ALBANY CITY COUNCIL

AGENDA

Monday, October 21, 2024

4:00 p.m.

Council Chambers, City Hall
333 Broadalbin Street SW
Watch on YouTube: https://www.youtube.com/user/cityofalbany

Please help us get Albany's work done.
Be respectful and refer to the rules of conduct posted by the main door to the Chambers and on the website.

1. Call to order and roll call
2. Business from the public
3. Arts Commission presentation – Kim Lyddane.
   Information
4. FEMA pre-implementation compliance measures – Jennifer Cepello. [Pages *-*]
   Direction
5. Business from the council
6. City manager report
7. Adjournment

This meeting is accessible to the public via video connection. The location for in-person attendance is accessible to people with disabilities. If you have a disability that requires accommodation, please notify city staff at least 48 hours in advance of the meeting at: cityclerk@albanyoregon.gov.

Testimony provided at the meeting is part of the public record. Meetings are recorded, capturing both in-person and virtual participation, and are posted on the City website.

MEMO

TO: Albany City Council

VIA: Peter Troedsson, City Manager
Matthew Ruettgers, Community Development Director

FROM: Jennifer Cepello, Planner III

DATE: October 11, for the October 21, 2024, City Council Work Session

SUBJECT: Federal Emergency Management Agency's Pre-Implementation Compliance Measures

Action Requested:

Staff requests that the City Council discuss and provide direction about which Pre-Implementation Compliance Measures option the City should pursue.

Discussion:

On July 15, 2024, the City of Albany received a letter from the Federal Emergency Management Agency (FEMA) announcing the start of the Pre-Implementation Compliance Measures (PICM) for National Flood Insurance Program participating communities in Oregon (Attachment A). That letter states that local jurisdictions within the National Flood Insurance Program are required to have "Pre-Implementation Compliance Measures" in place no later than December 1, 2024. The purpose of these PICMs, according to FEMA, are to "ensure the continued existence of threatened or endangered species in compliance with the Endangered Species Act".

National Flood Insurance Program participating communities in Oregon must select one of the PICM pathways laid out by FEMA. The three options are:

1. Prohibit all new development within the Special Flood Hazard Area.
2. Adopt a model ordinance that incorporates the requirements of the Endangered Species Act into the City's floodplain code. (Attachment B)
3. Require applicants on a permit-by-permit basis to prepare a Habitat Assessment documenting that their proposed development in the Special Flood Hazard Area will achieve "no net loss." (Attachment C)

The selected PICM must be in place until the release and implementation of the Final Implementation Plan, which is anticipated in 2027. If a PICM pathway is not chosen by the December 1, 2024, deadline, and FEMA notified of their selection, they will default to a permit-by-permit basis (Option 3). In addition, National Flood Insurance Program communities are required to report to FEMA on their implementation of interim measures beginning on January 31, 2025.

Staff seeks to engage Council on the PICM options and begin discussion on which option is preferred for the City of Albany.

Budget Impact:

None at this time.

JC:km
Attachments: (3)

U.S. Department of Homeland Security
FEMA Region 10
130 228th Street, SW
Bothell, WA 98021-8627

FEMA

July 15, 2024

Alex Johnson II
333 Broadalbin SW
Albany, Oregon 97321

Dear Alex Johnson II:

The purpose of this letter is to announce the start of the United States Department of Homeland Security's Federal Emergency Management Agency's (FEMA) Pre-Implementation Compliance Measures (PICM) for National Flood Insurance Program (NFIP) participating communities in Oregon. The intent of PICM is to ensure the continued existence of threatened or endangered species in compliance with the Endangered Species Act (ESA). These measures include coordination with communities to provide appropriate technical assistance, help identify available resources, deliver trainings, and facilitate workshops to ensure on-going community participation in the NFIP. These pre-implementation compliance measures will assist communities in preparing for the Final NFIP-ESA Implementation Plan by helping them develop short and long-term solutions to ensure their on-going participation in the NFIP.

FEMA is currently conducting a National Environmental Policy Act (NEPA) evaluation of impacts associated with the Oregon NFIP-ESA Implementation Plan. FEMA developed this plan, in part, due to a Biological Opinion in 2016 from National Marine Fisheries Services. The Biological Opinion recommended specific measures for FEMA to take to avoid jeopardizing endangered species, including interim compliance measures. The release of the Final Implementation Plan (Plan) is anticipated by 2026, following the Record of Decision in the Environmental Impact Statement (EIS) process, then FEMA will fully implement the Plan in 2027.

FEMA has heard concerns from several communities regarding challenges they are facing to meet the expectations of this Plan. To provide communities with the support needed to incorporate ESA considerations to their permitting of development in the floodplain, FEMA will inform, educate, and support our Oregon NFIP participating communities through the PICM before the Final Implementation Plan is released.

NFIP participating communities in Oregon must select one of the PICM pathways which include the following: (1) adopt a model ordinance that considers impacts to species and their habitat and requires mitigation to a no net loss standard; (2) choose to require a habitat assessment and mitigation plan for development on a permit-by-permit basis; or (3) putting in place a prohibition on floodplain development in the Special Flood Hazard Area (SFHA). Communities must pick a PICM pathway by December 1, 2024. If a community fails to inform FEMA of its selection, they will default to the permit-by-permit PICM pathway. Communities will be required to report their floodplain development activities to FEMA beginning in January of 2025. Failure to report may result in a compliance visit.

As a part of the PICM, FEMA will implement a delay in the processing of two types of Letters of Map Changes in the Oregon NFIP-ESA Implementation Plan area, specifically Letters of Map Changes associated with the placement of fill in the floodplain: Conditional Letter of Map Revision Based on Fill (CLOMR-F) and Letter of Map Revision Based on Fill (LOMR-F) requests. This action was specifically requested by NMFS in their 2016 Biological Opinion and serves to remove any perceived programmatic incentive of using fill in the floodplain. This delay in processing will begin on August 1, 2024, and will be in place until the Final Implementation Plan is released.

Your community's ongoing participation in the NFIP is critical, as it provides access to flood insurance for property owners, renters, and businesses. In City Of Albany there are currently 213 of NFIP policies in force representing $58271000 in coverage for your community.

FEMA will be conducting informational virtual webinars this summer to provide an overview and status update for the Oregon NFIP-ESA integration, introduce the Pre-Implementation Compliance Measures, and provide an opportunity for Oregon NFIP floodplain managers to ask questions of FEMA staff. In the fall, FEMA will hold workshops to provide in-depth opportunities for local technical staff to work with FEMA technical staff, to understand and discuss issues relating to the PICM.

The webinars will be held virtually over Zoom. The information at each webinar is the same so your jurisdiction only needs to attend one. You can register for a webinar using the links below.

- Wednesday, July 31 at 3-5pm PT: https://kearnswest.zoom.us/meeting/register/tZEkc-murjstGdPJiFioethjRk-id8N-k0hj
- Tuesday, August 13 at 9:30-11:30am PT: https://kearnswest.zoom.us/meeting/register/tZAod-isrTsqGN0KqckRLPPeaZuu4rv96lcR
- Thursday, August 15 at 2-4pm PT: https://kearnswest.zoom.us/meeting/register/tZIqcOGpqDojHtTXaa946aI9dMpCTcJlH_zt
- Wednesday, August 21 at 12:30-2:30pm PT: https://kearnswest.zoom.us/meeting/register/tZYqcuGsrD8rH9DZO22vG0v9KrNzVeUZA9gy

FEMA will also develop a questionnaire to allow communities to identify how they currently incorporate or plan to incorporate ESA considerations, both in the short-term and long-term. To assist communities in making this determination, FEMA will be offering guidance on the potential pathways that help ensure current compliance. Communities will also be asked to help identify what technical assistance and training would be most beneficial. Feedback from this questionnaire will drive FEMA's engagement and outreach.

Upon completion of the Environmental Impact Statement review and determination, the Final Implementation Plan will be distributed along with several guidance documents and a series of Frequently Asked Questions. FEMA will also be starting NFIP Compliance Audits, in which we will be reviewing permits issued by communities for development in the floodplain and will expect the community to be able to demonstrate what actions are being taken to address ESA considerations.

If you have any questions, please contact us through our project email address fema-r10-mit-PICM@fema.dhs.gov. Thank you for your community's on-going efforts to reduce flood risk in your

community and for your support as we worked toward these milestones.

Sincerely,

Willie G. Nunn
Regional Administrator
FEMA Region 10

cc: JenniferCepello, City Of Albany
John Graves, Floodplain Management and Insurance Branch Chief
Deanna Wright, Oregon State National Flood Insurance Program Coordinator

Enclosure: Pre-Implementation Compliance Measures Fact Sheet

Oregon National Flood Insurance Program Endangered Species Act Integration

Pre-Implementation Compliance Measures Overview

Beginning this summer, FEMA will assist communities with coming changes to the National Flood Insurance Program (NFIP) in Oregon.

Why are the changes needed?

As the result of a Biological Opinion issued by the National Marine Fisheries Service, communities are required to demonstrate how floodplain development is compliant with the Endangered Species Act in Special Flood Hazard Areas. Changes are needed to protect the habitat of several species of fish and the Southern Resident killer whales to comply with the Endangered Species Act (ESA). FEMA outlined these changes in the draft Oregon NFIP-ESA Implementation Plan.

Current status

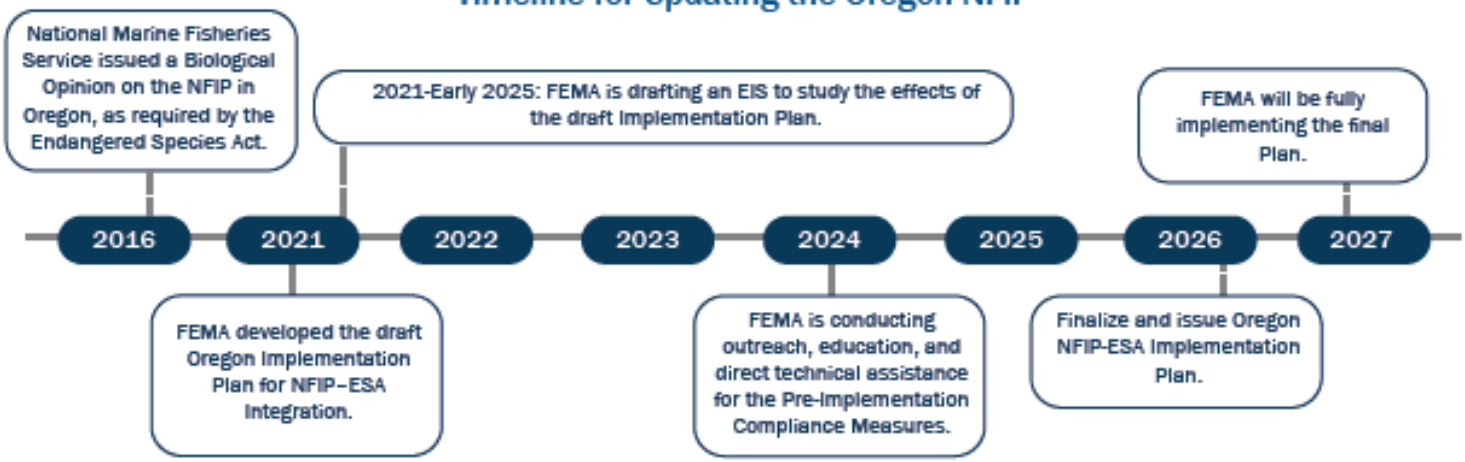
FEMA is evaluating proposed changes to the NFIP outlined in the Implementation Plan through an environmental impact statement (EIS), in compliance with the National Environmental Policy Act (NEPA).

The National Flood Insurance Program serves to protect lives and property, while reducing costs to taxpayers due to flooding loss.

What is "no net loss"?
Any development action resulting in negative impacts to one or more key floodplain functions that are then mitigated or avoided to offset said impacts.

The Final Implementation Plan is anticipated by 2026 following the Record of Decision in the EIS process, then FEMA will fully implement the plan in 2027. Until then, communities need to begin taking action to protect habitat and achieve "no net loss." FEMA is offering several resources for communities to learn more and implement interim measures, called Pre-Implementation Compliance Measures (PICMs).

Timeline for Updating the Oregon NFIP



FEMA

What can communities do to comply with these changes?

Oregon communities participating in the NFIP can take short-term measures to comply with ESA requirements, known as PICMs. FEMA developed these measures in response to concerns from communities about the time and resources needed to meet requirements and ensure their future good standing in the NFIP. By implementing these measures now, communities will be better prepared for compliance audits, which will begin when the Final Implementation Plan is in place.

Communities can select one of the following three PICMs:

- Prohibit all new development in the floodplain.
- Incorporate the ESA into local floodplain ordinances.
- Require permit applicants to develop a Floodplain Habitat Assessment documenting that their proposed development in the Special Flood Hazard Area will achieve "no net loss."

Communities must report to FEMA on their implementation of interim measures.

In addition to the above measures, as of August 1, 2024, FEMA is temporarily suspending processing applications for Letters of Map Revision based on Fill (LOMR-Fs) and Conditional Letters of Map Revision based on Fill (CLOMR-Fs) in NFIP communities to avoid potentially negative effects on ESA-listed species.

FEMA is here to support your community.

FEMA is offering several resources to assist communities in preparing for the Oregon NFIP-ESA Implementation Plan.

- **Informational Webinars (Summer 2024):** Learn about what FEMA is doing to revise the Implementation Plan and receive an introduction to the PICMs.
- **Questionnaire (Summer 2024):** Share what floodplain management measures your community is currently implementing to comply with the ESA, which PICMs you're most interested in, and what support you need. Your feedback will help us plan the fall workshops and identify needs for technical assistance.
- **Workshops (Fall 2024):** Get an in-depth look at PICMs and talk through questions and concerns with FEMA staff.
- **Technical Assistance (Begins in Fall 2024):** Get support from FEMA to begin implementing PICMs.

Learn more and participate

Visit www.fema.gov/about/organization/region-10/oregon/nfip-esa-integration to read the latest information about NFIP-ESA Integration in Oregon.

You can also contact us at FEMA-R10-MIT-PICM@fema.dhs.gov

NFIP Oregon Implementation Program Guidance

Model Floodplain Management Ordinance

For Participating Communities in the Implementation Plan Area

FEMA

Federal Emergency Management Agency
Region 10
Department of Homeland Security
130 – 228th Street SW
Bothell, WA 98021

Note to Communities: This document presents the draft model ordinance that for the Pre-Implementation Compliance Measures and is intended to closely represent most of the language that will be presented as Pathway A of the Draft Implementation Plan. It is built off the 2020 State of Oregon Model Flood Hazard Management Ordinance and the 2018 iteration of the Oregon Model ordinance for ESA Integration. It reflects the NMFS 2016 Biological Opinion (BiOp) (except where noted) and is informed by the 2023 NEPA Scoping effort.

Table of Contents

Acronyms and Abbreviations

BiOp	Biological Opinion
CFR	Code of Federal Regulations
CLOMR	Conditional Letter of Map Revision
CRS	Community Rating System
dbh	diameter breast height
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
LID	Low-Impact Development
LOMR	Letter of Map Revision
MHHW	Marine Higher-High Water line
NFIP	National Flood Insurance Program
NMFS	National Marine Fisheries Service
OHWM	Ordinary High Water Mark
ORS	Oregon Revised Statutes
ORSC	Oregon Residential Specialty Code
OSSC	Oregon Structural Specialty Code
RBZ	Riparian buffer zone
SFHA	Special Flood Hazard Area
TB	Technical Bulletin

SECTION 1. Introduction

FEMA has developed this model flood hazard management ordinance ("2024 model ordinance") to address the requirements outlined in the Draft Implementation Plan for National Flood Insurance Program (NFIP)-Endangered Species Act (ESA) Integration in Oregon ("Oregon Implementation Plan"). The Federal Emergency Management Agency (FEMA) consulted with the National Marine Fisheries Service (NMFS) on potential effects of the implementation of the NFIP in Oregon on listed species under NMFS authority. In 2016, NMFS issued a Biological Opinion (BiOp), which recommended changes to the implementation of the NFIP in Oregon within the plan area (see the 2024 Draft Oregon Implementation Plan for NFIP-ESA Integration [2024 Draft Implementation Plan] for a description of the plan area).

As a result of the BiOp issued by NMFS, communities are required to demonstrate how floodplain development is compliant with the Endangered Species Act in the SFHA while the 2024 Draft Implementation Plan undergoes an Environmental Impact Statement (EIS). The 2024 model ordinance provides the tools a community would need to implement "Path A" of the 2024 Draft Implementation Plan and serves as one of three actions a community can take under Pre-Implementation Compliance Measures (PICM).

The regulatory language contained within the 2024 model ordinance can be adopted verbatim and incorporated into local floodplain and land use regulations, or a community may select those sections that are missing from its current floodplain ordinance and adopt those sections. The State of Oregon's Model Flood Hazard Management Ordinance (2020) was used as a starting point, with additions to provide compliance with the Oregon Implementation Plan. The additional sections are clearly noted with yellow highlighting to simplify implementation for Oregon communities in the plan area that have already adopted the Oregon Model Flood Hazard Management Ordinance (2020).

This 2024 model ordinance provides a set of provisions to protect the built environment from flood damage and to minimize potential impacts of construction and reconstruction on public health and safety, property, water quality, and aquatic and riparian habitats. The requirements pertain to new development in Special Flood Hazard Area (see definitions), which includes the maintenance, repair, or remodel of existing structures and utilities when the existing footprint is expanded and/or the floodplain is further encroached upon.

The Oregon Implementation Plan and this model ordinance do not change the definition of development in 44 Code of Federal Regulations [CFR] 59.1.

> "Development" is defined as "any man-made change to improved or unimproved real estate, including, but not limited to, buildings or other structures, mining, filling, grading, paving, excavation or drilling operations, or storage of equipment or materials." (44 C.F.R. 59.1)

The 2024 model ordinance provides compliance with federal and state statutes and with the Oregon Implementation Plan. The 2024 model ordinance conforms to the following:

1. The requirements of the NFIP, as specified in 44 CFR 59 and 60.

2. Oregon State codes to protect structures from flood damage that are specified in Oregon Structural Specialty Code (OSSC), Section 1612 and Oregon Residential Specialty Code (ORSC), Section R322.

3. Oregon Statewide Land Use Planning Goals

4. Provisions needed to meet the requirements of the Oregon Implementation Plan for NFIP-ESA Integration. These sections are highlighted in yellow in the model ordinance.

This 2024 model ordinance provides communities with ordinance language that complies with the NFIP-ESA Integration Implementation Plan. Adoption of the ordinance language will ensure compliance with the minimum standards for participation in the NFIP in the plan area in Oregon. Prior to adoption of the ordinance language, communities must have their locally proposed draft language reviewed by FEMA and/or the Oregon Department of Land Conservation and Development.

The model flood hazard ordinance includes standards and provisions that encourage sound floodplain management. The language is based on the minimum requirements of the NFIP found in 44 CFR 59 and 60, Oregon's statewide land use planning Goal 7, and Oregon specialty codes. The new language added to the state model floodplain ordinance, highlighted in yellow, provides compliance with the ESA for floodplain development in the plan area.

Adherent to the NMFS 2016 Biological Opinion, mitigation is necessary to ensure a no net loss in floodplain functions. FEMA's 2024 Draft Oregon Implementation Plan identifies proxies that provide measurable actions that can prevent the no net loss of the parent floodplain functions. These proxies include undeveloped space, pervious surfaces, and trees to account for a no net loss in respective floodplain functions of floodplain storage, water quality, and vegetation. Mitigation of these proxies must be completed to ensure compliance with no net loss standards. No net loss applies to the net change in floodplain functions as compared to existing conditions at the time of proposed development and mitigation must be addressed to the floodplain function that is receiving the detrimental impact.

1.1. How to Use this Document

This 2024 model ordinance includes a Table of Contents and a Regulatory Crosswalk that identifies the federal and state standards that align to and are reflected in each section. Communities will need to review their ordinances and ensure that all the required components are included.

Please refer to FEMA's website for information on how to determine whether or not your community is within the plan area.

1.1.1. ORDINANCE LANGUAGE LEGEND:

The colors are used in the text in the model ordinance to denote specific actions or sections with specific applicability.

- Black: Represents the existing NFIP and current state minimum requirements that are found in the 2020 Oregon Model Flood Hazard Management Ordinance.
- Red: Represents language that must be replaced with community specific information. Only include the appropriate language for your community.
- Purple: Represents language required for communities with Coastal High Hazard Areas mapped by FEMA (V Zones or Coastal A Zones). *(DELETE ALL PURPLE LANGUAGE IF NOT A COASTAL COMMUNITY).*
- Blue: Represents hyperlinks to other sections of the document or external websites.
- Yellow highlighting: Represents new ordinance language not in the 2020 Oregon Model Flood Hazard Management Ordinance. Communities that have previously adopted the state model ordinance may focus on the yellow highlighted sections.

1.2. Changes from the 2020 Oregon Model Flood Hazard Management Ordinance

This 2024 version of the Oregon Model Flood Hazard Ordinance (to be referred to herein as the "2024 Model Ordinance"), varies from the 2020 Oregon Model Flood Hazard Management Ordinance. with the addition of new content to be included for ESA compliance for NFIP-participating communities in the plan area. If no part of the Special Flood Hazard Area (SFHA) in your NFIP-participating community is in the Oregon NFIP-ESA Integration plan area, your community may continue to use the 2020 Oregon Model Flood Hazard Management Ordinance.

In general, the ordinance was revised to ensure that the implementation of the NFIP-ESA integration no net loss standards avoids or offsets adverse impacts on threatened and endangered species and their critical habitat. A summary of the primary changes found in the 2024 model ordinance is provided below:

1. New language has been added to incorporate the following no net loss standards:
    a. No net loss of undeveloped space (see Section 6.1.1).
    b. No net loss of pervious surface. (see Section 6.1.2).
    c. No net loss of trees equal to or greater than 6 inches dbh (i.e., tree diameter measured at 4.5 feet from the ground surface). (see Section 6.1.3).

2. Some definitions (see 2.0) have been added to provide context for the new no net loss standards from the Oregon Implementation Plan.

3. Language has been added:

    a. (see 6.3) to address activities that may require a floodplain development permit but are exempt from the no net loss requirement per the BiOp.

    b. (see 6.4) to address the specific requirements of the Riparian Buffer Zone (RBZ).

4. In general, the language in the 2024 model ordinance mirrors the language from the 2020 Oregon Model Flood Hazard Management Ordinance. Minor edits to the 2020 language have been made for clarity, punctuation, and grammar.

1.3. Community Rating System

Implementation of the new no net loss standards related to NFIP-ESA integration may be eligible for credit under the Community Rating System (CRS). The CRS is explained further in CRS Credit for Habitat Protection, available online at: https://crsresources.org/files/guides/crs-credit-for-habitat-protection.pdf, and the 2017 CRS Coordinators' Manual, available online at: https://www.fema.gov/sites/default/files/documents/fema_community-rating-system_coordinators-manual_2017.pdf, and the 2021 Addendum to the 2017 CRS Coordinator's Manual, available online at: https://www.fema.gov/sites/default/files/documents/fema_community-rating-system_coordinator-manual_addendum-2021.pdf. The Association of State Floodplain Managers' Green Guide, also provides useful information on development techniques that avoid impacts on natural functions and values of floodplains. This document is available at: www.floodsciencecenter.org/products/crs-community-resilience/green-guide/. Communities interested in CRS credits should contact their CRS specialist for additional information and review.

Implementation of the no net loss standards would most likely contribute to credits under the following CRS activities:

- Activity 430 Higher Regulatory Standards
    - Development Limitations
        - Prohibition of all fill (DL1a): This credit is for prohibiting all filling in the regulatory floodplain. To meet this standard, communities may NOT approve Conditional Letters or Letters of Map Revision based on Fill (CLOMR-F or LOMR-F). If a CLOMR-F or LOMR-F is issued for a property in a community, then DL1 credit will be denied. This applies to CLOMRs and LOMRs that include filling as part of the reason for requesting a map change. Minor filling may be allowed where needed to protect or restore natural floodplain functions, such as part of a channel restoration project.

- The CRS manual describes a number of regulatory approaches that do not warrant credit under DL1; however, because the Oregon NFIP-ESA integration no net loss standards exceed the approaches described in the manual, a community meeting the Oregon no net loss standards should qualify for credit under DL1.

- Compensatory storage (DL1b): This credit is for regulations that require new development to provide compensatory storage at hydraulically equivalent sites up to a ratio of 1.5:1. Credit is not provided for:

    - Compensatory storage requirements in floodways only or in V Zones only, or

    - Stormwater management regulations that require a developer to compensate for any increase in runoff created by the development. This is credited under Activity 450.

- Activity 450 Stormwater Management

    - Stormwater management regulations (SMR – 452a): This credit is the sum of four sub-elements: Size of development (Section 452.a(1), SZ); design storm used (Section 452.a(2), DS); low-impact development (LID) regulations (Section 452.a(3), LID); and public agency authority to inspect and maintain, at the owner's expense, private facilities constructed to comply with the ordinance (Section 452.a.(4), PUB).

        - LID credits the community's regulatory language that requires the implementation of LID techniques to the maximum extent feasible to control peak runoff when new development occurs. LID techniques can significantly reduce or eliminate the increase in stormwater runoff created by traditional development, encourage aquifer recharge, and promote better water quality.

SECTION 2. Regulatory Crosswalk

The following table presents a crosswalk of the model ordinance sections against the relevant federal and state laws, regulations, and policies. The new sections related to the Oregon NFIP-ESA integration implementation (yellow highlighted sections of the model ordinance) are not listed in this table and are related to compliance with the ESA.

Ordinance Section	44 CFR and Technical Bulletin (TB) Citation(s)	State of Oregon Citation(s) (Goal 7, Specialty Codes*, Oregon Revised Statutes [ORS])
1.1 Statutory Authorization	59.22(a)(2)	Goal 7; ORS 203.035 (Counties), ORS 197.175 (Cities)
1.2 Findings of Fact	59.22(a)(1)	Goal 7
1.3 Statement of Purpose	59.2; 59.22(a)(1) and (8); 60.22	Goal 7
1.4 Methods of Reducing Flood Losses	60.22	Goal 7
2.0 Definitions	59.1; 33 CFR 328.3(c)(7)	Goal 7
3.1 Lands to Which this Ordinance Applies	59.22(a)	Goal 7
3.2 Basis for Establishing the Special Flood Hazard Areas	59.22(a)(6); 60.2(h)	Goal 7
3.3 Coordination with Specialty Codes Adopted by the State of Oregon Building Codes Division		ORS 455
3.4.1 Compliance	60.1(b) – (d)	Goal 7
3.4.2 Penalties for Noncompliance	60.1(b) – (d)	Goal 7
3.5.1 Abrogation	60.1(b) – (d)	Goal 7
3.5.2 Severability		
3.6 Interpretation	60.1(b) – (d)	Goal 7
3.7.1 Warning		
3.7.2 Disclaimer of Liability		
4.1 Designation of the Floodplain Administrator	59.22(b)(1)	Goal 7
4.2.1 Permit Review	60.3(a)(1) – (3); 60.3(c)(10)	Goal 7
4.2.2 Information to be Obtained and Maintained	59.22(a)(9)(iii); 60.3(b)(5)(i) and (iii); 60.3(c)(4); 60.3(b)(3); 60.6(a)(6)	Goal 7; 105.9; 110.33; R106.1.4; R109.1.3; R109.1.6.1; R322.1.10; R322.3.6

Ordinance Section	44 CFR and Technical Bulletin (TB) Citation(s)	State of Oregon Citation(s) (Goal 7, Specialty Codes*, Oregon Revised Statutes [ORS])
4.2.3.1 Community Boundary Alterations	59.22(a)(9)(v)	Goal 7
4.2.3.2 Watercourse Alterations	60.3(b)(6) – (7), 65.6(12-13)	Goal 7
4.2.3.3 Requirement to Submit New Technical Data	65.3, 65.6, 65.7, 65.12	Goal 7
4.2.4 Substantial Improvement and Substantial Damage Assessments and Determinations	59.1; 60.3(a)(3); 60.3(b)(2); 60.3(b)(5)(i); 60.3(c)(1), (2), (3), (5) – (8), (10), (12); 60.3(d)(3); 60.3(e)(4), (5), (8)	Goal 7
4.3.1 Floodplain Development Permit Required	60.3(a)(1)	Goal 7
4.3.2 Application for Development Permit	60.3(a)(1); 60.3(b)(3); 60.3(c)(4)	Goal 7; Oregon Residential Specialty Code (R) 106.1.4; R322.3.6
4.4 Variance Procedure	60.6(a)	Goal 7
4.4.1 Conditions for Variances	60.6(a)	Goal 7
4.4.2 Variance Notification	60.6(a)(5)	Goal 7
5.1.1 Alteration of Watercourses	60.3(b)(6) and (7)	Goal 7
5.1.2 Anchoring	60.3(a)(3); 60.3(b)(1), (2), and (8)	Goal 7; R322.1.2
5.1.3 Construction Materials and Methods	60.3(a)(3), TB 2; TB 11	Goal 7; R322.1.3; R322.1.3
5.1.4.1 Water Supply, Sanitary Sewer, and On-Site Waste Disposal Systems	60.3(a)(5) and (6)	Goal 7; R322.1.7
5.1.4.2 Electrical, Mechanical, Plumbing, and Other Equipment	60.3(a)(3)	Goal 7; R322.1.6;
5.1.5 Tanks		R322.2.4; R322.3.7
5.1.6 Subdivision Proposals	60.3(a)(4)(i) – (iii); 60.3(b)(3)	Goal 7
5.1.7 Use of Other Base Flood Data	60.3(a)(3); 60.3(b)(4); 60.3(b)(3); TB 10-01	Goal 7; R322.3.2
5.1.8 Structures Located in Multiple or Partial Flood Zones		R322.1
5.2.1 Flood Openings	60.3(c)(5); TB 1; TB 11	Goal 7; R322.2.2;

Ordinance Section	44 CFR and Technical Bulletin (TB) Citation(s)	State of Oregon Citation(s) (Goal 7, Specialty Codes*, Oregon Revised Statutes [ORS])
		R322.2.2.1
5.2.2 Garages	TB 7-93	R309
5.2.3.1 Before Regulatory Floodway	60.3(c)(10)	Goal 7
5.2.3.2 Residential Construction	60.3(c)(2)	Goal 7
5.2.3.3 Non-residential Construction	60.3(c)(3) – (5); TB 3	Goal 7; R322.2.2; R322.2.2.1
5.2.3.4 Manufactured Dwellings	60.3(b)(8); 60.3(c)(6)(iv); 60.3(c)(12)(ii)	Goal 7; State of OR Manufactured Dwelling Installation Specialty Code (MDISC) and associated statewide Code Interpretation dated 1/1/2011
5.2.3.5 Recreational Vehicles	60.3(c)(14)(i) – (iii)	Goal 7
5.2.3.6 Appurtenant (Accessory) Structures	60.3(c)(5); TB 1; TB 7-93	Oregon Structural Specialty Code (S) 105.2; R105.2
5.2.4 Floodways	60.3(d); FEMA Region X Fish Enhancement Memo (Mark Riebau)	Goal 7
5.2.5 Standards for Shallow Flooding Areas	60.3(c)(7), (8), (11), and (14)	Goal 7
5.3 Specific Standards for Coastal High Hazard Flood Zones, and 5.3.1 Development Standards	60.3(e); TB 5; TB 8; TB 9	Goal 7; R322.3.1; R322.3.2; R322.3.3; R322.3.4; R322.3.5
5.3.1.1 Manufactured Dwelling Standards for Coastal High Hazard Zones	60.3(e)(8)(i) – (iii)	Goal 7; RR322.3.2; State of OR Manufactured Dwelling Installation Specialty Code (MDISC) and associated statewide Code Interpretation dated 1/1/2011

Ordinance Section	44 CFR and Technical Bulletin (TB) Citation(s)	State of Oregon Citation(s) (Goal 7, Specialty Codes*, Oregon Revised Statutes [ORS])
5.3.1.2 Recreational Vehicle Standards for Coastal High Hazard Zones	60.3(e)(9)(i)- (iii)	Goal 7
5.3.1.3 Tank Standards for Coastal High Hazard Zones		R322.2.4; R322.3.7

*Link to Oregon Specialty Codes (https://www.oregon.gov/bcd/codes-stand/Pages/adopted-codes.aspx)

SECTION 3. Model Ordinance Language

1.0 STATUTORY AUTHORITY, FINDINGS OF FACT, PURPOSE, AND METHODS

1.1 STATUTORY AUTHORIZATION

The State of Oregon has in ORS 203.035 (COUNTIES) OR ORS 197.175 (CITIES) delegated the responsibility to local governmental units to adopt floodplain management regulations designed to promote the public health, safety, and general welfare of its citizenry.

Therefore, the COMMUNITY NAME does ordain as follows:

1.2 FINDINGS OF FACT

A. The flood hazard areas of COMMUNITY NAME preserve the natural and beneficial values served by floodplains but are subject to periodic inundation which may result in loss of life and property, health and safety hazards, disruption of commerce and governmental services, extraordinary public expenditures for flood protection and relief, and impairment of the tax base, all of which adversely affect the public health, safety, and general welfare.

B. These flood losses may be caused by the cumulative effect of obstructions in special flood hazard areas which increase flood heights and velocities, and when inadequately anchored, cause damage in other areas. Uses that are inadequately floodproofed, elevated, or otherwise protected from flood damage also contribute to flood loss.

1.3 STATEMENT OF PURPOSE

It is the purpose of this ordinance to promote public health, safety, and general welfare, and to minimize public and private losses due to flooding in special flood hazard areas by provisions designed to:

A. Protect human life and health;

B. Minimize expenditure of public money for costly flood control projects;

C. Preserve natural and beneficial floodplain functions;

D. Minimize the need for rescue and relief efforts associated with flooding and generally undertaken at the expense of the general public;

E. Minimize prolonged business interruptions;

F. Minimize damage to public facilities and utilities such as water and gas mains; electric, telephone and sewer lines; and streets and bridges located in special flood hazard areas;

G. Help maintain a stable tax base by providing for the sound use and development of flood hazard areas so as to minimize blight areas caused by flooding;

H. Notify potential buyers that the property is in a special flood hazard area;

I. Notify those who occupy special flood hazard areas that they assume responsibility for their actions;

J. Participate in and maintain eligibility for flood insurance and disaster relief.

1.4 METHODS OF REDUCING FLOOD LOSSES

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

A. Restricting or prohibiting development which is dangerous to health, safety, and property due to water or erosion hazards, or which result in damaging increases in erosion or in flood heights or velocities;

B. Requiring that development vulnerable to floods, including facilities which serve such uses, be protected against flood damage at the time of initial construction;

C. Controlling the alteration of natural floodplains, stream channels, and natural protective barriers, which help accommodate or channel flood waters;

D. Controlling filling, grading, dredging, and other development which may increase flood damage;

E. Preventing or regulating the construction of flood barriers which will unnaturally divert flood waters or may increase flood hazards in other areas.

F. Employing a standard of “no net loss” of natural and beneficial floodplain functions.

2.0 DEFINITIONS

Unless specifically defined below, words or phrases used in this ordinance shall be interpreted so as to give them the meaning they have in common usage.

Appeal: A request for a review of the interpretation of any provision of this ordinance or a request for a variance.

Area of shallow flooding: A designated Zone AO, AH, AR/AO or AR/AH on a community’s Flood Insurance Rate Map (FIRM) with a one percent or greater annual chance of flooding to an average depth of one to three feet where a clearly defined channel

does not exist, where the path of flooding is unpredictable, and where velocity flow may be evident. Such flooding is characterized by ponding or sheet flow.

Area of special flood hazard: 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, V1-30, VE). "Special flood hazard area" is synonymous in meaning and definition with the phrase "area of special flood hazard."

Base flood: The flood having a one percent chance of being equaled or exceeded in any given year.

Base flood elevation (BFE): The elevation to which floodwater is anticipated to rise during the base flood.

Basement: Any area of the building having its floor subgrade (below ground level) on all sides.

Breakaway wall: A wall that is not part of the structural support of the building and is intended through its design and construction to collapse under specific lateral loading forces, without causing damage to the elevated portion of the building or supporting foundation system.

Coastal high hazard area: An area of special flood hazard extending from offshore to the inland limit of a primary frontal dune along an open coast and any other area subject to high velocity wave action from storms or seismic sources.

Development: Any man-made change to improved or unimproved real estate, including but not limited to buildings or other structures, mining, dredging, filling, grading, paving, excavation or drilling operations or storage of equipment or materials.

Fill: Placement of any materials such as soil, gravel, crushed stone, or other materials that change the elevation of the floodplain. The placement of fill is considered "development."

Fish Accessible Space: The volumetric space available to fish to access.

Fish Egress-able Space: The volumetric space available to fish to exit or leave from.

Flood or Flooding:

(a) A general and temporary condition of partial or complete inundation of normally dry land areas from:

(1) The overflow of inland or tidal waters.

(2) The unusual and rapid accumulation or runoff of surface waters from any source.

(3) Mudslides (i.e., mudflows) which are proximately caused by flooding as defined in paragraph (a)(2) of this definition and are akin to a river of liquid and flowing mud on the surfaces of normally dry land areas, as when earth is carried by a current of water and deposited along the path of the current.

(b) 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)(1) of this definition.

Flood elevation study: 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.

Flood Insurance Rate Map (FIRM): The official map of a community, on which the Federal Insurance Administrator has delineated both the special hazard areas and the risk premium zones applicable to the community. A FIRM that has been made available digitally is called a Digital Flood Insurance Rate Map (DFIRM).

Flood Insurance Study (FIS): See "Flood elevation study."

Floodway: The channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than a designated height. Also referred to as "Regulatory Floodway."

Functionally Dependent Use: A use which cannot perform its intended purpose unless it is located or carried out in proximity to water. The term includes only docking facilities, port facilities that are necessary for the loading and unloading of cargo or passengers, and ship building and ship repair facilities, but does not include long-term storage or related manufacturing facilities.

Green Infrastructure: Use of natural or human-made hydrologic features to manage water and provide environmental and community benefits. Green infrastructure uses management approaches and technologies that use, enhance, and/or mimic the natural hydrologic cycle processes of infiltration, evapotranspiration, and reuse. At a large scale, it is an interconnected network of green space that conserves natural systems and provides assorted benefits to human populations. At a local scale, it manages stormwater by infiltrating it into the ground where it is generated using vegetation or porous surfaces, or by capturing it for later reuse. Green infrastructure practices can be used to achieve no net loss of pervious surface by creating infiltration of stormwater in an amount equal to or greater than the infiltration lost by the placement of new impervious surface.

Habitat Restoration Activities: Activities with the sole purpose of restoring habitats that have only temporary impacts and long-term benefits to habitat. Such projects cannot include ancillary structures such as a storage shed for maintenance equipment, must demonstrate that no rise in the BFE would occur as a result of the project and obtain a CLOMR and LOMR, and have obtained any other required permits (e.g., CWA Section 404 permit).

Hazard Trees: Standing dead, dying, or diseased trees or ones with a structural defect that makes it likely to fail in whole or in part and that present a potential hazard to a structure or as defined by the community.

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

Historic structure: Any structure that is:

(a) Listed individually in the National Register of Historic Places (a listing maintained by the Department of Interior) or preliminarily determined by the Secretary of the Interior as meeting the requirements for individual listing on the National Register;

(b) Certified or preliminarily determined by the Secretary of the Interior as contributing to the historical significance of a registered historic district or a district preliminarily determined by the Secretary to qualify as a registered historic district;

(c) Individually listed on a state inventory of historic places in states with historic preservation programs which have been approved by the Secretary of Interior; or

(d) Individually listed on a local inventory of historic places in communities with historic preservation programs that have been certified either:

(1) By an approved state program as determined by the Secretary of the Interior or

(2) Directly by the Secretary of the Interior in states without approved programs.

Hydraulically Equivalent Elevation: A location (e.g., a site where no net loss standards are implemented) that is approximately equivalent to another (e.g., the impacted site) relative to the same 100-year water surface elevation contour or base flood elevation. This may be estimated based on a point that is along the same approximate line perpendicular to the direction of flow.

Hydrologically Connected: The interconnection of groundwater and surface water such that they constitute one water supply and use of either results in an impact to both.

Impervious Surface: A surface that cannot be penetrated by water and thereby prevents infiltration and increases the amount and rate of surface water runoff, leading to erosion of stream banks, degradation of habitat, and increased sediment loads in streams. Such surfaces can accumulate large amounts of pollutants that are then "flushed" into local water bodies during storms and can also interfere with recharge of groundwater and the base flows to water bodies.

Low Impact Development: An approach to land development (or redevelopment) that works with nature to manage stormwater as close to its source as possible. It employs principles such as preserving and recreating natural landscape features and minimizing effective imperviousness to create functional and appealing site drainage that treats stormwater as a resource rather than a waste product. Low Impact Development refers to designing and implementing practices that can be employed at the site level to control stormwater and help replicate the predevelopment hydrology of the site. Low impact development helps achieve no net loss of pervious surface by infiltrating stormwater in an amount equal to or greater than the infiltration lost by the placement of new impervious surface. LID is a subset of green infrastructure.

Lowest floor: The lowest floor of the lowest enclosed area (including basement). An unfinished or flood resistant enclosure, usable solely for parking of vehicles, building access or storage in an area other than a basement area is not considered a building's lowest floor, provided that such enclosure is not built so as to render the structure in violation of the applicable non-elevation design requirements of this ordinance.

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

Manufactured dwelling park or subdivision: A parcel (or contiguous parcels) of land divided into two or more manufactured dwelling lots for rent or sale.

Mean Higher-High Water: The average of the higher-high water height of each tidal day observed over the National Tidal Datum Epoch.

Mean sea level: For purposes of the National Flood Insurance Program, the National Geodetic Vertical Datum (NGVD) of 1929 or other datum, to which Base Flood Elevations shown on a community's Flood Insurance Rate Map are referenced.

New construction: 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 COMMUNITY NAME and includes any subsequent improvements to such structures.

No Net Loss: A standard where adverse impacts must be avoided or offset through adherence to certain requirements so that there is no net change in the function

from the existing condition when a development application is submitted to the state, tribal, or local jurisdiction. The floodplain functions of floodplain storage, water quality, and vegetation must be maintained.

Offsite: Mitigation occurring outside of the project area.

Onsite: Mitigation occurring within the project area.

Ordinary High Water Mark: The line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank; shelving; changes in the character of soil; destruction of terrestrial vegetation; the presence of litter and debris; or other appropriate means that consider the characteristics of the surrounding areas.

Qualified Professional: Appropriate subject matter expert that is defined by the community.

Reach: A section of a stream or river along which similar hydrologic conditions exist, such as discharge, depth, area, and slope. It can also be the length of a stream or river (with varying conditions) between major tributaries or two stream gages, or a length of river for which the characteristics are well described by readings at a single stream gage.

Recreational vehicle: A vehicle which is:

(a) Built on a single chassis;

(b) 400 square feet or less when measured at the largest horizontal projection;

(c) Designed to be self-propelled or permanently towable by a light duty truck; and

(d) Designed primarily not for use as a permanent dwelling but as temporary living quarters for recreational, camping, travel, or seasonal use.

Riparian: Of, adjacent to, or living on, the bank of a river, lake, pond, or other water body.

Riparian Buffer Zone (RBZ): The outer boundary of the riparian buffer zone is measured from the ordinary high water line of a fresh waterbody (lake; pond; ephemeral, intermittent, or perennial stream) or mean higher-high water line of a marine shoreline or tidally influenced river reach to 170 feet horizontally on each side of the stream or 170 feet inland from the MHHW. The riparian buffer zone includes the area between these outer boundaries on each side of the stream, including the stream channel. Where the RBZ is larger than the special flood hazard area, the no net loss standards shall only apply to the area within the special flood hazard area.

Riparian Buffer Zone Fringe: The area outside of the RBZ and floodway but still within the SFHA.

Silviculture: The art and science of controlling the establishment, growth, composition, health, and quality of forests and woodlands.

Special flood hazard area: See "Area of special flood hazard" for this definition.

Start of construction: Includes substantial improvement and means the date the building permit was issued, provided the actual start of construction, repair, reconstruction, rehabilitation, addition, placement, or other improvement was within 180 days from the date of the permit. The actual start means either the first placement of permanent construction of a structure on a site, such as the pouring of slab or footings, the installation of piles, the construction of columns, or any work beyond the stage of excavation; or the placement of a manufactured dwelling on a foundation. Permanent construction does not include land preparation, such as clearing, grading, and filling; nor does it include the installation of streets and/or walkways; nor does it include excavation for a basement, footings, piers, or foundations or the erection of temporary forms; nor does it include the installation on the property of accessory buildings, such as garages or sheds not occupied as dwelling units or not part of the main structure. For a substantial improvement, the actual start of construction means the first alteration of any wall, ceiling, floor, or other structural part of a building, whether or not that alteration affects the external dimensions of the building.

Structure: For floodplain management purposes, a walled and roofed building, including a gas or liquid storage tank, that is principally above ground, as well as a manufactured dwelling.

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

Substantial improvement: Any reconstruction, rehabilitation, addition, or other improvement of a structure, the cost of which equals or exceeds 50 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, however, include either:

(a) Any project for improvement of a structure to correct existing violations of state or local health, sanitary, or safety code specifications which have been identified by the local code enforcement official and which are the minimum necessary to assure safe living conditions; or

(b) Any alteration of a "historic structure," provided that the alteration will not preclude the structure's continued designation as a "historic structure."

Undeveloped Space: The volume of flood capacity and fish-accessible/egress-able habitat from the existing ground to the Base Flood Elevation that is undeveloped. Any form of development including, but not limited to, the addition of fill, structures, concrete

structures (vaults or tanks), pilings, levees and dikes, or any other development that reduces flood storage volume and fish accessible/egress-able habitat must achieve no net loss.

Variance: A grant of relief by COMMUNITY NAME from the terms of a floodplain management regulation.

Violation: The failure of a structure or other development to be fully compliant with the community's floodplain management regulations. A structure or other development without the elevation certificate, other certifications, or other evidence of compliance required in this ordinance is presumed to be in violation until such time as that documentation is provided.

3.0 GENERAL PROVISIONS

3.1 LANDS TO WHICH THIS ORDINANCE APPLIES

This ordinance shall apply to all special flood hazard areas within the jurisdiction of COMMUNITY NAME.

3.2 BASIS FOR ESTABLISHING THE SPECIAL FLOOD HAZARD AREAS

The special flood hazard areas identified by the Federal Insurance Administrator in a scientific and engineering report entitled "The Flood Insurance Study (FIS) for "EXACT TITLE OF FLOOD INSURANCE STUDY FOR COMMUNITY", dated DATE (MONTH DAY, FOUR DIGIT YEAR), with accompanying Flood Insurance Rate Maps (FIRMs) LIST ALL EFFECTIVE FIRM PANELS HERE (UNLESS ALL PANELS ARE BEING REPLACED THROUGH A NEW COUNTY_WIDE MAP THAT INCORPORATES ALL PREVIOUS PANELS/VERSIONS, IN THAT SITUATION PANELS DO NOT NEED TO BE INDIVIDUALLY LISTED) are hereby adopted by reference and declared to be a part of this ordinance. The FIS and FIRM panels are on file at INSERT THE LOCATION (I.E. COMMUNITY PLANNING DEPARTMENT LOCATED IN THE COMMUNITY ADMINISTRATIVE BUILDING).

3.3 COORDINATION WITH STATE OF OREGON SPECIALTY CODES

Pursuant to the requirement established in ORS 455 that the COMMUNITY NAME administers and enforces the State of Oregon Specialty Codes, the COMMUNITY NAME does hereby acknowledge that the Oregon Specialty Codes contain certain provisions that apply to the design and construction of buildings and structures located in special flood hazard areas. Therefore, this ordinance is intended to be administered and enforced in conjunction with the Oregon Specialty Codes.

3.4 COMPLIANCE AND PENALTIES FOR NONCOMPLIANCE

3.4.1 COMPLIANCE

All development within special flood hazard areas is subject to the terms of this ordinance and required to comply with its provisions and all other applicable regulations.

3.4.2 PENALTIES FOR NONCOMPLIANCE

No structure or land shall hereafter be constructed, located, extended, converted, or altered without full compliance with the terms of this ordinance and other applicable regulations. Violations of the provisions of this ordinance by failure to comply with any of its requirements (including violations of conditions and safeguards established in connection with conditions) shall constitute a (INFRACTION TYPE (I.E. MISDEMEANOR) AND PENALTIES PER STATE/LOCAL LAW ASSOCIATED WITH SPECIFIED INFRACTION TYPE (I.E. ANY PERSON WHO VIOLATES THE REQUIREMENTS OF THIS ORDINANCE SHALL UPON CONVICTION THEREOF BE FINED NOT MORE THAN A SPECIFIED AMOUNT OF MONEY…) Nothing contained herein shall prevent the COMMUNITY NAME from taking such other lawful action as is necessary to prevent or remedy any violation.

3.5 ABROGATION AND SEVERABILITY

3.5.1 ABROGATION

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

3.5.2 SEVERABILITY

This ordinance and the various parts thereof are hereby declared to be severable. If any section clause, sentence, or phrase of the Ordinance is held to be invalid or unconstitutional by any court of competent jurisdiction, then said holding shall in no way effect the validity of the remaining portions of this Ordinance.

3.6 INTERPRETATION

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

A. Considered as minimum requirements;

B. Liberally construed in favor of the governing body; and

C. Deemed neither to limit nor repeal any other powers granted under state statutes.

3.7 WARNING AND DISCLAIMER OF LIABILITY

3.7.1 WARNING

The degree of flood protection required by this ordinance is considered reasonable for regulatory purposes and is based on scientific and engineering considerations. Larger floods can and will occur on rare occasions. Flood heights may be increased by man-made or natural causes. This ordinance does not imply

that land outside the areas of special flood hazards or uses permitted within such areas will be free from flooding or flood damages.

3.7.2 DISCLAIMER OF LIABILITY

This ordinance shall not create liability on the part of the COMMUNITY NAME, any officer or employee thereof, or the Federal Insurance Administrator for any flood damages that result from reliance on this ordinance or any administrative decision lawfully made hereunder.

4.0 ADMINISTRATION

4.1 DESIGNATION OF THE FLOODPLAIN ADMINISTRATOR

The INDIVIDUAL JOB TITLE is hereby appointed to administer, implement, and enforce this ordinance by granting or denying development permits in accordance with its provisions. The Floodplain Administrator may delegate authority to implement these provisions.

Additional Recommended Language Provided in Appendix B

4.2 DUTIES AND RESPONSIBILITIES OF THE FLOODPLAIN ADMINISTRATOR

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

4.2.1 PERMIT REVIEW

Review all development permits to:

A. Determine that the permit requirements of this ordinance have been satisfied;

B. Determine that all other required local, state, and federal permits have been obtained and approved;

C. Determine if the proposed development is located in a floodway.

i. If located in the floodway assure that the floodway provisions of this ordinance in section **5.2.4** are met; and

ii. Determine if the proposed development is located in an area where Base Flood Elevation (BFE) data is available either through the Flood Insurance Study (FIS) or from another authoritative source. If BFE data is not available then ensure compliance with the provisions of sections **5.1.7**; and

iii. Provide to building officials the Base Flood Elevation (BFE) (ADD FREEBOARD IF COMMUNITY HAS HIGHER ELEVATION STANDARDS) applicable to any building requiring a development permit.

D. Determine if the proposed development qualifies as a substantial improvement as defined in section **2.0**.

E. Determine if the proposed development activity is a watercourse alteration. If a watercourse alteration is proposed, ensure compliance with the provisions in section **5.1.1**.

F. Determine if the proposed development activity includes the placement of fill or excavation.

G. Determine whether the proposed development activity complies with the no net loss standards in Section 6.0.

4.2.2 INFORMATION TO BE OBTAINED AND MAINTAINED

The following information shall be obtained and maintained and shall be made available for public inspection as needed:

A. The actual elevation (in relation to mean sea level) of the lowest floor (including basements) and all attendant utilities of all new or substantially improved structures where Base Flood Elevation (BFE) data is provided through the Flood Insurance Study (FIS), Flood Insurance Rate Map (FIRM), or obtained in accordance with section **5.1.7**.

B. The elevation (in relation to mean sea level) of the natural grade of the building site for a structure prior to the start of construction and the placement of any fill and ensure that the requirements of sections **4.2.1(B), 5.2.4, and 5.3.1(F),** are adhered to.

C. Upon placement of the lowest floor of a structure (including basement) but prior to further vertical construction, documentation, prepared and sealed by a professional licensed surveyor or engineer, certifying the elevation (in relation to mean sea level) of the lowest floor (including basement).

D. Where base flood elevation data are utilized, As-built certification of the elevation (in relation to mean sea level) of the lowest floor (including basement) prepared and sealed by a professional licensed surveyor or engineer, prior to the final inspection.

E. Maintain all Elevation Certificates (EC) submitted to the community.

F. The elevation (in relation to mean sea level) to which the structure and all attendant utilities were floodproofed for all new or substantially improved floodproofed structures where allowed under this ordinance and where

Base Flood Elevation (BFE) data is provided through the FIS, FIRM, or obtained in accordance with section **5.1.7**.

G. All floodproofing certificates required under this ordinance.

H. All variance actions, including justification for their issuance.

I. All hydrologic and hydraulic analyses performed as required under section **5.2.4**.

J. All Substantial Improvement and Substantial Damage calculations and determinations as required under section **4.2.4**.

K. Documentation of how no net loss standards have been met (see Section 6.0)

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

4.2.3 REQUIREMENT TO NOTIFY OTHER ENTITIES AND SUBMIT NEW TECHNICAL DATA

4.2.3.1 COMMUNITY BOUNDARY ALTERATIONS

The Floodplain Administrator shall notify the Federal Insurance Administrator in writing whenever the boundaries of the community have been modified by annexation or the community has otherwise assumed authority or no longer has authority to adopt and enforce floodplain management regulations for a particular area, to ensure that all Flood Hazard Boundary Maps (FHBM) and Flood Insurance Rate Maps (FIRM) accurately represent the community's boundaries. Include within such notification a copy of a map of the community suitable for reproduction, clearly delineating the new corporate limits or new area for which the community has assumed or relinquished floodplain management regulatory authority.

4.2.3.2 WATERCOURSE ALTERATIONS

A. Notify adjacent communities, the Department of Land Conservation and Development, and other appropriate state and federal agencies, prior to any alteration or relocation of a watercourse, and submit evidence of such notification to the Federal Insurance Administration. This notification shall be provided by the applicant to the Federal Insurance Administration as a Letter of Map Revision (LOMR) along with either:

i. A proposed maintenance plan to assure the flood carrying capacity within the altered or relocated portion of the watercourse is maintained; or

ii. Certification by a registered professional engineer that the project has been designed to retain its flood carrying capacity without periodic maintenance.

B. The applicant shall be required to submit a Conditional Letter of Map Revision (CLOMR) when required under section **4.2.3.3**. Ensure compliance with all applicable requirements in sections **4.2.3.3** and **5.1.1**.

4.2.3.3 REQUIREMENT TO SUBMIT NEW TECHNICAL DATA

A. A community's base flood elevations may increase or decrease resulting from physical changes affecting flooding conditions. As soon as practicable, but not later than six months after the date such information becomes available, a community shall notify the Federal Insurance Administrator of the changes by submitting technical or scientific data in accordance with Title 44 of the Code of Federal Regulations (CFR), Section 65.3. The community may require the applicant to submit such data and review fees required for compliance with this section through the applicable FEMA Letter of Map Change (LOMC) process.

B. The Floodplain Administrator shall require a Conditional Letter of Map Revision prior to the issuance of a floodplain development permit for:

i. Proposed floodway encroachments that increase the base flood elevation; and

ii. Proposed development which increases the base flood elevation by more than one foot in areas where FEMA has provided base flood elevations but no floodway.

C. An applicant shall notify FEMA within six (6) months of project completion when an applicant has obtained a Conditional Letter of Map Revision (CLOMR) from FEMA. This notification to FEMA shall be provided as a Letter of Map Revision (LOMR).

Additional Recommended Language Provided in Appendix B

4.2.4 SUBSTANTIAL IMPROVEMENT AND SUBSTANTIAL DAMAGE ASSESSMENTS AND DETERMINATIONS

Conduct Substantial Improvement (SI) (as defined in section 2.0) reviews for all structural development proposal applications and maintain a record of SI calculations within permit files in accordance with section **4.2.2**. Conduct Substantial Damage (SD) (as defined in section 2.0) assessments when structures are damaged due to a natural hazard event or other causes. Make SD determinations whenever structures within the special flood hazard area (as established in section **3.2**) are damaged to the extent that the cost of restoring

the structure to its before damaged condition would equal or exceed 50 percent of the market value of the structure before the damage occurred.

4.3 ESTABLISHMENT OF DEVELOPMENT PERMIT

4.3.1 FLOODPLAIN DEVELOPMENT PERMIT REQUIRED

A development permit shall be obtained before construction or development begins within any area horizontally within the special flood hazard area established in section **3.2**. The development permit shall be required for all structures, including manufactured dwellings, and for all other development, as defined in section **2.0**, including fill and other development activities.

4.3.2 APPLICATION FOR DEVELOPMENT PERMIT

Application for a development permit may be made on forms furnished by the Floodplain Administrator and may include, but not be limited to, plans in duplicate drawn to scale showing the nature, location, dimensions, and elevations of the area in question; existing or proposed structures, fill, storage of materials, drainage facilities, and the location of the foregoing. Specifically, the following information is required:

A. In riverine flood zones, the proposed elevation (in relation to mean sea level), of the lowest floor (including basement) and all attendant utilities of all new and substantially improved structures; in accordance with the requirements of section **4.2.2**.

B. In coastal flood zones (V zones and coastal A zones), the proposed elevation in relation to mean sea level of the bottom of the lowest structural member of the lowest floor (excluding pilings and columns) of all structures, and whether such structures contain a basement.

C. Proposed elevation in relation to mean sea level to which any non-residential structure will be floodproofed.

D. Certification by a registered professional engineer or architect licensed in the State of Oregon that the floodproofing methods proposed for any non-residential structure meet the floodproofing criteria for non-residential structures in section **5.2.3.3**.

E. Description of the extent to which any watercourse will be altered or relocated.

F. Base Flood Elevation data for subdivision proposals or other development when required per sections **4.2.1 and 5.1.6**.

G. Substantial improvement calculation for any improvement, addition, reconstruction, renovation, or rehabilitation of an existing structure.

H. The amount and location of any fill or excavation activities proposed.

4.4 VARIANCE PROCEDURE

The issuance of a variance is for floodplain management purposes only. Flood insurance premium rates are determined by federal statute according to actuarial risk and will not be modified by the granting of a variance.

4.4.1 CONDITIONS FOR VARIANCES

A. Generally, variances may be issued for new construction and substantial improvements to be erected on a lot of one-half acre or less in size contiguous to and surrounded by lots with existing structures constructed below the base flood level, in conformance with the provisions of sections **4.4.1 (C) and (E), and 4.4.2**. As the lot size increases beyond one-half acre, the technical justification required for issuing a variance increases.

B. Variances shall only be issued upon a determination that the variance is the minimum necessary, considering the flood hazard, to afford relief.

C. Variances shall not be issued within any floodway if any increase in flood levels during the base flood discharge would result.

D. Variances shall only be issued upon:

i. A showing of good and sufficient cause;

ii. A determination that failure to grant the variance would result in exceptional hardship to the applicant; and,

iii. A determination that the granting of a variance will not result in increased flood heights, additional threats to public safety, extraordinary public expense, create nuisances, cause fraud on or victimization of the public, or conflict with existing laws or ordinances.

E. Variances may be issued by a community for new construction and substantial improvements and for other development necessary for the conduct of a functionally dependent use provided that the criteria of section **4.4.1 (B) – (D)** are met, and the structure or other development is protected by methods that minimize flood damages during the base flood and create no additional threats to public safety.

F. Variances shall not be issued unless it is demonstrated that the development will not result in net loss of the following proxies for the three floodplain functions in the SFHA: undeveloped space; pervious surface; or trees 6 inches dbh or greater (see Section 6.0 and associated options in Table 1).

Additional Optional Language Provided in Appendix B.

4.4.2 VARIANCE NOTIFICATION

Any applicant to whom a variance is granted shall be given written notice that the issuance of a variance to construct a structure below the Base Flood Elevation will result in increased premium rates for flood insurance and that such construction below the base flood elevation increases risks to life and property. Such notification and a record of all variance actions, including justification for their issuance shall be maintained in accordance with section **4.2.2**.

5.0 PROVISIONS FOR FLOOD HAZARD REDUCTION

5.1 GENERAL STANDARDS

In all special flood hazard areas, the no net loss standards (see Section 6.0) and the following standards shall be adhered to:

5.1.1 ALTERATION OF WATERCOURSES

Require that the flood carrying capacity within the altered or relocated portion of said watercourse is maintained. Require that maintenance is provided within the altered or relocated portion of said watercourse to ensure that the flood carrying capacity is not diminished. Require compliance with sections **4.2.3.2 and 4.2.3.3**.

5.1.2 ANCHORING

A. All new construction and substantial improvements shall be anchored to prevent flotation, collapse, or lateral movement of the structure resulting from hydrodynamic and hydrostatic loads, including the effects of buoyancy.

B. All manufactured dwellings shall be anchored per section **5.2.3.4**.

5.1.3 CONSTRUCTION MATERIALS AND METHODS

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

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

5.1.4 UTILITIES AND EQUIPMENT

5.1.4.1 WATER SUPPLY, SANITARY SEWER, AND ON-SITE WASTE DISPOSAL SYSTEMS

A. All new and replacement water supply systems shall be designed to minimize or eliminate infiltration of flood waters into the system.

B. New and replacement sanitary sewage systems shall be designed to minimize or eliminate infiltration of flood waters into the systems and discharge from the systems into flood waters.

C. On-site waste disposal systems shall be located to avoid impairment to them or contamination from them during flooding consistent with the Oregon Department of Environmental Quality.

5.1.4.2 ELECTRICAL, MECHANICAL, PLUMBING, AND OTHER EQUIPMENT

Electrical, heating, ventilating, air-conditioning, plumbing, duct systems, and other equipment and service facilities shall be elevated at or above the base flood level (ANY COMMUNITY FREEBOARD REQUIREMENT) or shall be designed and installed to prevent water from entering or accumulating within the components and to resist hydrostatic and hydrodynamic loads and stresses, including the effects of buoyancy, during conditions of flooding. In addition, electrical, heating, ventilating, air- conditioning, plumbing, duct systems, and other equipment and service facilities shall:

A. If replaced as part of a substantial improvement shall meet all the requirements of this section.

B. Not be mounted on or penetrate through breakaway walls.

5.1.5 TANKS

A. Underground tanks shall be anchored to prevent flotation, collapse and lateral movement under conditions of the base flood.

B. Above-ground tanks shall be installed at or above the base flood level (COMMUNITY FREEBOARD REQUIREMENT) or shall be anchored to prevent flotation, collapse, and lateral movement under conditions of the base flood.

C. In coastal flood zones (V Zones or coastal A Zones) when elevated on platforms, the platforms shall be cantilevered from or knee braced to the building or shall be supported on foundations that conform to the requirements of the State of Oregon Specialty Code.

5.1.6 SUBDIVISION PROPOSALS AND OTHER PROPOSED DEVELOPMENTS

A. All new subdivision proposals and other proposed new developments (including proposals for manufactured dwelling parks and subdivisions) greater than 50 lots or 5 acres, whichever is the lesser, shall include within such proposals Base Flood Elevation data.

B. All new subdivision proposals and other proposed new developments (including proposals for manufactured dwelling parks and subdivisions) shall:

i. Be consistent with the need to minimize flood damage.

ii. Have public utilities and facilities such as sewer, gas, electrical, and water systems located and constructed to minimize or eliminate flood damage.

iii. Have adequate drainage provided to reduce exposure to flood hazards.

iv. Comply with no net loss standards in section 6.0.

5.1.7 USE OF OTHER BASE FLOOD ELEVATION DATA

A. When Base Flood Elevation data has not been provided in accordance with section **3.2** the local floodplain administrator shall obtain, review, and reasonably utilize any Base Flood Elevation data available from a federal, state, or other source, in order to administer section **5.0**. All new subdivision proposals and other proposed new developments (including proposals for manufactured dwelling parks and subdivisions) must meet the requirements of section **5.1.6**.

B. Base Flood Elevations shall be determined for development proposals that are 5 acres or more in size or are 50 lots or more, whichever is lesser in any A zone that does not have an established base flood elevation. Development proposals located within a riverine unnumbered A Zone shall be reasonably safe from flooding; the test of reasonableness includes use of historical data, high water marks, FEMA provided Base Level Engineering data, and photographs of past flooding, etc… where available. (REFERENCE TO ANY OF THIS TYPE OF INFORMATION TO BE USED FOR REGULATORY PURPOSES BY YOUR COMMUNITY, I.E. BASE LEVEL ENGINEERING DATA, HIGH WATER MARKS, HISTORICAL OR OTHER DATA THAT WILL BE REGULATED TO. THIS MAY BE NECESSARY TO ENSURE THAT THE STANDARDS APPLIED TO RESIDENTIAL STRUCTURES ARE CLEAR AND OBJECTIVE. IF UNCERTAIN SEEK LEGAL ADVICE, **AT A MINIMUM REQUIRE THE ELEVATION OF RESIDENTIAL STRUCTURES AND NON-RESIDENTIAL STRUCTURES THAT ARE NOT DRY FLOODPROOFED TO BE 2 FEET ABOVE HIGHEST ADJACENT GRADE).** Failure to elevate at least two feet above grade in these zones may result in higher insurance rates.

5.1.8 STRUCTURES LOCATED IN MULTIPLE OR PARTIAL FLOOD ZONES

In coordination with the State of Oregon Specialty Codes:

A. When a structure is located in multiple flood zones on the community's Flood Insurance Rate Maps (FIRM) the provisions for the more restrictive flood zone shall apply.

B. When a structure is partially located in a special flood hazard area, the entire structure shall meet the requirements for new construction and substantial improvements.

Additional Recommended Language Provided in Appendix B.

5.2 SPECIFIC STANDARDS FOR RIVERINE (INCLUDING ALL NON-COASTAL) FLOOD ZONES

These specific standards shall apply to all new construction and substantial improvements in addition to the General Standards contained in section **5.1** of this ordinance and the no net loss standards (see Section 6.0).

5.2.1 FLOOD OPENINGS

All new construction and substantial improvements with fully enclosed areas below the lowest floor (excluding basements) are subject to the following requirements. Enclosed areas below the Base Flood Elevation, including crawl spaces shall:

A. Be designed to automatically equalize hydrostatic flood forces on walls by allowing for the entry and exit of floodwaters;

B. Be used solely for parking, storage, or building access;

C. Be certified by a registered professional engineer or architect or meet or exceed all of the following minimum criteria:

i. A minimum of two openings;

ii. The total net area of non-engineered openings shall be not less than one square inch for each square foot of enclosed area, where the enclosed area is measured on the exterior of the enclosure walls;

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

iv. Openings may be equipped with screens, louvers, valves, or other coverings or devices provided that they shall allow the automatic flow of floodwater into and out of the enclosed areas and shall be accounted for in the determination of the net open area; and,

v. All additional higher standards for flood openings in the State of Oregon Residential Specialty Codes Section R322.2.2 shall be complied with when applicable.

5.2.2 GARAGES

A. Attached garages may be constructed with the garage floor slab below the Base Flood Elevation (BFE) in riverine flood zones, if the following requirements are met:

i. If located within a floodway the proposed garage must comply with the requirements of section 5.2.4;

ii. The floors are at or above grade on not less than one side;

iii. The garage is used solely for parking, building access, and/or storage;

iv. The garage is constructed with flood openings in compliance with section 5.2.1 to equalize hydrostatic flood forces on exterior walls by allowing for the automatic entry and exit of floodwater;

v. The portions of the garage constructed below the BFE are constructed with materials resistant to flood damage;

vi. The garage is constructed in compliance with the standards in section 5.1; and,

vii. The garage is constructed with electrical, and other service facilities located and installed so as to prevent water from entering or accumulating within the components during conditions of the base flood.

B. Detached garages must be constructed in compliance with the standards for appurtenant structures in section 5.2.3.6 or non-residential structures in section 5.2.3.3 depending on the square footage of the garage.

5.2.3 FOR RIVERINE (NON-COASTAL) SPECIAL FLOOD HAZARD AREAS WITH BASE FLOOD ELEVATIONS

In addition to the general standards listed in section 5.1 the following specific standards shall apply in Riverine (non-coastal) special flood hazard areas with Base Flood Elevations (BFE): Zones A1-A30, AH, and AE.

5.2.3.1 BEFORE REGULATORY FLOODWAY

In areas where a regulatory floodway has not been designated, no new construction, substantial improvement, or other development (including fill) shall be permitted within Zones A1-30 and AE on the community's Flood Insurance Rate Map (FIRM), unless it is demonstrated that the cumulative effect of the proposed development, when combined with all other existing and anticipated development, will not increase the water surface elevation of the base flood more than one foot at any point within the community and will not

result in the net loss of flood storage volume. When determined that structural elevation is not possible and where the placement of fill cannot meet the above standard, impacts to undeveloped space must adhere to the no net loss standards in section **6.1.C**.

5.2.3.2 RESIDENTIAL CONSTRUCTION

A. New construction, conversion to, and substantial improvement of any residential structure shall have the lowest floor, including basement, elevated at or above the Base Flood Elevation (BFE) (ADDITIONAL FREEBOARD FOR YOUR COMMUNITY – RECOMMEND MINIMUM OF 1FT ABOVE BFE).

B. Enclosed areas below the lowest floor shall comply with the flood opening requirements in section **5.2.1**.

5.2.3.3 NON-RESIDENTIAL CONSTRUCTION

A. New construction, conversion to, and substantial improvement of any commercial, industrial, or other non-residential structure shall:

i. Have the lowest floor, including basement elevated at or above the Base Flood Elevation (BFE) (ANY ADDITIONAL FREEBOARD REQUIREMENTS FOR YOUR COMMUNITY); or

ii. Together with attendant utility and sanitary facilities:

a. Be floodproofed so that below the base flood level the structure is watertight with walls substantially impermeable to the passage of water;

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

c. Be certified by a registered professional engineer or architect that the design and methods of construction are in accordance with accepted standards of practice for meeting provisions of this section 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 section **4.2.2**.

B. Non-residential structures that are elevated, not floodproofed, shall comply with the standards for enclosed areas below the lowest floor in section **5.2.1**.

C. Applicants floodproofing non-residential buildings shall be notified that flood insurance premiums will be based on rates that are one (1) foot below the floodproofed level (e.g. a building floodproofed to the base flood level will be rated as one (1) foot below.

5.2.3.4 MANUFACTURED DWELLINGS

A. Manufactured dwellings to be placed (new or replacement) or substantially improved that are supported on solid foundation walls shall be constructed with flood openings that comply with section **5.2.1**;

B. The bottom of the longitudinal chassis frame beam shall be at or above Base Flood Elevation;

C. Manufactured dwellings to be placed (new or replacement) or substantially improved shall be anchored to prevent flotation, collapse, and lateral movement during the base flood. Anchoring methods may include, but are not limited to, use of over-the-top or frame ties to ground anchors (Reference FEMA's "Manufactured Home Installation in Flood Hazard Areas" guidebook for additional techniques), and;

D. Electrical crossover connections shall be a minimum of twelve (12) inches above Base Flood Elevation (BFE).

5.2.3.5 RECREATIONAL VEHICLES

Recreational vehicles placed on sites are required to:

A. Be on the site for fewer than 180 consecutive days, and

B. Be fully licensed and ready for highway use, on its wheels or jacking system, is attached to the site only by quick disconnect type utilities and security devices, and has no permanently attached additions; or

C. Meet the requirements of section **5.2.3.4**, including the anchoring and elevation requirements for manufactured dwellings.

5.2.3.6 APPURTENANT (ACCESSORY) STRUCTURES

Relief from elevation or floodproofing requirements for residential and non-residential structures in Riverine (Non-Coastal) flood zones may be granted for appurtenant structures that meet the following requirements:

A. Appurtenant structures located partially or entirely within the floodway must comply with requirements for development within a floodway found in section **5.2.4**;

B. Appurtenant structures must only be used for parking, access, and/or storage and shall not be used for human habitation;

C. In compliance with State of Oregon Specialty Codes, appurtenant structures on properties that are zoned residential are limited to one-story structures less than 200 square feet, or 400 square feet if the property is greater than two (2) acres in area and the proposed appurtenant structure will be located a minimum of 20 feet from all property lines. Appurtenant structures on properties that are zoned as non-residential are limited in size to 120 square feet;

D. The portions of the appurtenant structure located below the Base Flood Elevation must be built using flood resistant materials;

E. The appurtenant structure must be adequately anchored to prevent flotation, collapse, and lateral movement of the structure resulting from hydrodynamic and hydrostatic loads, including the effects of buoyancy, during conditions of the base flood;

F. The appurtenant structure must be designed and constructed to equalize hydrostatic flood forces on exterior walls and comply with the requirements for flood openings in section **5.2.1**;

G. Appurtenant structures shall be located and constructed to have low damage potential;

H. Appurtenant structures shall not be used to store toxic material, oil, or gasoline, or any priority persistent pollutant identified by the Oregon Department of Environmental Quality unless confined in a tank installed incompliance with section **5.1.5**; and,

I. Appurtenant structures shall be constructed with electrical, mechanical, and other service facilities located and installed so as to prevent water from entering or accumulating within the components during conditions of the base flood.

5.2.4 FLOODWAYS

Located within the special flood hazard areas established in section **3.2** are areas designated as floodways. Since the floodway is an extremely hazardous area due to the velocity of the floodwaters which carry debris, potential projectiles, and erosion potential, the following provisions apply:

A. Prohibit encroachments, including fill, new construction, substantial improvements, and other development within the adopted regulatory floodway unless:

i. Certification by a registered professional civil engineer is provided demonstrating through hydrologic and hydraulic analyses performed in accordance with standard engineering practice that the proposed encroachment shall not result in any increase in flood levels within the community during the occurrence of the base flood discharge; or

ii. A community may permit encroachments within the adopted regulatory floodway that would result in an increase in base flood elevations, provided that conditional approval has been obtained by the Federal Insurance Administrator through the Conditional Letter of Map Revision (CLOMR) application process, all requirements established under 44 CFR 65.12 are fulfilled, and the encroachment(s) comply with the no net loss standards in section 6.0.

B. If the requirements of section **5.2.4 (A)** are satisfied, all new construction, substantial improvements, and other development shall comply with all other applicable flood hazard reduction provisions of section **5.0 and 6.0**.

5.2.5 STANDARDS FOR SHALLOW FLOODING AREAS

Shallow flooding areas appear on FIRMs as AO zones with depth designations or as AH zones with Base Flood Elevations. For AO zones the base flood depths range from one (1) to three (3) feet above ground where a clearly defined channel does not exist, or where the path of flooding is unpredictable and where velocity flow may be evident. Such flooding is usually characterized as sheet flow. For both AO and AH zones, adequate drainage paths are required around structures on slopes to guide floodwaters around and away from proposed structures.

5.2.5.1 STANDARDS FOR AH ZONES

Development within AH Zones must comply with the standards in sections **5.1, 5.2, and 5.2.5.**

5.2.5.2 STANDARDS FOR AO ZONES

In AO zones, the following provisions apply in addition to the requirements in sections **5.1** and **5.2.5**:

A. New construction, conversion to, and substantial improvement of residential structures and manufactured dwellings within AO zones shall have the lowest floor, including basement, elevated above the highest grade adjacent to the building, at minimum to or above the depth number specified on the Flood Insurance Rate Maps (FIRM) (COMMUNITY FREEBOARD REQUIREMENT) (at least two (2) feet if no depth number is specified). For manufactured dwellings the lowest floor is considered to be the bottom of the longitudinal chassis frame beam.

B. New construction, conversion to, and substantial improvements of non-residential structures within AO zones shall either:

i. Have the lowest floor (including basement) elevated above the highest adjacent grade of the building site, at minimum to or above the depth number specified on the Flood Insurance Rate

Maps (FIRMS) (COMMUNITY FREE BOARD REQUIREMENT) (at least two (2) feet if no depth number is specified); or

ii. Together with attendant utility and sanitary facilities, be completely floodproofed to or above the depth number specified on the FIRM (COMMUNITY FREEBOARD REQUIREMENT) or a minimum of two (2) feet above the highest adjacent grade if no depth number is specified, so that any space below that level is watertight with walls substantially impermeable to the passage of water and with structural components having the capability of resisting hydrostatic and hydrodynamic loads and the effects of buoyancy. If this method is used, compliance shall be certified by a registered professional engineer or architect as stated in section **5.2.3.3(A)(4)**.

C. Recreational vehicles placed on sites within AO Zones on the community's Flood Insurance Rate Maps (FIRM) shall either:

i. Be on the site for fewer than 180 consecutive days, and

ii. Be fully licensed and ready for highway use, on its wheels or jacking system, is attached to the site only by quick disconnect type utilities and security devices, and has no permanently attached additions; or

iii. Meet the elevation requirements of section **5.2.5.2(A)**, and the anchoring and other requirements for manufactured dwellings of section **5.2.3.4**.

D. In AO zones, new and substantially improved appurtenant structures must comply with the standards in section **5.2.3.6**.

E. In AO zones, enclosed areas beneath elevated structures shall comply with the requirements in section **5.2.1**.

5.3 SPECIFIC STANDARDS FOR COASTAL HIGH HAZARD FLOOD ZONES

Located within special flood hazard areas established in section **3.2** are Coastal High Hazard Areas, designated as Zones V1-V30, VE, V, or coastal A zones as identified on the FIRMs as the area between the Limit of Moderate Wave Action (LiMWA) and the Zone V boundary. These areas have special flood hazards associated with high velocity waters from surges and, therefore, in addition to meeting all provisions of this ordinance and the State of Oregon Specialty Codes, the following provisions shall apply in addition to the general standards provisions in section **5.1**.

5.3.1 DEVELOPMENT STANDARDS

A. All new construction and substantial improvements in Zones V1-V30 and VE, V, and coastal A zones (where base flood elevation data is available) shall be elevated on pilings and columns such that:

   i. The bottom of the lowest horizontal structural member of the lowest floor (excluding the pilings or columns) is elevated a minimum of one foot above the base flood level; and

   ii. The pile or column foundation and structure attached thereto is anchored to resist flotation, collapse and lateral movement due to the effects of wind and water loads acting simultaneously on all building components. Water loading values used shall be those associated with the base flood. Wind loading values used shall be those specified by the State of Oregon Specialty Codes;

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

C. Obtain the elevation (in relation to mean sea level) of the bottom of the lowest horizontal structural member of the lowest floor (excluding pilings and columns) of all new and substantially improved structures and whether or not such structures contain a basement. The floodplain administrator shall maintain a record of all such information in accordance with section 4.2.2.

D. Provide that all new construction and substantial improvements have the space below the lowest floor either free of obstruction or constructed with non- supporting breakaway walls, open wood lattice-work, or insect screening intended to collapse under wind and water loads without causing collapse, displacement, or other structural damage to the elevated portion of the building or supporting foundation system.

   For the purpose of this section, a breakaway wall shall have a design safe loading resistance of not less than 10 and no more than 20 pounds per square foot. Use of breakaway walls which exceed a design safe loading resistance of 20 pounds per square foot (either by design or when so required by local or state codes) may be permitted only if a registered professional engineer or architect certifies that the designs proposed meet the following conditions:

   i. Breakaway wall collapse shall result from water load less than that which would occur during the base flood; and

ii. Such enclosed space created by breakaway walls shall be useable solely for parking of vehicles, building access, or storage. Such space shall not be used for human habitation.

iii. Walls intended to break away under flood loads shall have flood openings that meet or exceed the criteria for flood openings in section 5.2.1.

E. The elevated portion of the building and supporting foundation system shall not be subject to collapse, displacement, or other structural damage due to the effects of wind and water loads acting simultaneously on all building components (structural and nonstructural). Maximum water loading values to be used in this determination shall be those associated with the base flood. Maximum wind loading values used shall be those specified by the State of Oregon Specialty Codes.

F. Prohibit the use of fill for structural support of buildings.

G. All new construction shall be located landward of the reach of mean high tide.

H. Prohibit man-made alteration of sand dunes which would increase potential flood damage.

I. All structures, including but not limited to residential structures, non-residential structures, appurtenant structures, and attached garages shall comply with all the requirements of section 5.3.1 Floodproofing of non-residential structures is prohibited.

5.3.1.1 MANUFACTURED DWELLING STANDARDS FOR COASTAL HIGH HAZARD ZONES

All manufactured dwellings to be placed (new or replacement) or substantially improved within Coastal High Hazard Areas (Zones V, V1-30, VE, or Coastal A) shall meet the following requirements:

A. Comply with all of the standards within section 5.3

B. The bottom of the longitudinal chassis frame beam shall be elevated to a minimum of one foot above the Base Flood Elevation (BFE); and

C. Electrical crossover connections shall be a minimum of 12 inches above the BFE.

5.3.1.2 RECREATIONAL VEHICLE STANDARDS FOR COASTAL HIGH HAZARD ZONES

Recreational Vehicles within Coastal High Hazard Areas (Zones V, V1-30, VE, or Coastal A) shall either:

A. Be on the site for fewer than 180 consecutive days, and

B. Be fully licensed and ready for highway use, on wheels or jacking system, is attached to the site only by quick disconnect type utilities and security devices, and has no permanently attached additions.

5.3.1.3 TANK STANDARDS FOR COASTAL HIGH HAZARD ZONES

Tanks shall meet the requirements of section 5.1.5 and 6.0.

6.0STANDARDS FOR PROTECTION OF SFHA FLOODPLAIN FUNCTIONS

The standards described below apply to all special flood hazard areas as defined in Section 2.0.

6.1 NO NET LOSS STANDARDS

A. No net loss of the three proxies for the floodplain functions mentioned in Section 1 is required for development in the special flood hazard area that would reduce undeveloped space, increase impervious surface, or result in a loss of trees that are 6-inches dbh or greater. No net loss can be achieved by first avoiding negative effects to floodplain functions to the degree possible, then minimizing remaining effects, then replacing and/or otherwise compensating for, offsetting, or rectifying the residual adverse effects to the three floodplain functions. Prior to the issuance of any development authorization, the applicant shall:

i. Demonstrate a legal right by the project proponent to implement the proposed activities to achieve no net loss (e.g., property owner agreement);

ii. Demonstrate that financial assurances are in place for the long-term maintenance and monitoring of all projects to achieve no net loss;

iii. Include a management plan that identifies the responsible site manager, stipulates what activities are allowed on site, and requires the posting of signage identifying the site as a mitigation area.

B. Compliance with no net loss for undeveloped space or impervious surface is preferred to occur prior to the loss of habitat function but, at a minimum, shall occur concurrent with the loss. To offset the impacts of delay in implementing no net loss, a 25 percent increase in the required minimum area is added for each year no net loss implementation is delayed.

C. No net loss must be provided within, in order of preference: 1) the lot or parcel that floodplain functions were removed from, 2) the same reach of the waterbody where the development is proposed, or 3) the special flood hazard area within the same hydrologically connected area as the proposed development. Table 1 presents the no net loss ratios, which increase based on the preferences listed above.

6.1.1 UNDEVELOPED SPACE

A. Development proposals shall not reduce the fish-accessible and egress-able undeveloped space within the special flood hazard area.

B. A development proposal with an activity that would impact undeveloped space shall achieve no net loss of fish-accessible and egress-able space.

C. Lost undeveloped space must be replaced with fish-accessible and egress-able compensatory volume based on the ratio in Table 1 and at the same flood level at which the development causes an impact (i.e., plus or minus 1 foot of the hydraulically equivalent elevation).

i. Hydraulically equivalent sites must be found within either the equivalent 1-foot elevations or the same flood elevation bands of the development porposal. The flood elevation bands are identified as follows:

(1) Ordinary High Water Mark to 10-year,

(2) 10-year to 25-year,

(3) 25-year to 50-year,

(4) And 50-year to 100-year

ii. Hydrologically connected to the waterbody that is the flooding source;

iii. Designed so that there is no increase in velocity; and

iv. Designed to fill and drain in a manner that minimizes anadromous fish stranding to the greatest extent possible.

6.1.2 IMPERVIOUS SURFACES

Impervious surface mitigation shall be mitigated through any of the following options:

A. Development proposals shall not result in a net increase in impervious surface area within the SFHA, or

B. use low impact development or green infrastructure to infiltrate and treat stormwater produced by the new impervious surface, as documented by a qualified professional, or

C. If prior methods are not feasible and documented by a qualified professional stormwater retention is required to ensure no increase in peak volume or flow and to maximize infiltration, and treatment is required to

minimize pollutant loading. See section **6.2.C** for stormwater retention specifications.

6.1.3 TREES

A. Development proposals shall result in no net loss of trees 6-inches dbh or greater within the special flood hazard area. This requirement does not apply to silviculture where there is no development.

i. Trees of or exceeding 6-inches dbh that are removed from the RBZ, Floodway, or RBZ-fringe must be replaced at the ratios in Table 1.

ii. Replacement trees must be native species that would occur naturally in the Level III ecoregion of the impact area.

6.2 STORMWATER MANAGEMENT

Any development proposal that cannot mitigate as specified in 6.1.2(A)-(B) must include the following:

A. Water quality (pollution reduction) treatment for post-construction stormwater runoff from any net increase in impervious area; and

B. Water quantity treatment (retention facilities) unless the outfall discharges into the ocean.

C. Retention facilities must:

i. Limit discharge to match the pre-development peak discharge rate (i.e., the discharge rate of the site based on its natural groundcover and grade before any development occurred) for the 10-year peak flow using a continuous simulation for flows between 50 percent of the 2-year event and the 10-year flow event (annual series).

ii. Treat stormwater to remove sediment and pollutants from impervious surfaces such that at least 80 percent of the suspended solids are removed from the stormwater prior to discharging to the receiving water body.

iii. Be designed to not entrap fish and drain to the source of flooding.

iv. Be certified by a qualified professional.

D. Stormwater treatment practices for multi-parcel facilities, including subdivisions, shall have an enforceable operation and maintenance agreement to ensure the system functions as designed. This agreement will include:

i. Access to stormwater treatment facilities at the site by the COMMUNITY TYPE (e.g., city, county) for the purpose of inspection and repair.

ii. A legally binding document specifying the parties responsible for the proper maintenance of the stormwater treatment facilities. The agreement will be recorded and bind subsequent purchasers and sellers even if they were not party to the original agreement.

iii. For stormwater controls that include vegetation and/or soil permeability, the operation and maintenance manual must include maintenance of these elements to maintain the functionality of the feature.

iv. The responsible party for the operation and maintenance of the stormwater facility shall have the operation and maintenance manual on site and available at all times. Records of the maintenance and repairs shall be retained and made available for inspection by the COMMUNITY TYPE (e.g., city, county) for five years

6.3 ACTIVITIES EXEMPT FROM NO NET LOSS STANDARDS

The following activities are not subject to the no net loss standards in Section 6.1; however, they may not be exempt from floodplain development permit requirements.

A. Normal maintenance of structures, such as re-roofing and replacing siding, provided there is no change in the footprint or expansion of the roof of the structure;

B. Normal street, sidewalk, and road maintenance, including filling potholes, repaving, and installing signs and traffic signals, that does not alter contours, use, or alter culverts. Activities exempt do not include expansion of paved areas;

C. Routine maintenance of landscaping that does not involve grading, excavation, or filling;

D. Routine agricultural practices such as tilling, plowing, harvesting, soil amendments, and ditch cleaning that does not alter the ditch configuration provided the spoils are removed from special flood hazard area or tilled into fields as a soil amendment;

E. Routine silviculture practices that do not meet the definition of development, including harvesting of trees as long as root balls are left in place and forest road construction or maintenance that does not alter contours, use, or alter culverts;

F. Removal of noxious weeds and hazard trees, and replacement of non-native vegetation with native vegetation;

G. Normal maintenance of above ground utilities and facilities, such as replacing downed power lines and utility poles provided there is no net change in footprint;

H. Normal maintenance of a levee or other flood control facility prescribed in the operations and maintenance plan for the levee or flood control facility. Normal maintenance does not include repair from flood damage, expansion of the prism, expansion of the face or toe or addition of protection on the face or toe with rock armor.

I. Habitat restoration activities.

6.4 RIPARIAN BUFFER ZONE (RBZ)

A. The Riparian Buffer Zone is measured from the ordinary high-water line of a fresh waterbody (lake; pond; ephemeral, intermittent, or perennial stream) or mean higher-high water of a marine shoreline or tidally influenced river reach to 170 feet horizontally on each side of the stream or inland of the MHHW. The riparian buffer zone includes the area between these outer boundaries on each side of the stream, including the stream channel.

B. Habitat restoration activities in the RBZ are considered self-mitigating and are not subject to the no net loss standards described above.

C. Functionally dependent uses are only subject to the no net loss standards for development in the RBZ. Ancillary features that are associated with but do not directly impact the functionally dependent use in the RBZ (including manufacturing support facilities and restrooms) are subject to the beneficial gain standard in addition to no net loss standards.

D. Any other use of the RBZ requires a greater offset to achieve no net loss of floodplain functions, on top of the no net loss standards described above, through the beneficial gain standard.

E. Under FEMA's beneficial gain standard, an area within the same reach of the project and equivalent to 5% of the total project area within the RBZ shall be planted with native herbaceous and shrub vegetation and designated as open space.

Table 1 No Net Loss Standards

Basic Mitigate Ratios	Undeveloped Space (ft^3)	Impervious Surface (ft^2)	Trees (6"<dbh≤20")	Trees (20"<dbh≤39")	Trees (39"<dbh)
RBZ and Floodway	2:1*	1:1	3:1*	5:1	6:1
RBZ-Fringe	1.5:1*	1:1	2:1*	4:1	5:1

Mitigation multipliers					
Mitigation onsite to Mitigation offsite, same reach	100%	100%	100%	100%	100%
Mitigation onsite to Mitigation offsite, different reach, same watershed (5th field)	200% *	200%*	200%*	200%	200%

Notes:

1. Ratios with asterisks are indicated in the BiOp
2. Mitigation multipliers of 100% result in the required mitigation occurring at the same value described by the ratios above, while multipliers of 200% result in the required mitigation being doubled.
    a. For example, if only 500 ft^2 of the total 1000 ft^2 of required pervious surface mitigation can be conducted onsite and in the same reach, the remaining 500 ft^2 of required pervious surface mitigation occurring offsite at a different reach would double because of the 200% multiplier.
3. RBZ impacts must be offset in the RBZ, on-site or off-site.
4. Additional standards may apply in the RBZ (See 6.4 Riparian Buffer Zone)

Floodplain Habitat Assessment and Mitigation

Regional Guidance for Oregon

August 2024

FEMA Region 10

Regional Guidance
For
Floodplain Habitat Assessments
and Mitigation in Oregon

Produced by FEMA - Region 10
August 2024

FEMA
Region 10

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Acknowledgements

This guidance document was developed by Region 10 of the Federal Emergency Management Agency, as part of its continuing effort to improve floodplain management practices and assist communities in meeting the requirements of the Endangered Species Act.

An earlier version of this document that was written solely for Puget Sound was drafted in 2010 by French & Associates, Ltd., Steilacoom, ESA Adolfson, Seattle, and PBS&J, Seattle, through an arrangement with the Insurance Services Office and the Community Rating System. Extensive edits were completed by FEMA Region 10 in 2013 in a document that was written solely for Puget Sound.

The 2018 Update was prepared by CDM Smith and FEMA Region 10.

The 2024 Update was prepared by FEMA Region 10 to address the interim measures for implementing the Oregon Biological Opinion.

Acronyms

BA	Biological Assessment
BE	Biological Evaluation
BiOp	Biological Opinion
CMZ	Channel Migration Zone
DLCD	Oregon Department of Land Conservation
EFH	Essential Fish Habitat
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FWHCA	Fish and Wildlife Habitat Conservation Areas
HA	Habitat Assessment
HPA	Hydraulic Project Approval
IPaC	Information for Planning and Consultation tool
JARPA	Joint Aquatic Resources Permit Application
JPA	Joint Permit Application
NFIP	National Flood Insurance Program
NMFS	National Marine Fisheries Service
ODEQ	Oregon Department of Environmental Quality
ODSL	Oregon Department of State Lands
RBZ	Riparian buffer zone
RPA	Reasonable and Prudent Alternative
SFHA	Special Flood Hazard Area
USACE	United States Army Corps of Engineers
USFWS	United States Fish and Wildlife Service

1.0 Introduction

1.1 Background

This Regional Guidance is written to assist communities in meeting the requirements and criteria of the Endangered Species Act (ESA) regarding the National Flood Insurance Program (NFIP). Those requirements are described in Biological Opinions (BiOp) issued by the National Marine Fisheries Service (NMFS) April 14, 2016, and the January 2017 errata document that supplements the BiOp for most of the State of Oregon.

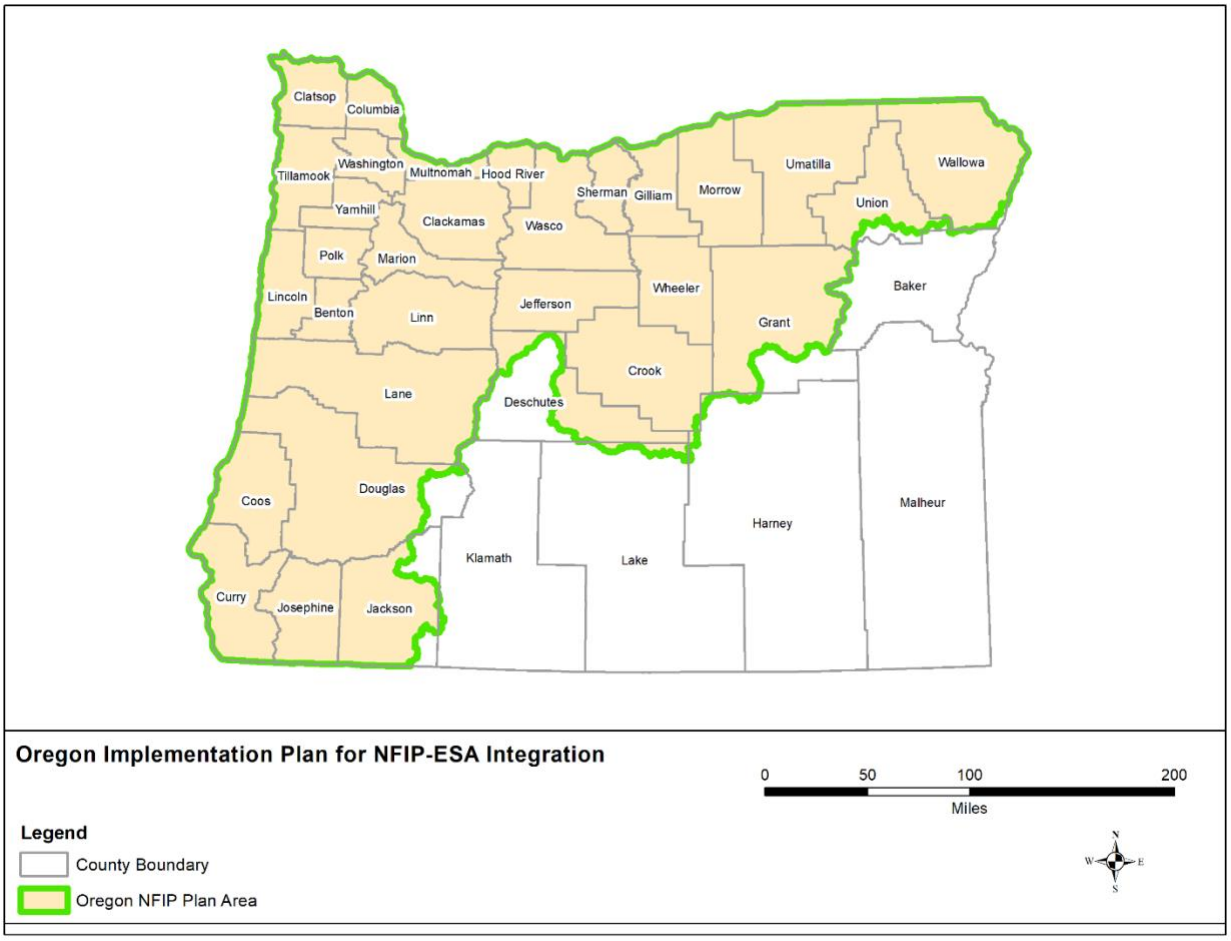

Figure 1 Oregon National Flood Insurance Program Plan Area for Endangered Species Act Integration

This guide is a companion to the BiOp for Oregon and the ESA Consultation Handbook (NMFS and USFWS 1998). It is intended to assist environmental planners, fisheries biologists, and other qualified floodplain and river management professionals who may potentially write or review habitat assessments (HAs). This document focuses on requirements specific to Oregon. It provides information on methods that communities may utilize to assess the impacts of land

management actions on ESA-listed species and their designated critical habitats within the Special Flood Hazard Area (SFHA).

This document is also designed to support the NFIP-ESA 2024 Draft Model Ordinance prepared by the Federal Emergency Management Agency (FEMA) Region 10. This guidance is offered to help communities comply with the interim measures in the Reasonable and Prudent Alternative (RPA) element 2 while FEMA works towards full implementation of the NMFS BiOp.

For further details on the BiOp's requirements, see the BiOp and RPA for Oregon. The Model Ordinance and additional guidance documents are also available from FEMA Region 10.

Communities in Oregon have two options to implement the interim measures of the BiOp: adopting the Model Ordinance under a hybrid programmatic habitat assessment approach or using a permit-by-permit approach. Sections of the Model Ordinance are referenced in this guidance to help the reader match the requirements of the BiOp with NFIP regulations. Additional references included in this guidebook are listed at the end of the document.

The RPAs set forth for Oregon under the BiOp include an expanded timeframe for implementation to account for state-wide implementation and potential changes in FEMA policy and guidance. The RPAs also allow for compensatory mitigation of adverse effects within the SFHA.

This revised 2024 habitat assessment guidance will help jurisdictions assess and document ESA compliance reviews. It is intended to be useful to those jurisdictions who are complying with the requirements of the interim elements of the RPA in Oregon through adoption of the model ordinance.

Regardless of which compliance option is selected, the objective is to avoid adverse effects and ensure no net loss to ESA-listed species and their designated critical habitats by protecting those species and the natural functions of their designated critical habitats.

The preparation of this guidance was informed by technical input from local officials, engineers, natural resource scientists, and planners. It is designed to assist qualified habitat professionals, representing both permit applicants and permit officials, in ensuring that any adverse impacts from actions occurring anywhere within the Oregon Special Flood Hazard Area will be mitigated to a no net loss standard. This guidance is focused on ESA-listed species utilizing habitats in flood-prone areas, including those areas associated with streams, lakes, and marine waters.

The 2016 BiOp and 2017 errata for the NFIP in Oregon apply to 16 ESA-listed fish species and the Southern Resident killer whale. However, the Model Ordinance and this guidance may also help guide assessment of potential impacts from project actions on bull trout (administered by the U.S. Fish and Wildlife Service [USFWS]), which are currently listed as threatened or endangered. In Oregon, bull trout are found in the Columbia River and many of its tributaries. The

assessment of impacts on other fish species that may become candidates for ESA listing may also be warranted, to ensure that project proposals adequately address their needs if they become formally listed while a project is still underway. This assessment guidance does not, however, provide details on possible methods of how to assess impacts to any ESA-listed wildlife, invertebrate, or plant species that may be present, nor impacts to their habitats.

1.2 Definitions

Three terms are used in this guidance and the Model Ordinance, that may not be the same terms used in a community's regulations: "Riparian Buffer Zone" and "development." These terms are defined in the Definitions section of the Model Ordinance Language (Section 2.0).

The **SFHA** is the land in the floodplain within a community subject to a 1% 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, V1-30, VE).

The **Riparian Buffer Zone** is measured from the ordinary high water line of a fresh waterbody (lake; pond; ephemeral, intermittent, or perennial stream) or mean higher-high water (MHHW) line of a marine shoreline or tidally influenced river reach to 170 feet horizontally on each side of the stream or 170 feet inland from the MHHW. The riparian buffer zone includes the area between these outer boundaries on each side of the stream, including the stream channel. Where the RBZ is larger than the special flood hazard area, the no net loss standards shall only apply to the area within the special flood hazard area. The RBZ-fringe is the remainder of the SFHA that is outside of the RBZ.

Development is any man-made change to improved or unimproved real estate, including but not limited to buildings or other structures, mining, dredging, filling, grading, paving, excavation or drilling operations or storage of equipment or materials. The Oregon BiOp extends that definition to include subdivision of land, removal of vegetation, other alteration of natural site characteristics (including any remnant natural characteristics existing in a degraded site), substantial repairs and improvements, and the maintenance, repair, or remodel of existing buildings, facilities, and utilities when their existing footprint is expanded.

1.3 When to Conduct a Habitat Assessment

Whenever a development project is proposed in the SFHA, the property owner must obtain a floodplain development permit from the community. Certain types of projects can be permitted relatively quickly (see "Allowed Activities" below). Unless a community's floodplain management ordinance lists a project action type as exempt from the requirement to complete an HA (see Section 1.3.1), the project applicant must complete an HA that describes the impact of the proposed development on existing floodplain and instream habitat functions and processes. The scope and detail of that assessment may vary as needed to portray possible impacts for each project. If the anticipated project effects are clearly limited in nature and extent, it may be possible to describe them in a relatively short assessment. The greater the complexity, scope, and/or risk of possible impacts to ESA-listed species or their habitats, the more likely it will be that the HA will need to be an in-depth analysis, to portray impacts and describe planned mitigation, if needed.

1.3.1 No Habitat Assessment Required

There are four general circumstances where an HA would not be required:

1. Projects that are listed as exempt from conducting a habitat assessment in the BiOp for the NFIP in Oregon. These exemptions should be listed in the community's ordinance (exempt situations are listed below).
2. Project actions that are covered under separate consultations under Section 4(d), 7, or 10 of the ESA.
3. Projects under consideration that have already been covered by a full programmatic habitat assessment of all current and reasonably foreseeable future conditions throughout a jurisdiction. (When such an assessment already exists, and the project clearly fits within the nature and scope of those project types that were addressed by it, then the jurisdiction need only document and track how they evaluated its eligibility for coverage by that assessment).

1.3.1.1 No HA Required and No Floodplain Permit Required:

Communities may allow the following activities in the floodplain without requiring a floodplain development permit, provided all applicable federal, state, and local requirements are met. A floodplain permit is not required because these activities do not meet the NFIP definition of "development." Note: local community regulations may be more restrictive than the minimum standards (44 CFR 59).

- Routine maintenance of existing landscaping that does not involve grading, excavation, or filling.
- Removal of noxious weeds, hazard trees, and replacement of non-native vegetation with native vegetation.
- Normal maintenance of above and below ground utilities and facilities, such as replacing power lines and utility poles.

- Normal road maintenance, such as filling potholes, repaving, installing signs and traffic signals, but not including any expansion.
- Normal maintenance of a levee or other flood control facility, as prescribed in the operations and maintenance plan for the facility. Normal maintenance does not include repair from flood damage, any expansion of the prism, face or toe expansion, or the addition of material for protection or armor.
- Plowing and other normal farm practices (other than new structures or filling) on legally existing agricultural areas. Clearing additional land for agriculture will likely require a floodplain development permit and an HA.

1.3.1.2 Floodplain Permit Required and No HA Required

Communities may allow the following activities in the floodplain without an HA, provided a floodplain development permit is obtained and all applicable federal, state, and local requirements are met.

- Normal maintenance, repairs, or remodeling of structures, such as re-roofing and replacing siding, provided such work does not constitute a substantial improvement or repair of substantial damage. To comply, the cost of such work must be less than 50 percent of the market value of the structure(s).
- Activities with the sole purpose of creating, restoring, or enhancing natural functions associated with floodplains, streams, lakes, estuaries, marine areas, habitat, and riparian areas , provided the activities meet federal and state standards and do not include structures, grading, fill, or impervious surfaces.
- Development of open space and recreational facilities, such as parks, trails, and hunting grounds, that do not include structures, fill, impervious surfaces, or removal of more than 5 percent of the native vegetation on the portion of the property located in the SFHA.
- Repair to onsite septic systems, provided ground disturbance is the minimal necessary and best management practices (BMP) are utilized to prevent stormwater runoff and soil erosion.
- Projects that have already received concurrence under another permit or other consultation with the Services, either through Section 7, Section 4d, or Section 10 of the ESA, that addresses the entirety of the project in the floodplain. Examples of other such permits include but are not limited to a U.S. Army Corps of Engineers (USACE) 404 permit.
- Repair of an existing, functional bulkhead in the same location and footprint with the same materials when the Ordinary High-Water Mark (OHWM) is still outside of the face of the bulkhead.

Projects that require a federal permit under Section 404 of the Clean Water Act would likely need to go through an ESA consultation process led by the USACE Regulatory Branch. The Section 404 permit process includes consultation with the U.S. Fish and Wildlife Service (USFWS),

and/or NMFS when a project may influence a federally listed species. Such consultation is required under Section 7 of the ESA. If a project has gone through this Section 7 process with USACE then a local HA would not be required.

A project is deemed to comply with the ESA if a permit applicant has prepared a Biological Evaluation (BE) or a Biological Assessment (BA) and has received concurrence from USFWS and/or NMFS as applicable for the species potentially present (via either a Letter of Concurrence or a BiOp) that covers the full scope of the proposed action. In such cases the additional HA requirements of this guidance are not required (see Section 7.7 of either of the Model Ordinances).

1.4 Habitat Assessment Overview

The habitat assessment needs to describe any impacts to habitat functions due to actions occurring within any part of the SFHA in the BiOps action area communities. The assessment must demonstrate that there will be no net loss to habitat functions in the SFHA.

The impact of a project on habitat functions and processes may be complicated to determine because there is often little or no information on the site's baseline (pre-project) natural features. A habitat assessment is needed to identify those natural functions and to complete an analysis that estimates what effects the proposed action will have on ESA-listed species and their critical habitats.

If the assessment finds that an adverse effect may occur due to impacts from the proposed action on ESA-listed fish species, Southern Resident killer whales, or their designated critical habitats, then the permit applicant must prepare a plan identifying the steps that the applicant will take to modify the proposed action to avoid adverse effects. Avoidance measures should be applied as the first priority. Then, measures to minimize or fully mitigate any unavoidable adverse impacts must be developed and applied to the project. Jurisdictions must be able to document the details of the mitigation plan and identify which mitigation measures are required rather than recommended. They must also be able to monitor and document the implementation and measure the effectiveness of the plan, track any enforcement actions taken, and provide that information to FEMA, if requested.

Any actions that would adversely affect ESA-listed species or their critical habitats within the BiOps action area SFHA must be fully mitigated. In the required descending order of preference, the mitigation sequence is avoidance, minimization, and mitigation. Applicants must explain and document why all preferable forms of mitigation were not practicable before proposing less preferable forms (e.g., mitigation over avoidance).

1.5 Preparing and Reviewing a Habitat Assessment

This guidance provides a step-by-step approach to complete a HA when an assessment is needed. The approach described in the following sections should provide sufficient information to assess

and document the likely effects of a proposed project, but it does not have to be followed exactly as described. However, if a different approach is followed, it must provide sufficient data and analysis to describe baseline conditions and likely effects on ESA-listed species and their designated critical habitat. It must conclude with an effects determination that is well supported by that analysis.

This guidebook is not intended to represent comprehensive instructions for how a jurisdiction should complete a comprehensive "programmatic" HA of existing conditions and impacts of community's regulations across its entire jurisdiction (e.g., conditions within all watersheds in a jurisdiction). However, it helps describe the information that would be needed to complete such an extensive and inclusive programmatic assessment. Communities may conduct programmatic assessments with differing approaches based on their unique land uses, regulatory structure, available maps and data, and community goals. Communities may request technical assistance from FEMA when they draft programmatic habitat assessments or review assessments prepared by others for projects within their jurisdictions.

The guidance is also not intended to provide complete instructions for documentation and justification of how a jurisdiction's existing regulations (and any planned changes to those regulations) comply with all the terms and conditions within the RPAs of the BiOp. It will be the responsibility of the jurisdiction to explain and document that information. This guidance is primarily intended to assist applicants in preparing an HA under the permit-by-permit approach listed in the Pre-Implementation Compliance Measures (PICM). Applicants may seek assistance from their local jurisdiction in preparation of the HA. If the project is complex, it is recommended that applicants begin with conceptual development plans and conduct a preliminary assessment before investing in detailed project plans and specifications. Continued communication with community staff will also help identify issues before significant time and/or money is spent on a project that may require additional mitigation measures or needs to be redesigned or abandoned. It may be appropriate for some communities with limited staff to request assistance from their neighboring jurisdictions, Tribes, or other partners to help assess the adequacy of draft HAs written on their behalf. This guidance document allows for flexibility in the format of many aspects of the HA. Reviewers of draft HAs should be familiar with the range of formats that adequately portray and interpret fisheries population and habitat survey data.

A permit applicant should weigh the cost of preparing an assessment and mitigation plan, should one be needed, against the cost of locating the project outside the SFHA. It may cost less in time and money to simply avoid the SFHA

2.0 Conducting the Assessment

The process to adequately identify and address the impacts a proposed project may have on habitat within the floodplain is described in the following sections. In circumstances where an approved habitat assessment (Steps 1 through 4) determines that if no impacts on habitat functions

associated with ESA-listed species will occur, development of a mitigation plan is not necessary. However, most activities within the SFHA that require a HA are highly likely to have impacts on habitats associated with ESA-listed species. The first few steps are to describe the project area, area of potential effects (which may be larger), and whether any listed species potentially occur in that area. If ESA-listed species potentially occur within the area where project effects may occur, then the potential impacts on those species must be determined. When habitat impacts are identified, a mitigation plan must be prepared for the project, in accordance with Steps 5 and 6.

2.1 Step 1. Describe the Project Area

The project area is generally the parcel or parcels being developed. In some cases, the project may extend to a larger area, such as when a road to the parcel is to be built or improved, or when the effects of several interrelated or interdependent proposed land development actions are considered together. Step 1 should produce two documents – the project area description and a project area map.

2.1.1 Project Area Description

If an Oregon State Joint Permit Application (JPA) form has been prepared for the project, it will include the general project area description information that would be included as part of the habitat assessment. An approval under Section 401 of the Clean Water Act is required from the Oregon Department of Environmental Quality (ODEQ) and/or a removal-fill permit is required from the Oregon Department of State Lands (DSL). However, the JPA may not adequately describe all the natural functions, and habitat support processes, species distribution characteristics, hydrologic variables, and/or water quality effects that need to be addressed in a habitat assessment. At a minimum, an Oregon State JPA form would include the following information:

- **Location information:**
  - Street address
  - City and County
  - Township, section, and range
  - Latitude and longitude
  - Tax parcel number(s) of the project location
  - Type of ownership of the project (Federal, State, or locally owned public lands; tribal lands; privately owned lands)
- **Water resource information:**
  - Watershed name
    Watershed Assessment Unit or HUC12 codes. Information on Oregon's Watershed

Assessment Units can be found at the Oregon Department of Environmental Quality (DEQ) Oregon 2024 Integrated Report Frequently Asked Questions and the mapping webpage at:
Oregon Explorer HUC codes for the Pacific Northwest region can be found at the U.S. Geological Survey site: https://water.usgs.gov/GIS/wbd_huc8.pdf.

- Names and descriptions of the water bodies in which work will occur, including water type. For more information on water type and a map that designates the types for major water bodies, see the Oregon State Water Resources Department water typing page:
(http://www.oregon.gov/ODF/Documents/WorkingForests/WaterClassificationTechNote1.pdf)

- Coastal Management Areas are associated with the coasts of Oregon, as managed by the Oregon Coastal Zone Management Program.

- Critical Areas associated with streams, designated by the local jurisdiction pursuant to the Transportation and Growth Act in Oregon. Critical areas management information should include the critical areas designation and a description of the extent of jurisdiction.

- **Fish and Wildlife Habitat Areas**

  - Designated Goal 5 resources include riparian areas, wetlands, wildlife habitat, and natural areas in or near the project area.

2.1.2 Project Area Map

The second item needed for Step 1 is a map, drawn to scale that shows the following:

- Parcel(s) boundaries
- Full analysis area
- Area of the finished project (including roads)
- Any additional area(s) that will be disrupted during construction (including access routes, staging areas, and areas to be re-graded or filled)
- All water bodies
- Site topography, soils, and geology
- Fish and Wildlife Habitat Conservation Areas/Goal 5 resources
- Existing native vegetation by vegetation community zones. For example, a map could distinguish areas with existing coniferous forest cover from areas with shrub cover and areas with grass cover.
- Boundaries of the following regulatory areas (see Section 3 of the Model Ordinance)

  - Special Flood Hazard Area

- Floodway (if available)
- Riparian buffer zone (RBZ)
- Channel Migration Zone (CMZ) (where available)

- Depths of the 10- and 100-year floods at representative locations. These only need to be provided when flood data is available from existing studies for the community.

2.2 Step 2. Describe the Project Area's Habitat

In Step 2 of the habitat assessment, the applicant describes the existing habitat conditions of the project area. Tasks 2.2.1 and 2.2.2 of Step 2 are largely based on existing scientific information regarding species use and current habitat functions in the project area.

2.2.1 Background Research

In order to adequately describe current population and habitat conditions, Step 2 starts with a review of existing sources of information relevant to threatened or endangered species and their habitats in or near the project area. There may be thorough inventories already available. The following sources should be checked, and appropriate sections referenced as needed:

- Critical areas inventory maps, best available science consistency studies, flood control and floodplain management plans, watershed analyses, and habitat studies that may be available from the community's planning or environmental protection department.
  - The following sources may be helpful: Conservation Strategy Areas; Coastal Zone Management Program
- Natural area studies that may be available from the community's parks and/or natural resources departments.
- NMFS distribution of threatened and endangered Species (www.nwr.noaa.gov)
- NMFS designated critical habitat maps (www.nmfs.noaa.gov/pr/species/criticalhabitat.htm)
- USFWS Information for Planning and Consultation tool (IPaC) at https://ecos.fws.gov/ipac/location/index
- USFWS critical habitat maps (http://criticalhabitat.fws.gov/ and (www.fws.gov/pacific/bulltrout/)
- USFWS National Wetland Inventory mapper (https://www.fws.gov/wetlands/data/Mapper.html)
- USFWS and NMFS habitat recovery plans, when published for ESA listed species in the project vicinity
  - USFWS: (www.fws.gov/pacific)

  - NMFS: (www.nwr.noaa.gov)

- U.S. Department of Agriculture, Natural Resource Conservation Service soil survey maps (http://websoilsurvey.nrcs.usda.gov/app/)
- Oregon Department of Fish and Wildlife threatened and endangered species list (http://www.dfw.state.or.us/wildlife/diversity/species/threatened_endangered_candidate_list.asp)
- Oregon Department of Fish and Wildlife Crucial Habitat Database (http://dfw.state.or.us/maps/compass/data.asp)
- Oregon State Department of Environmental Quality Water Quality Assessment (http://www.oregon.gov/deq/wq/Pages/WQ-Assessment.aspx)
- Oregon Native Fish Conservation and Recovery Plans
- Stream surveys conducted by tribes or federal, state, or local agencies. Such surveys may contain detailed information on habitat conditions and fish species presence from redd surveys or from snorkeling or electroshocking surveys. Other recent projects near the project area may also have collected stream survey or other habitat data.

2.2.2 Protected Species Identification

The review of the existing research should identify all federally listed species, designated critical habitats, Essential Fish Habitat (EFH) as defined by the Magnuson-Stevens Fishery Conservation and Management Act, affected EFH species, and Fish and Wildlife Habitat Conservation Areas or Conservation Strategy Areas, that occur in or near the project area. Species or habitats that have the potential to be negatively impacted on a direct, indirect, or cumulative basis by proposed ground-disturbing actions need to be described. The appropriate spatial and temporal scales for each form of potential impact must also be identified and briefly explained. Further discussion of potentially measurable or observable impacts, and the appropriate spatial and temporal scales for an effects analysis is presented later in this guidebook.

The table below is an example of how species presence and ESA status of populations and Critical Habitat could be presented. Additional columns could also be inserted to list the status of EFH and other categories when present and convenient to describe in a tabular format.

Occurrence of Listed Species and Critical Habitat in or Near the Project Area. (Sample Display)				
Common Name	Scientific Name	ESA Status	Jurisdiction	Critical Habitat
Lower Columbia River Chinook salmon	*Oncorhynchus tshawytscha*	Threatened	NMFS	Yes
Lower Columbia River coho salmon	*O. kisutch*	Threatened	NMFS	Yes
Lower Columbia River steelhead	*O. Mykiss*	Threatened	NMFS	Yes
Southern Resident killer whale	*Orcinus orca*	Endangered	NMFS	Yes

Table 1. Sample Species Status Table for a Habitat Assessment

Check with the NMFS and USFWS data sources described in Section 2.1 of this document to obtain general maps of the distribution of ESA-listed or proposed species, listed critical habitats, and any areas designated Essential Fish Habitat. Please note that the maps of potential fish distribution at these websites are not necessarily the most detailed or accurate maps that exist. The regional or local offices of NMFS, USFWS, tribes, or local land management agencies may be able to provide more accurate maps based on recent fish and habitat surveys, including known migration barriers.

EFH species are managed by NMFS. On the west coast of the United States there are three EFH salmon species that potentially occur in freshwater systems, namely pink, coho, and Chinook salmon. If project actions may potentially negatively impact estuarine and marine systems, numerous species of ground fish and coastal pelagic fishes that are listed under EFH may also need to be considered.

This task should summarize the biological and ecological information that will be needed for the habitat assessment. Appropriate information on species life histories, habitat, and distributions, as well as other data necessary for species survival or possible recovery, must be included to provide sufficient background for the analyses in later sections. It is important to note that even though the 2016 BiOp for Oregon focuses on salmon and EFH species managed by NMFS, all threatened or endangered plant and animal species in or near the project area need to be addressed. If other ESA-listed species are present or are potentially present, it may be necessary to conduct additional surveys and assessments beyond those described in this guidance.

Several sources of existing information are listed above in Section 2.2.1. When a document contains relevant information, that information can simply be cited by page-specific reference. Other sources include the locally developed Best Available Science (BAS) documentation reports; the state's Growth Management Act that requires each community to prepare such

reports for their critical area standards. Additional references are provided below as examples of the general format and guidance on how some agencies conduct biological assessments.

- The U.S. Army Corps of Engineers' ESA *Consultation Initiation Template* (USACE 2007) [http://www.spk.usace.army.mil/Portals/12/documents/regulatory/pdf/ESA_Template_Guidance. pdf]
- *Making Endangered Species Act Determinations of Effect for Individual or Grouped Actions at the Watershed Scale* (NMFS 1996). [http://www.nwr.noaa.gov/Publications/Reference-Documents/upload/matrix_1996.pdf]
- Oregon Department of Transportation *Biological Assessment and Guidance Document* (ODOT 2005). [http://cms.oregon.gov/ODOT/HWY/GEOENVIRONMENTAL/docs/BAWritingDocument.pdf]

Currently, the Northwest Region of NMFS does not formally recommend use of any specific template for Biological Assessments (other than the 'Analytical Process' for some specific land management actions like timber sales on Federal lands). The Region instead allows the potential use of a variety of formats.

HAs must describe existing habitat and species population conditions for each ESA-listed species that may occur in the area of potential effects. The HA should describe the habitat functions that potentially support ESA-listed species in or near the action area. It must then describe the potential impacts of the proposed actions on individuals of each species, populations of those species, and their habitats. The detail and extent of each assessment will vary by the nature and scope of the proposal and the potential for negative impacts.

This section's narrative should include, but not necessarily be limited to, descriptions and discussions of the following topics:

i. Factors of decline
   a. Historical pressures on the species
   b. Current pressures on the species
   c. Limiting factors for recovery of the species
ii. Local empirical information (if available)
   a. Current local population information
   b. Ongoing monitoring programs (if any)
   c. Population trend of the species

A summary of the habitat needs for each protected species should follow its description. This section of the narrative should identify and describe the key factors that are important to each

protected species. These factors include the Primary Constituent Elements (PCEs) for those species with designated critical habitat. PCEs are the key habitat components that an ESA-listed species needs to survive in an area (see example in the box). For each listed species, PCEs are described in the corresponding Federal Register publication for its designated critical habitat. The PCEs must be described when critical habitat may potentially be affected. In those cases where designated critical habitat is not present near the project action area, describing the available habitat in terms of the PCE components is still a recommended means to concisely describe existing habitat features. Not all PCEs for a species may apply to a project. In the example below, PCEs related to the ocean environment would not apply to the project if the project area is on a freshwater stream.

Example Primary Constituent Elements

(Chinook salmon and steelhead trout, 50 CFR Part 226, Federal Register / Vol. 70, No. 170 / Friday, September 2, 2005)

1. Freshwater spawning sites with water quantity and quality conditions and substrate supporting spawning, incubation and larval development.
2. Freshwater rearing sites with water quantity and floodplain connectivity
3. Freshwater migration corridors free of obstruction
4. Estuarine areas free of obstruction
5. Nearshore marine areas free of obstruction
6. Offshore marine areas with water quality conditions and forage, including aquatic invertebrates and fishes, supporting growth and maturation.

2.2.3 Site Investigation

Tasks 2.2.1 and 2.2.2 give the applicant guidance on where to look and what to look for regarding species potentially present at the site. Following completion of the first parts of Step 2, a site visit is usually needed to determine if there are habitat areas in the project area with which identified species have a "primary association." "Habitats of primary association" include critical habitat components (which could be PCEs), which, if altered, may reduce the likelihood that the listed species will be able to continue to live and reproduce in the area over the long term. A site visit and determination of site-specific conditions is generally necessary to determine what actual impacts on ESA-listed species, EFH, and associated habitats may occur from a proposed project.

For example, identification of Chinook salmon habitat areas of primary association should look for those PCEs listed in the box. A description of the riparian and instream habitat conditions that exist both upstream and downstream of the project action area would also be needed.

This description of existing baseline habitat functions must, at a minimum, include those habitat functions that are listed in the BiOp on the NFIP in Oregon. These functions are described in the next section on the habitat narrative. In addition, it is especially important to note the locations

and distances from the proposed project area relative to any stream reaches that may potentially support ESA-listed species or contain designated critical habitat.

The description of habitat and general conditions in the project area should also identify existing modifications to the project site within the floodplain, including existing structures, roads, impervious areas, and graded or filled areas. Any existing modification that has impaired habitat functions and/or habitats of primary association should be described (as discussed in the next section). If the project includes activities to restore the habitat in these modified areas, it could help the assessment conclude that there will be no adverse effects on habitat due to the project (see also Task 2.3.3 of Step 3).

The Oregon Department of Fish and Wildlife, through its conservation strategy includes additional actions that have the potential to result in impaired habitats. The site investigation should look for and describe these modifications when they are present. In general, actions that have the potential to result in impaired habitats involve one or more of the following:

- coastal development and associated construction
- shoreline armoring
- alteration of hydraulic regimes
- dredging and dredged materials disposal
- aquaculture
- global climate change
- habitat isolation
- the removal of riparian vegetation (except for the removal of noxious plants)

Furthermore, RPA element 2 identified in the Oregon BiOp requires communities within the implementation plan area to identify a riparian buffer zone (RBZ) that is measured 170 feet horizontally from the ordinary high-water mark of perennial or intermittent streams, including the area between these outer boundaries on each side of the stream, including the stream channel or 170 feet inland from a MHHW. Development in the RBZ must adhere to additional performance standards to comply with NFIP-ESA integration efforts as outlined in section 2.5.3.

2.2.4 Habitat Narrative

The findings of the field investigation are used to prepare a description of the habitat areas of primary association that will need to be protected. The narrative for this part of the assessment report needs to describe the presence and existing quality of the natural features that relate to the PCEs for all the species and habitat areas that were identified in Tasks 2.2.2 and 2.2.3. The habitat narrative must include descriptions of the site's floodplain storage capabilities, water quality, and riparian vegetation. As described in the final paragraph of Task 2.2.2, PCEs are the key habitat components required for an ESA-listed species, as identified in the final rules that were published in the Federal Register when a species was listed. The narrative must identify what habitat

functions are still relatively intact and which are impaired by previous site and/or area (e.g., sub-watershed, watershed, or basin scale) modifications.

The BiOp for the NFIP in Oregon states that within the SFHA all development impacts on natural floodplain functions must be mitigated. The mitigation standards should identify the specific development activities that require mitigation including the following activities.

1) The addition of fill, structures, levees, or dikes, which reduces flood storage and fish refugia, impedes habitat forming processes, and increases flow volume and velocity. The latter erodes stream banks and beds and alters peak flow timing, which increases the risk of injury to redds, fry, and alevin.

2) The addition of impervious surfaces, which reduces hyporheic function and stream recharge, increases stormwater runoff, pollutant loading, water temperature, velocity, and scour, and modifies peak and base flows.

3) Vegetation removal, which reduces shade, detrital input, velocity refuge, and habitat complexity, and increases stormwater runoff and erosion.

4) Bank armoring, which reduces instream habitat values and impedes habitat forming processes.

The site investigation and resulting habitat narrative must also include a description of the proposed action and existing habitat conditions even when the action is outside of the High Hazard Area.

It is possible that there may be limited information available from the sources identified in Tasks 2.2.2 and 2.2.3. The habitat narrative must note the sources of data and information, and clarify which statements are based on scientific reports and data, and which statements are based on the professional opinion of the author. This is one of the most vital aspects of the assessment, and is required for reviewers to evaluate the basis and relative confidence of statements, related to current conditions and estimated environmental effects.

The variables listed below should be considered to ensure that the assessment covers all the required factors. In most cases, the analysis scale will be small and only address a small contiguous action area. However, some projects may include multiple sites in multiple watersheds. The extent and detail needed for the assessment will vary by the nature, scope, and scale of the proposed action. In many cases, the project will not have the potential to affect many (or any) of the habitat functions listed below. When that is the case, the assessment simply needs to clarify why the project does not have any significant potential to degrade some or all variables. The list below is intended to assist jurisdictions in considering all possible impacts on aquatic habitat and ESA-listed fish species, due to major land management actions. The list includes questions that should be answered in the HA with additional guidance on how to address them.

Primary Constituent Elements (PCEs)

These are identified in the final rules that designate critical habitat for listed threatened and endangered species (see the NMFS and USFWS critical habitat map links within the References and Resources section to access final rules for ESA listed species). For example, for an inland site with Chinook salmon habitat (see box on page 18), the first three sections of the habitat narrative would cover freshwater spawning sites, freshwater rearing sites, and freshwater migration corridors. In those cases where designated critical habitat is not present near the project action area, describing available habitat in terms of the PCE variables is still recommended to concisely depict key habitat features. Even if designated critical habitat is not present on a site, there still may be suitable habitat for the species and the species may be present. If suitable habitat is present, then the potential for impacts to the species from project activities needs to be evaluated. The distance and locations of the nearest designated critical habitat, relative to the project area also need to be listed, so that the potential for projects to impact these mapped areas can be evaluated (e.g. via sediment transport). Water quality, floodplain connectivity and storage, and riparian vegetative community are three PCEs of particular importance within the Oregon implementation plan area, as they have been identified as key floodplain functions by the 2016 BiOp.

Water Quality

- Does the proposed action include any activities (e.g. grading, stormwater, or road construction) that may have any potential to cause measurable degradation to water quality variables within the action area, and how was this assessed?
- If so, which water quality variables would be affected? Water quality variables that should be considered include: turbidity, pH, total dissolved gas (percent of saturation), bacteria, toxics, and pollutants. In Oregon, the numeric standards for turbidity, pH, total dissolved gas, and bacteria vary by location depending on the state's designated uses for salmon and charr fish species listed for the river reach in question (i.e., spawning, rearing, and/or migration). These states have also adopted narrative criteria to supplement the numeric criteria for some variables. The narrative criteria are statements that describe the desired water quality goal, such as waters being "free from" pollutants including oil and scum, color and odor, and other substances that can harm people and fish.
- Is there any potential for the project to result in not meeting state water quality standards for any water quality variables (over any temporal scale) within the defined action area? If so, which variables? How was the action area selected, and how was the assessment conducted?

  Reaches of streams that are known to be impaired and to not meet water quality criteria for one or more variables are required to be listed under section 303(d) of the Clean Water Act (CWA). If a river reach is not included on one of these lists, it does

not necessarily ensure that it meets all water quality standards for all variables. It may simply mean that no sampling (if any has occurred) has demonstrated that it does not meet standards. Data on water quality variables may be extremely limited or non-existent for many streams and river reaches. Water body segments only become listed via documented and repeated violations that are estimated to have likely been human-caused.

Jurisdictions in Oregon should advise the Oregon Department of Environmental Quality regarding any water quality data that they are aware of, in addition to what is cited in the current 303(d) list for a specific river reach. Information on the 303(d) list is found at: Department of Environmental Quality : EPA Approved Integrated Report : Water Quality : State of Oregon.

Water body segments (i.e., stream reaches, lakes, marine waters) that appear on the 303(d) list require the preparation of a plan to restore water quality, which often takes the form of a Total Maximum Daily Load (TMDL) study. Habitat assessments should include consideration of the status of water quality in the project action area and evaluate whether the project proposal has any potential to further degrade any variables, including any that are already listed as not meeting State standards.

- If there is any potential for degradation of any water quality variables, what are the estimated effects on ESA-listed fish species and/or their designated critical habitats within the action area, and how was this assessed? In addition, what is the maximum estimated spatial scale, and maximum time period when any possible impacts on ESA-listed fish species and/or their designated critical habitats might occur?

Water Temperature and Dissolved Oxygen

- Does the proposed action include any actions or regulations that may cause measurable changes in water temperature or changes in levels of dissolved oxygen (DO) in any locations, and how was this assessed?
- If there is any potential for measurable impacts, is there any potential for water temperature or DO (over any temporal scale) to not meet State water quality standards within the action area(s)? [see Water Quality section above for hyperlinks to standards in Washington and Oregon].
- If there is any potential for measurable impacts, what is the estimated effect (at all temporal scales) on ESA-listed fish species, and how was this assessed?
- If there is the potential for measurable impacts, what is the maximum estimated spatial scale and locations (including any downstream effects) and maximum time period when impacts on ESA-listed fish species may occur?

Low Flow Hydrologic Regimes (including hyporheic flows)

- Does the proposed action include any actions that could potentially cause changes to the magnitude, duration, or recurrence intervals of low summer baseflows at any locations, over any temporal scale, and how was this assessed?
- If there is any potential for changes, what impact would those changes have on ESA-listed fish species or their designated critical habitats in the project action area, and what is the maximum estimated spatial and temporal scale of those effects?

High Flow (flood) Hydrologic Regimes

- Does the proposed action include any actions that could potentially cause changes to the magnitude, duration, or recurrence intervals of the 10-, 50-, or 100-year flood flows in any location, and how was this assessed?
- If there is any potential for changes in flood flows, what effect would those changes have on ESA-listed fish species and/or their designated critical habitats in the project action area, and what is the maximum estimated spatial and temporal scale of those effects?

  Site flood dynamics and hydrology must be assessed to varying degrees, to ensure that the analysis is adequate and appropriate, for the nature of the proposed action and the habitat resources potentially at risk. Flood flow depths, volumes, velocities, and flow paths have an important effect on the way habitat is formed. The habitat assessment narrative should describe these factors with an emphasis placed on the effects of flood events on habitats. Tributary streams, seeps, stormwater outfalls, waterways that pass through the project site, and other water sources should be identified and described. This discussion may rely on and reference other flood and site hydrology studies prepared for the project and should be focused on how flood dynamics and hydrology impact local habitat areas.

  A semi-quantitative or qualitative assessment of water quantity should usually be sufficient for projects limited in scope, scale, and overall potential to result in negative impacts on ESA-listed fish populations and their critical habitats. Projects with more potential for measurable or observable negative impacts will sometimes require more rigorous examination of hydrologic or sediment regimes, based on best available data, including correlations to existing gage stations. They may also require more intensive field surveys and possibly 1- or 2- dimensional flow modeling to describe water velocities, likely extents of inundation, and possible changes to instream and riparian habitat due to future flood events.

Flood Velocities

- Does the proposed action include any actions that could potentially cause increases in water velocities in streams or rivers during high flow events, and how was this assessed?

- If there are any potential for increases in high flow velocities, is there also any potential for measurable increases in streambed or stream bank shear or velocities in fish habitat units (e.g., pools, glides, side-channels) that provide refugia for ESA-listed species from high velocities within the channel over any temporal scale at any locations? How was this estimated?
- If there is any potential for changes in flood velocities, what impact would those changes have upon ESA-listed fish species and/or their designated critical habitats in the project action area, and what is the maximum estimated spatial and temporal scale of effects?

Sediment Delivery (erosion) and Sediment Regime (in-stream transport)

- Does the proposed action include any actions that could potentially increase rates of surface erosion, delivery of sediments to water bodies, or total loading (volumes) of sediment transported in rivers that provide habitat for ESA-listed species? How was this assessed?
- If there is any potential for sediment increases, what impact would those changes have on ESA-listed fish species and/or their designated critical habitats in the project action area, and what is the maximum estimated spatial and temporal scale of those effects?

Stream Substrate

The quality, quantity, and general distribution of substrate particle size needs to be described in those cases where there is the potential for spawning, rearing, feeding, or refugia substrate habitat to be degraded by project actions. In some cases, this may include impacts from transport of sediments downstream from the project site.

If the proposed action has the potential to deliver significant quantities of fine-sediments to stream reaches in designated critical habitat or in those areas that may otherwise provide potential habitat to ESA-listed species, the percent fines (e.g. per ?) would need to be estimated and the analysis methods described. This information is required to describe current habitat conditions and estimate how (if) any additional inputs of fine sediments may degrade the current quality of stream substrate habitat.

In those cases where sediment impacts may be a significant concern, it may also be necessary to fully describe current substrate conditions in those stream reaches that could be impacted. If this is the case, the description should include the general range of substrate types that currently exist across each different channel type in potentially affected stream reaches.

The specific questions that need to be addressed are:

- Does the proposed action include any actions that could potentially cause increased rates of aggradation of fine or coarse sediments on potential substrates

for spawning, feeding, rearing, or migration? How was this assessed?

- If there is any potential for increased sedimentation, what impact would those changes have on ESA-listed fish species and/or their designated critical habitats in the project action area, and what is the maximum estimated spatial and temporal scale of effects?

Floodplain Connectivity and Storage

Disconnecting a river from its floodplain impacts several other functions that directly affect the quality and quantity of habitat that supports ESA-listed species. Disconnection affects the potential for natural lateral migration and hydrologic connectivity between the stream and its floodplain. It also affects groundwater systems and the production and utilization of organic matter by riparian and aquatic communities.

Hydrologic connections provide temporary storage of floodwaters, while also providing key off-channel habitats and a source of water during dry summer base-flow periods. Many urbanized watersheds have lost these functions to varying degrees. If the stream is largely disconnected from its floodplain, the stream ecosystem cannot maintain its biological diversity, nor can it recover from major episodic disturbances. Some of these diverse habitat types also provide refuge from high velocity flows during flood events (see discussion below).

The habitat assessment needs to describe the current condition of floodplain connections and processes. This can usually be accomplished in a brief narrative via a combination of a site visit and examination of aerial photography and FIRM maps (if they exist). Some of the conditions that should be noted include, but are not necessarily limited to, the extent of the channel migration zone, general channel geometry in potentially affected stream reaches, including the distribution and size of riffles and pools, and identification of any side-channels and tributaries. Specific questions that need to be addressed include:

- Does the proposed action include any actions that could potentially affect the extent and level of the connection of stream channels to their floodplain? How was this assessed?
- If there is any potential for changing the extent or level of floodplain connectivity, what impact would those changes have upon ESA-listed fish species and/or their designated critical habitats in the project action area, and what is the maximum estimated spatial and temporal scale of effects?

Refugia for ESA-listed Fish Species from High Velocity Flows

- Does the proposed action include any actions that could potentially affect the location, extent, or quality of refugia from high velocity flows available for ESA-listed fish

species in side channels and other areas across the floodplain when over-bank flows occur? How was this assessed?

- If there is any potential for changes in the extent or quality of refugia, what impact would those changes have upon ESA-listed fish species and/or their designated critical habitats in the project action area, and what is the maximum estimated spatial and temporal scale of those effects?

Riparian Vegetative Community

The riparian vegetation along a stream provides many functions including bank stability, food input to streams, nutrient cycling, potential for recruitment of large woody debris to streams, shade, buffering of sediment and pollutants. The habitat assessment should include, but not necessarily be limited to, a description of existing conditions throughout any mapped channel migration area. Freshwater riparian conditions should be characterized by describing conditions as they relate to the riparian habitat functions. The habitat functions affected by riparian communities include water temperature control, recruitment of large woody debris, filtering of sediment and pollutants, erosion control, bank stability, and influence on microclimatology.

Characterization of marine shoreline conditions should be consistent with guidance from state agencies, such as the Oregon's Department of Land Conservation and Development (DLCD) Coastal Management Program. Questions that should be addressed include:

- Does the proposed action include any actions that could potentially degrade the quantity or quality of the riparian vegetative community? How was this assessed?
- If the project has any potential to affect riparian vegetation, describe the general species, sizes, areas, and percent cover of the existing levels of riparian vegetation as well as the percent cover resulting from the proposed action.
- If there is any potential for degradation of the riparian vegetative community, how would:
    - The extent, rate, and quality of nutrient cycling, buffering, food input from terrestrial sources to streams (i.e. allochthonous food), and recruitment of large woody debris be impacted?
    - The extent and quality of bank stability and stream shading to be impacted?
- If there is any potential for degradation of some of the functions that the riparian community provides, what impact would those changes have on ESA-listed fish species and/or their designated critical habitat in the project action area, and what

is the maximum estimated spatial and temporal scale of those effects?

2.2.5. Habitat Area Map

Once all habitat areas of primary association are identified and described, they should be delineated on a map. The map should be at the same scale as the project area map (Task 2.1.2) to facilitate comparison of the habitat to be protected with the extent of the Special Flood Hazard Area, Floodway, the riparian buffer zone, and other relevant features such as watercourses and wetlands.

2.3 Step 3. Describe the Project

There are two key parts of the project that need to be described at this stage of the assessment report: 1) the final project, i.e., what the area will look like and how it will be used when the project is completed; and 2) the construction process that will be followed to get there. The description of the final project should be covered first. Measures taken by the proponent to avoid, minimize, replace, or compensate (the descending order of preference of the mitigation sequence) for degradation to the habitat functions must be described in enough detail to allow assessment of all the effects of the proposed action. It needs to be clear whether each measure is required, or if it is only recommended. It can't be assumed that recommended actions will occur, so their potential positive impacts should not be part of the assured result.

As described for Task 2.1.1, if an Oregon State JPA form has been prepared for the project, it will include general project description information, but usually additional information will be needed for the habitat assessment. More information regarding the Oregon application process and JPA form template can be found at the Oregon Department of State Lands website at: http://www.oregon.gov/DSL/WW/Pages/Permits.aspx.

If the information that is already being provided in the JPA includes the level of detail described in this guidance, then the community may accept the application form as sufficient for the project description. If a JPA has not been prepared for the project, the project area description should, at a minimum, include the information included in Tasks 2.3.1 and 2.3.2 of this section.

2.3.1 Final Project

All features of the proposed completed project must be described. This includes, but is not necessarily limited to:

- A summary of the project, including all features that will be present when construction is finished
- Project category (industrial, commercial, residential, institutional, transportation, recreational, maintenance, agriculture, or environmental restoration)
- A description of the general design, location relative to nearest water bodies, and general dimensions of the footprints of any structures and facilities including, but not

necessarily limited to: buildings, boat launches, docks, pilings, fences, roads, bridges, culverts, trails, roads, or paved areas

- Detailed descriptions of all structures or facilities that would potentially impact water bodies or wetlands including, but not necessarily limited to: aquaculture, buoys, mining, bank stabilization, channel modifications, culverts, dams, levees, ditches, fishways, moorage, or outfall structures
- Above and underground utilities
- Water supply
- Wastewater disposal
- Stormwater management facilities
- Non-native landscaping

The level of detail needed for these descriptions will vary according to the nature, scope, and scale of the project, and its location relative to ESA-listed species and their potential habitats. Assessments should include as much information as is needed to adequately describe and estimate potential environmental effects. In some cases, there may be little or no potential for adverse effects; therefore, in those cases, it may require relatively less information and discussion to document potential effects.

Project details, nearby stream courses, and any key floodplain features need to be mapped, and those features should be shown on the project area map(s) (Task 2.1.2). Maps should show how project details relate to stream conditions appearing on the habitat area map(s) (Task 2.2.5).

There should also be a description of:

- Any ongoing activities that will be conducted at the site after construction is complete.
- Any ongoing activities that will affect adjacent areas, including, but not necessarily limited to, increases in traffic, stormwater runoff from the site, and noise, and changes air quality.

2.3.2 Construction Process

At a minimum, the description of the construction methods should cover the following points:

- Land clearance (areas to be cleared and native vegetation that will be removed)
- Any work in-water, including a description of the methods and materials used
- Grading and filling
- Stormwater management measures to be taken during construction
- Utility installation (including any on-site wastewater treatment)
- Methods and techniques for construction of structures, including buildings, roads,

bridges, paved areas, retaining walls, shoreline modifications, and types of equipment to be used

- Construction phasing and anticipated construction timing
- Mobilization and staging plans
- Temporary construction access and staging areas

Maps and a timeline should be included to show where and when each activity will occur.

2.3.3 Protection Measures

There are several federal, state, and local regulatory requirements that require development projects to include measures that avoid, minimize, replace, or compensate for negative effects on populations or habitat functions due to project impacts. The applicant may propose additional measures. The habitat assessment must list the protective measures that will be implemented and clarify which are required and which are recommended. All required and recommended measures should be described. They could include, but are not necessarily limited to, the examples below:

- Preserving a setback area from any disturbances, or any other measures that avoid negative impacts on ESA-listed species or their habitats.
- Drainage/erosion control plans to be implemented during construction.
- Post-construction stormwater and erosion control plans.
- Use of low impact development techniques (which may eliminate or reduce runoff from areas to be developed).
- Any other measures that minimize negative impacts on ESA-listed species or their habitats.
- Actions to implement wetland mitigation plans.
- Any other measures proposed to reduce potential negative impacts during or after construction is complete, such as sedimentation basins, should be included and described as part of the project design and included in the project timeline.
- Compensatory storage provisions to replace lost floodplain storage[1] that demonstrate that they will not potentially strand fish.
- Any other forms of on-site or off-site compensation for degradation of habitat functions that support ESA-listed species.
- A description of any adaptive management program that will be utilized. This should

[1] Compensatory floodplain storage requirements are included in Section 7.6 of the Model Ordinance. This section requires that compensatory storage areas must be graded and vegetated to allow fish passage during flood events without creating fish stranding sites. Areas of compensatory flood storage should be designed to create floodplain habitat whenever feasible. Compensatory storage should not be used in areas prone to avulsions because lowering floodplain elevations or digging pits in these areas may increase the probability of an avulsion.

include, but not necessarily be limited to, a description of what monitoring would be conducted to track both implementation and effectiveness of mitigation measures, what would trigger adaptive measures, what those measures would be, and what method will be used to determine if they are sufficient and successful.

Adaptive management refers to a structured, iterative process intended to enable decision-making under conditions that include some uncertainty. The goal is to reduce that uncertainty over time by monitoring project site conditions before, during, and after construction, as well as the effectiveness of project design elements and mitigation measures. Possible components of an adaptive management plan include, but are not necessarily limited to, the following topics.

- How monitoring and resultant possible changes in project management (e.g., variations in mitigation measures) are based on spatial and temporal scales of analysis that are appropriate for the project in question, and how the basis for those scales is explained. This includes the location(s), duration, and frequency of monitoring.
- Why the variables selected for monitoring are appropriate and practical to track project impacts and the effectiveness of best management practices and mitigation measures.
- How monitoring results can and will be used in a direct way to decide what, if any, changes need to be made to achieve the desired future condition for the project. For many projects the desired future condition is obvious and can be easily stated. For more complex projects, the minimum parameters needed to adequately define the desired future condition will need to be determined and clearly described.
- How adaptive changes to the project would be based on existing best management practices and best available science to the greatest extent possible.

2.4 Step 4. Assess the Environmental Effects

The habitat assessment must analyze the direct and indirect effects of the proposed action on ESA-listed species and their aquatic, riparian, and floodplain habitat areas identified in Step 2, as well as the cumulative effects of future actions that are reasonably certain to occur. Primary factors to be considered in the assessment include, but are not necessarily limited to, the following considerations:

- The proximity of the action to individuals of the species present, habitat management units, or designated critical habitat units. This includes assessing the likelihood of measurable or observable impacts on fish or their designated critical habitats based on the relative location(s) of the action and nearby populations and habitats. For example, habitats located well downstream of an action that is expected to deliver significant volumes of sediment to a stream near the project site may still be measurably impacted

if those sediments may be routed (transported) downstream to areas of concern. The appropriate temporal and spatial scales of analysis will vary by the variables of concern and nature of the project and must be described in the assessment.

- The spatial distribution of an action over one or more action areas or sub-watersheds. The analysis should consider the accumulated effects of impacts in multiple locations and/or cumulative effects due to the combination of project effects added to the effects of other nearby, reasonably foreseeable future, non-federal actions.
- The timing of the proposed action relative to sensitive periods of the lifecycles of any potentially impacted ESA-listed species, and how that timing may result in negative impacts.
- The nature, scale, scope, and duration of the effects of the proposed action on the sub-population size, growth and survival, life cycle, diversity, isolation, and genetic integrity of ESA-listed species that could potentially be affected. Assessments should include as much information as is needed to adequately describe these population variables. In some cases, there may be little or no potential for adverse effects with respect to these variables, so relatively little discussion will be needed.
- The nature, scale, scope, and duration of the effects of the proposed action on the PCEs of any designated critical habitat, including any direct, indirect, interdependent, interrelated, or cumulative effects. In freshwater systems, PCEs generally include adequate water quality, water quantity, and substrate (free of fine sediments) for spawning, incubation, and larval development, floodplain connectivity for rearing, and stream channels free of man-made obstructions (obstructions may include physical, water temperature, or chemical barriers). The habitat assessments should include as much information as is needed to adequately estimate potential effects on these habitat variables. In some cases, there may be little or no potential for adverse effects on these variables, so relatively little discussion will be needed.
- There are three potential categories of effect on designated critical habitat that relate to the duration of the effect: 1) a short-term events where effects reduce to negligible levels soon after construction activities cease; 2) actions that may result in sustained long-term negative effects that are measurable or observable after the proposed action is completed; and 3) actions that cause permanent changes, resulting in a new threshold (condition) for some population or habitat functions of an a ESA-listed species and/or its critical habitat. Note that ‘Short-term’ effects will never persist more than one year beyond the duration of construction duration (e.g., removal of native vegetation due to construction that is replaced within one year), and in the case of significant inputs of sediment or pollutants, may not persist for more than a few hours to a few days at most.
- The frequency of any negative impacts due to the proposed action, described as the mean number of events per an appropriate time basis for the proposed action. This rate must then be compared against best available data on the estimated recovery rates of

any potentially affected species to assess how those species would likely be impacted by multiple disturbances (if such occurs). The duration of each event may vary. A recurring event of short duration will in some cases result in a smaller net impact than a single event of a much longer duration, but the opposite may also be true depending on the nature of the disturbance.

- The severity of any negative effects on ESA-listed fish or their designated critical habitats that may potentially occur due to the actions of the proposed project. In this context severity is not analogous to intensity or scale, but it is closely related. With a "severe disturbance," affected fish would take a longer time to recover, due to both the intensity of effects as well as the cumulative effects of the other variables described above.

2.4.1 Types of Environmental Effects

The References and Resources section at the end of this document lists resources that have additional guidance for the assessment of environmental effects. The habitat assessment should assess direct, indirect, and cumulative effects.

Direct effects: According to ESA rules and regulations, direct effects occur at or very close to the time of the action itself. Examples include, but are not limited to: construction noise disturbance, loss of habitat, or sedimentation that results from the construction activity. Direct effects include the effects of interrelated actions. Such actions are part of the proposed action and depend on the proposed action for their justification. Direct effects also include interdependent actions, which are activities that have no independent utility apart from the action under consideration. Neither interdependent nor interrelated actions would occur 'but for' the implementation of the proposed action.

The discussion of direct effects must include information on the temporal and spatial limits of the effects, species tolerances, severity of effect, mortality, and other forms of take (including harm) and expected habitat loss as a result of the proposed action. Identification of the appropriate estimated temporal and spatial scales of potential impacts are key to assessing environmental consequences. It is recommended that a table or list of appropriate scales for each pertinent issue (e.g., possible erosion and delivery of sediments to stream channels, water pollutants, changes in instream or riparian habitat, changes in hydraulics, etc.) be created to document appropriate scales of analysis for the nature and location of the proposed action. Habitat assessments only need to address those habitat functions and processes that the project has the potential to affect, while also explaining (as briefly as is practicable) why those are the only functions that may be impacted.

The direct impacts a project might have on a habitat area include, but are not limited to:

- Permanent clearing and grading of any habitat area
- Temporary clearing and grading of any habitat area during construction
- Permanent structures, pavements, etc., constructed within or placed within a habitat

area

- Modification of a stream channel or side channel, including bank stabilization measures and removal or changes to large woody debris (other than stream restoration efforts)
- Diversion of water that will change the hydrologic or sediment regime in the project action area

Indirect effects: Indirect effects are also caused by or result from the proposed action; however, they are likely to occur later in time. They may occur outside of the area directly affected by the action. Indirect impacts include, but are not limited to:

- Disrupting high or low stream flows, including impacts from stormwater runoff
- Contributing to sedimentation that fills in substrate
- Blocking a corridor that connects habitat areas
- Increases in water temperature or degradation of chemical or biologic water quality parameters through removal of riparian vegetation or other actions
- Disturbance of riparian vegetation (for example, clearing vegetation to the edge of a forested riparian area)
- Moving or removing large woody debris
- Destabilizing banks or altering natural lateral or vertical channel migration or channel forming processes
- Degrading wetland areas through disturbance of adjacent vegetation or modification of hydrology

Cumulative effects: Under the National Environmental Policy Act (NEPA) cumulative effects include the lingering effects of past and current actions (as depicted in the environmental baseline) that overlap in time and space with the proposed action, as well as estimates of the effects of future state, federal, tribal, local, or private actions that are reasonably certain to occur in the action area. However, under the ESA's distinct definition, cumulative effects include the effects of foreseeable future state, tribal, local, or private actions that are reasonably certain to occur in the project action area, but federal actions (i.e. actions permitted or partially funded by one or more federal agencies) are not part of the assessment nor are any past projects.

Project assessment cannot be segmented under either NEPA or ESA. It is not permitted to break the project down into small segments that may have low levels of impacts when considered separately. The entire scope of the direct, indirect, interdependent, and interrelated actions must be considered, including any possible lingering effects that may overlap with other reasonably foreseeable projects that could result in cumulative effects in the area(s) defined for analysis.

Permit officials are required to review the cumulative effects of all projects when the proposed action has the potential to produce any measurable or observable negative effects. The cumulative effects section should not simply be a list of other projects. It must in some manner describe the estimated accumulated impacts of future projects that are reasonably certain to occur, superimposed upon the baseline of current conditions and the expected impacts of the proposed action.

2.4.2 Report Format

There is no single required format for a NFIP habitat assessment, but such assessments must contain sufficient information and analysis to fully describe the impacts of the proposed action on ESA-listed species and their habitats. Similarly, neither NMFS nor USFWS (often jointly referred to as the 'Services') requires a specific format that biological assessments must follow. The main reference that the Services refer to and recommend applicants fully comply with is the Consultation Handbook (NMFS, USFWS 1998). Endangered Species Consultation Handbook (noaa.gov)

The Handbook is a large document that includes chapters and appendices that stress the contents (versus format) needed in a biological assessment, along with examples of such assessments. However, there are also several examples of formats sometimes employed by various agencies that may be helpful for jurisdictions to reference as they can supplement the recommendations in this guidance. One format often used in the Pacific Northwest is the Matrix of Pathways and Indicators (NMFS 1996 and USFWS 1998). This approach assesses both the current condition and the estimated effect of the proposed action on 18 'indicators' of population and habitat conditions that fall under six broader 'pathway' categories. This approach is useful because it breaks down the assessment into a repeatable, manageable number of specific topics.

The only significant difference between the NMFS and USFWS versions is that the suggested thresholds for when the current condition of an indicator is 'properly functioning', 'at risk', or 'not properly functioning' varies between the Services. The narrative for the matrices emphasizes that these specific threshold metrics do not need to be used and can be replaced by other metrics that are more appropriate for the watershed in question, if the deviation can be explained.

The outline below is a variation on the U.S. Army Corps of Engineers (USACE) Biological Assessment Template guidance regarding how to describe the effects of a proposed action in a biological assessment. It is included in the Endangered Species Section of USACE Permit Guidebook online resource at: http://www.nws.usace.army.mil/Missions/CivilWorks/Regulatory/PermitGuidebook.aspx. All the components of this USACE outline must be covered in some manner, but the format may vary.

A. Direct effects
    1. First PCE (e.g., freshwater spawning sites)
    2. Second PCE (e.g., freshwater rearing sites)

3. Third PCE (e.g., freshwater migration corridors)
4. Additional PCEs as appropriate
5. Essential Fish Habitat designated by the National Marine Fisheries Service
6. Fish and Wildlife Habitat Conservation Areas
7. Vegetation communities and habitat structures
8. Water quality
9. Water quantity, including flood and low flow depths, volumes, and velocities
10. The channel's planform pattern and migration processes
11. Spawning substrate, if applicable
12. Floodplain refugia, if applicable

B. Indirect effects - see the list on the previous pages of this document and include consideration of indirect effects with respect to items A.1 through A.12, above, that are applicable to the proposed project
C. Effects from interdependent and interrelated actions
D. Cumulative Effects
E. Effects determinations – see following section
F. Summary

2.4.3 No Net Loss Determination

Actions in the SFHA of the implementation plan area will have a May Affect -- Not Likely to Adversely Affect (NLAA) determination. However, the RPAs set forth in the 2016 BiOp and 2017 errata allow for compensatory mitigation of adverse effects within the SFHA through abidance with no net loss standards. No net loss is a standard where adverse impacts must be avoided or offset through mitigation so that there is no net change in function from the condition when development begins. The no net loss standards ensure that the implementation of the NFIP avoids jeopardy of listed species and adverse modification of habitat, including essential fish habitat (EFH) under the jurisdiction of NMFS within the plan area. They apply to three floodplain functions (i.e., floodplain storage, water quality, and riparian vegetation) essential to the survival of the 16 ESA-listed fish species and Southern Resident killer whale in the plan area.

2.4.4 Preparing the Mitigation Plan

The following sections (Steps 5 and 6) provide guidance on preparing a mitigation plan, including reference to any other pertinent habitat-specific restoration and mitigation guidance materials developed for the area under consideration. The final objective of floodplain habitat mitigation is to ensure that there is no adverse effect on quality or quantity of natural habitat functions and processes within the Special Flood Hazard Area through no net loss standards. Step 6, Task 2.6.1

of this guidance provides guidance on mitigation objectives to achieve no net loss, including specific requirements for mitigation within riparian buffer zones and through the remainder of the SFHA.

For many development proposals, the permit conditions and mitigation actions required to meet other local and state permit requirements may also provide sufficient mitigation for the impacts identified through Step 4 of this guidance. In such instances, permit conditions and required mitigation actions may overlap to serve as mitigation for impacts on floodplain habitats, as required by the local floodplain management ordinance. However, the conditions and mitigation proposed, must be sufficient to mitigate for all floodplain habitat impacts, in order to meet the objective of no adverse effect on habitat for ESA-listed species.

2.5 Step 5. Review Mitigation Alternatives (Mitigation Sequencing)

There are three major types of mitigation approaches to rectify an adverse effect. In descending order of preference and effectiveness they are: avoidance, minimization, and mitigation. This mitigation sequence hierarchy requires minimization of those impacts that can't be avoided and directs that any impacts remaining after taking steps to minimize shall be fully mitigated. On-site, in-kind compensation is preferred over off-site and/or out-of-kind compensation. The necessity for use of the latter must be explained and justified. Successful mitigation is dependent upon adequate monitoring of both the actual (versus planned) implementation of mitigation measures as well as the effectiveness of those measures to accomplish the stated objectives in the Mitigation Plan (see Step 6 below). The results of that monitoring may trigger adaptive management to accomplish those goals.

2.5.1 Avoidance

Avoidance of adverse effects is the preferred approach. FEMA recommends that new land development actions remain outside of the SFHA. Avoidance prevents additional adverse effects on aquatic and riparian habitats, while also precluding any risks to public safety and property from increased frequency, duration, or magnitude of flooding that would possibly result from further development in the floodplain. Avoidance also largely eliminates the expense of adhering to no net loss within the SFHA. The permit applicant should strongly consider relocating or redesigning proposed projects to minimize the impacts on floodplain habitat functions and the corresponding need for a mitigation plan.

Communities should consider disincentivizing development within the floodplain. Many communities currently use a variety of strategies to encourage conservation of sensitive areas by allowing for development at a more intense level in other areas. These measures are usually implemented through provisions of a zoning ordinance or separate development regulations. Here are three incentives for floodplain conservation that some jurisdictions use:

1. Providing density incentives to individual property owners: A density incentive or

density credit system would allow specified land uses to occur at a more intense level within the portion of a parcel outside of the floodplain as compensation for conservation of flood-prone areas within the parcel. For example, if a 20-acre parcel is zoned for one acre lots and half of the parcel is in the floodplain, the community might consider allowing the ten "dry" acres to be developed with half acre lots, allowing the developer to still construct 20 homes. This would allow for a higher density of development in a portion of the property and would require the remaining, high-habitat-value floodplain to be conserved as a dedicated tract. This strategy is similar to the approach of clustering development, which is provided as a case study in Figure 6-3 of the FEMA 480 manual "Floodplain Management Requirements" and is often used in planned unit developments. Under either the density incentive or density credit approach, the overall project does not exceed the development density allowed by the zoning district.

2. Transfer of development rights: Transfer of development rights (TDR) programs allow for the transfer of development density from one parcel of land (with some conservation value, such as a floodplain or wetland) to another parcel or area that is planned for higher density development. Implementation and administration of TDR systems has proven challenging in many circumstances due to the required coordination in establishing density receiving and density giving areas and the required negotiation to set density credit values. However, a community, regional, or watershed-based TDR system may be a successful strategy for floodplain avoidance.
3. Tax relief for conservation lands: Tax relief is a financial incentive proven to help discourage development of sensitive lands. Such systems could provide an additional venue to encourage conservation of floodplain lands. However, tax relief systems generally do not provide permanent protection for natural resources as they often are terminated when the property ownership transfers.

2.5.2 Minimization

If the entire project cannot avoid some development within the SFHA, it may be able to minimize the physical area and magnitude of impacts on the three floodplain functions. Some ideas for minimizing impacts include:

- Elevating structures in the SFHA on posts and piers to reduce the amount of fill/structure volume below the BFE.
- Reducing the amount of new impervious surface and using pervious surfaces where possible.
- Reducing the number of trees with a dbh of 6 inches or larger to be removed.

Many adverse effects result from degradation of natural processes or functions caused by actions during the construction period. Some best management practices to avoid these types of problems include, but are not necessarily limited to:

- Perform all work in dry weather and/or during the dry season.
- Incorporate erosion and sedimentation control measures.
- Use vegetable oil-based hydraulic fluids in all equipment working in water.
- Prepare and train crews on a spill prevention and pollution control plan and require that all equipment needed to contain a possible spill is available on-site before construction activities begin.
- Store, stage, and refuel equipment outside the riparian buffer zone.
- Inspect equipment daily for leaks.
- Time specific phases of work to occur during "species work windows," when the species are not present or will not be affected.

2.5.3 Mitigation

Mitigation must be conducted for any loss to floodplain storage, water quality, and riparian vegetation in the SFHA. This is commonly measured through an increase in fill or structures below the BFE, an increase in impervious surfaces, and the removal of trees 6 inches dbh or higher. Mitigation may include both natural methods (e.g., replanting of trees) or engineered methods (e.g., green infrastructure) depending on the floodplain function impacted.

Mitigation is recommended to occur on the same site and reach as which the impact occurs. Mitigation that does not occur within the same reach as where impacts occurred is subject to higher ratios that increase mitigation required to achieve no net loss. Mitigation must occur within the same watershed (i.e., within the same 10-digit hydrologic unit code area) and the same jurisdictional boundaries as the impact. For communities within the plan area of Oregon's BiOp, FEMA requires that all development in the SFHA to be mitigated to achieve no net loss of the natural floodplain functions of floodplain storage, water quality, and vegetation through the ratios below.

Basic Mitigate Ratios	Undeveloped Space (ft^3)	Pervious Surface (ft^2)	Trees (6"<dbh≤20")	Trees (20"<dbh≤39")	Trees (39"<dbh)
Floodway and/or RBZ	2:1	1:1	3:1	5:1	6:1
RBZ-Fringe	1.5:1	1:1	2:1	4:1	5:1
Mitigation multipliers					
Mitigation onsite to Mitigation offsite, same reach	100%	100%	100%	100%	100%
Mitigation onsite to Mitigation offsite, different reach, same watershed (5^{th})	200%	200%	200%	200%	200%

Table 2: Mitigation Ratios Required to Achieve No Net Loss

Mitigation multipliers of 100% result in the required mitigation occurring at the same value described by the ratios above, while multipliers of 200% result in the required mitigation being doubled.

- For example, if only 500 ft^2 of the total 1000 ft^2 of required pervious surface mitigation can be conducted onsite and in the same reach, the remaining 500 ft^2 of required pervious surface mitigation occurring offsite at a different reach would double as a result of the 200% multiplier.

In instances where pervious surface replacement is not possible, mitigation can be achieved through infiltration of stormwater using low impact development (LID) or green infrastructure practices (e.g., rain gardens, bioswales). Or, where pervious surface replacement is not possible, due to impermeable soils or high-water tables, then through stormwater detention, to ensure no increase in peak volume of flow, followed by treatment to minimize pollutant loading.

In addition to higher mitigation ratios established by the no net loss standards, development in the RBZ is subject to the following conditions and performance standards:

- Habitat restoration activities in the RBZ are considered self-mitigating and are not subject to the no net loss standards described above.
- Functional-dependent uses are subject to the no net loss standards for development in the RBZ. Ancillary features in the RBZ (including manufacturing support facilities) are subject to the beneficial gain standard in addition to no net loss standards.
- Any other use of the RBZ requires a greater offset to achieve no net loss of floodplain functions, on top of the no net loss standards described above, through the beneficial

gain standard.

- Under FEMA's beneficial gain standard, an area within the same reach of the project and equivalent to 5% of the total project area within the RBZ, shall be planted with native herbaceous and shrub vegetation and designated as open space.

2.5.4 Select the Best Approach

Selecting the best mitigation approach for the proposed project is an iterative process. Avoidance should be considered first as the preferred choice. If work must be done in a sensitive area, the project proponent should consider the costs of restoration and compensation. If those costs are too high, then avoidance should be reconsidered.

Selecting the best mitigation approach should be done in conjunction with the local, state, and federal regulatory offices for technical assistance regarding the discussion of preliminary project designs and assessment of environmental effects. Assistance from these sources, as well as possible review and assistance from neighboring tribal representatives, can greatly aid in designing an appropriate sequence of mitigation of actions. Early and periodic meetings with appropriate regulatory agencies will increase the likelihood that a mitigation plan will meet all regulatory requirements and can reduce total project costs and the probability of schedule delays during the approval process.

2.6 Step 6. Prepare the Mitigation Plan

2.6.1 Objective

As noted in Step 5, the objective of the mitigation plan is to assure that actions are taken to sufficiently and appropriately mitigate for negative impacts on ESA-listed populations and the natural functions and processes that support their habitats. The mitigation plan needs to provide sufficient detail to demonstrate how this will be done, using avoidance, minimization, replacement (rectify), and/or compensatory measures.

For all mitigation, the final plan (construction level detail) should not be drafted until the local permitting office(s), in coordination with state and federal agencies, as necessary, has agreed that the conceptual mitigation plan would meet the objectives. Coordination with local permitting officers will ensure that the scope of the planned mitigation will be commensurate with the scale of the impacts and will meet the objectives identified above.

2.6.2 Format

Many communities have established formats that they have used to document mitigation plans within environmental or biological assessments. These formats are likely adequate for purposes of the NFIP. In Oregon, refer to Chapter 3 of *Wetland Mitigation Banking Guidebook for Oregon: Approval Process and Documentation*. For detailed guidelines regarding what to include in a mitigation plan.

Here is an example mitigation plan outline:

1. Introduction, background, objectives
2. The project area, with map (taken from Step 1 of the assessment)
3. The project area's habitat, with map (taken from Step 2 of the assessment)
4. Project description (taken from Step 3 of the assessment)
5. Impact on habitat (taken from Step 4 of the assessment)
6. Alternatives considered (taken from Step 5, this should note why some alternatives, especially avoidance, were not selected)
7. Mitigation concept (an overall explanation of the measures)
8. Construction measures
    a. Grading plan, with existing and post-construction topographical maps
    b. Construction methods (e.g. equipment to be used)
    c. Construction schedule
9. Permanent measures
    a. Surface water management
    b. Vegetation plan
    c. Permanent buffer areas
    d. Etc.
10. Post-construction monitoring and maintenance plan
11. Bond arrangements

2.6.3 Minimum Standards

At a minimum, the mitigation plan's components 7, 8, 9, 10, and 11 of the outline above, should be consistent with the mitigation guidance requirements of the Army Corps of Engineers, and Chapter 3 of *Wetland Mitigation Banking Guidebook for Oregon: Approval Process and Documentation*. In Oregon, mitigation plans must also be consistent with the community's critical areas regulations or Goal 5 implementation plans. If there are inconsistencies between these requirements, the standards that provide the highest level of environmental protection and the greatest likelihood of mitigation success take precedence.

3.0 Reviewing Habitat Assessments and Mitigation Plans

This section provides guidance for the local permit official. The following strategies may be used to ensure that habitat assessments and mitigation plans are prepared by a qualified individual or company and meet the intent of the Model Ordinance and this guidance.

Establishing a List of Qualified Professionals: The community could provide a list of qualified professionals who have experience in the area to developers and landowners. Another strategy for ensuring that qualified professionals are used could include developing qualification criteria for authors of habitat assessments and mitigation plans; see the box below for an example of qualifying criteria.

Public Comment Period: After habitat assessments and mitigation plans are submitted, the permitting official may require a public comment period before assessment conclusions and/or mitigation plans are approved. This approach could include a requirement that a public notice be posted in a publication of record. The intent of the public comment period would be to ensure that interested third parties would have ample opportunity to review and comment on proposed projects. This could alert the local permit official to issues or impacts not adequately addressed by an assessment or mitigation plan.

Third Party Review: The community may establish a system of third-party review(s) by qualified consultants or agencies. Third party review is frequently implemented by local jurisdictions for other environmental permits and approvals. The cost of third-party review could be passed on to the applicant. This may require establishment of a third-party review system in the local ordinance. Establishing a system of third party review could augment internal review within the local jurisdiction. Another option that may work for certain jurisdictions could be formalizing a system of internal review where qualified staff would determine the adequacy of submitted materials.

Example Qualification Criteria

The following criteria could be used by a community as part (likely not all) of the minimal criteria needed to conduct habitat assessment to ensure assessments and mitigation plans are prepared by a qualified consultant:

> *Reports and plans shall be prepared by persons who have a minimum of a bachelor's degree in wildlife or fisheries habitat biology, or a related degree in a biological field from an accredited college or university with a minimum of four years' experience as a practicing fish or wildlife habitat biologist.*

Qualifying criteria should include further specifications for all wildlife, fisheries, habitat, and environmental professionals that could be relied upon to address the broad array of habitats and conditions that occur in flood-prone areas.

3.1 Review Checklists

Permit staff could develop a review checklist for assessment and mitigation plan submittals. A checklist would likely need to be tailored to specific types of development activity due to the site

and habitat-specific nature of habitat assessments and mitigation plans. See the worksheet attached to this guidance document for an example of a review checklist.

4.0 References and Resources

4.1 Federal and State Regulations and Guidance

National Flood Insurance Program- Endangered Species Act Integration in Oregon, FEMA Region 10. https://www.fema.gov/about/organization/region-10/oregon/nfip-esa-integration

CRS Credit for Habitat Protection, FEMA, 2010. http://training.fema.gov/EMIWeb/CRS/

Endangered Species Consultation Handbook, National Marine Fisheries Service, 1998. https://media.fisheries.noaa.gov/dam-migration/esa_section7_handbook_1998_opr5.pdf

Endangered Species Act (ESA) Section 7(a)(2) Jeopardy and Adverse Modification of Critical Habitat Biological Opinion, ESA Section 7(a)(2) "Not Likely to Adversely Affect" Determination, and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Response for the Implementation of the National Flood Insurance Program in the State of Oregon. April 14, 2016. https://media.fisheries.noaa.gov/2022-01/2016-04-14-fema-nfip-nwr-2011-3197.pdf

Mitigation guidance and JPA permit information, Oregon State Department of Lands. http://www.oregon.gov/DSL/WW/Pages/Permits.aspx

National Flood Insurance Program Floodplain Management Requirements A Study Guide & Desk Reference for Local Officials, FEMA 480, 2005. https://library.floods.org/cgi-bin/koha/opac-detail.pl?biblionumber=5219

4.2 Maps and Databases

Critical habitat maps:

National Marine Fisheries Service: http://www.nmfs.noaa.gov/pr/species/criticalhabitat.htm

U.S. Fish and Wildlife Service: http://criticalhabitat.fws.gov/

Forest Water Typing System, Oregon State Water Resources Department. http://www.oregon.gov/ODF/Documents/WorkingForests/WaterClassificationTechNote1.pdf

Threatened and Endangered Species List, Oregon Department of fish and Wildlife. http://www.dfw.state.or.us/wildlife/diversity/species/threatened_endangered_candidate_list.asp

Oregon Natural Heritage Program, Oregon State University Institute for Natural Resources. http://inr.oregonstate.edu/orbic

Washington and Oregon State Soil Survey data, see the USDA Natural Resource Conservation Service maps or online *Web Soil Survey*. http://websoilsurvey.nrcs.usda.gov/app/

Regional Guidance for Hydrologic and Hydraulic Studies in Support of the Model Ordinance for Floodplain Management under the National Flood Insurance Program and the Endangered Species Act, FEMA Region 10, 2010. https://www.fema.gov/pdf/about/regions/regionx/draft_handh_guide.pdf

4.3 Water Quality and Quantity

Section 401 Water Quality Certification: Post-Construction Stormwater Management Plan Submission Guidelines, State of Oregon Department of Environmental Quality, 2016, https://www.oregon.gov/deq/wq/wqpermits/Pages/Section-401.aspx

Standards for surface water quality in Oregon State, Department of Environmental Quality. http://www.oregon.gov/deq/wq/Pages/WQ-Standards.aspx

Routine Road Maintenance | Water Quality and Habitat Guide, Best Management Practices, State of Oregon Department of Transportation, 2020. http://www.oregon.gov/ODOT/GeoEnvironmental/Pages/Stormwater.aspx

Oregon State Water Quality Assessment, Department of Environmental Quality. http://www.oregon.gov/deq/wq/Pages/WQ-Standards.aspx

Water level data:

- U.S. Geological Survey: http://wa.water.usgs.gov/data/

4.4 Mitigation

Engineering with Nature – Alternative Techniques to Riprap Bank Stabilization, FEMA Region 10, 2009. https://www.fema.gov/pdf/about/regions/regionx/Engineering_With_Nature_Web.pdf

Habitat Conservation Planning Handbook, US Fish & Wildlife Service and National Marine Fisheries Service, 1996. https://www.fws.gov/library/collections/habitat-conservation-planning-handbook

Pu*rpose of Mitigation and Mitigation Steps in Oregon State,* Oregon State Department of State Lands. http://www.oregon.gov/dsl/WW/Pages/Mitigation.aspx

Wetland Mitigation Banking Guidebook for Oregon: Approval Process and Documentation, Oregon Division of State Lands, 2000, http://oregonexplorer.info/data_files/OE_topic/wetlands/documents/mitbank_guidebk.pdf

A Guide to the Removal-Fill Permit Process: Compensatory Mitigation Planning, Oregon Division of State Lands, 2016, https://www.oregon.gov/dsl/wetlands-waters/Documents/Removal_Fill_Guide.pdf

Oregon Aquatic Habitat: Restoration and Enhancement Guide, Oregon Plan for Salmon and Watersheds, 1999, https://digital.osl.state.or.us/islandora/object/osl:16552

4.5 Additional References

Invasive species information: Oregon Department of Agriculture. http://www.oregon.gov/ODA/programs/Weeds/Pages/AboutWeeds.aspx

Low Impact Development, Oregon Environmental Council. http://www.oeconline.org/tag/low-impact-development/