



**CITY OF EDGEWOOD
COUNCIL STUDY SESSION AGENDA**

Tues., July 3, 2018 – 7:00 PM ♦ City Hall – 2224 104th Avenue East ♦ Edgewood, WA

1. CALL TO ORDER

Pledge of Allegiance & Roll Call

2. COUNCIL BUSINESS

- A. Review/Discussion - Planning Commission Reappointments/Interviews*
- B. Review/Discussion - Development Review*
- C. Review/Discussion - Ordinance - Critical Areas*
- D. Review/Discussion - SWMP Update (Schedule/Status)*
- E. Review/Discussion - Resolution – Greg Pile Goat Agreement*
- F. Review/Discussion - 2017 Annual Financial Report*
- G. Review/Discussion - Budget Amendment No. 3*

3. OTHER COUNCIL ITEMS

4. ADJOURN

Study Sessions are meetings for Council to review upcoming and pertinent business of the City, no action is taken by the City Council. Study Sessions are open to the public, but public input is reserved for the regular Council meetings



City Of Edgewood Council Agenda Summary Sheet

SUBJECT: Interviews for Planning Commission to fill two terms that ended on June 30, 2018.		Agenda Item #:		2A
		For Agenda of:		July 3, 2018
		Department:		Comm. Dev.
		Prepared by:		Darren Groth
ATTACHMENTS (list): ☒ PC Membership Roster updated per June 26, 2018 Confirmations				
Review of Materials:				
Mayor, Daryl Eidinger	☐	Expenditure Required:	<u>\$0</u>	
Asst. City Administrator, Dave Gray	☐	Amount Budgeted:	<u>\$0</u>	
City Attorney, Carol Morris	☐	Appropriation Required:	<u>\$0</u>	
City Clerk, Rachel Pitzel	☐	Timeline: N/A		
Community Development Director, Darren Groth	☒			
Public Works, Jeremy Metzler	☐	BARS:		
Fiscal Note/Consideration: N/A				
SUMMARY STATEMENT: In accordance with Section 2.30.020 of the Edgewood Municipal Code (EMC), appointment and reappointment to the Planning Commission shall follow the City Council Rules of Procedures. The Rules of Procedures require applications and interviews for each applicant. The City Council shall interview candidates in a panel format, with all candidates participating in the interview session concurrently. The Mayor shall call on each Council Member to ask questions. Upon completing the interviews, each Council Member will announce their candidate rankings and the City Clerk shall tally the rankings. The rankings shall be provided to the Council and shall be used by the Mayor for consideration in the appointment process. At the Mayor's discretion, the appointment process may take place at a regularly scheduled Council meeting or a special Council meeting following the interview session. The Mayor shall appoint or reappoint and the Council shall confirm or deny the appointments proposed by the Mayor. On June 26, 2018, City Council confirmed the mayoral appointments for the two candidates already interviewed to Planning Commission positions 1 and 3 (Position 1 Guillory and Position 3 Lowry) with terms ending June 30, 2020. City Council also confirmed the reappointed of Commissioner Pincas from Position 1 to Position 6 with her term still ending on June 30, 2019. The remaining three applicants for the Planning Commission were invited to interview during the July 3, 2018 City Council Study Session.				
COUNCIL COMMITTEE REVIEW AND RECOMMENDATION: N/A				
RECOMMENDED ACTION: Receive a briefing, hold a discussion, conduct interviews, and make a recommendation to the Mayor regarding the candidates seeking (re)appointment to Planning Commission (PC) Positions 2 and 7.				
ALTERNATIVES TO RECOMMENDED ACTION: 1) Fill the vacant positions with the current member and the candidate that accepted the interview request; or 2) Postpone filling the vacancies until all applicants are able to fit an interview into their schedule.				



**CITY OF EDGEWOOD
PLANNING COMMISSION ROSTER**

Revised 06/27/2018

Carly Guillory

Position 1 – *Term ending June 30, 2020*

Vacant – To be filled July 10

Position 2 - *Term ending June 30, 2020*

Lucy Lowry

Position 3 - *Term ending June 30, 2020*

Chair – *Term ending June 30, 2018**

Carrie Streepy

Position 4 - *Term ending June 30, 2019*

Sigmund Brudevold

Position 5 - *Term ending June 30, 2019*

Allison Pincas

Position 6 - *Term ending June 30, 2019*

Vacant – To be filled July 10

Position 7 - *Term ending June 30, 2019*

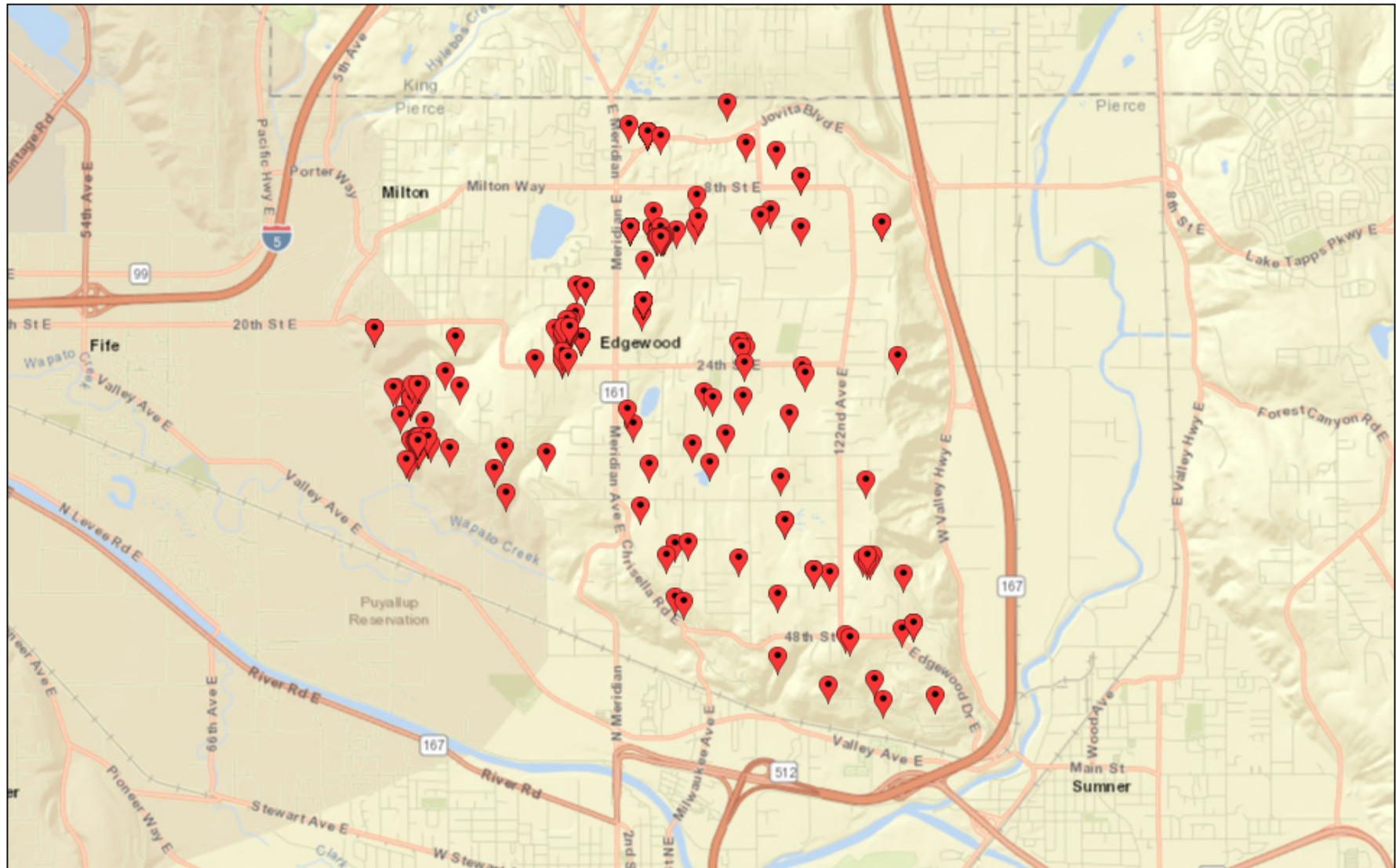
*Need to select new Chair and Vice-Chair during the July 9, 2018 meeting—both roles filled annually.



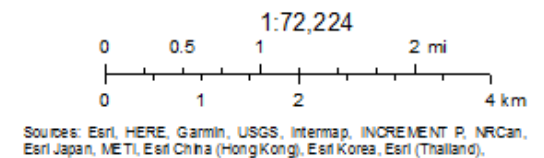
City Of Edgewood Council Agenda Summary Sheet

SUBJECT: Monthly Update Regarding Community Development Project and Permit Statuses.		Agenda Item #:		2B
		For Agenda of:		July 3, 2018
		Department:		Comm. Dev.
		Prepared by:		Darren Groth
ATTACHMENTS (list): ☒ Permit and Project Activity Map ☒ Ongoing Land Disturbing Projects ☒ May and June Permit Reports				
Review of Materials:				
Mayor, Daryl Eidinger	☐	Expenditure Required:	<u>\$0</u>	
Asst. City Administrator, Dave Gray	☐	Amount Budgeted:	<u>\$0</u>	
City Attorney, Carol Morris	☐	Appropriation Required:	<u>\$0</u>	
City Clerk, Rachel Pitzel	☐	Timeline: N/A		
Community Development Director, Darren Groth	☒			
Public Works, Jeremy Metzler	☐	BARS:		
Fiscal Note/Consideration: N/A				
SUMMARY STATEMENT: The City's Community Development Department (CDD) is entrusted by City Council, Edgewood citizens, and the State of Washington to provide growth management and development review, neighborhood preservation and revitalization, property inspection and maintenance, and other programs and business development services necessary to ensure the healthy, safety, and quality of life of Edgewood residents. To carry out these responsibilities, the CDD staff members perform numerous customer interactions, code interpretations, permitting functions, project reviews, on-site inspections, and multiple other functions. Several of these functions are easily presented to demonstrate development activity levels in Edgewood. This monthly agenda item was added to City Council's first Study Session meeting of each month to provide regular updates on land development actions occurring in Edgewood. Each month, the City Council will receive a permit and project activity map that shows a pin for each active permit engaged in some stage of the development process. In addition, a status report will be provided for ongoing land disturbing projects that will give details regarding the various land construction sites around the city. Finally, the included permit report will update the City Council on the permitting activity for the previous month.				
COUNCIL COMMITTEE REVIEW AND RECOMMENDATION: N/A				
RECOMMENDED ACTION: Receive a briefing, hold a discussion, and provide any direction to staff regarding the reporting of community development project and permit statuses.				

Permit and Project Activity Map



June 27, 2018



Ongoing Land Disturbing Projects

File Number	Project Name	Type	Status	Plan Approval
17-1099	Sheets Sport Court APPEAL	SW / Site Dev	PENDING	
18-1041	Curran Estates	Final Plat	PENDING	
18-1174	Robisnon/Boling Detached Garage	SFR	PENDING	
18-1201	Daffodil SP SFR's	SFR	PENDING	
18-1203	Kimpel Detached Addition	ADU	PENDING	
18-1204	Daffodil SP SFR	SFR	PENDING	
18-1205	Westridge SFR	SFR	PENDING	
18-1221	Westridge SFR's	SFR	PENDING	
18-1135	Hunter SFR	SFR	PENDING	
4532	Northwood Estates	Site Dev	PENDING	
4678	The Arbors	Site Dev	PENDING	
17-1488	The Learning Center	Site Dev	DEFICIENT	
18-1045	Berezniov Short Plat	Pre-Plat	DEFICIENT	
18-1012	Abel Short Plat	Pre-Plat	DEFICIENT	
18-1065	View Pointe Signs	Commercial	DEFICIENT	
18-1040	View Pointe RV Storage	Site Dev	DEFICIENT	
16-5623	Haymond C&G	SW / Site Dev	DEFICIENT	
17-1472	Gervais Short Plat	Site Dev	DEFICIENT	
17-1435	Volente Subdivision	Site Dev	DEFICIENT	
18-1130	Heart & Soul SP	Pre-Plat	DEFICIENT	
18-1129	Ankeman SFR	SFR	DEFICIENT	
18-1091	Ratsko SFR	SFR	DEFICIENT	
17-1527	Northwood Estates West	Site Dev	DEFICIENT	
18-1186	Worthen SP Amendment	Final Plat	APPROVED	6/18/2018
18-1187	Jovanovich Driveway (Maple Grove)	SFR	APPROVED	6/13/2018
18-1107	Morton SFR	SFR	APPROVED	6/7/2018
17-1532	Yurina-Collins Shared Access	CG	APPROVED	5/30/2018
18-1084	St. Ives SFR	SFR	APPROVED	5/21/2018
18-1142	Northwood Estates West Ph1 SFR's	SFR	APPROVED	5/18/2018
18-1151	Westridge SFR's	SFR	APPROVED	5/18/2018
18-1165	Westridge SFR	SFR	APPROVED	5/18/2018
18-1015	Pascolo Estates	Site Dev	APPROVED	5/17/2018
17-1303	Berezniov SFR (34th St E)	SFR	APPROVED	5/8/2018
17-1222	Kelley Clear & Grade	CG	APPROVED	5/7/2018
17-1093	North Edgewood Apartments	Site Dev	APPROVED	3/6/2018
17-1381	Northwood Elementary	Site Dev	APPROVED	2/23/2018
17-1246	Caliber SP	Site Dev	APPROVED	2/21/2018
17-1063	Lisitsyn Short Plat	Site Dev	APPROVED	10/17/2017
17-1373	Northwood Estates West	CG	APPROVED	10/9/2017
17-1173	Domus Townhomes PRD	Site Dev	APPROVED	8/28/2017
16-5695	Edgewood Heights	Site Dev	APPROVED	8/4/2017
17-1098	Maple Grove	Site Dev	APPROVED	7/31/2017
16-5745	Nicklaus Plat	Site Dev	APPROVED	6/5/2017
17-1130	Smith C&G (Old #5145)	SW / Site Dev	APPROVED	4/24/2017

May 2018

Number of Applications Received and Issued

Department	Received	Issued	YTD RECEIVED	YTD ISSUED
# of Building Permits	42	39	168	162
# of Planning Permits	7		30	
# of Public Works Permits	7	4	37	23

Inspections Completed

Department	# of Stops Made	# of Inspections	YTD # of Inspections
Public Works Inspections	48	139	667
Building Inspections	217	491	2435

Number of Inspections By Inspector

Inspector	# of Inspections
Dean	205
Gene	237
Cory	49
Taylor	139

June 2018 - * As of June 27, 2018

Number of Applications Received and Issued

Department	Received	Issued	YTD RECEIVED	YTD ISSUED
# of Building Permits	28	30	196	192
# of Planning Permits	4		34	
# of Public Works Permits	11	3	48	26

Inspections Completed

Department	# of Stops Made	# of Inspections	YTD # of Inspections
Public Works Inspections	39	81	748
Building Inspections	188	340	2775

Number of Inspections By Inspector

Inspector	# of Inspections
Dean	8
Gene	16
Cory	316
Taylor	81



City Of Edgewood Council Agenda Summary Sheet

SUBJECT: Ordinance 18-0513 Critical Areas Ordinance (CAO) Code Amendment		Agenda Item #: 2C	
		For Agenda of: July 3, 2018	
		Department: Comm. Dev.	
		Prepared by: Darren Groth	
ATTACHMENTS (list): ☒ Staff Report ☒ Initial Redlined Draft from ESA ☒ A. Nix Draft post Public Hearing ☒ A. Nix Draft Redlined ☒ A. Nix Draft Redlined – Clean ☒ Critical Areas Maps ☒ Draft Ordinance			
Review of Materials:			
Mayor, Daryl Eidinger	☐	Expenditure Required:	\$0
Asst. City Administrator, Dave Gray	☐	Amount Budgeted:	\$0
City Attorney, Carol Morris	☐	Appropriation Required:	\$0
City Clerk, Rachel Pitzel	☐	Timeline: N/A	
Community Development Director, Darren Groth	☒	BARS:	
Public Works, Jeremy Metzler	☐		
Fiscal Note/Consideration: N/A			
SUMMARY STATEMENT:			
For the past year, the City of Edgewood has been in the process of updating its Critical Areas Ordinance (CAO). After multiple staff changes; various public input opportunities; and multiple language changes for ease of reading, interpretation, and implementation; the draft code should be ready for adoption. The most recent language revision was made at the request of Mountain View-Edgewood (MTVE) water company and pertains to the definition of Wellhead Protection Area. This recent revision also resulted in an updated mapping exhibit for the Critical Aquifer Recharge Critical Area Map.			
COUNCIL COMMITTEE REVIEW AND RECOMMENDATION: On April 16, 2018, the Planning Commission held a second public hearing for the substantially modified draft code and recommended approval.			
RECOMMENDED ACTION: Forward the draft code to City Council's July 10, 2018 regular meeting for adoption.			

**CITY OF EDGEWOOD
STAFF REPORT**

STUDY SESSION AGENDA ITEM: Ordinance 18-0513 Critical Areas

Date: July 3, 2018

Discussion

The City of Edgewood contracted with Environmental Sciences Associates (ESA) to update its Critical Areas Ordinance (CAO) in accordance with the requirements of the Growth Management Act. ESA reviewed best available science regarding the City's critical areas and assisted the City with revisions to Edgewood Municipal Code (EMC) Title 14. The work ESA performed was completed within three tasks.

Under Task 1, ESA reviewed existing conditions, current critical area regulations, regulatory agency requirements and guidelines, and relevant best available science. ESA, with its team partners, developed recommendations for revising the CAO based on our review of best available science, our experience with other critical areas ordinances, and recent agency guidelines.

Task 2 charged ESA with a review and update to existing critical areas inventory mapping datasets, where information changed. These maps were updated using existing publicly-available data sources from the City, Pierce County, State of Washington (WDNR, WDFW and Ecology), and federal agencies. After City review and approval of the recommended code revisions developed in Task 1, ESA proposed revisions to the City's current CAO regulations. The final task, Task 3, was the initial redlined draft from ESA that is included as Exhibit 1.

The Planning Commission (PC) held a public hearing on the modified draft code on August 21, 2017. City staff incorporated the PC comments and refined the CAO draft for discussion during the October 17, 2017 City Council meeting. The refined CAO draft is attached as Exhibit 2 and served as the basis for City Council's public hearing on November 14, 2017. Once the lingering public comments and the input from City Council's hearing were incorporated into the drafted code, major modifications were necessary. The result of the major modifications led staff to request City Council to remand this item back to the Planning Commission for another public hearing.

On March 30, 2018, the City sent a copy of the latest draft code, both the redlined and clean drafts (Exhibits 3 and 4, respectively), to the Washington State Department of Commerce (DOC), as required by RCW 36.70A.106(1). On April 3, 2018, the DOC confirmed the City met the procedural requirements and processed the request with material ID # 24770.

On April 16, 2018, the PC held a public hearing on the updated draft. The ESA consultants, the Washington Department of Ecology, and the City Attorney Office all provided comments in conjunction with the PC hearing. Those comments and any received during the City Council hearing on May 8 will be incorporated into the final draft ordinance.

On May 8, 2018, the City Council held a public hearing on Ordinance 18-0513. Mayor Eidinger opened the public hearing at 7:03 p.m. and Community Development Director Groth gave an update on Ordinance No. 17-0513. After the update, Mayor Eidinger asked for public comments. One commenter, Colleen Wise, thanked staff for the great job on such a big project and had a question regarding the swales and not being considered in setbacks/buffer zones. Since no other speakers were present to offer input, Mayor Eidinger closed the public hearing at 7:08 p.m.

On May 15, 2018, during the City Council's study session, Community Development Director Darren Groth briefed Council on subject code amendment with an update regarding the differentiation between natural and artificial swales in response to the input received at the public hearing. After the introductory briefing, Mike Craig from Mt. View-Edgewood (MTVE) water added comments regarding the Critical Aquifer Recharge Map and zone of contribution. Mr. Craig asked for a map revision and definition update. Discussion took place and Mayor Eidinger noted an off-line discussion will take place between staff and MTVE to find a solution to the map and definition.

On May 29, 2018, MTVE and City staff met to discuss the map revisions and code language changes requested by MTVE. The discussion resulted in a change to the Critical Aquifer Recharge Map to include the zone of contribution and a definition change to Wellhead Protection Area.

CITY OF EDGEWOOD

STAFF REPORT

STUDY SESSION AGENDA ITEM: Ordinance 18-0513 Critical Areas

Date: July 3, 2018

Discussion

The City of Edgewood contracted with Environmental Sciences Associates (ESA) to update its Critical Areas Ordinance (CAO) in accordance with the requirements of the Growth Management Act. ESA reviewed best available science regarding the City's critical areas and assisted the City with revisions to Edgewood Municipal Code (EMC) Title 14. The work ESA performed was completed within three tasks.

Under Task 1, ESA reviewed existing conditions, current critical area regulations, regulatory agency requirements and guidelines, and relevant best available science. ESA, with its team partners, developed recommendations for revising the CAO based on our review of best available science, our experience with other critical areas ordinances, and recent agency guidelines.

Task 2 charged ESA with a review and update to existing critical areas inventory mapping datasets, where information changed. These maps were updated using existing publicly-available data sources from the City, Pierce County, State of Washington (WDNR, WDFW and Ecology), and federal agencies. After City review and approval of the recommended code revisions developed in Task 1, ESA proposed revisions to the City's current CAO regulations. The final task, Task 3, was the initial redlined draft from ESA that is included as Exhibit 1.

The Planning Commission (PC) held a public hearing on the modified draft code on August 21, 2017. City staff incorporated the PC comments and refined the CAO draft for discussion during the October 17, 2017 City Council meeting. The refined CAO draft is attached as Exhibit 2 and served as the basis for City Council's public hearing on November 14, 2017. Once the lingering public comments and the input from City Council's hearing were incorporated into the drafted code, major modifications were necessary. The result of the major modifications led staff to request City Council to remand this item back to the Planning Commission for another public hearing.

On March 30, 2018, the City sent a copy of the latest draft code, both the redlined and clean drafts (Exhibits 3 and 4, respectively), to the Washington State Department of Commerce (DOC), as required by RCW 36.70A.106(1). On April 3, 2018, the DOC confirmed the City met the procedural requirements and processed the request with material ID # 24770.

On April 16, 2018, the PC held a public hearing on the updated draft. The ESA consultants, the Washington Department of Ecology, and the City Attorney Office all provided comments in conjunction with the PC hearing. Those comments and any received during the City Council hearing on May 8 will be incorporated into the final draft ordinance.

On May 8, 2018, the City Council held a public hearing on Ordinance 18-0513. Mayor Eidinger opened the public hearing at 7:03 p.m. and Community Development Director Groth gave an update on Ordinance No. 17-0513. After the update, Mayor Eidinger asked for public comments. One commenter, Colleen Wise, thanked staff for the great job on such a big project and had a question regarding the swales and not being considered in setbacks/buffer zones. Since no other speakers were present to offer input, Mayor Eidinger closed the public hearing at 7:08 p.m.

On May 15, 2018, during the City Council's study session, Community Development Director Darren Groth briefed Council on subject code amendment with an update regarding the differentiation between natural and artificial swales in response to the input received at the public hearing. After the introductory briefing, Mike Craig from Mt. View-Edgewood (MTVE) water added comments regarding the Critical Aquifer Recharge Map and zone of contribution. Mr. Craig asked for a map revision and definition update. Discussion took place and Mayor Eidinger noted an off-line discussion will take place between staff and MTVE to find a solution to the map and definition.

On May 29, 2018, MTVE and City staff met to discuss the map revisions and code language changes requested by MTVE. The discussion resulted in a change to the Critical Aquifer Recharge Map to include the zone of contribution and a definition change to Wellhead Protection Area.

Title 14

CRITICAL AREAS

Chapters:

- 14.10 General Provisions**
- 14.20 Use and Activity Regulations**
- 14.30 Wetlands**
- 14.40 Critical Fish and Wildlife Habitat Areas**
- 14.50 Aquifer Recharge and Wellhead Protection Areas**
- 14.60 Volcanic Hazard Areas**
- 14.70 Flood Hazard Areas**
- 14.80 Landslide Hazard Areas**
- 14.90 Seismic (Earthquake) Hazard Areas**
- 14.110 Erosion Hazard Areas**
- 14.500 Natural Resource Lands**

Chapter 14.10
GENERAL PROVISIONS

Sections:

14.10.010 Authority.

~~14.10.020 Repeal.~~

~~14.10.025 Title.~~

14.10.030 Purpose.

14.10.040 Interpretation.

~~14.10.045 Best Available Science.~~

14.10.050 Applicability.

14.10.060 Definitions.

14.10.070 Administration.

~~14.10.075 Relationship to Other Regulations.~~

14.10.080 Critical area protective measures.

14.10.085 Variances to critical areas.

14.10.090 Reconsideration and appeal procedures.

14.10.100 Fees.

14.10.110 Compliance.

14.10.120 Warning and disclaimer of liability.

14.10.130 Severability.

14.10.135 Violation – Civil infraction.

14.10.140 Appendixes.

~~14.10.150 Figures.~~

14.10.010 Authority.

A. This title is established and adopted pursuant to the Growth Management Act (RCW 36.70A.060).

B. As provided herein, the director or his/her designee is given the authority to interpret and apply, and the responsibility to enforce this title to accomplish the stated purpose.

This title is established and adopted pursuant to:

A. Environmental policies and procedures for this title are established pursuant to Chapter 43.21C RCW, as amended and entitled the “State Environmental Policy Act” (SEPA), and Chapter 197-11 WAC, as amended and entitled “State Environmental Policy Act Rules”; and

B. The city adopts by reference WAC 197-11-300 through 197-11-800; and

C. Chapter 173-22 WAC; and

D. Chapter 86.16 RCW; and

E. The Growth Management Act (RCW 36.70A.060); and

F. The Tri-County Response to the 4(D) Rule Land Management Development Regulations; and

G. RCW 36.70A.172, Critical areas—Designation and protection. (Ord. 02-200 § 2).

~~14.10.020 Repeal.~~

The current EMC Title 19, Shoreline Management, and EMC Title 20, Critical Areas, are hereby repealed in their entirety and EMC Title 20 is replaced with this title (effective December 24, 2002). Repeal of EMC Title 20 does not affect any existing permits, land use applications or requirements, or existing enforcement actions. (Ord. 02-200 § 2).

Formatted: Font: Not Bold

Formatted: Indent: Left: 0", First line: 0", Keep with next

14.10.025 — Title.

The current EMC Title 14, Environment, is hereby renamed EMC Title 20, SEPA, and the new EMC Title 14 shall be known as EMC Title 14, Critical Areas (effective December 24, 2002). (Ord. 02-200 § 2).

14.10.030 Purpose.

The purpose of this title is to protect environmentally sensitive critical areas of Edgewood from the impacts of development and protect development from the impacts of hazard areas by establishing minimum standards for development of sites which contain or are adjacent to identified critical areas and thus promote the public health, safety, and welfare by:

- A. Avoiding impacts to critical areas;
- B. Mitigating unavoidable impacts by regulating development;
- C. Protecting critical areas from impacts of development;
- D. Protecting the public against losses from:
 - 1. Costs of public emergency rescue and relief operations where the causes are avoidable; and
 - 2. Degradation of the natural environment and the expense associated with repair or replacement;
- E. Preventing adverse impacts on water availability, water quality, wetlands, and streams;
- F. Protecting unique, fragile, and valuable elements of the environment, including critical fish and wildlife habitat;
- G. Providing department staff with sufficient information to adequately protect critical areas and proposed development when approving, conditioning, or denying public or private development proposals;
- H. Providing the public with sufficient information and notice of potential risks associated with development in natural hazard critical areas; and
- I. Implementing the goals and requirements of the Growth Management Act (RCW 36.70A.060) Growth Management Act of 1990, the State Environmental Policy Act, the Puget Sound Water Quality Management Plan, the Pierce County Charter, the Pierce County Interim Growth Management Policies; and the city of Edgewood comprehensive plan, and all updates and amendments, functional plans, and other land use policies formally adopted or accepted by the city of Edgewood.

J. This title also consolidates procedures and regulations that shall promote compatibility between the natural and built environment within the city of Edgewood. Chapters within this title detail the procedures for activities related to critical areas and natural resource lands. (Ord. 02-200 § 2).

14.10.040 Interpretation.

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

- A. Considered the minimum necessary;
- B. Liberally construed to serve the purposes of this title; and
- C. Deemed neither to limit nor repeal any other powers under state statute. (Ord. 02-200 § 2).

14.10.045 Best Available Science.

Critical area reports and decisions to alter critical areas shall be based on the best available science to protect the functions and values of critical areas and must give special consideration to conservation or protection measures necessary to preserve or enhance anadromous fish, such as salmon and bull trout, and their habitat.

Formatted: Font: Not Bold

14.10.050 Applicability.

A. This title shall apply to all lands and waters within Edgewood that are designated as critical areas and their corresponding buffer and setback.

B. No development (see “development” definition) shall hereafter be affected without full compliance with the terms of this title.

C. When the requirements of this title are more stringent than those of other Edgewood codes and regulations, including the International Building Code, the requirements of this title shall apply.

D. Compliance with these regulations does not remove an applicant’s obligation to comply with applicable provisions of any other federal, state, or local law or regulation.

E. Criteria for determining critical areas is contained within each chapter of this title.

F. When a site contains two or more critical areas, the site shall meet the minimum standards and requirements for each identified critical area as set forth in this title.

G. Critical areas, as defined and regulated by this title, are identified, but not limited to the following Edgewood critical areas ~~atlas maps~~:

1. ~~Wetland inventory maps~~Wetlands; and
2. ~~Landslide hazard area maps~~Geologically hazardous areas; and
3. ~~Erosion hazard area maps~~Critical aquifer recharge areas; and
4. ~~Seismic hazard area maps~~Streams; and
5. ~~Volcanic hazard area maps~~Frequently flooded areas.; and
6. Aquifer recharge and wellhead protection areas maps; and
7. Fish and wildlife habitat, and stream typing area maps; and
8. Flood hazard area maps; and
9. Resource lands maps; and
10. Soils maps; and
11. FIRM (flood insurance rate maps) maps.

H. The exact boundary of each critical area depicted on the City’s critical areas ~~atlas maps~~ is approximate and is only intended to provide an indication of the presence of a critical area on a particular site. Additional critical areas that have not been mapped may be present on a site. The actual presence of a critical area, or areas and the applicability of these regulations shall be determined based upon the classification or categorization criteria and review procedures established for each critical area. City staff and/or consultant(s) may conduct on-site inspections to assess the site in order to determine if additional studies or reports identified in this title are necessary. An inspection report of findings shall be written after the on-site inspection and will become a part of any site development application as a future reference.

I. The Edgewood critical areas atlas maps shall be updated and maintained by the city’s department of community development geospatial information system (GIS) division.

J. ~~Development of the city’s critical areas atlas maps were derived from the sources listed in EMC 14.10.140, Appendix A. These sources may be updated from time to time and will result in a correlating update to the applicable critical areas atlas maps. (Ord. 02-200 § 2).~~

Commented [t1]: Organization: Mapping is typically it's own section and not part of Applicability.

Formatted: Not Highlight

Formatted: Not Highlight

Formatted: Not Highlight

Formatted: Not Highlight

Formatted: Not Highlight

14.10.060 Definitions.

A. This title shall rely on the definitions contained in Chapter 18.20 EMC, Definitions. The city also adopts by reference the definitions stated in WAC 197-11-700 through 197-11-799 as now or hereafter amended. In addition, the definitions in subsection (B) of this section shall also apply:

B. Additional definitions that apply to this title are:

“Abutting” means bordering upon, to touch upon, in physical contact with. Sites are considered abutting even though the area of contact may be only a point.

Act. See “State Environmental Policy Act (SEPA).”

“Actions” include, as further specified below:

1. ~~New and continuing activities (including projects and programs) entirely or partly financed, assisted, conducted, regulated, licensed, or approved by agencies;~~

2. ~~New or revised agency rules, regulations, plans, policies, or procedures; and legislative proposals. Actions fall within one of two categories:~~

a. ~~Project Actions. Involves a decision on a specific project, such as a construction or management activity located in a defined geographic area. Projects include and are limited to agency decisions to:~~

i. ~~License, fund, or undertake any activity that will directly modify the environment, whether the activity will be conducted by the agency, an applicant, or under contract;~~

ii. ~~Purchase, sell, lease, transfer, or exchange natural resources, including publicly owned land, whether or not the environment is directly modified.~~

b. ~~Nonproject Actions. Involve decisions on policies, plans, or programs:~~

i. ~~The adoption or amendment of legislation, ordinances, rules, or regulations that contain standards controlling use or modification of the environment;~~

ii. ~~The adoption or amendment of comprehensive land use plans or zoning ordinances;~~

iii. ~~The adoption of any policy, plan, or program that will govern the development of a series of connected actions (WAC 197-11-060), but not including any policy, plan, or program for which approval must be obtained from any federal agency prior to implementation;~~

iv. ~~Creation of a district or annexations to any city, town or district;~~

v. ~~Capital budgets; and~~

vi. ~~Road, street, and highway plans.~~

“Actions” do not include the activities listed above when an agency is not involved, or include bringing judicial or administrative civil or criminal enforcement actions (categorical exemptions in WAC 197-11-800 identify in more detail governmental activities that would not have any environmental impacts and for which SEPA review is not required).

“Activity” means any use conducted on a site.

“Addendum” means an environmental document used to provide additional information or analysis that does not substantially change the analysis of significant impacts and alternatives in the existing environmental document. The term does not include supplemental EISs. An addendum may be used at any time during the SEPA process.

Commented [t2]: Organization:
Consider pulling the Definitions Section out into a new section 14.20 Definitions.

“Addition” means an alteration to an existing structure that increases the floor area. There are two types of additions: additions affixed to the side of an existing structure and an upper story addition.

~~“Adjacent” means within 500 feet from the exterior boundaries of designated resource lands pursuant to RCW 36.70A.060.~~

~~“Aggrieved person” means the project sponsor, or any person affected by the proposal.~~

“Agricultural activities” means the production of crops and/or raising or keeping livestock, including operation and maintenance of farm and stock ponds, drainage ditches, irrigation systems, and normal operation, maintenance, and repair of existing serviceable agricultural structures, facilities, or improved areas, and the practice of aquaculture. Forest practices regulated under Chapter 76.09 RCW and WAC Title 222 are not included in this definition.

“Agricultural land” means land primarily devoted to the commercial production of horticultural, viticultural, floricultural, dairy, apiary, vegetable, or animal products or of berries, grain, hay, straw, turf, seed, Christmas trees not subject to the excise tax imposed by RCW 84.33.100 through 84.33.140, finfish in upland hatcheries, or livestock, and that has long-term commercial significance for agricultural production.

~~“Alluvial geologic unit” means geologically recent (Holocene) stream, lake, swamp, and beach deposits of gravel, sand, silt, and peat.~~

Formatted: Not Highlight

“Animal containment area” means a site where two or more animal units of large animals per acre or 0.75 of an animal unit of small animals per acre are kept, and where a high volume of waste material is deposited in quantities capable of impacting groundwater resources.

“Animal unit” means the equivalent of 1,000 pounds of animal.

“Appeal” means a request for a review of the interpretation of any provision of this chapter, per EMC 14.10.090.

“Applicant” means any person or entity, including an agency, applying for a license from an agency.

“Application” means a request for a license.

“Aquifer” means a saturated geologic formation, which will yield a sufficient quantity of water to serve as a private or public water supply.

~~“Aquifer recharge area” means areas that have a critical recharging effect on groundwater used for potable water supplies and/or that demonstrate a high level of susceptibility or vulnerability to groundwater contamination from land use activities. Examples of aquifer recharge areas include:~~

- ~~1. Wellhead protection areas delineated pursuant to the Federal Safe Drinking Water Act; and~~
- ~~2. Other areas with a high level of susceptibility or vulnerability to contamination as demonstrated through the use of the DRASTIC (see DRASTIC) model.~~

“Area of shallow flooding” means areas designated as AO or AH zones on the FIRM(s). AO zones are characterized as sheet flows, having base flood depths that range from one to three feet above the natural ground, where a clearly defined channel does not exist, the path of flooding is unpredictable and indeterminate, and velocity flow may be evident. AH zones indicate similar depth ponding, shown with standard base flood elevations on the FIRM(s).

“Area of special flood hazard” means land in the floodplain within a community subject to a one percent or greater chance of flooding in any given year. Designation on FIRM(s) always includes the letter A or V.

“Base flood” means the flood having a one percent chance of being equaled or exceeded in any given year, also referred to as the “100-year flood,” and is designated on FIRM(s) by the letter A or V.

“Basement” means any area of the building having its floor sub-grade (below ground level) on all sides, for the purposes of this title.

~~“Best available science” means means scientific information applicable to the critical area prepared by local, state, or federal natural resource agencies, a qualified scientific professional, or team of qualified scientific professionals that is consistent with criteria established in WAC 365-195-900 through WAC 365-195-925, as defined by WAC 365-195-905, Criteria for determining which information is the “best available science.”~~

Formatted: Font: Times New Roman, 10 pt

~~“Best available technology” means the technology that provides the greatest degree of protection to the natural resource, taking into consideration processes that are developed, or could feasibly be developed given overall reasonable expenditures on research and development, and processes that are currently in use. In determining what is best available technology, the local government shall consider the effectiveness, engineering feasibility and commercial availability of the technology.~~

~~“Best management plan” means a plan developed for a property, which specifies best management practices for the control of animal wastes, stormwater runoff, and erosion.~~

~~“Best management practices” means conservation practices or systems of practices and management measures that:~~

- ~~A. Control soil loss and reduce water quality degradation caused by high conservations of nutrients, animal waste, toxics and sediment;~~
- ~~B. Minimize adverse impacts to surface water and ground water flow and circulation patterns and to the chemical, physical, and biological characteristics of wetlands;~~
- ~~C. Protect trees and vegetation designated to be retained during and following site construction and use native plant species appropriate to the site for re-vegetation of disturbed areas; and~~
- ~~D. Provide standards for proper use of chemical herbicides within critical areas.~~

Formatted: Numbered + Level: 1 + Numbering Style: A, B, C, ... + Start at: 1 + Alignment: Left + Aligned at: 0.5" + Indent at: 0.75"

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

Commented [JWM3]: Need to keep this definition, part of recent Flood Code Update

~~“Buffer” means an area contiguous with a critical area that is required for the integrity, maintenance, function, and structural stability of the critical area.~~

~~“Building footprint” means the horizontal area measured within the outside of the exterior walls of the ground floor of all principal and accessory buildings on a lot.~~

~~“Cave” means a natural subterranean chamber greater than one foot in diameter and greater than three feet deep.~~

~~“City” means the city of Edgewood.~~

~~“Class” means one of the wetland classes in the United States Fish and Wildlife Service (USFWS) December 1979 publication, Classification of Wetlands and Deep Water Habitats of the United States.~~

~~“Classification” means defining value and hazard categories to which critical areas and land resource lands will be assigned.~~

~~“Clearing” means the removal of timber, brush, grass, ground cover, or other vegetative matter from a site, which exposes the earth’s surface on the site.~~

~~“Cliff” means a steep vertical or overhanging face of rock or earth greater than 25 feet in height.~~

~~“Colluvium” means loose materials deposited by gravity on the face of or at the foot of a slope (e.g., talus, soil creep, etc.).~~

Formatted: Not Highlight

Formatted: Not Highlight

~~“Compensatory mitigation” means mitigation to compensate for loss of wetland habitat due to filling of wetlands or other regulated activities in wetlands replacing project-induced losses or impacts to a critical areas.~~

“Conservation easement” means a recorded deed restriction or covenant that runs in perpetuity on a parcel of land restricting the use of the property by preventing future real estate development such as residential, industrial, or commercial use. Conservation easements may allow for continued current uses (e.g., residential, recreational, agriculture, forestry, or ranching); however, conservation easements most often restrict both the current use as well as future uses of the land to some important conservation quality such as habitat preservation, open space, or scenic views. A land trust or governmental entity that manages properties for long-term goals typically holds conservation easements.

“Contaminant” means any chemical, physical, biological, or radiological substance that does not occur naturally or occurs at concentrations and duration as to be injurious to human health or welfare or shown to be ecologically damaging.

“Council” means the Edgewood city council.

“County” means Pierce County.

“Crawl space” means the shallow space beneath the bottom floor of a house with no basement; used for access and inspection of framing, electrical, plumbing, insulation, vapor barriers, or duct work. For purposes of the National Flood Insurance Program Elevation Certificate, a crawl space that has subgrade around all sides shall be considered a basement.

~~“Creation” means producing or forming a wetland through artificial means from an upland (nonwetland) site.~~

~~“Critical aquifer recharge areas” means areas with a critical recharging effect on aquifers used for potable water, including areas where an aquifer that is a source of drinking water is vulnerable to contamination that would affect the potability of the water, or is susceptible to reduced recharge.~~

~~“Critical areas” means the following areas and ecosystems: (a) Wetlands; (b) areas with a critical recharging effect on aquifers used for potable water; (c) fish and wildlife habitat conservation areas; (d) frequently flooded areas; and (e) geologically hazardous areas, erosion, landslide, seismic, volcanic, and flood hazard areas; streams; wetlands; fish and wildlife habitat; and aquifer recharge and (depressional) pothole areas as defined by RCW 36.70A.030. All of these areas are of special concern to the people of Edgewood and the state of Washington.~~

“Critical facilities” means those facilities occupied by populations or which handle dangerous substances including but not limited to hospitals, medical facilities, nursing homes; structures housing, supporting, or containing toxic or explosive substances; covered public assembly structures; school buildings through secondary, including daycare centers; buildings for colleges or adult education; police, fire, and emergency response installations; jails and detention facilities; and all structures with occupancy of greater than 5,000 people. These facilities are such that even a slight chance of flooding might be too great. Essential public facilities (as defined under [EMC 18.20.080 and 18.100.050](#)) are considered critical facilities, for floodplain management purposes.

“Debris flow” means the rapid downslope movement of a viscous mass of water-saturated ~~regolith~~ [sediments](#).

“Degraded” means to have suffered a decrease in naturally occurring functions and values due to activities undertaken or managed by persons on or off a site.

“Delineation” means a wetland study conducted in accordance with the [approved federal wetland delineation manual and applicable regional supplements](#) ~~Corps of Engineers Wetlands Delineation Manual 1987 edition and corresponding guidance letters and the Washington State Wetlands Identification and Delineation Manual.~~

~~“Delineation report” means a written document prepared by a wetland specialist, which includes data sheets, findings of the delineation, and a site plan, which identifies the wetland boundaries.~~

~~“Department” means any division, subdivision, or organizational unit of the city, established by regulations, resolution or order; the City of Edgewood Department of Community Development.~~

“Depressional pothole” means a relatively sunken or low-lying area of the earth’s surface, especially one having no natural outlet for surface drainage.

Formatted: Font: Times New Roman, 10 pt

Formatted: Font: Times New Roman, 10 pt

Commented [JWM4]: Essential Public facilities are first defined in 18.20.080, and further described in 18.100.050.

Formatted: Not Highlight

Formatted: Font: Times New Roman, 10 pt

~~“Designation” means taking formal legislative action to adopt classifications, inventories, and regulations.~~

~~“Determination of”:~~

~~1. Nonsignificance (DNS).~~

~~2. Significance (DS).~~

~~3. Mitigated determination of nonsignificance (MDNS).~~

“Development” means any human-induced change to improved or unimproved real property, including but not limited to: the construction of buildings or other structures, placement of a manufactured home/mobile home, mining, dredging, clearing, filling, grading, paving, excavation, drilling operations, storage of equipment or materials located within an area of special flood hazard, or activities otherwise governed by EMC Title 16, Subdivisions.

“Development activity” means any construction, development, earth movement, clearing, or other site disturbance of the land, except as listed under exemptions.

~~“Director” means the mayor or designee, the director of the city of Edgewood Department of Community Development or his/her designee.~~

Formatted: Font: Times New Roman, 10 pt

Formatted: Font: Times New Roman, 10 pt

~~“Downed logs” means trees that have fallen or toppled which are dead or in the process of dying, and exhibit sufficient decay characteristics to enable use by fish or wildlife species as habitat. Also referred to as “large woody debris (LWD).”~~

Formatted: Font: Times New Roman, 10 pt

“DRASTIC” is an acronym for a computer model developed by the National Water Well Association and Environmental Protection Agency used to measure aquifer susceptibility.

~~“Drift” means a nearly horizontal mine passageway driven on or parallel to the course of a vein or rock stratum.~~

“Dwelling unit” means one or more rooms designed for or occupied by one family for living or sleeping purposes and containing kitchen facilities for use solely by one family.

“Earth/earth material” means naturally occurring rock, soil, stone, sediment, or combination thereof.

~~“Earthflow” means a slow downslope movement in which of viscous, saturated regolith sediment sags downward in a series of irregular terraces.~~

Formatted: Not Highlight

Formatted: Not Highlight

~~“Ecotone” means a transition area between two adjacent vegetation communities.~~

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

“Elevation certificate” means the official form (FEMA Form 81-31) used to track development, provide elevation information necessary to ensure compliance with community floodplain management ordinances, and determine the proper insurance premium rate with Section B completed by community officials.

“Encroachment” means any development or regulated activity conducted inside the boundaries of a designated critical area and/or its associated buffer.

“Engineer” as defined by Chapter 18.43 RCW.

“Engineering geologist” means a geologist who, by reason of his or her knowledge of engineering geology, acquired by education and practical experience, is qualified to engage in the practice of engineering geology, has met the qualifications in engineering geology established under Chapter 18.220 RCW, and has been issued a license in engineering geology by the Washington State Geologist Licensing Board.

“Engineering geology” means a specialty of geology affecting the planning, design, operation, and maintenance of engineering works and other human activities where geological factors and conditions impact the public welfare or the safeguarding of life, health, property, and the environment.

“Enhancement” means ~~actions performed within an existing degraded critical area and/or buffer to intentionally increase or augment one or more ecological functions or values of the existing area. Enhancement actions include, but are not limited to, increasing plant diversity and cover; increasing wildlife habitat and structural complexity (snags, woody debris); installing environmentally compatible erosion controls; removing non-native plant or animal species; or removing human-made structures or fill that are degrading ecological functions or values.~~ ~~actions performed to improve the condition of existing degraded wetlands and/or buffers so that the quality of wetland functions increases (e.g., increasing plant diversity, increasing wildlife habitat, installing environmentally compatible erosion controls, removing nonindigenous plant or animal species, removing fill material or solid waste).~~

“Environmental determination” means that the responsible official or proponent has determined whether or not there are significant adverse effects on quality of the environment and if so, can they be mitigated.

“Environmental Impact Statements (EISs) — Types.” See Chapter 197-11 WAC, SEPA Rules.

“Environmental Review.” See Chapter 197-11 WAC, SEPA Rules.

“Erosion” means the wearing away of the earth’s surface as a result of the movement of wind, water, or ice.

“Erosion hazard areas” means those areas that because of natural characteristics, including vegetative cover, soil texture, slope, gradient, and rainfall patterns, or human-induced changes to such characteristics, are vulnerable to erosion.

“Excavation” means the mechanical removal of earth material.

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

“Expansion to an existing manufactured home park or subdivision” means the preparation of additional sites by the construction of facilities for servicing the lots on which the manufactured homes are to be affixed (including the installation of utilities, the construction of streets, and either final site grading or the pouring of concrete pads).

~~“Extirpation” means the elimination of a species from a portion of its original geographic range.~~

“Facility” means all structures, contiguous land, appurtenances, and other improvements on the land used for recycling, reusing, reclaiming, transferring, storing, treating, disposing, or otherwise handling a hazardous substance. Use of the term “facility” includes underground and aboveground tanks and operations, which handle, use, dispose of, or store hazardous substances.

“Fill/fill material” means a deposit of earth material placed by human or mechanical means.

“Filling” means the act of placing fill/fill material on any surface, including temporary stockpiling of fill material.

“Finished floor” means the top of the next higher floor above the lowest floor. For purposes of the National Flood Insurance Program Elevation Certificate, the finished floor referenced in this regulation shall equal the top of the next higher floor.

~~“Fish and wildlife habitat conservation areas” means those areas identified as being of critical importance to maintenance of fish, wildlife, and plant species, including areas with which endangered, threatened, and sensitive species have a primary association; habitats and species of local importance; naturally occurring ponds under 20 acres and their submerged aquatic beds that provide fish or wildlife habitat; waters of the state; lakes, ponds, streams, and rivers planted with game fish by a governmental or tribal entity, or private organization; state natural area preserves and natural resource conservation areas. This does not include such artificial features or constructs as irrigation~~

Commented [JWM5]: Need to keep these definitions, part of recent Flood Code Update

~~delivery systems, irrigation infrastructure, irrigation canals, or drainage ditches that lie within the boundaries of and are maintained by a port district or an irrigation district or company means areas necessary for maintaining species in suitable habitats within their natural geographic distribution so that isolated subpopulations are not created as designated by WAC 365-190-080(5). "Fish and wildlife habitat conservation areas" does not include such artificial features or constructs as irrigation delivery systems, irrigation infrastructure, irrigation canals, or drainage ditches that lie within the boundaries of and are maintained by a port district or an irrigation district or company.~~

"Fisheries biologist" means a professional with a degree in fisheries or certification by the American Fisheries Society, or with five years' professional experience as a fisheries biologist.

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

1. The overflow of inland or tidal waters; and/or
2. The unusual and rapid accumulation of runoff of surface waters from any source.

~~"Flood hazard areas" means areas of flooding identified by verifiable flooded areas using:~~

1. Aerial photographs of the city, especially those taken in wintertime 1996 and 1997; ~~or~~
2. Relevant and verifiable information from the city's capacity analysis technical review adhoc committee (CATRAC) draft report, 2000; ~~or~~
3. Relevant and verifiable government and citizen photographs, notes, observations, etc. regarding historic ponding/flooding levels; ~~or~~
4. Relevant and verifiable information available through Pierce County; ~~or~~
5. Relevant and verifiable information available through the Federal Emergency Management Agency (FEMA); or
6. Areas of land located in floodplains, which are subject to a one percent or greater chance of flooding in any given year, including, but not limited to, streams, rivers, lakes, ponds, wetlands, depression potholes and the like.

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

"Flood Insurance Study (FIS)" means the official report provided by the Federal Insurance Administration (FIA) that includes flood profiles, FIRM(s), and the water surface elevation of the base flood.

"Flood fringe" means the area subject to inundation by the base flood, but outside the limits of the floodway, and which may provide needed temporary storage capacity for floodwaters.

"Floodplain" means the total area subject to inundation by the base flood, including the flood fringe and the floodway areas.

"Floodway" means the channel of a river or other watercourse and the adjacent land areas that must be reserved in order to convey and discharge the base flood without cumulatively increasing the water surface elevation by more than one foot, and those areas designated as deep and/or fast-flowing water.

~~"Fluvial processes" means the physical interaction of flowing water and the natural channels of rivers and streams.~~

"Foundation footing setback" means a typical geotechnical recommendation intended to assure that a proposed structure is protected in the event of a slope failure or sloughage. A foundation footing setback is measured horizontally from the face of the foundation footing to the face of the slope. A foundation footing setback for this

purpose should not be confused with a building or construction setback from a landslide hazard area buffer. A foundation footing setback is also not a buffer. (see Figure 14.10-1 in EMC 14.10.150).

“Frequently flooded area” means lands in the floodplain subject to at least a one percent or greater chance of flooding in any given year, or within areas subject to flooding due to high groundwater. These areas include, but are not limited to, streams, rivers, lakes, wetlands, and areas where high groundwater forms ponds on the ground surface.

Formatted: Font: Times New Roman, 10 pt

“Geological assessment” means an assessment prepared by a professional engineer licensed by the state of Washington with expertise in geotechnical engineering or prepared by a licensed professional geologist, hydrologist, or soils scientist, as specified later in this section, who has earned the related bachelor’s degree from an accredited college or university, or equivalent educational training, and has five years’ experience assessing the relevant geologic hazard. A geological assessment must detail the surface and subsurface conditions of a site and delineate the areas of a property that might be subject to specified geologic hazards.

“Geologically hazardous areas” means areas that because of their susceptibility to erosion, sliding, earthquake, or other geological events are not suited to the siting of commercial, residential, or industrial development consistent with public health or safety concerns.

“Geologist” means engineering geologist, or hydrogeologist, registered in the state of Washington.

“Geotechnical professional” means a person with experience and training in analyzing, evaluating, and mitigating landslide, erosion, and/or seismic hazards. A geotechnical professional shall be licensed in the state of Washington as a geologist or professional engineer, and must have five or more years experience specializing in landslide, erosion, or seismic hazards, as applicable.

“Geotechnical report” means a report prepared by a professional engineer licensed by the state of Washington with expertise in geotechnical engineering, evaluating the site conditions and mitigating measures necessary to reduce the risks associated with development in geologically hazardous areas.

“Grading” means any excavating, filling, clearing, or creating of impervious surfaces or combination thereof.

“Ground amplification” means an increase in the intensity of earthquake-induced ground shaking which occurs at a site whereby thick deposits of unconsolidated soil or surficial geologic materials are present.

“Groundwater” means all water found beneath the ground surface, including slowly moving subsurface water present in aquifers and recharge areas.

“Group A water system” means a water system:

1. With 15 or more service connections; or
2. A system that services an average of 25 or more people per day for 60 or more days within a calendar year.

“Habitat assessment” means a report prepared by a professional wildlife biologist or fisheries biologist, which identifies the presence of fish and wildlife habitat conservation areas near the proposed development site.

“Habitat evaluation” means a procedure for determining the abundance and quality of habitat features for a species or other taxonomic group (in this case, salmonid fishes) at or on a particular site or property.

“Habitat evaluation report package” means the combined materials that compose a report on a habitat evaluation (see definition in this section), including narrative on methods and findings, as well as maps and data in tabular and graphic form.

“Habitat management plan” means a report prepared by a professional wildlife biologist or fisheries biologist, which discusses and evaluates the measures necessary to maintain fish and wildlife habitat conservation areas on a proposed development site.

“Habitat of local importance” means an area, range, or habitat within which a species has a primary association and which, if altered, may reduce the likelihood that the species will maintain and reproduce over the long term. Examples include areas of high relative density or species richness, breeding habitat, winter range, and movement corridors. These areas may also include habitats that are of limited availability or high vulnerability to alteration.

“Hard armoring” means the use of large rock and/or human-made materials to protect property from shoreline erosion. Such techniques include cement/concrete bulkheads, steel structures, rock wall revetments, and rock gabion structures. Hard armoring typically does not utilize or integrate any of soft armoring or soil bioengineering techniques.

“Hazardous substance(s)” means any liquid, solid, gas, or sludge, including any materials, substance, product, commodity, or waste, regardless of quantity, that exhibits any of the characteristics or criteria of hazardous waste; and including waste oil and petroleum products.

“Hazardous substance processing or handling” means the use, storage, manufacture, or other land use activity involving hazardous substances, but does not include individually packaged household consumer products or quantities of hazardous substances of less than five gallons in volume per container. Hazardous substances shall not be disposed on-site unless in compliance with Dangerous Waste Regulations, Chapter 173-303 WAC, and any pertinent local ordinances such as sewer discharge standards.

“Hazardous waste” means and includes all dangerous waste and extremely hazardous waste as designated pursuant to Chapter 70.105 RCW and Chapter 173-303 WAC.

1. “Dangerous waste” means any discarded, useless, unwanted, or abandoned substances including but not limited to certain pesticides or any residues or containers of such substances which are disposed of in such quantity or concentrations as to pose a substantial present or potential hazard to human health, wildlife, or the environment because such wastes or constituents or combinations of such wastes:
 - a. Have short-lived, toxic properties that may cause death, injury, or illness, or have mutagenic, teratogenic, or carcinogenic properties; or
 - b. Are corrosive, explosive, flammable, or may generate pressure through decomposition or other means.
2. “Extremely hazardous waste” means any waste which:
 - a. Will persist in a hazardous form for several years or more at a disposal site and which in its persistent form presents a significant environmental hazard and may be concentrated by living organisms through a food chain or may affect the genetic make-up of humans or wildlife; and
 - b. Is disposed of at a disposal site in such quantities as would present an extreme hazard to humans or the environment.

“Hazardous waste treatment and storage facility” means a facility that treats and stores hazardous waste and is authorized pursuant to Chapter 70.105 RCW and Chapter 173-303 WAC. It includes all contiguous land and structures used for recycling, reusing, reclaiming, transferring, storing, treating, or disposing of hazardous waste. Treatment includes using physical, chemical, or biological processing of hazardous wastes to make such waste nondangerous or less dangerous and safer for transport, amenable for energy or material resource recovery. Storage includes the holding of waste for a temporary period, but not the accumulation of waste on the site of generation as long as the storage complies with applicable requirements of Chapter 173-303 WAC.

~~1. “On-site treatment and storage facility” means a facility that treats or stores hazardous wastes generated on the same geographically contiguous property.~~

~~2. “Off-site treatment and storage facility” means a facility that treats or stores hazardous wastes generated on property other than those on which the off-site facility is located.~~

Hearing Examiner or Examiner. See EMC 18.20.110, “H” definitions.

“Holocene Epoch” means that part of the geologic record that post-dates the youngest deposits associated with the late Pleistocene Age Fraser Glaciation and is typically considered to be the past 10,000 years.

Formatted: Not Highlight

“Hydrogeologic assessment” means a report detailing the subsurface conditions, the design of a proposed land use action, and the facilities operation which indicates the susceptibility and potential for contamination of groundwater supplies.

Formatted: Not Highlight

“Hydrologically connected” means a connection between two or more surface water bodies including, but not limited to, wetlands, streams or lakes as evidenced by:

1. The presence of surface water in a perennial or intermittent stream, through a culvert or otherwise above-ground;
2. The presence of contiguous hydric soil; or
3. The location of a water body within or contiguous to a 100-year floodplain of a wetland, stream or lake.

“Hydrologically isolated wetland” means a wetland which:

1. Is not contiguous to any 100-year floodplain of a lake, river, or stream; and
2. Has no contiguous surface hydrology, hydric soil, or hydrophytic vegetation between the wetland and any other wetland or stream system.

“Impervious surface” means a hard surface, which prevents or retards the entry of water into the soil mantle as under natural conditions prior to development, and/or a hard surface area, which causes water to run off the surface in greater quantities or at an increased rate of flow than the flow present under natural conditions prior to development. Common impervious surfaces include, but are not limited to, roof tops, walkways, patios, driveways, parking lots or storage areas, concrete or asphalt paving, gravel roads, gravel parking lots, packed earthen materials, and oiled, macadam or other surfaces which similarly impede the natural infiltration of stormwater. Open, uncovered retention/detention facilities shall not be considered as impervious surfaces.

“In-kind mitigation” means to replace wetlands with substitute wetlands whose characteristics and functions and values are intended to replicate those destroyed or degraded by a regulated activity.

“Increased cost of compliance (ICC)” means a flood insurance claim payment up to \$30,000 directly to a property owner for the cost to comply with floodplain management regulations after a direct physical loss caused by a flood. Eligibility for an ICC claim can be through a single instance of “substantial damage” or as a result of a “cumulative substantial damage.” (More information can be found in FEMA ICC Manual 301.)

Commented [JWM6]: Need to keep this definition, part of recent Flood Code Update

“Interspersion between wetland classes” means the degree to which different wetland classes are scattered among each other.

“Lahar” means a mudflow or debris flow mobilized by water, which originates on the slopes of a volcano.

“Lakes” means impoundments of open water 20 acres or larger.

Landfill. See EMC 18.20.150, “L” definitions: “Landfill” means a place to dispose of refuse and other waste material by burying it and covering it over with soil.

“Landslide” means the abrupt downslope movement of soil, rocks, or other surface matter on a site. Landslides may include but are not limited to slumps, debris flows, mudflows, earthflows, rockfalls, and snow avalanches.

Formatted: Not Highlight

“Landslide hazard areas” means areas which are potentially subject to risk of mass movement due to a combination of geologic, topographic, and hydrologic factors.

“Large animal” means an animal with an average weight of 100 pounds or more.

“License” means any form of written permission given to any person, organization, or agency to engage in any activity, as required by law or agency rule. A license includes all or part of a city permit, certificate, approval, registration, charter, or plat approvals or rezones to facilitate a particular proposal. The term does not include a license required solely for revenue purposes.

“LiDAR” means Light Detection and Ranging imaging.

“Liquefaction” means a process by which a water-saturated granular (sandy) soil layer loses strength because of ground shaking commonly caused by an earthquake.

“Long-term commercial significance” means the growing capacity, productivity, and soil composition of land, which makes it suitable for long-term commercial production, in consideration with the land’s proximity to population areas, and the possibility of more intense uses of land.

“Lowest floor” means the lowest floor of the lowest enclosed area (including basement and crawl space). 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 title.

“Maintenance” means those usual acts to prevent a decline, lapse, or cessation from a lawfully established condition without any expansion of or significant change from that originally established condition. For the purposes of this document, activities within landscaped areas within areas subject to native vegetation retention requirements may be considered maintenance only if they maintain or enhance the canopy and understory cover.

“Manufactured home/mobile home” means a structure, transportable in one or more sections, which is built on a permanent chassis and is designed for use with or without a permanent foundation when connected to the required utilities. For floodplain management purposes, the term “manufactured home/mobile home” also includes park trailers, travel trailers, and other similar recreational vehicles placed on a site for greater than 180 consecutive days. For insurance purposes, the term “manufactured home/mobile home” does not include park trailers, travel trailers, recreational vehicles, or other similar vehicles.

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

“Mineral resource lands” means lands primarily devoted to the extraction of minerals or which have known or potential long-term commercial significance for the extraction of minerals.

“Minerals” include gravel, sand, or other resources that are extracted from the ground, and valuable metallic substances.

“Mitigation” means:

1. Avoiding the impact altogether by not taking a certain action or parts of an action;
2. Minimizing impacts by limiting the degree or magnitude of the action and its implementation, by using appropriate technology, or by taking affirmative steps to avoid or reduce impacts;
3. Rectifying the impact by repairing, rehabilitating, or restoring the affected environment;
4. Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action;
5. Compensating for the impact by replacing, enhancing, or providing substitute resources or environments;
and
6. Monitoring the impact and taking appropriate corrective measures; and

Commented [JWM7]: Need to keep this definition, part of recent Flood Code Update

Formatted: Indent: Left: 0.5"

~~7. Measures used in sequential order to eliminate, reduce, or compensate for adverse impacts to habitat resulting from a development proposal or alteration.~~

“Mudflow” means a debris flow containing an abundance of fine particles.

“Native vegetation” or “native plants” means a mix of plant species comprising herbs, grasses, grass-like plants, shrubs and trees indigenous to the Puget Sound region that reasonably could be expected to naturally occur on the site.

“Natural resource lands” means agricultural and mineral resource lands, which have long-term commercial significance.

“New construction” means structures for which the “start of construction” commenced on or after the following:

1. For the purposes of determining flood insurance rates, the effective date of an initial FIRM (i.e., August 19, 1987, or August 4, 1988, for Panel 350 only), and includes any subsequent improvements to such structures.
2. For floodplain management purposes, the effective date of this floodplain management ordinance and includes any subsequent improvements to such structures.
3. For all other cases, the effective date of the applicable critical areas ordinance.

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

Commented [JWM8]: Need to keep this definition, part of recent Flood Code Update

~~“Oak woodlands” means those areas where Oregon white oak comprises more than 20 percent of the trees in a stand, and where the stand size is one acre or greater; provided, that stand size may be smaller where white oak serves as linkages between larger stands. Trees should be greater than 15 inches in diameter at breast height and greater than 16 feet tall.~~

~~“Old growth forests” means a stand of trees generally containing mature and overmature trees in the overstory, a multi-layered canopy and trees of several age classes, and standing dead trees and down material.~~

“Ordinance” means the ordinance, resolution, or other procedure used by the city to adopt regulatory requirements.

“Ordinary high water mark (OHWM)” means the mark on all lakes, streams and tidal waters that will be found by examining the beds and banks and ascertaining where the presence and action of waters are so common and usual, and so long continued in all ordinary years, as to mark upon the soil a character distinct from that of the abutting upland and vegetation, as that condition exists on the effective date of the ordinance codified in this title, or as it may naturally change thereafter. In any area where the ordinary high water mark cannot be found, the ordinary high water mark shall be the line of mean higher high tide in areas adjoining saltwater, and the line of mean high water in areas adjoining freshwater.

~~“Out of kind mitigation” means to replace wetlands with substitute wetlands whose characteristics do not approximate those destroyed or degraded by a regulated activity.~~

~~“Parties of record” are those persons with legal standing with respect to an application including the applicant, property owner as identified by the records available from the Pierce County assessor’s office, or any person who testified at the open record public hearing on the application; and/or any person who submitted written comments during administrative review or has submitted written comments concerning the application at the open record public hearing, excluding persons who have only signed petitions or mechanically produced form letters.~~

~~“Permanent erosion control” means continuous on-site and off-site control measures that are needed to control conveyance and/or deposition of earth, turbidity, or pollutants after development, construction, or restoration.~~

~~Person. See EMC 18.20.190, “P” definitions.~~

“Plat” means:

1. “Short subdivision” or “short plat” means the division or redivision of land into six or fewer lots, tracts, parcels, sites, or divisions for the purpose of sale, lease, or transfer of ownership.
2. “Subdivision” or “formal subdivision” means the division or redivision of land into seven or more lots, tracts, parcels, sites, or division for the purpose of sale, lease, or transfer of ownership. For floodplain management regulation purposes, this includes land over five acres in area situated within a flood hazard area.

“Ponds” means naturally occurring impoundments of open water less than 20 acres in size and larger than 2,500 square feet, which maintain standing water throughout the year. Also see “depressional pothole.”

~~“Private organization” means a nonprofit corporation organized pursuant to Chapter 24.03 RCW, which includes the planting of game fish among its purposes for organizing as a nonprofit corporation.~~

“Professional engineer” means an engineer currently licensed and registered in the state of Washington.

~~“Project permit” means any land use or environmental permit or license required from the city for a project action, including but not limited to building permits, site development permits, land use preparation permits, subdivisions, binding site plans, planned unit developments, conditional uses, shoreline substantial development permits, development plan review, site specific rezones authorized by the comprehensive plan; but excluding adoption or amendment of the comprehensive plan and development regulations, zoning of newly annexed land, area wide rezones, and zoning map amendments except as otherwise specifically included in this subsection.~~

~~“Public services” means fire protection and suppression, law enforcement, public health, education, recreation, environmental protection, and other governmental services.~~

~~“Recessional outwash geologic unit” means sand and gravel materials deposited by melt water streams from receding glaciers.~~

“Reconstruction” means the rebuilding of an existing structure which has been partially or completely destroyed by any cause, such as but not limited to fire, wind, landslides, and water, without increasing the original floor area or square footage area.

“Recreational vehicle (RV)” means a vehicle built on a single chassis, 400 square feet or less when measured at the largest horizontal projection, designed to be self-propelled or permanently towable by a light duty truck, and designed primarily not for use as a permanent dwelling but as a temporary living quarters for recreational, camping, travel, or seasonal use.

~~“Rectification” means an action which repairs an alteration to habitat and its functions.~~

~~“Regolith” means any body of loose, noncemented particles overlying and usually covering the bedrock.~~

“Regulated activities” means, but is not limited to, any of the following activities which are directly undertaken or originate in a regulated critical area or its buffer: building permit, commercial or residential; binding site plan; franchise right-of-way construction permit; site development permit; right-of-way permit; shoreline permits; short subdivision; use permits; subdivision; utility permits; or any subsequently adopted permit or required approval not expressly exempted by this title.

“Rehabilitation” means any improvements and repairs which are made to the interior and exterior of an existing structure, but which do not result in any increase in the floor area of the structure. This is also commonly referred to as a “remodel” of an existing structure.

“Restoration” means an action which returns habitat to a state in which its stability and functions approach its unaltered state as closely as possible. This may be accomplished through measures including, but not limited to, re-vegetation, removal of intrusive stream bank structures, and removal or treatment of toxic materials. Restoration does not imply a requirement for returning the critical area to aboriginal or pre-European settlement conditions.

“Revised Code of Washington (RCW)” means all laws of a general and permanent nature heretofore or hereafter enacted by the legislature, and assign permanent numbers as provided by law to all new titles, chapters, and sections thereof.

“Riparian” means the area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other. Riparian habitat begins at the ordinary high water mark and includes the entire extent of the floodplain and riparian areas of wetlands that are directly connected to the stream course.

“Seismic hazard areas” means areas subject to severe risk of damage as a result of earthquake-induced ground shaking, slope failure, settlement, or soil liquefaction.

“Sensitive areas” mean agricultural lands and mineral resource lands and all associated buffers.

“Shoreline” for this title means the line where a body of water and the shore meet or the strip of land along the shoreline. There are no waters within the city of Edgewood meeting the criteria of shorelines of statewide significance as defined by RCW 90.58.030.

“Single-family dwelling” means a detached building designed exclusively for occupancy by one family and containing one dwelling unit.

“Site” means a lot, parcel, tract, or combination of lots, parcels, or tracts on which a regulated activity is proposed.

“Slope” means an inclined earth surface, the inclination of which is expressed as the ratio of horizontal distance to vertical distance.

“Sludge” means a semisolid substance consisting of settled solids combined with varying amounts of water and dissolved materials generated from a wastewater treatment plant or system or other sources, including septage sludge, sewage sludge, and industrial sludge.

“Sludge land application site” means a site where stabilized sludge, septage, and other organic wastes are applied to the surface of the land in accordance with established agronomic rates for fertilization or soil conditioning.

“Slump” means the downward and outward movement of a mass of bedrock, colluvium, or ~~regolith~~ other sediments along a distinct surface of failure.

“Small animal” means an animal with an average weight of less than 100 pounds.

~~“Snag-rich areas” means forested areas which contain concentrations of standing dead trees, averaging 10 snags or greater per acre, and averaging greater than 15 inches in diameter at breast height.~~

“Special occupancy structures” means those structures that have the potential to provide capacity for large numbers of people or special groups of people or assemblies such as but not limited to schools, jails and detention facilities, and resident incapacitated patients.

“Species of local importance” means species that are of local concern due to their population status or their sensitivity to habitat manipulation.

“Soft armoring techniques” means the use of woody plants and limited structural-mechanical systems that are integrated in a structurally and environmentally sound manner to repair and protect slopes and shorelines against shallow mass wasting and surface erosion. Measures such as live stake, live fascine, brushlayer, live cribwall, vegetated geogrid, branchpacking, live slope grading, beach berms, or earthen berms are examples of soft armoring techniques. Soft armoring techniques may also be referred to as soil bioengineering methods.

“Start of construction” includes substantial improvement, and means the date the building permit was issued, provided the actual start of construction, repair, reconstruction, placement or other improvement was within 180 days of the permit date. The “actual start” means either the first placement of permanent construction of a structure on a site, such as the pouring of slab or footings, the installation of piles, the construction of columns, or any work beyond the stage

Formatted: Not Highlight

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

~~“State Environmental Policy Act (SEPA)” means RCW 43.21C.010, to declare a state policy which will encourage productive and enjoyable harmony between man and his environment; to promote efforts which will prevent or eliminate damage to the environment and biosphere; stimulate the health and welfare of man; and to enrich the understanding of the ecological systems and natural resources important to the state and nation.~~

~~“State Environmental Policy Act (SEPA) Rules” means Chapter 197-11 WAC adopted by Washington State Department of Ecology as now, or hereafter, amended.~~

“Stockpiling” means the placement of material with the intent to remove it later.

“Structure” means a walled and roofed building, including a gas or liquid storage tank that is principally above ground.

~~“Subbasin” means a drainage area which drains to marine water, lakes or the mainstem of a watershed water resource inventory area.~~

~~“Subclass” means one of the subclasses identified in the United States Fish and Wildlife Service (USFWS) December 1979 publication, Classification of Wetlands and Deep Water Habitats of the United States.~~

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

“Substantial improvement” means any repair, reconstruction, addition, rehabilitation, or other improvement of a structure, whereby the cost for the work exceeds 50 percent of the market value of the existing 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:

1. Any project for improvement of a structure to correct existing violations of state or local health, sanitary, or safety code specifications which have been identified by the local code enforcement official and which are the minimum necessary to assure safe living conditions; or
2. Any alteration of a structure listed on the National Register of Historic Places or a State Inventory of Historic Places; provided, that the alteration will not preclude the structure’s continued designation as a “historic structure.”

Except for floodplain management regulation, the “cost” and “market value” may be determined using the current permit valuation. The building official shall determine the current permit valuation based on the cost per square foot values in effect at the time of permit application. Substantial improvement shall be accumulative from the effective date of the ordinance codified in this chapter.

~~“Substrate” means the soil, sediment, decomposing organic matter, or combination of those located on the bottom surface of a wetland.~~

“Talus” means a homogenous area of rock rubble ranging in average size 0.15 to 2.0 meters (0.5 to 6.5 feet) ~~composed of basalt, andesite, and/or sedimentary rock~~, including riprap slides and mine tailings. Talus areas may be associated with cliffs.

~~“Temporary erosion control” means on-site and off-site control measures that are needed to control conveyance or deposition of earth, turbidity, or pollutants during development, construction, or restoration.~~

~~“Ten-year time travel zone boundary” means the maximum distance around a pumping well from which a contaminant hypothetically present in groundwater could travel to the well within a 10-year time period.~~

“Toe of slope” means a distinct topographic break in slope at the lowermost limit of the landslide or erosion hazard area.

~~“Top of slope” means a distinct topographic break in slope at the uppermost limit of the landslide or erosion hazard area.~~

“TPCHD” means the Tacoma-Pierce County Health Department.

“Underground storage tank” means any one or a combination of tanks (including underground pipes connected thereto) which are used to contain or dispense an accumulation of hazardous substances or hazardous wastes, and the volume of which (including the volume of underground pipes connected thereto) is 10 percent or more beneath the surface of the ground.

“Urban governmental services” means those governmental services historically and typically delivered by cities, and includes storm and sanitary sewer systems, domestic water systems, street cleaning services, and other public utilities associated with urban areas and normally not associated with nonurban areas.

“Urban growth” means growth that makes intensive use of the land for the location of buildings, structures, and impermeable surfaces to such a degree as to be incompatible with the primary use of such land for the production of food, other agricultural products, or fiber, or the extraction of mineral resources. When allowed to spread over wide areas, urban growth typically requires urban governmental services. ~~“Characterized by urban growth”² refers to land having urban growth located on it or to land located in relationship to an area with urban growth on it as to be appropriate for urban growth.~~

“Utility line” means pipe, conduit, cable, or other similar facility by which services are conveyed to the public or individual recipients. Such services shall include, but are not limited to, water supply, electric power, gas, communications, and sanitary sewers.

“Variance” means a grant of relief from the requirements of this chapter that permits construction in a manner that would otherwise be prohibited by this chapter, per EMC 14.10.085.

“View corridor” means an area, which affords views of lakes, mountains, or other scenic amenities normally enjoyed by residential property owners.

“Violation” means the failure of a structure or other development activity to be fully compliant with the provisions of this title. With regard to the floodplain management regulations, projects without the elevation certificate, other certifications, or other evidence of compliance required in Chapter 14.70 EMC are presumed to be in violation until such time as that documentation is provided. See Chapter 1.10 EMC for penalties.

“Volcanic hazard areas” means those areas subject to pyroclastic flows, lava flows, and inundation by debris flows, mudflows, or related flooding resulting from geologic or volcanic events on Mount Rainier.

“Washington Administrative Code (WAC)” means state of Washington Administrative Code.

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

“Wellhead protection area” means the area within the 10-year time-of-travel zone boundary of a group A public water system well, as delineated by the water system purveyor or its designee, pursuant to WAC 246-290-135.

“Wetland” means areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for

Commented [JWM9]: Need to keep this definition, part of recent Flood Code Update

Formatted: Indent: Left: 0"

Formatted: Font: Times New Roman, 10 pt

life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas. Wetlands do not include those artificial wetlands intentionally created from nonwetland sites, including, but not limited to, irrigation and drainage ditches, grass-lined swales, canals, detention facilities, wastewater treatment facilities, farm ponds, and landscape amenities, or those wetlands created after July 1, 1990, that were unintentionally created as a result of the construction of a road, street, or highway. Wetlands may include those artificial wetlands intentionally created from nonwetland areas created to mitigate conversion of wetlands.

“Wetland mosaic” means a patchwork of wetlands that is considered one unit where each patch of wetland is less than one acre and the areas delineated as vegetated wetland are more than fifty percent of the total area of the wetlands and uplands together means any area which is inundated or saturated by ground or surface water at a frequency and duration sufficient to support, and under normal circumstances does support, a prevalence of vegetation typically adapted for life in saturated soil conditions. For the purpose of this definition:

Formatted: Font: Times New Roman, 10 pt

1. Where the vegetation has been removed or substantially altered, the presence of a wetland is determined by the presence or evidence of hydric soil, by other documentation such as aerial photographs of the previous existence of wetland vegetation or by any other manner authorized in the “Washington State Wetlands Identification and Delineation Manual,” 1997, Department of Ecology;

Formatted: Indent: Left: 0"

2. A wetland may occur along the shoreline of tidal water, a lake, a stream or in a depression in the landscape. For any wetland occurring along a shoreline, the wetland's waterward boundary is where the water's depth exceeds six and six-tenths feet below low water or, if low water cannot be determined, six and six-tenths feet below the outlet's invert elevation;

3. Except for artificial features intentionally made for the purpose of mitigation, a wetland does not include an artificial feature made from a nonwetland area which may include, but is not limited to, a surface water conveyance for drainage or irrigation, a grass-lined swale, a canal, a flow control facility, a wastewater treatment facility, a farm pond, a wetpond, landscape amenities or a wetland made after July 1, 1990, which was unintentionally made as a result of the construction of a road, street, or highway; and

4. Wetlands shall include those wetlands intentionally created from nonwetland areas, formed to mitigate conversion of wetlands.

“Wetland, isolated” means a wetland, which is not hydrologically connected, does not have permanent open water and is often of low function.

“Wetland specialist” means a person with experience and training in wetlands issues and with experience in performing a wetland delineation, analyzing wetland functions and values, analyzing wetland impacts, and recommending wetland mitigation and restoration means a wetland scientist with at least two years of full-time work experience as a wetlands professional, including delineating wetlands using the federal manual and supplements, preparing wetland reports, conducting function assessment, and development and implementing mitigation plans.

Qualifications include:

1. Bachelor of Science or Bachelor of Arts or equivalent degree in biology, botany, environmental studies, fisheries, soil science, wildlife, agriculture, or related field, and two years of related work experience, including a minimum of one year experience delineating wetlands using the Unified Federal Manual and preparing wetland reports and mitigation plans. Additional education may substitute for one year of related work experience; or
2. Four years of related work experience and training, with a minimum of two years experience delineating wetlands using the Unified Federal Manual and preparing wetland reports and mitigation plans. The person should be familiar with the Federal Manual for Identifying and Delineating Jurisdictional Wetlands, Corps of Engineers Wetlands Delineation Manual 1987 edition and corresponding guidance letters, Washington State Wetlands Identification and Delineation Manual, the city site development regulations, and the requirements of this title.

“Wildlife biologist” means a professional with a degree in wildlife, or certification by the Wildlife Society, or with five years’ professional experience as a wildlife biologist. (Ord. 17-492 § 2 (Exh. A); Ord. 16-461 § 2; Ord. 15-447 § 1 (Exh. A); Ord. 02-200 § 2).

14.10.070 Administration.

A. Approvals Required. An approval must be obtained from the city when the department determines that the site or project area is or may be located within 300 feet of a critical area, as set forth in each chapter.

B. Application Requirements.

1. Preliminary Review. The provisions for conducting a preliminary review of an application is set forth in EMC 18.40.070, Process types.

2. Application Filing.

a. Applications shall be reviewed for completeness in accordance with department submittal standards checklists and pursuant to EMC 18.40.150, Determination of completeness.

b. Applications and associated reports shall not be submitted without an accompanying permit application for an underlying action (parent application) such as, but not limited to, a building permit, subdivision or boundary alteration action, site development application, TPCHD permit, or use permit, with the exception of applications required by the department as a result of an enforcement action or reports required by TPCHD for septic design approval.

3. Modifications. The department may request an update of any required assessment, report, delineation, etc., due to the potential for change in the existing environment that may have been caused by a natural event (e.g., seismic event, landslides, flooding, etc.) or human induced activity that degraded the existing conditions that occurred after the original document was initially submitted.

C. Public Notice. Public notice provisions for notice of application; public hearing, if applicable; and final decision pursuant to this title are outlined in EMC 18.40.190, Notice of public hearing.

D. Review.

1. Initial Review. The department shall conduct an initial review of any application in accordance with the provisions outlined in EMC 18.40.150, Determination of completeness.

2. Review Responsibilities.

a. The department is responsible for administration, circulation, and review of any applications and approvals required by this title.

b. The hearing examiner shall be the decision authority for reasonable use applications.

c. Other city or county departments and state agencies, as determined by the department, may review an application and forward their respective recommendations to the director or hearing examiner, as appropriate.

3. Review Process.

a. The department shall perform a critical area review for any building or land use application submitted for a regulated activity, including, but not limited to, those set forth in EMC 14.20.020. Reviews for multiple critical areas shall occur concurrently.

b. The department shall, to the extent reasonable, consolidate the processing of related aspects of other Edgewood city regulatory programs which affect activities in regulated critical areas, such as subdivision or site development, with the approval process established herein so as to provide a timely and coordinated review process.

c. As part of the initial review of all development or building-related approvals or permit applications, the department shall review the information submitted by the applicant to:

- i. Confirm the nature and type of the critical area and evaluate any required assessments, reports, or studies;
- ii. Determine whether the development proposal is consistent with this title;
- iii. Determine whether any proposed alterations to the site containing critical areas are necessary; and
- iv. Determine if the mitigation and monitoring plans proposed by the applicant are sufficient to protect the public health, safety, and welfare consistent with the goals, purposes, objectives, and requirements of this title.

~~d. Regulated activities subject to SEPA shall also be reviewed with consideration for impacts on critical areas as identified in this title. Regulated activities that pose a significant adverse impact which are not addressed by the standards and criteria established in this title (gaps), may be subject to additional mitigation measures as determined through the SEPA process. A threshold determination issued pursuant to EMC Title 20, SEPA, may not be made prior to departmental review of any special studies or technical reports required by this title, except where the applicant requests a declaration of significance so that environmental review is required.~~

ed. Critical area applications required under this title shall be approved prior to approval of any related action (parent application) such as, but not limited to, a building permit, subdivision action, site development action, forest practice application, or use permit.

ef. The requirement to submit a critical area assessment, report, etc., required under this title, may be waived at the department's discretion when the proposed project area for a regulated activity is located in an area that has been the subject of a previously submitted and approved assessment, report, etc., if all of the following conditions have been met:

- i. The provisions of this title have been previously addressed as part of another approval;~~;~~
- ii. There has been no material change in the potential impact to the critical area or required buffer since the prior review;~~;~~
- iii. There is no new information available that is applicable to any critical review of the site or particular critical area;~~;~~
- iv. The permit or approval has not expired or, if there is no expiration date, no more than five years have elapsed since the issuance of that permit or approval; ~~and;~~
- v. Compliance with any standards or conditions placed upon the prior permit or approval has been achieved or secured.

4. Burden of Proof. The applicant has the burden of proving that a proposed application complies with the standards set forth in this title.

5. Approval.

a. The department may approve, approve with conditions, or deny any development proposal in order to comply with the requirements and carry out the goals, purposes, objectives, and requirements of this title based on the department's or hearing examiner's, as applicable, evaluation of the ability of any proposed mitigation measures to reduce risks associated with the critical area and compliance with required standards. Approval of a development proposal does not discharge the obligation of the applicant to comply with the provisions of this title.

b. Applicants shall comply with the recommendations and/or mitigation measures contained in final approved assessments or reports and any department or hearing examiner conditions of approval.

c. Approval of an application required under this title must be given prior to the start of any development activity on a site.

6. Denial. The department or hearing examiner, as applicable, shall have the authority to deny any application for development or building-related approvals or permits when the criteria established in this title have not been met.

7. Time Period for Final Decision. The provisions for issuing a notice of final decision on any application filed pursuant to this title is set forth in EMC 18.40.040, Coordination of development permit procedures.

E. Time Limitations.

1. Expiration of Approval.

a. Approvals granted under this title shall be valid for the same time period as the underlying permit (e.g., preliminary plat, site development, building permit). If the underlying permit does not contain a specified expiration date then approvals granted under this title shall be valid for a period of three years from the date of issue, unless a longer or shorter period is specified by the department.

b. The approval shall be considered null and void upon expiration, unless a time extension is requested and granted as set forth in subsection (E)(2) of this section.

2. Time Extensions.

a. The applicant or owner(s) may request in writing a one-time, one-year extension of the original approval.

b. Knowledge of the expiration date and initiation of a request for a time extension is the responsibility of the applicant or owner(s).

c. A written request for a time extension shall be filed with the department at least 60 days prior to the expiration of the approval.

d. Upon filing of a written request for a time extension, a copy shall be sent to each party of record together with governmental departments or agencies that were involved in the original approval process. By letter, the department shall request written comments be delivered to the department within 30 days of the date of the letter.

e. Prior to the granting of a time extension, the department may require a new application(s), updated study(ies), and fee(s) if:

i. The original intent of the approval is altered or enlarged by the renewal;

ii. The circumstances relevant to the review and issuance of the original approval have changed substantially; or

iii. The applicant failed to abide by the terms of the original approval.

f. If approved, the one-year time extension shall be calculated from the date of granting said approval.

F. Recording.

1. Approvals.

a. Critical area regulation approvals are to be recorded on the title of the project parcel(s) at the Pierce County auditor's office within six months of issuance. Failure to record an approval in this timeframe may result in the project being placed into inactive status. A new application(s) and fee(s) may be required to

remove the project from inactive status. Also refer to EMC 14.10.080(C), Title and Land Division Notification, for additional recording requirements.

b. Recording of a wetland approval for work completed within utility line easements on lands not owned by the jurisdiction conducting the regulated activity shall be required.

2. Right of Entry Agreement. The city may require the applicant to record a right of entry agreement, which shall be consistent with a format approved by the department. The right of entry agreement shall:

a. Allow ~~director or agent~~ the department and agents of the department to access the site for purposes of inspection during the course of application review, construction, and post-construction monitoring.

b. Allow the department and agents of the department ~~director or agent~~ to enter a property to construct required improvements, mitigation measures, or monitoring that have been financially guaranteed.

c. Run with the land, and be binding on all parties having or acquiring any right, title, interest, or any part thereof of the site, including the grantor, heirs, successors, and assigns. (Ord. 02-200 § 2).

14.10.075 Relationship to Other Regulations

A. This title shall apply as an overlay and in addition to zoning and other regulations adopted by the City.

B. These critical areas regulations shall apply concurrently with review conducted under SEPA, as adopted under Chapter EMC 20.05.

C. Compliance with the provisions of this title does not constitute compliance with other federal, state, and local regulations and permit requirements that may be required (for example, Hydraulic Permit Act [HPA] permits, Section 106 of the National Historic Preservation Act, U.S. Army Corps of Engineers Section 404 permits, National Pollution Discharge Elimination System permits). The applicant is responsible for complying with these requirements, apart from the process established in this title.

14.10.080 Critical area protective measures.

A. General. All critical area tracts, conservation easements, land trust dedications, and other similarly preserved areas shall remain undeveloped in perpetuity, except as they may be allowed to be altered pursuant to each chapter.

B. Financial Guarantees.

1. The city may require an applicant to submit one or more financial guarantees to the city, as set forth in each chapter of this title (and other titles of Edgewood's Municipal Code as required), to guarantee any performance, mitigation, maintenance, or monitoring required as a condition of permit approval. The approval for the project will not be granted until the financial guarantee is received by the department. Projects where the city or one of its departments is the applicant shall not be required to post a financial guarantee.

2. Financial guarantees required under this title shall be:

a. In addition to any other site development guarantees required for project approval;

b. Submitted on financial guarantee forms approved by the city;

c. In the amount of 125 percent of the estimate of the cost of mitigation or monitoring to allow for inflation and administration should the city have to complete the mitigation or monitoring, unless the provisions set forth in subsection (B)(2)(D) of this section are applicable; ~~and~~.

d. Released by the city only when the applicant's appropriate technical professional has provided written confirmation that the performance, mitigation, or monitoring requirements have been met and department staff, or agent, inspected the site(s) for compliance.

3. Failure to complete any performance, mitigation, or monitoring may result in the forfeiture of the guarantee. Applicants who have previously defaulted will no longer be allowed to post a guarantee for improvements

Formatted: Font: Not Bold

Formatted: Font: Times New Roman, 10 pt, Font color: Auto

Formatted: Font: Times New Roman, 10 pt, Font color: Auto

Formatted: Font: Not Bold

Commented [t10]: Organization:
This section typically has a different order that follows the permit process: starts with mitigation sequencing, mitigation plan requirements, building setbacks, financial guarantees, critical area tracts, notice on title, and ends with signs/fencing.

Formatted: Tab stops: 0.73", Left

necessary for approval of a land use application. Applicants who have previously defaulted will be allowed to post guarantees for subsequent critical area mitigation work needed for approval of a land use application or permit, but the guarantee must be by bond and must be for two times the required amount.

C. Title and Land Division Notification.

1. General.

- a. Title and/or land division notice shall be required to be recorded with the Pierce County auditor on each site that contains a critical area, prior to approval of any regulated activity on a site.
- b. If more than one critical area subject to the provisions of this title exists on the site, then one notice which addresses all of the critical areas shall be sufficient.
- c. Title and land division notifications and notes shall be approved by the department and shall be consistent with ~~Appendix B in~~ EMC 14.10.140, Appendix A.

2. Title Notification.

- a. When the city determines that activities not exempt from this title are proposed, the property owner shall file a notice with the Pierce County auditor. The notice shall provide a public record of the presence of a critical area and associated buffer, if applicable; the application of this title to the property; and that limitations on actions in or affecting such critical area and associated buffer, if applicable, may exist.
- b. The notice shall be notarized and shall be recorded with the Pierce County auditor prior to approval of any regulated use or activity for the site.
- c. Notice on title is not required for utility line easements on lands not owned by the jurisdiction conducting the regulated activity (e.g., gas pipelines).

3. Land Division Notification and Notes. The applicant shall include notes, as referenced in EMC 14.10.140, Appendix ~~AB~~, on the face of any proposed activity as defined in EMC Title 16, Subdivisions (i.e., final plat, binding site plan, large lot, short subdivision, boundary line adjustment, or lot combination), for projects that contain critical areas or critical area buffers. The applicant shall also clearly identify the critical area boundaries and the boundary of any associated buffers on the face of these documents.

D. Conservation Easements. Prior to any final critical area approval, the part of the critical area and required buffer which is located on the site shall be protected with a conservation easement or other similar permanent deed restriction. The conservation easement shall indicate allowable and prohibited uses within the critical area and required buffer.

E. Tracts. Prior to final approval of any subdivisions, short subdivisions, large lot divisions, or binding site plans, the part of the critical area and required buffer which is located on the site, shall be placed in a separate tract or tracts (~~see Figure 14.10-2 in EMC 14.10.150~~). In lieu of a separate tract, an applicant may propose to establish an alternative permanent protective mechanism; however, approval of such is based upon the department's or hearing examiner's, as applicable, determination that such alternative mechanism provides the same level of permanent protection as designation of a separate tract or tracts.

F. Homeowner's Covenants. A description of the critical area and required buffer shall be placed in any required homeowner's covenants. Such covenants shall contain a detailed description of the allowable uses within the critical area and, if applicable, associated buffer and long-term management and maintenance requirements of that critical area.

G. Identification of Critical Areas and Required Buffers on Construction Plans. Critical areas and required buffers shall be clearly identified on all construction plans such as, but not limited to, site development plans, residential building plans, commercial building plans, forest harvest plans, etc.

H. Markers, Fencing, and Signage.

1. Markers. Prior to final approval of any critical area application, the outer edge of the critical area boundaries or, if applicable, required buffer boundaries on the site shall be flagged by the qualified professional, as outlined in each chapter. These boundaries shall then be identified with permanent markers (rebar and cap) and flagged by a licensed surveyor, unless otherwise stated in this title. The permanent markers shall be clearly visible, durable, and permanently affixed to the ground.

2. Fencing.

a. Temporary Construction Fencing. Temporary fencing is required when vegetation is to be retained in an undisturbed condition within the critical area and required buffer. In such cases, the applicant will be required to construct silt fencing, construction fencing, or other city-approved method of temporary fencing at the edge of the critical area or, if applicable, the edge of the required buffer prior to beginning construction on the site.

b. Permanent Fencing. Where deemed necessary by the department to provide protection to the critical area, the applicant will be required to construct permanent, wildlife-passable fencing along the buffer boundary.

3. Signage.

a. The department shall require permanent signage to be installed at the edge of the critical area or, if applicable, the edge of the required buffer.

b. The sign shall indicate the type of critical area and if the area is to remain in a natural condition as permanent open space.

c. Exact sign locations, wording, size, and design specifications shall be established by the department. Required signage shall be clearly visible, durable, and permanently affixed to the ground.

d. Prior to final approval of any critical area application, the applicant shall submit an affidavit of posting to the department as proof that the required signs were posted on the site.

I. Building Setbacks.

1. Unless otherwise provided in this title, buildings and other structures shall be set back a distance of 15 feet from the edge of all critical area buffers or, where no buffers are required, the edge of the critical area.

2. The following uses and activities may be allowed in the building setback area:

a. Landscaping;

b. Uncovered decks;

c. Building overhangs if such overhangs do not extend more than 18 inches into the setback area;

d. Impervious ground surfaces, such as driveways, parking lots, roads, walkways, and patios; provided, that such improvements conform to the water quality standards set forth in the city's adopted stormwater management manual and that construction equipment does not enter the buffer during the construction process; and

e. Clearing and grading. (Ord. 02-200 § 2).

J. Mitigation Sequence.

1. Adverse impacts caused by new activities and developments shall be mitigated using the following action in order of priority:

a. Avoiding the impact altogether by not taking a certain action or parts of an action;

Commented [t11]: Organization:
This section should be listed first under 14.10.080, replace B.

b. Minimizing impacts by limiting the degree or magnitude of the action and its implementation, by using appropriate technology, or by taking affirmative steps, such as project redesign, relocation, or timing, to avoid or reduce impacts;

c. Rectifying the impact by repairing, rehabilitating, or restoring the affected environment;

d. Reducing or eliminating the impact over time by preservation and maintenance operations;

e. Compensating for the impact by replacing, enhancing, or providing substitute resources or environments; and

f. Monitoring the impact and the compensation project and taking appropriate corrective measures.

Formatted: Font: Times New Roman, 10 pt

Formatted: Font: Times New Roman, 10 pt

Formatted: Font: Times New Roman, 10 pt

Formatted: Font: Times New Roman, 10 pt

Formatted: Indent: Left: 0"

14.10.085 Variances to critical areas.

A. General. Variances are reviewed pursuant to EMC 18.50.080, Variances. Conditions may be attached to a critical area(s) variance, which will serve to meet the goals, objectives, and policies of this title.

B. Criteria for Priority Habitat Buffer Variances. In order to grant a priority habitat buffer variance, requirements pursuant to EMC 18.50.080, Variances, shall apply. In addition, the applicant must also demonstrate, and the examiner must find, that the requested buffer width modification preserves adequate vegetation to: Variance Criteria. A variance may be granted only if the applicant demonstrates that the requested action conforms to all of the criteria set forth as follows:

1. Special conditions and circumstances exist that are peculiar to the land, the lot, or something inherent in the land, and that are not applicable to other lands in the same district;

2. The special conditions and circumstances do not result from the actions of the applicant;

3. A literal interpretation of the provisions of this title would deprive the applicant of all reasonable economic uses and privileges permitted to other properties in the vicinity and zone of the subject property under the terms of this title, and the variance requested is the minimum necessary to provide the applicant with such rights;

4. Granting the variance requested will not confer on the applicant any special privilege that is denied by this title to other lands, structures, or buildings under similar circumstances;

5. The granting of the variance is consistent with the general purpose and intent of this title, and will not further degrade the functions or values of the associated critical areas or otherwise be materially detrimental to the public welfare or injurious to the property or improvements in the vicinity of the subject property;

6. The decision to grant the variance includes the best available science and gives special consideration to conservation or protection measures necessary to preserve or enhance anadromous fish habitat; and

7. The granting of the variance is consistent with the general purpose and intent of the Edgewood Comprehensive Plan and adopted development regulations.

1. Maintain proper water temperature;

2. Minimize sedimentation; and

3. Provide food and cover for listed species.

Formatted: Indent: Left: 0.28"

C. Additional Criteria for Flood Hazard Area Variances. In addition to the variance criteria specified above in subsection (B) of this section, a flood hazard area variance applicant must also demonstrate, and the hearing examiner must find, that the proposal satisfies all of the following: In order to grant a flood hazard area variance, requirements pursuant to EMC 18.50.080, Variances, shall apply. In addition, the applicant must also demonstrate, and the examiner must find, that the proposal satisfies all of the following:

1. Generally, the only condition under which a variance from the elevation standard may be issued is for new construction and substantial improvements to be erected on a small or irregularly shaped lot contiguous to and surrounded by lots with existing structures constructed below the base flood level. As the lot size increases the technical justification required for issuing the variance increases.
2. Variances shall not be issued within a designated floodway if any increase in flood levels during the base flood discharge would result.
3. Variances shall only be issued upon a determination that the variance is the minimum necessary, considering the flood hazard, to afford relief.
4. Variances shall only be issued upon:
 - a. A showing of good and sufficient cause;
 - b. A determination that failure to grant the variance would result in exceptional hardship to the applicant;
 - c. A determination that the granting of a variance will not result in increased flood heights, additional threats to public safety, extraordinary public expense, create nuisances, cause fraud on or victimization of the public, or conflict with existing local laws or ordinances.
5. Variances as interpreted in the National Flood Insurance Program are based on the general zoning law principle that they pertain to a physical piece of property; they are not personal in nature and do not pertain to the structure, its inhabitants, economic or financial circumstances. They primarily address small lots in densely populated residential neighborhoods. As such, variances from flood elevations should be quite rare.
6. Variances may be issued for nonresidential buildings in very limited circumstances to allow a lesser degree of floodproofing than watertight or dry-floodproofing, where it can be determined that such action will have low damage potential, complies with all other variance criteria (except 4.4-1), and otherwise complies with Sections 5.1-1, 5.1-3, and 5.1-4 of the General Standards.
7. Any applicant to whom a variance is granted shall be given written notice that the permitted structure will be built with its lowest floor below the base flood elevation and that the cost of flood insurance will be commensurate with the increased risk.

D. Should a variance be denied, the application will be reviewed as a reasonable use exception pursuant to EMC 14.20.050. (Ord. 17-492 § 2 (Exh. A); Ord. 02-200 § 2).

14.10.090 Reconsideration and appeal procedures.

Procedures for appeal of an administrative decision and procedures for reconsideration or appeal of a hearing examiner decision issued pursuant to this title are set forth in EMC 18.40.090, Process II – Administrative action. (Ord. 02-200 § 2).

14.10.100 Fees.

Fees for applications and/or review of reports, studies, or plans filed pursuant to this title are set forth in the adopted fee schedule and as stipulated below:

A. Fee Establishment. The city, by resolution, shall establish fees for filing of critical area review processing and other services provided by the city as required by this title. These fees shall be based on the anticipated sum of direct costs incurred by the city for any individual development or action and may be established as a sliding scale that will recover all of the city costs. Basis for these fees shall include, but not be limited to, the cost of engineering and planning review time, cost of inspection time, costs for administration, and any other special costs attributable to the critical area review process.

B. Applicant Responsibilities. Unless otherwise indicated in this title, the applicant shall be responsible for the initiation, preparation, submission, and expense of all required reports, assessment(s), studies, plans, reconnaissance(s), peer review(s) by qualified consultants, and other work prepared in support of or necessary to review the application.

Commented [AM12]: Note from city: "Processing Procedures are likely to change with other code updates currently in review. The reference to EMC 18.40.090 may need revising accordingly as the code update moves forward. It should be flagged for future editing."

C. Fee Schedule. The director is charged with the responsibility of collecting appropriate fees charged to applicants for any permits or discretionary approval processes provided for in this title. The amount of the fees charged shall be as established by resolution or ordinance of the city council filed in the office of the city clerk and may be, from time to time, changed without amendment to this title.

D. Payment. Fees established in accordance with this title shall be paid upon submission of a signed application or petition for appeal, or as otherwise provided by any fee ordinance or resolution adopted by the city council. A department of the city shall not be required to pay application fees when applying for a permit regulated under this title. Where such an application will require substantial review time or expenditures, the mayor may, at his/her sole discretion, direct that the department initiating the permit request to reimburse the community development department for some or all of costs expended for the application review.

E. Investigation Fee. To investigate violations of this title, all city fees associated with investigation of violations of this title may be assessed at the adopted billable staff hour rate in addition to any required consultant costs, legal costs, and other expenses necessary to complete the investigation of the violation. The payment of such investigation fees shall not exempt any person from compliance with all other provisions of this title, nor from penalties prescribed by law.

~~F. Fees for Environmental Assessments and EISs. Environmental assessment/checklist fees for the construction, alteration, or repair of single- or two-family dwellings may be waived when the application provides sufficient documentation showing, to the satisfaction of the city, who shall make written findings, that all of the following conditions exist:~~

- ~~1. The single- or two-family dwelling is intended for low-income families. Low-income families are those families who meet the low-income guidelines as set forth by the city of Edgewood community development department; Department of Housing and Urban Development (HUD) annual guidelines, Section 8;~~
- ~~2. The construction, alteration, or repair of the single- or two-family dwelling involves some volunteer labor; and~~
- ~~3. The construction, alteration, or repair is being undertaken by an organization classified as a 501(c)(3) nonprofit organization by the Internal Revenue Service; or~~
- ~~4. The construction, alteration, or repair is being undertaken by Pierce County department of community services housing rehabilitation or authorized agent. (Ord. 16-482 § 2 (Exh. C); Ord. 02-200 § 2).~~

14.10.110 Compliance.

A. The regulations for compliance with the provisions of this title are set forth in EMC 18.30.040, Scope and compliance.

B. When a critical area or its required buffer has been altered in violation of this title, the department shall require the property owner to bring the site into compliance. The property owner shall be required to submit the appropriate critical area application and commence a departmental review, as applicable for each chapter of this title. In addition to any required site investigation, delineations, assessments, reports, etc., the property owner shall be required to submit a restoration plan that identifies the proposed mitigation to bring the subject property into compliance with the requirements of this title. (Ord. 02-200 § 2).

14.10.120 Warning and disclaimer of liability.

The degree of protection required through application of this title is deemed to be reasonable for regulatory purposes and is based on ~~scientific and engineering considerations~~ best available science; however, natural events that may exceed the geographic boundaries regulated under this title can and will occur (e.g., flood heights that are higher ~~than~~ anticipated). This title does not mean to imply that land outside designated hazard areas or uses permitted within such areas will be free from damages. Application of this title shall not create liability on the part of the city, any officer or employee thereof, or the Federal Insurance Administration for any damages that may result from the administration of this title or any administrative decision lawfully made hereunder. (Ord. 02-200 § 2).

Commented [AM13]: City attorney to review this section

14.10.130 Severability.

If any provision of this title or its application to any person or circumstance is held to be invalid or unconstitutional, then said holding shall in no way affect the validity or application of the remainder of this regulation to other persons or circumstances. (Ord. 17-492 § 2 (Exh. A); Ord. 02-200 § 2).

14.10.135 Violation – Civil infraction.

A. In addition to any other sanction or penalty, or any remedial, judicial or administrative procedure available under city code or state law, violation of any provision of this title or failure to comply with a decision of the responsible official, hearing examiner, or city council issued pursuant to this title constitutes a civil infraction.

B. Each day or portion thereof during which a violation occurs or exists shall be deemed a separate civil infraction. A person found to have committed a civil infraction shall be assessed a monetary penalty. The maximum penalty and the default amount for a civil infraction shall be \$250.00, not including statutory assessments. In addition:

1. The court may consider dismissing with costs only upon a showing that the violation was corrected within 30 days.
2. Whenever a monetary penalty is imposed by a court under this title, it is immediately payable. If the person is unable to pay at that time, the court may grant an extension. If the penalty is not paid on or before the time established for payment, the court may proceed to collect the penalty in the same manner as other civil judgments and may notify the prosecuting attorney of the failure to pay.
3. Payment of a monetary penalty or performance of the required community service shall not relieve a person of the duty to correct the violation.
4. The court may also order a person found to have committed a civil infraction to make restitution. (Ord. 02-200 § 2).

14.10.140 Appendixes.

~~A. Mapping Sources.~~

~~B.A. Title and Plat Notification Forms.~~

APPENDIX A

MAPPING SOURCES

~~The following sources of information and/or best available science may be used to indicate the presence of critical areas within Edgewood and provide data used in the development of the city of Edgewood critical areas atlas maps:~~

~~A. The following sources identify wetlands that are depicted in the Edgewood wetland inventory map and/or used as indicators of wetland presence:~~

- ~~1. Soil Survey of Pierce County Area, Washington, 1979, Soil Conservation Service, United States Department of Agriculture (USDA);~~
- ~~2. National Wetland Inventory Maps, U.S. Department of Interior, Fish and Wildlife Service, 1973;~~
- ~~3. Potential flood hazard areas as identified under subsection (G) of this section;~~
- ~~4. Aerial photographs, Department of Natural Resources, 1985 (Assessor's Office aeriels) or city-acquired aerial photographs;~~
- ~~5. Applicant supplied and verified data;~~
- ~~6. Ongoing field investigation to categorize and delineate wetlands; and~~

Commented [JWM14]: What is the replacement for mapping source identification? Just moving to individual sections?

7. Buildable Lands Wetland Inventory, 2001.

B. The following sources identify landslide and erosion hazard areas that are depicted in the critical areas landslide hazard area map and erosion hazard areas map and/or used as indicators of landslide and erosion hazard area presence:

1. Soil Survey of Pierce County Area, Washington, 1979, Soil Conservation Service, United States Department of Agriculture (USDA);
2. Areas designated as slumps, earthflows, mudflows, lahars, or landslides on maps published by the United States Geological Survey or Washington Department of Natural Resources Division of Geology and Earth Resources;
3. The city of Edgewood topographic data;
4. United States Geologic Survey Quadrangle maps;
5. Applicant supplied and verified data of active landslide areas and potentially unstable areas; and
6. Buildable Lands Slope Data, 2001.

C. The following sources identify seismic hazard areas which are depicted in the critical areas seismic hazard areas map and/or used as indicators of seismic hazard areas presence:

1. Washington State Department of Natural Resources Division of Geology and Earth Resources 1-100,000 Scale Digital Geology of Washington State; and
2. Areas designated as faults or subject to liquefaction or dynamic settlement on maps or data published by the United States Geological Survey or Washington Department of Natural Resources Division of Geology and Earth Resources.

D. The following sources identify volcanic hazard areas that are depicted in the Critical Areas Atlas—Volcanic Hazard Areas Map:

1. “Map Showing Debris Flows and Debris Avalanches at Mount Rainier, Washington—Historical and Potential Future Inundation Areas,” Hydrogeologic Investigations Atlas HA-729, U.S. Department of Interior, Geologic Survey, 1995, as amended by Kevin Scott, USGS, on November 10, 1997, to be consistent with the reports listed in subsections (D)(1) and (2) of this section;
2. Volcano Hazards from Mount Rainier, Washington by Hoblitt, Walder, Driedger, Scott, Pringle, and Valance, U.S. Geological Survey Open File Report 95-273, 1995;
3. Sedimentology, Behavior, and Hazards of Debris Flows at Mount Rainier, Washington, U.S. Geological Survey Professional Paper 1547, 1995; and
4. Table of Estimated Lahar Travel Times for Lahars 107 to 108 Cubic Meters in Volume (Approaching a “Case I” Lahar in Magnitude) in the Puyallup River Valley, Mount Rainier, Pierson, T.C., 1998, An empirical method for estimating travel times for wet volcanic mass flows; Bulletin of Volcanology, v. 60, p. 98-109.

E. The following sources identify fish and wildlife habitats or presence and/or are used as indicators of critical fish or wildlife presence:

1. Water Type Reference Maps, Washington Department of Natural Resources, were used as sources to identify fish and wildlife habitat areas that are depicted in the Critical Areas Fish and Wildlife Habitat Areas—Stream Typing Map;
2. Priority Habitats and Species Program and Priority Habitat Species Maps, Washington Department of Fish and Wildlife (WDFW);

3. Water Resource Index Areas (WRIA), Washington Department of Fish and Wildlife; and

4. Salmon Distribution Maps, WDFW and Washington State Conservation Commission Data, January 2000.

F. The following sources identify the aquifer recharge, pothole and wellhead protection areas that are depicted in the Critical Areas Aquifer Recharge Area — DRASTIC Zones Map and Aquifer Recharge Area:

1. The boundaries of the two highest DRASTIC zones which are rated 180 and above on the DRASTIC index range, as identified in Map of Groundwater Pollution Potential, Edgewood, Washington, National Water Well Association, U.S. Environmental Protection Agency;

2. Wellhead protection areas as identified by the Mountain View/Edgewood Water Company.

G. The following sources identify flood hazard areas:

1. The areas of special flood hazard identified by the Federal Insurance Administration in a scientific and engineering report entitled “The Flood Insurance Study for Pierce County, Washington and Incorporated Areas” dated March 7, 2017, with accompanying FIRMs and any map amendments or corrections are hereby adopted by reference and declared to be a part of this title. The Flood Insurance Study and FIRMs are on file at Edgewood City Hall, 2224 104th Avenue East, Edgewood, Washington, 98371. The city may add or delete land from areas of special flood hazard or revise base flood elevations, utilizing best available information for flood hazard identification in accordance with federal regulations.

2. The city’s Surface Water Management Plan, 1997, or as amended thereafter.

3. Aerial photographs of the city, especially those taken in wintertime 1996 and 1997.

4. The city’s two-foot elevation contour mapping performed by Nies Mapping Group, Inc., 1999, or as subsequently updated.

5. Relevant and verifiable information from the city’s Capacity Analysis Technical Review AdHoc Committee draft report, 2000.

6. Relevant and verifiable government and citizen photographs, notes, observations, etc., regarding historic ponding/flooding levels.

7. Relevant and verifiable information available through Pierce County.

8. Relevant and verifiable information available through FEMA.

9. Where the flood insurance study, FIRM, and floodway maps do not provide adequate, best, or most recent information, the city may utilize flood information that is more restrictive or detailed than the FEMA data which can be used for identifying flood hazard areas. This information may include, but is not limited to, new and more accurate mapping or data on: channel migration, high water elevations from flood events, base flood elevations, groundwater flooding areas, potholes, maps showing increased flood inundation based on future build-out or changed hydrologic conditions, specific maps from watershed basin plans or related studies, studies by federal or state agencies, or other information deemed appropriate by the city.

APPENDIX **AB**

TITLE AND PLAT NOTIFICATION FORMS

A. Notice for Title Notification.

1. (Example: Appropriate Critical Area from EMC 14.10.030)

Tax Parcel Number:

Address:

Legal Description:

Present Owner:

NOTICE: This property contains (e.g., wetlands or wetland buffers) as defined by EMC 14.10.030. The site was the subject of a development proposal for _____ application number filed on _____ (date). Restrictions on use or alteration of the site may exist due to natural conditions of the property and resulting regulations. Review of such application has provided information on the location of the (e.g., wetland or wetland buffers) and any restriction on use.

Date Signature of owner

Notary acknowledgment and notary seal

B. Additional Title Notification Statements.

1. Title notification for liquefaction and dynamic settlement hazard areas shall include a statement of the performance criteria (i.e., protection of life safety only, provision for minimal structural damage so that post-earthquake functionality is substantially unchanged, no structural damage for the design earthquake).
2. Title notification for fault rupture hazard areas shall include a statement that a fault rupture hazard area or associated buffer exists on the site. The title notification shall include a site plan of the subject property with the fault rupture hazard area and associated buffer identified.
3. Properties that contain flood hazard areas pursuant to Chapter 14.70 EMC shall include the following statement:

Flood Elevation Certificates are kept on file by the ~~d~~Department.

C. Notice for Plat Notification/Plat Notes.

1. General. The following notice shall be placed on the face of the final plat, short plat, large lot, or binding site plan documents when said subdivision contains critical areas or critical area buffers:

Notice: This site lies within a (e.g., landslide hazard area) as defined in EMC Title 14. Restrictions on use or alteration of the site may exist due to natural conditions of the site and resulting regulation.

2. Native/~~Natural~~ Vegetation Preservation Areas. The following notice shall be placed on the face of the final plat, short plat, large lot, or binding site plan documents when said subdivision contains critical areas or critical area buffers and when said critical areas or critical area buffers have been identified as native/natural vegetation preservation areas.

Notice: The Critical Areas (~~e.g., Oregon White Oak Preservation Areas~~) appearing on this (final site plan/preliminary plat/final plat/short plat/large lot/engineering drawing) contain areas of ~~natural~~/native vegetation intended to buffer the Critical Area from the adverse effects of development. These Critical Areas (~~e.g., Oregon White Oak Preservation Areas~~) shall remain and be maintained in a natural, undeveloped, open space state. There shall be no clearing, grading, filling, or construction within the Critical Areas (~~e.g., Oregon White Oak Preservation Areas~~), except as shown on plans or documents approved by the City of Edgewood and contained in the official files for this development. Each Critical Area (~~e.g.,~~

~~Oregon White Oak Preservation Area~~ shall remain undisturbed except for periodic watering and hand weeding of plants designated as noxious by the State of Washington.

3. Plat Notes for Flood Hazard Areas. The following notes shall be placed on the face of any of final plat, short plat, large lot, or binding site plan documents which lie within a flood hazard area.

- a. Grading, clearing, and/or filling within the limits of the 100-year floodplain is prohibited except for watercourse related construction, repair, and/or maintenance work that is done by the city for management operations.
- b. If a higher frequency event occurs or if existing conditions upon which the flood hazard area boundaries were based were to change or occur differently than depicted, then the level of protection afforded by the existing levee, if applicable, and flood hazard area standards may not be adequate to prevent the subject site from flooding.
- c. All purchasers and developers (and/or their agents) of property within the subject development area and/or parcel shall take notice of the above conditions and hereby agree to defend, indemnify, and hold harmless Edgewood from any and all claims, losses, costs, liabilities, or damages of any nature imposed upon or asserted against Edgewood arising out of or caused by the city's issuance of approval or by issuance of any other permits arising out of this approval.
- d. All occupants and/or owners of property in the subject area assume the risk of flooding which may occur and waive any claims against Edgewood arising out of damage or injury to person or property resulting therefrom. (Ord. 17-492 § 2 (Exh. A); Ord. 16-461 § 3; Ord. 02-200 § 2).

~~14.10.150—Figures.~~

~~A. Figure 14.10-1, Foundation Footing Setback.~~

~~B. Figure 14.10-2, Critical Area Protective Measures—Tracts.~~

~~(Ord. 02-200 § 2).~~

Chapter 14.20

USE AND ACTIVITY REGULATIONS

Sections:

- 14.20.010 Permitted uses.
- 14.20.020 Regulated uses and activities.
- 14.20.030 Exemptions.
- 14.20.040 Nonconforming uses and structures.
- 14.20.050 Reasonable use exceptions.
- ~~14.20.060 Current use assessment program.~~ 14.20.060 Critical areas reports
- ~~14.20.070 Mitigation plans~~

Commented [t15]: Organization:
Both 14.20.060 and .070 appear at an awkward place here.
Could they be moved to 14.10? The CAR and mitigation
sections usually comes after mapping and determination of
jurisdiction in a General provisions section.

14.20.010 Permitted uses.

Uses permitted on properties designated as critical areas shall be the same as those permitted in the zone classification shown in the city's zoning atlas unless specifically prohibited by this title. (Ord. 02-200 § 2).

14.20.020 Regulated uses and activities.

A. Unless the requirements of this title are met, the department shall not grant any approval or permission to alter the condition of any land, water, or vegetation, or to construct or alter any structure or improvement regulated through the following: building permit, commercial or residential; binding site plan; franchise right-of-way construction permit; site development permit; right-of-way permit; short subdivision; large lots; use permits; subdivision; utility permits; or any subsequently adopted permit or required approval not expressly exempted by this chapter.

B. The following activities are regulated ~~within a critical fish and wildlife habitat area, wetland, aquifer recharge area, landslide or erosion hazard area, flood hazard area, within critical areas~~ and/or their buffers, unless exempted by EMC

14.20.030:

1. Removing, excavating, disturbing, or dredging soil, sand, gravel, minerals, organic matter, or materials of any kind;
2. Dumping, discharging, or filling;
3. Draining, flooding, or disturbing the water level or water table. In addition, an activity which involves intentional draining, flooding, or disturbing the water level or water table in a wetland or stream in which the activity itself occurs outside the regulated area shall be considered a regulated activity;
4. Driving, piling or placing obstructions, including placement of utilities;
5. Constructing, reconstructing, installing, demolishing, or altering the size of any structure or infrastructure, including manufactured and/or mobile homes;
6. Altering the character of a regulated area by destroying or altering vegetation through clearing, harvesting, cutting, intentional burning, shading, or planting;
- ~~7. Activities which result in significant changes in water temperature or physical or chemical characteristics of wetland or stream water sources, including changes in quantity of water and pollutant level;~~
- ~~8. Application of pesticides, fertilizers, and/or other chemicals unless demonstrated not to be harmful to the regulated area;~~
9. The division ~~or redivision~~ of land;

10. The creation of ~~hard~~ impervious surfaces.

11. The city adopts the Forest Practice Act (Chapter 76.09 RCW) by reference. (Ord. 17-492 § 2 (Exh. A); Ord. 02-200 § 2).

14.20.030 Exemptions.

~~A. All exempted~~ Exempted activities shall use reasonable methods to avoid potential impacts to critical areas and their buffers to the greatest degree feasible. To be exempt from this title does not give permission to degrade a critical area or its buffer or ignore risk from natural hazards. Any incidental damage to, or alteration of, a critical area or its buffer that is not a necessary outcome of the exempted activity shall be restored, rehabilitated, or replaced at the responsible party's expense.

~~B. The following activities are exempt from the provisions of this title:~~

The following activities are exempt from the provisions of this title:

~~A. Existing agricultural activities established prior to February 2, 1992; that after that date, do not cause permanent conversion of a critical area through actions such as filling, ditching, draining, clearing, grading, etc.; provided, that:~~

~~1. Existing agricultural activities and structures shall comply with the provisions of Chapter 14.70 EMC, Flood Hazard Areas; and~~

~~2. Determination of an agricultural exemption status is limited to the specific area(s) upon which lawfully established agricultural activities are being conducted. A determination that an activity is exempt within one portion of a property does not necessarily extend to other portions of the property.~~

~~1. Operation, maintenance, or repair of existing structures, infrastructure improvements, utilities, public or private roads, dikes, levees, or drainage systems, that do not require construction permits, if the activity does not further alter or increase the impact to, or encroach further within, the critical area or buffer and there is no increased risk to life or property as a result of the proposed operation, maintenance, or repair. Operation and maintenance includes vegetation management performed in accordance with best management practices that is part of ongoing maintenance of structures, infrastructure, or utilities, provided that such management actions are part of ongoing maintenance, do not expand further into the critical area or buffer, are not the result of an expansion of the structure or utility, and do not directly impact an endangered or threatened species.~~

~~2. Normal maintenance or repair of existing structures or developments, including damage by accident, fire, or elements. "Normal maintenance" includes those usual acts to prevent a decline, lapse, or cessation from a lawfully established condition. "Normal repair" means to restore a development to a state comparable to its original condition including, but not limited to, its size, shape, configuration, location, and external appearance, within a reasonable period after decay or partial destruction, except where repair causes substantial adverse effects to critical areas or their buffers. Replacement of a structure or development may be authorized as repair where such replacement is the common method of repair for the type of structure or development and the replacement structure or development is comparable to the original structure or development including, but not limited to, its size, shape, configuration, location, and external appearance and the replacement does not cause substantial adverse effects to critical areas or their buffers.~~

~~B. Maintenance or reconstruction of existing, lawfully established public facilities; provided, that reconstruction does not involve expansion of the facility:~~

~~1. Roads, paths, bicycle ways, trails, bridges, and associated storm drainage facilities or other public rights-of-way;~~

~~2. Flood control improvements such as, but not limited to, levees, revetments, floodwalls, regional storm drainage facilities, drainage structures, or channel capacity projects to protect public infrastructure and/or existing development, when administered by Edgewood public works and utilities; provided, that the work shall:~~

~~a. Not increase the height of the facility or linear length of the affected stream edge;~~

Commented [JWM16]: Disagreed – We made this change in our recent Flood Code update to include **all** hard surfaces, not just impervious surfaces, so there can be some regulation and/or review.

Formatted: Font: Times New Roman, 10 pt

Formatted: Font: Times New Roman, 10 pt

Formatted: Indent: Left: 0.28"

Formatted: Font: Times New Roman, 10 pt

Formatted: Font: Times New Roman, 10 pt

b. Not expand the footprint of the facility waterward or into any landward aquatic habitat; and

c. Use approved fish-friendly bioengineering techniques to the extent feasible.

C. Maintenance or reconstruction of existing private roads, driveways, on-site septic systems, and wells; provided, that reconstruction does not involve expansion of facilities, widening, or relocation.

D. For the following utility activities, when undertaken pursuant to best management practices to avoid impacts to critical areas:

1. Normal and routine maintenance or repair of existing utilities that does not include any expansion.

2. Installation, replacement, operation, repair, alteration, extension, or construction of all utility lines, equipment, or appurtenances in improved city road rights-of-way.

3E. Reconstruction, remodeling, or maintenance of existing single-family residential structures and accessory structures that are located outside a flood hazard area and active landslide hazard area; provided, that a one-time only expansion of the building footprint does not increase by more than 25 percent and that the new construction or related activity does not further intrude into the critical area or related buffer. The exemption shall not apply to reconstruction which is proposed as a result of structural damage associated with a critical area, such as slope failure in a landslide hazard area or flooding in a flood hazard area.

4F. Reconstruction, remodeling, or maintenance of structures, other than single-family structures and accessory structures that are located outside a flood hazard area or active landslide hazard area; provided, that such reconstruction, remodeling, or maintenance does not increase the floor area nor extend beyond the existing ground coverage. The exemption shall not apply to reconstruction which is proposed as a result of site or structural damage associated with a critical area, such as slope failure in a landslide hazard area or flooding in a flood hazard area.

5G. Site investigative work necessary for land use application submittals such as surveys, soil logs, percolation tests, and other related activities. Critical area impacts shall be minimized and disturbed areas shall be immediately restored.

6H. Emergency actions necessary to prevent imminent threat or danger to public health or safety, or to public or private property, or serious environmental degradation.

a1. The department shall review all proposed emergency actions to determine the existence of the emergency and reasonableness of the proposed actions taken; however, post-emergency actions, such as submittal of permits, completion of city review, modification or removal of the emergency repair work, or mitigation shall be required by the department.

b2. Shoreline erosion protection measures shall only be allowed as an emergency action when the owner can demonstrate that there is an imminent threat to an existing residential, commercial, industrial, or agricultural structure. The owner shall retain either city staff or an engineering geologist to conduct a site investigation and provide adequate documentation that the situation is actually an emergency. An emergency action is not warranted when the structure is located outside the active landslide or shoreline erosion hazard area.

c. After the emergency, the person or agency undertaking the action shall fully fund and conduct necessary restoration and/or mitigation for any impacts to the critical area and buffers resulting from the emergency action in accordance with an approved critical area report and mitigation plan. The person or agency undertaking the action shall apply for review, and the alteration, critical area report, and mitigation shall be reviewed by the department in accordance with the review procedures contained herein. Restoration and/or mitigation activities must be initiated within one (1) year of the date of the emergency activity, and completed in a timely manner.

7. Installation, construction, replacement, repair, operation or alteration of natural gas, cable and telecommunication facilities, electric facilities and lines, water, sewer or storm lines, pipes, mains, equipment or appurtenances in publicly owned right-of-way (which may be within or adjacent to a critical

Formatted: Indent: Left: 0.28"

Formatted: Indent: Left: 0.5"

Commented [JWM17]: We mention 60 days in other areas of the code regarding emergency work... Do we want a shorter time limit here?

area or its buffer), subject to full review and approval of the department, including any mitigation and restoration requirements established by the department.

I. Activities in artificial wetlands, except those artificial wetlands intentionally created from nonwetland sites, including but not limited to irrigation and drainage ditches, grass-lined swales, canals, detention facilities, wastewater treatment facilities, farm ponds, and landscape amenities; or, those wetlands created after July 1, 1990, that were unintentionally created as a result of the construction of a road, street, or highway. However, wetlands may include those artificial wetlands intentionally created from nonwetland areas, created to mitigate conversion of wetlands, if permitted by the department.

J. Activities affecting:

1. Category III wetlands less than 2,500 square feet in size which fail to meet the definition of an associated wetland, and which are not part of a mosaic wetland system as set forth in EMC 14.30.020(E)(2).
2. Category IV wetlands less than 10,000 square feet in size and which fail to meet the definition of an associated wetland, and which are not part of a mosaic wetland system as set forth in EMC 14.30.020(E)(2).
3. Category III and IV wetlands exempted under this section may still be regulated under the provisions of the city's adopted stormwater management manual.

K. Placement of access roads, utility lines, and utility poles across a Category IV wetland and/or a buffer for a Category IV wetland if there is no reasonable alternative.

L. Activities on improved portions of roads, rights-of-way, or easements; provided, there is no expansion of ground coverage.

M. Activities in wetlands in areas managed according to a special area management plan or other plan adopted by the department and specifically designed to protect wetland resources.

N. Removal by hand of manmade litter and control of noxious weeds that are included on the state noxious weed list (Chapter 16-750 WAC) or invasive plant species as identified by the city. Control may be conducted by clipping, pulling, or digging, or by an alternative nonmechanical method upon approval of a plan by the department.

Formatted: Indent: Left: 0.5"

O. Activities undertaken to comply with a United States Environmental Protection Agency superfund order, or a Washington Department of Ecology order, pursuant to the Model Toxics Control Act, including the following activities:

- a1. Remediation or removal of hazardous or toxic substances;
- b2. Source control; and
- c3. Natural resource damage restoration.

Formatted: Indent: Left: 1"

P. Maintenance activities of landscaping and gardens in a required buffer, including but not limited to, mowing lawns, weeding, harvesting, and replanting of garden crops, pruning and planting of vegetation to maintain the condition and appearance of the site existing on February 1, 1992.

Q. Activities designed for previously approved maintenance and enhancement of critical areas and/or their associated buffers.

R. Activities undertaken on the site of an existing holding pond where the water flow and/or water table is controlled by a previously approved pump system.

S. A residential building permit for a lot which was created through a land division action subject to previous reports and assessments as required under this title; provided, that the previous reports and assessments adequately identified the impacts associated with the current development proposal.

T. Maintenance of individual cemetery plots in established and approved cemeteries:

10U. Activities within a portion of a wetland buffer or fish and wildlife habitat conservation area buffer located landward of an existing, substantially developed area, such as a paved area, dike, levee, or permanent structure which eliminates or greatly reduces the impact of the proposed activities on the wetland or fish and wildlife habitat conservation area. The department shall review the proposal to determine the likelihood of associated impacts.

Formatted: Indent: Left: 0.5"

11V. Passive recreation such as hunting, hiking, fishing, and wildlife viewing that does not involve the construction of trails.

12W. Enhancement actions that do not involve clearing, grading, or construction activities (e.g., revegetation with native plants and installation of nest boxes). Enhancement activity proposals shall be reviewed by the department.

13. Forest practices conducted in accordance with the requirements of the Forest Practice Act (Chapter 76.09 RCW) and its rules, with the exception of the conversion of forest land to a use other than commercial forestry (Class IV conversions).

14. Existing and ongoing agricultural activities, provided that they implement applicable Best Management Practices (BMPs) contained in the latest editions of the USDA Natural Resources Conservation Service Field Official Technical Guide; or develop a farm conservation plan in coordinate with the local conservation district. BMPs and/or farm plans should address potential impacts to critical areas from livestock, nutrient and farm chemicals, soil erosion and sediment control and agricultural drainage infrastructure. BMPs and/or farm plans should ensure that ongoing agricultural activities minimize their effects on water quality, riparian ecology, salmonid populations, and wildlife habitat.

Formatted: Font: Not Italic

X. Maintenance or repair of existing shoreline erosion protection measures or structures; provided, that the repair shall not serve to expand any existing structures or increase the impacts of such structure on critical fish or wildlife habitat.

Y. In addition to the general exemptions listed in this section, the following uses or activities are exempt from the provisions of Chapter 14.50 EMC, Aquifer Recharge and Wellhead Protection Areas:

1. Sewer lines and appurtenances;
2. Biosolids and sludge land application sites; provided, that these activities comply with the requirements established in Chapters 173-200, 173-216, and 173-304 WAC; and
3. Single family and two family dwellings and associated accessory structures. (Ord. 02-200 § 2).

14.20.040 Nonconforming uses and structures.

An established use or existing structure located in a wetland, critical fish and wildlife habitat conservation area, landslide or erosion hazard area, flood hazard area, and their associated buffers that was lawfully permitted prior to February 1, 1992, the effective date of this title, but which is not currently in compliance with this title, may continue subject to the following:

A. Nonconforming Use Expansion. Nonconforming uses shall not be expanded or changed in any way that increases the nonconformity without a permit issued pursuant to the provisions of this title.

B. Nonconforming Structure Expansion. Existing structures shall not be expanded or altered in any manner that will increase the nonconformity without a permit issued pursuant to the provisions of this title, except as provided in EMC 14.20.030 (F) and (G-B).

C. Discontinued Uses. Activities or uses which are discontinued for 12 consecutive months shall be allowed to resume only if they are in compliance with this title.

D. Substantial Damage. Nonconforming structures, except for structures located in a flood hazard area or active landslide hazard area which are damaged or destroyed by fire, explosion, flood, or other casualty, may be restored or

replaced if reconstruction is commenced within one year of such damage and is substantially completed within 18 months of the date such damage occurred. The reconstruction or restoration shall not serve to expand, enlarge, or increase the nonconformity except as allowed through the provisions in EMC 14.20.030~~(F) and (G)~~~~(B)~~. Structures in a floodway or active landslide hazard area may be allowed to be restored only up to the limits of substantial improvement, as set forth in each chapter. (Ord. 02-200 § 2).

14.20.050 Reasonable use exceptions.

A. General Requirements.

1. If the application of this title would deny all reasonable use of a site, development may be allowed which is consistent with the general purposes of this title and the public interest. Nothing in this title is intended to preclude all reasonable use of property.

2. The provisions outlined in this section shall only be used when application of this title would deny all reasonable use of a site.

~~3. Reasonable use provisions shall apply to new construction, expansions, additions, replacements, and redevelopment projects.~~

43. Applications for a reasonable use shall automatically constitute an application for a variance to reduce front, side, or rear yard setback requirements. The hearing examiner shall examine the feasibility of reducing setbacks as a method of locating a structure outside a critical area or its associated buffer prior to granting a reasonable use exception for allowing construction to occur within a critical area or its associated buffer. Reductions in setback requirements shall be given preference over granting of a reasonable use exception.

~~5. The proposed impact to the critical area shall be the minimum necessary to allow for reasonable economic use of the property.~~

~~6. Mitigation may be required to assure that the proposal will result in no net loss of critical area functions and values, consistent with the best available science.~~

~~75.~~ The creation of new lots within critical areas and their associated buffers is prohibited.

~~86.~~ The proposal must comply with all provisions in Chapter 14.70 EMC, Flood Hazard Areas, and Chapter 14.80 EMC, Landslide Hazard Areas.

B. Application Requirements. An application for a reasonable use exception shall include the following information:

1. A description of the areas of the site that contains a critical area, buffers, or within setbacks required under this title;
2. A description of the amount of the site that is within setbacks required by other standards of the zoning code;
3. A description of the proposed development, including a site plan;
4. An analysis of the impact that the amount of development described in subsection (B)(3) of this section would have on the critical area(s);
5. An analysis of whether any other reasonable use with less impact on the critical area(s) and associated buffer(s) is possible;
6. A design of the proposal so that the amount of development proposed as reasonable use will have the least impact practicable on the critical area(s);
7. An analysis of the modifications needed to the standards of this title to accommodate the proposed development;

8. A description of any modifications needed to the required front, side, and rear setbacks; building height; and buffer widths to provide for a reasonable use while providing greater protection to the critical area(s);

9. Such other information as the department determines is reasonably necessary to evaluate the issue of reasonable use as it relates to the proposed development, such as but not limited to a wetland analysis report, mitigation plan, habitat evaluation study, and/or a buffer enhancement plan.

C. Review.

1. Public Hearing Required. The department shall set a date for a public hearing before the hearing examiner after all requests for additional information or plan correction, as set forth in EMC 18.40.150, have been satisfied. The public hearing shall follow the procedures set forth in EMC 18.40.190, Notice of public hearing.

2. Decision Criteria. The hearing examiner may approve a reasonable use exception if the examiner determines the following criteria are met:

a. The proposed development is located on an existing lot of record that was created prior to the effective date of the ordinance codified in this title and there is no other reasonable use or feasible alternative to the proposed development with less impact on the critical area(s) and/or associated buffers including phasing or project implementation, change in timing of activities, buffer averaging or reduction, setback variance, relocation of driveway, or placement of structure.

b. The development cannot be located outside the critical area and/or its associated buffer due to topographic constraints of the parcel or size and/or location of the parcel in relation to the limits of the critical area and/or its associated buffer and a building setback variance or road variance has been reviewed, analyzed, and rejected as a feasible alternative.

c. The proposed development does not pose a threat to the public health, safety, or welfare on or off the site, nor shall it damage nearby public or private property.

d. Any alteration of the critical area(s) shall be the minimum necessary to allow for reasonable use of the property.

e. The inability of the applicant to derive reasonable use of the property is not the result of actions by the applicant in subdividing the property or adjusting a boundary line thereby creating the undevelopable condition after February 1, 1992.

f. The proposal mitigates the impacts on the critical area(s) to ~~the maximum extent possible~~ ensure no net loss of critical area functions, while still allowing reasonable use of the site.

g. The proposed activities will not jeopardize the continued existence of species listed by the state or federal government as endangered, threatened, sensitive, or documented priority species or priority habitats.

h. The proposed activities will not cause significant degradation of groundwater or surface water quality.

~~3. Additional Decision Criteria for Wetlands and Associated Buffers. In addition to the decision criteria listed in subsection (C)(2) of this section, a reasonable use exception for wetlands and associated buffers shall also demonstrate that the proposed activity will result in minimum feasible alteration or impairment to the wetland's functional characteristics and existing contours, vegetation, fish and wildlife resources, and hydrological conditions.~~

~~4. Additional Decision Criteria for Critical Fish and Wildlife Habitat Areas and Associated Buffers. In addition to the decision criteria listed in subsection (C)(2) of this section, the hearing examiner may approve a reasonable use exception for critical fish and wildlife habitat areas and associated buffers if the examiner determines that the proposal complies with the mitigation measures as set forth in EMC 14.40.050.~~

35. Hearing Examiner's Authority. The hearing examiner has the authority to approve an application for a reasonable use exception, approve with additional requirements above those specified in this title, require

modification of the proposal to comply with specified requirements or local conditions, or deny the application if it fails to comply with the requirements of this title.

46. Required Written Findings and Determinations. A reasonable use exception may be approved by the hearing examiner only if all of the following findings can be made regarding the proposal and are supported by the record:

- a. The granting of the proposal will not be detrimental to the public health, safety, and general welfare.
- b. The granting of the proposal will not be injurious to the property, regulated critical area(s), or improvements adjacent to and in the vicinity of the proposal.
- c. The proposal minimizes adverse environmental impacts to the maximum practicable extent and provides mitigation to offset any impacts.
- d. The granting of the proposal is consistent and compatible with the goals, objectives, and policies of the comprehensive plan; community plan, if applicable; and the provisions of this title. (Ord. 02-200 § 2).

14.20.060 Current use assessment program.

A. An owner of agricultural land, timberland, or open space desiring current use classification under Chapter 84.34 RCW may file for such current use classification with the Pierce County assessor-treasurer's office.

B. The department shall notify the assessor-treasurer's office when restrictions on development occur on a particular site.

C. The assessor-treasurer's office shall consider the critical areas and buffering requirements of this title in determining the fair market value of land. Any owner of an undeveloped buffer which has been placed in a separate tract or tracts, protective easement, public or private land trust dedication, or other similarly preserved area shall have that portion of land assessed consistent with those restrictions. (Ord. 02-200 § 2).

14.20.060 Critical areas reports

A. When required in accordance with this title, the applicant shall submit a critical areas report.

B. The critical areas report shall use scientifically valid methods and studies in the analysis of critical area data and field reconnaissance to evaluate the proposed development and all probable impacts to critical areas in accordance with the provisions of this title. The report shall reference the source(s) of science used.

C. At a minimum the report shall contain the following:

1. The name and contact information of the applicant and a description of the proposal;
2. The site plan for the proposed development, including a map drawn to scale depicting critical areas, buffers, the proposed development, and any areas to be cleared or altered;
3. The names and qualifications of the persons preparing the report;
4. Documentation of any fieldwork performed on the site;
5. Identification and characterization of all critical areas and buffers on and adjacent to the proposed development;
6. A statement specifying the accuracy of the report, and all assumptions made and relied upon;
7. A discussion of the performance standards applicable to the critical area and proposed development;
8. A mitigation plan in accordance with EMC 14.20.070, if mitigation is required; and

Formatted: Indent: Left: 0.56", Space After: 10 pt, Don't keep with next, Tab stops: 0.56", Left + Not at 0.75"

Formatted: Indent: Left: 0.56", Tab stops: 0.56", Left + Not at 0.5"

Commented [JWM18]: If this is being deleted, should we include something in this regard elsewhere in the code, or are we covered by statute? I know there are several properties in Edgewood that are assessed under the County's Current Use program, and more may desire participation in the future...

Formatted: Font: Bold

Formatted: Font: Bold

Formatted: Font: Not Bold

Formatted: Font: Times New Roman, 10 pt

Formatted

Formatted: Font: Times New Roman, 10 pt

Formatted: Indent: Left: 0.5"

Formatted

Formatted: Indent: Left: 0.5"

Formatted: Font: Times New Roman, 10 pt

Formatted

Formatted: Indent: Left: 0.5"

Formatted: Font: Times New Roman, 10 pt

Formatted

Formatted: Indent: Left: 0.5"

Formatted: Font: Times New Roman, 10 pt

Formatted

Formatted: Indent: Left: 0.5"

Formatted: Font: Times New Roman, 10 pt

Formatted

Formatted: Indent: Left: 0.5"

Formatted: Font: Times New Roman, 10 pt

Formatted

Formatted: No bullets or numbering

Formatted: Font: Times New Roman, 10 pt

Formatted

Formatted: Font: Times New Roman, 10 pt

Formatted: Font: Times New Roman, 10 pt

Formatted: Indent: Left: 0.5"

9. Any additional report information required for the critical area as specified in the following chapters.

14.20.070 Mitigation plans

When mitigation is required, the applicant shall submit a mitigation plan. The mitigation plan shall include all of the following:

A. Mitigation sequencing. A description of reasonable efforts made to apply mitigation sequencing pursuant to EMC 14.10.080(J) to avoid, minimize, and mitigate impacts to critical areas and buffers.

B. Mitigation details.

1. A description of the anticipated impacts to the critical area and buffer, including impacts to critical area functions and values;

2. The mitigating actions proposed, including: type of mitigation proposed (e.g., on-site or off-site); site selection criteria; identification of compensation goals; and identification of critical area functions.

3. The environmental goals and objectives of the mitigation, together with specific measurable criteria and performance standards for evaluating whether or not the goals and objectives of the mitigation project have been successfully attained;

4. A review of the best available science supporting the proposed mitigation; and

5. An analysis of the likelihood of success of the mitigation project.

C. Construction details. The mitigation plan shall include written specifications, descriptions, and drawings of the mitigation proposed, including:

1. Construction sequence, timing, and duration;

2. Grading and excavation details;

3. Erosion and sediment control features; and

4. Planting plan specifying plant species, quantities, locations, size, spacing, density, and measures to protect and maintain plants until established. All plant species must be native to the region.

D. Monitoring details.

1. A program for monitoring construction and assessing the outcome of the mitigation project, including the schedule for site monitoring (for example, monitoring shall occur in year 1, 3, and 5 after site construction), and how the monitoring data will be evaluated to determine if the performance standards are being met. Monitoring reports shall be submitted to document milestones, successes, problems, and contingency actions of the compensation project. The mitigation project shall be monitored for a period necessary to establish that performance standards have been met, but not for a period less than five (5) years. Mitigation monitoring shall be the responsibility of the applicant.

2. A contingency plan with courses of action and corrective measures to be taken if monitoring or evaluation indicates project performance standards are not being met.

E. Bond estimate. A bond estimate for the entire compensatory mitigation project, per the requirements of EMC 14.10.080(B).

F. Other requirements. The mitigation plan shall address any additional mitigation requirements relevant to the specific critical area as specified in the following chapters.

Formatted: Font: Times New Roman, 10 pt

Formatted: Numbered + Level: 1 + Numbering Style: 1, 2, 3, ... + Start at: 1 + Alignment: Left + Aligned at: 0.25" + Indent at: 0.5"

Formatted: No bullets or numbering

Formatted: Space After: 0 pt, No bullets or numbering

Formatted: Font: Times New Roman, 10 pt

Formatted: No bullets or numbering

Formatted: Numbered + Level: 1 + Numbering Style: A, B, C, ... + Start at: 1 + Alignment: Left + Aligned at: 0.25" + Indent at: 0.5"

Formatted: Font: Times New Roman, 10 pt

Formatted: Font: Times New Roman, 10 pt

Formatted: Font: Not Bold

Formatted: Font: Not Bold

Formatted: Numbered + Level: 1 + Numbering Style: 1, 2, 3, ... + Start at: 1 + Alignment: Left + Aligned at: 0.5" + Indent at: 0.75"

Formatted: Font: Times New Roman, 10 pt

Formatted: Numbered + Level: 1 + Numbering Style: A, B, C, ... + Start at: 1 + Alignment: Left + Aligned at: 0.25" + Indent at: 0.5"

Formatted: Numbered + Level: 1 + Numbering Style: 1, 2, 3, ... + Start at: 1 + Alignment: Left + Aligned at: 0.5" + Indent at: 0.75"

Formatted: Numbered + Level: 1 + Numbering Style: A, B, C, ... + Start at: 1 + Alignment: Left + Aligned at: 0.25" + Indent at: 0.5"

Formatted: Font: Not Bold

Formatted: Font: Times New Roman, 10 pt

Formatted: Numbered + Level: 1 + Numbering Style: 1, 2, 3, ... + Start at: 1 + Alignment: Left + Aligned at: 0.5" + Indent at: 0.75"

Formatted: Font: Times New Roman, 10 pt

Formatted: Numbered + Level: 1 + Numbering Style: 1, 2, 3, ... + Start at: 1 + Alignment: Left + Aligned at: 0.5" + Indent at: 0.75"

Formatted: Indent: Left: 0.5"

Formatted: Numbered + Level: 1 + Numbering Style: A, B, C, ... + Start at: 1 + Alignment: Left + Aligned at: 0.25" + Indent at: 0.5"

Formatted: Font: Times New Roman, 10 pt

Chapter 14.30

WETLANDS

Sections:

- 14.30.010 Purpose.
- 14.30.020 Wetland ~~areas~~ identification and rating.
- 14.30.030 Wetland review procedures.
- 14.30.040 ~~Wetland standards~~ Allowed activities.
- 14.30.050 ~~Mitigation-Buffer~~ requirements.
- 14.30.060 ~~Buffer-Mitigation~~ requirements.
- 14.30.070 Appendices.
- ~~14.30.080 Figures.~~

14.30.010 Purpose.

The purpose of this chapter is to avoid or, in appropriate circumstances, to minimize, rectify, reduce, or compensate for impacts arising from land development and other activities affecting wetlands, and to maintain and enhance the biological and physical functions and values of wetlands with respect to water quality maintenance, stormwater and floodwater storage and conveyance, fish and wildlife habitat, primary productivity, recreation, education, and historic and cultural preservation. When wetland impacts occur, mitigation will be required to achieve no net loss of wetlands in terms of acreage, function, and value. (Ord. 02-200 § 2).

14.30.020 Wetland ~~areas~~ identification, and rating delineation and rating.

A. ~~General Designation. All areas within the city meeting the meeting the definition of "wetland" in EMC 14.10.060~~ are hereby designated critical areas.

B. Identification and Delineation. Wetlands shall be identified and delineated by a qualified wetland scientist in accordance with the approved federal wetland delineation manual and applicable regional supplements. Wetland delineations are valid for 5 years, after which date the City shall require verification that the wetland boundaries and prior conditions have not changed.

1. Wetlands are those areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.

2. The city will require the use of the following documents to determine the presence or absence of potential wetlands:

a. Federal Manual for Identifying and Delineating Jurisdictional Wetlands, Corps of Engineers Wetlands Delineation Manual, 1987 Edition, and corresponding guidance letters; and

b. Washington State Wetlands Identification and Delineation Manual, March 1997 Edition (DOE Publication 96-94).

B. Wetland Indicators. Indicators of wetlands normally include, but are not limited to: saturated soils or standing water; water-tolerant plant species such as salmonberry, Oregon ash, Western red cedar, rushes and sedges; and dark brown or black soil colors. Refer to the documents listed in subsection (A)(2) of this section for detailed wetland indicator criteria.

C. Potential Wetland Areas Mapping. Potential wetland areas, as depicted on the city's Critical Areas Atlas—Wetland Inventory Maps, are those areas where wetland indicators have been mapped or identified. Potential wetlands include:

1. Areas within 165 feet of hydric soils identified on the soil survey of Pierce County area, wetlands identified on the National Wetland Inventory Maps or Edgewood wetland inventory maps, areas of known flooding identified on the

Formatted: List Paragraph, Space After: 0 pt, Adjust space between Latin and Asian text, Adjust space between Asian text and numbers, Tab stops: Not at 0.5"

Formatted: Font: Times New Roman, 10 pt

Formatted: Font: Times New Roman, 10 pt

Formatted: Font: Times New Roman, 10 pt

Formatted: Indent: Left: 0.28", Tab stops: 0.5", Left + Not at 0.56"

Formatted: Indent: Left: 0.28"

Formatted: Indent: Left: 0"

FEMA FIRM and flood insurance study maps, or any other indicators of hydrology such as Department of Natural Resource stream data.

2. Areas that possess one or a number of wetland indicators as set forth in subsection (B) of this section and any adjacent areas within 165 feet.

3. Areas within the buffer of any wetland previously identified through the wetland review process. The approximate location and extent of wetlands are shown on maps maintained by the city. These maps are useful as a guide for project applicants and/or property owners but do not provide a conclusive or definitive indication of wetland presence or extent. Other wetlands may exist that do not appear on the maps, and some wetlands that appear on the maps may not meet all of the wetland designation criteria. The city shall update the maps periodically as new wetland areas are identified and as new wetland information becomes available.

D. Wetland Categories. Wetlands shall be categorized by a qualified wetland scientist in accordance with the current version of the Washington State Wetland Rating System for Western Washington (Ecology, 2014) and the appropriate rating forms approved by the Washington State Department of Ecology. The wetland shall also be classified according to the U.S. Fish and Wildlife Service "Classification of Wetlands and Deep Water Habitats in the U.S." Wetlands shall be classified into categories which are reflective of each wetland's function and value and unique characteristics. Wetland categories shall be based on the generalized criteria provided in EMC 14.30.070, Appendix A, and the specific criteria provided in the Edgewood wetlands rating form provided in EMC 14.30.070, Appendix F. Wetlands shall be generally designated as follows:

1. Category I Wetlands. Category I wetlands are those regulated wetlands of exceptional resource value based on their functional value and diversity, wetland communities of infrequent occurrence, association with documented habitat for sensitive, threatened or endangered species, and other attributes which may not be adequately replicated through creation or restoration.

2. Category II Wetlands. Category II wetlands are those regulated wetlands of significant resource value based on their functional value and diversity, wetland communities of infrequent occurrence, and other attributes which may not be adequately replicated through creation or restoration.

3. Category III Wetlands. Category III wetlands are those regulated wetlands that have important resource value, principally due to vegetative diversity.

4. Category IV Wetlands. Category IV wetlands are those regulated wetlands of ordinary resource value based on monotypic vegetation of similar age and class, lack of special habitat features, and isolation from other aquatic systems.

E. Wetland Delineation Criteria.

1. Delineating Wetlands Divided by a Manmade Feature. When a wetland is divided by a manmade feature (e.g., a road embankment), the wetland shall be rated as if it is not divided if there is a perennial or intermittent surface water connection between the two wetlands and either of the following criteria are met:

a. It can be demonstrated that the separate wetlands were one discrete wetland prior to construction of the manmade feature. This may be accomplished through an analysis of secondary information such as aerial photographs and soils maps; or

b. The two separated wetlands can be shown to function as one wetland. This shall be determined based on normal conditions (i.e., in the absence of unauthorized activity, the wetlands possess similar vegetative or wildlife assemblages or hydrologic regime).

c. Separated wetland areas may be rated jointly in the absence of a perfectly level culvert with two-way water flow.

2. Connecting Mosaic Pattern Wetlands. In cases where there are no surface water connections, but the wetlands are separated from each other by less than 100 feet (on average), the DOE mosaic methodology shall be used to determine the wetland boundary. The area of the wetlands must be greater than 50 percent of the total combined

Formatted: Font: Times New Roman, 10 pt

Formatted: Font: Times New Roman, 10 pt

Formatted: Font: Times New Roman, 10 pt

Formatted: Font: Times New Roman, 10 pt

Formatted: Font: Times New Roman, 10 pt

Formatted: Font: Times New Roman, 10 pt

Formatted: Font: Times New Roman, 10 pt

area of wetland and upland for the patchwork to be considered on a wetland. In addition, the patchwork is to be encompassed in such a manner as to minimize the amount of upland area interspersed amongst the wetland areas (see EMC 14.30.080(A), Figure 14.30-1). (Ord. 16-461 § 4; Ord. 02-200 § 2).

14.30.030 Wetland review procedures.

A. Wetland Report Requirements. When the department's maps, sources, or field investigations indicate that the proposed project area is located within 300 feet of a known or suspected wetland, an applicant shall submit a wetland critical areas report prepared by a qualified wetland scientist. The requirement to provide a wetland critical areas report may be waived if the department determines that there are no potential direct and/or indirect impacts on wetlands or their buffers that would result from the proposed development. Wetland critical areas reports shall comply with the requirements established in EMC 14.30.070, Appendix A.

Formatted: Font: Not Bold

Formatted: Font: Times New Roman, 10 pt

Formatted: Font: Times New Roman, 10 pt

Formatted: Font: Times New Roman, 10 pt

Formatted: Font: Times New Roman, 10 pt

Formatted: Font: Not Bold

A. General Requirements:

1. The city's Critical Areas Atlas—Wetland Inventory Maps provides an indication of where potential wetlands are located within the city. The actual presence or location of a potential wetland or a potential wetland that has not been mapped, but may be present on or adjacent to a site shall be determined using the procedures and criteria established in this chapter.

2. The department will complete a review of the city's Critical Areas Atlas—Wetland Inventory Maps and other source documents for any proposed regulated activity to determine whether the project area for a proposed single-family dwelling unit or site for all other proposed regulated activities is located within a potential wetland. Identification of a potential wetland may also occur as a result of field investigations conducted by department staff.

3. When the department's maps, sources, or field investigation indicate that a potential wetland is located within the project area for a proposed one-family dwelling unit or within the site for all other proposed regulated activities, the department shall require a site evaluation (field investigation) to determine whether or not a regulated wetland is present and if so, its relative location in relation to the proposed project area or site. The findings of the site evaluation shall be documented as outlined in subsections (B); (C); (D); or (E) of this section.

4. If department staff completes the site evaluation and determines that no regulated wetlands are present, then wetland review will be considered complete.

5. All site evaluations shall include a proposed categorization of the wetland in accordance with the guidelines set forth in EMC 14.30.020(B) and a calculation of the standard wetland buffer as set forth in EMC 14.30.060.

6. Unless otherwise stated in this chapter, the critical area protective measure provisions contained in EMC 14.10.080 shall apply.

B. General Wetland Review. A general wetland review shall include the submittal of a wetland verification report, wetland delineation report, or a wetland analysis report, together with a wetland application and appropriate fees (see EMC 14.30.080(B), Figure 14.30-2).

1. Wetland Verification Report:

a. A wetland verification report shall be submitted when the site evaluation determines that:

i. No regulated wetland is present within 165 feet of the site;

ii. A regulated wetland is present, but its standard buffer does not extend within the site; or

iii. Wetlands are identified but are evaluated and found to be exempt as set forth in EMC 14.20.030(K).

b. The wetland verification report shall include data sheets, site maps, and other field data and information necessary to confirm wetland presence or absence and category. If exempt wetlands (refer to EMC 14.20.030(K)) are identified, a site plan must be provided that identifies their location.

c. The wetland verification report shall identify and discuss wetland boundaries within the site as well as those that extend off-site. Off-site wetlands and associated standard buffers do not have to be marked in the field.

d. Department staff shall review the wetland verification report and either:

- i. Accept the report and approve the wetland application; or
- ii. Reject the report and require the submittal of a wetland analysis report.

2. Wetland Analysis Report.

a. If a regulated wetland or its standard buffer extends onto the site, the department shall require a wetland analysis report. Information required in a wetland analysis report is identified in EMC 14.30.070, Appendix B.

b. If the department determines that a Category I wetland is on-site which is associated with documented habitat for endangered, threatened, or sensitive species or for potentially extirpated plant species recognized by state or federal agencies, the department shall also require the submittal of a habitat assessment report as set forth in Chapter 14.40 EMC.

c. If the department determines that mitigation is necessary to offset the identified impacts, the applicant shall comply with the mitigation requirements set forth in EMC 14.30.050.

d. Approval of the wetland application shall be granted upon a determination that the wetland analysis report and mitigation plan, if applicable, are thorough and accurate, and meet all requirements of this title, and that the monitoring program and contingency plan are tied to an acceptable financial guarantee as set forth in EMC 14.10.080 to assure that the requirements will be followed.

B. 3. Time Limitations. Wetland delineations and reports that have been accepted by the city shall be valid for a period of five (5) years, unless the department determines that new information warrants revision of the delineation or report.

Formatted: Indent: Left: 0"

a. General. Delineation reports and mitigation plans that have not been accepted by the city for a project are valid for a period of four years unless a longer period is approved by the department.

b. Extensions. A one year extension may be approved by the department upon written request for such extension of that delineation report or mitigation plan.

C. Single-Family Dwelling Wetland Review. Two alternative review procedures exist for construction of a single-family dwelling and regulated activities accessory to a single-family dwelling (see EMC 14.30.080(C), Figure 14.30-3). Both review procedures require the completion of a site evaluation as follows:

1. Wetland Certification Process for Single-Family Dwellings (No Encroachment into a Regulated Wetland or Its Standard Buffer):

a. Prior to issuance of a building permit, site development permit, or on-site sewage system permit, the applicant shall submit a single-family wetland certification form completed by a wetland specialist that certifies either:

- i. No regulated wetlands are present within 165 feet of the project area; or
- ii. Wetlands are present within 165 feet of the project area, but all regulated activities associated with the dwelling (i.e., landscaped areas, septic facilities, outbuildings, etc.) will occur outside of the standard buffer of the identified wetland.

b. If regulated wetland buffers extend onto the site, the wetland specialist shall place permanent, clearly visible, wetland buffer signs at the edge of the buffer. A wetland buffer sign affidavit, signed by the wetland

specialist, shall be submitted to the department as verification that the wetland buffer signs have been placed on the site.

c. A survey as outlined in EMC 14.10.080(H) will not be required.

d. The single family certification form may be used only to authorize single family dwellings and associated homesite features such as driveways, gardens, fences, wells, lawns, and on-site septic systems. It may not be used for new agricultural activities, expansion of existing agricultural activities, forest practice activities, commercial projects, land divisions, buffer width modifications (as set forth in EMC 14.30.060), or violations.

e. The single family certification process will be monitored by the department for accuracy, and enforcement actions will be initiated should encroachment into a regulated wetland or buffer occur.

f. The applicant/property owner assumes responsibility for any and all errors of the single family certification form and all associated mitigation imposed by the department.

g. Single family certification forms shall be filed with the Pierce County auditor's office in accordance with EMC 14.10.070(F) and 14.10.110(B).

2. Single Family Wetland Application Process (Encroachment into the Standard Buffer of a Regulated Wetland).

a. A wetland application and wetland delineation report shall be submitted to the department when the single family dwelling and associ-

ated homesite features are located within the standard buffer of a regulated wetland.

b. The applicant may retain either a wetland specialist or department staff to delineate the limits of a regulated wetland and determine the impacts associated with the project, subject to the following:

i. A wetland delineation report, as defined in subsection (C)(3) of this section, shall be submitted to the department for review; or

ii. Upon the applicant's request and payment of fees, the department shall delineate the regulated wetland(s).

c. If the department determines that mitigation is necessary to offset the identified impacts, the applicant shall comply with the mitigation requirements set forth in EMC 14.30.050.

d. The applicant shall place permanent, clearly visible, wetland boundary buffer signs at the edge of the buffer.

e. A survey as defined in EMC 14.10.080(H) will not be required.

3. Wetland Delineation Report. The wetland delineation report shall include data sheets; scaled site maps showing the project boundary, wetland boundary, categorization of the wetland and standard buffer boundary, boundary flag location and sample plot location and designation; a vicinity map with driving instructions; and any other field data and information necessary for the department to confirm wetland presence, location, and category.

D. Agricultural Activity Wetland Review. A wetland application and wetland delineation report shall be submitted to the department when the site evaluation indicates that a regulated wetland or its standard buffer extends into a site proposed for an agricultural activity.

1. The applicant may either retain a wetland specialist or department staff to delineate the limits of a regulated wetland and determine the impacts associated with the project area, subject to the following:

a. A wetland delineation report, as defined in subsection (C)(3) of this section, shall be submitted to the department for review; or

b. Upon the applicant's request and payment of fees, the department shall delineate the regulated wetland(s).

2. If the department determines that mitigation is necessary to offset the identified impacts, the applicant shall comply with the mitigation requirements set forth in EMC 14.30.050.

3. The applicant shall place permanent, clearly visible, wetland boundary buffer signs at the edge of the buffer.

4. A survey as defined in EMC 14.10.080(H) will not be required.

5. Agricultural activities may be initiated subject to compliance with the requirements set forth in subsections (D)(1) through (4) of this section and the submittal of a best management plan developed by the Pierce County Conservation District or Natural Resource Conservation Service (NRCS).

E. Forest Practice Wetland Review.

1. All forest practice activities that are not exempt from the provision of this title shall be reviewed pursuant to the criteria set forth in subsection (B) of this section, General Wetland Review, except for conversion option harvest plan (COHP).

2. An abbreviated wetland review process may be used for COHPs as follows:

a. If a regulated wetland or its standard buffer extends onto the site, the department shall require the submittal of a wetland application and delineation report. At a minimum the report shall include:

i. A detailed description of all wetlands on, or within, 165 feet of the site, including the wetland(s) approximate size, vegetation, categorization, and hydrology source(s).

ii. Sample data sheets for each wetland.

iii. An accurate map delineating the boundaries of the wetland(s) and standard buffer(s) in relation to the boundaries of the site.

b. The wetland delineation report shall be prepared, signed, and dated by a wetland specialist.

c. The accuracy of the wetland delineation, flagging, and categorization shall be field verified by the department.

d. A survey as defined in EMC 14.10.080(H) will not be required.

3. Where an application for a development permit, other than a site development permit, has not been submitted in association with a proposed forest practice activity a deviation, from the standard wetland buffer, as set forth in EMC 14.30.060(A), shall not be allowed. (Ord. 02-200 § 2).

14.30.040 Wetland standards/Allowed activities.

A. The following wetlands are exempt from the requirement to avoid impacts in EMC 14.10.080(J) and may be altered if the impacts are fully mitigated based on the remaining mitigation sequencing actions in EMC 14.10.080(J). In order to verify the following conditions, a wetland critical areas report meeting the requirements of EMC 14.30.070, Appendix A must be submitted.

1. All isolated Category IV wetlands less than 4,000 square feet that:
 - a. Are not associated with riparian areas or their buffers;
 - b. Are not part of a wetland mosaic;
 - c. Do not score 5 or more points for habitat functions based on current version of the Washington State Wetland Rating System for Western Washington (Ecology, 2014).
 - d. Do not contain a Priority Habitat or a Priority Area for a Priority Species identified by the Washington Department of Fish and Wildlife, federally listed species or their critical habitat, or habitats or species of local importance as identified in EMC 14.40.030(A).
2. Wetlands less than 1,000 square feet that meet the criteria specified in subsection (A)(1) of this section.
3. Utility projects within wetland buffers which have minor or short-duration impacts, as determined by the department in accordance with the criteria below, and which do not significantly impact the function or values of wetlands; provided, that such projects are constructed with best management practices and additional restoration measures are provided. Minor activities shall not result in the transport of sediment or increased stormwater. Such allowed minor utility projects shall meet the following criteria:
 - a. There is no practical alternative to the proposed activity with less impact on wetlands;
 - b. The activity involves the placement of a utility pole, street signs, anchor, or vault or other small component of a utility facility; and
 - c. The activity involves disturbance of an area less than 75 square feet.

AB. Regulated activities in wetlands and/or buffers may be allowed when the applicant demonstrates to the department that all adverse impacts to wetlands or associated buffers will be mitigated according to EMC 14.30.050. The activities listed below are allowed in wetlands and their buffers, and do not require submission of a critical area report, except where such activities would result in a loss of the functions and values of a wetland or wetland buffer. These activities include:

1. Activities in wetlands in areas managed according to a special area management plan or other plan adopted by the department and specifically designed to protect wetland resources.

B. The following activities may be allowed in a buffer without a complete mitigation plan if the applicant demonstrates to the department that all adverse impacts to wetlands will be mitigated according to the provisions in EMC 14.30.050. In cases that require environmental review, a threshold environmental determination may not be made until the department is satisfied that adequate mitigation will occur. The allowed activities are as follows:

1. One well and necessary appurtenances, including a pump and appropriately sized pump house, but not including a water storage tank (unless the water storage tank can be contained within the pump house), subject to the following conditions:
 - a. The pump house is a one-story building with a ground area of less than 120 square feet; and
 - b. The well is more than 75 feet deep; and
 - c. For Category I and II wetlands, the minimum distance from the well and appurtenances to the wetland edge is no less than 50 percent of the buffer widths established in the table in EMC 14.30.060(A); and
 - d. Access to the well and pump house shall be by a pervious trail for pedestrian traffic only or, if necessary, by an unimproved access for a maintenance vehicle.
2. Pervious trails and associated viewing platforms.
3. The placement of utility lines which do not require excavation or utility pole installation in any part of a buffer for a Category II, III, or IV wetland. They may be placed in a buffer for a Category I wetland; provided, that the

Formatted: Font: Not Bold

Formatted: Font: Not Bold

Formatted: Numbered + Level: 1 + Numbering Style: 1, 2, 3, ... + Start at: 1 + Alignment: Left + Aligned at: 0.5" + Indent at: 0.75"

Formatted: Numbered + Level: 2 + Numbering Style: a, b, c, ... + Start at: 1 + Alignment: Left + Aligned at: 1" + Indent at: 1.25"

Formatted: Numbered + Level: 1 + Numbering Style: 1, 2, 3, ... + Start at: 1 + Alignment: Left + Aligned at: 0.5" + Indent at: 0.75"

Formatted: Numbered + Level: 2 + Numbering Style: a, b, c, ... + Start at: 1 + Alignment: Left + Aligned at: 1" + Indent at: 1.25"

Formatted: Font: Not Bold

Formatted: Numbered + Level: 1 + Numbering Style: 1, 2, 3, ... + Start at: 1 + Alignment: Left + Aligned at: 0.28" + Indent at: 0.53"

minimum distance from the wetland edge is no less than 50 percent of the Category I buffer width established in the table in EMC 14.30.060(A).

4. New farm and agricultural activities may be permitted within a buffer subject to the following:

- a. Agricultural activities and structures shall comply with the provisions of Chapter 14.70 EMC, Flood Hazard Areas.
- b. The agricultural activity is in compliance with the USDA, NRCS Conservation Reserve Program farm management standards.
- c. A copy of an approved NRCS or Pierce County Conservation District farm management plan that documents compliance with the USDA, NRCS Conservation Reserve Program farm management standards has been submitted to the department for review and approval.

2G. Trimming of vegetation for purposes of providing view corridors will be allowed; provided, that trimming shall be limited to view corridors of a maximum 20-foot width and that benefit to fish and wildlife habitat are not reduced. Trimming shall be limited to hand pruning of branches and vegetation. Trimming shall not include felling, topping, or removal of trees. (Ord. 02-200 § 2).

3. Drilling for utilities/utility corridors under a wetland, with entrance/exit portal located completely outside of the wetland buffer, provided that the drilling does not interrupt the ground water connection to the wetland or percolation of surface water down through the soil column. Specified studies by a hydrologist are necessary to determine whether the ground water connection to the wetland or percolation of surface water down through the soil column will be disturbed.

14.30.050 Buffer requirements standards – Wetlands.

A. Determining Buffer widths. Buffer widths shall be measured horizontally from the perpendicular line established at the wetland edge as shown in Table 14.20.050(1).

Table 14.30.050(1)
Buffer Requirements Standards - Wetlands

Wetland Category	Buffer Width (Wetlands scores 3-4 habitat points)	Buffer Width (Wetland scores 5 habitat points)	Buffer Width (Wetland scores 6-7 habitat points)	Buffer Width (Wetland scores 8-9 habitat points)
Category I: Based on total score	75 ft.	105 ft.	165 ft.	225 ft.
Category I: Bogs and Wetlands of High Conservation Value	190 ft.	190 ft.	190 ft.	225 ft.
Category I: Forested	75 ft.	105 ft.	165 ft.	225 ft.
Category II (all)	75 ft.	105 ft.	165 ft.	225 ft.
Category III (all)	60 ft.	105 ft.	165 ft.	225 ft.
Category IV (all)	40 ft.	40 ft.	40 ft.	40 ft.

B. Required Measures to Minimize Impacts to Wetlands. Measures to minimize the impacts of the land use adjacent to wetlands shall be applied, as shown in Table 14.20.050(2).

Formatted: Indent: Left: 0.56"

Formatted: Indent: Left: 0.83"

Formatted: Indent: Left: 0.28"

Commented [t19]: Organization:
Move Buffer Standards to right after Wetland Rating.

Commented [JWM20]: This appears to be the latest BAS issued, based on the June 2015 Table XX.1 published by Ecology. Reading their website, it appears we may have an opportunity to adopt the older guidance (2005 Appendix 8-C), which is a bit more complicated, but does allow narrower buffers in certain situations (similar to our existing code and buffer widths. *Something to discuss with Planning Commission??*

Formatted: Centered, Space After: 10 pt, Tab stops: 0.5", Left

Formatted: Font: 8 pt

Formatted: Font: 8 pt

Table 14.30.050(2)
Wetland Impact Minimization Measures

Disturbance	Required Measures to Minimize Impacts
<u>Lights</u>	• <u>Direct lights away from wetland</u>
<u>Noise</u>	• <u>Locate activity that generates noise away from wetland</u> • <u>For activities that generate relatively continuous, potentially disruptive noise, such as certain heavy industry or mining, establish an additional 10-foot heavily vegetated buffer strip immediately adjacent to the outer wetland buffer</u>
<u>Toxic runoff</u>	• <u>Route all new, untreated runoff away from wetland while ensuring wetland is not dewatered</u> • <u>Establish covenants limiting use of pesticides within 150 feet of wetlands</u> • <u>Apply integrated pest management</u>
<u>Stormwater runoff</u>	• <u>Retrofit stormwater detention and treatment for roads and existing adjacent development</u> • <u>Prevent channelized flow from lawns that directly enters the buffer</u> • <u>Use Low Impact Development techniques</u>
<u>Change in water regime</u>	• <u>Infiltrate or treat, detain, and disperse into buffer new runoff from impervious surfaces and new lawns</u>
<u>Pets and human disturbance</u>	• <u>Use privacy fencing OR plant dense vegetation to delineate buffer edge and to discourage disturbance using vegetation appropriate for the ecoregion</u> • <u>Place wetland and its buffer in a separate tract or protect with a conservation easement</u>
<u>Dust</u>	• <u>Use best management practices to control dust</u>

Formatted: Font: 8 pt, Bold

Formatted: Centered

Formatted: Font: 8 pt

Formatted Table

Formatted: Not Highlight

C. Modification of Buffer Widths. The standard buffer widths of subsection (A) of this section may be modified by averaging, reducing, or increasing.

1. Buffer Averaging. Buffer width averaging may be allowed only where the applicant demonstrates all of the following:

- a. Buffer encroachment is unavoidable.
- b. The wetland contains variations in sensitivity due to existing physical characteristics.
- c. Width averaging will provide equal or greater protection of current wetland functions and values.
- f. The total buffer area after averaging is no less than the buffer area prior to averaging.
- g. The minimum width of the buffer at any given point shall be at least seventy-five percent (75%) of the standard width, or twenty-five (25) feet, whichever is greater.
- h. The averaging is accomplished within the project boundaries.

2. Buffer Width Reductions. Buffer width reduction to a maximum of twenty-five (25) percent may be allowed when the applicant demonstrates the following circumstances:

Commented [JWM21]: Would "of" make more sense here?

- a. Buffer encroachment is unavoidable.
- b. The existing buffer is predominately un-vegetated, composed of nuisance species, or is in an otherwise highly disturbed condition.
- c. The project includes a buffer enhancement plan as part of the mitigation required by EMC 14.30.060. The buffer enhancement plan shall use plant species which are native, noninvasive to the project area.
- d. Buffer reduction with enhancement will provide equal or greater protection of current wetland functions and values.

Formatted: Not Highlight

3. Buffer Increases. The department may require increased buffer width(s) when any of the following are identified:

- a. A larger buffer is necessary to maintain viable populations of existing species;
- b. The wetland is used by, or associated with, species listed by the federal government or the state as endangered, threatened, sensitive, or as documented priority species or habitats, or essential or outstanding potential sites such as heron rookeries or raptor nesting areas;
- c. The adjacent land is susceptible to severe erosion and erosion control measures will not effectively prevent adverse wetland impacts;
- d. The adjacent land has minimal vegetative cover, or slopes greater than 20 percent. (Ord. 02-200 § 2).

14.30.0650 Mitigation requirements.

A. Mitigation. All regulated development activities in wetlands or buffers shall be mitigated according to this title subject to the following criteria:

- 1. Avoiding the impact altogether by not taking a certain action or parts of actions;
- 2. Minimizing impacts by limiting the degree or magnitude of the action and its implementation by using appropriate technology or by taking affirmative steps to reduce impacts;
- 3. The following types of mitigation (no order of preference):
 - a. Rectifying the impact by repairing, rehabilitating, or restoring the affected environment;
 - b. Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action;
 - c. Compensating for the impact by replacing or providing substitute resources or environments;
- 4. Monitoring the impact and compensation and taking appropriate corrective measures; and
- 5. Mitigation for individual actions may include a combination of the above measures.

A. Mitigation. Compensatory mitigation is required for all unavoidable alterations to wetlands or their buffers, except for buffer averaging when done in accordance with EMC 14.30.050(C)(1). Compensatory mitigation actions shall replace functions affected by the alteration and shall provide equal or greater functions compared to the impacted wetland.

Formatted: Indent: Left: 0"

B. Preference of Mitigation Actions. Compensatory wetland mitigation shall occur in the following order of preference:

1. Restoration: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural or historic functions to a former or degraded wetland. For the purpose of tracking net gains in wetland acres, restoration is divided into:

a. Re-establishment: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural or historic functions to a former wetland. Re-establishment results in a gain in wetland acres (and functions). Activities could include removing fill material, plugging ditches, or breaking drain tiles.

b. Rehabilitation: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of repairing natural or historic functions of a degraded wetland. Rehabilitation results in a gain in wetland function but does not result in a gain in wetland acres. Activities could involve breaching a dike to reconnect wetlands to a floodplain or return tidal influence to a wetland

2. Creation: The manipulation of the physical, chemical, or biological characteristics of a site to develop a wetland on an upland or deepwater site where a wetland did not previously exist. Creation results in a gain in wetland acres. Activities typically involve excavation of upland soils to elevations that will produce a wetland hydroperiod, create hydric soils, and support the growth of hydrophytic plant species.

3. Enhancement: The manipulation of the physical, chemical, or biological characteristics of a wetland site to heighten, intensify, or improve specific function(s) or to change the growth stage or composition of the vegetation present. Enhancement is undertaken for specified purposes such as water quality improvement, flood water retention, or wildlife habitat. Enhancement results in a change in some wetland functions and can lead to a decline in other wetland functions, but does not result in a gain in wetland acres. Activities typically consist of planting vegetation, controlling non-native or invasive species, modifying site elevations or the proportion of open water to influence hydroperiods, or some combination of these activities

C. Approaches to Compensatory Mitigation. Mitigation for alterations to wetland and their buffers shall rely on the approaches listed below.

1. Wetland Mitigation Banks. Credits from a certified wetland mitigation bank may be used to compensate for impacts within the service area specified in the mitigation bank instrument. Use of credits from a wetland mitigation bank certified under Chapter 173-700 WAC is allowed if:

a. The department determines that it would provide appropriate compensation for the proposed impacts; and

b. The impact site is located in the service area of the bank.

c. The proposed use of credits is consistent with the terms and conditions of the certified bank instrument.

d. Replacement ratios for projects using bank credits is consistent with replacement ratios specified in the certified mitigation bank instrument.

2. In-Lieu Fee Mitigation. Credits from an approved in-lieu-fee program may be used when all the following apply:

a. The approval authority determines that it would provide environmentally appropriate compensation for the proposed impacts.

b. The proposed use of credits is consistent with the terms and conditions of the approved in-lieu-fee program instrument.

c. Project using in-lieu-fee credits shall have debits associated with the proposed impacts calculated by the applicant's qualified wetland scientist using the credit assessment method specified in the approved instrument for the in-lieu-fee program.

Formatted: Indent: Left: 0"

Formatted: Numbered + Level: 1 + Numbering Style: 1, 2, 3, ... + Start at: 1 + Alignment: Left + Aligned at: 0.5" + Indent at: 0.75"

Formatted: Numbered + Level: 2 + Numbering Style: a, b, c, ... + Start at: 1 + Alignment: Left + Aligned at: 1" + Indent at: 1.25"

Formatted: Numbered + Level: 1 + Numbering Style: 1, 2, 3, ... + Start at: 1 + Alignment: Left + Aligned at: 0.5" + Indent at: 0.75"

Formatted: Numbered + Level: 2 + Numbering Style: a, b, c, ... + Start at: 1 + Alignment: Left + Aligned at: 1" + Indent at: 1.25"

d. The impacts are located within the service area specified in the approved in-lieu-fee instrument.

3. Permittee-responsible mitigation. In this situation, the permittee performs the mitigation after the permit is issued and is ultimately responsible for implementation and success of the mitigation. Permittee-responsible mitigation may occur at the site of the permitted impacts or at an off-site location within the same watershed. If available, the use of wetland mitigation banks and in-lieu-fee programs are preferable to permittee-responsible mitigation.

D. Wetland mitigation ratios. The ratios listed in Table 14.30.060 apply to permittee-responsible mitigation. The first number specifies the acreage of replacement wetlands required, and the second number specifies the acreage of wetlands altered or relocated.

Table 14.30.060
Wetland Impact Minimization Measures

<u>Category and Type of Wetland</u>	<u>Creation or Re-establishment</u>	<u>Rehabilitation</u>	<u>Enhancement</u>
Category I: High conservation value/bog	Not considered possible	Not considered possible	Not considered possible
Category I: Mature and old growth forest	6:1	12:1	24:1
Category I: Based on functions	4:1	8:1	16:1
Category II	3:1	6:1	12:1
Category III	2:1	4:1	8:1
Category IV	1.5:1	3:1	6:1

The director may increase the ratios under the following circumstances:

1. Uncertainty as to the probable success of the proposed restoration or creation;
2. Significant period of time between destruction and replication of wetland values;
3. Projected losses in functional value;
4. The compensatory mitigation is off site.

E. Wetland buffer mitigation. To mitigate unavoidable impacts to functions and values of wetland buffers, a minimum buffer ratio of 1:1 (alteration area: mitigation area) is required. This ratio assumes that creation/restoration of a wetland buffer with appropriate native vegetation is sufficient to compensate for the wetland buffer functions and values affected by alteration of an existing wetland buffer. If enhancement of an existing wetland buffer is proposed as mitigation, a higher mitigation ratio may be required. For any proposed wetland buffer activities, the applicant must demonstrate that the functions and values of the altered wetland buffer will be fully replaced by the proposed mitigation. The department may increase the buffer mitigation ratios under the following circumstances:

1. The replacement ratio needed to recover the lost functions and values of buffer area is greater than 1:1 based upon the existing type of vegetative cover of either the impact site or the proposed mitigation site.

Formatted: Numbered + Level: 1 + Numbering Style: 1, 2, 3, ... + Start at: 1 + Alignment: Left + Aligned at: 0.5" + Indent at: 0.75"

Formatted: Indent: Left: 0"

Formatted: Font: 9 pt

Formatted: Centered, Indent: Left: 0"

Formatted: Font: 9 pt

Formatted: Font: Bold

Formatted: Centered, Line spacing: single

Formatted: Not Highlight

Formatted: Font: Bold

Formatted: Font: Bold

Formatted: Not Highlight

Formatted: Font: Bold

Formatted: Centered, Line spacing: single

Formatted: Centered, Line spacing: single

Formatted: Centered, Line spacing: single

Formatted: Centered, Line spacing: single

Formatted: Centered, Line spacing: single

Formatted: Centered, Line spacing: single

Formatted: Indent: Left: 0"

Formatted: Indent: Left: 0.5"

Formatted: Numbered + Level: 1 + Numbering Style: 1, 2, 3, ... + Start at: 1 + Alignment: Left + Aligned at: 0.5" + Indent at: 0.75"

Formatted: Indent: Left: 0"

Formatted: Font: Times New Roman, 10 pt

Formatted: Font: Times New Roman, 10 pt

Formatted: Font: Times New Roman, 10 pt

Formatted: Font: Times New Roman, 10 pt

Formatted: Font: Times New Roman, 10 pt

Formatted: Indent: Left: 0.5"

Formatted: Font: Times New Roman, 10 pt

2. Uncertainty exists as to the probable success of the proposed restoration or creation;

3. A significant period of time will elapse between impact and replication of wetland functions;

4. The impact was an unauthorized impact.

F. Wetland and buffer mitigation plans. Compensatory wetland mitigation plans shall be consistent with Wetland Mitigation in Washington State – Part 2: Developing Mitigation Plans (Ecology, 2006); and Selecting Wetland Mitigation Sites Using a Watershed Approach (Ecology, 2009), or as revised. Mitigation plans shall comply with the requirements established in EMC 14.30.070, Appendix B.

B. Mitigation for Regulated Activities in Wetland Buffers. Noncompensatory mitigation shall be required for all regulated activities in buffers. Specific mitigation plan requirements are provided in EMC 14.30.070, Appendix C. Where environmental review is required, a threshold determination may not be made until the department has reviewed and approved the noncompensatory mitigation plan.

C. Mitigation for Regulated Activities in Wetlands. Compensatory mitigation shall be required for regulated activities that result in the loss of wetland acreage. Noncompensatory mitigation shall be required for regulated activities that do not result in the loss of wetland acreage. Specific mitigation plan requirements are provided in EMC 14.30.070, Appendices D and E.

1. The compensatory mitigation plan shall be completed in two phases, a conceptual phase and a detailed phase.

a. Conceptual Phase. The applicant shall submit a conceptual mitigation plan for compensatory mitigation to the department. Where environmental review is required, the department shall not make a threshold determination prior to department review and approval of the conceptual mitigation plan. See EMC 14.30.070, Appendix D, for specific requirements of the conceptual mitigation plan.

b. Detailed Phase. Following the department's approval of the conceptual mitigation plan, the applicant shall submit a detailed mitigation plan for compensatory mitigation to the department. See EMC 14.30.070, Appendix E, for specific requirements of the detailed mitigation plan.

2. The detailed mitigation plan shall be prepared, signed, and dated by the wetland specialist to indicate that the plan is in accordance with specifications determined by the wetland specialist. A signed original mitigation plan shall be submitted to the department.

3. Approval of the detailed mitigation plan shall be signified by a notarized memorandum of agreement signed by the applicant and director, and recorded with the Pierce County auditor. The agreement shall refer to all requirements for the mitigation project.

4. The mitigation project shall be completed according to a schedule agreed upon between the department and the applicant.

5. Wetland mitigation shall occur according to the approved wetland mitigation plan and shall be consistent with provisions of this chapter and title.

6. The wetland specialist shall be on-site during construction and plant installation phases of all mitigation projects.

7. On completion of construction for the wetland mitigation project, the wetland specialist shall submit an as-built report to the department for review and approval.

D. Mitigation Banking. (Reserved). (Ord. 02-200 § 2).

14.30.060 — Buffer requirements.

A. Determining Buffer Widths. Buffer widths shall be measured horizontally from the perpendicular line established at the wetland edge based on the following table:—

Formatted: Indent: Left: 0"

Formatted: Font: Times New Roman, 10 pt

Formatted: Font: Times New Roman, 10 pt

Formatted: Font: Times New Roman, 10 pt

Formatted: Indent: Left: 0.22"

Formatted: Indent: Left: 0.5"

Formatted: Indent: Left: 0.78"

Formatted: Indent: Left: 0.5"

Formatted: Indent: Left: 0.5", Tab stops: 0.5", Left

Wetland Category	Standard Buffer Width
I	150 feet
II	100 feet
III	50 feet
IV	25 feet

Formatted: Left

B. Modification of Buffer Widths. The standard buffer widths of subsection (A) of this section may be modified by averaging, reducing, or increasing:

1. **Buffer Averaging.** Buffer width averaging may be allowed only where the applicant demonstrates all of the following:

- a. Buffer encroachment is unavoidable;
- b. A habitat assessment has been submitted which demonstrates that no documented habitat for endangered, threatened, or sensitive plant, fish, or animal species, or for potentially extirpated plant species recognized by state or federal agencies exists; or
- c. For wetlands and/or required buffers associated with documented habitat for endangered, threatened, or sensitive plant, fish, or wildlife species, or for potentially extirpated plant species recognized by state or federal agencies, a habitat assessment report has been submitted that demonstrates that the buffer reduction will not result in an adverse impact to the species of study;
- d. The wetland contains variations in sensitivity due to existing physical characteristics;
- e. Width averaging will not adversely impact the wetland or critical fish or wildlife habitat;
- f. The total buffer area after averaging is no less than the buffer area prior to averaging (see EMC-14.30.080(D), Figure 14.30-4);
- g. The minimum buffer width will not be less than 50 percent of the widths established in subsection (A) of this section;
- h. The averaging is accomplished within the project boundaries.

2. **Buffer Width Reductions.** Buffer width reduction to a maximum of 25 percent may be allowed when the applicant demonstrates the following circumstances:

- a. Buffer encroachment is unavoidable; and
- b. A habitat assessment has been submitted which demonstrates that no documented habitat for endangered, threatened, or sensitive plant, fish, or animal species, or for potentially extirpated plant species recognized by state or federal agencies exists; or
- c. A habitat assessment report has been submitted that demonstrates that the buffer reduction will not result in an adverse impact to the species of study for wetlands and/or required buffers associated with documented habitat for endangered, threatened, or sensitive plant, fish or wildlife species or for potentially extirpated plant species recognized by state or federal agencies; and
- d. The applicant demonstrates one or more of the following conditions:
 - i. The proposed buffer area is extensively vegetated, has less than 20 percent slopes, and the reduction will not result in adverse impacts to the wetland; or

ii. The project includes a buffer enhancement plan as part of the mitigation required by EMC 14.30.050. The buffer enhancement plan shall use plant species which are native, noninvasive to the project area and shall substantiate that an enhanced buffer will improve the functional attributes of the buffer to provide additional protection for wetland functional values; or

iii. The acreage included in the buffer would substantially exceed the size of the wetland and the reduction will not result in adverse impacts to the wetland.

3. Buffer Increases. The department may require increased buffer width(s) when any of the following are identified:

a. A larger buffer is necessary to maintain viable populations of existing species;

b. The wetland is used by, or associated with, species listed by the federal government or the state as endangered, threatened, sensitive, or as documented priority species or habitats, or essential or outstanding potential sites such as heron rookeries or raptor nesting areas;

c. The adjacent land is susceptible to severe erosion and erosion control measures will not effectively prevent adverse wetland impacts;

d. The adjacent land has minimal vegetative cover, or slopes greater than 20 percent. (Ord. 02-200 § 2).

Formatted: Indent: Left: 0"

14.30.070 Appendices.

A. Wetland Report.

Formatted: Don't keep with next, Tab stops: 0.56", Left + Not at 0.75"

B. Wetland Mitigation Plan

Formatted: Font: Not Bold

APPENDIX A

WETLAND REPORT

A. A wetland critical areas report shall, at a minimum, include the following:

1. The general critical areas report requirements in EMC 14.20.060;
2. Map showing the location of all wetlands and required buffers within three hundred (300) feet of the proposed development;
3. An analysis of the onsite wetland(s) include the following site- and proposal-related information:
 - a. Documentation of any fieldwork performed on the site, including, but not limited to, field delineation data sheets for delineations and wetland rating forms;
 - b. Wetland acreage;
 - c. Wetland category;
 - d. A discussion of the water sources supplying the wetland and documentation of hydrologic regime (locations of inlet and outlet features, water depths throughout the wetland, evidence of recharge or discharge);
 - e. A discussion of the functions of existing wetlands, including vegetative, faunal, and hydrologic conditions; and
 - f. A description of the methodologies used to conduct the wetland delineations;
4. A discussion of measures, including avoidance, minimization, and mitigation, proposed to preserve existing wetlands;

5. A detailed discussion of the direct and/or indirect potential impacts on the wetland by the project; and
6. The wetland mitigation plan requirements of EMC 14.30.070, Appendix B, if the activity will result in unavoidable impacts to wetlands or their buffers.

APPENDIX B

WETLAND MITIGATION PLAN

A. A wetland mitigation plan shall, at a minimum, include the following:

1. The general mitigation plan requirements in EMC 14.20.070 and the following information:
2. Existing and proposed wetland acreage;
3. Vegetative and faunal conditions;
4. Surface and subsurface hydrologic conditions including an analysis of existing and future hydrologic regime and proposed hydrologic regime for enhanced, created, or restored mitigation areas;
5. Relationship within watershed and to existing waterbodies;
6. Soils and substrate conditions, topographic elevations;
7. Existing and proposed adjacent site conditions;
8. Required wetland buffers (including any buffer reduction or averaging and mitigation proposed to enhance buffers);
9. Property ownership;
10. A discussion of ongoing management practices that will protect wetlands after the project site has been developed, including proposed monitoring and maintenance programs;
10. A bond estimate for the installation (including site preparation, plant materials and installation, fertilizers, mulch) and the proposed monitoring and maintenance work for the required number of years, pursuant to EMC 14.10.080(B).

A. Wetland Categories.

B. Information to Be Included in a Wetland Analysis Report.

C. Mitigation Plan for Regulated Activities in Buffers.

D. Compensatory Mitigation Plan for Regulated Activities in Wetlands, Conceptual Phase.

E. Compensatory Mitigation Plan for Regulated Activities in Wetlands, Detailed Phase.

F. Edgewood Wetlands Rating Form.

APPENDIX A

WETLAND CATEGORIES

Wetland categories shall be designated according to the following generalized criteria:

A. Category I. Wetlands that contain any of the following:

Formatted: Normal, No bullets or numbering

Formatted: List Paragraph, Numbered + Level: 1 + Numbering Style: A, B, C, ... + Start at: 1 + Alignment: Left + Aligned at: 0" + Indent at: 0.25"

Formatted: Indent: Left: 0.25"

1. Documented habitat for endangered or threatened plant, fish, or animal species or for potentially extirpated plant species recognized by state or federal agencies;
2. Wetlands associated with documented habitat for endangered, threatened, sensitive plant, fish, or animal species or for potentially extirpated plant species recognized by state or federal agencies;
3. High quality native wetland communities, including documented natural heritage wetland sites and sites which qualify as a natural heritage wetland;
4. High quality, regionally rare wetland communities with irreplaceable ecological functions, including sphagnum bogs and fens, estuarine wetlands, mature forested wetlands, or snag-rich areas;
5. Wetlands of exceptional local significance, as designated by separate Edgewood ordinance.

B. Category II. Regulated wetlands that do not contain features outlined in Category I with any of the following:

1. Documented habitats for sensitive plants or fish species recognized by federal or state agencies;
2. Documented priority habitats and species recognized by state agencies;
3. Regionally rare wetland communities which are not high quality, but which have irreplaceable ecological functions, including sphagnum bogs and fens, estuarine wetlands, or mature forested wetlands;
4. Wetland types with significant functions which may not be adequately replicated through creation or restoration. These wetlands may be demonstrated by any of the following characteristics:
 - a. Peat or muck systems;
 - b. Forested wetlands that have three canopy layers; or
 - c. Significant spring fed systems;
5. Wetlands with significant habitat value based on diversity and size including wetlands:
 - a. Ten acres or greater in size with two or more wetland classes together with an open water class at any time during a normal year;
 - b. Ten acres or greater in size, with three or more wetland classes and five or more subclasses of vegetation in a dispersed pattern;
 - c. Five acres or greater in size, with 40 to 60 percent open water at any time during a normal year, and two or more subclasses of vegetation in a dispersed pattern;
6. Regulated wetlands that are associated with either year-round or intermittent salmonid fishbearing waters;
7. Wetlands with significant use by fish and wildlife.

C. Category III. Regulated wetlands that do not contain features outlined in Category I, II, or IV wetlands that are not part of a mosaic wetland.

D. Category IV. Regulated wetlands that do not meet the criteria of a Category I, II, or III wetland that are:

1. Hydrologically isolated;
2. Less than or equal to one acre in size;
3. Have only one wetland class and one dominant plant species (i.e., displaying monotypic vegetation); and
4. Not part of a mosaic wetland.

E. The category of a wetland shall not be changed to recognize illegal modifications to the wetland.

APPENDIX B

INFORMATION TO BE INCLUDED IN A WETLAND ANALYSIS REPORT

A wetland analysis report shall include the following:

A. Vicinity map and detailed driving instructions to the site;

B. A site map setting forth all of the following:

1. Surveyed wetland boundaries based upon a delineation by a wetlands specialist;
2. Wetlands and buffers off site, within 165 feet of the site boundaries, are also to be discussed and shown in as much detail as possible;
3. Site boundary property lines and roads;
4. A north arrow and scale;
5. Internal property lines, rights-of-way, easements, etc.;
6. Existing physical features of the site including buildings, fences, and other structures, roads, parking lots, utilities, water bodies, etc.;
7. Contours at the smallest readily available intervals, preferably at two-foot intervals;
8. Hydrologic mapping showing patterns of surface water movement and known subsurface water movement into, through, and out of the site area; and
9. Location of all test holes and vegetation sample sites, and wetland boundary flags numbered to correspond with flagging in the field and field data sheets;

C. A report which includes the following:

1. Location information (legal description, parcel number, and address);
2. Delineation analysis results. The wetland boundaries on the site established by the delineation shall be staked and flagged in the field. If the wetland extends outside the site, the delineation report shall discuss all wetland areas within 150 feet of the site, but need only delineate those wetland boundaries within the site;
3. General site conditions including topography, acreage, and surface areas of all wetlands identified in the city's wetland atlas and water bodies within one-quarter mile of the subject wetland(s);
4. Hydrological analysis, including topography of existing surface and known significant sub-surface flows into and out of the subject wetland(s); and
5. Discussion of the values of existing wetlands, including vegetative, faunal, and hydrologic conditions and the presence of threatened, endangered, candidate, sensitive or monitor species;

D. A summary of the proposed activity and potential direct or indirect impacts to the wetland(s) including stormwater-related impacts to wetland hydrology;

E. Recommended wetland category, including rationale for the recommendation;

F. Recommended buffer boundaries, including rationale for boundary locations;

G. Proposed on-site residential density transfer from wetlands and/or buffers to upland areas;

H. Site plan of proposed activity, including location of all parcels, tracts, easements, roads, structures, and other modifications to the existing site. The location of all wetlands and buffers shall be identified on the site plan;

I. The wetland analysis report shall be signed and dated by the wetlands specialist.

APPENDIX C

MITIGATION PLAN FOR REGULATED ACTIVITIES IN BUFFERS

A. A mitigation plan for regulated activities in buffers shall be prepared, signed, and dated by a wetlands specialist and shall contain the following:

1. General goals of the mitigation plan including a discussion of the function and values of impact and enhancement areas;
2. Approximated site topography before and after alteration;
3. Location of proposed mitigation area (include a north arrow and scale);
4. General hydrologic patterns on the site before and after construction;
5. General plant selection and justification, planting instructions, and approximate planting sequencing and schedule;
6. A maintenance plan;
7. A monitoring and contingency plan. Monitoring is to occur for a minimum of five years;
8. Estimated costs for the installation, maintenance, and monitoring phases of the project. Separate estimates shall be prepared for the installation phase and monitoring and maintenance phase of the project; and
9. Address and phone number of person(s) or organization(s) responsible for the monitoring requirements.

B. Upon department review and approval of this plan, it shall become the detailed plan.

C. Where environmental review is required, a threshold determination may not be made prior to submittal of a plan which meets department approval.

APPENDIX D

COMPENSATORY MITIGATION PLAN FOR REGULATED ACTIVITIES IN WETLANDS—CONCEPTUAL PHASE

A. The conceptual phase of a mitigation plan for regulated activities in wetlands shall be prepared, signed, and dated by a wetland specialist and shall include the following:

1. General goals of the compensatory mitigation plan, including an overall goal of no net loss of wetland function, value, and acreage;
2. Mitigation projects that involve Category I wetlands associated with documented habitat for endangered or threatened plant, fish, or animal species or for potentially extirpated plant species recognized by state or federal agencies must also demonstrate a net benefit to the conservation of the affected species;
3. Site topography before and after construction;
4. Location of proposed wetland mitigation area;
5. General hydrologic patterns on the site before and after construction;

6. Field data confirming the presence of adequate hydrology to support the existing and created wetland area(s). At a minimum, the following information shall be included:

- a. Seasonal (growing season) water level;
- b. Sources of water (if the water source is adjacent to a stream or river then no instream structures will be allowed that restrict fish migration or access);
- c. Pre- and post-development inflow and outflow volumes and velocity and frequency of flooding;
- d. Groundwater and surface water table. (Guidelines for Developing Freshwater Wetlands Mitigation Plans and Proposals 1994, COE, EPA, DOE, USFWS, and WDFW);

7. Nature of mitigation, including wetland types (in-kind and out-of-kind), general plant selection and justification, approximate project sequencing and schedule, and approximate size of the new wetland buffer. A discussion of the function and values of both the impact and creation areas is also to be provided;

8. A conceptual maintenance plan; and

9. Conceptual monitoring and contingency plan.

B. Once the department approves the conceptual mitigation plan, a detailed mitigation plan shall be submitted. Due to the complex nature of creating and restoring wetlands, very detailed plans are needed (see EMC 14.30.070, Appendix E, for further information on detailed mitigation plans).

APPENDIX E

COMPENSATORY MITIGATION PLAN FOR REGULATED ACTIVITIES IN WETLANDS—DETAILED PHASE

Article I. Outline of Detailed Mitigation Plan

A. The detailed mitigation plan shall contain the following:

1. Site-specific, quantifiable criteria for evaluating whether or not the goals for the proposed compensation are being met. Such criteria shall include the establishment of viable plant communities, hydric soil formation, and establishment of wetland hydrology, and may include water quality standards, species abundance and diversity targets, habitat diversity indices, or other ecological, geological, or hydrological criteria (see Article III of this appendix for specific performance standards);

2. Pre-development analysis of the proposed compensation area including:

- a. Existing vegetation community analysis;
- b. Hydrological analysis that demonstrates the project will not adversely impact existing wetland and buffer areas and ensures adequate hydrology for any created wetland areas (see Article V for specific requirements);
- c. On-site soils analysis data and, where appropriate, Natural Resources Conservation Service mapping;
- d. Detailed description of flora and fauna existing on the site; and
- e. Description of existing site conditions in relation to historic conditions for those sites which have been recently altered or degraded.

3. Proposed post-development conditions within existing wetland and buffer areas and mitigation areas, including:

- a. Relationship of the project to the watershed and existing water bodies;

- b. Topography, using one-foot contour intervals;
- c. Hydrologic analysis (see Article V of this appendix for specific requirements);
- d. Grading, filling, and excavation, including a description of imported soils;
- e. Irrigation requirements;
- f. Erosion control measures during construction; and
- g. Aerial coverage of planted areas to open water areas (if any open water is to be present).

4. Detailed site diagrams, to-scale construction drawings with cross-section data, topographic maps showing slope percentage and final grade elevations, and any other drawings appropriate to show construction techniques or anticipated final outcome. The plan shall provide for elevations which are appropriate for the desired habitat type(s). The construction drawings must include a note that requires the contractor to refer to the approved mitigation plan.

5. Planting plan prepared by a wetland specialist that shall include the following:

- a. Soils and substrate characteristics;
- b. Specification of substrate stockpiling techniques;
- c. Planting instructions, including species, stock type and size, density or spacing of plants, and water and nutrient requirements; and
- d. Specification of where plant materials will be procured. Documentation shall be provided which guarantees plant materials are to be procured from licensed regional nurseries or from wetlands on site which are part of the mitigation plan.

6. Schedule showing dates for beginning and completing the mitigation project, including a sequence of construction activities.

7. Monitoring and maintenance plan which includes the following:

- a. Specification of procedures for monitoring and site maintenance; and
- b. Schedule for submitting monitoring reports.

8. Detailed contingency plan, consistent with Article IV of this appendix.

9. Detailed budget for implementing the mitigation plan, including construction, monitoring, maintenance, and contingency phases.

10. Financial guarantee for the work to be performed as planned and approved. Separate guarantee estimates shall be prepared for the installation phase and monitoring and maintenance phase of the project.

11. Address and phone number of the person or organization responsible for monitoring requirements.

Article II. Location Criteria

In cases in which it is determined that compensatory mitigation is appropriate, the following shall apply:

A. Compensatory mitigation shall be provided on-site, except where the applicant demonstrates that on-site mitigation is not scientifically feasible or practical due to physical features of the site.

B. When compensatory mitigation cannot be provided on-site, it shall be provided in the immediate vicinity of and within the same watershed as the regulated activity.

Article III. Mitigation Performance Standards

A. When regulated activities occur in wetlands, the applicant shall restore, create, or enhance equivalent areas of wetlands. Equivalent areas shall be determined according to acreage, functional value, type, location, time factors, and projected success. No overall net losses shall occur in wetland acreage, functions and/or values, and any restored, created, or enhanced wetland shall be as persistent as the wetland it replaces.

B. When an applicant proposes to alter or eliminate wetland, the applicant shall replace acreage at the following ratios:

Category I:		3:1 (acreage replacement: acreage lost)
Category II and III:		-
-	Forested Class:	2:1
-	Scrub/Shrub Class:	1.5:1
-	Emergent Class:	1.5:1
-	Open Water:	1:1
Category IV:		1:1

C. Ratios provided are for proposed projects with on-site, in-kind replacement which occurs prior to regulated activities on the site. The department may increase the ratios under the following circumstances:

1. Uncertainty as to the probable success of the proposed restoration or creation; or
2. Significant period of time between destruction and replication of wetland functions; or
3. Projected losses in wetland functions and value; or
4. Off-site and/or out-of-kind compensation.

D. The department may allow enhancement of existing or created wetland area(s) as a means of reducing the standard acreage replacement ratio if the applicant demonstrates that no net loss of wetland function or value will result; provided, that:

1. Enhancement mitigation ratios shall be no less than twice the standard creation ratio of the impacted wetland.
2. The applicant may be required to complete an analysis of the impact and mitigation areas in support of the acreage replacement ratio reduction. An example of an acceptable analysis methodology is the Washington State Department of Ecology Wetland Function Assessment Methodology (Ecology Publication # 99-116); however, other methodologies may be proposed.
3. The county will not allow the acreage replacement ratio to be reduced to less than 1:1 except as described in subsection (E) of Article III of this appendix.

E. In the case of Category II, III, and IV wetlands, the replacement ratio may be decreased to a ratio of less than 1:1 if, following a public hearing, the hearing examiner determines the following:

1. A replacement ratio of greater than 1:1 is either not feasible on-site or would be likely to result in substantial degradation of other natural features; and
2. The mitigation plan shows that a net increase in wetland functional values will result from the mitigation; and
3. The mitigation is completed, and then monitored by the department for one year prior to the issuance of permits. If after one year of monitoring, the department is not satisfied that the anticipated final outcome of the

mitigation plan will be met, modifications to the mitigation plan and further monitoring may be required. When the department is satisfied that the mitigation will be successful, permits pending will be issued.

F. In-kind compensation shall be provided except where the applicant demonstrates that:

1. Greater functional and habitat values can be achieved through out-of-kind mitigation; and
2. The wetland system is already significantly degraded; or
3. Problems such as the presence of exotic vegetation and changes in watershed hydrology make implementation of in-kind compensation infeasible; or
4. Out-of-kind replacement will best meet identified regional goals (e.g., replacement of historically diminished wetland types).

G. Design requirements for the mitigation plan shall, at a minimum, include the following:

1. Use only indigenous native plants (not introduced or exotic species);
2. Use plants appropriate to the depth of water at which they will be planted;
3. Use plants that originate and are available from local sources;
4. Use plant species high in food and cover value for fish and wildlife;
5. Plant mostly perennial species;
6. Avoid committing significant areas of site to species that have questionable potential for successful establishment;
7. Water depth is not to exceed 6.5 feet (two meters);
8. The grade or slope that water flows through the wetland is not to exceed six percent;
9. Slopes within the wetland and buffer should not be steeper than 3:1 (horizontal to vertical);
10. Planting densities and placement of plants shall be shown on the design plans;
11. The wetland should not contain more than 60 percent open water as measured at the seasonal high water mark;
12. Stockpiling shall be confined to upland areas and contract specifications should limit stockpile duration to less than four weeks. Erosion control measures shall be in effect at the stockpiling location;
13. Planting instructions shall describe proper placement, diversity, and spacing of seeds, tubers, bulbs, rhizomes, sprigs, plugs, cuttings, and transplanted stock;
14. Apply controlled release fertilizer at the time of planting and afterward only as plant conditions warrant (determined during the monitoring process), and only to the extent that the release would be conducted in an environmentally sound manner;
15. Install an irrigation system, as necessary, until plants are established.

H. Mitigation projects are unique and performance standards will differ based upon the goals and objectives of the project. However, performance standards pertaining to water regime, vegetative structure and establishment, and hydric soil formation are to be established for all mitigation projects, as defined below:

1. The mitigation wetland must meet the technical criteria for wetland hydrology, seasonal inundation, and/or saturation to the surface for a consecutive number of days greater than or equal to 12.5 percent of the growing

season. Areas that are seasonally inundated and/or saturated to the surface for a consecutive number of days between five percent and 12.5 percent of the growing season may also be wetlands. Hydrology may be monitored through the use of one or a combination of the following: groundwater wells, piezometers, crest gauges, hand-dug soil pits, staff gauges, and continuous recording flow meters.

2. At a minimum, vegetative success equals the establishment of a multi-species, mixed canopy community comprised of emergent, scrub shrub, and tree species. Yearly standards pertaining to survival and aerial coverage shall also be established for each vegetative stratum.

3. Hydric soil characteristics shall be monitored through the use of one or a combination of the following: Munsell soil color, pH, particle size, redox potential, organic content, microbial activity, time and duration of saturation or ponding, and alkalinity.

Article IV. Monitoring Program and Contingency Plan

A. A contingency plan shall be established for compensation in the event the mitigation project is inadequate or fails. The contingency plan is to provide specific corrective measures for such common mitigation plan failings as plant mortality, vandalism, damage due to wildlife grazing, grading errors, and hydro regime problems. A financial guarantee on a form acceptable to the city is required for the duration of the monitoring period and the guarantee plus any accrued interest will be released by the city when the required mitigation and monitoring are completed. To determine the amount of the financial guarantee, an estimate shall be submitted to the city detailing the work to be accomplished and the cost thereof. The estimate shall be based on current costs. The city will review the estimate and, if acceptable, will establish the financial guarantee at 125 percent of the estimate to allow for inflation and administration expenses should the city have to complete the project.

B. Requirements of the monitoring program are as follows:

1. Scientific procedures are to be used for establishing the success or failure of the project.

2. Monitoring reports prepared by a wetland specialist are to be submitted for department review. Monitoring reports shall include discussions of wildlife utilization of the site, vegetation establishment, water quality, water flow, stormwater storage and conveyance, and existing or potential degradation, according to the following schedule:

a. At completion of construction of mitigation project (as-built report);

b. Thirty days after completion;

c. Early in the first growing season after construction;

d. End of the first growing season after construction;

e. Twice the second year; and

f. Annually after the second year.

3. Monitor for a period of time appropriate to the nature of the project (single family versus commercial) and the complexity of the mitigation project. The majority of monitoring programs will last a minimum of five years.

4. The city will require a right of entry form be recorded that allows city staff access to the mitigation area through completion of the monitoring program.

5. Correct for failures in the mitigation project.

6. Replace dead or undesirable vegetation with appropriate plantings.

7. Repair damages caused by erosion, settling, or other geomorphological processes.

8. If necessary, redesign mitigation project and implement the new design.

9. Correction procedures shall be approved by a wetland specialist and the department director or designee.

Article V. Hydrology Monitoring Guidelines

A. Applicants are required to ensure that the proposed development does not result in adverse impacts to regulated wetland and/or buffers. To achieve this, an applicant must provide detailed hydrologic calculations, completed by a licensed civil engineer or hydrologist which shows the project will either:

1. Match the predevelopment contributing basin flow quantities and durations; or

2. That any identified changes will not adversely impact the wetland or wetland buffer.

B. The existing hydroperiod of the on-site wetland(s) shall be established through direct monitoring or computer estimation. Monitoring may be accomplished by the use of a continuous recording level gauge or a combination of a crest stage and staff gauge. Computer estimation may be either a time series model (for Category I and II wetlands) or a single event model (for Category III and IV wetlands).

C. Additional guidance in the design of a project's stormwater plan can be found in the Puget Sound Wetlands and Stormwater Management Research Program and in the "Wetland Hydrology Management Guidelines" included as Appendix A of the document entitled "Sensitive Areas Mitigation Guidelines" prepared by King County department of development and environmental services.

APPENDIX F

EDGEWOOD WETLANDS RATING FORM*

OFFICE DATA SECTION

Background Information: Name of Rater: _____ Affiliation: _____ Date: _____ Application No./Case No.: _____ Project Name: _____ Project Location: _____ Parcel No.(s): _____ Property Owner Name: _____ Property Owner Address: _____ Location: _____ 1/4 Section of _____ 1/4 Section, of Section _____, Township _____, Range _____, W.M., Edgewood, WA SOURCE OF INFORMATION: (Check all sources that apply.) Site Visit: _____ USGS Topo Map: _____ NWI Map: _____ Aerial Photo: _____ Soil Survey: _____ Edgewood Inventory: _____ Edgewood Drainage Map: _____ Other: _____ When the Office and/or Field Data Forms are completed enter category here: _____		
ANSWER ALL QUESTIONS BELOW. If the source agency identifies the wetland as satisfying any of the questions below, circle the category in "CATEGORY" column.	DATA SOURCE	CATEGORY- (the highest qualifies)
Does the wetland contain federal or state listed threatened or endangered plant species; or, is the wetland a historic location of a plant species potentially extirpated from Washington?	DNR (Natural Heritage) U.S. Fish & Wildlife Service	Yes: Category I No: Next Question

Is the wetland associated with documented habitat for endangered or threatened plant, fish, or animal species or for potentially extirpated plant species recognized by state or federal agencies?	Wash. Dept. of Wildlife	Yes: Category I
	Wash. Dept. of Fisheries	No: Next Question
	U.S. Fish & Wildlife Service	
Is the wetland already on record with the Washington Natural Heritage Program as a high quality native wetland?	DNR (Natural Heritage)	Yes: Category I No: Next Question
Is the wetland documented as a Category I Wetland of Local Significance? (None currently designated.)	Local Government	Yes: Category I No: Next Question
Does the wetland contain sensitive plant species recognized by federal or state agencies?	DNR (Natural Heritage)	Yes: Category II
	U.S. Fish & Wildlife Service	No: Next Question
Does the wetland contain documented habitats of sensitive fish species recognized by federal or state agencies?	Wash. Dept. of Wildlife	Yes: Category II
	Wash. Dept. of Fisheries	No: Next Question
	U.S. Fish & Wildlife Service	
Does the wetland contain priority species or habitats documented by Washington Department of Wildlife's Priority Habitats and Species Program?	Wash. Dept. of Wildlife	Yes: Category II No: Next Question
Is the wetland documented as a Category II Wetland of Local Significance? (None currently designated.)	Local Government	Yes: Category II No: Go to Wetlands Rating Field Data Form
Is the wetland documented as a Category III Wetland of Local Significance? (None currently designated.)	Local Government	Yes: Category III No: Go to Wetlands Rating Field Data Form

*Adapted from Washington State Wetlands Rating System for Western Washington, Second Edition, August 1993 (publ. #93-74), developed by the Washington State Department of Ecology.

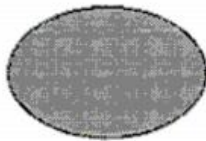
EDGEWOOD WETLANDS RATING FORM

FIELD DATA SECTION

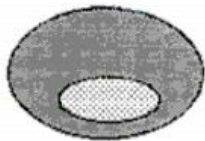
Background Information: Name of Rater: _____ Affiliation: _____ Date of Field Visit: _____ Application No./Case No.: _____ Project Name: _____ Project Location: _____ Parcel No.: _____ Property Owner Name: _____ Property Owner Address: _____ Location: ____ ¼ Section of ____ ¼ Section, of Section ____, Township ____, Range ____, W.M., Edgewood, WA SOURCE OF INFORMATION: (Check all sources that apply). Site Visit: _____ USGS Topo Map: _____ NWT Map: _____ Aerial Photo: _____ Soil Survey: _____ Edgewood Inventory: _____ Edgewood Drainage Map: _____ Other: _____ -
--

cover?	
3b4. Is > 50% (areal cover) of the dominant plants in one or more layers (canopy, young trees, shrubs, and herbs)-invasive/exotic plant species from the Table 1 list?	Yes: Category II No: Category I
3b5. Does the forested wetland contain three canopy layers (trees over 20 feet tall, shrubs or saplings, and herbaceous ground covers)?	Yes: Category II No: go to Q.5.
3c. Estuarine Wetlands	-
3c1. Is the wetland listed as National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park, or Educational, Environmental or Scientific Reserves designated under WAC 332-30-151?	Yes: Category I No: go to 3c2.
3c2. Is the wetland > 5 acres?	Yes: Category I
• — or, is the wetland 1 to 5 acres;	Yes: go to 3c3.
• — or, is the wetland < 1 acre?	Yes: go to 3c4.
3c3. Does the wetland meet at least 3 of the following 4 criteria:	Yes: Category I No: Category II
• — minimum existing evidence of recent (since 1992) human-related disturbance such as diking, ditching, filling, cultivation, grazing, or the presence of nonnative plant species (see guidance for definition);	-
• — surface water connection with tidal saltwater or tidal freshwater;	-
• — at least 75% of the wetland has a 100-foot buffer of ungrazed pasture, open water, shrub, or forest;	-
• — have at least 3 of the following features: low marsh, high marsh, tidal channels, lagoon(s), woody debris, or contiguous freshwater wetland?	-
3c4. Does the wetland meet all of the 4 criteria under 3c3 above?	Yes: Category II No: Category III
3d. Eelgrass and Kelp Beds	-
3d1. Are eelgrass beds present?	Yes: Category I No: go to 3d2.
3d2. Are there floating or nonfloating kelp bed(s) present with greater than 50% macro algal cover in the month of August or September?	Yes: Category I No: Category II
3e. Significant Spring Fed Wetland Systems	-
3e1. Is the spring fed wetland system at least 1/2 acre in size?	Yes: Category II No: go to Q.4.
Q.4. Category II and IV Wetlands	-
4a. Is the wetland associated with year-round or intermittent salmonid fish bearing waters? Briefly describe source of information: _____ _____ _____ _____ _____	Yes: Category II No: go to 4b.
4b. Is the wetland less than or equal to 1 acre in size, hydrologically isolated, and comprised of one wetland class that is dominated by one plant species (monotypic vegetation)? • — Monotypic vegetation is defined as greater than 80% areal cover by one plant species. • — Hydrologically isolated wetland means a wetland which is not contiguous to any 100-year flood plain of any water type; and, has no contiguous surface hydrology, hydric soil, or hydrophytic vegetation between the wetland and any other wetland or stream system.	Yes: Category IV No: go to Q.5.
Q.5. Wetlands with significant habitat value based on the following specific diversity and size criteria.	-
5a. Is the wetland 10 acres or greater in size and have 2 or more wetland classes, together with open water, at any time during the normal year?	Yes: Category II No: go to 5b.

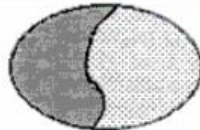
5b. Is the wetland 10 acres or greater in size, have 3 or more wetland classes, and 5 or more subclasses of vegetation in a dispersion pattern?		Yes: Category II No: go to 5e.
5c. Is the wetland 5 acres or greater in size, 40 to 60% open water at any time during a normal year, and 2 or more subclasses of vegetation in a dispersed pattern?		Yes: Category II No: go to Q.6.
Q.6. Wetlands with significant habitat value based on the following specific diversity and size criteria and significant use by fish and wildlife. Answer all questions and enter data requested: -		Circle Scores That Qualify
6a. Total Wetland Area	Acres	-
Estimate area, select from choices in the near right column, and score in the far right column: Enter acreage of wetland (including estimate of off-site acreage) here: _____ acres source: _____ -	>20.00 10—19.99 5—9.99 1—4.99 0.1—0.99 <0.1	Yes = 6 Yes = 5 Yes = 4 Yes = 3 Yes = 2 Yes = 1
6b. Wetland Community Types (include observations of off-site wetland area)		-
Circle the wetland community types below that qualify: Open Water: If the area of open water is > 1/2 acre, or > 10% of the total wetland area. Source: _____ Aquatic Beds: If the area of aquatic beds are > 10% of the open water area, or > 1/2 acre. Emergent: If the area of emergent community type is > 1/2 acre, or > 10% of the total wetland area. Scrub-Shrub: If the area of scrub-shrub community type is > 1/2 acre, or 10% of the total wetland area. Forested: If the area of forested community type is > 1/2 acre, or 10% of the total wetland area.		-
Add the number of wetland community types above that qualify, and then score according to the columns at right. e.g., If there are 4 community types (aquatic beds, open water, emergent, and scrub-shrub), you would circle 7 points in the far right column.	# of Community Types 1: 2: 3: 4: 5:	- Yes = 1 Yes = 3 Yes = 5 Yes = 7 Yes = 10
6c. Plant Species Diversity (include observations of off-site wetland area)	# of Community Type Species	-
For all wetland community types (at right) that qualify in 6b. above, count the number of different plant species you can find. You do not have to name them. Score in column at far right: e.g., If a wetland has aquatic bed community type with 3 species, an emergent community type with 4 species, and a scrub-shrub community type with 2 species, you would circle 2, 2, and 1 in the far column. - -	Aquatic Bed — 1—2 Aquatic Bed — 3 Aquatic Bed — >3 Emergent — 1—2 Emergent — 3—4 Emergent — >4 Scrub-Shrub — 1—2 Scrub-Shrub — 3—4 Scrub-Shrub — >4 Forested — 1—2 Forested — 3—4 Forested — >4	Yes = 1 Yes = 2 Yes = 3 Yes = 1 Yes = 2 Yes = 3 Yes = 1 Yes = 2 Yes = 3 Yes = 1 Yes = 2 Yes = 3
6d. Structural Diversity (include observations of off-site wetland area)		-
If the wetland has a forested community type, add 1 point for each of the following:		-
Trees > 50 feet tall		Yes = 1
Trees 20 feet to 49 feet tall		Yes = 1
Shrubs/saplings		Yes = 1
Herbaceous ground cover		Yes = 1
6e. Decide from the diagrams below whether interspersions between wetland community types is high, moderate, low, or none?		-



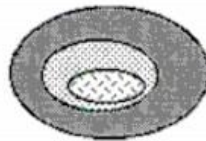
none



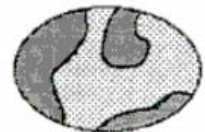
low



low



moderate



moderate



high

-
High=3
Moderate=2
Low=1
None=0

Formatted: Font: 8 pt, Bold

6f. Habitat Features (include observations of off-site wetland areas)

Answer questions below, circle features that apply, and score to right:

Is there evidence of current use by beavers?

Yes=3

Is a heron rookery located within 300 feet?

Yes=2

Are raptor nest(s) located within 300 feet?

Yes=1

Are there at least 3 standing dead trees (snags) per acre?

Yes=1

Are any of these standing dead trees (snags) >10 inches in diameter?

Yes=1

Are there any other perches (wires, poles, or posts)?

Yes=1

Are there at least 3 downed logs at least 10' in length with a diameter >6" per acre (include observations of off-site wetland areas)?

Yes=1

6g. Connection to streams

Is the wetland connected at any time of the year via surface water to a seasonal stream? The connection could be during flood events, via a natural or manmade channel, culvert, or an area of open water.

Yes=1

6h. Adjacent Land Uses and Buffers

Step 1

Estimate (to the nearest 5%) the percent of each land use or buffer type (below) that adjoins the wetland boundary.

Then multiply the percent(s) by the factor(s) below and enter result in column to right:

-

roads, buildings, or parking lots: ____%
____ x 0 =

lawn, grazed pasture, vineyards, or annual crops: ____% x 1 =

ungrazed grassland or orchards: ____%
____ x 2 =

Step 2

Multiply result(s) of step 1:

By 1, if buffer width is 25—50 feet;

By 2, if buffer width is 50—100 feet;

By 3, if buffer width is >100 feet.

Enter results below and add subtotals:

_____ x _____ = _____

_____ x _____ = _____

_____ x _____ = _____

_____ x _____ = _____

_____ x _____ = _____

_____ x _____ = _____

_____ x _____ = _____

Step 3

Score points according to table below:

-

-

-

-

-

Buffer Total:

900—1,200

-

600—899

-

300—599

-

-

100—299

-

-

-

-

-

-

-

-

-

-

-

-

-

-

-

-

open water or native grasslands: ____% ____ x 3 =	____ x ____ = ____		
forest or shrub: ____% ____ x 4 =	____ x ____ = ____		
-	Add buffer total: ____		
6i. Connection to other habitat areas:			-
Is there a riparian corridor to other wetlands within 0.25 of a mile; or, a corridor > 100 feet wide with good forest or shrub cover to any other habitat area(1)?			Yes = 5
Is there a narrow corridor < 100 feet wide with good cover; or, a wide corridor > 100 feet wide with low cover to any other habitat area?			Yes = 3
Is there a narrow corridor < 100 feet wide with low cover; or, a significant habitat area within 0.25 mile but no corridor?			Yes = 1
Is the wetland and buffer completely isolated by development and or cultivated agricultural land?			Yes = 0
Add the scores circled (for Q.6a.—Q.6i. above) to get a total:			Total = ____
Is the total greater than or equal to 22 points:			Yes: Category II No: Category III
(1) For purposes of this rating form the term "Habitat area" means any forested, shrub, and herbaceous areas that could be used by wildlife species that use wetlands to provide a part of their life cycle needs.			-

(Ord. 02-200 § 2).

TABLE 1

List of invasive/exotic plant species for Question 3a1 (peat wetlands), question 3b3 (forested wetlands), and question 4b (Category IV wetlands). This list is provided for use with the field data form.

Scientific Name	Common Name
<i>Agropyron repens</i>	Quackgrass
<i>Alopecurus pratensis</i> , <i>A. aquatilis</i>	Meadow foxtail
<i>Arctium minus</i>	Burdock
<i>Bromlus tectorum</i> , <i>B. rigidus</i> , <i>B. brizaeformis</i> , <i>B. secalinus</i> , <i>B. japonicus</i> , <i>B. mollis</i> , <i>B. commutatus</i> , <i>B. inermis</i> , <i>B. erectus</i>	Bromes
<i>Cenchrus longispinu</i>	Sandbur
<i>Centaurea solstitialis</i> , <i>C. repens</i> , <i>C. cyanus</i> , <i>C. maculosa</i> , <i>C. diffusa</i>	Knapweeds
<i>Cirsium vulgare</i> , <i>C. arvense</i>	Thistle
<i>Cynosurus cristatus</i> , <i>C. echinatus</i>	Dogtail
<i>Cytisus scoparius</i>	Scotch broom
<i>Dactylis glomerata</i>	Orchard grass
<i>Dipsacus sylvestris</i>	Teasel
<i>Digitaria sanguinalis</i>	Crab grass

<i>Echinochloa crusgalli</i>	Barnyard grass
<i>Elaeagnus angustifolia</i>	Russian olive
<i>Euphorbia peplus</i> , <i>E. esula</i>	Spurge
<i>Festuca arundinacea</i> , <i>F. pratensis</i>	Fescue
<i>Holcus lanatus</i> , <i>H. mollis</i>	Velvet grass
<i>Hirdeum jubatum</i>	Foxtail barley
<i>Hypericum perforatum</i>	St. John's wort
<i>Juncus effusus</i>	Soft rush
<i>Lolium perenne</i> , <i>L. multiflorum</i> , <i>L. temulentum</i>	Ryegrass
<i>Lotus corniculatus</i>	Birdsfoot trefoil
<i>Lythrum salicaria</i>	Purple loosestrife
<i>Matricaria matricarioides</i>	Pineapple weed
<i>Medicago sativa</i>	Alfalfa
<i>Melilotus alba</i> , <i>M. officinalis</i>	Sweet clover
<i>Phalaris arundinacea</i>	Reed-canary grass
<i>Phleum pratense</i>	Timothy
<i>Phragmites communis</i>	Reed
<i>Poa compressa</i> , <i>P. palustris</i> , <i>P. pratensis</i>	Bluegrass
<i>Polygonum aviculare</i> , <i>P. convolvulus</i> , <i>P. cuspidatum</i> , <i>P. lapathifolium</i> , <i>P. persicaria</i>	Knotweeds
<i>Ranunculus repens</i>	Buttercup
<i>Rubus discolor</i> , <i>R. laciniatus</i> , <i>R. vestitus</i> , <i>R. macrophyllus</i>	Nonnative blackberry
<i>Salsola kali</i>	Russian thistle
<i>Sataria viridis</i>	Green bristlegrass
<i>Sisymbrium altissimum</i> , <i>S. loeselii</i> , <i>S. officinale</i>	Tumblemustards
<i>Tanacetum vulgare</i>	Tansy
<i>Trifolium dubium</i> , <i>T. patense</i> , <i>T. repens</i> , <i>T. arvense</i> , <i>T. subterraneum</i> , <i>T. hybridum</i>	Clovers

Cultivated species:	Wheat, Corn, Barley, Rye, etc.
---------------------	--------------------------------

14.30.080—Figures:

A. Figure 14.30-1, Connecting Mosaic Pattern Wetlands.

B. Figure 14.30-2, General Wetland Review.

C. Figure 14.30-3, One Family Wetland Review.

D. Figure 14.30-4, Wetland Buffer Averaging.

(Ord. 02-200 § 2).

Chapter 14.40

CRITICAL FISH AND WILDLIFE HABITAT AREAS FISH AND WILDLIFE HABITAT CONSERVATION AREAS

Sections:

- 14.40.010 Purpose.
14.40.020 ~~Critical fish and wildlife species and habitat areas.~~Fish and wildlife habitat conservation area identification and classification.
14.40.030 ~~Critical fish and wildlife habitat area.~~Fish and wildlife habitat conservation area review procedures.
14.40.040 ~~Critical fish and wildlife habitat area standards.~~Allowed activities.
14.40.050 ~~Mitigation Buffer~~ requirements.
14.40.060 ~~Buffer Mitigation~~ requirements.
14.40.070 Appendix

ees:

14.40.080 — Figures:

14.40.010 Purpose.

Many land use activities can impact the habitats of fish and wildlife. Special care must be taken in the management of lands that support ~~critical~~ fish and wildlife species to ensure that development occurs in a manner that is sensitive to their habitat needs. The purpose of this chapter is to identify ~~critical fish and wildlife species and habitats~~fish and wildlife habitat conservation areas and establish habitat protection procedures and mitigation measures that are designed to ~~minimize any negative impacts~~result in no net loss of habitat functions and values~~associated with new development or regulated activities.~~ (Ord. 02-200 § 2).

14.40.020 ~~Critical fish and wildlife species and habitat areas.~~Fish and wildlife habitat conservation area identification and classification.

A. General. Critical fish and wildlife habitat areas are those areas that support critical fish and wildlife species, typically identified either by known point locations of specific species (such as a nest or den) or by habitat areas or both~~Designation.~~ Fish and wildlife habitat conservation areas include:

B. Federally and State Listed Species and their Associated Habitats. Areas which have a primary association with federally or state listed endangered, threatened, or sensitive species of fish or wildlife (specified in 50 CFR 17.11, 50 CFR 17.12, WAC 232-12-011 and 232-12-014) and which if altered may reduce the likelihood that the species will survive and reproduce over the long term. The list of endangered, threatened, or sensitive species is maintained and located at:

<http://www.wdfw.wa.gov/wlm/diversity/soc/soc.htm>.

1. Waters of the state. Waters of the state include lakes, rivers, ponds, streams, and all other surface waters and watercourses within jurisdiction of the state of Washington, as classified in WAC 222-16-030.
2. Areas with which federally designated endangered, threatened, and sensitive species have a primary association. The U.S. Fish and Wildlife Service and the National Marine Fisheries Service should be consulted for current federal listing status.
3. Areas with which state designated endangered, threatened, and sensitive species have a primary association. The Washington State Department of Fish and Wildlife should be consulted for current state listing status.
4. State priority habitats and areas associated with state priority species. The state Department of Fish and Wildlife should be consulted for current listing of priority habitats and species.

Formatted: Indent: Left: 0.5"

Formatted: Font: Times New Roman, 10 pt

Formatted: Font: Times New Roman, 10 pt

Formatted: Numbered + Level: 1 + Numbering Style: 1, 2, 3, ... + Start at: 1 + Alignment: Left + Aligned at: 0.5" + Indent at: 0.75"

Formatted: Font: Times New Roman, 10 pt, Not Bold

Formatted: Font: Times New Roman, 10 pt, Not Bold, Not Highlight

Formatted: Font: Times New Roman, 10 pt, Not Highlight

Formatted: Font: Times New Roman, 10 pt

Formatted: Font: Times New Roman, 10 pt, Not Bold, Not Highlight

Formatted: Font: Times New Roman, 10 pt, Not Highlight

Formatted: Font: Times New Roman, 10 pt

Formatted: Font: Times New Roman, 10 pt, Not Bold, Not Highlight

Formatted: Font: Times New Roman, 10 pt

5. Habitats and species of local importance. The following fish and wildlife species and their associated habitat areas shall be regulated under this chapter:

- a. Fish. Coho salmon (*Oncorhynchus kisutch*), pink salmon (*Oncorhynchus gorbuscha*), chum salmon (*Oncorhynchus keta*), cutthroat trout (*Oncorhynchus clarkia*), and steelhead (*Oncorhynchus mykiss*).
- b. Birds. Great blue heron (*Ardea herodias*) and green heron (*Butorides virescens*).
- c. Areas with which state-listed monitor or candidate fish or wildlife species or federally listed candidate fish or wildlife species have a primary association, and which if altered may reduce the likelihood that the species will survive and reproduce over the long term.
- d. Old growth/mature forests.
- e. Heron rookeries.

B. Habitat boundary survey. If the department determines that a regulated habitat conservation area may be present within the project vicinity, the department may require the habitat area to be delineated and/or mapped by a qualified fisheries biologist or wildlife biologist who is knowledgeable of fish and wildlife habitat within western Washington or by the Washington Department of Fish and Wildlife. The boundary of aquatic habitats shall be the ordinary high water mark of the waterbody. The management recommendations for Washington's priority habitats and species or federal equivalent should be used as a tool for identifying and delineating wildlife habitat boundaries. The city may waive this requirement if there is adequate information available on the area proposed for development to determine the impacts of the proposed development and appropriate mitigating measures.

C. Mapping. The approximate location and extent of waters of the state and fish presence within the city are shown on maps maintained by the city. The city shall update the maps periodically as new information becomes available. The approximate location and extent of other fish and wildlife habitat conservation areas area shown on maps maintained by the Washington State Department of Fish and Wildlife and other state and federal agencies. These maps are to be used as a guide and do not provide definitive information about fish and wildlife habitat conservation area size or presence. Fish and wildlife habitat conservation areas may exist that do not appear on the maps.

D. Waters of the state classification. The city hereby adopts the water typing system specified in WAC 222-16-030, as described below:

1. Type S. All waters, within their ordinary high water mark, meeting the criteria as "shorelines of the state" and "shorelines of statewide significance" under RCW Chapter 90.58. As of the effective date of this title, there are no Type S streams within city jurisdiction.
2. Type F: segments of natural waters other than Type S Waters, which are within the bankfull widths of defined channels and periodically inundated area of their associated wetlands, or within lakes, ponds, or impoundments having a surface area of 0.5 acre or greater at seasonal low water and which in any case contain fish habitat.
3. Type Np: all segments of natural waters within the bankfull width of defined channels that are perennial non-fish habitat stream. Perennial stream waters do not go dry any time of a year of normal rainfall. However, for the purpose of water typing, Type Np Waters include the intermittent dry portions of the perennial channel below the uppermost point of perennial flow.
4. Type Ns: All segments of natural waters within the bankfull width of the defined channels that are not Type S, F, or Np waters. These are seasonal, non-fish habitat streams in which surface flow is not present for at least some portion of a year of normal rainfall and are not located downstream from any stream reach that is a Type Np Water. Ns Waters must be physically connected by an above-ground channel system to Type S, F, or Np Waters.

Formatted: Font: Times New Roman, 10 pt, Not Bold

Commented [AM22]: Question for City—Any additions/subtractions to this list? There's no BAS requirement to designate (or not) specific species and habitats; it's up for local jurisdictions to decide.

Formatted: Font: Italic

Formatted: Font: Italic

Formatted: Numbered + Level: 2 + Numbering Style: a, b, c, ... + Start at: 1 + Alignment: Left + Aligned at: 1" + Indent at: 1.25"

Formatted: Font: Italic

Formatted: Font: Italic

Formatted: Font: Italic

Formatted: Font: Times New Roman, 10 pt

Formatted: Font: Times New Roman, 10 pt

Formatted: Font: Times New Roman, 10 pt

Formatted: Font: Times New Roman, 10 pt

Formatted: Font: Times New Roman, 10 pt

Formatted: Font: Times New Roman, 10 pt

Formatted: Font: Times New Roman, 10 pt

Formatted: Indent: Left: 0.5"

Formatted: Font: Times New Roman, 10 pt

Formatted: Font: Times New Roman, 10 pt, Not Bold

Formatted: Font: Times New Roman, 10 pt, Not Bold

Formatted: Font: Times New Roman, 10 pt, Not Bold

C. Species of Local Importance. In addition to federally and state-listed species, the following fish and wildlife species and their associated habitat areas shall be regulated under this chapter:

1. Fish. Coho salmon, pink salmon, chum salmon, sockeye salmon, cutthroat trout, steelhead.

2. Birds. Herons.

D. Habitats of Local Importance.

1. Areas with which state-listed monitor or candidate fish or wildlife species or federally-listed candidate fish or wildlife species have a primary association (habitat areas and point locations), as specified in Washington Department of Wildlife Policies 4802 and 4803, and which if altered may reduce the likelihood that the species will survive and reproduce over the long term. The list of endangered, threatened, or sensitive species is maintained and located at:

<http://www.wdfw.wa.gov/wlm/diversty/soc/soc.htm>.

2. Documented habitat areas or potential habitat areas and point locations for fish and wildlife species. These areas include specific habitat types, which are infrequent in occurrence in Edgewood and may provide specific habitats with which endangered, threatened, sensitive, candidate, or monitor fish and wildlife species have a primary association, such as breeding habitat, winter range, and movement corridors. These areas include the following:

a. Oregon white oak trees and woodlands. Oregon white oak woodlands, stands, and individual trees meeting the following criteria shall be considered priority habitat and shall be subject to protection under the provisions of this chapter:

i. Priority Oregon White Oak Woodlands. Stands of Oregon white oak or oak/conifer associations where the stand is at least one acre in size and the canopy coverage of the oak component of the stand is greater than or equal to 25 percent (see Figure 14.40-1).

ii. Significant Oaks and Stands. Single oaks, or stands of oaks smaller than one acre in size, when any of the following criteria are met:

(A) Individual trees having a diameter at breast height of 20 inches or more; or

(B) Oregon white oak stands in which the oak trees have an average diameter at breast height of 15 inches or more regardless of stand size.

b. Old growth/mature forests.

c. Caves.

d. Cliffs.

e. Snag-rich areas and logs.

f. Waters of the state and/or natural waters and adjacent shoreline areas (200 feet landward measured from the ordinary high water mark) including:

i. All water bodies classified by the Washington Department of Natural Resources (DNR) water typing classification system as detailed in WAC 222-16-030 and 222-16-031.

ii. All waters that support critical fish or wildlife species (i.e., areas that have connectivity to fish-bearing waters and may potentially provide habitat given no natural barriers to fish passage).

iii. Ponds and their submerged aquatic beds.

g. Wetlands (refer to Chapter 14.30 EMC).

Formatted: Indent: Left: 0"

Formatted: Indent: Left: 0"

Formatted: Indent: Left: 0"

Formatted: Indent: Left: 0", Tab stops: 0.5", Left + Not at 0.56"

h. Heron rookeries.

E. Potential Critical Fish and Wildlife Habitat Areas. Potential critical fish and wildlife habitat areas, as depicted on the Critical Areas Atlas—Critical Fish and Wildlife Habitat Area Maps, are those areas where the suspected presence of critical fish or wildlife species is sufficient to require critical fish or wildlife habitat area review (see Figure 14.40-2). Potential critical fish and wildlife habitat areas are determined using the following criteria:

1. A habitat area identified on one of the maps listed in EMC 14.10.140, Appendix A (includes but is not limited to breeding habitat, winter ranges, movement corridors, oak woodlands, streams, ponds, etc., as outlined in subsections (A) through (D) of this section) plus the adjacent 200 feet surrounding the habitat area.
2. A point location identified on one of the maps listed in EMC 14.10.140, Appendix A, (including but not limited to nests, dens, rookeries, etc.) plus the adjacent 800 feet surrounding the point location. (Ord. 02-200 § 2).

14.40.030 Critical fish and wildlife habitatFish and wildlife habitat conservation area review procedures.

A. Habitat management plan. When the department's maps, sources, or field investigations indicate that the proposed project area is located within 300 feet of a known or suspected fish or wildlife habitat conservation area, an applicant shall submit a habitat management plan prepared by a qualified fisheries biologist or wildlife biologist. The requirement to provide a habitat conservation plan for habitat conservation areas may be waived if the department determines that there are no potential direct and/or indirect impacts on designated species or habitats that would result from the proposed development. Habitat management plans shall comply with the requirements established in EMC 14.40.070, Appendix A.

Formatted: Font: Not Bold

Formatted: Font: Times New Roman, 10 pt

Formatted: Font: Times New Roman, 10 pt

A. General Requirements:

1. The City's Critical Areas Atlas—Critical Fish and Wildlife Habitat Area Maps provide an indication of where potential critical fish and wildlife habitat areas are located within the city. The presence or location of a potential critical fish or wildlife species, habitat area, or point location that has not been mapped, but that may be present on or adjacent to a site, shall be determined using the procedures and criteria established in this chapter.

Formatted: Indent: Left: 0"

2. The department will complete a review of the Critical Areas Atlas—Critical Fish and Wildlife Habitat Area Maps and other source documents for any proposed regulated activity to determine whether the site for the regulated activity is located within a potential critical fish or wildlife habitat. Identification of a potential critical fish or wildlife habitat area may also occur as a result of field investigation conducted by Department or Washington Department of Fish and Wildlife (WDFW) staff.

3. When the department's maps, sources, or field investigation indicates that the site for a proposed regulated activity is located within a potential critical fish or wildlife habitat area, the department shall require the submittal of a critical fish and wildlife application and habitat assessment to determine the presence or absence of critical fish or wildlife species or habitat. The habitat assessment shall be documented as set forth in subsection (B) of this section (see EMC 14.40.080(C), Figure 14.40-3).

4. The requirement to conduct a habitat assessment may be waived by the department when the department determines that no other critical fish and wildlife species and habitats, as set forth in EMC 14.40.020, are present. The applicant shall be required to comply with the standards set forth in EMC 14.40.040(D).

5. Projects undergoing review for critical fish and wildlife habitat areas shall be routed to tribal agencies with jurisdiction for review. Tribes will have an opportunity to provide specific habitat information on proposed development sites. If necessary, the department will seek additional assistance from the Washington Department of Fish and Wildlife and similar appropriate state and federal agencies.

6. Approval of a critical fish and wildlife application shall be granted upon a determination that the habitat assessment and mitigation plan, if applicable, are thorough and accurate and meet all requirements of this title.

7. If application of the standards contained in this chapter would deny all reasonable use of a site, the applicant may pursue a reasonable use exception as set forth in EMC 14.20.050.

8. Unless otherwise stated in this chapter, the critical area protective measure provisions contained in EMC 14.10.080 shall apply.

B. Habitat Assessment. A habitat assessment is a site investigation process to evaluate the presence or absence of a potential critical fish or wildlife species or habitat affecting a subject property.

1. The applicant may select either a fish or wildlife biologist, as applicable, or department staff to conduct a habitat assessment to determine whether or not a critical fish or wildlife habitat area, point location, and any associated buffer are located on the site for a proposed development as outlined below:

Formatted: Indent: Left: 0"

a. Applicants for single family dwellings or agricultural activities may retain department staff to complete the habitat assessment as follows:

Formatted: Indent: Left: 0", Tab stops: 0.5", Left + Not at 0.56"

i. Requests for department staff to conduct a habitat assessment shall be accompanied with a critical fish and wildlife habitat area application and associated fee(s).

ii. If department staff conducts the habitat assessment and determines that no critical fish or wildlife habitat areas, point locations, or associated buffers are present on the site, then the critical fish and wildlife habitat area review will be considered complete.

iii. If department staff conducts the habitat assessment and determines that critical fish or wildlife habitat areas, point locations, or associated buffers are present on the site, then the applicant shall be required to submit a habitat assessment study or a habitat assessment report as outlined in subsection (B)(1)(b) of this section. This requirement may be waived if the applicant agrees to comply with the standards set forth in EMC 14.40.040 and the critical area protective measures set forth in EMC 14.10.080.

b. If a fish or wildlife biologist conducts the habitat assessment, then the following documentation shall be submitted to the department:

i. The habitat assessment shall be submitted in the form of a habitat assessment letter when the fish or wildlife biologist completes the field investigation and determines that a critical fish or wildlife habitat area, point location, or associated buffer is not located on the site. The habitat assessment letter shall meet the requirements contained in EMC 14.40.070, Appendix A (see EMC 14.40.080(C), Figure 14.40-3).

ii. The habitat assessment shall be submitted in the form of a habitat assessment study when the fish or wildlife biologist completes the field investigation and determines a critical fish or wildlife habitat area, point location, or associated buffer is located on the site and when the proposed regulated activity complies with the standards set forth in EMC 14.40.040 and the buffer requirements as set forth in EMC 14.40.060. The habitat assessment study shall meet the requirements contained in EMC 14.40.070, Appendix B (see EMC 14.40.080(C), Figure 14.40-3).

iii. The habitat assessment shall be submitted in the form of a habitat assessment report when the fish or wildlife biologist completes the field investigation and determines a critical fish or wildlife habitat area, point location, or associated buffer is located on the site and when the proposed development activity does not or cannot comply with the standards set forth in EMC 14.40.040 and the buffer requirements as set forth in EMC 14.40.060. The habitat assessment report shall meet the requirements contained in EMC 14.40.070, Appendix C (see EMC 14.40.080(C), Figure 14.40-3).

iv. Habitat assessments shall be submitted to the department for review and approval together with a critical fish and wildlife habitat area application and associated fee(s).

v. Habitat assessments shall be prepared, signed, and dated by a fisheries or wildlife biologist (as defined in EMC 14.10.060), as applicable to the particular species or habitat type.

vi. Habitat assessment reports shall address the mitigation requirements set forth in EMC 14.40.050.

2. All habitat assessments submitted under the requirements of this chapter shall, at a minimum, include the following:

Formatted: Indent: Left: 0"

a. The parcel number of the subject property.

Formatted: Indent: Left: 0", Tab stops: 0.5", Left + Not at 0.56"

b. The site address of the subject property, if one has been assigned by the city.

c. The date and time when the site evaluation for the habitat assessment was conducted and the date when the habitat assessment was prepared.

d. The credentials of the fish or wildlife biologist who prepared the habitat assessment.

e. The mailing address and phone number of the property owner and the fish or wildlife biologist that prepared the habitat assessment.

f. A detailed description of the vegetation on and adjacent to the site.

g. Identification and a detailed description of any critical fish or wildlife species or habitats, as set forth in EMC 14.40.020, on or adjacent to the site and the distance of such habitats or species in relation to the site. Describe efforts to determine the status of any critical species in the project area, including information on survey methods, timing, and results of surveys for species or suitable habitat identification.

h. Include any information received from biologists with special expertise on the species or habitat type, such as WDFW, Tribal, USFS, or other local, regional, federal, and university fish, wildlife and habitat biologists and plant ecologists. Include any such conversations in the habitat assessment and cite as personal communication.

i. A map showing the location of the site, including written directions.

j. The department may also require that the applicant request a separate evaluation of the site by WDFW staff to confirm the findings of the habitat assessment.

3. Hold harmless clauses, disclaimers, and limitations are not allowed within a habitat assessment letter.

Formatted: Indent: Left: 0"

4. The department shall review the habitat assessment and either:

a. Accept the habitat assessment and approve the critical fish and wildlife application; or

Formatted: Indent: Left: 0", Tab stops: 0.5", Left + Not at 0.56"

b. Reject the habitat assessment and notify the applicant in writing of the reasons why the habitat assessment was rejected. (Ord. 02-200 § 2).

14.40.040 ____ Critical fish and wildlife habitat area standards Allowed activities.

Formatted: Space After: 10 pt, Don't keep with next, Tab stops: 0.5", Left + Not at 0.75"

A. General.

Formatted: Not Highlight

1. Activities permitted under this section shall comply with the provisions of all other chapters contained in this title.

2. All proposed regulated activities shall comply with the buffer requirements contained in EMC 14.40.060.

3. If the department determines that mitigation is necessary to offset the identified impacts from a proposed development, the applicant shall comply with the mitigation requirements set forth in EMC 14.40.050.

4. Unless otherwise allowed in this chapter, all regulated activities shall be located outside critical fish and wildlife habitat areas and associated buffers.

5. A proposed regulated activity may be allowed within a critical fish or wildlife habitat area or required buffer when located on an existing lot of record that was created prior to the effective date of the ordinance codified in this chapter subject to the following conditions:

a. Applicants shall demonstrate there are no other feasible alternatives that would allow the proposed development to occur completely outside the critical fish or wildlife habitat area or the required associated buffer.

b. The development cannot be located outside the critical fish or wildlife habitat area or required buffer due to topographic constraints of the parcel or size and/or location of the parcel in relation to the limits of the critical fish or wildlife habitat area or required buffer.

c. If applicable, a building setback variance has been reviewed, analyzed, and rejected as a feasible alternative to encroachment into the critical fish or wildlife habitat area or associated buffer.

d. The proposed project complies with the standards set forth in this section and has demonstrated through the submittal of a habitat assessment report that adequate mitigation as outlined in EMC 14.40.050 has been provided.

A. The following activities may be permitted in habitat conservation areas and/or their buffers when all reasonable measures have been taken to avoid and mitigate adverse effects on species and habitats and a net loss of habitat functions will not occur. In order to verify the following conditions, a habitat management plan meeting the requirements of EMC 14.40.070, Appendix A must be submitted.

B. Riparian Areas, Ponds, and Associated Buffers. The following specific regulated activities may occur within a riparian area, pond, or associated buffer subject to the following standards:

1. Clearing and Grading. When clearing and grading is permitted as part of an authorized regulated activity or as otherwise allowed in these standards, the following shall apply:

a. Grading is allowed only during the dry season, which is typically regarded as beginning on May 1st and ending on October 1st of each year; the department may extend or shorten the dry season on a case-by-case basis, determined on actual weather conditions.

b. Filling or modification of a wetland or wetland buffer is permitted only if it is conducted as part of an approved wetland permit issued by the department.

c. The soil duff layer shall remain undisturbed to the maximum extent possible. Where feasible, any soil disturbed shall be redistributed to other areas of the project site.

d. The moisture holding capacity of the topsoil layer shall be maintained by minimizing soil compaction or reestablishing natural soil structure and infiltrative capacity on all areas of the site that impervious surfaces do not cover.

e. Erosion and sediment control that meets or exceeds the standards set forth in Edgewood's adopted stormwater management manual (Chapter 13.05 EMC) shall be provided. 1. Stream Erosion Control Measures. New or replacement stream erosion control measures shall be subject to the following standards:

a. The proposal complies with the provisions set forth in Chapter 14.110 EMC.

b. The required habitat management plan demonstrates the following:

i. Natural stream processes will be maintained. The project will not result in increased beach erosion or alterations to, or loss of, stream substrate within one-quarter mile of the site.

ii. The stream erosion control measure will not adversely impact fish or wildlife habitat conservation areas or associated wetlands.

2. Docks and launching ramps. Construction, reconstruction, repair, and maintenance of docks and public or private launching ramps are subject to all of the following:

Formatted: Indent: Left: 0.28", Tab stops: 0.5", Left + Not at 0.56"

a. The dock or ramp is located and oriented and constructed in a manner that minimizes adverse effects on water quality, movement of aquatic and terrestrial life, ecological processes, spawning habitat, and wetlands.

Formatted: Indent: Left: 0.5", Tab stops: 0.5", Left + Not at 0.56"

b. Docks and ramps shall meet or exceed all relevant state and federal permit requirements.

3. Roads, Trails, Bridges, and Rights-of-Way. Construction of trails, roadways, bridges, and culverts may be allowed subject to the following standards:

a. There is no other feasible alternative route with less impact on the environment.

b. The crossing minimizes interruption of downstream movement of wood, ice, and gravel and the movement of all fish and wildlife.

c. Stream crossings, where necessary, shall only occur as near to the perpendicular with the stream as possible and be limited to the minimum width necessary.

d. Road bridges and culverts are designed according to the latest versions of the Washington Department of Fish and Wildlife Water Crossing Design Guidelines (Washington Department of Fish and Wildlife) the Anadromous Salmonid Passage Facility Design guidelines (National Marine Fisheries Service).

e. Trails and associated viewing platforms shall be made of pervious materials.

4. Utility Facilities. New utility lines and facilities are permitted to cross habitat conservation areas if they comply with the following standards

a. Avoid fish and wildlife habitat conservation areas to the maximum extent possible.

Formatted: Indent: Left: 0.56"

b. Cross at an angle greater than 60 degrees to the centerline of the channel in streams or perpendicular to the channel centerline whenever boring under the channel is not feasible.

c. Crossings are contained within the footprint of an existing road or utility crossing where possible.

d. Avoid paralleling the stream or following a down-valley course near the channel.

e. Do not increase or decrease the natural rate of shore migration or channel migration.

f. Bore beneath the scour depth and hyporheic zone of the water body and channel migration zone (CMZ) where feasible.

5. Public Flood Protection Measures. New public flood protection measures and expansion of existing facilities may be approved, subject to the department's review and approval of a habitat management plan.

6. Instream Structures. New instream structures (e.g., such as, but not limited to, high flow bypass, sediment ponds, instream ponds, retention and detention facilities, dams, weirs, etc.) shall be allowed only as part of an approved mitigation or restoration project or watershed basin plan approved by the department and upon acquisition of any required state or federal permits. The structure shall be designed to avoid modifying flows and water quality in ways that may adversely affect critical fish species. Proposals for placement of water quality, water quantity, or other instruments or structures within a stream to gather data, or as a mitigation measure, shall be exempt from the provisions of this title upon review and approval by the department.

7. Stormwater Conveyance Facilities. Conveyance structures whose sole purpose is to convey stormwater already treated for quality, or water bypassed around water quality treatment facilities pursuant to an approved stormwater plan, may be constructed subject to the following standards:

a. No other feasible alternatives with less impact exist;

b. Mitigation for impacts is provided;

c. Stormwater conveyance facilities shall incorporate fish habitat features;

d. Vegetation shall be maintained and, if necessary, added adjacent to all open channels and ponds in order to retard erosion, filter out sediments, and shade the water.

8. On-Site Sewage Systems and Wells.

a. New on-site sewage systems and individual wells are permitted if accessory to an approved structure.

b. Repairs to failing on-site sewage systems associated with an existing structure shall be accomplished by utilizing one of the following methods that result in the least impact:

i. Connection to an available public sewer system;

ii. Replacement with a new on-site sewage system located in a portion of the site that has already been disturbed by development and is located landward as far as possible, provided the proposed sewage system is in compliance with the provisions in Chapter 14.70 EMC; or

iii. Repair to the existing on-site septic system.

B. The activities listed below are allowed in habitat conservation areas and their buffers, and do not require submission of a habitat management plan, except where such activities would result in a loss of the functions and values of habitat conservation areas or buffers.

Formatted: Indent: Left: 0"

12. Vegetation Removal, Disturbance, and Introduction. Limited vegetation removal shall be allowed subject to EMC 18.90.180 (tree preservation) and the following standards:

a. Hazard trees may be cut; provided, that:

i. The applicant submits a report from a certified arborist, licensed architect, or professional forester that documents the hazard and provides a replanting schedule for the replacement trees and receives written approval from the city authorizing the tree removal;

ii. Tree cutting shall be limited to limbing and crown thinning, unless otherwise justified by the landowner's expert. Where limbing or crown thinning is not sufficient to address the hazard, trees should be topped to remove the hazard rather than cut at or near the base of the tree. All vegetation cuttings (tree stems, branches, tops, etc.) shall be left within the ~~critical area~~ habitat area or buffer unless removal is warranted due to the potential for disease transmittal to other healthy vegetation;

iii. The landowner shall replace any trees that are felled or topped with new trees at a ratio of two replacement trees for each tree felled or topped. Tree species that are native and indigenous to the site shall be used;

iv. Hazard trees determined to pose an imminent threat or danger to public health or safety, or to public or private property, or serious environmental degradation may be removed or topped by the landowner prior to receiving written approval from the department; provided, that within 14 days following such action, the landowner shall submit the necessary report and replanting schedule demonstrating compliance with subsections (B)(12)(a)(i) through (iii) of this section.

Formatted: Not Highlight

b. Trimming of vegetation for purposes of providing view corridors will be allowed; provided, that trimming shall be limited to view corridors of 20 feet in width or less, that no more than 30 percent of the live crown is removed, and that benefits to fish and wildlife habitat are not reduced. Trimming shall be limited to hand pruning of branches and vegetation. Trimming shall not include felling, topping, or removal of trees.

c. Limited vegetation and tree removal subject to the conditions contained in an approval for a regulated activity.

d. Introduced vegetation shall be limited to species that are native and historically indigenous to the site.

23. Fencing. Fencing shall be placed in such a manner as to maintain wildlife movement corridors and not create any fish passage blockages. The department shall approve the location, type, and height of any proposed fencing.

4. Shoreline Erosion Control Measures. New or replacement shoreline erosion control measures shall be subject to the following standards:

a. The proposal complies with the provisions set forth in Chapter 14.110 EMC.

b. The applicant has submitted a habitat assessment report, as set forth in EMC 14.40.030.

c. The habitat assessment report demonstrates the following:

i. Natural shoreline processes will be maintained. The project will not result in increased beach erosion or alterations to, or loss of, shoreline substrate within one-quarter mile of the site.

ii. The shoreline erosion control measure will not adversely impact critical fish or wildlife habitat areas or associated wetlands.

iii. Adequate mitigation measures, as set forth in EMC 14.40.050, are provided that ensure no net loss of intertidal or riparian habitat or function occurs as a result of the proposed shoreline erosion control measure.

iv. No alteration of intertidal migration corridors occurs as a result of the proposed shoreline erosion control measure.

5. Streambank Stabilization. Streambank stabilization to protect new structures from future channel migration is not permitted except when such stabilization is achieved through bioengineering or soft armoring techniques. Streambank stabilization shall comply with the provisions set forth in Chapter 14.70 EMC.

6. Launching Ramps — Public or Private. Launching ramps may be allowed when the applicant has submitted a habitat assessment report as set forth in EMC 14.40.030 that has demonstrated the following:

a. The project will not result in increased beach erosion or alterations to, or loss of, shoreline substrate within one-quarter mile of the site.

b. The ramp will not adversely impact critical fish or wildlife habitat areas or associated wetlands.

c. Adequate mitigation measures, as set forth in EMC 14.40.050, are provided that ensure no net loss of intertidal or riparian habitat or function occurs as a result of the ramp.

d. No alteration of intertidal migration corridors as a result of the ramp.

7. Docks. Repair and maintenance of an existing dock or pier shall be permitted subject to the following:

a. There is no increase in the use of materials creating shade for predator species;

b. There is no expansion in overwater coverage;

c. There is no new spanning of waters between three and 13 feet deep;

d. There is no increase in the size and number of pilings; and

e. There is no use of toxic materials (such as creosote) that come in contact with the water.

8. Roads, Trails, Bridges, and Rights-of-Way. Construction of trails, roadways, and minor road bridging (less than or equal to 30 feet wide) may be allowed subject to the following standards:

a. There is no other feasible alternative route with less impact on the environment.

Formatted: Indent: Left: 0"

b. The crossing allows for uninterrupted downstream movement of wood and gravel.

c. Mitigation, pursuant to EMC 14.40.050, for impacts is provided.

d. Road bridges are designed according to the WDFW Habitat and Lands Environmental Division's Fish Passage Design at Road Culverts, March, 1999, and the NMFS Guidelines for Salmonid Passage at Stream Crossings, 2000.

e. Trails and associated viewing platforms shall be made of pervious materials.

9. Utility Facilities.

a. Installation of a utility is permitted if constructed in an existing, improved roadway, driveable surface or shoulder, subject to compliance with Pierce County road maintenance best management practices (BMPs).

b. New utility lines and facilities are permitted to cross watercourses if they comply with the following standards:

i. Avoid critical fish and wildlife habitat areas to the maximum extent possible.

ii. Cross at an angle greater than 60 degrees to the centerline of the channel in streams or perpendicular to the channel centerline whenever boring under the channel is not feasible.

iii. Crossings are contained within the footprint of an existing road or utility crossing where possible.

iv. Avoid paralleling the stream or following a down-valley course near the channel.

v. Do not increase or decrease the natural rate of shore migration or channel migration.

vi. Bore beneath the scour depth and hyporheic zone of the water body and channel migration zone (CMZ) where feasible.

10. Public Flood Protection Measures. New public flood protection measures and expansion of existing ones may be approved, subject to the department's review and approval of a habitat assessment report or the approval of a federal biological assessment.

11. Instream Structures. A new instream structure (e.g., such as, but not limited to, high flow bypass, sediment ponds, instream ponds, retention and detention facilities, tide gates, dams, weirs, etc.) shall be allowed only as part of an approved mitigation or restoration project or watershed basin plan approved by the city and upon acquisition of any required state or federal permits. The structure shall be designed to avoid modifying flows and water quality in ways that may adversely affect critical fish species. Proposals for placement of water quality, water quantity, or other instruments or structures within a stream to gather data, or as a mitigation measure, shall be exempt from the provisions of this title upon review and approval by the department.

12. Stormwater Conveyance Facilities. Conveyance structures whose sole purpose is to convey stormwater already treated for quality, or water bypassed around water quality treatment facilities pursuant to an approved stormwater plan, may be constructed subject to the following standards:

a. No other feasible alternatives with less impact exist;

b. Mitigation for impacts is provided;

c. Stormwater conveyance facilities shall incorporate fish habitat features;

d. Vegetation shall be maintained and, if necessary, added adjacent to all open channels and ponds in order to retard erosion, filter out sediments, and shade the water.

13. On-Site Sewage Systems and Wells.

a. New on-site sewage systems and individual wells are permitted if accessory to an approved structure.

b. Repairs to failing on-site sewage systems associated with an existing structure shall be accomplished by utilizing one of the following methods that result in the least impact:

i. Connection to an available public sewer system;

ii. Replacement with a new on-site sewage system located in a portion of the site that has already been disturbed by development and is located landward as far as possible, provided the proposed sewage system is in compliance with the provisions in Chapter 14.70 EMC; or

iii. Repair to the existing on-site septic system.

14. New Agricultural Activities. New agricultural activities are permitted subject to the following:

a. Agricultural activities and structures shall comply with the provisions of Chapter 14.70 EMC, Flood Hazard Areas.

b. The agricultural activity is in compliance with the USDA, NRCS Conservation Reserve Program farm management standards;

c. A copy of an approved NRCS or Pierce County conservation district farm management plan that documents compliance with the USDA, NRCS Conservation Reserve Program farm management standards has been submitted to the department for review and approval.

15. Structures and Landscaped Areas. New construction, redevelopment, or additions or expansions of existing structures or reconstruction of damaged structures may be permitted subject to the following:

a. Maximum disturbance (including the principal structure, accessory structures, and related appurtenances such as landscaped areas, wells, on-site septic systems, etc.) within the habitat area and/or associated buffer shall be:

i. Two thousand five hundred square feet if the area of the lot within the buffer is 5,000 square feet or less;

ii. Five thousand square feet if the area of the lot within the buffer is 10,000 square feet or greater;

iii. Fifty percent of the area of the lot if the area within the buffer is between 5,001 and 9,999 square feet; and

iv. Expansions and redevelopment projects shall be limited to the lesser of 1,000 additional square feet of disturbance area or the same area and disturbance criteria that would have been permitted if the site were undeveloped.

b. Development is prohibited within 50 feet of any waterbody, watercourse, as measured landward from the ordinary high water mark.

c. Development is prohibited within any side channel, oxbow, spring, or other type of off-channel habitat including connectable relic channels or oxbows.

d. The area not disturbed by development shall be managed for native or approved vegetation and planted with native or approved vegetation where necessary following adopted guidelines to reestablish natural forested conditions (example: WDFW's Restoring the Watershed, A Citizen's Guide to Riparian Restoration in Western Washington).

e. The proposal complies with the standards set forth in Chapter 14.70 EMC, Flood Hazard Areas.

f. The expansion of existing multifamily structures and the conversion of lots from single-family to multifamily use is prohibited.

16. Alteration of Watercourses. Alteration of watercourses shall comply with the standards set forth in subsection (D) of this section.

C. Oregon White Oak Trees and Woodlands.

Formatted: Indent: Left: 0", Tab stops: 0.56", Left + Not at 0.5"

Formatted: Indent: Left: 0"

1. Habitat Protection. Oak woodlands, stands, and individual trees meeting the criteria set forth in EMC 14.40.020(D) shall be protected as follows:

Formatted: Indent: Left: 0"

a. Priority Oregon White Oak Woodlands.

i. Priority Oregon white oak woodlands shall be protected through inclusion within a conservation tract meeting the requirements set forth in EMC 14.40.060. The tract shall extend a minimum of five feet beyond the outermost dripline of the trees within the woodland.

ii. A minimum of 80 percent of the Oregon white oak trees on site having a diameter at breast height of six inches or larger shall be preserved within the conservation tract.

iii. The conservation tract shall be maintained in an undisturbed state except for periodic watering, grass mowing of not more than four times per year, and hand removal of noxious or invasive plants, including conifer seedlings and saplings.

iv. No clearing, grading, filling, or construction of any kind shall occur within the conservation tract.

v. Use of pesticides, herbicides, rodenticides, fungicides, or fertilizers in the conservation tract shall be prohibited.

vi. All oak snags within the conservation tract shall be retained.

vii. Downed or felled oak trees within the conservation tract shall be retained; provided, that such trees may be selectively cut to further enhance habitat value.

b. Significant Oaks and Stands.

i. Significant Oaks. Seventy percent of all Oregon white oaks having a diameter at breast height of 20 inches or greater shall be preserved.

ii. Significant Oak Stands. A minimum of 50 percent of the Oregon white oak trees within the stand shall be preserved.

iii. Downed or felled oak trees and snags within significant oak stands shall be retained when located within a tract of land separate from individually owned lots.

iv. Trees may be located within individually owned lots or a separate tract(s) at the discretion of the developer.

2. Protection of Trees during Construction. Trees conserved pursuant to this chapter shall be protected before and during site development and construction through adherence to the following requirements:

Formatted: Indent: Left: 0", Tab stops: 0.56", Left + Not at 0.5"

a. A tree protection area shall be designed to protect each tree or tree stand during site development and construction. Tree protection areas may vary widely in shape, but must extend a minimum of five feet beyond the existing tree canopy area along the outer edge of the dripline of the tree(s), unless otherwise approved by the department.

Formatted: Indent: Left: 0"

b. Tree protection areas shall be added and clearly labeled on all applicable site development and construction drawings submitted to the department.

c. Temporary construction fencing at least three feet tall shall be erected around the perimeter of the tree protection areas prior to the initiation of any clearing or grading. The fencing shall be posted with signage clearly identifying the tree protection area. The fencing shall remain in place through site development and construction.

d. No clearing, grading, filling, or other development activities shall occur within the tree protection area, except where approved in advance by the department and shown on the approved plans for the proposal.

e. No vehicles, construction materials, fuel, or other materials shall be placed in tree protection areas. Movement of any vehicles within tree protection areas shall be prohibited.

f. No nails, rope, cable, signs, or fencing shall be attached to any tree proposed for retention.

g. The department may approve the use of alternate tree protection techniques if an equal or greater level of protection will be provided.

D. Standards for Other Critical Habitat Areas. Standards for critical habitat areas not listed in EMC 14.40.030(A) and (B) shall be determined on a case-by-case basis, based upon the needs of specific species or habitat area of study. The department will coordinate with the WDFW in these instances to determine appropriate standards and development a habitat management plan. (Ord. 16-482 § 2 (Exh. C); Ord. 02-200 § 2).

Formatted: Indent: Left: 0.28"

14.40.050 Buffer standards.

A. Determining buffer widths. Buffers shall be required as set forth for each habitat type. The required buffers shall be delineated, both on a site plan or plat, and on the property prior to approval of any regulated activity.

Commented [t23]: Organization: Same as wetlands, move standard buffers up to follow the stream typing.

1. Aquatic habitat conservation areas.

a. Buffers for aquatic habitat conservation areas shall be based upon the water type classification of the water body as specified in WAC 22-16-030. Refer to Table 14.40.050 for the water types and the associated buffer requirements.

Formatted: Not Highlight

b. The required buffer width shall be measured in all directions from the ordinary high water mark.

c. The required buffer shall be extended to include any adjacent regulated wetland(s), landslide hazard areas, and/or erosion hazard areas and required buffers.

2. Non-aquatic habitat conservation areas. Appropriate buffers for critical habitat areas and species not listed in Table 14.40.050 shall be determined by the Washington Department of Fish and Wildlife or by a qualified wildlife biologist and documented in an approved habitat management plan.

Formatted: Not Highlight

Table 14.40.050
Buffer Standards

Formatted: Not Highlight

<u>Water Type</u>	<u>Buffer Width¹</u>
Type S	150 ft. ²
Type F	100 ft.
Type Np	60 ft.
Type Ns	35 ft.

Formatted Table

Formatted: Superscript

Formatted: Centered

Formatted: Centered

Formatted: Centered

Formatted: Centered

Formatted: Indent: Left: 0.5"

¹ In the event that buffers for any habitat conservation area or other critical area are contiguous or overlapping, the landward-most edge of all such buffers shall apply.

² As of the effective date of this title, there are no Type S streams within city jurisdiction.

C. Modification to Buffer Width Requirements. The standard buffer widths of subsection (A) of this section may be modified as follows:

1. Buffer Width Reductions. A buffer width reduction may be proposed through submittal of a habitat management plan. Buffer reductions of up to a maximum of 25 percent may be allowed when the applicant demonstrates the following circumstances:

Formatted: Indent: Left: 0.28"

a. Buffer encroachment is unavoidable.

b. The existing buffer is predominately un-vegetated, composed of nuisance species, or is in an otherwise highly disturbed condition.

Formatted: Indent: Left: 0.56", Tab stops: 0.5", Left + Not at 0.56"

c. Buffer reduction with enhancement will provide equal or greater protection of current habitat functions and values, and will not adversely affect salmon habitat.

d. The buffer reduction will not increase the risk of slope failure or downslope stormwater drainage impacts.

e. The minimum width of the buffer at any given point shall be at least seventy-five (75) percent of the standard width, or twenty-five (25) feet, whichever is greater.

f. The project includes a buffer enhancement plan as part of the mitigation required by EMC 14.40.060. The buffer enhancement plan shall use native plant species.

2. Buffer Width Increases. The department may require increased buffer width(s) when any of the following are identified:

a. A larger buffer is necessary to maintain viable populations of existing species or protect the existing functions of the habitat area;

b. The adjacent land is susceptible to severe erosion and erosion control measures will not effectively prevent adverse habitat impacts;

c. The adjacent land has minimal vegetative cover or slopes greater than 20 percent; or

d. The habitat area is in an area of high tree blow down potential. In these cases the habitat area may be expanded an additional 50 feet on the windward side.

14.40.050060 Mitigation requirements.

A. Mitigation. Compensatory mitigation is required for all unavoidable alterations to fish and wildlife habitat conservation areas or their buffers. Mitigation of alteration to habitat areas shall achieve equivalent or greater biological functions. Mitigation shall address each functional attribute affected by the alteration to achieve functional equivalency or improvement on a per function basis. Mitigation elements to be addressed may include, but are not limited to: restoration of previously degraded areas and key habitat features, restoration of riparian vegetation communities to provide shade and large woody debris, addition of large woody debris, and installation of upland habitat features.

B. Type of mitigation required. In determining the extent and type of mitigation required, the department may consider all of the following:

1. The ecological processes that affect and influence habitat structure and function within the watershed or sub-basin;

2. The individual and cumulative effects of the action upon the functions of the critical area and associated watershed;

3. Observed or predicted trends regarding the gains or losses of specific habitats or species in the watershed, in light of natural and human processes;

4. The likely success of the proposed mitigation measures;

5. Effects of the mitigation actions on neighboring properties; and

6. Opportunities to implement restoration actions formally identified by an adopted shoreline restoration plan, watershed planning document prepared and adopted pursuant to Chapter 90.82 RCW, a salmonid recovery plan or project that has been identified on the Salmon Recovery Board Habitat Project List or by the Washington State Department of Fish and Wildlife as essential for fish and wildlife habitat enhancement.

C. Location. Compensatory mitigation shall be provided on-site or off-site in the location that will provide the greatest ecological benefit to the species and/or habitats affected and have the greatest likelihood of success. Mitigation shall occur as close to the impact site as possible, within the same sub-basin, and in a similar habitat type as the permitted

Formatted: Indent: Left: 0.5"

alteration unless the applicant demonstrates to the satisfaction of the department through a watershed- or landscape-based analysis that mitigation within an alternative sub-basin of the same watershed would have greater ecological benefit.

D. Mitigation plans. When required by this chapter, the applicant shall submit a fish and wildlife habitat conservation area mitigation plan meeting the requirements of EMC 14.30.060. A. All regulated development activities in critical fish and/or wildlife habitat areas and associated buffers shall be mitigated in the following order:

Formatted: Not Highlight

1. Avoiding the impact altogether by not taking a certain action or parts of actions;
2. Minimizing impacts by limiting the degree or magnitude of the action and its implementation by using appropriate technology or by taking affirmative steps to reduce impacts;
3. The following types of mitigation (no order of preference):
 - a. Rectifying the impact by repairing, rehabilitating, or restoring the affected environment;
 - b. Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; or
 - c. Compensating for the impact by replacing or providing substitute resources or environments.
4. Monitoring the impact and compensation and taking appropriate corrective measures. Monitoring reports are to be submitted to the department for a period of time, and upon a schedule, appropriate for the species or habitat of concern.
5. Mitigation for individual actions may include a combination of the above measures.

B. Specific mitigation elements are to be discussed within a habitat assessment report, as defined in EMC 14.40.070, Appendix C. The habitat assessment report is to provide specific recommendations to reduce, eliminate, or mitigate for the adverse effects of the proposed activity. Potential measures include timing restrictions for all or some of the activities; clearing limitations; avoidance of specific areas; special construction techniques; hydraulic project approval (HPA) conditions; planting with native vegetation; habitat enhancement (i.e., fish passage barrier removal); best management practices; etc. If applicable, append a copy of the HPA, specifications for BMPs, or other documentation to support the implementation of the conservation measure.

C. The department may require an enhancement plan that provides mitigation for the impacts associated with any encroachment into the habitat area or associated buffer or a request for buffer averaging/reduction as set forth in EMC 14.40.060(C). The enhancement plan shall use native plant species that are indigenous to the project area and shall substantiate that an enhanced habitat area and/or buffer will improve the functional attributes of the affected area to provide additional protection for critical fish or wildlife habitat, wetlands, landslide hazard areas, or adjacent properties that may be affected by the proposal. At a minimum, the enhancement plan shall include detailed information on the following:

1. Type of species proposed.
2. Exact location of proposed enhancement area.
3. Timing and schedule of planting.
4. Schedule for monitoring and maintenance and any financial guarantees for these as required in EMC 14.10.080.
5. Name, address, and telephone number of the person(s) responsible for the enhancement project.
6. Any additional information required by the department.

D. Mitigation of alterations to habitat areas shall achieve equivalent or greater biological functions and shall include mitigation for adverse impacts upstream and downstream of the development proposal site. Mitigation shall address each function affected by the alteration to achieve functional equivalency or improvement on a per function basis.

E. In cases in which it is determined that aquatic habitat mitigation is appropriate, the following shall apply:

1. Mitigation shall be provided on-site, except where the applicant demonstrates that on-site mitigation is not scientifically feasible or practical due to physical features of the site or where it can be demonstrated that greater functional and habitat values can be achieved through off-site mitigation; and
2. When mitigation cannot be provided on-site, it shall be provided in the immediate vicinity of and within the same watershed as the regulated activity. (Ord. 02-200 § 2).

14.40.060 — Buffer requirements.

A. Buffer Delineation. Buffers shall be required as set forth for each habitat type. The required buffers shall be delineated, both on a site plan or plat, and on the property prior to approval of any regulated activity.

B. Buffer Widths:

1. Riparian Areas and Ponds:

- a. Riparian areas (streams and creeks) and ponds shall be managed through the use of buffers. Buffers shall be based upon the water type classification of the water body as established by the Department of Natural Resources stream typing classification system. Refer to Table 14.40.060 for the water types and the associated buffer requirements.
- b. The required riparian buffer width is measured from the edge of the ordinary high water mark.
- c. The required pond buffer width is measured from the edge of the ordinary high water mark (OHWM).
- d. The required buffer shall be extended to include any adjacent regulated wetland(s), landslide hazard areas and/or erosion hazard areas and required buffers (see EMC 14.40.080(D) and (E), Figures 14.40-4 and 14.40-5).

2. Buffers for Other Critical Habitat Areas. Appropriate buffers for critical habitat areas not listed in Table 14.40.060 shall be determined on a case-by-case basis, based upon the needs of specific species or habitat area of study. The department will coordinate with the WDFW in these instances to determine an appropriate buffer width.

**Table 14.40.060
Buffer Requirements**

Water Type ¹	Water Body Criteria	Buffer Width ²
Type S	All waters within their ordinary high water marks, inventoried as "shorelines of statewide significance or shorelines of the state" under Chapter 90.58 RCW and related rules (currently Type 1 waters under state DNR rules).	150 feet landward from the OHWM
Type F1	All segments of natural waters (other than Type S waters) within the bankfull widths of defined channels or within lakes, ponds, or impoundments which provide habitat for or support any portion of the lifecycle of a critical fish species. These areas shall include: • Waters that are diverted for domestic use by more than 10 residential or camping units or by a public accommodation facility licensed to serve more than 10 persons, where such diversion is determined by DNR to be a valid appropriation of water and the only practical water source for such users; such waters shall be considered to be Type F waters upstream from the point of such diversion for 1,500 feet or until the drainage area is reduced by 50 percent, whichever is less; • Waters that are within a federal, state, local, or private campground having more than 10 camping units; provided, that the water shall not be considered to enter a campground until it	150 feet landward from the OHWM

Water Type ¹	Water Body Criteria	Buffer Width ²
	reaches the boundary of the park lands available for public use and comes within 100 feet of a camping unit, trail or other park improvement; or 1. Waters that are diverted for use by federal, state, tribal, or private fish hatcheries. Such waters shall be considered to be Type F waters upstream from the point of diversion for 1,500 feet and tributaries if highly significant for protection of downstream water quality.	
Type F2	Type F1 stream adjacent to a landslide hazard area as set forth in Chapter 14.80 EMC.	150 feet landward from the OHWM or the minimum buffer distance required in Chapter 14.80 EMC, whichever is greatest
Type N1	All segments of natural waters within the bankfull widths of defined channels that are not Type S or F1 or F2 waters but are located within one quarter mile of the confluence with a Type S or F1 or F2 or are perennial streams or are physically connected by an above-ground channel system to downstream waters such that water or sediment initially delivered to such waters will eventually be delivered to a Type S or F1 or F2 water.	115 feet landward from the OHWM
Type N2	Seasonal non-fish-bearing natural waters within bankfull width of defined channels that are not Type S or F1 or F2 waters and are located more than one quarter mile upstream from the confluence with a Type S or F1 or F2 water.	65 feet landward from the OHWM
Type N3	Lakes or ponds that do not support any critical fish or wildlife species.	35 feet landward from the OHWM

¹—Water types are based upon the criteria established in WAC 222-16-030 and 222-16-031. Water types are mapped in the City's Critical Areas Atlas: Fish and Wildlife Habitat Areas—Stream Typing Maps and Fish and Wildlife Habitat Areas—Critical Fish Presence Maps.

²—There may be wetlands associated with ponds or streams that are regulated and which may have a required buffer greater than those listed in Table 14.40.060, e.g., an urban lake with no buffer requirement may have associated wetlands with 50 to 150 foot buffers.

C. Modification to Buffer Width Requirements. The standard buffer widths of subsection (B) of this section may be modified by averaging, reducing, or increasing as follows:

1. Buffer Averaging. Buffer width averaging may be proposed through submittal of a habitat assessment report. Buffer width averaging shall be allowed only when the applicant demonstrates all of the following:

- a. Buffer encroachment is unavoidable.
- b. The habitat area contains variations in sensitivity (both geological and biological) due to existing site characteristics.
- c. Buffer averaging will not adversely impact the structure and function of the habitat area.
- d. The buffer averaging is not inconsistent with other buffer requirements set forth under this title (e.g., wetlands, landslide hazard areas, etc.).
- e. The buffer averaging will not increase the risk of slope failure or downslope stormwater drainage impacts.
- f. The total buffer area after averaging is no less than the buffer area prior to the averaging.
- g. The minimum buffer width after averaging will not be less than 50 percent of the widths established in subsection (B) of this section.
- h. The averaging is accomplished within the project boundaries.

2. Buffer Width Reductions. A buffer width reduction may be proposed through submittal of a habitat assessment report. Buffer reductions of up to a maximum of 25 percent may be allowed when the applicant demonstrates the following circumstances:

Formatted: Indent: Left: 0"

a. Buffer encroachment is unavoidable.

b. The buffer reduction will not result in an adverse impact to the species of study, any associated wetlands, or landslide hazard areas.

c. The buffer reduction will not increase the risk of slope failure or downslope stormwater drainage impacts.

d. The encroachment does not occur within landslide hazard area buffer or into the buffer of any associated wetlands.

e. The proposed buffer area is extensively vegetated, has less than 20 percent slopes, and the reduction will not result in adverse impact to the structure and function of the habitat area.

f. The acreage included in the buffer would substantially exceed the size of the habitat area.

g. The minimum buffer width will not be less than 75 percent of the total required width.

3. **Buffer Width Increases.** The department may require an increased buffer width when a larger buffer is necessary, based on site conditions, to protect habitat area functions and values. This determination shall be reasonably related to protection of the functions and values of the regulated habitat area. Such determination shall demonstrate any of the following:

a. A larger buffer is necessary to maintain viable populations of existing species or protect the existing functions of the habitat area;

b. The adjacent land is susceptible to severe erosion and erosion control measures will not effectively prevent adverse habitat impacts;

c. The adjacent land has minimal vegetative cover or slopes greater than 20 percent; or

d. The habitat area is in an area of high tree blow down potential. In these cases the habitat area may be expanded an additional 50 feet on the windward side.

4. Where an application for a development permit, other than a site development permit, has not been submitted in association with a proposed forest practice activity, a deviation from the standard buffer, as set forth in subsections (C)(1) and (2) of this section, shall not be allowed. (Ord. 02-200 § 2).

14.40.070. Appendix.

APPENDIX A

HABITAT MANAGEMENT PLAN

A. A habitat management plan shall, at a minimum, include the following:

1. The general critical areas report requirements in EMC 14.20.060.
2. Identification of any endangered, threatened, sensitive, or candidate species that have a primary association with habitat on the project area;
3. Map showing the location of the ordinary high water mark and/or locations of wildlife habitat conservation area(s) and their buffers in accordance with EMC 14.40.050;
4. The vegetative, faunal, topographic, and hydrologic characteristics of the habitat conservation area;
5. A discussion of any federal, state, or local special management recommendations, including Washington Department of Fish and Wildlife habitat management recommendations, that have been developed for species or habitat located on or adjacent to the project area;
6. A detailed discussion of the direct and/or indirect potential impacts on the habitat conservation area by the project. Such discussion shall include a discussion of the ongoing management practices that will protect habitat after the project site has been developed;
7. The mitigation plan requirements of EMC 14.20.070 if the activity will result in unavoidable impacts to habitat conservation areas. Mitigation measures may include:
 - a. Prohibition or limitation of use and development activities within the habitat conservation area;
 - b. Retention of vegetation and/or re-vegetation of areas/habitats critically important to species;
 - c. Special construction techniques;
 - d. Implementation of erosion and sediment control measures;
 - e. Habitat restoration or enhancement (i.e., fish passage barrier removal);
 - f. Seasonal restrictions on construction activities on the subject property;
 - g. Clustering of development activities on the subject property; and/or
 - h. Any other requirements and/or recommendations from federal, state, or local special management recommendations, including the Washington State Department of Fish and Wildlife's habitat management guidelines.

Formatted: Font: Not Bold

Formatted: Font: Not Bold

Formatted: Not Highlight

Formatted: Font: Not Bold

Formatted: Font: Not Bold

Formatted: Font: Not Bold

Formatted: Font: Not Bold

Formatted: Font: Not Bold

Formatted: Font: Not Bold

14.40.070 — Appendices.

A. Habitat Assessment Letters.

B. Habitat Assessment Studies.

C. Habitat Assessment Reports.

APPENDIX A

HABITAT ASSESSMENT LETTERS

A. The habitat assessment letter shall, at a minimum, include the following:

1. The information required in EMC 14.40.030(B)(2).
2. Documentation that the potential habitat is not present. Discuss the habitat features or types that are available as compared to the habitat features that define the potential habitat. Describe why potential restoration measures would not be feasible.
3. Documentation that potential species are not present. Note: a determination that a species is lacking based upon limited field investigation, occurring at an inappropriate time of the year for the species of study will not be

acceptable. In such cases, the city will require separate confirmation of absence provided by the Washington Department of Fish and Wildlife.

B. Hold harmless clauses, disclaimers, and limitations are not allowed within a habitat assessment letter.

APPENDIX B

HABITAT ASSESSMENT STUDIES

A. The habitat assessment study shall, at a minimum, include the following:

1. The information required in EMC 14.40.030(B)(2).
2. Identify the presence of the habitat area or species on the site.
3. Identify and discuss how the project complies with the standards set forth in EMC 14.40.040.
4. Provide a detailed description of the proposed project. At a minimum, the following items should be included:
 - a. A legal description (section, township, range) and vicinity map that clearly show the site and project area in relation to nearby waterbodies, sensitive habitats, etc.
 - b. A site plan of the habitat area and associated buffer in relation to the proposed project area.
 - c. Photographs, especially color copies, are useful to orient the reviewer to the project area. A combination of aerial or orthophotos and snapshots are ideal.
5. Describe the environmental baseline (current or pre-project) condition of the habitat and the project area. The baseline description should address all pertinent habitat parameters for the species.
6. Describe in detail the type and scope of development activity proposed:
 - a. Describe the overall purpose of the project and a brief summary of project objectives.
 - b. List all proposed project related construction activities and types of equipment. Provide a chronology of activities, timing of construction, hours of operation, phasing.
 - c. Provide to-scale plans that show where work is proposed relative to habitat areas and buffers.
 - d. Quantify areas of vegetation removal, include clearing and grubbing, vegetation type.
 - e. Describe proposed grading and filling or other earthwork, include specific BMPs for erosion, sedimentation, stormwater, and spill control. If appropriate, append the temporary erosion sediment control (TESC) plan, spill control plan, BMP specifications, etc.
 - f. Provide stormwater treatment information including:
 - i. Amount of new impervious surface;
 - ii. Percent of surface and type of treatment for new and existing impervious surface;
 - iii. Specify BMPs to treat for quality and quantity; and
 - iv. Identify the receiving area/waterbody for each BMP, including overflow channels.

B. Hold harmless clauses, disclaimers, and limitations are not allowed within a habitat assessment study.

APPENDIX C

HABITAT ASSESSMENT REPORTS

A. The applicant is advised to refer to the following guidance documents during the course of the habitat assessment report (HAR) preparation:

1. Washington Department of Fish and Wildlife Priority Habitat and Species Management Recommendations, May 1991 (or as hereafter amended), and supplemental documents including but not limited to:
 - a. Priority Habitats and Species List;
 - b. Management Recommendations for Washington's Priority Habitats: Oregon White Oak Woodlands;
 - c. Management Recommendations for Washington's Priority Habitats: Volume I Invertebrates; and
 - d. Management Recommendations for Washington's Priority Habitats: Volume III Amphibians and Reptiles.
2. Making Endangered Species Act Determinations of Effect for Individual or Grouped Actions at the Watershed Scale (NMFS 1996).
3. A Guide to Biological Assessments (NMFS revised March 23, 1999).
4. Biological Assessment Preparation and Review (USFWS March 1999).
5. NMFS Checklist for Documenting Environmental Baseline and Effects of Proposed Action(s) on Relevant Indicators.
6. Stream Survey Report Criteria, King County Department of Development and Environmental Services.

B. The following information must be included in every habitat assessment report:

1. Project Description. Describe in detail the type and scope of action proposed.
 - a. Describe the overall purpose of the project and a brief summary of project objectives.
 - b. List all proposed project related construction activities and types of equipment.
 - c. Provide to-scale plans that show where work is proposed relative to sensitive areas and/or habitat.
 - d. Quantify areas of vegetation removal, include clearing and grubbing, vegetation type, replanting plans.
 - e. Provide a chronology of activities, timing of construction, phasing.
 - f. Describe proposed grading and filling or other earthwork, include specific BMPs for erosion, sedimentation, stormwater, and spill control. If appropriate, append the spill control plan, BMP specifications, etc.
 - g. Provide stormwater treatment information including:
 - i. Amount of new impervious surface;
 - ii. Percent of surface and type of treatment for new and existing impervious surface;
 - iii. Specify BMPs to treat for quality and quantity;
 - iv. Identify the receiving area/waterbody for each BMP, including overflow channels.

h. Describe proposed in-water work (below OHWM or extreme high tide) and work over waterbodies, and potential for impacts to riparian or aquatic vegetation. Include conditions and work windows as described in the WDFW HPA. State clearly if the project does not include any in-water or over-water work.

2. Description of the Project Area. The following items should be addressed as appropriate:

- a. Provide a legal description (section, township, range) and vicinity map that clearly shows the project in relation to nearby waterbodies, sensitive habitats, etc.
- b. Date of field review(s) of project, credentials of personnel involved, and results of visit(s).
- c. Describe the environmental baseline (current or pre-project) condition of the habitat and the project area. The baseline description should address all pertinent habitat parameters for the species.
- d. Describe the project setting in terms of physiographic region, general topography, dominant habitat and vegetation type(s), aquatic resources, land use patterns, and existing disturbance levels from human activities, roadways, etc.
- e. Include information about past and present activities in the area that relate to the species or its habitat and/or the proposed action. This could include information on adjacent development projects, past consultations with state or federal agencies, previously established conservation measures, or species management plans.

3. Critical Fish and Wildlife Species and Habitat Occurrence. The HAR must be based on current site-specific information about the species and its life history. Cite any relevant scientific literature or research findings. At a minimum, the following items should be addressed:

- a. Cite species listings provided by NMFS, WDFW, and/or USFWS. Append a copy of the listing to the report. Species listings should be updated every six months.
 - i. Identify any state listed, federal or state proposed species (and candidate or species of concern if appropriate), and designated or proposed critical habitat that are known or have the potential to occur on-site or in the vicinity of the project area.
 - ii. Identify fish by ecologically significant unit (ESU).
- b. Describe the species, its habitat requirements and ecology in general, and relate that to the local populations. A lengthy life history is not required, but enough information should be provided to adequately explain the potential impacts.
- c. Describe the potential suitable habitat for the species found on-site or in the project vicinity and how local populations use it. Discuss the local status of the species as appropriate. Determine the likely level and type of use of the area by each species.

4. Analysis of Effects on Listed and Proposed Species and Designated and Proposed Critical Habitat. The HAR should provide a thorough analysis of, and a separate section addressing the potential direct, indirect, interrelated and interdependent, and cumulative effects of the action on the species and its habitat within the project area. The following items should be addressed:

- a. Define the project area (area of potential impacts, both indirect and direct). The area of impact is usually larger than the project area or project vicinity (i.e., the river upstream and downstream from a bridge project, waterbodies receiving stormwater).
- b. Describe how the environmental baseline (current or pre-project condition of the habitat in the project area) will be degraded, maintained or improved (restored). If appropriate, append the completed NMFS Checklist for Documenting Environmental Baseline and Effects of Proposed Action(s) on Relevant Indicators.

e. **Direct Effects.** Describe and analyze the effects of the action that would directly affect the species. Include actions that would potentially remove or destroy habitat, displace or otherwise influence the species, either positively (beneficial effects) or negatively (adverse effects).

d. Describe potential for impacts from disturbance (i.e., noise above ambient levels, sudden loud noises, increased human activity), from construction and continuing operation. Construction impacts would be considered a direct effect whereas operation noise impacts could be considered indirect effects as they occur later in time.

e. **Indirect Effects.** Describe any potential indirect impacts (those that occur later in time) such as impacts to future food resources or foraging areas, and impacts from increased long-term human access.

f. **Interrelated/Interdependent Effects.** Describe and analyze any potential effects from interdependent actions (actions that have no independent utility apart from the primary action) and interrelated actions (actions associated with the primary action and dependent upon that action for their justification) on the species or habitat that would not occur if not for the proposed action. Examples of these two effects include site clearing activities associated with new home construction (an interdependent effect), and increases in light, noise, and glare that occur as a result of land division (an interrelated effect).

g. **Cumulative Effects.** Identify to the extent possible those cumulative effects within the project area that are reasonably certain to occur.

h. If species-specific recovery plans or management plans have been established by the U.S. Fish and Wildlife Service, WDFW, or National Marine Fisheries Service, address the project in terms of compliance and recommendations.

i. For proposed species, analyze the potential for the project to jeopardize the continued existence of the species.

j. The HAR must contain a distinct statement of the overall effect of the project on each species. It must also provide supporting evidence to justify the effect determination (for listed species) or jeopardy call (for proposed species). The determination must be consistent throughout and worded correctly. See NMFS or USFWS guidance for specific wording for each status.

5. **Recommended Conservation Measures.** The HAR should describe components of the project that may benefit or promote the recovery of listed species and are included as an integral part of the proposed project. These conservation (or mitigation) measures serve to minimize or compensate for project effects on the species under review. The following items should be addressed:

a. Provide specific recommendations, as appropriate, to reduce or eliminate the adverse effects of the proposed activity. Potential measures include: timing restrictions for all or some of the activities; clearing limitations; avoidance of specific areas; special construction techniques; HPA conditions; replanting with native vegetation; potential of habitat enhancement (i.e., fish passage barrier removal); best management practices, etc.

b. If applicable, append a copy of the HPA, specifications for BMPs, or other documentation to support the implementation of the conservation measure.

c. Include a description of proposed monitoring of the species, its habitat, and mitigation effectiveness.

6. **Conclusions and Effect Determinations.**

a. Summarize the proposed project and objectives, and restate the listed species that may occur near the project and the expected level of use.

b. State what conclusions regarding potential impacts to the species discussed can be supported from the information presented in the report. The following items should be addressed:

i. A determination of effect must be made for each identified critical fish and wildlife species or habitat area. For each, only one of the following determinations of effect is acceptable:

(A) No Effect. The appropriate finding to make when the direct or indirect impacts of a project will have no effect of any kind, negative or beneficial, upon a species or habitat area;

(B) May Affect, Not Likely to Adversely Affect. The appropriate finding to make when the direct or indirect effects of a project are insignificant, discountable, or beneficial; or

(C) Likely to Adversely Affect. The appropriate finding to make when the direct or indirect effects of a project may adversely impact a species or habitat area and the effects are not insignificant.

ii. Determinations of “no effect” or “may affect, not likely to adversely affect” may not be based upon the argument that species will be displaced to other suitable habitat or that (based upon a limited number of surveys) species are not known to occur. The failure to provide site-specific surveys at the appropriate time of the year for the species of study will result in the department assuming a worst-case scenario in regards to project-related impacts.

c. For any proposed species or proposed critical habitat discussed, the conclusions should indicate whether the proposed project is likely to jeopardize the continued existence of the species (as in the entire species, not individual(s)), or adversely modify the proposed critical habitat.

7. References and Appendices. Refer to all appropriate project documents, particularly if the assessment depends upon information located elsewhere (e.g., in an EIS). Applicants may consider providing the department with copies of pertinent documents along with the HAR. At a minimum, the following items should be addressed:

a. Provide citations for other information referred to in the HAR, such as current literature and personal contacts used in the assessment. Include name, affiliation, and date.

b. Include as appropriate any photographs, survey methods, protocols, and results. Do not provide specific information regarding the exact location of state- or federally-listed species within the HAR document. Federal and state restrictions exist regarding the release of such information.

C. Hold harmless clauses, disclaimers, and limitations are not allowed within a habitat assessment report. (Ord. 02-200 § 2).

14.40.080—Figures.

A. Figure 14.40-1, Local Importance Priority Oregon White Oak Woodlands.

B. Figure 14.40-2, Examples of Potential Critical Fish and Wildlife Habitat Areas.

C. Figure 14.40-3, Critical Fish and Wildlife Habitat Area Review Procedures.

D. Figure 14.40-4, Riparian Buffer Extension Adjacent to Wetland.

E. Figure 14.40-5, Riparian Buffer Extension Landslide Hazard Buffer Area.

(Ord. 02-200 § 2).

Chapter 14.50

AQUIFER RECHARGE AND WELLHEAD PROTECTION AREAS CRITICAL AQUIFER RECHARGE AREAS

Sections:

- 14.50.010 Purpose.
14.50.020 ~~Aquifer recharge and wellhead protection~~Critical aquifer recharge area identification areas.
14.50.030 ~~Aquifer recharge and wellhead protection~~Critical aquifer recharge area review procedures.
14.50.040 ~~Aquifer recharge and wellhead protection~~Critical aquifer recharge area standards.

14.50.010 Purpose.

The purpose of this chapter is to protect critical aquifer recharge ~~and wellhead protection areas~~ areas from degradation or depletion resulting from new or changed land use activities. Due to the exceptional susceptibility and/or vulnerability of groundwater underlying aquifer recharge areas to contamination and the importance of such groundwater as sources of public water supply, it is the intent of this chapter to safeguard groundwater resources and wellhead protection areas by mitigating or precluding future discharges of contaminants from new land use activities. (Ord. 02-200 § 2).

14.50.020 ~~Aquifer recharge and wellhead protection areas~~Critical aquifer recharge area identification.

A. General. ~~Aquifer recharge and wellhead protection areas~~Critical aquifer recharge areas are areas that have a critical recharging effect on groundwater used for potable water supplies and/or that demonstrate a high level of susceptibility or vulnerability to groundwater contamination from land use activities. These areas include the following:

1B. Aquifer Recharge Areas. The boundaries of the two highest DRASTIC zones that are rated 180 and above on the DRASTIC index range, as identified in Map of Groundwater Pollution Potential, Edgewood, Washington, National Water Well Association, U.S. Environmental Protection Agency; ~~and~~

G2. Wellhead Protection Areas. Wellhead protection areas that lie within the 10-year time of travel zone boundary of a group A public water system well, as delineated by the water system purveyor or its designee, pursuant to WAC 246-290-135; ~~and: (Ord. 02-200 § 2);~~

3. Sole Source Aquifers. Sole source aquifers are areas that have been designated by the U.S. Environmental Protection Agency pursuant to the Federal Safe Water Drinking Act. As of the effective date of this title, there are no designated sole source aquifers within city limits.

14.50.030 ~~Aquifer recharge and wellhead protection~~Critical aquifer recharge area review procedures.

A. General Requirements:

1. The city's ~~Critical Areas Atlas—Aquifer Recharge and Wellhead Protection Area Map~~critical aquifer recharge area map provides an indication of where ~~aquifer recharge and wellhead protection~~critical aquifer recharge areas are located within the city and the map is updated as necessary.

2. ~~The department will complete a review of the aquifer recharge area map for any development proposal to determine whether the proposed project area for a regulated activity falls within an aquifer recharge or wellhead protection area.~~

3. ~~When the department's maps or sources indicate that the proposed project area for a regulated activity is located within an aquifer recharge or wellhead protection area, the department shall require an aquifer recharge and wellhead protection area review as set forth in this chapter.~~

4. ~~Any proposed development located within an aquifer recharge or wellhead protection~~protection critical aquifer recharge area shall comply with the standards set forth in EMC 14.50.040.

Formatted: Indent: Left: 0.5"

35. Any hazardous uses, as defined in EMC 14.50.040, shall require the submittal of a hydrogeologic assessment, as set forth in subsection (B) of this section.

46. The department may waive some of the critical area protective measure provisions contained in EMC 14.10.080.

B. Hydrogeologic Assessment.

1. The hydrogeologic assessment shall be prepared, signed, and dated by a state licensed geologist/hydrogeologist.

2. The hydrogeologic assessment shall be submitted in the form of a report detailing the subsurface conditions, the design of a proposed land use action, and the facilities operation which indicates the susceptibility and potential for contamination of groundwater supplies. The hydrogeologic assessment shall, at a minimum, include the general critical area report requirements of EMC 14.20.060 in addition to the following:

- a. Information sources;
- b. Geologic setting – includes well logs or borings used to identify information;
- c. Background water quality;
- d. Groundwater elevations;
- e. Location/depth to perched water tables;
- f. Recharge potential of facility site (permeability/transmissivity);
- g. Groundwater flow direction and gradient;
- h. Current available data on wells located within one-quarter mile of the site;
- i. Current available data on any spring within one-quarter mile of the site;
- j. Surface water location and recharge potential;
- k. Water source supply to facility (e.g., high capacity well);
- l. Any sampling schedules necessary;
- m. Discussion of the effects of the proposed project on the groundwater resource;
- n. Discussion of potential mitigation measures, should it be determined that the proposed project will have an adverse impact on groundwater resources; and
- o. Any other information as required by the TPCHD, including information required under Washington Department of Ecology Publication 97-30.

C. Storage Tank Permits. In addition to the requirements set forth in this title, the following agencies also have the authority to regulate the installation, repair, replacement, or removal of underground storage tanks:

1. The Pierce County Fire Prevention Bureau regulates and authorizes permits for underground storage tanks, pursuant to the International Fire Code (Article 79) and this chapter.
2. The Washington Department of Ecology regulates and authorizes permits for underground storage tanks (Chapter 173-360 WAC).

3. The TPCHD regulates and authorizes permits for the removal of underground storage tanks (Pierce County Code, Chapter 8.34). (Ord. 02-200 § 2).

14.50.040 ~~Aquifer recharge and wellhead protection~~Critical aquifer recharge area standards.

A. General. All regulated activities that are not exempt or prohibited under the provisions of this chapter shall ensure sufficient groundwater recharge. In order to achieve sufficient groundwater recharge, the applicant shall comply with city's adopted stormwater manual (Chapter 13.05 EMC) and demonstrate that the total post-development infiltration rate for the project area will be equal to or better than the predevelopment rate.

B. Prohibited Uses. Landfills (other than inert and demolition landfills), Class I, III, and IV underground injection wells, metals mining, wood treatment facilities, pesticide manufacturing, petroleum refining facilities (including distilled petroleum facilities), ~~and the storage of large volumes of petroleum products, and other uses or activities determined by the department to have a significant adverse impact on ground water~~ are prohibited within ~~aquifer-recharge and wellhead protection-critical aquifer recharge~~ areas.

C. Exemptions. In addition to the general exemptions listed in EMC 14.20.030, the following uses or activities are exempt from the requirements of this chapter:

1. Sewer lines and appurtenances;

2. Biosolids and sludge land application sites; provided, that these activities comply with the requirements established in Chapters 173-200, 173-216, and 173-304 WAC; and

3. Single-family and two-family dwellings and associated accessory structures.

D. Agricultural Activities. New agricultural activities that do not involve hazardous substance handling or application are allowed within an aquifer recharge or wellhead protection area subject to the following:

1. The applicant is required to submit a farm management plan prepared by the USDA, NRCS, Pierce County Conservation District, or Washington State University, Cooperative Extension Office, that certifies that water quality and quantity within the aquifer recharge area is maintained. The farm management plan shall at a minimum address the following:
 - a. The limits of the proposed agricultural activities.
 - b. The proposed scope of agricultural activities, including the use of any pesticides, fertilizers, or other chemicals.
 - c. The existing nitrate levels on the site and any proposed increases in nitrate levels.
2. Integrated pest management (IPM) practices for pest control and best management practices (BMPs) for the use of fertilizers, as described by the Washington State University, Pierce County Cooperative Extension Office, shall be utilized.
3. Nitrate levels at down-gradient property line shall not exceed 2.5 mg/L or, if the background nitrate concentration exceeds 2.5 mg/L, that the concentration will not be increased more than 0.1 mg/L.
4. Additional protective measures may be required if deemed necessary by the department or TPCHD to protect public health or safety.

D. Nonhazardous Uses. Subdivision of land as defined in EMC Title 16, residential structures housing three or more units and all commercial and industrial sites or activities that do not include or involve hazardous substance processing or handling in ~~an aquifer recharge and/or wellhead protection~~protection critical aquifer recharge area are allowed subject to the following standards:

1. Stormwater quality treatment and flow control shall be provided in conformance with the city's adopted stormwater management manual.

Formatted: Not Highlight

Formatted: Indent: Left: 0.5"

Formatted: Not Highlight

2. Floor drains shall not be allowed to drain to the stormwater system and must be designed and installed to meet the Uniform Plumbing Code (UPC) Section 303.

3. If any roof venting carries contaminants, then the portion of the roof draining from this area must go through pretreatment pursuant to UPC Section 304(b).

4. All nonresidential vehicle washing must be self-contained or be discharged to a sanitary sewer system, if approved by the sewer utility, and is subject to UPC Sections 708 and 711.

5. Integrated pest management (IPM) practices for pest control and best management practices (BMPs) for the use of fertilizers as described by the Washington State University, Pierce County Cooperative Extension Office, shall be utilized.

6. For new or changes in regulated activities served by on-site sewage systems, the applicant must demonstrate to the TPCHD that nitrate levels at the down-gradient property line will not exceed 2.5 mg/L or that if the background nitrate concentration exceeds 2.5 mg/L the concentration will not be increased more than 0.1 mg/L.

7. Additional protective measures may be required if deemed necessary by the department or TPCHD to protect public health or safety.

E. Hazardous Uses – General. Hazardous substance processing or handling, hazardous waste treatment and storage facilities, animal containment areas, and solid waste facilities that require a solid waste handling permit from the TPCHD, requiring approval from the city, shall be allowed only in ~~an aquifer recharge and/or wellhead protection~~ critical aquifer recharge area subject to review and approval of a hydrogeologic assessment by the department and review by the TPCHD. The department has the authority to apply whatever standards deemed necessary to mitigate any negative impacts that may be associated with the proposed development and will consider comments by TPCHD.

F. Hazardous Uses – Storage Tanks. In addition to the requirement to submit a hydrogeologic assessment, the following standards apply to storage tanks in ~~an aquifer recharge and/or wellhead protection~~ critical aquifer recharge area:

1. Underground Tanks. All new underground storage facilities used or to be used for the underground storage of hazardous substances or hazardous wastes shall be designed and constructed so as to:

- a. Prevent releases due to corrosion or structural failure for the operational life of the tank;
- b. Be protected against corrosion, constructed of noncorrosive material, steel clad with a noncorrosive material, or designed to include a secondary containment system to prevent the release or threatened release of any stored substance;
- c. Use material in the construction or lining of the tank which is compatible with the substance to be stored; and
- d. The installation of underground storage tanks shall also be subject to other state and local permit requirements.

2. Aboveground Tanks.

- a. No new aboveground storage facility or part thereof shall be fabricated, constructed, installed, used, or maintained in any manner which may allow the release of a hazardous substance to the ground, groundwater, or surface waters of ~~Edgewood the city~~ within ~~an aquifer recharge area~~ a critical aquifer recharge area.
- b. A new aboveground tank that will contain a hazardous substance will require both a double-walled tank and a secondary containment system separate from the tank that will hold 110 percent of the tank's capacity.

The secondary containment system or dike system must be designed and constructed to contain material stored in the tank(s). (Ord. 16-482 § 2 (Exh. C); Ord. 02-200 § 2).

Chapter 14.60

VOLCANIC HAZARD AREAS

Sections:

- 14.60.010 Purpose.
- 14.60.020 Volcanic hazard areas.
- 14.60.030 Volcanic hazard area review procedures.
- 14.60.040 Volcanic hazard area standards.

14.60.010 Purpose.

At over 14,411 feet high, Mount Rainier dominates the skyline of the southern Puget Sound region. This glacier-clad mountain is a dormant volcano capable of generating large floods and lahars which have historically reached the floors of the lowlands south of the city of Seattle and out to Commencement Bay in the Port of Tacoma, spewing ash from pyroclastic eruptions. The purpose of this chapter is to promote the public health, safety, and general welfare of the citizens of Edgewood by providing standards that minimize the loss of life that may occur as a result of volcanic events emanating from Mount Rainier. (Ord. 02-200 § 2).

14.60.020 Volcanic hazard areas.

A. General. Volcanic hazard areas are areas subject to pyroclastic flows, lava flows, and inundation by debris flows, mudflows, or related flooding resulting from geologic and volcanic events on Mount Rainier.

B. Volcanic Hazard Area Categories. Volcanic hazard areas are areas that have been historically inundated by Case I, Case II, or Case III lahars or other types of debris flow; affected by pyroclastic flows, pyroclastic surges, lava flows, or ballistic projectiles in future eruptions; or are located in other drainages expected to be inundated by a future Case I, Case II, or Case III debris flow. Volcanic hazard areas are classified into the following categories:

1. Inundation Zone for Case I Lahars. Areas that could be affected by cohesive lahars that originate as enormous avalanches of weak chemically altered rock from the volcano. Case I lahars can occur with or without eruptive activity. The average reoccurrence rate for Case I lahars on Mount Rainier is about 500 to 1,000 years.
2. Inundation Zone for Case II Lahars. Areas that could be affected by relatively large noncohesive lahars, which most commonly are caused by the melting of snow and glacier ice by hot rock fragments during an eruption, but which can also have a noneruptive origin. The average time interval between Case II lahars from Mount Rainier is near the lower end of the 100- to 500-year range, making these flows analogous to the so-called "100-year flood" commonly considered in engineering practice.
3. Inundation Zone for Case III Lahars. Areas that could be affected by moderately large debris avalanches or small noncohesive lahars, glacial outburst floods, or other types of debris flow, all of noneruptive origin. The average time interval between Case III lahars at Mount Rainier is about one to 100 years.
4. Pyroclastic Flow Hazard Zone. Areas that could be affected by pyroclastic flows, pyroclastic surges, lava flows, and ballistic projectiles in future eruptions. During any single eruption, some drainages may be unaffected by any of these phenomena, while other drainages are affected by some or all phenomena. The average time interval between eruptions of Mount Rainier is about 100 to 1,000 years.

C. Time Travel Zones. The ability to evacuate people from within a volcanic hazard area correlates to the distance from the source of an event (i.e., those areas closest to the event will have less time to evacuate than those areas farther away from the source of an event). The amount of time that is anticipated for a debris flow, lahar, flood, or avalanche to travel geographically has been classified into the following time travel zones:

1. Time Zone A. Time Zone A is an estimated one-hour travel distance from the source of the event.
2. Time Zone B. Time Zone B is an estimated one and one-half hour travel distance from the source of the event.
3. Time Zone C. Time Zone C is an estimated two-hour travel distance from the source of the event.

4. Time Zone D. Time Zone D is an estimated two hours or greater travel distance from the source of the event. (Ord. 02-200 § 2).

14.60.030 Volcanic hazard area review procedures.

A. The City's Critical Areas Atlas – Volcanic Hazard Area Map provides an indication of where volcanic hazard areas are located within the city.

B. The department will complete a review of the volcanic hazard area maps for any development proposal to determine whether the proposed project area for a regulated activity falls within a volcanic hazard area.

C. When the department's maps or sources indicate that the proposed project area for a regulated activity is located within a volcanic hazard area, the department shall apply the standards for regulated activities in volcanic hazard areas, as set forth in EMC 14.60.040.

~~D. Title and land division notification shall be required, as set forth in EMC 14.10.080(C). (Ord. 02-200 § 2).~~

14.60.040 Volcanic hazard area standards.

The following standards apply within the inundation zones for Case I, II, and III lahars and within the pyroclastic flow hazard zone (refer to Table 14.60.040):

A. Bonus densities, as set forth in EMC 18.90.080, Housing incentives program, shall be prohibited.

B. All ~~essential facilities and hazardous~~critical facilities, as defined in EMC 14.10.060, shall be prohibited, except sewer collection facilities and any other utilities that are located underground or not likely to cause harm to people or the environment if inundated by a lahar.

C. Special occupancy structures, as defined in EMC 14.10.060, are subject to the following:

1. Time Travel Zone A. Special occupancy structures located within the Time Travel Zone A area shall be limited to a maximum ~~100-person~~100-person occupancy.
2. Time Travel Zone B. Special occupancy structures located within the Time Travel Zone B area shall be limited to a maximum ~~500-person~~500-person occupancy.
3. Time Travel Zone C. Special occupancy structures located within the Time Travel Zone C area shall be limited to a maximum ~~1,000-person~~1,000-person occupancy.
4. Time Travel Zone D. Special occupancy structures located within the Time Travel Zone D area shall be limited to a maximum ~~5,000-person~~5,000-person occupancy.

Table 14.60.040 Volcanic Hazard Area Standards

Facility/Occupancy List	Case I Lahar Inundation Zone	Case II Lahar Inundation Zone	Case III Lahar Inundation Zone	Pyroclastic Flow Hazard Zone
Bonus Densities ⁽¹⁾	Not Allowed	Not Allowed	Not Allowed	Not Allowed
Essential-Critical Facilities ⁽²⁾	Not Allowed	Not Allowed	Not Allowed	Not Allowed
Special Occupancies ⁽²⁴⁾	In Time Travel Zone A – Limited to 100 person occupant load. In Time Travel Zone B – Limited to 500 person occupant load. In Time Travel Zone C – Limited to 1,000 person occupant load. In Time Travel Zone D – Limited to 5,000 person occupant load.			

Facility/Occupancy List	Case I Lahar Inundation Zone	Case II Lahar Inundation Zone	Case III Lahar Inundation Zone	Pyroclastic Flow Hazard Zone
Other Occupancies	No Limitation	No Limitation	No Limitation	No Limitation

(1) Bonus density as set forth in EMC 18.90.080, Housing incentives program.

(2) Essential facility as defined in EMC ~~14.60.040(B)~~; 14.10.060.

~~(3) Hazardous facility as defined in EMC 14.60.040(B).~~

~~(3.4)~~ Special occupancy structures as defined in EMC 14.10.060; ~~14.60.040(C)~~.

(Ord. 02-200 § 2).

Chapter 14.70

FLOOD HAZARD AREAS

Sections:

- 14.70.010 Purpose.
- 14.70.020 Flood hazard areas.
- 14.70.030 Flood hazard area review procedures.
- 14.70.040 Flood hazard area standards.
- 14.70.050 Appendices.
- ~~14.70.060 Figures.~~

Commented [JWM24]: Any particular reason to remove figures from the code?

14.70.010 Purpose.

The purpose of this chapter is to promote the public health, safety, and general welfare of the citizens of Edgewood. The standards contained in this chapter are intended to minimize public and private losses due to flood conditions in flood hazard areas and provide special criteria necessary for regulated activities located within flood hazard areas of the city. The following statements describe the purpose of this chapter:

- A. Protect human life and health;
- B. Minimize expenditure of public money and costly flood control projects;
- C. Minimize the need for rescue and relief efforts associated with flooding;
- D. Minimize prolonged business interruptions;
- E. Minimize damage to public infrastructure, facilities and utilities;
- F. Minimize damage to critical fish and wildlife habitat areas;
- G. Minimize net loss of ecological functions of floodplains;
- H. Ensure that potential buyers are notified that property is in a flood hazard area;
- I. Ensure that those who occupy flood hazard areas assume responsibility for their actions; and
- J. Qualify Edgewood for participation in the National Flood Insurance Program, thereby giving the citizens of Edgewood the opportunity to purchase flood insurance with particular emphasis to those in flood hazard areas. (Ord. 02-200 § 2).

14.70.020 Flood hazard areas.

Edgewood regulates the following flood hazard areas:

- A. Potential Flood Hazard Areas.
 - 1. Potential flood hazard areas, as depicted on the Critical Areas Atlas – Flood Hazard Area Map, include:
 - a. Detailed Study Areas.
 - i. FEMA Flood Insurance Rate Map and Floodway Map AE and AH zones.
 - ii. Areas within 300 feet horizontal distance from the base flood elevation established for the mapped AE and AH zones (~~see EMC 14.70.060(A), Figure 14.70-1~~).
 - iii. Areas within five feet of vertical height from the base flood elevation established for the mapped AE and AH zones.

b. Unstudied Areas. FEMA Flood Insurance Rate Map A zones and shaded X zones, and areas within 300 feet horizontal distance from said mapped areas ~~(see EMC 14.70.060(B), Figure 14.70-2).~~

c. Natural Waters/Watercourse. Areas within five feet of vertical height above the ordinary high water mark of an identified natural watercourse ~~(see EMC 14.70.060(C), Figure 14.70-3).~~

d. Groundwater Flooding Areas. Areas within 300 feet horizontal distance from a mapped groundwater flooding area ~~(see EMC 14.70.060(D), Figure 14.70-4).~~

e. Potholes. Areas not identified as a mapped flood hazard area as described above, but within 10 feet of vertical relief from the bottom of an identified pothole or within two feet of vertical relief of a potential surface water spillway or other type of outlet ~~(see EMC 14.70.060(E) and (F), Figures 14.70-5 and 14.70-6).~~ Potholes may be identified by city topographic mapping, field survey, or site inspections.

f. Channel Migration Zones (CMZs). Channel migration zones shall apply only to those watercourses specifically identified by the city or listed in subsection (B)(4) of this section. In those areas where detailed CMZ studies have been completed and accepted by the department, additional horizontal and vertical review threshold criteria (i.e., 300 feet horizontal and five feet vertical) shall not apply ~~(see EMC 14.70.060(G), Figure 14.70-7).~~

2. The Critical Areas Atlas – Flood Hazard Areas Map may not show all potential flood hazard areas that may be necessary for a specific site analysis. The department may make interpretations, where needed, as to the approximate location of the boundaries of potential flood hazard areas. When there is a conflict between the elevations and the mapped potential flood hazard area boundaries, the elevations shall govern.

3. Where there is insufficient information shown on the potential flood hazard area maps, the department may require the applicant to verify that the site is out of the flood hazard area using the flood hazard area review procedures set forth in EMC 14.70.030.

B. Floodway. A floodway is an extremely hazardous area due to the depth and/or velocity of floodwaters, which carry debris, potential projectiles, and have erosion potential ~~(see EMC 14.70.060(H), Figure 14.70-8).~~ The following areas are regulated by the city as floodways:

1. Regulatory Floodway. Regulatory floodway designated by flood hazard area maps.

2. Deep and/or Fast Flowing Water Areas. Areas of deep and/or fast flowing water shall be regulated as a floodway. Based on the criteria set forth in EMC 14.70.030(E), the department shall make the determination after review and approval of applicant's analysis of whether the project site falls within the floodway area based on deep and/or fast flowing waters ~~(see EMC 14.70.060(I), Figure 14.70-9).~~

3. Potholes and Shaded X Zones. That portion of a pothole and B zone area that is three feet or greater in depth shall be regulated as a floodway ~~(see EMC 14.70.060(J), Figure 14.70-10).~~

4. Channel Migration Zones (CMZs).

a. Channel migration zones shall be regulated as a floodway.

b. Channel migration zones are equivalent to the base flood elevation limits (i.e., 100-year floodplain limits).

C. Flood Fringe. All areas subject to inundation by the base flood, but outside the limits of the floodway as set forth in subsection (B) of this section. Those portions of the A, AE, AH, and shaded X zones not defined as floodway, and that portion of a pothole and FEMA shaded X zone area that is between zero feet (base flood elevation) and three feet in depth shall be regulated as a flood fringe.

D. Other Areas of Special Flood Hazard.

1. Groundwater Flooding Areas. Groundwater flooding areas are those areas identified by Edgewood and shown on flood hazard maps and are subject to flood inundation from subsurface waters that result from a fluctuation of the groundwater table. Groundwater flooding areas shall be regulated as a floodway or flood fringe pothole.

2. Natural Waters/Watercourse. Natural waters/watercourse as identified on city topographic, planimetric or orthophoto maps, WDNR stream classification maps, USGS quadrangle maps, or other source maps that are not identified as a flood hazard area on the FEMA maps. That portion of the natural watercourse located between the ordinary high water mark and a topographic elevation five feet above the ordinary high water mark shall be regulated as a floodway or flood fringe. If the applicant chooses to accept the five-foot topographic elevation line above the ordinary high water mark as the base flood elevation (i.e., floodplain elevation limits), a flood study shall not be required for a natural water/watercourse.

3. Frequently Flooded Areas. See EMC 14.70.030(A)(9) as the areas defined by this section. (Ord. 17-492 § 2 (Exh. A); Ord. 02-200 § 2).

14.70.030 Flood hazard area review procedures.

A. General Requirements.

1. The city's Critical Areas Atlas – Flood Hazard Area Map provides an indication of where potential flood hazard areas are located within the city. The actual presence or location of a flood hazard area shall be determined using the procedures and criteria contained in this chapter.

2. The department will complete a review of the flood hazard area maps, and other source documents, for any development proposal to determine whether the proposed project area for a regulated activity falls within a potential flood hazard area. When there is a conflict between the elevations and the mapped 100- or 500-year floodplain or floodway boundaries, the elevations shall govern. In the instance where base flood elevation data has not been provided within a mapped A zone, the department shall obtain, review, and reasonably utilize any base flood elevation and floodway data available from a federal, state, or other source to complete their review.

3. When the department's maps or sources indicate that the proposed project area for a regulated activity is or may be located within a potential flood hazard area (except for coastal flood hazard areas), the department shall require a flood boundary verification survey as outlined in subsection (C) of this section, and may require a flood study as outlined in subsection (D) of this section, a deep and/or fast flowing water analysis as outlined in subsection (E) of this section, and/or a zero-rise analysis as outlined in subsection (F) of this section.

4. Any proposed development located within a flood hazard area shall comply with the flood hazard area standards set forth in EMC 14.70.040.

5. Prior to approval of any proposed flood hazard area development, all necessary permits from those governmental agencies from which prior approval is required by federal or state law, including but not limited to Section 404 of the Federal Water Pollution Control Act Amendments of 1972, 33 U.S.C. 1334, must be provided to the city by the applicant.

6. A FEMA letter of map amendment (LOMA) or letter of map revision (LOMR) shall not be submitted to FEMA until review and approval has been granted by the department. The city shall not recognize any LOMA or LOMR as an amendment to the department's flood hazard maps unless the department has granted prior approval.

7. Unless otherwise stated in this chapter, the critical area protective measure provisions contained in EMC 14.10.080 shall apply.

8. The Federal Emergency Management Agency (FEMA) administers the nation's floodplain management program. FEMA has identified some of the flood prone areas in the city; however, it is generally recognized that FEMA's Flood Insurance Rate Maps (FIRMs) may not accurately reflect the degree or frequency of flooding within all areas of the city. Therefore, information available through FEMA may not meet best available science criteria and cannot be used exclusively to address frequently flooded areas.

9. The city has determined that the following documents and sources are the most current and accurate information concerning frequently flooded areas within the city, and therefore represent best available science:

- a. The city's Surface Water Management Plan, 1997, or as amended thereafter.
- b. Aerial photographs of the city, especially those taken in wintertime 1996 and 1997.
- c. The city's two-foot elevation contour mapping performed by Nies Mapping Group, Inc., 1999, or as subsequently updated.
- d. Relevant and verifiable information from the city's Capacity Analysis Technical Review AdHoc Committee draft report, 2000.
- e. Relevant and verifiable government and citizen photographs, notes, observations, etc., regarding historic ponding/flooding levels, including but not limited to the City of Edgewood Potholes Water Level Monitoring 2006-2007 report prepared by Robinson Engineers, LLC.
- f. Relevant and verifiable information available through Pierce County.
- g. Relevant and verifiable information available through FEMA.

10. Flooding conditions within the city generally fall into three distinct hydrologic settings: (a) upland areas within enclosed depressions, (b) streams that flow off the upland areas, and (c) valley lowlands. Accordingly, the city manages frequently flooded areas within these three zones, as described below:

- a. Upland Areas Within Enclosed Depressions. From the above list use the historic ponding elevation, determined by subsection (A)(9) of this section, or the FEMA 100-year base flood elevation, whichever is highest.
- b. Streams Which Flow Off the Upland Areas. From the above list use the historic flood elevation, determined by subsection (A)(9) of this section, or the FEMA 100-year base flood elevation, whichever is highest.
- c. Valley Lowlands. From the above list use the historic flood elevation determined by subsection (A)(9) of this section, or the FEMA 100-year base flood elevation, whichever is highest.

11. The city will provide local flood information to FEMA, and request FEMA's assistance in accurately mapping and evaluating frequently flooded areas.

12. Warning and Disclaimer of Liability. The degree of flood protection required by this chapter is considered reasonable for regulatory purposes and is based on scientific and engineering considerations. Larger floods can and will occur on rare occasions. Flood heights may be increased by manmade or natural causes. This chapter does not imply that land outside frequently flooded areas or uses permitted within such areas will be free from flooding or flood damages. This chapter shall not create liability on the part of city, any officer or employee thereof, or the Federal Insurance Administration, for any flood damages that result from reliance on this chapter or any administrative decision lawfully made hereunder.

B. Channel Migration Zone Study.

1. In areas where Edgewood has not conducted a detailed channel migration zone study, an applicant may submit an independent channel migration zone study to demonstrate that the channel migration zone limits for those watercourses listed in EMC 14.70.020(B)(4) are located inside the 100-year floodplain limits.
2. The channel migration zone study shall be prepared, signed, and dated by a professional engineer or professional geologist with at least five years of experience in fluvial geomorphology, river dynamics, or geotechnical engineering.

3. The channel migration zone study shall, at a minimum, contain the information set forth in EMC 14.70.050, Appendix B.

4. The department shall review the channel migration zone study and either accept the new channel migration zone limits or reject the study and require the use of the 100-year floodplain limits. Once the department has reviewed and approved the channel migration zone study, the applicant shall be required to provide a flood boundary verification survey, as outlined in subsection (C) of this section, utilizing the newly established channel migration zone limits as the floodway limits.

C. Flood Boundary Verification Survey.

1. A flood boundary verification survey that delineates the horizontal and vertical limits of the base flood elevation shall be submitted to the department when the department's maps or sources indicate that the proposed project area for a regulated activity is located within a potential flood hazard area.

a. Where a base flood elevation has not been determined, a flood study shall be required pursuant to subsection (D) of this section.

b. A base flood elevation that has been established through a detailed flood study accepted by the department may be used in lieu of conducting a flood study.

c. The base flood elevation for a natural watercourse as set forth in EMC 14.70.020(D)(2) shall be established at the five-foot topographic elevation line above the ordinary high water mark.

2. The requirement to submit a flood boundary verification survey may be waived at the department's discretion, when the department can determine, using contour elevations, base flood data, orthophotos, and parcel data, that the extent of the regulated activity is clearly above the base flood elevation.

3. The flood boundary verification survey shall be prepared, signed, and dated by a registered land surveyor.

4. The department shall review the flood boundary verification survey to determine if the proposed development is located within a flood hazard area.

5. If the proposed development lies within the flood hazard area, the limits of the floodway, as well as the base flood elevation, shall be shown on the flood boundary verification survey.

D. Flood Study.

1. A flood study shall be conducted when the department's maps or sources indicate that the proposed project area for a regulated activity is, or may be located within, a potential flood hazard area where base flood elevation data is not available through the flood insurance study or other authoritative sources, or when an established base flood elevation is contested. A full engineering analysis to determine the base flood elevation shall be required by the department. Base flood elevations shall be determined using the detailed methods established in EMC 14.70.050, Appendix A. The department may approve alternative methods.

2. The flood study shall be prepared, signed, and dated by a professional engineer.

3. Once the department has reviewed and approved the flood study, the applicant shall be required to provide a flood boundary verification survey, utilizing the newly established base flood elevation, as outlined in subsection (C) of this section.

4. Flood studies shall not be required for coastal flood hazard areas.

E. Deep and/or Fast Flowing Water Analysis.

1. When the department determines that a proposed project area for a regulated activity is located within a flood hazard area, a deep and/or fast flowing water analysis based on ~~EMC 14.70.060(f), Figure 14.70-9 and EMC 14.70.050, Appendix A~~, shall be required to determine the floodway limits.

2. The floodway limits and flood fringe limits identified in the deep and/or fast flowing water analysis shall be depicted on the flood boundary verification survey, as outlined in subsection (C) of this section.
3. The deep and/or fast flowing water analysis shall be prepared, signed, and dated by a professional engineer.
4. Deep and/or fast flowing water analysis shall not be required for coastal flood hazard areas.

F. Zero-Rise Analysis.

1. When the department determines that a proposed project area for a regulated activity is located within a flood hazard area, a zero-rise analysis shall be required to determine that no increase in base flood elevation, displacement of flood volume, or flow conveyance reduction will occur as a result of the development.
2. The zero-rise analysis shall be conducted utilizing HEC-RAS (Hydrologic Engineering Center – River Analysis System) modeling methodology (for stream/channel floodways), the Western Washington Hydrology Model (i.e., WWHM, for pothole/closed depression floodways), or by other alternative methodologies approved by the city (see EMC 14.70.050, Appendix A). HEC-RAS can be found at the following website: <http://www.hec.usace.army.mil/software/hecras/>. WWHM can be found here: <http://www.ecy.wa.gov/programs/wq/stormwater/wwhmtraining/index.html>. The analysis shall show that no rise (0.01 foot or less) has occurred as a result of the proposed development. The proposed development may need to be reduced or specially engineered (such as utilizing piers or pilings) to achieve zero-rise.
3. The zero-rise analysis shall be prepared, signed, and dated by a professional engineer.
4. The zero-rise analysis shall be documented on the zero-rise analysis form, as set forth in EMC 14.70.050, Appendix A, and shall be attached to the flood hazard area permit.
5. Zero-rise analysis shall not be required for coastal flood hazard areas.
6. When structures are elevated by pier or pilings and no fill is placed in the flood hazard area, the requirement to submit a zero rise analysis may be waived at the department's discretion. (Ord. 17-492 § 2 (Exh. A); Ord. 02-200 § 2).

14.70.040 Flood hazard area standards.

A. General.

1. New construction done by or for the city, such as bridges, roads, flood control works, revetments, retaining walls, drainage structures, sewer or water lines, parks, or other structures necessary to promote the public's health, safety, and welfare shall be allowed in a flood hazard area when:
 - a. The project is prepared, dated, and stamped by a registered professional engineer in the state of Washington and is designed so the project does not result in any increase in flood levels during the occurrence of the base flood discharge (zero-rise) and shall not obstruct the floodway or cause an adverse impact to critical fish or wildlife habitat or adjacent, cross-channel, or upstream or downstream properties; and
 - b. The improvements utilize appropriate flood hazard protection standards.
2. Elevation Certificate. A Federal Emergency Management Agency (FEMA) elevation certificate shall be required for new construction, additions affixed to the side of a structure, and substantial improvements located within flood hazard areas. The most current version of the FEMA elevation certificate must be completed and certified by a professional land surveyor, currently licensed in the state of Washington, kept on file by the city for public inspection, recording the actual (as-built) elevation (in relation to mean sea level) of:
 - a. The lowest floor (including basement) of all new or substantially improved structures, whether or not the structure contains a basement;

b. For floodproofed nonresidential structures, where the structure was floodproofed (including floodproofing certifications).

B. Floodways. Any development, encroachments, filling, clearing or grading, new construction, and substantial improvements shall be prohibited within the floodway (including structures that do not require a building permit), except as allowed in the following standards:

1. Agricultural activities that do not require the installation of structures and that do not have any associated fill.
2. Park and recreational uses and facilities that do not require the installation of structures and that do not have any associated fill.
3. Individual recreational vehicles, not located in an RV park, that are licensed and ready for highway use, on wheels or jacking system, and are not permanently attached to the site (attached only by quick disconnect type utilities and security devices, with no permanently attached additions).
4. Habitat enhancement/stream restoration activities are permitted subject to the provisions outlined in subsection (D) of this section.
5. Rehabilitation, reconstruction, or an upper story addition to an existing structure that does not exceed the limits for a substantial improvement.
6. Private bridges may be allowed to cross the floodway; provided, that the structure meets the requirements contained in EMC 14.70.030 and the following:
 - a. The lowest structural member of a private bridge proposed to cross a channel migration zone shall be a minimum of six feet above the base flood elevation.
 - b. The lowest structural member of a private bridge proposed to cross the floodway portion of any other watercourse shall be a minimum of one foot above the base flood elevation.

C. Flood Fringe Areas. All activities allowed in subsection (B) of this section shall be permitted in a flood fringe area. Any other proposed development, encroachments, filling, clearing or grading, new construction, and substantial improvements are prohibited in a flood fringe area except as permitted under the following standards:

1. Structures that do not require a building permit and that do not have any associated fill are allowed, subject to flood hazard area review and permitting.
2. All other regulated activities shall only be allowed when the proposed development is located on an existing lot of record that was created prior to the effective date of the ordinance codified in this chapter. Applicants shall demonstrate there are no other feasible alternatives that would allow the proposed development to occur completely outside the flood hazard area. At a minimum, the following shall be demonstrated:
 - a. The development cannot be located outside the flood hazard area due to topographic constraints of the parcel or size and/or location of the parcel in relation to the limits of the flood hazard area and a building setback variance has been reviewed, analyzed, and rejected as a feasible alternative to encroachment into the flood hazard area; and
 - b. The proposed development shall not cause an adverse impact to adjacent, cross-channel, or upstream or downstream properties.
3. Roads, Bridges, Trails, and Parking Lots.
 - a. Roads, bridges, driveways, trails, emergency vehicle access, and access routes and easements, where allowed, shall be constructed and armored based on the standards in subsection (C)(4) of this section and elevated a minimum of one foot above the base flood elevation.
 - b. Parking lots shall be elevated to a minimum of one-half foot below the base flood elevation.

4. Grading and Filling. When development is permitted under this subsection, it shall be designed to a zero-rise standard as set forth in EMC 14.70.030(F) and 14.70.050, Appendix A. Any filling, grading, or clearing associated with the permitted development shall not increase flood hazards, water velocities, or flood elevations. In addition to meeting the requirements for zero-rise, all permitted development must also meet the following requirements:

- a. Compensatory Storage. New excavated storage volume shall be equivalent to the flood storage capacity eliminated by filling or grading within the flood fringe. Equivalent shall mean that the storage removed shall be replaced by equal live storage volume between corresponding one-foot contour intervals that are hydraulically connected to the floodplain through their entire depth. ~~(refer to EMC 14.70.060(K), Figure 14.70-11).~~
- b. Flow Conveyance. New excavated conveyance areas shall be equivalent to existing conveyance within the flood fringe. Equivalent shall mean a mechanism for transporting water from one point to another using an open channel system.
- c. Erosion Protection. Development shall be protected from flow velocities greater than two feet per second through the use of bio-engineering methods or, when bioengineering methods have been deemed insufficient to protect development, then hard armoring may be utilized. All erosion protection shall extend one to three feet, depending on development requirements, above the base flood elevation and shall be covered with topsoil and planted with native vegetation ~~(see EMC 14.70.060(L), Figure 14.70-12).~~

5. Critical Facilities.

- a. New construction, additions affixed to the side of an existing structure, and substantial improvement of hazardous facilities, and special occupancy structures are prohibited.
- b. New construction of an essential facility, reconstruction of an existing essential facility, or additions to an existing essential facility that exceed the threshold for substantial improvement shall be permitted when no feasible alternative site is available outside the flood hazard area. Such regulated activities are subject to the following:
 - i. Essential facilities with a crawlspace elevated by fill shall have the lowest floor and any utilities and ductwork elevated a minimum of three feet above base flood elevation, ~~(see Figure 14.70-12),~~ or to the height of the 500-year flood, whichever is higher.
 - ii. Essential facilities elevated by piers or pilings shall have the finished floor and any utilities and ductwork elevated a minimum of three feet above the base flood elevation (or to the height of the 500-year flood, whichever is higher) and must be designed by a professional structural engineer. ~~(see Figure 14.70-13).~~
 - iii. Access to and from the critical facility shall be protected to the height utilized under subsections (C)(5)(b)(i) and/or (ii) of this section. Access routes shall be elevated to or above the same elevation to the maximum extent possible.
 - iv. Essential facilities shall be armored based on the standards in subsection (C)(4) of this section.
 - v. Flood proofing and sealing measures must be taken to ensure that toxic or explosive substances will not be displaced or released into floodwaters.

6. Structures. Single-family, two-family, multifamily, mobile/manufactured homes, commercial, industrial, etc., except for critical facilities as set forth in subsection (C)(5) of this section, shall be allowed subject to the following standards:

- a. New construction, additions affixed to the side of an existing structure, and substantial improvement of any structure with a crawlspace shall have the lowest floor elevated a minimum of two feet above base flood elevation. ~~(see EMC 14.70.060(L), Figure 14.70-12).~~

b. New construction, additions affixed to the side of an existing structure, and substantial improvement of any structure elevated by piers or pilings shall have the bottom of the lowest horizontal structural member elevated a minimum of two feet above the base flood elevation and must be designed by a professional structural engineer. Electrical, heating, ventilation, plumbing, air-conditioning equipment, and other service facilities and associated ductwork shall be elevated a minimum of two feet above base flood elevation; however, the department may approve a lesser minimum distance above base flood elevation; provided, that the systems are designed to prevent floodwater from entering or accumulating within the components ~~(see EMC 14.70.060(M), Figure 14.70-13)~~. Areas below the lowest horizontal structural member shall not be enclosed and shall remain free of obstructions.

c. Mobile/manufactured homes shall be anchored to prevent flotation, collapse, or lateral movement, and shall be installed using methods and practices to minimize flood damage. Anchoring methods may include, but are not limited to, use of over-the-top or frame ties to ground anchors. This is in addition to applicable state and local anchoring requirements for resisting wind forces.

7. Agricultural Accessory Structures. The lowest floor in an agricultural accessory structure shall be located at the base flood elevation or higher; provided, that the structure be designed to automatically equalize hydrostatic flood forces on exterior walls by allowing for the entry and exit of floodwaters. Designs for meeting this requirement must either be certified by a professional engineer in the state of Washington or must meet or exceed the following minimum criteria:

a. A minimum of two openings having a total net area of not less than one square inch for every square foot of enclosed area subject to flooding shall be provided;

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

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

8. Construction Standards.

a. Construction of a basement is prohibited.

b. Crawl spaces shall be backfilled with clean earth material and shall meet International Building Code requirements. Finished grade within the crawlspace shall be at least two feet above the base flood elevation.

c. Flood proofing in lieu of elevating the structure is prohibited.

d. All single-family, two-family, multifamily, mobile/manufactured homes, commercial, and industrial structures shall be placed on standard concrete stemwall/footing foundations or piles, piers, or column foundations and engineered pursuant to International Building Code requirements.

9. Sewage Disposal and Potable Water Installation.

a. New and replacement public water sources (i.e., wells and water supply lines) and public sanitary sewage conveyance systems are allowed. These systems shall be designed to withstand scour resulting from flow velocity, minimize or eliminate infiltration of floodwaters into the systems, and minimize or eliminate discharge from the systems into floodwaters

b. All replacement wells and replacement on-site sewage system (OSS) shall be designed to minimize or eliminate impairment to them or contamination from/to them during flooding (i.e., infiltration of floodwaters into or discharge out of the systems). They shall not be located in pothole or no-outlet floodplains.

c. All new individual wells and new on-site sewage system (OSS) shall be prohibited. Conveyance systems from a structure to a well or OSS located outside of the flood hazard area shall be allowed provided these systems are designed to meet the standards in subsection (C)(4) of this section.

D. Alteration of Watercourses. Any alteration of a watercourse shall comply with the following standards:

1. The city will notify adjacent communities and the Washington State Department of Ecology prior to any alteration or relocation of a watercourse proposed by the applicant and submit evidence of such notification to the Federal Insurance Administration.

2. The city shall require that maintenance be provided within the altered or relocated portion of said watercourse, so that the flood-carrying capacity is not diminished. Therefore, if the maintenance program calls for future cutting of planted native vegetation used in performing the alteration, the system shall be oversized at the time of construction to compensate for said vegetation growth or any other natural factor that may need future maintenance.

3. Alterations and relocations, including stabilization projects, shall not degrade fish habitat and shall be subject to the following provisions:

a. Structures that cross all watercourses and water bodies shall meet fish habitat requirements of ~~WDFW~~the Washington Department of Fish and Wildlife.

b. Any culverts that are used on fish-bearing watercourses shall be arch/bottomless culverts or equivalent that provide comparable fish protection, and must meet fish habitat requirements of the latest edition of ~~Washington Department of Fish and Wildlife~~WDFW's Design Manual for Culverts.

c. Bridges or other crossings shall allow for uninterrupted downstream movement of wood and gravel, be as close to perpendicular to the watercourse as possible, and be designed to minimize fill and to pass the base flood flows.

d. Watercourse alterations shall maintain natural meander patterns, channel complexity, and floodplain connectivity. Where feasible, such characteristics shall be restored as part of the watercourse alteration.

e. The applicant shall identify the channel migration zone for the watercourse at the project site and for a reasonable reach upstream and downstream of the site, and shall not undertake actions as part of the alteration that would in any way inhibit movement of the channel.

f. Existing culverts that do not meet fish habitat requirements shall be removed or replaced as part of the approved watercourse alteration project.

g. Watercourse alteration projects shall not result in a fish blockage of side channels. Known fish barriers into side channels shall be removed as part of the approved watercourse alteration project.

h. For any watercourse alteration of a Type S or F water (pursuant to EMC 14.40.0260(~~DB~~)) whose channel is subject to migration, bioengineered (soft) armoring of streambanks is required to allow for woody debris recruitment, gravels for spawning, and creation of side channels. The bioengineering technique used must be designed in accordance with the latest edition of ~~Washington Department of Fish and Wildlife~~WDFW's Integrated Streambank Protection Guidelines.

4. The project engineer shall design the watercourse alteration so the activity does not increase the water surface elevation (zero-rise); decrease the capacity, storage, and conveyance of the watercourse; or cause an adverse impact to adjacent, cross-channel, or upstream or downstream properties. (Ord. 17-492 § 2 (Exh. A); Ord. 02-200 § 2).

14.70.050 Appendices.

A. Floodplain/Floodway Analysis.

B. Channel Migration Zone Study.

APPENDIX A

FLOODPLAIN/FLOODWAY ANALYSIS

This Appendix describes the flood hazard analyses and studies as required by Chapter 14.70 EMC, Flood Hazard Areas. Flood hazard studies establish the base flood elevation and delineate floodplain and/or floodway(s) when a proposed project contains or is adjacent to a river, stream, lake, or closed depression.

Flood hazard studies must conform to FEMA regulations described in Part 65 of 44 Code of Federal Regulations (CFR). In addition, the following information must be provided and procedures performed for flood hazard studies used under Chapter 14.70 EMC to examine development proposals or improvements within a floodplain.

Article I. Floodway Determination

The city recognizes two distinct floodways. The FEMA floodway describes the limit to which encroachment into the natural conveyance channel can cause one foot or less rise in water surface elevation. The deep and/or fast flowing (DFF) water floodways are hazardous areas and conditions of the floodplain for both people and habitable structures. Life safety and protection to improved properties are compromised if encroached upon. Encroachment cannot occur within these areas.

A. FEMA Floodways.

1. FEMA floodways are determined through the procedures outlined in the FEMA publication Guidelines and Specifications for Study Contractors using the one-foot maximum allowable rise criteria.
2. Transitions shall take into account obstructions to flow such as road approach grades, bridges, piers, culverts, or other restrictions. General guidelines for transitions may be found in HEC-RAS, Water Surface Profiles – Users Manual, Appendix IV, Application of HEC-RAS Bridge Routines, published by the Hydrologic Engineering Center, Davis, California.

B. Deep and/or Fast Flowing (DFF) Floodways.

1. DFF floodways are generally assumed to include the entire 100-year floodplain until the department approves a detailed floodway analysis that defines areas of DFF within the entire floodplain area based on the criteria.
2. The hydraulic model must adequately be calibrated to known or recorded stage elevations of past flood events with computed recurrence frequency intervals for the 100-year flood recurrence interval. This is to ensure model accuracy.

Article II. Flood Study Content and Required Information

Three copies of the completed floodplain/floodway analysis study report and the modeling digital files shall be submitted. The report submittal must be stamped by a licensed professional civil engineer and include the following information in addition to that required for the drainage plan of a proposed project:

A. Floodplain/Floodway Map.

1. A scaled survey base map stamped by a licensed professional land surveyor registered in the state of Washington. The map must accurately locate the proposed development with respect to the floodplain and floodway, the channel of the subject stream, river, and/or pothole location, and the existing improvements within the subject study area. It must also supply all pertinent information such as the nature of the proposed project, legal description of the property on which the project would be located, fill quantity, limits and elevation, the building floor elevations, and use of compensatory storage.
2. The map must show elevation contours at a minimum of two-foot vertical intervals and shall comply with survey and map guidelines published in the FEMA publication Guidelines and Specifications for Study Contractors. The map must show the following:
 - a. Elevations and ground contours, spot elevations, and vertical datum NAVD 88 (North American Vertical Datum of 1988) (or most recent vertical datum accepted by the department).

- b. Elevations and dimensions of existing structures, fill, and compensatory storage areas.
- c. Size, location, elevation and spatial arrangement of all proposed structures on the site.
- d. Location and elevations of roadways, drainage facilities, water supply lines, and sanitary sewer facilities.
- e. Areas of DFF must clearly be shown and plotted on the map sheet depicting the bounded area of the floodway on both sides of the study channel through the subject site. DFF floodway studies must reflect all transitions as referenced above as well.
- f. The base maps must also be accompanied by all field survey notes/computations, drawings, etc., for each cross-section with water surface elevation at the time the cross-section field survey was done.

B. Study Report.

- 1. Soil maps, groundcover maps, and photographs.
- 2. A narrative report containing the purpose of the study and description of the study area, data collection, methodology for both the hydrology and hydraulics, detailed discussion on the input parameters used, modeling results, and conclusions.
- 3. A floodplain/floodway analysis must include calculations and all computer analysis input and output information, supporting graphical illustrations, as well as the following additional information:
 - a. Scaled cross-sections showing the current/existing conditions of the river/stream channel, the floodplain adjoining each side of the channel, the computed floodway, the cross-sectional area to be occupied by any proposed development and all historic high water information.
 - b. Profiles showing the bottom of the channel, the top of both left and right banks and computed base flood water surface elevations for the 10-, 25-, 50- and 100-year events.
 - c. Plans and specifications of any flood protection for structures, construction areas, filling, dredging, channel improvements, storage of materials, water supply, and sanitary facilities within the floodplain.
 - d. Complete printout of input and output data of the model that was used for the analysis. Liberal use of comments and written discussion will assist considerably in understanding the model logic and minimize misinterpretations and/or questions.
 - e. A map, showing the graphical/plotted location and limits of the computed floodway and/or floodplain.
 - f. Three copies of ready-to-run digital files of both the hydrologic and hydraulic model and its input and output files used in the study. Data shall be submitted on a disk in standard ASCII format, ready to use on an IBM-compatible personal computer and in the applicable software application (i.e., HEC-RAS, HSPF – Hydrological Simulation Program – Fortran, SBUH, etc.).
 - g. A section on the flood flow including computer modeling and/or calculations (see below for additional requirements on flood flow determinations).
 - h. Aerial photographs of the site including pre-February 1996 and post-February 1996 photos of the site.
 - i. All field survey notes/computations, maps, and drawings for each cross-section with water surface elevation at the time of the cross-section field survey.

C. Computer Modeling Information. Floodway/floodplain studies submitted to the city for review must include output summary tables and include the following (but not limited to) items:

- 1. Cross-section(s) identification number.

2. Range of flows being examined.
3. Computed water surface elevation at each cross-section.
4. Energy grade line at each cross-section.
5. Graphical plots of the channel cross-sections with computed water surface elevations for all model runs including calibrated model runs.
6. All model input and output printouts.
7. Graphical plots of the model output data that show the points and segments along each cross-section where deep and/or fast flowing water occurs. This shall include cross-section plots of depth and velocity in one-unit increments. The plots shall also be accompanied with a table listing the station distance (right and left bank), flow rate, area, hydraulic depth, velocity, and whether each point is a floodway.
8. A plan sheet clearly showing the graphical representation of the bounded area of the floodway based on DFF criteria through the entire study site and reach. Note that identified islands or pockets within the middle of the bounded floodway area are generally considered as part of the floodway, unless otherwise approved by the department.
9. Discussion on the starting water surface elevation for the hydraulic model.

Article III. Determining Flood Flows

The three techniques used to determine the flows used in a flood study depend on whether gauge data is available, whether a basin plan has been adopted, or a detailed flood study has been done and approved for use by the Department. The first technique is for basins with adopted basin plan areas. The second technique is used if a gauging station exists on the stream. The third technique is used on ungauged catchments or those with an insufficient length of record. In all cases, the engineer shall be responsible for assuring that the hydrologic methods used are technically reasonable, conservative, conform to the FEMA publication, Guidelines and Specifications for Study Contractors, and are acceptable by FEMA and the department.

A. Flood Flows from Adopted Basin Plan Information. Flood flows may be determined using information from the city's basin plan. The hydrologic model used in the basin plan shall be updated to include the latest changes in zoning or any additional information regarding the basin which has been acquired since the adoption of the basin plan.

B. Flood Flows from Stream Gauge Data. Determining flood flows from stream gauge data uses the Log-Pearson Type III distribution method as described in the Guidelines for Determining Flood Flow Frequency, Bulletin 17B of the Hydrology Committee, United States Water Resources Council (revised October 1981).

1. This technique may be used only if data from a gauging station in the basin is available for a period of at least 10 years.
2. If the difference in the drainage area on the stream at the study site and the drainage area to a gauging station on the stream at a different location in the same basin is less than or equal to 50 percent, the flow at the study site shall be determined by transferring the calculated flow at the gauge to the study site using a drainage area ratio raised to the 0.86 power, as in the following equation:

where

- Q_{ss} = estimated flow for the given return frequency on the stream at the study site.
- Q_g = flow for the given return frequency on the stream at the gauge site.
- A_{ss} = drainage area tributary to the stream at the study site.
- A_g = drainage area tributary to the stream at the gauge site.

3. If the difference in the drainage area at the study site and the drainage area at a gauging station in the basin is more than 50 percent and a basin plan has not been prepared, a continuous model shall be used as described below to determine the flood flows at the study site.

4. In all cases where dams or reservoirs, floodplain development, or land use upstream may have altered the storage capacity or runoff characteristics of the basin so as to affect the validity of this technique, a continuous model shall be used to determine flood flows at the study site.

C. Flood Flows from a Calibrated Continuous Model. Flood flows may be determined by utilizing a continuous flow simulation model such as HSPF or other equivalent continuous flow simulation model, as approved by the city. Where flood elevation or stream gauging data are available, the model shall be calibrated to the known data. Otherwise, regional parameters may be used.

Article IV. Determining Flood Elevations, Profiles and Floodways (Hydraulic Model)

A. Reconnaissance. The applicant's project engineer is responsible for the collection of all existing data with regard to flooding in the study area. This shall include a literature search of all published reports in the study area and adjacent communities and an information search to obtain all unpublished information on flooding in the immediate and adjacent areas from federal, state, and local units of government. This search shall include specific information on past flooding in the area, drainage structures such as bridges and culverts that affect flooding in the area, available topographic maps, available community maps, photographs of past flood events, and general flooding problems within the community. Documented discussions with nearby property owners should also be done to obtain a witness account of the flooding extent. A field reconnaissance shall be made by the applicant's project engineer to determine hydraulic conditions of the study area, including type and number of structures, locations of cross-sections, and other parameters including the roughness values necessary for the hydraulic analysis.

B. Base Data. Channel cross-sections used in the hydraulic analysis shall be current/existing at the time the study is performed and shall be obtained by field survey. Topographic information obtained from aerial photographs/mapping may be used in combination with surveyed channel cross-sections in the hydraulic analysis. The elevation datum of all information used in the hydraulic analysis shall be verified. All information shall be referenced directly to NAVD 1988 (and include local correlation to NGVD) unless otherwise approved by the city.

C. Methodology. Flood studies and analysis (including deep and/or fast flowing floodways and zero-rise analysis) shall be calculated using the U.S. Army Corps of Engineers HEC-RAS computer model (or subsequent revision) unless otherwise approved by the city.

D. Adequacy of the Hydraulic Model. Edgewood considers the following (but not limited to) factors when determining the adequacy of the hydraulic model for use in the floodway/floodplain model:

1. Cross-section of a downstream starting location and spacing.
2. Differences in energy grade line (significant differences in the energy grade line from cross-section to cross-section are an indication that cross-sections should be more closely spaced or that other inaccuracies exist in the hydraulic model).
3. Methods and results for analyzing the hydraulics of structures such as bridges and culverts.
4. Lack of flow continuity.
5. Use of a gradually varied flow model. In certain cases, rapidly varied flow techniques may need to be used in combination with a gradually varied flow model such as weir flow over a levee, flow through a spillway of a dam, or special application of bridge flow (pressure flow if bridge superstructure is shown to be submerged for the study event).
6. Mannings "n" value.

7. Calibration of hydraulic model to known and/or observed flow stage elevations including past flood events.

8. Special applications. In some cases, steady state one-dimensional hydraulic models may not be sufficient for preparing the floodplain/floodway analysis. This may occur where sediment transport, two-dimensional flow, or other unique hydraulic circumstances affect the accuracy of the model. In these cases, the project engineer must propose and obtain department approval of alternative models for establishing the water surface elevations.

9. All reported error and/or warning messages by the model must be properly and adequately addressed and/or resolved and included in the report for review verification.

Article V. Zero-Rise Analysis (ZRA)

A. Zero-rise analysis (ZRA) is required where encroachment within the flood fringe area is allowed and approved by the department. The ZRA must show that the proposed development encroachment in the flood fringe area will not show a measurable rise in the base flood elevation (i.e., less than 0.01 foot), resulting from a comparison of existing conditions and proposed conditions. This is directly attributable to development in the floodplain but not attributable to manipulation of mathematical variables such as roughness factors, coefficients, discharge, and other hydraulic parameters.

B. In addition to those items listed in subsection (A) of this article, the following shall be included in a ZRA:

1. Floodway boundaries (based on zero-rise) are to follow the stream lines and reasonably balance the rights of property owners on either side of the floodway. Use of the automatic equal conveyance encroachment option in the model will be considered equitable.

2. The ZRA must include a sufficient number of cross-sections in order to accurately model the subject fill and compensatory storage areas of the site. In all cases, cross-sections shall be located downstream, through the subject site and upstream of the site at a very minimum. They shall also be located where changes in channel and the fill material characteristics occur, such as slope, shape, and roughness. The sections shall also be located perpendicular to the flow path in the channel and the outside overbank areas. The department shall review and approve the proposed number and location of cross-sections. All cross-sections and surveys shall be prepared and certified by a professional land surveyor or registered professional engineer in the state of Washington.

3. The difference between two profiles of water surface elevation at the cross-section (e.g., difference between existing and encroached water surface). The model must report 0.01 feet or less an allowable change in the water surface elevation. This must be shown in the profile graphical plot as well.

4. The difference between profiles of the energy grade line at the cross-section. The model must report 0.01 feet or less. This is the allowable change in the energy grade line. This must be shown in the profile graphical plot as well.

C. Conveyance Capacity.

1. The ZRA must also show that the proposed development encroachment in the flood fringe area will not show a measurable decrease (less than 0.01 CFS) in the conveyance capacity of the channel, resulting from a comparison of existing conditions and proposed conditions, for each of the cross-sections. This is also directly attributable to development in the floodplain but not attributable to manipulation of mathematical variables such as roughness factors, coefficients, discharge, and other hydraulic parameters.

2. The analysis must provide calculations of the reduction in conveyance caused by the proposed development encroachment, assuming no change in the water surface elevation, and using the roughness coefficient value(s) appropriate for the proposed development.

3. The analysis must then provide calculations for the increase in conveyance of the proposed compensatory measure, using the roughness coefficient value(s) appropriate for the proposed development.

4. Include a comparison analysis and discussion from subsections (C)(2) and (3) of this article. The comparison must adequately show that the conveyance capacity has not measurably decreased between the existing condition and proposed development condition.

Floodplain/Floodway Zero-Rise Certification

This is to certify that I am a duly qualified professional engineer licensed to practice in the state of Washington.

This is to further certify that the attached floodplain/floodway zero-rise analysis conclusively shows that the proposed development of:

(Name of Development) Parcel Number

will not increase the 100-year base flood elevation(s) and widths nor reduce the conveyance capacity of the floodplain/floodway and its associated channel to the

(Name of River, Stream, Pothole or other Watercourse)

Supporting Data

Base Flood Elevation (Pre-Development) = _____ FT (NAVD 88)

Base Flood Elevation (Post-Development) = _____ FT (NAVD 88)

Conveyance Capacity (Pre-Development) = _____ CFS

Conveyance Capacity (Post-Development) = _____ CFS

with compensatory storage)

Signature Date

Title Firm Name

Address

City

State Zip Code

APPENDIX B

CHANNEL MIGRATION ZONE STUDY REQUIREMENTS

The channel migration zone (CMZ) is the area within the lateral extent of likely stream channel movement due to stream bank destabilization and erosion, rapid stream incision, and shifts in location of stream channels. The CMZ will define areas in which, to the best information available, development should be regulated due to the dangers expected from erosion.

Article I. Determining Channel Migration Zone Limits

A. The CMZ shall be based on available historic records of channel migration, or 100 years of calculated channel migration whichever is greater, and will generally include those areas that encompass:

1. The limit of geologic controls, such as hill slope, bedrock outcrop, or abandoned floodplain terrace;
2. Side channels, abandoned channels, and oxbows; and
3. Outside edges of progressive bank erosion at meander bends.

B. Channel migration over the 100-year time frame can be estimated and predicted from geomorphic analysis of annual bank erosion rates, historic meander belt width, and measured meander bend amplitudes, potential avulsion sites, and previous river channel locations as depicted on historic aerial photographs and maps. The 100-year time span represents the time required to grow mature trees that can provide functional large woody debris to streams.

C. The CMZ boundaries will be determined using the following specific criteria:

1. The representative average annual rate of channel migration in the affected river reach is calculated by dividing the lateral distance eroded with the corresponding elapsed time shown in sequential aerial photographs or historic maps (distance/time equals channel movement). Measurements from reaches that have had some form of bank armoring shall not be included. Historical records will need to be checked closely for this information.
2. Identify the width of the channel migration zone by multiplying the representative average annual erosion rate by 100 years.

D. Areas separated from the active channel by legally existing artificial channel constraints (levees, roads, driveways, etc.) that limit bank erosion and channel avulsion to the 100-year recurrence interval flood elevation plus three feet of freeboard shall serve as a boundary for the outer limit of the CMZ.

Article II. Channel Migration Zone Study Content and Required Information

Three copies of the completed channel migration zone study shall be submitted. The study submittal must be stamped by a licensed professional engineer or professional geologist with five years experience in fluvial geomorphology, river dynamics, or geotechnical engineering. The CMZ study shall include the following information in addition to that required for the drainage plan of a proposed project. The CMZ study will consist of a written technical report including:

- A. Detailed methods, techniques, and assumptions used in determining the location of the CMZ.
- B. A vicinity map and site with scale, north arrow, and parcel number(s) or specific site being studied.
- C. A clear statement of the requested revision to the county's determination of the 100-year floodplain limits as the CMZ.
- D. A clearly stated conclusion of the study results that support the requested revision. The conclusion needs to document the basis for the revision, show how the data presented refutes the 100-year floodplain limits as the CMZ, and calculates the new results using the new information.
- E. A map clearly delineating the subject property and the CMZ of the adjacent watercourse. In addition to providing a hard copy of the CMZ map, the CMZ map shall also be provided in ARC-View shapefile format. Contact the city GIS department for mapping and aerial imaging standards. (Ord. 02-200 § 2).

14.70.060 — Figures.

A. Figure 14.70-1, Potential Flood Hazard Areas — Detailed Study Areas.

B. Figure 14.70-2, Potential Flood Hazard Areas — Unstudied Areas.

C. Figure 14.70-3, Potential Flood Hazard Areas — Natural Watercourse.

D. Figure 14.70-4, Potential Flood Hazard Areas—Groundwater Flooding Areas.

E. Figure 14.70-5, Potential Flood Hazard Areas—Potholes.

F. Figure 14.70-6, Potential Flood Hazard Areas—Potholes.

G. Figure 14.70-7, Potential Flood Hazard Areas—Channel Migration Zone.

H. Figure 14.70-8, Floodway—Flood Hazard Area.

I. Figure 14.70-9, Deep and/or Fast Flowing Water Graph.

J. Figure 14.70-10, Pothole and B Zone Flood Hazard Area.

K. Figure 14.70-11, Compensatory Storage.

L. Figure 14.70-12, Structure with Crawlspace Elevation by Fill.

M. Figure 14.70-13, Building on Piles, Piers or Columns.

(Ord. 02-200 § 2).

Chapter 14.80

LANDSLIDE HAZARD AREAS

Sections:

- 14.80.010 Purpose.
- 14.80.020 Landslide hazard areas.
- 14.80.030 Landslide hazard area review procedures.
- 14.80.040 Landslide and erosion hazard area standards.
- 14.80.050 Buffer requirements.
- 14.80.060 Appendices.
- ~~14.80.070 Figures.~~

14.80.010 Purpose.

The following statements describe the purpose of this chapter is to:

- A. Protect human life and health.
- B. Regulate uses of land in order to avoid damage to structures and property being developed and damage to neighboring land and structures.
- C. Identify and map active landslide hazard areas.
- D. Minimize the ill effects on wetlands and critical fish and wildlife habitat that can result from landslides.
- E. Establish permit requirement and review procedures for development proposals in areas with potential landslides. (Ord. 02-200 § 2).

14.80.020 Landslide hazard areas.

A. Landslide Hazard Areas Indicators. Landslide hazard areas are areas potentially subject to mass movement due to a combination of geologic, seismic, topographic, hydrologic, or manmade factors. Landslide hazard areas can be identified by the presence of any of the following indicators:

1. Areas of historic failures, including areas of unstable, old and recent landslides or landslide debris within a head scarp.

~~2. Areas with active bluff retreat that exhibit continuing sloughing or calving of bluff sediments, resulting in a vertical or steep bluff face with little or no vegetation.~~

~~3. Areas with all of the following characteristics:~~

- a. Slopes steeper than ~~2015~~ percent with a vertical relief of 20 feet or more ~~(see EMC 14.80.070(A), Figure 14.80-1); and~~
- b. Hillside that intersect geologic contacts with a relatively permeable sediment overlying a relatively impermeable sediment or bedrock; and
- c. Springs or groundwater seepage.

~~4. Slopes that are parallel or sub-parallel to planes of weakness, such as bedding planes, joint systems, and fault planes in subsurface materials.~~

~~5. Areas exhibiting geomorphological features indicative of past slope failure within the last 10,000 years, such as hummocky ground, back-rotated benches on slopes, tension cracks, etc.~~

~~6. Areas with tension cracks or ground fractures along and/or near the edge of the top of a bluff or ravine.~~

7. Areas with structures that exhibit structural damage such as settling and cracking of building foundations or separation of steps or porch from a main structure that is located near the edge of a bluff or ravine.

8. The occurrence of toppling, leaning, bowed, or jackstrawed trees that are caused by disruption of ground surface by active movement.

9. Areas with slopes containing soft or liquifiable soils.

10. Areas where gullying and surface erosion have caused dissection of the bluff edge or slope face as a result of drainage or discharge from pipes, culverts, ditches, and natural drainage courses.

11. Areas where seeps or springs or indicators (e.g., vegetation type) of a shallow groundwater table are observed on or adjacent to the face of the slope.

124. Any area with a slope of 40 percent or steeper and with a vertical relief of 15-15 or more feet, except those manmade slopes created under the design and inspection of a geotechnical professional or slopes composed of competent bedrock. Manmade slopes of 40 percent or steeper with a vertical relief of 15 feet or more may be exempted from the requirements of this section of the code provided that it can be demonstrated by a qualified geotechnical professional that such an exemption does not result in an increased risk of landsliding or damage to the subject site, nearby properties, or existing structures and, any associated hazards to proposed structures are suitably mitigated. For the purposes of determining whether a slope is considered to be a landslide hazard area, the horizontal and vertical distance between the top and toe of slope are utilized (see EMC 14.80.060, Appendix D, and EMC 14.80.070(A), Figure 14.80-1).

135. Areas that are at risk of mass movement due to seismic events.

B. Potential Landslide Hazard Areas. Potential landslide hazard areas (see EMC 14.80.070(BB), Figure 14.80-2), as depicted on the [Critical Areas Atlas—Landslide Hazard Areas Map](#) [Geologically Hazardous Areas map](#), are those areas where the suspected risk of slope instability and landslide is sufficient to require a geological assessment to assess the potential for active landslide activity. Potential landslide hazard areas are determined by using the following criteria:

1. Areas identified on the city topographic maps as having slopes greater than 20 percent with a vertical relief of greater than 20 feet and any adjacent areas within a distance of 65 feet (see EMC 14.80.070(C), Figure 14.80-3).

21. Areas that possess one or more of the landslide hazard area indicators (stratigraphy, [topography](#), [emergent groundwater conditions](#) [seepage](#), etc.) as set forth in subsection (A) of this section and any adjacent area within a distance of 65 feet (EMC 14.80.070(B), Figure 14.80-2). —These areas include, but are not necessarily limited to, those areas designated on the City's Geologically Hazardous Areas map as moderate or steep slope areas.

C. Landslide Hazard Area Categories. Landslide hazard areas shall be classified into categories, which reflect each landslide hazard areas past landslide activity, and the potential for future landslide activity based on an analysis of slope instability. Landslide hazard areas shall be designated as follows:

1. Active Landslide Areas. A composite of the active landslides and/or unstable areas, including that portion of the top of slope and slope face subject to failure and sliding as well as toe of slope areas subject to impact from down slope run-out, identified and mapped during a geological assessment of a site. An active landslide hazard area exhibits one or more of the following:

a. Areas of historical landslide movement on a site which have occurred in the past century including areas identified on the Coastal Zone Atlas of Washington, Volume VII, Pierce County as Urs (unstable recent slide).

b. Unstable areas that exhibit geological and geomorphologic evidence of past slope instability or landsliding or possess geological indicators (stratigraphy, ground water conditions, etc.), as set forth in subsection (A) of this section, that have been determined through a geological assessment process to be presently failing or may be subject to future landslide activity. The impact of the proposed development activities must be considered in defining the extent of the active areas.

c. Interim areas are located between areas identified through the geological assessment process as an active landslide hazard area. Interim areas will be considered part of the active landslide hazard area if the required top of slope or toe of slope landslide hazard area buffer encompasses the area (see EMC 14.80.070(D), Figure 14.80-4).

2. Stable Areas. Areas that have been identified as potential landslide hazard areas, but through the geological assessment process meet one of the following conditions. Such stable areas shall continue to be considered critical areas for all purposes under this code including but not limited to density calculations and the application of SEPA:

a. No indicators as set forth in subsection (A) of this section actually exist that indicate the potential for future landslide activity to occur;

b. A slope stability analysis has proven that there is no landslide potential; or

c. Adequate engineering or structural measures have been provided through the submittal of a geological assessment—geotechnical report that mitigates the potential for a future landslide to occur as a result of current or cumulative development activity. (Ord. 04-240 § 1; Ord. 02-200 § 2).

14.80.030 Landslide hazard area review procedures.

A. General Requirements.

1. The city's ~~critical areas atlas~~ [Geologically Hazardous Areas map](#) provides an indication of where active and potential landslide hazard areas are located within the city. The actual presence or location of an active landslide hazard area ~~and/or additional potential landslide hazard areas~~ that have not been mapped, but may be present on or adjacent to a site, shall be determined using the geological assessment procedures established in this chapter.

2. The department will complete a review of the [Critical Areas Atlas—Landslide Hazard Area Map](#) [Geologically Hazardous Areas map](#) and other source documents for any proposed regulated activity to determine whether the site is, or may be, located within an active landslide hazard area or potential landslide hazard area. Identification of an active landslide hazard area or potential landslide hazard area may also occur as a result of field investigations conducted by department staff.

3. When the department's maps or sources indicate that the site for a proposed regulated activity is or may be located within an active landslide hazard area or potential landslide hazard area, the department shall require the submittal of a geological assessment as outlined in subsection (B) of this section ~~(see EMC 14.80.070(E), Figure 14.80-35).~~

4. Unless otherwise stated in this chapter, the critical protective measure provisions contained in EMC 14.10.080 shall apply.

B. Geological Assessment. A geological assessment is a site investigation process to evaluate the on-site geology affecting a subject property. [The findings of the geological assessment shall be presented in a Landslide Hazard Geotechnical Verification or Geotechnical Report, in accordance with EMC 14.80.070\(C\), Figure 14.80-3](#)

1. Geological assessments shall be submitted to the department for review and approval together with a landslide hazard area application and associated fee.

2. A geological assessment shall include a field investigation and may include the use of historical air photo analysis, [LiDAR mapping](#), [review of regional geologic mapping](#), review of public records and documentation, and interviews with adjacent property owners, etc.

3. The geological assessment shall include the following information and analysis:

a. A determination of which areas on the site or within the vicinity of the site meet the criteria for an active landslide hazard area ~~and stable area~~ as set forth in EMC 14.80.020 ~~(C)(1) and (2).~~

b. Consider the run-out hazard of landslide debris to the proposed development that starts upslope (whether part of the subject property or on a neighboring property) and/or the impacts of landslide run-out on down slope properties.

c. The geological assessment shall include a detailed review of the field investigations, published data and references, data and conclusions from past geological assessments, or geotechnical investigations of the site, site-specific measurements, tests, investigations, or studies, as well as the methods of data analysis and calculations that support the results, conclusions, and recommendations.

4. Geological assessments shall be prepared, signed, and dated by a geotechnical professional (as defined in EMC 14.10.060 and established in this chapter) and the format shall be pre-approved by the department.

5. An ~~engineering geologist~~geotechnical professional shall complete a field investigation and geological assessment to determine whether or not ~~an active~~ landslide hazard area ~~exists-is likely to exist~~ within 300 feet of the site ~~(see EMC 14.80.070(EC), Figure 14.80-53)~~. ~~-Where access to off-site properties is not available by the geotechnical professional, evaluation of off-site landslide hazards must include review of regional geologic mapping and LiDAR based topographic mapping.~~

~~a. The geological assessment shall be submitted in the form of a geotechnical letter when the engineering geologist finds that no active landslide hazard area exists within 300 feet of the site. The geotechnical letter shall meet the requirements contained in EMC 14.80.060, Appendix A.~~

~~ab. The geological assessment shall be submitted in the form of geotechnical verification when the engineering geologistgeotechnical professional finds that no an active~~ landslide hazard area exists ~~,but is located more thanwithin~~ 300 feet away from of the ~~proposed~~ project area. The geotechnical verification shall meet the requirements contained in EMC 14.80.060, Appendix ~~BA~~.

~~bc. The geological assessment shall be submitted in the form of a geotechnical report when the engineering geologistgeotechnical professional finds that an active~~ landslide hazard area exists within 300 feet of the proposed project area or when a geotechnical professional determines that mitigation measures are necessary in order to construct or develop within a potential landslide hazard area. The geotechnical report shall meet the requirements contained in EMC 14.80.060, Appendix ~~CB~~.

6. Geological assessments that do not contain the minimum required information or comply with the landslide hazard area standards set forth in EMC 14.80.030 will be returned to the geotechnical professional for revision.

7. The department shall review the geological assessment and either:

a. Accept the geological assessment; or

b. Reject the geological assessment and require revisions or additional information.

8. When the geological assessment has been accepted, the department shall issue a decision on the landslide hazard area application.

9. A geological assessment for a specific site may be valid for a period of up to five years when the proposed land use activity and surrounding site conditions are unchanged. However, if any environmental conditions associated with the site change during that five-year period, the applicant may be required to submit an amendment to the geological assessment. (Ord. 02-200 § 2).

14.80.040 Landslide and erosion hazard area standards.

A. ~~Active~~ Landslide Hazard Areas. Any development, encroachment, filling, clearing or grading, building structures, impervious surfaces, and vegetation removal shall be prohibited within ~~active~~ landslide hazard areas and associated buffers except as specified in the following standards:

1. Stormwater Conveyance. Stormwater conveyance shall be allowed when it is conveyed through a high-density polyethylene stormwater pipe with fuse-welded joints and when no other stormwater conveyance alternative is

available. The pipe shall be located on the surface of the ground and be properly anchored so that it will continue to function in the event of an underlying slide.

2. Utility Lines. Utility lines will be permitted when no other conveyance alternative is available. The line shall be located above ground and properly anchored and/or designed so that it will continue to function in the event of an underlying slide.

3. Roads, Bridges, and Trails. Roads, bridges, and trails shall be allowed when all of the following conditions have been met:

a. Mitigation measures are provided that ensure the roadway prism and/or bridge structure will not be susceptible to damage from landslide-induced ground deformation or impact/coverage by landslide debris. Mitigation measures shall be designed for static and seismic loading conditions in accordance with the most recent version of the American Association of State Highway and Transportation Officials (AASHTO) Manual.

b. The road is not a sole access for a development.

c. The removal or disturbance of vegetation, clearing or grading shall be prohibited during the wet season (November 1st to May 1st).

B. Landslide Hazard Management Areas. All regulated activities may be allowed in areas located within 300 feet of an ~~an~~ active landslide hazard area subject to the following standards:

1. The department reviews and approves a geological assessment – geotechnical report and determines that the potential landslide hazard area is stable.

2. The proposed development is located outside of an active landslide hazard area and any required buffer, as set forth in EMC 14.80.050.

3. The proposed recommendations and mitigation measures contained within the geotechnical report are adequate to reduce or mitigate risks to health and safety.

4. The proposed development shall not decrease the factor of safety for landslide occurrence below the limits of 1.5 for static conditions and 1.21.1 for dynamic conditions. Analysis of dynamic (seismic) conditions shall be based on a minimum horizontal acceleration as established by the current version of the International Building Code.

5. The removal and disturbance of vegetation, clearing or grading shall be limited to the area of the approved development and shall not be allowed during the wet season (November 1st through May 1st) unless adequate provisions for wet season erosion have been addressed in the geotechnical report and approved by the department.

6. Surface drainage from developed areas, including downspouts and runoff from paved or unpaved surfaces up slope, shall not be directed through an active landslide hazard area or its associated buffer unless it is conveyed in conformance with the provisions in EMC 14.80.030(A)(1).

7. Stormwater retention facilities, including infiltration systems utilizing perforated pipe, are prohibited unless the slope stability impacts of such systems have been analyzed and mitigated by a geotechnical professional and the impacts have been determined to be negligible.

8. The proposed development shall not create a need for larger landslide hazard area buffers and setbacks on neighboring properties unless approved through a notarized written agreement with the affected property owner(s).

9. The proposed development shall be sited far enough from regressing slope faces to project 120 years of useful life for the proposed structure(s) or infrastructure.

10. Any proposed lots must be completely located outside any identified ~~active~~ landslide hazard areas or their associated buffers.

11. ~~Stable~~ landslide hazard areas that are directly adjacent to any riparian areas, or wetlands, may be subject to additional buffer requirements and standards as set forth in Chapter 14.40 EMC, ~~Critical~~ Fish and Wildlife Habitat ~~Conservation~~ Areas, or wetlands as set forth in Chapter 14.30 EMC, Wetlands. (Ord. 02-200 § 2).

14.80.050 Buffer requirements.

A. Determining Buffer Widths.

1. The buffer width shall be measured on a horizontal plane from a perpendicular line established at the edge of the ~~active~~ landslide hazard area limits (both from the top and toe of the slope) (~~see EMC 14.80.070(F), Figure 14.80-6~~).

2. A buffer of undisturbed vegetation shall be required for ~~an active~~ landslide hazard area. The required buffer width is the greater amount of the ~~following~~ distances ~~described in EMC 14.80.050(a) and (b)~~:

a. Fifty feet from all edges of the active landslide hazard area limits;

b. A distance of one-third the height of the slope at the top of the active landslide hazard area and a distance of one-half the height of the slope at the bottom of an active landslide hazard area; or

c. ~~The minimum distance recommended by the geotechnical professional, measured from the edges of the active landslide hazard area. The buffer widths may be reduced below the widths specified in EMC 14.80.050(a) and (b), or eliminated upon approval by the department of a geotechnical report that demonstrates that such a reduction would not result in an increased risk of landslide activity either on or off of the subject property.~~

B. Modification of Buffer Widths. The department may require a larger buffer width than the buffer distance, as determined in subsection (A) of this section, if any of the following are identified:

1. The adjacent land is susceptible to severe erosion and erosion control measures will not effectively prevent adverse impacts.

2. The area has a severe risk of slope failure or downslope stormwater drainage impacts. (Ord. 02-200 § 2).

14.80.060 Appendices.

~~A. Geological Assessment – Landslide Hazard Geotechnical Letter.~~

~~B. A. Geological Assessment – Landslide Hazard Geotechnical Verification.~~

~~C. B. Geological Assessment – Landslide Hazard Geotechnical Report.~~

APPENDIX A

GEOLOGICAL ASSESSMENT – LANDSLIDE HAZARD GEOTECHNICAL LETTER

~~A. A geotechnical letter shall include the following:~~

~~1. The letter shall be labeled identifying the submittal as a “Landslide Hazard Geotechnical Letter.”~~

~~2. The date when the geological assessment was performed. The date when the letter was prepared.~~

~~3. The parcel number(s) of the site.~~

~~4. Site address, if the city has assigned one.~~

5. A brief description of the project (including the proposed land use) and a description of the area to be developed. The appropriate professional preparing the geotechnical letter shall provide conclusions and recommendations as to slope stability for the proposed development.

6. A paragraph that states the following specific language:

I meet the qualifications contained in EMC 14.10.060 to prepare a landslide hazard geological assessment. I understand the requirements of the current landslide hazard area Chapter 14.80 EMC and the definitions of the applicable terms contained within EMC 14.10.060. I have performed a landslide hazard geological assessment, conducted a field investigation, and researched historic records on or in the vicinity of the above referenced site and determined that no active landslide hazard area exists within 300 feet of the site.

7. The name, mailing address, and telephone number of the engineering geologist who performed the geological assessment and prepared the letter.

8. The name, mailing address, and telephone number of the property owner.

B. The engineering geologist who prepared the letter shall stamp the letter with his or her license stamp/seal.

C. Geotechnical letters shall be in conformance with a format that is pre-approved by the department.

APPENDIX B~~A~~

GEOLOGICAL ASSESSMENT – LANDSLIDE HAZARD GEOTECHNICAL VERIFICATION

A. A geotechnical verification shall include the following:

1. ~~The first page of the document shall be labeled identifying the submittal as a "Landslide Hazard Geotechnical Verification."~~

1. ~~The general critical areas report requirements in section 14.20.060.~~

21. ~~The date when the geological assessment was performed. The date when the verification document was prepared.~~

32. ~~The parcel number(s) of the site.~~

34. ~~Site address, if the city has assigned one.~~

45. ~~A detailed description of the project (including the proposed land use) and a description of the area to be developed.~~

256. A description of the surface and subsurface geology, hydrology, soils, and vegetation at the site and a list of the landslide hazard area indicators, as set forth in EMC 14.80.020(A), that were found on or in the vicinity of the site.

367. A summary of the results, conclusions, and recommendations resulting from the geological assessment of the landslide hazards on or in the vicinity of the site. This summary shall address all of the information required in EMC 14.80.030(B). The summary should include a description of observations during the site visit and a discussion of information obtained from review of the listed documents in EMC 14.80.030(B)(2)

478. An accurate site plan drawn at a scale of one inch equals 20 feet, one inch equals 30 feet, one inch equals 50 feet (or other scale deemed appropriate by the department) is required. The department may require that the site plan information listed below be based on a field survey by a licensed surveyor. The site plan shall include:

- a. The limits/location of the active landslide hazard area(s) ~~set forth in EMC 14.80.020(C)(1).~~

- b. The limits/location of the required landslide hazard buffer based upon the requirements set forth in EMC 14.80.050(A).
- c. The location of any existing and proposed structures, utilities, on-site septic systems, wells, and stormwater management facilities.
- d. The full geographical limits of the proposed project area (area to be developed).
- e. Dimension the closest distance between the identified active landslide hazard area boundary and the project area.
- f. Existing topography on the site presented in two-foot contours.
- g. Property lines for the site.
- h. North arrow and plan scale.

~~9. A paragraph that states the following specific language:~~

~~I meet the qualifications contained in EMC 14.80.030 to prepare a landslide hazard geological assessment. I understand the requirements of the current landslide hazard area Chapter 14.80-EMC and the definitions of the applicable terms contained within EMC 14.10.060. I have performed a landslide hazard geological assessment, conducted a field investigation, and researched historic records on or in the vicinity of the above referenced site and determined that no active landslide hazard area exists within 300 feet of the proposed project area.~~

~~810. The name, mailing address, and telephone number of engineering geologistthe geotechnical professional who performed the geological assessment and prepared the verification document.~~

~~911. The name, mailing address, and telephone number of the property owner.~~

B. The engineering geologist-geotechnical professional who prepared the verification document shall stamp the verification with his or her license stamp/seal.

C. Geotechnical verifications shall be in conformance with a format that is pre-approved by the department.

APPENDIX CB

GEOLOGICAL ASSESSMENT – LANDSLIDE HAZARD GEOTECHNICAL REPORT

A. At a minimum, a geotechnical report shall include the following:

~~1. The first page of the document shall clearly identify the submittal as a "Landslide Hazard Geotechnical Report."~~

~~1. The general critical areas report requirements in section 14.20.060.~~

~~21. The date when the geological assessment was performed. The date when the geotechnical report was prepared.~~

~~32. The parcel number(s) of the site.~~

~~43. Site address if the city has assigned one.~~

~~54. A detailed description of the project (including the proposed land use) and a description of the area to be developed.~~

~~625~~. A description of the surface and subsurface geology, hydrology, soils, and vegetation of the site and a list of the landslide hazard area indicators, as set forth in EMC 14.80.020(A), that were found on or in the vicinity of the site.

~~736~~. A summary of the results, conclusions, and recommendations resulting from the geological assessment of the landslide hazards on or in the vicinity of the site. This summary shall address all of the information required in EMC 14.80.030(B).

~~847~~. An accurate site plan drawn at a scale of one inch equals 20 feet, one inch equals 30 feet, one inch equals 50 feet (or other scale deemed appropriate by the department) is required. The department may require that the site plan information listed below be based on a field survey by a licensed surveyor. The site plan shall include:

a. The limits/location of the ~~active~~ landslide hazard area(s) ~~within the site boundaries as set forth in EMC-14.80.020(C)(1)~~. Delineation of the ~~active~~ landslide hazard area limits shall ~~differentiate between~~ identify any areas of historic landslide activity ~~and adjacent unstable areas~~.

b. The limits/location of the required landslide hazard buffer based upon the requirements set forth in EMC 14.80.050(A).

~~c. The limits/location of any potential landslide hazard areas that have been designated as stable areas in accordance with EMC 14.80.020(C)(2)(c).~~

d. The location of any existing and proposed structures, utilities, on-site septic systems, wells, and stormwater management facilities.

e. The full geographical limits of the proposed project area (area to be developed).

f. Location and unique identifier of geotechnical borings, CPT soundings, or other surveys or explorations used to characterize subsurface conditions.

g. Extent of cross-section(s) used to evaluate the three-dimensional subsurface geologic and groundwater conditions at the site.

h. Extent of cross-section(s) used in the evaluation of slope instability.

i. Existing topography on the site presented in two-foot contours.

j. Property lines for the site.

k. North arrow and plan scale.

~~958~~. Subsurface characterization data must be provided. The data shall be based on both existing and new information that may include soil borings, test pits, geophysical surveys, or other appropriate subsurface exploration methods, development of site-specific soil and/or rock stratigraphy, and measurement of groundwater levels including variability resulting from seasonal changes, alterations to the site, etc.

~~a. Conventional geotechnical boring data shall be reported as a graphic log utilizing the following standards:~~

~~i. The vertical scale of the graphic log shall be such that five feet of drilled depth is scaled to range of one inch to two inches (1:60 or 1:30 scale), and shall include vertical columns that record depth in one-foot increments, SPT value and incremental blow counts, a graphic pattern representation of the soil type encountered during drilling, and sample descriptions and other comments regarding drilling.~~

~~ii. The graphic log shall have a header on the first page that includes a unique identifier for the boring, the times and dates of the start and completion of drilling, the manufacturer and model of the drilling rig, the company name of the drilling contractor, the name(s) of the site geologist(s) or engineer(s) overseeing the drilling activities, the details of the method used to advance the borehole (e.g., four-inch i.d. hollow-stem auger), the type of drilling fluid used to stabilize the borehole, verification that the SPT~~

followed all applicable ASTM standards including a description of the sampler, hammer weight, drop height, the type of hammer used to perform the SPT, number of turns of rope if a cathead is used to raise the hammer, condition of rope (i.e., new, used, frayed, oily, etc.), and the depth of static groundwater measured immediately prior to abandonment of the boring and the time and date of this measurement.

iii. All subsequent pages of the graphic log shall have the unique identifier for the boring, the times and dates of the start and completion of drilling, and the number of the page and the total number of pages comprising the log.

iv. Each SPT value will be reported in the appropriate column showing the blow counts recorded at each six-inch interval, and the sum of the blow counts between penetration distances of six inches to 18 inches, unless refusal conditions (50 or more blows with less than six inches of sampler penetration) are met anywhere in this interval. At refusal, the blow count shall be recorded as the number of blows with the corresponding sampler penetration, in inches.

v. SPT tests shall be performed every five feet during drilling, at a minimum. Additional undisturbed samples, collected following ASTM standards for undisturbed soil sampling, cannot be substituted for SPT testing.

vi. The soil sample descriptions will include the total length of the recovered sample, the soil color, odor, the density or consistency (loose to very dense, very soft to very stiff), degree of water saturation (dry, moist, wet, saturated), and dilatancy. For granular (sand and gravel) soils, the description shall include a physical description of the soil sample, including size distribution (poorly or well-graded), angularity, composition, amount and plasticity of the fines fraction. For fine soils (silt and clay), the description shall include a qualitative estimate of the proportion of the silt and clay size particles (e.g., silty clay, clay with some silt, etc.), plasticity, and amount and type of organic material. The sample description shall include a description of any bedding, laminations, slickensides, or other textural or deposition features, including contact between dissimilar soil types. The sample description shall also include a field classification of the soil sample using the Unified Soil Classification System where the classification is expressed in lower case letters (e.g., sp, ml, etc.). The sample classification shall be expressed in upper case letters (e.g., SP, ML, etc.) where subsequent laboratory testing has been performed. This column of the graphic log will also include any other information relevant to the subsurface investigation, such as loss of drilling fluid, heaving, churning of the drill in gravelly soils, etc.

b. CPT sounding data shall be reported as a graphic log utilizing the following standards:

i. The vertical scale of the graphic log shall be such that five feet of penetrated depth is scaled to range of one inch to two inches (1:60 or 1:30 scale), and shall include vertical columns that record depth in one-foot increments.

ii. The graphic log shall have a header on the first page that includes a unique identifier for the boring, the times and dates of the start and completion of the CPT sounding, the manufacturer and model of the CPT system, the company name of the CPT service contractor, the name(s) of the site geologist(s) or engineer(s) overseeing the CPT sounding, and any comments regarding the conduct of the testing, reaction of the CPT system during sounding, etc.

iii. All subsequent pages of the graphic log shall have the unique identifier for the boring, the times and dates of the start and completion of drilling, and the number of the page and the total number of pages comprising the log.

iv. The graphic log shall display, at a minimum, a continuous depth plot of the uncorrected tip resistance, the friction (sleeve) resistance, the friction ratio, and the measured pore pressure with an overlay of the calculated hydrostatic pore pressure. These curves shall be plotted so as to show the full variation of the measured quantities within the depth range of the sounding, and each curve shall have a visible scale with the minimum and maximum ranges labeled.

~~v. All of the CPT data recorded for each sounding shall also be provided in either electronic or hardcopy format. Electronic data will be presented in an ASCII text file format.~~

~~ea.~~ Geotechnical borings or CPT soundings will be advanced to a depth sufficient to characterize geologic conditions within and below the existing or potential landslide mass.

~~eb.~~ Other methods used for subsurface characterization shall be assigned a unique identifier, and the basic data presented in appropriate graphical and/or tabular format.

~~ec.~~ The three-dimensional subsurface conditions at the site shall be presented using one or more cross-sections showing location and depth penetration of geotechnical borings, CPT soundings, or other subsurface characterization methods, interpretation of the geometry of major soil units, and projected location of the static groundwater surface determined from the subsurface exploration. The cross-sections shall be presented at a scale of one inch equals 20 feet, one inch equals 30 feet, one inch equals 50 feet (or other scale deemed appropriate by the department). Each cross-section shall have a legend with a description of the various major soil units.

~~10. Soil strength and index properties (i.e., unit weight, cohesion, etc.) shall be provided for each soil unit interpreted from the subsurface characterization of the site, and shall be presented in tabular format. Justification for the presented values of these soil parameters shall be based on one or more of the following approaches:~~

~~a. Back analysis based on pre-landslide stability conditions.~~

~~b. Laboratory measurement of strength or other index properties made on soil samples.~~

~~c. Correlation of soil strength index properties to other geotechnical indices (e.g., SPT blow counts, etc.), where the correlation relations are documented (e.g., published literatures, in-house empirical data set, etc.).~~

~~d. Soil strength and indices based on generic values must provide a clear justification for their use.~~

~~1169.~~ A detailed description of any prior grading activity, soil instability, or slope failure.

~~12740. Where deemed appropriate by the geotechnical professional~~ Assessments and conclusions regarding slope stability for both the existing and developed conditions shall be presented and documented. These assessments and conclusions shall include ~~the information provided below in EMC 14.80.060, Appendix B(A)(10)(a), (b), and (c):~~ -. The project geotechnical professional must provide justification for not including a slope stability analysis if one is excluded. ~~–The City’s geotechnical professional reserves the right to request a slope stability analysis based on site conditions.– If a dispute arises between the project geotechnical professional and the City’s geotechnical professional regarding the need for a slope stability analysis, then the City reserves the right to require an independent, third party review to be paid for by the applicant to resolve~~ the dispute.

a. Determination of the potential types of landslide failure mechanisms (e.g., debris flow, rotational slump, translational slip, etc.) that may affect the site.

b. Quantitative stability evaluation of slope conditions of the various failure mechanisms using state-of-the-practice modeling techniques. Limiting equilibrium methods of analysis shall state the stability conditions as a factor of safety. The most unstable failure geometry(ies) shall be presented in the form of a cross-section(s), with the least stable failure geometry for each failure mechanism clearly indicated. The stability evaluation shall also consider dynamic (earthquake) loading, and shall use a minimum horizontal acceleration as established by the current version of the International Building Code.

c. An analysis of slope regression rate shall be presented in those cases where stability is impacted or influenced by erosional processes (e.g., wave cutting, stream meandering, etc.) acting on the toe of the slope.

~~13814.~~ Mitigation recommendations using engineered measures to protect the proposed structure(s) and any adjacent structures, infrastructure, adjacent wetlands, or critical fish and wildlife habitat from damage or destruction as a result of proposed construction activities shall be designed by a professional engineer. Design plans and detailed geotechnical recommendations may be provided in a document separate from the geotechnical

report. When appropriate, such recommendations/plans may include, but are not necessarily limited to: The geotechnical report shall contain:

- a. Design plans and associated design calculations for engineered structures or drainage systems (e.g., structural foundation requirements, retaining wall design, etc.).
- b. Recommendations and requirements pertaining to the handling of surface and subsurface runoff in the developed condition.
- c. Identification of necessary geotechnical inspections to assure conformance with the report mitigation and recommendations.
- d. Proposed angles of cut and fill slopes, site grading requirements, final site topography (shown as two-foot contours), and the location of any proposed structures, on-site septic systems, wells, and stormwater management features or facilities associated with the development detailed within the body of the report and shown on a site map at the same scale as that required in subsection (A)(8) of this appendix.

- e. Soil compaction criteria and compaction inspection requirements.
- f. An analysis that indicates how the proposal meets the standards outlined in EMC 14.80.040.
- g. Structural foundation requirements and estimated foundation settlement shall be provided if structures are proposed.
- h. Lateral earth pressures.
- i. Suitability of on-site soil for use as fill.
- j. Mitigation measures for building construction on each lot for short plats, large lots, or formal plats such that additional geotechnical professional involvement is minimized during building construction.

B. The geotechnical report shall be prepared by an engineering geologist and shall be cowritten by both an engineering geologist and professional engineer where both geological interpretations and engineering analyses and designs are necessary or prudent in the mitigation of the landslide hazard.

C. The geotechnical professional(s) who prepared the geotechnical report shall stamp the report with his or her license stamp/seal.

D. The department may request a geotechnical professional to provide additional information in the geotechnical report based upon existing conditions, changed conditions, or unique circumstances occurring on a case-by-case basis.

E. Geotechnical reports shall be in conformance with a format that is pre-approved by the department. (Ord. 05-247 § 1; Ord. 02-200 § 2).

14.80.070 — Figures:

A. Figure 14.80-1, Landslide Hazard Indicators.

B. Figure 14.80-2, Potential Landslide Hazard Areas.

C.B. Figure 14.80-32, Potential Landslide Hazard Areas—Slopes Greater than 20-15 Percent.

D. Figure 14.80-4, Interim Areas Between Landslide Hazard Areas.

EC. Figure 14.80-53, Landslide Hazard Area Review.

F. Figure 14.80-6, Required Buffers for Active Landslide Hazard Areas.

Formatted: Centered

Formatted: Centered

(Ord. 02-200 § 2).

Chapter 14.90

SEISMIC (EARTHQUAKE) HAZARD AREAS

Sections:

- 14.90.010 Purpose.
- 14.90.020 Seismic hazard areas.
- 14.90.030 Seismic hazard area review procedures.
- 14.90.040 Seismic hazard area standards.
- 14.90.050 Buffer requirements.
- 14.90.060 Appendices.

~~14.90.070 — Figures.~~

14.90.010 Purpose.

Earthquakes have historically occurred throughout the Puget Sound region. Large earthquakes have caused loss of life and over a billion dollars in property damage. The purpose of this chapter is to protect the public health, safety, and general welfare of the citizens of Edgewood from the damaging effects of earthquakes. This chapter provides standards to ensure life safety and minimize public and private losses that may occur within a seismic hazard area. (Ord. 02-200 § 2).

14.90.020 Seismic hazard areas.

A. General. Seismic hazard areas are areas subject to severe risk of damage as a result of earthquake-induced landsliding, seismic ground shaking, dynamic settlement, fault rupture, [or](#) soil liquefaction, ~~or flooding caused by tsunamis and seiches.~~

B. Potential Seismic Hazard Areas. Potential seismic hazard areas, ~~as depicted on the Critical Areas Atlas — Seismic Hazard Areas map,~~ are those areas where the suspected risk of earthquake induced landsliding, dynamic settlement, fault rupture, ground deformation caused by soil liquefaction, or flooding is sufficient to require a further seismic hazard area review as set forth in EMC 14.90.030. These potential seismic hazard areas are determined using the following criteria:

1. Earthquake Induced Landslide Hazard Areas. Areas identified as potential landslide hazard areas in EMC 14.80.020.
2. Liquefaction and/or Dynamic Settlement Hazard Areas. Areas identified as high and moderate liquefaction and dynamic settlement hazard areas on the [Washington Department of Natural Resources, Division of Geology and Earth Resources liquefaction and dynamic settlement hazard area table](#) [Geologically Hazardous Areas map](#).
3. Fault Rupture Hazard Areas. ~~(Reserved).~~
4. ~~Tsunami and Seiche Hazard Areas. Areas that are adjacent to Puget Sound marine waters, lakes, and ponds that are designated as “A” or “V” zones as defined by FEMA and depicted on the FEMA maps or other maps adopted by the city.~~

C. Seismic Hazard Area Categories.

1. Earthquake Induced Landslide Hazard Areas. Earthquake induced landslide hazard areas include slopes that can become unstable as a result of strong ground shaking, even though these areas may be stable under nonseismic conditions.
2. Liquefaction and/or Dynamic Settlement Hazard Areas.
 - a. Liquefaction hazard areas are areas underlain by unconsolidated (corrected Standard Penetration Test blow counts, $[(N_1)_{60}]$ less than 30) sandy or silt soils (Unified Soil Classification System S or M soil-types)

and a shallow groundwater table (static groundwater depth less than 30 feet) capable of liquefying in response to earthquake shaking.

b. Dynamic settlement hazard areas are areas underlain by a significant thickness (more than 10 feet) of loose or soft soil not susceptible to liquefaction (e.g., peats or organic silts and clays, unsaturated loose sands or silts), but that could result in vertical settlement of the ground surface in response to earthquake shaking.

3. Fault Rupture Hazard Areas. Fault rupture hazard areas include:

a. Active fault rupture hazard areas are areas where displacement (movement up, down, or laterally) of the ground surface has occurred during past earthquake(s) in the Holocene Epoch; and

b. Areas adjacent to the active fault rupture hazard area that may be potentially subject to ground surface displacement in a future earthquake. ~~(see EMC 14.90.070(A), Figure 14.90-1). (Ord. 02-200 § 2).~~

14.90.030 Seismic hazard area review procedures.

A. General Requirements.

1. The city's [Critical Areas Atlas—Seismic Hazard Area Map](#) ~~Geologically Hazardous Areas map~~ provides an indication of where potential seismic hazard areas are located within the city.

2. The department will complete a review of the Critical Areas Atlas – Seismic Hazard Area Map for any regulated activity to determine whether the site for a proposed regulated activity is located within a seismic hazard area.

3. When the department's maps indicate that the site for a proposed regulated activity is located within a potential liquefaction or dynamic settlement hazard area, the department shall require the submittal of a geological assessment as outlined in subsection (B) of this section. ~~(see EMC 14.90.070(B), Figure 14.90-2).~~

4. When the department's maps indicate that the site for a proposed regulated activity is located within a potential fault rupture hazard area, the department shall require the submittal of a geological assessment as outlined in subsection (B) of this section. The requirement to submit a geological assessment may be waived at the department's discretion when it is determined that the proposed project area for the regulated activity is located outside the potential fault rupture hazard area.

5. When the department's maps indicate that the site for a proposed regulated activity is or may be located within a potential earthquake-induced landslide hazard area, the department shall conduct a review pursuant to the requirements set forth in EMC 14.80.030.

6. Unless otherwise stated in this chapter, the critical area protective measure provisions contained in EMC 14.10.080 shall apply.

B. Geological Assessments. A geological assessment is a site investigation process to evaluate the on-site geology affecting a subject property and define the extent and severity of potential seismic hazards.

1. A geological assessment shall be required when the department's maps, sources, or field investigation indicate a site contains a potential liquefaction, dynamic settlement, or fault rupture hazard area. Geological assessments shall be submitted to the department for review and approval together with a seismic hazard area application.

2. A geotechnical professional(s) shall complete a field investigation and geological assessment to determine whether or not the site for a proposed regulated activity is located within a liquefaction or dynamic settlement hazard area. ~~(see EMC 14.90.070(B), Figure 14.90-2).~~

~~a. The geological assessment shall be submitted in the form of a geotechnical letter when the geotechnical professional(s) finds that no liquefaction or dynamic settlement hazard areas exist within the site. The geotechnical letter shall meet the requirements contained in EMC 14.90.060, Appendix A.~~

ba. The geological assessment shall be submitted in the form of a geotechnical verification when the geotechnical professional(s) finds that ~~a no~~ liquefaction or dynamic settlement hazard area exists ~~on the site but is located outside within~~ the proposed project area. The geotechnical verification shall meet the requirements contained in EMC 14.90.060, Appendix A.

cb. The geological assessment shall be submitted in the form of a geotechnical report when the geotechnical professional(s) finds that a liquefaction or dynamic settlement hazard area exists within the proposed project area. The geotechnical report shall meet the requirements contained in EMC 14.90.060, Appendix A.

3. ~~An engineering geologist~~ A geotechnical professional shall complete a field investigation and geological assessment presented in the form of a geotechnical report to determine whether or not the site for a proposed regulated activity is located within a fault rupture hazard area. The geological assessment shall meet the requirements contained in EMC 14.90.060, Appendix B. Any structural recommendations proposed to mitigate the fault rupture hazard that are included in the geotechnical report shall be prepared by an engineer.

4. All geological assessments for seismic hazards submitted under this chapter shall include, at a minimum, the following:

- a. The dates when the geological assessment was conducted and when the assessment was prepared.
- b. The parcel number(s) of the subject property.
- c. Site address, if the city has assigned one.
- d. A brief description of the project (including the proposed land use) and the area to be developed.
- e. A map showing the property lines for the site, existing two-foot contours of the existing site topography, and the location of any existing structures, utilities, wells, stormwater or septic systems, or other developments.
- f. A site plan delineating the limits of the proposed development and the location of all areas of the site subject to potential seismic hazards based on the Critical Areas Atlas—Seismic Hazard Areas-Map Geologically Hazardous Areas map and, if applicable, limits of associated buffers.
- g. A description of the surface and subsurface geology, hydrology, soils, and vegetation of the site.
- h. A detailed overview of the field investigations, published data and references, data and conclusions from past geological assessments or geotechnical investigations of the site, site-specific measurements, tests, investigations, or studies, as well as the methods of data analysis and calculations that support the determination regarding whether liquefaction and/or dynamic settlement hazards are present on the site.
- i. The results, conclusions, and recommendations resulting from the geological assessment of the liquefaction and/or dynamic settlement hazards on the subject property as prepared by a geotechnical professional(s).

5. Geological assessments shall be prepared, signed, stamped, and dated by the appropriate geotechnical professional(s) (as defined in EMC 14.10.060 and established in this chapter) and the format shall be pre-approved by the department.

6. Geological assessments that do not contain the minimum required information will be returned to the geotechnical professional(s) for revision.

7. The department shall review the geological assessment and either:

- a. Accept the geological assessment and approve the application; or
- b. Reject the geological assessment and require revisions or additional information.

8. A geological assessment for a specific site may be valid for a period of up to five years when the proposed land use activity and surrounding site conditions are unchanged. However, if any environmental conditions associated with the site change during that five-year period, the applicant may be required to submit an amendment to the geological assessment. (Ord. 02-200 § 2).

14.90.040 Seismic hazard area standards.

A. Earthquake Induced Landslide Hazard Areas. All standards set forth in Chapter 14.80 EMC shall apply to earthquake induced landslide hazard areas.

B. Liquefaction and/or Dynamic Settlement Hazard Areas.

1. All building structures shall conform to the standards set forth in EMC Title 15, Buildings and Construction.
2. Utility Lines. Utility lines, except for gas pipelines, which are prohibited, will be permitted when no other conveyance alternative is available. The line shall be located above ground and properly anchored and/or designed so that it will continue to function in the event of seismically induced ground deformation. Provision for automatic shut-off of utilities in a ground-rupturing event will be required.
3. Roads, Bridges, and Trails. Roads, bridges, and trails shall be allowed when mitigation measures are provided that ensure the roadway prism and/or bridge structure will not be susceptible to damage from seismic induced ground deformation. Mitigation measures shall be designed for static and seismic loading conditions in accordance with the most recent version of the American Association of State Highway and Transportation Officials (AASHTO) Manual and also for an estimated range of ground surface offset presented in the geotechnical report.

C. Fault Rupture Hazard Areas. Any development, encroachment, filling, grading, or building structures shall be prohibited within fault rupture hazard areas and associated buffers except as specified in the following standards:

1. Utility Lines. Utility lines, except for gas pipelines, which are prohibited, will be permitted when no other conveyance alternative is available. The line shall be located above ground and properly anchored and/or designed so that it will continue to function in the event of seismically-induced ground deformation. Provision for automatic shutoff of utilities in a ground-rupturing event will be required.
2. Roads, Bridges, and Trails. Roads, bridges, and trails shall be allowed when all of the following conditions have been met:
 - a. Mitigation measures are provided that ensure the roadway prism and/or bridge structure will not be susceptible to damage from seismically-induced ground deformation. Mitigation measures shall be designed for static and seismic loading conditions in accordance with the most recent version of the American Association of State Highway and Transportation Officials (AASHTO) Manual and also for an estimated range of ground surface offset presented in the geotechnical report.
 - b. The road is not a sole access for a development. (Ord. 02-200 § 2).

14.90.050 Buffer requirements.

A. Determining Buffer Widths.

1. The buffer width shall be measured on a horizontal plane from a perpendicular line established at the edge of the fault rupture hazard area limits. ~~(see EMC 14.90.070(C), Figure 14.90-3).~~
2. A buffer is an area that is adjacent to a fault rupture hazard area that may be potentially subject to ground surface displacement in a future earthquake. No development shall be permitted within a fault rupture hazard area and its associated buffer. The required buffer width is the greater amount of the following distances:
 - a. Fifty feet from all edges of a fault rupture hazard area, except for high occupancy or essential facilities, where the minimum buffer distance shall be 100 feet; or
 - b. The required buffer width is the minimum distance recommended by the geotechnical professional(s).

B. Modification of Buffer Widths. The Department may require a larger buffer width than the buffer distance, as determined in subsection (A) of this section, if the department determines the standard or proposed buffer is not adequate to protect the health, safety, or welfare of any proposed development. (Ord. 02-200 § 2).

14.90.060 Appendices.

A. Geological Assessments – Liquefaction or Dynamic Settlement Hazard Areas.

B. Geological Assessments – Fault Rupture Hazard Area Geotechnical Report.

APPENDIX A

GEOLOGICAL ASSESSMENTS – LIQUEFACTION OR DYNAMIC SETTLEMENT HAZARD AREAS

Article I. Geotechnical Letter

A. A geotechnical letter shall, at a minimum, include the following:

1. The letter shall be labeled identifying the submittal as a “Liquefaction or Dynamic Settlement Hazard Geotechnical Letter,” and will include all mandatory items listed in EMC 14.90.030(B)(4).
2. The geological assessment must include a determination that no portion of the subject property [site] includes a liquefaction and/or dynamic settlement hazard.
3. A paragraph that states the following specific language:

I meet the qualifications contained in EMC 14.90.030 to prepare this geological assessment. I understand the requirements of the current seismic (earthquake) hazard areas Chapter 14.90-EMC and the definitions of the applicable terms contained within EMC 14.10.060. I have conducted an investigation of sufficient scope on the above referenced site to determine that no liquefaction and/or dynamic settlement hazard area exists within the boundaries of the proposed site.
4. The name, mailing address and telephone number of geotechnical professional(s) who prepared the letter.
5. The name, mailing address, and telephone number of the property owner.

B. The geotechnical professional(s) who prepared the geotechnical letter shall stamp the letter with his or her license stamp/seal.

C. Hold harmless clauses, disclaimers, and limitations are not allowed within a geotechnical letter.

Article II Article I. Geotechnical Verification

A. A geotechnical verification shall, at a minimum, include the following:

1. The general critical areas report requirements in EMC 14.20.060.
21. The first page of the document shall be labeled identifying the submittal as a “Liquefaction or Dynamic Settlement Hazard Geotechnical Verification,” and geotechnical verification shall will include all mandatory items listed in EMC 14.90.030(B)(4).
32. The geological assessment must include a determination that a no liquefaction and/or dynamic settlement hazard exists on the site, but is located outside within the proposed project area.
43. The verification shall include an accurate site plan drawn at a scale of one inch equals 20 feet, one inch equals 30 feet, one inch equals 50 feet (or other scale deemed appropriate by the department) is required. The department may require that the site plan information be based on a field survey by a licensed surveyor. The site plan shall include:

Formatted: Indent: Left: 0.28"

a. Property lines for the site, and the location of any existing structures.

b. The existing site topography presented in two-foot contours.

c. The limits/location of any liquefaction and/or dynamic settlement hazard area(s) as set forth in EMC 14.90.020(C)(2).

d. The full geographical limits of the proposed project area or conceptual project area (i.e., area to be developed) and the location of any proposed structures, on-site septic systems, wells, and stormwater management features or facilities associated with the development, if known.

e. The limits of any setbacks from the defined locations of the liquefaction and/or dynamic settlement hazard areas determined by the geotechnical professional(s) as necessary to protect any portion of the proposed development activity from damage caused by liquefaction induced ground displacement.

4. A paragraph that states the following specific language:

I meet the qualifications contained in EMC 14.90.030 to prepare this geological assessment. I understand the requirements of the current seismic (earthquake) hazard areas Chapter 14.90-EMC and the definitions of the applicable terms contained within EMC 14.10.060. I have conducted an investigation of sufficient scope on the above referenced site to determine that no liquefaction and/or dynamic settlement hazard area exists within the boundaries of the proposed project area.

~~54. The name, mailing address, and telephone number of geotechnical professional(s) who prepared the letter.~~

~~65. The name, mailing address, and telephone number of the property owner.~~

B. The geotechnical professional(s) who prepared the geotechnical verification shall stamp the verification with his or her license stamp/seal.

C. Hold harmless clauses, disclaimers, and limitations are not allowed within a geotechnical verification.

~~Article III~~Article II: Geotechnical Report

A. A geotechnical report shall, at a minimum, include the following:

~~1. The general critical areas report requirements in EMC 14.20.060.~~

~~24. The first page of the document shall be labeled identifying the submittal as a "Liquefaction or Dynamic Settlement Hazard Geotechnical Report," and will document shall include all mandatory items listed in EMC 14.90.030(B)(4). The report shall be prepared by an engineer and shall be cowritten by an engineering geologist where geological interpretations and conclusions critical to the assessment of liquefaction and/or dynamic settlement hazard and potential effects are necessary or prudent. The introductory section of the report shall specify the desired performance level of the structures and other development facilities (e.g., safety to building occupants, minimal damage to structure, post-earthquake serviceability for pre-earthquake operations, no damage, etc.).~~

~~32. The results, conclusions, and recommendations resulting from the geological assessment of the liquefaction and/or dynamic settlement hazards on the subject property as prepared by the geotechnical professional(s).~~

~~43. The geological assessment-geotechnical report shall include:~~

a. A statement that the proposed project area falls within a liquefaction and/or dynamic settlement hazard area.

b. A detailed engineering evaluation of expected ground displacements or other liquefaction and/or dynamic settlement effects (e.g., bearing failures, flotation of buried tanks, etc.) and proposed mitigation measures to

Formatted: Indent: Left: 0.28"

ensure an acceptable level of risk for the proposed structure type or other development facilities, as well as the proposed land use type (i.e., occupancy category). The minimum level of acceptable risk for any proposed structure or development facility shall ensure the life safety of any occupant. ~~Designs shall evaluate the range of alternatives for achieving limited structural damage to no structural damage based on the proposed use intended for the structure. Where appropriate, a range of mitigation options should be considered depending on site conditions, the intended use of the structures, and acceptable levels of settlement.~~

~~54.~~ The report shall include ~~an accurate~~ site plan drawn ~~at a~~ scale of one inch equals 20 feet, one inch equals 30 feet, one inch equals 50 feet (or other scale deemed appropriate by the department) is required. The department may require that the site plan information be based on a field survey by a licensed surveyor. The site plan shall include:

a. Property lines for the site and the location of any existing structures.

~~b. The existing site topography presented in two-foot contours.~~

~~c.~~ The limits/location of any liquefaction and/or dynamic settlement hazard area(s) as set forth in EMC 14.90.020(C)(2).

~~d.~~ The full geographical limits of the proposed project area or conceptual project area (i.e., area to be developed) and the location of any proposed structures, on-site septic systems, wells, and stormwater management features or facilities associated with the development, if known.

~~e. The limits of any setbacks from the defined locations of the liquefaction and/or dynamic settlement hazard areas determined by the geotechnical professional(s) as necessary to protect any portion of the proposed development activity from damage caused by liquefaction-induced ground displacement.~~

~~f.~~ Location and unique identifier of geotechnical borings and/or CPT sounding explorations used to characterize subsurface conditions.

~~65.~~ The geotechnical study shall include field exploration sufficient to assess the potential for liquefaction or dynamic settlement hazards and options for mitigation of those hazards. ~~Copies of the exploration logs shall be provided in the report. The geotechnical study shall include field exploration sufficient to assess the potential for liquefaction or dynamic settlement hazards and options for mitigation of those hazards. Copies of the exploration logs shall be included in the report. The project geotechnical professional must provide justification for the scope of the field exploration program. The City's geotechnical professional reserves the right to request additional exploration if deemed appropriate. If a dispute arises between the City's geotechnical professional and the project geotechnical professional regarding the scope of the field exploration, the City reserves the right to require an independent, third party review to be paid for by the applicant to resolve the dispute. field investigation shall require the following elements:~~

~~a. Subsurface characterization using conventional geotechnical borings and standard penetration testing (SPT) or using cone penetration testing (CPT).~~

~~b. Conventional geotechnical boring data shall be reported as a graphic log utilizing the following standards:~~

~~i. The vertical scale of the graphic log shall be such that five feet of drilled depth is scaled to range of one inch to two inch (1:60 or 1:30 scale), and shall include vertical columns that record depth in one-foot increments, SPT value and incremental blow counts, a graphic pattern representation of the soil type encountered during drilling, and sample descriptions and other comments regarding drilling.~~

~~ii. The graphic log shall have a header on the first page that includes a unique identifier for the boring, the times and dates of the start and completion of drilling, the manufacturer and model of the drilling rig, the company name of the drilling contractor, the name(s) of the site geologist(s) or engineer(s) overseeing the drilling activities, the details of the method used to advance the borehole (e.g., four-inch i.d. hollow-stem auger), the type of drilling fluid used to stabilize the borehole, verification that the SPT followed all applicable ASTM standards~~

Formatted: Indent: Left: 0.28", Tab stops: 0.5", Left + Not at 0.56"

including a description of the sampler, hammer weight, drop height, the type of hammer used to perform the SPT, number of turns of rope if a cathead is used to raise the hammer, condition of rope (i.e., new, used, frayed, oily, etc.), and the depth of static groundwater measured immediately prior to abandonment of the boring and the time and date of this measurement.

iii. All subsequent pages of the graphic log shall have the unique identifier for the boring, the times and dates of the start and completion of drilling, and the number of the page and the total number of pages comprising the log.

iv. Each SPT value will be reported in the appropriate column showing the blow counts recorded at each six-inch interval, and the sum of the blow counts between penetration distances of six inches to 18 inches, unless refusal conditions (50 or more blows with less than six inches of sampler penetration) are met anywhere in this interval. At refusal, the blow count shall be recorded as the number of blows with the corresponding sampler penetration, in inches.

v. SPT tests shall be performed every five feet during drilling, at a minimum. Additional undisturbed samples, collected following ASTM standards for undisturbed soil sampling, cannot be substituted for SPT testing.

vi. The soil sample descriptions will include the total length of the recovered sample, the soil color, odor, the density or consistency (loose to very dense, very soft to very stiff), degree of water saturation (dry, moist, wet, saturated), and dilatancy. For granular (sand and gravel) soils, the description shall include a physical description of the soil sample, including size distribution (poorly or well graded), angularity, composition, amount and plasticity of the fines fraction. For fine soils (silt and clay), the description shall include a qualitative estimate of the proportion of the silt and clay size particles (e.g., silty clay, clay with some silt, etc.), plasticity, and amount and type of organic material. The sample description shall include a description of any bedding, laminations, slickensides, or other textural or deposition features, including contact between dissimilar soil types. The sample description shall also include a field classification of the soil sample using the Unified Soil Classification System where the classification is expressed in lower case letters (e.g., sp, ml, etc.). The sample classification shall be expressed in upper case letters (e.g., SP, ML, etc.) where subsequent laboratory testing has been performed. This column of the graphic log will also include any other information relevant to the subsurface investigation, such as loss of drilling fluid, heaving, churning of the drill in gravelly soils, etc.

c. CPT sounding data shall be reported as a graphic log utilizing the following standards:

i. The vertical scale of the graphic log shall be such that five feet of penetrated depth is scaled to range of one inch to two inch (1:60 or 1:30 scale), and shall include vertical columns that record depth in one-foot increments.

ii. The graphic log shall have a header on the first page that includes a unique identifier for the boring, the times and dates of the start and completion of the CPT sounding, the manufacturer and model of the CPT system, the company name of the CPT service contractor, the name(s) of the site geologist(s) or engineer(s) overseeing the CPT sounding, and any comments regarding the conduct of the testing, reaction of the CPT system during sounding, etc.

iii. All subsequent pages of the graphic log shall have the unique identifier for the boring, the times and dates of the start and completion of drilling, and the number of the page and the total number of pages comprising the log.

iv. The graphic log shall display, at a minimum, a continuous depth plot of the uncorrected tip resistance, the friction (sleeve) resistance, the friction ratio, and the measured pore pressure with an overlay of the calculated hydrostatic pore pressure. These curves shall be plotted so as to show the full variation of the measured quantities within the depth range of the sounding, and each curve shall have a visible scale with the minimum and maximum ranges labeled.

v. All of the CPT data recorded for each sounding shall also be provided in either electronic or hardcopy format. Electronic data will be presented in an ASCII text file format.

d. All SPT or CPT testing will be conducted to a minimum depth of 50 feet below the existing ground surface or lowest proposed finished grade, except where a minimum thickness of 10 feet of consolidated soils are encountered where the $(N_1)_{60}$ is greater than 30, or CPT corrected tip resistance (q_{c1N}) is greater than 175. In

addition, SPT or CPT testing should extend a minimum of 20 feet below the lowest expected foundation level, including the lowest elevation of piling support.

76. ~~If beneficial to the assessment of seismic hazards for the project, the~~ three-dimensional subsurface conditions at the site shall be presented using one or more cross-sections showing location and depth penetration of borings or CPT soundings, interpretation of the geometry of major soil units, and projected location of the static groundwater surface determined from the subsurface exploration. The cross-sections shall be presented at a scale of one inch equals 20 feet, one inch equals 30 feet, one inch equals 50 feet (or other scale deemed appropriate by the department). Each cross-section shall have a legend with a description of the various major soil units. ~~The City's geotechnical professional reserves the right to request inclusion of one or more cross sections in the geotechnical report. If a dispute arises between the project geotechnical professional and the City's geotechnical professional regarding this issue, then the City reserves the right to require an independent, third party review to be paid for by the applicant to resolve the dispute.~~

87. All assessments of liquefaction and/or dynamic settlement hazards and effects will be based on a design earthquake using ground motion parameters consistent and equivalent to those specified in the most current version of the International Building Code. ~~The choice of moment magnitude used in the determination of the magnitude-scaling factor, as well as the scaling relations used in the analysis, shall be justified in the report narrative.~~ These assessments shall use the shallowest groundwater table observed during or inferred from subsurface exploration and characterization (e.g., the measured depth of static groundwater immediately prior to abandonment of borings, observation of iron-oxide mottling of soils samples, etc.).

98. Results of laboratory testing of samples retrieved during drilling and sampling shall be presented in order to support the values of fines contents used in subsequent analysis of liquefaction and/or dynamic settlement hazard. Where only CPT methods are used in site assessment, the correlation between fines content and CPT measurements will be discussed and documented. This documentation will require rigorous correlation of CPT and fines content measurements from similar geological deposits within the Puget Sound region.

109. The geotechnical report shall include a detailed assessment of the liquefaction and/or dynamic settlement hazard based on analysis of all available SPT or CPT available subsurface data using state-of-the-practice methodologies, ~~such as provided in Youd and Idriss (1997) or subsequent technical publications~~. The ~~methodology used in results of~~ the analysis shall be documented, and all results of intermediate and final calculations and results, including factors of safety, shall be included.

1011. ~~When appropriate, the~~ geotechnical report shall ~~contain~~ include an assessment of the potential for large lateral spreads or flow failures, bearing failures, settlement, limited lateral displacement, and flotation of buried facilities. The methodologies used must be, at a minimum, state-of-the-practice, and ~~where applicable should employ more than one method of analysis~~. ~~All results of intermediate and final calculations and the~~ conclusions regarding the potential and severity of the possible liquefaction and/or dynamic settlement induced failure modes shall be presented.

1412. Alternative mitigative measures including structural and foundation design options and/or soil improvement techniques shall be evaluated and compared for their effectiveness in reaching the level of performance specified in the report introduction. ~~Final designs and specifications and plans for structural and/or foundation design shall be included if applicable~~. Effectiveness of soil improvement techniques shall be specified in terms of post-treatment densification or strength improvement as measured by appropriate subsurface investigation and testing. The extent of the post-treatment verification testing shall be provided on a site map at the same scale as the map presented in subsection (A)(4) of this article. Geotechnical review of all final plans is required and the findings of the review shall be documented in writing.

12. ~~The name, mailing address, and telephone number of geotechnical professional(s) who prepared the letter.~~

13. ~~The name, mailing address, and telephone number of the property owner.~~

B. The geotechnical professional(s) who prepared the geotechnical report shall stamp the report with his or her license stamp/seal.

C. Hold harmless clauses, disclaimers, and limitations are not allowed within a geotechnical report.

APPENDIX B

GEOLOGICAL ASSESSMENTS – FAULT RUPTURE HAZARD AREA GEOTECHNICAL REPORT

A. A geotechnical report shall, at a minimum, include the following:

1. The general critical areas report requirements in EMC 14.20.060.

~~24.~~ The first page of the document shall be labeled identifying the submittal as a “Fault Rupture Hazard Geotechnical Report,” and will document shall include all mandatory items listed in EMC 14.90.030(B)(4). The report shall be prepared by an engineer and shall be cowritten by an engineering geologist where geological interpretations and conclusions critical to the assessment of liquefaction and/or dynamic settlement hazard and potential effects are necessary or prudent.

~~2.~~ The geological assessment for fault rupture hazards shall include the minimum requirements specified in EMC 14.90.030(B)(4).

~~23.~~ The following topics should be considered and addressed in detail where essential to support opinions, conclusions, and recommendations in any geologic report on faults. It is not expected that all the topics or investigative methods would be necessary in a single investigation. In specific cases, it may be necessary to extend some of the investigative methods well beyond the site or property being investigated.

- a. Purpose and scope of investigation; description of proposed development.
- b. Geologic and tectonic setting. Include seismicity and earthquake history.
- c. Site description and conditions, including dates of site visits and observations. Include information on geologic units, graded and filled areas, vegetation, existing structures, and other factors that may affect the choice of investigative methods and interpretation of data.
- d. Methods of Investigation.
 - i. Review of published and unpublished literature, maps, and records concerning geologic units, faults, groundwater barriers, and other factors.
 - ii. Stereoscopic interpretation of aerial photographs, review of LiDAR based topography, and other remotely sensed images to detect fault-related topography (geomorphic features), vegetation and soil contrasts, and other lineaments of possible fault origin. The area interpreted usually should extend beyond the site boundaries.
 - iii. Surface observations, including mapping of geologic and soil units, geologic structures, geomorphic features and surfaces, springs, deformation of engineered structures due to fault creep, both on and beyond the site.
 - iv. Subsurface Investigations.
 - (A) Trenching and other excavations to permit detailed and direct observation of continuously exposed geologic units, soils, and structures; must be of adequate depth and be carefully logged (Taylor & Cluff 1973, Hatheway & Leighton 1979, McCalpin 1996b).
 - (B) Borings and test pits to permit collection of data on geologic units and groundwater at specific locations. Data points must be sufficient in number and spaced adequately to permit valid correlations and interpretations.
 - (C) Cone penetrometer testing (CPT) (Grant et al., 1997, Edelman et al., 1996). CPT must be done in conjunction with continuously logged borings to correlate CPT results with on-site materials. The

Formatted: Indent: Left: 0.28"

number of borings and spacing of CPT soundings should be sufficient to adequately image site stratigraphy. The existence and location of a fault based on CPT data are interpretative.

v. Geophysical Investigations. These are indirect methods that require a knowledge of specific geologic conditions for reliable interpretations. They should seldom, if ever, be employed alone without knowledge of the geology (Chase & Chapman 1976). Geophysical methods alone never prove the absence of a fault nor do they identify the recency of activity. The types of equipment and techniques used should be described and supporting data presented (California Board of Registration for Geologists and Geophysicists, 1993).

Formatted: Indent: Left: 0.56"

(A) High-resolution seismic reflection (Stephenson et al., 1995, McCalpin, 1996b).

(B) Ground penetrating radar (Cai et al., 1996).

(C) Other methods include: seismic refraction, magnetic profiling, electrical resistivity, and gravity (McCalpin, 1996b).

vi. Age-dating techniques are essential for determining the ages of geologic units, soils, and surfaces that bracket the time(s) of faulting (Pierce 1986, Birkeland et al., 1991, Rutter & Catto, 1995, McCalpin, 1996a).

Formatted: Indent: Left: 0.56"

(A) Radiometric dating (especially ¹⁴C).

(B) Soil-profile development.

(C) Rock and mineral weathering.

(D) Landform development.

(E) Stratigraphic correlation of rocks/minerals/fossils.

(F) Other methods – artifacts, historical records, tephrochronology, fault scarp modeling, thermoluminescence, lichenometry, paleomagnetism, dendrochronology, etc.

vii. Other methods should be included when special conditions permit or requirements for critical structures demand a more intensive investigation.

Formatted: Indent: Left: 0.56"

(A) Aerial reconnaissance overflights.

(B) Geodetic and strain measurements.

(C) Microseismicity monitoring.

e. Conclusions.

i. Location and existence (or absence) of hazardous faults on or adjacent to the site; ages of past rupture events.

ii. Type of faults and nature of anticipated offset, including sense and magnitude of displacement, if possible.

iii. Distribution of primary and secondary faulting (fault zone width) and fault-related deformation.

iv. Probability of, or relative potential for, future surface displacement. The likelihood of future ground rupture seldom can be stated mathematically, but may be stated in semiquantitative terms such as low, moderate, or high, or in terms of slip rates determined for specific fault segments.

v. Degree of confidence in, and limitations of data and conclusions.

f. Recommendations.

i. The recommended increase from the standard buffer distance (50 feet) of proposed structures from fault rupture hazard areas. The recommended buffer distance generally will depend on the quality of data and type and complexity of fault(s) encountered at the site and the proposed land use type (i.e., occupancy). In order to establish an appropriate buffer distance from a fault located by indirect or interpretative methods (e.g., borings or cone penetrometer testing), the area between data points also should be considered underlain by a fault unless additional data are used to more precisely locate the fault. Additional measures (e.g., strengthened foundations, engineering design, and flexible utility connections) to accommodate warping and distributive deformation associated with faulting (Lazarte and others, 1994).

ii. Risk evaluation relative to the proposed development.

iii. Limitations of the investigation; need for additional studies.

g. References.

i. Literature and records cited or reviewed; citations should be complete.

ii. Aerial photographs or images interpreted – list type, data, scale, source, and index numbers.

iii. Other sources of information, including well records, personal communications, and other data sources.

h. Illustrations. The following illustrations should be provided:

i. A location map that identifies site locality, significant faults, geographic features, regional geology, seismic epicenters, and other pertinent data; ~~1:24,000~~ 1:24,000 scale is recommended.

ii. A site development map that shows site boundaries, existing and proposed structures and limits of the proposed project area, graded areas, streets, exploratory trenches, borings geophysical traverses, locations of faults, and other data; recommended scale is 1:2,400 (one inch equals 200 feet), or larger.

iii. A geologic map that shows the distribution of geologic units (if more than one), faults and other structures, geomorphic features, aerial photo graphic lineaments, and springs; on topographic map 1:24,000 scale or larger; can be combined with subsection (B)(h)(i) ~~1~~ or (ii) ~~2~~ of this appendix.

iv. Geologic cross-sections, if needed, to provide three-dimensional picture.

v. Logs of exploratory trenches and borings that show details of observed features and conditions (note: these should not be generalized or diagrammatic). Trench logs should show topographic profile and geologic structure at a 1:1 horizontal to vertical scale; scale should be 1:60 (one inch equals five feet) or larger.

vi. Geophysical data and geologic interpretations.

i. Appendix. Attach any supporting data not included above (e.g., water well data, photographs, aerial photographs).

~~443~~. The geotechnical professional who prepared the geotechnical shall stamp the report with his or her license stamp/seal.

~~554~~. The department may request a geotechnical professional to provide additional information in the geotechnical report based upon existing conditions, changed conditions, or unique circumstances occurring on a case-by-case basis.

~~656~~. Hold harmless clauses, disclaimers, and limitations are not allowed to be included, neither expressly nor implied, within a geological assessment. (Ord. 02-200 § 2).

14.90.070 — Figures.

A. Figure 14.90-1, Fault Rupture Hazard Areas.

B. Figure 14.90-2, Seismic Hazard Area Review.

C. Figure 14.90-3, Fault Rupture Hazard Area Buffers.

(Ord. 02-200 § 2).

Formatted: Centered

Chapter 14.110

EROSION HAZARD AREAS

Sections:

- 14.110.010 Purpose.
- 14.110.020 Erosion hazard areas.
- 14.110.030 Erosion hazard area review procedures.
- 14.110.040 Erosion hazard area standards.
- 14.110.050 Buffer requirements.
- 14.110.060 Appendices.

~~14.110.070~~ — ~~Figures.~~

14.110.010 Purpose.

The following statements describe the purpose of this chapter:

- A. Protect human life and health;
- B. Regulate uses of land in order to avoid damage to structures and property being developed and damage to neighboring land and structures;
- C. Identify and map erosion hazard areas;
- D. Minimize impacts on wetlands and critical fish and wildlife species and their associated habitat that can result from erosion;
- E. Establish a permit requirement and review procedures for development proposals in areas with potential erosion hazards;
- F. Strike a balance between the need to maintain natural shoreline erosion/regression processes and the need to protect existing and proposed development. (Ord. 02-200 § 2).

14.110.020 Erosion hazard areas.

A. Shoreline Erosion Hazard Indicators. Shoreline ~~erosion~~ hazard areas are areas potentially subject to land regression or retreat due to a combination of geologic, seismic, ~~tidally influenced,~~ and/or hydrologic or manmade factors. Shoreline hazard areas can be identified by ~~the presence of any of the following indicators:~~ indicators of active land retreat as a result of fluvial processes.

~~1. Areas with active bluff retreat that exhibit continuing sloughing or calving of bluff sediments, resulting in a vertical or steep bluff face with little or no vegetation.~~

~~2. Areas with active land retreat as a result of wave action.~~

B. Erosion Hazard Area Categories.

1. Potential Erosion Hazard Areas. Potential erosion hazard areas, as depicted on the ~~Critical Areas Atlas — Erosion Hazard Areas Map~~ Geologically Hazardous Areas map, are those areas where the suspected risk of erosion through either loss of soil, slope instability, or land regression is sufficient to require additional review to assess the potential for active erosion activity or apply additional standards. These potential erosion hazard areas are determined using the following criteria:

- a. Shoreline Erosion Hazard Areas. Areas within 200 feet of a freshwater (lake, pond, or shoreline) as measured landward perpendicularly from the edge of the ordinary high water mark. ~~(see EMC 14.110.070(A), Figure 14.110-1).~~

Formatted: Indent: Left: 0"

b. Riverine Erosion Hazard Areas. The rivers subject to regulation as a channel migration zone listed in EMC 14.70.020(B)(45).

c. Soil Erosion Hazard Areas. Areas identified as having slopes of 20 percent or greater and that are classified as having severe, or very severe erosion potential by the Soil Conservation Service, United States Department of Agriculture (USDA).

2. Active Shoreline Erosion Hazard Areas. Land areas located directly adjacent to ~~freshwater or marine waters~~surface water bodies that, through the geological assessment process, are identified as regressing, retreating, or potentially unstable as a result of undercutting by wave action or bluff erosion. The limits of the active shoreline erosion hazard area shall extend landward to include that land area that is calculated, based on the rate of regression, to be subject to erosion processes within the next 10-year time period.

3. Riverine Erosion Hazard Areas. Riverine erosion hazard areas are located within the lateral extent of likely watercourse channel movement due to bank destabilization and erosion, rapid incision, and shifts in location of watercourse channels. Riverine erosion hazard areas are also referred to as channel migration zones (CMZs). Rivers and streams subject to erosion are regulated as a CMZ as listed in EMC 14.70.020(B)(4).

4. Soil Erosion Hazard Areas. Soil erosion hazard areas are identified by the presence or absence of natural vegetative cover, soil texture condition, slope, and rainfall patterns, or man-induced changes to such characteristics that create site conditions which are vulnerable to erosion of the upper soil horizon. Soil erosion hazard areas ~~include~~ are those areas with slopes of 20 percent or greater and that are classified as having severe, or very severe erosion potential by the ~~Soil Conservation Service, USDA~~ Natural Resources Conservation Service. (Ord. 02-200 § 2).

14.110.030 Erosion hazard area review procedures.

A. General Requirements.

1. The City's ~~Critical Areas Atlas—Erosion Hazard Area Map~~Geologically Hazardous Areas map provides an indication of where potential erosion hazard areas are located ~~within the county~~. The actual presence or location of an erosion hazard area and/or additional potential erosion hazard area that have not been mapped, but may be present on or adjacent to a site, shall be determined using the procedures and criteria established in this chapter.

2. The department will complete a review of the ~~Critical Areas Atlas—Erosion Hazard Area Map~~Geologically Hazardous Areas map, and any other source documents for any proposed regulated activity to determine whether the site for the regulated activity is located within a potential erosion hazard area.

3. When the department's maps, sources, or field investigations indicate that the site for a proposed regulated activity is located within a potential shoreline erosion hazard area, the department shall require a geological assessment as outlined in subsection (B) of this section. ~~(see EMC 14.110.070(B), Figure 14.110-2).~~

4. When the department's maps, sources, or field investigations indicate that the proposed project area for a regulated activity is located within a potential riverine erosion hazard area (channel migration zone), the department shall conduct a review pursuant to the requirements set forth in EMC 14.70.030. All standards set forth in Chapter 14.70 EMC shall apply to riverine erosion hazard areas (CMZs).

5. When the department's maps, sources, or field investigations indicate that the proposed project area for a regulated activity is located within a potential soil erosion hazard area, the department shall require submittal of an erosion control plan pursuant to the requirements set forth in EMC Title 15, Buildings and Construction.

6. Applicants requesting to develop a bulkhead along a ~~freshwater or marine~~ shoreline shall be required to submit a geotechnical report. The geotechnical report shall comply with the requirements established in EMC 14.110.060, Appendix C.

7. Unless otherwise stated in this chapter, the critical area protective measure provisions contained in EMC 14.10.080 shall apply.

B. Geological Assessment. A geological assessment is a site investigation process to evaluate the on-site geology affecting a subject property and proposed development.

1. Geological assessments shall be submitted to the department for review and approval together with a shoreline erosion hazard area application.

2. The geological assessment shall include a field investigation and may also include review of public records and documentation, analysis of historical air photos, ~~LiDAR mapping, published mapping, published~~ data and references, etc.

3. The geological assessment shall include the following information and analysis:

a. An analysis of the shoreline erosion processes on and in the vicinity of the site including an evaluation of erosion and bluff shoreline retreat that has occurred over the past decade and an estimated probable rate of erosion based upon the historic rate of erosion that has occurred on the site.

b. A determination of which areas on the site meet the criteria for an active shoreline erosion hazard area as set forth in EMC 14.110.020(B)(2).

c. A determination of the area on the site or in the vicinity of the site that will experience regression in the next 120 years given natural processes.

4. Geological assessments shall be prepared, signed, and dated by a geotechnical professional (as defined in EMC 14.10.060 and established in this chapter) and the format shall be pre-approved by the department.

5. A geotechnical professional shall complete a field investigation and geological assessment to determine whether or not an active shoreline erosion hazard area exists within 200 feet of the site. ~~(see EMC 14.110.070(B); Figure 14.110-2).~~

a. The geological assessment shall be submitted in the form of a geotechnical letter when the geotechnical professional finds that no active shoreline erosion hazard area exists within 200 feet of the site. The geotechnical letter shall meet the requirements contained in EMC 14.110.060, Appendix A.

b. The geological assessment shall be submitted in the form of geotechnical verification when the geotechnical professional finds that an active shoreline erosion hazard area exists but is located more than 200 feet away from the proposed project area. The geotechnical verification shall meet the requirements contained in EMC 14.110.060, Appendix B.

c. The geological assessment shall be submitted in the form of a geotechnical report when the geotechnical professional finds that an active shoreline erosion hazard area exists within 200 feet of the proposed project area or when a geotechnical professional determines that mitigation measures, such as a bulkhead, are necessary in order to construct or develop within a potential shoreline erosion hazard area. The geotechnical report shall meet the requirements contained in EMC 14.110.060, Appendix C.

6. The department shall review the geological assessment and either:

a. Accept the geological assessment and approve the application; or

b. Reject the geological assessment and require revisions or additional information.

7. A geological assessment for a specific site may be valid for a period of up to five years when the proposed land use activity and surrounding site conditions are unchanged. However, if any environmental conditions associated with the site change during that five-year period, the applicant may be required to submit an amendment to the geological assessment.

C. Riverine Erosion Hazard Area (Channel Migration Zones) Review. Riverine erosion hazard areas shall be reviewed pursuant to the requirements set forth in EMC 14.70.030.

D. Soil Erosion Hazard Area Review. Soil erosion hazard areas shall be reviewed pursuant to the requirements set forth in EMC Title 15, Buildings and Construction. (Ord. 02-200 § 2).

14.110.040 Erosion hazard area standards.

A. Active Shoreline Erosion Hazard Areas. Any development, encroachment, filling, clearing, or grading, timber harvest, building structures, impervious surfaces, and vegetation removal shall be prohibited within active shoreline erosion hazard areas and associated buffers except as specified in the following standards:

1. Shoreline Erosion Protection Measures. Shoreline erosion protection measures located within or adjacent to freshwater or marine shorelines shall be allowed subject to the following:

a. The proposed shoreline protection measure shall comply with the standards set forth in ~~EMC-14.40.030~~ Chapter 14.40 EMC, Fish and Wildlife Habitat Conservation Areas.

b. A geological assessment-shoreline erosion geotechnical report has been conducted in accordance with the provisions set forth in EMC 14.110.030(B) that indicates that the shoreline is currently experiencing active erosion (i.e., land retreat or regression).

c. The use of the shoreline erosion protection measure will not cause a significant adverse impact on adjacent properties or critical fish and wildlife species and their associated habitat (i.e., increase erosion on adjacent properties).

d. The use of soft armoring techniques (soil bioengineering erosion control measures) is the preferred method for shoreline protection.

e. Hard armoring shoreline erosion control measures shall be approved only when a geological assessment-shoreline erosion geotechnical report, as set forth in EMC 14.110.030(B), has been completed and indicates the following:

i. The regression has been monitored on a yearly interval for a period of at least five consecutive years prior to allowing a bulkhead to be constructed. This monitoring shall be conducted by field survey measurements of a licensed surveyor. The department may shorten or eliminate the monitoring period if there are indicators that the regression rate is rapid and an existing structure may be threatened prior to completion of the monitoring period;

ii. The use of beach nourishment alone or in combination with soft armoring techniques is not adequate to protect the property from shoreline erosion processes; and

iii. The property contains an existing structure(s) that will be threatened within the next 10 years or the buildability of an undeveloped site will be threatened within the next 10 years if a hard armoring method of shoreline erosion protection is not provided.

f. Hard armoring shoreline protection measures shall not be allowed when structures can be located landward of the 120-year rate of regression area.

2. Stormwater Conveyance. Surface drainage into an active shoreline erosion hazard area should be avoided. If there are no other alternatives for discharge, then drainage must be collected upland of the top of the active shoreline erosion hazard area and directed downhill in a high density polyethylene stormwater pipe with fuse welded joints that includes an energy dissipating device at the base of the active landslide hazard area. The pipe shall be located on the surface of the ground and be properly anchored so that it will continue to function in the event of an underlying slide. The number of these pipes should be minimized along the slope frontage.

3. Utility Lines. Utility lines will be permitted when no other conveyance alternative is available. The line shall be located above ground and properly anchored and/or designed so that it will continue to function in the event of an underlying slide.

4. Roads, Bridges, and Trails. Roads, bridges, and trails shall be allowed when all of the following conditions have been met:

a. Mitigation measures are provided that ensure the roadway prism and/or bridge structure will not be susceptible to damage from active erosion.

b. The road is not a sole access for a development.

B. Shoreline Erosion Hazard Management Area. All regulated activities such as but not limited to building structures, impervious surfaces, vegetation removal, timber harvest, and clearing or grading activities may be allowed in areas located within 200 feet of an active shoreline erosion hazard area subject to the following standards:

1. The department reviews and approves a geological assessment – shoreline erosion hazard geotechnical report and determines that the proposed project area is located outside an active shoreline hazard area and the required buffer, as set forth in EMC 14.110.050.

2. The proposed recommendations and mitigation measures contained within the geotechnical report are adequate to reduce or mitigate risks to the natural environment, health, and safety.

3. Surface drainage from the proposed project area, including downspouts, landscape irrigation systems, and runoff from paved or unpaved surfaces upland of the shoreline, shall not be directed through an active shoreline erosion hazard area or its associated buffer unless it is conveyed in conformance with the provisions in subsection (A)(2) of this section.

4. Stormwater retention and detention systems, such as dry wells and infiltration systems utilizing buried pipe or french drains, shall not be permitted unless such systems are designed by a professional engineer and the geotechnical report indicates that such a system will not affect the stability of the shoreline.

5. Proposed developments, with the exception of shoreline erosion protection measures, shall be sited far enough from regressing shorelines to ensure 120 years of useful life for any proposed structures or infrastructure.

C. Riverine Erosion Hazard Area (Channel Migration Zones) Review. Riverine erosion hazard areas shall be reviewed pursuant to the requirements set forth in EMC 14.70.030.

D. Soil Erosion Hazard Area Review. Soil erosion hazard areas shall be reviewed pursuant to the requirements set forth in EMC Title 15, Buildings and Construction. (Ord. 02-200 § 2).

14.110.050 Buffer requirements.

A. Determining Buffer Widths.

1. The buffer width shall be measured on a horizontal plane from a perpendicular line established at the edge of the active shoreline erosion hazard area limits. ~~(see Figure 14.110-3).~~

2. An undisturbed buffer of existing vegetation shall be required for an active shoreline erosion hazard area. The required standard buffer width is the greatest amount of the ~~following~~ distances in EMC 14.110.050(A)(2)(a) and (b):

a. Fifty feet from all edges of the active shoreline erosion hazard area limits;

b. A distance of one-third the height of the slope at the top of the slope and a distance of one-half the height at the bottom of the slope; or

c. ~~The minimum distance recommended by the geotechnical professional measured from the edge of the active shoreline erosion hazard area. The buffer width may be reduced below the widths specified in EMC 14.110.050(A)(2)(a) and (b) or eliminated upon approval by the Department of a geotechnical report that demonstrates that such a reduction would not result in an increased risk of erosion either on or off of the subject property.~~

B. Modification of Buffer Widths. The department may require a larger buffer width than the standard buffer distance, as determined in subsection (A) of this section, if any of the following are identified through the geological assessment process:

1. The adjacent land is susceptible to severe erosion and erosion control measures will not effectively prevent adverse impacts.
2. The area has a severe risk of slope failure or downslope stormwater drainage impacts. (Ord. 02-200 § 2).

14.110.060 Appendices.

- A. Geological Assessment – Shoreline Erosion Hazard Geotechnical Letter.
- B. Geological Assessment – Shoreline Erosion Hazard Geotechnical Verification.
- C. Geological Assessment – Shoreline Erosion Hazard Geotechnical Report.

APPENDIX A

GEOLOGICAL ASSESSMENT – SHORELINE EROSION HAZARD GEOTECHNICAL LETTER

- A. A geotechnical letter shall, at a minimum, include the following:

~~1. The letter shall be labeled identifying the submittal as a “Shoreline Erosion Hazard Geotechnical Letter.”~~

~~1. The general critical areas report requirements in EMC 14.20.060.~~

~~2. The date when the geological assessment was conducted. The date when the letter was prepared.~~

~~3. The parcel number(s) of the site.~~

~~4. Site address, if the city has assigned one.~~

~~25. A brief description of the project (including the proposed land use) and a description of the area to be developed. The letter will include a summary of the findings of the site visit, a site plan, and a summary of the findings from the review of documents listed in EMC 14.110.030(B)(2).~~ The appropriate professional preparing the geotechnical letter shall provide conclusions and recommendations as to slope-shoreline stability for the proposed development.

~~6. A paragraph that states the following specific language:~~

~~I meet the qualifications contained in EMC 14.110.030 to prepare a geological assessment. I understand the requirements of the current erosion hazard area Chapter 14.110 EMC and the definitions of the applicable terms contained within EMC 14.10.060. I have performed a shoreline erosion hazard geological assessment, conducted a field investigation, and researched available historic records on the above referenced site and determined that that no active shoreline erosion hazard area exists within 200 feet of the site.~~

~~76. The name, mailing address, and telephone number of the geotechnical professional who prepared the letter.~~

~~87. The name, mailing address, and telephone number of the property owner.~~

- B. The geotechnical professional who prepared the geotechnical letter shall stamp the letter with his or her seal.
- C. Hold harmless clauses, disclaimers, and limitations are not allowed within a geotechnical letter.

APPENDIX B

GEOLOGICAL ASSESSMENT – SHORELINE EROSION HAZARD GEOTECHNICAL VERIFICATION

- A. A geotechnical verification shall, at a minimum, include the following:

~~1. The cover letter for the document shall clearly identify the submittal as a “Shoreline Erosion Hazard Geotechnical Verification.”~~

~~1. The general critical areas report requirements in EMC 14.20.060.~~

~~21. The date when the geological assessment was conducted. The date when the verification was prepared.~~

~~32. The parcel number(s) of the site.~~

~~43. Site address, if the city has assigned one.~~

~~54. A detailed description of the project (including the proposed land use) and a description of the area to be developed.~~

~~625. A summary of the results, conclusions, and recommendations resulting from the geological assessment, as set forth in EMC 14.110.030(B). The verification will also include a summary of the findings of the site visit, a site plan, and a summary of the findings from the review of the documents listed in EMC 14.110.030(B)(2).~~

~~736. An accurate site plan drawn at a scale of one inch equals 20 feet, one inch equals 30 feet, one inch equals 50 feet (or other scale deemed appropriate by the department) is required. The department may require that the site plan information listed below be based on a field survey by a licensed surveyor. The site plan shall include:~~

- ~~a. The limits/location of the active shoreline erosion hazard area(s) set forth in EMC 14.110.020(B)(2).~~
- ~~b. The limits of the required shoreline erosion hazard buffer based upon the requirements set forth in EMC 14.110.050(A).~~
- ~~c. The limits/location of the shoreline erosion hazard management area.~~
- ~~d. The limits/location of the 120-year regression area.~~
- ~~e. The location of any existing structures, utilities, on-site septic systems, wells, and stormwater management facilities.~~
- ~~f. The location of any proposed structures, utilities, on-site septic systems, wells, and stormwater management facilities.~~
- ~~g. The full geographical limits of the proposed project area (area to be developed).~~
- ~~h. Dimension of the closest distance between the identified active shoreline hazard area boundary and the proposed project area.~~
- ~~i. Dimension of the closest distance between the 120-year regression line and the proposed project area.~~
- ~~j. Existing contours on the site at two-foot intervals.~~
- ~~k. Property lines for the site.~~
- ~~l. North arrow and scale.~~

~~8. A paragraph that states the following specific language:~~

~~I meet the qualifications contained in EMC 14.110.030 to prepare a geological assessment. I understand the requirements of the current erosion hazard area Chapter 14.110 EMC and the definitions of the applicable terms contained within EMC 14.10.060. I have performed a shoreline erosion hazard geological assessment, conducted a field investigation, and researched available historic records on the above referenced site and determined that an active shoreline erosion hazard area exists, but is located more than 200 feet away from the proposed project area.~~

~~97. The name, mailing address, and telephone number of the geotechnical professional who prepared the verification.~~

~~108. The name, mailing address, and telephone number of the property owner.~~

B. The geotechnical professional who prepared the geotechnical verification shall stamp the verification with his or her seal.

C. Hold harmless clauses, disclaimers, and limitations are not allowed within a geotechnical verification.

APPENDIX C

GEOLOGICAL ASSESSMENT – SHORELINE EROSION HAZARD GEOTECHNICAL REPORT

A. A geotechnical report shall, at a minimum, include the following:

~~1. The cover letter for the document shall clearly identify the submittal as a “Shoreline Erosion Hazard Geotechnical Report.”~~

~~1. The general critical areas report requirements in EMC 14.20.060.~~

~~21. The date when the geological assessment was conducted. The date when the verification was prepared.~~

~~32. The parcel number(s) of the site.~~

~~43. Site address, if the city has assigned one.~~

~~54. A detailed description of the project (including the proposed land use) and a description of the area to be developed.~~

~~625.~~ A summary of the results, conclusions, and recommendations resulting from the geological assessment, as set forth in EMC 14.110.030(B). ~~The report will also include a summary of the findings of the site visit, a site plan, and a summary of the findings from the review of documents listed in EMC 14.110.030(B)(2).~~ ~~The~~ The summary shall specifically address:

a. Whether it is possible given the physical constraints of the property (size, shape, building setbacks, utility requirements, etc.) to locate the proposed development outside of the 120-year area of regression based on natural shoreline processes.

b. If it is not possible to locate the development outside of the 120-year area of regression (based on natural processes), determine whether beach nourishment and/or soft armoring techniques can be used to slow the rate of regression such that the proposed development is no longer within the 120-year regression area.

c. If it is not possible to locate the development outside of the ~~120-year~~120-year area of regression (based on the use of beach nourishment and/or soft armoring techniques), outline the strategy, as set forth in EMC 14.110.040(A)(1), to monitor the rate of regression on the site.

d. Determine whether any proposed shoreline erosion protection measures will cause an increase in the rate of regression on neighboring properties.

~~736.~~ An accurate site plan drawn at a scale of one inch equals 20 feet, one inch equals 30 feet, one inch equals 50 feet (or other scale deemed appropriate by the department) is required. The department may require that the site plan information listed below be based on a field survey by a licensed surveyor. The site plan shall include:

a. The limits/location of the active shoreline erosion hazard area(s) set forth in EMC 14.110.020(B)(2).

b. The limits of the required shoreline erosion hazard buffer based upon the requirements set forth in EMC 14.110.050(A).

c. The limits/location of the shoreline erosion hazard management area.

d. The limits/location of the 120-year regression area based on natural shoreline processes and, if applicable, based upon proposed shoreline protection measures.

e. The location of any existing structures, utilities, on-site septic systems, wells, and stormwater management facilities.

f. The location of any proposed structures, utilities, on-site septic systems, wells, and stormwater management facilities.

g. The full geographical limits of the proposed project area (area to be developed).

h. Dimension of the closest distance between the identified active shoreline hazard area boundary and the proposed project area.

i. Dimension of the closest distance between the 120-year regression line and the proposed project area.

j. Existing contours on the site at two-foot intervals.

k. Property lines for the site.

l. North arrow and scale.

~~847.~~ A discussion of any proposed shoreline protection measures including design and construction drawings is required.

~~958.~~ A list of references utilized in preparation of the report.

~~109. The name, mailing address, and telephone number of the geotechnical professional(s) who prepared the report.~~

~~1110. The name, mailing address, and telephone number of the property owner.~~

B. The geotechnical professional(s) who performed the geological assessment shall stamp the report with his or her license stamp/seal. The report must be co-authored by a licensed professional engineer when engineering designs or interpretations are necessary to address the report requirements. The engineer must also stamp the report with his or her license stamp/seal.

C. The department may request a geotechnical professional to provide additional information in the geotechnical report based upon existing conditions, changed conditions, or unique circumstances occurring on a case-by-case basis.

D. Hold harmless clauses, disclaimers, and limitations are not allowed within a geotechnical report.

E. Geotechnical reports shall be in conformance with a format that is pre-approved by the department. (Ord. 02-200 § 2).

~~14.110.070—Figures.~~

~~A. Figure 14.110-1, Potential Erosion Hazard Area.~~

~~B. Figure 14.110-2, Shoreline Erosion Hazard Area Review.~~

~~C. Figure 14.110-3, Active Shoreline Erosion Hazard Area Buffers.~~

..

(Ord. 02-200 § 2).

Chapter 14.500

NATURAL RESOURCE LANDS

Sections:

14.500.010	Purpose.
14.500.020	Intent.
14.500.030	Applicability.
14.500.031	Mineral resource lands designation.
14.500.040	Natural resource lands noticing requirements.
14.500.050	Current use assessment.
14.500.060	Variances and appeals.
14.500.070	Review process.
14.500.080	Title, plat, and regulated activities notification.
14.500.090	Permitted uses.
14.500.100	Appendices.

14.500.010 Purpose.

This chapter establishes requirements and regulations to protect natural resource lands and is established pursuant to WAC 197-11-908 and RCW 36.70A.170 and 36.70A.060. The city therefore designates agricultural lands and mineral resource lands, and all associated buffers as being environmentally sensitive areas and designated natural resource lands. By regulating development ~~within, and adjacent to, or abutting~~ within 500 feet of natural resource lands, this title seeks to implement the following goals and policies to:

- A. Inform the public of the existence, location and potential incompatibility impacts of development on, or ~~adjacent to~~ within 500 feet of, these environmentally sensitive areas within the city.
- B. Encourage the retention of open space, development of recreational opportunities, conserve priority habitat, increase access to natural resource lands and water, and develop parks.
- C. Assure the conservation of resource lands and related activities by limiting encroachment of incompatible development thereon.
- D. Promote the conservation of mineral resource lands through inclusion of known deposits of minerals and materials.
- E. Assure that undeveloped mineral and material resources will not be forever lost by prior development of the land for other purposes.
- F. Allow for the necessary mineral processing to convert such minerals and materials into marketable products.
- G. Protect the environment and enhance the state's high quality of life, including air and water quality and the availability of water.
- H. Maintain and enhance the biological and physical functions and values of wetlands. (Ord. 02-200 § 2).

14.500.020 Intent.

Resource lands are of special concern to the citizens, the city, and the state. The intent of this chapter is to conserve resource lands by establishing standards for development of sites which contain, or ~~are adjacent to~~ are within 500 feet of, resource lands to promote the public health, safety, and welfare by:

- A. Noticing of property on, or within, natural resource land areas;
- B. Mitigating unavoidable impacts by regulating development;
- C. Protecting from development impacts;

D. Protecting the public against losses from:

1. Costs of public emergency rescue and relief operations where the causes are avoidable;
2. Degradation of the natural environment and the expense associated with repair or replacement;

E. Preventing adverse impacts on water availability, water quality, wetlands, and streams;

F. Protecting unique, fragile, and valuable elements of the environment, including fish and wildlife habitat;

G. Providing sufficient information to show that critical areas are adequately protected prior to approving, conditioning, or denying public or private development activity;

H. Providing the public with sufficient information and notice of potential risks associated with development in critical and sensitive areas;

I. Implementing the goals and requirements of the Growth Management Act (RCW 36.70A.060)~~Growth Management Act of 1990, the State Environmental Policy Act, the Puget Sound Water Quality Management Plan, the Pierce County Charter, the Pierce County Growth Management Policies,~~ the city of Edgewood comprehensive plan, and all updates and amendments, functional plans, and other land use policies formally adopted or accepted by the city. (Ord. 02-200 § 2).

14.500.030 Applicability.

This chapter shall apply to all properties designated as resource lands (agricultural lands or mineral resource lands) or properties ~~adjacent to~~within 500 feet of designated resource lands within Edgewood. When the requirements of this title are more stringent than those of other local, state or federal law, codes, or regulations, the requirements of this title shall apply.

A. Agricultural Lands. Lands that are not already characterized by urban growth and that have long-term significance for the commercial production of food or other agricultural products. Agricultural lands are those lands meeting all of the following criteria:

1. Lands in parcels which are 10 acres or larger in size;
2. Lands which are on prime or unique soils as identified in:
 - a. United States Department of Agriculture (USDA), Soil Conservation Service, February 1979, Soil Survey of Pierce County Area, Washington; or
 - b. USDA, Soil Conservation Service, June 1981, Important Farmlands of Pierce County, Washington;
 - c. Lands which are primarily devoted to the commercial production of horticultural, viticultural, floricultural, dairy, apiary, vegetable, or animal products or of berries, grain, hay, straw, turf, seed, Christmas trees not subject to the excise tax imposed by RCW 84.33.100 through 84.33.140, or livestock, and which have long-term commercial significance for agricultural production; and
 - d. Lands which are not ~~adjacent to~~within 500 feet of lots of record of one acre or less on more than 50 percent of the perimeter of the parcel.

B. Mineral Resource Lands. Mineral resource lands shall be identified by the city using the criteria set forth in WAC 365-190-070 as now exists or as may hereafter be amended or modified.

C. Property Adjacent to Resource Lands. All plats, short plats, development permits, and building permits issued for development activities within 500 feet of lands designated as natural resource lands shall contain a notice that a variety of commercial activities may occur that are not compatible with residential development for certain periods of limited duration. (Ord. 04-221 § 1; Ord. 02-200 § 2).

14.500.031 Mineral resource lands designation.

A. The city has classified the following areas as potential mineral resource lands based on the criteria in EMC 14.500.030(B).

1. Parcels: 0420164023, 0420164024, 0420164016 (commonly known as Olson); and
2. Parcels: 0420162047, 0420162048 (commonly known as Josties); and
3. Parcels: 0420084072, 0420084002, 0420084005, 0420084069, 0420084068, 0420171073, 0420171057, 0420171000, 0420171059 (commonly known as Fife Sand and Gravel).

B. The city staff shall study each area and prepare a written analysis of each area.

C. The city council's land use and economic development committee shall review the staff analysis and either send the analysis back to staff for clarification or recommend approval/denial of each area as a mineral resource land to the city council. The staff analysis and land use and economic development committee's recommendation shall be forwarded to the city council for review and action.

D. The city council shall review the staff analysis and recommendation(s) of the land use committee and shall, by ordinance, approve, deny or modify the particular study area designation using the criteria in EMC 14.500.050(B). (Ord. 04-234 § 1).

14.500.040 Natural resource lands noticing requirements.

Pursuant to RCW 36.70A.060, the city shall require that all plats, development applications, or permits issued for development activities on, abutting, or within 500 feet of lands designated as natural resource lands contain a notice (see Appendices A through C).

A. General. If more than one natural resource land subject to the provisions of this title intersects the subject parcel, then one notice addressing all of the natural resource areas shall be sufficient.

B. Title Notification.

1. When the city determines that activities not exempt from this title are proposed, the owner shall file a notice with the Pierce County auditor (Appendices A through C). The notice shall provide a public record of the presence of the sensitive area(s); the application of this title to the property; and any limitations on activity in or affecting such sensitive area.
2. The notice shall be notarized and recorded with the Pierce County auditor before approval of any regulated use or activity on the site.

C. Plat Notification. For all proposals requiring a plat within sensitive areas, the applicant shall note the face of the plat consistent with the language set forth in Appendices A through C.

D. Permit Notification. The department shall require that all permits issued for regulated activities ~~within or adjacent to~~ on or within 500 feet of natural resource lands contain a notice as set forth in Appendices A through C. (Ord. 02-200 § 2).

14.500.050 Current use assessment.

A. An owner of natural resource lands or open space desiring current use classification under Chapter 84.40 RCW may file for such current use classification.

B. An owner of undeveloped land with critical areas which has been placed in a separate tract or tracts, protective easement, public or private land trust dedication, or other similarly preserved area for the protection of these critical areas may have that portion of land reviewed for reassessment by the assessor-treasurer's office consistent with those restrictions to determine the fair market value of the land pursuant to RCW 84.40.030.

C. The owner shall notify the assessor-treasurer's office when restrictions on development occur on a particular site, and shall provide a plat map in addition to the following, or other special study documents as may be required by the department.:

1. ~~Wetland delineation; and/or~~
2. ~~Geotechnical study; and/or~~
3. ~~Priority habitat studies; and/or~~
4. ~~Special studies as determined by the department. (Ord. 02-200 § 2).~~

14.500.060 Variances and appeals.

Procedures for variances and appeals of an administrative decision issued pursuant to this chapter are set forth in EMC 18.40.090, Process II, Administrative action. (Ord. 02-200 § 2).

14.500.070 Review process.

A. The department shall review any permit or application requested for any regulated activity, including, but not limited to, those set forth in EMC 14.500.010 on a site which includes, or ~~is adjacent to~~ is within 500 feet of, or ~~abutting~~ one or more resource land is located, unless otherwise provided in this title.

B. As part of all development applications, the department shall review the information submitted by the applicant to:

1. Confirm the nature and type of the resource land and evaluate any required title, plat, and/or regulated activity notification;
2. Determine whether the development proposal is consistent with this title; and
3. Determine whether any proposed alterations to the site containing resource lands are necessary.

C. The city may approve, approve with conditions, or deny any development proposal in order to comply with the requirements and carry out the goals, purposes, objectives, and requirements of this title.

D. Approval of a development proposal does not discharge the obligation of the applicant to comply with the provisions of this title. (Ord. 02-200 § 2).

14.500.080 Title, plat, and regulated activities notification.

A. If more than one resource land subject to the provisions of this title exists on the site, then one notice addressing all of the resource lands shall be sufficient.

B. Notification shall be approved by the department and shall be consistent with the forms set forth in EMC 14.500.100, Appendices A through C as applicable.

C. Title notifications shall be notarized and recorded with the Pierce County auditor prior to approval of any regulated use or activity for the site. (Ord. 02-200 § 2).

14.500.090 Permitted uses.

Uses permitted on designated resource land sites shall be the same as those permitted in the zone classifications shown on the city zoning map. (Ord. 02-200 § 2).

14.500.100 Appendices.

A. Property Adjacent to Resource Lands.

B. Agriculture Lands Noticing.

C. Mineral Resource Lands Noticing.

APPENDIX A

PROPERTY ADJACENT TO RESOURCE LANDS

A. Title Notification.

Parcel Number: _____

Site Address: _____

NOTICE: This parcel lies within 500 feet of land designated resource lands by Edgewood. A variety of commercial and industrial activities occur in the area that may be inconvenient or cause discomfort to area residents. This may arise from the use of chemicals, or from spraying or extraction which occasionally generates dust, smoke, noise, and odor. The city has established resource uses as priority uses on productive resource lands, and residents of adjacent property should be prepared to accept such inconveniences or discomfort from normal, necessary commercial resource lands operations.

Signature of Owner

(NOTARY ACKNOWLEDGMENT)

B. Plat Notification. The owner of any site within 500 feet of land designated as resource lands on which a large lot, short subdivision, or formal subdivision is submitted, shall record a notice on the face of the plat. Such notification shall be in the form as set forth below:

PROPERTY ADJACENT TO RESOURCE LANDS PLAT NOTIFICATION. This property lies within 500 feet of land designated resource lands by Edgewood. A variety of commercial and industrial activities occur in the area that may be inconvenient or cause discomfort to area residents. This may arise from the use of chemicals, or from spraying or extraction which occasionally generates dust, smoke, noise, and odor. The city has established resource uses as priority uses on productive resource lands, and residents of adjacent property should be prepared to accept such inconveniences or discomfort from normal, necessary commercial resource lands operations.

C. Regulated Activities Notification. The department shall require that permits issued for regulated activities, as defined in Chapter 14.500 EMC, within 500 feet of lands designated as resource lands, contain a notice as set forth below.

REGULATED ACTIVITIES NOTIFICATION. This property lies within 500 feet of land designated resource lands by Edgewood. A variety of commercial and industrial activities occur in the area that may be inconvenient or cause discomfort to area residents. This may arise from the use of chemicals, or from spraying or extraction which occasionally generates dust, smoke, noise, and odor. The city has established resource uses as priority uses on productive resource lands, and residents of adjacent property should be prepared to accept such inconveniences or discomfort from normal, necessary commercial resource lands operations.

APPENDIX B

AGRICULTURAL LANDS NOTICING

A. Title Notification.

Parcel Number: _____

Site Address: _____

NOTICE: This parcel lies within ~~an~~ **500 feet of an** area identified as agricultural lands by Edgewood. A variety of commercial agricultural activities occur in the area that may be inconvenient or cause discomfort to area residents. This may arise from the use of agricultural chemicals, including herbicides, pesticides, and fertilizers; or from spraying, pruning, and harvesting which occasionally generate dust, smoke, noise, and odor. Edgewood has established agriculture as a priority use on productive agricultural lands, and residents of adjacent property should be prepared to accept such inconveniences or discomfort from normal, necessary farm operations.

Signature of Owner

Signature of Owner

(NOTARY ACKNOWLEDGMENT)

B. Plat Notification. The owner of any site within this designation on which a large lot, short subdivision, or formal subdivision is submitted, shall record a notice on the face of the plat. Such notification shall be in the form as set forth below.

AGRICULTURAL LANDS PLAT NOTIFICATION. This parcel lies within an area identified as agricultural lands by Edgewood. A variety of commercial agricultural activities occur in the area that may be inconvenient or cause discomfort to area residents. This may arise from the use of agricultural chemicals, including herbicides, pesticides, and fertilizers; or from spraying, pruning, and harvesting which occasionally generate dust, smoke, noise, and odor. The city has established agriculture as a priority use on productive agricultural lands, and residents of adjacent property should be prepared to accept such inconveniences or discomfort from normal, necessary farm operations.

C. Regulated Activities Notification. The department shall require that all permits issued for regulated activities, as defined in Chapter 14.500 EMC, within this zone classification contain a notice as set forth below.

REGULATED ACTIVITIES NOTIFICATION. This parcel lies within **500 feet of an** area identified as agricultural lands by Edgewood. A variety of commercial agricultural activities occur in the area that may be inconvenient or cause discomfort to area residents. This may arise from the use of agricultural chemicals, including herbicides, pesticides, and fertilizers; or from spraying, pruning, and harvesting which occasionally generate dust, smoke, noise, and odor. The city has established agriculture as a priority use on productive agricultural lands, and residents of adjacent property should be prepared to accept such inconveniences or discomfort from normal, necessary farm operations.

APPENDIX C

MINERAL RESOURCE LANDS NOTICING

A. Title Notification.

Parcel Number: _____

Site Address: _____

NOTICE: This parcel lies within **500 feet of an** area of land designated mineral resource lands by the city. A variety of commercial mineral extraction activities occur in the area that may be inconvenient or cause discomfort to area residents. This may arise from the use of heavy

equipment, chemicals, and spraying which may generate dust, smoke, and noise associated with the extraction of mineral resources. Edgewood has established mineral resource extraction as a priority use on productive mineral resource lands, and residents of adjacent property should be prepared to accept such inconveniences or discomfort from normal, necessary mineral resource extraction operations.

Signature of Owner

(NOTARY ACKNOWLEDGMENT)

B. Plat Notification. The owner of any site within this overlay district on which a large lot, short subdivision, or formal subdivision is submitted, shall record a notice on the face of the plat. Such notification shall be in the form as set forth below:

MINERAL RESOURCE LANDS PLAT NOTIFICATION. This property lies within 500 feet of an area of land designated mineral resource lands by the city of Edgewood. A variety of mineral resource extraction activities occur in the area that may be inconvenient or cause discomfort to area residents. This may arise from the use of heavy equipment, chemicals, and spraying which may generate dust, smoke, and noise associated with the extraction of mineral resources. Edgewood has established mineral resource extraction as a priority use on productive mineral resource lands, and residents of adjacent property should be prepared to accept such inconveniences or discomfort from normal, necessary mineral resource extraction lands.

C. Regulated Activities Notification. The department shall require that all permits issued for regulated activities, as defined in Chapter 14.500 EMC, within this designation contain a notice as set forth below:

REGULATED ACTIVITIES NOTIFICATION. This property lies within 500 feet of an area of land designated mineral resource lands by Edgewood. A variety of mineral resource extraction activities occur in the area that may be inconvenient or cause discomfort to area residents. This may arise from the use of chemicals and extraction of minerals, which occasionally generates dust, smoke, noise, and odor. The city has established mineral resource extraction as a priority use on productive mineral resource lands, and residents of adjacent property should be prepared to accept such inconveniences or discomfort from normal, necessary mineral resource extraction lands.

(Ord. 02-200 § 2).

Title 14

CRITICAL AREAS

Chapters:

- 14.10 General Provisions**
- 14.15 Definitions**
- 14.20 Use and Activity Regulations**
- 14.30 Wetlands**
- 14.40 Critical Fish and Wildlife Habitat Areas**
- 14.50 Aquifer Recharge and Wellhead Protection Areas**
- 14.60 Volcanic Hazard Areas**
- 14.70 Flood Hazard Areas**
- 14.80 Landslide Hazard Areas**
- 14.90 Seismic (Earthquake) Hazard Areas**
- 14.110 ~~Erosion Hazard Areas~~**
- 14.500 ~~Natural Resource Lands~~**

Chapter 14.10
GENERAL PROVISIONS

Sections:

- 14.10.010 Authority.
- 14.10.030 Purpose.
- 14.10.040 Interpretation.
- 14.10.050 Applicability.
- 14.10.070 Administration.
- 14.10.075 Relationship to Other Regulations.
- 14.10.080 Critical area protective measures.
- 14.10.082 Critical areas reports
- 14.10.083 Mitigation plans
- 14.10.085 Variances to critical areas.
- 14.10.090 Reconsideration and appeal procedures.
- 14.10.100 Fees.
- 14.10.110 Compliance.
- 14.10.120 Warning and disclaimer of liability.
- 14.10.130 Severability.
- 14.10.135 Violation – Civil infraction.
- 14.10.140 Appendix.

14.10.010 Authority.

A. This title is established and adopted pursuant to the Growth Management Act (RCW 36.70A.060).

B. As provided herein, the director or his/her designee is given the authority to interpret and apply, and the responsibility to enforce this title to accomplish ~~the purposes~~ the purposes identified in EMC 14.10.030.

14.10.030 Purpose.

The purpose of this title is to protect environmentally sensitive critical areas of Edgewood from the impacts of development and protect development from the impacts of hazard areas by establishing minimum standards for development of sites which contain or are adjacent to identified critical areas and thus promote the public health, safety, and welfare by:

- A. Avoiding impacts to critical areas;
- B. Mitigating unavoidable impacts by regulating development;
- C. Protecting critical areas from impacts of development;
- D. Protecting the public against losses from:
 - 1. Costs of public emergency rescue and relief operations where the causes are avoidable; and
 - 2. Degradation of the natural environment and the expense associated with repair or replacement;
- E. Preventing adverse impacts on water availability, water quality, wetlands, and streams;
- F. Protecting unique, fragile, and valuable elements of the environment, including critical fish and wildlife habitat;
- G. Providing department staff with sufficient information to adequately protect critical areas and proposed development when approving, conditioning, or denying public or private development proposals;

Formatted: Indent: Left: 0", First line: 0"

H. Providing the public with sufficient information and notice of potential risks associated with development in natural hazard critical areas; and

I. Implementing the goals and requirements of the Growth Management Act (RCW 36.70A.060) and the city of Edgewood comprehensive plan, and all updates and amendments, functional plans, and other land use policies formally adopted or accepted by the city of Edgewood.

14.10.040 Interpretation.

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

- A. Considered the minimum necessary;
- B. Liberally construed to serve the purposes of this title; and
- C. Deemed neither to limit nor repeal any other powers under state statute. (Ord. 02-200 § 2).

14.10.050 Applicability.

A. This title shall apply to all lands and waters within Edgewood that are designated as critical areas and their corresponding buffers and setbacks.

B. No development (see “development” definition) shall hereafter take place without full compliance with the terms of this title.

C. When the requirements of this title are more stringent than those of other Edgewood codes and regulations, including the International Building Code, the requirements of this title shall apply.

D. Compliance with these regulations does not remove an applicant’s obligation to comply with applicable provisions of any other federal, state, or local law or regulation.

E. Criteria for determining critical areas is contained within each chapter of this title.

F. When a site contains two or more critical areas, the site shall meet the minimum standards and requirements for each identified critical area as set forth in this title.

G. Critical areas, as defined and regulated by this title, are identified, but not limited to the following Edgewood critical areas maps:

1. Wetlands;
2. Geologically hazardous areas;
3. Critical aquifer recharge areas;
4. Streams; and
5. Frequently flooded areas.

H. The exact boundary of each critical area depicted on the City’s critical areas maps is approximate and is only intended to provide an indication of the presence of a critical area on a particular site. Additional critical areas that have not been mapped may be present on a site. The actual presence of a critical area, or areas and the applicability of these regulations shall be determined based upon the classification or categorization criteria and review procedures established for each critical area. City staff and/or consultant(s) may conduct on-site inspections to assess the site in order to determine if additional studies or reports identified in this title are necessary. An inspection report of findings shall be written after the on-site inspection and will become a part of any site development application as a future reference.

I. The Edgewood critical areas atlas maps shall be updated and maintained by the city's department of community development geospatial information system (GIS) division.

14.10.070 Administration.

A. Critical Areas Permit or Approval Required. In order to conduct any development activity on any property located within three hundred (300) feet of a critical area (as each critical area is defined in each chapter of this Title, or as shown on the City's Critical Areas Map), a Critical Areas Permit or an Approval must be obtained from the City.

Formatted: Underline

B. Critical Areas Approval.

1. If the City requires that another permit application be submitted under a different code chapter in order to allow the proposed development activity (the underlying application), then a separate Critical Areas Permit is not required. Instead, the City shall review the underlying application, together with the application materials required in Section _____ herein, to determine compliance or noncompliance with this title. The determination on such compliance or noncompliance shall be incorporated within the decision on the underlying application.

2. In addition to the materials required to make the underlying application complete (as required by the City's code outside of this Title), the applicant shall also submit the materials set forth in Section _____ herein, where the subject property is within three hundred (300) feet of a critical area. The City shall not issue a determination that the underlying application is complete until the materials set forth in Section _____ have been submitted.

3. The process for review of the underlying application and critical areas approval shall be the same as the Process to be followed for the underlying application, as set forth in EMC Section _____

C. Critical Areas Permit.

1. If the City does not require any other permit in order to allow the proposed development activity, the applicant shall be required to obtain a separate Critical Areas Permit in order for the proposed development activity to proceed.

2. A complete application for a Critical Areas Permit shall consist of the materials set forth in EMC Section 14.10.070(D) below.

3. The process for review of a Critical Area Permit is the Type II Process, as set forth within EMC 18.40.090.

Formatted: Indent: Left: 0"

D. Elements of a Complete Permit Application. A complete application for Approval or a Critical Areas Permit under this Title shall consist of the following materials:

1. A completed permit/approval application form, which must be signed by the record owner of the property (the person(s) whose name is on the most recently recorded deed or contract purchaser with written permission from the record owner). An application form may be signed by an agent for the record owner, as long as the application is also accompanied by a verified statement signed by the record owner, which specifically authorizes the agent to submit the application on the record owner's behalf.

2. The street address and/or a legal description of the subject property;

3. A complete description of the proposed development activity;

4. (Where in each of the chapters relating to the different critical areas does it list the information that must be submitted for a complete application for a proposed development activity within that particular critical area?)

5. The required application fee.

Formatted: Font color: Red

Approvals Required. An approval must be obtained from the city when the department determines that the site or project area is or may be located within 300 feet of a critical area, as set forth in each chapter.

B. Application Requirements.

1. Preliminary Review. The provisions for conducting a preliminary review of an application is set forth in EMC 18.40.070, Process types.

2. Application Filing.

a. Applications shall be reviewed for completeness in accordance with department submittal standards-checklists and pursuant to EMC 18.40.150, Determination of completeness or as outlined within section c. below.

b. Applications and associated reports shall not be submitted without an accompanying permit application for an underlying action, such as, but not limited to, a building permit, subdivision or boundary alteration action, site development application, TPCHD permit, or use permit, with the exception of applications required by the department as a result of an enforcement action or reports required by TPCHD for septic design approval.

c. In cases where no accompany permit applications are required for potentially regulated activities within a critical area, a separate critical areas permit application shall be filed and include the following items in order to be deemed a complete application:

i. A completed Critical Area Permit Application;

ii. Submittal and review criteria and standards of this title, as outlined within each section of the specific critical area potentially being impacted;

iii. Associated Critical Area Permit Fee, as outlined within EMC 14.10.100.

iv. Review for a Critical Area Permit shall follow a Type II Process, as outlined within EMC 18.40.0980.

3. Modifications. The department may request an update of any required assessment, report, delineation, etc., due to the potential for change in the existing environment that may have been caused by a natural event (e.g., seismic event, landslides, flooding, etc.) or human induced activity that degraded the existing conditions that occurred after the original document was initially submitted.

C. Public Notice. Public notice provisions for notice of application; public hearing, if applicable; and final decision pursuant to this title are outlined in EMC 18.40.190, Notice of public hearing.

D. Review.

1. Initial Review. The department shall conduct an initial review of any application in accordance with the provisions outlined in EMC 18.40.150, Determination of completeness.

2. Review Responsibilities.

a. The department is responsible for administration, circulation, and review of any applications and approvals required by this title.

b. The City Council shall be the decision authority for reasonable use applications.

Formatted: Strikethrough

Formatted: Strikethrough

Formatted: Strikethrough

Formatted: Font color: Red, Strikethrough

Formatted: Strikethrough

Formatted: Highlight

Formatted: Strikethrough, Highlight

Formatted: Strikethrough

Formatted: Strikethrough

Formatted: Strikethrough

c. Other city or county departments and state agencies, as determined by the department, may review an application and forward their respective recommendations to the director or hearing examiner, as appropriate.

3. Review Process.

a. The department shall perform a critical area review for any building or land use application submitted for a regulated activity, including, but not limited to, those set forth in EMC 14.20.020. Reviews for multiple critical areas shall occur concurrently.

b. The department shall, to the extent reasonable, consolidate the processing of related aspects of other city regulatory programs which affect activities in regulated critical areas, such as subdivision or site development, with the approval process established herein so as to provide a timely and coordinated review process.

c. As part of the initial review of all development or related approvals or permit applications, the department shall review the information submitted by the applicant to:

i. Confirm the nature and type of the critical area and evaluate any required assessments, reports, or studies;

ii. Determine whether the proposal for the development activity/proposal is consistent with this title;

iii. Determine whether any proposed alterations to the site containing critical areas are necessary; and

iv. Determine if the mitigation and monitoring plans proposed by the applicant are sufficient to protect the public health, safety, and welfare consistent with the goals, purposes, objectives, and requirements of this title.

d. Regulated activities subject to SEPA shall also be reviewed with consideration for impacts on critical areas as identified in this title. Regulated activities that pose a significant adverse impact which are not addressed by the standards and criteria established in this title (gaps), may be subject to additional mitigation measures as determined through the SEPA process. A threshold determination issued pursuant to EMC Title 20, SEPA, may not be made prior to departmental review of any special studies or technical reports required by this title, except where the applicant requests a declaration of significance so that environmental review is required.

d. Critical area applications required under this title shall be approved prior to approval of any underlying permit action such as, but not limited to, a building permit, subdivision approval, site development forest practice application, or identified use permit.

e. The requirement to submit a critical area assessment, report, etc., required under this title, outlined within each critical area heading herein, may be waived at the department's discretion when the proposed project area for a regulated activity is located in an area that has been the subject of a previously submitted and approved assessment, report, etc., if all of the following conditions have been met:

i. The provisions of this title have been previously addressed as part of another approval;

ii. There has been no material change in the potential impact to the critical area or required buffer since the prior review;

iii. There is no new information available that is applicable to any critical review of the site or particular critical area;

iv. The permit or approval has not expired or, if there is no expiration date, no more than five years have elapsed since the issuance of that permit or approval; and

v. Compliance with any standards or conditions placed upon the prior permit or approval has been achieved or secured.

4. Burden of Proof. The applicant has the burden of proving that a proposed application complies with the standards set forth in this title.

5. Final Decision.

a. The department may approve, approve with conditions, or deny ~~any critical~~ any critical areas permit application or underlying application for development in a critical area in order to comply with the requirements and carry out the goals, purposes, objectives, and requirements of this title based on the decision-makers' evaluation of the ability of any proposed mitigation measures to reduce risks associated with the critical area and compliance with required standards. Approval of a development proposal does not discharge the obligation of the applicant to comply with the provisions of this title.

b. Applicants shall comply with the recommendations and/or mitigation measures contained in final approved assessments or reports and incorporated into any final decision and conditions of approval.

c. ~~Approval of an application required under this title must be given prior to the start of any development activity on a site. No development activity shall be performed on any site prior to the issuance of a~~ Critical Areas Permit or issuance of the underlying permit which incorporates an Approval under this title.

Formatted: Strikethrough

Formatted: Font color: Red

6. Time Period for Final Decision. The provisions for issuing a notice of final decision on any application filed pursuant to this title is set forth in EMC 18.40.040, Coordination of development permit procedures.

E. Time Limitations.

1. Expiration of Approval.

a. Approvals granted under this title shall be valid for the same time period as the underlying permit (e.g., preliminary plat, site development, building permit). If there is a Critical Areas Permit, or the underlying permit does not contain a specified expiration date, then approvals and Critical Areas Permits granted under this title shall be valid for a period of three years from the date of issue, unless a longer or shorter period is specified in the final decision.

b. The Critical Areas Permit or approval in the underlying permit shall be considered null and void upon expiration, unless a time extension is requested and granted as set forth in subsection (E)(2) of this section.

2. Time Extensions.

a. The applicant or owner(s) may request in writing a one-time, one-year extension of the original Critical Areas Permit or approval in the underlying application, upon demonstrating to the Director that circumstances beyond the control of the Applicant dictated the need for the extension.

b. Knowledge of the expiration date and initiation of a request for a time extension is the responsibility of the applicant or owner(s).

c. A written request for a time extension shall be filed with the department at least 60 days prior to the expiration of the approval.

d. Upon filing of a written request for a time extension, a copy shall be sent to each party of record together with governmental departments or agencies that were involved in the original approval process. By letter, the department shall request written comments be delivered to the department within 30 days of the date of the letter.

e. Prior to the granting of a time extension, the department may require a new application(s), updated study(ies), and fee(s) if:

i. The original intent of the approval is altered or enlarged by the extension ~~renewal~~;

Formatted: Strikethrough

ii. The circumstances relevant to the review and issuance of the original approval have changed substantially; or

iii. The applicant failed to abide by the terms of the original approval.

f. If approved, the one-year time extension shall be calculated from the date of granting said approval.

F. Recording.

1. Approvals.

a. Critical area ~~regulation~~ Permits and approvals included in underlying permits are to be recorded on the title of the project parcel(s) at the Pierce County auditor's office by City of Edgewood Staff prior to issuance and at the sole expense of Applicant. Also refer to EMC 14.10.080(F), Title and Land Division Notification, for additional recording requirements.

Formatted: Strikethrough

b. Recording of a wetland approval for work completed within utility line easements on lands not owned by the jurisdiction conducting the regulated activity shall be required.

2. Right of Entry Agreement. When required to investigate representations made by the permit applicant in the submitted materials and/or to ensure compliance with the terms of a Critical Areas Permit or Approval, The city may require the applicant to record a right of entry agreement against the property, which shall be consistent with a format approved by the department. The right of entry agreement shall:

a. Allow the department and agents of the department to access the site for purposes of inspection during the course of application review, construction, and post-construction monitoring.

b. Allow the department and agents of the department to enter a property to construct required improvements, mitigation measures, or monitoring that have been financially guaranteed.

c. Run with the land, and be binding on all parties having or acquiring any right, title, interest, or any part thereof of the site, including the grantor, heirs, successors, and assigns. (Ord. 02-200 § 2).

14.10.075 Relationship to Other Regulations

A. This title shall apply as an overlay and in addition to zoning and other regulations adopted by the City.

B. These critical areas regulations shall apply concurrently with review conducted under SEPA, as adopted under Chapter EMC 20.05.

C. Compliance with the provisions of this title does not constitute compliance with other federal, state, and local regulations and permit requirements that may be required (for example, Hydraulic Permit Act [HPA] permits, Section 106 of the National Historic Preservation Act, U.S. Army Corps of Engineers Section 404 permits, National Pollution Discharge Elimination System permits). The applicant is responsible for complying with these requirements, apart from the process established in this title.

D. Regulated activities that may impact critical areas and/or their buffers, but do not require any other City permits or approvals, may be reviewed as a critical areas permit, as outlined within EMC 14.10.070 (c).

14.10.080 Critical area protective measures.

A. General. All critical area tracts, conservation easements, land trust dedications, and other similarly preserved areas shall remain undeveloped in perpetuity, except as they may be allowed to be altered pursuant to this title.

B. Mitigation Sequence. Adverse impacts caused by new activities and developments shall be mitigated using the following action in order of priority:

1. Avoiding the impact altogether by not taking a certain action or parts of an action;

2. Minimizing impacts by limiting the degree or magnitude of the action and its implementation, by using appropriate technology, or by taking affirmative steps, such as project redesign, relocation, or timing, to avoid or reduce impacts;

3. Rectifying the impact by repairing, rehabilitating, or restoring the affected environment;

4. Reducing or eliminating the impact over time by preservation and maintenance operations;

5. Compensating for the impact by replacing, enhancing, or providing substitute resources or environments; and

6. Monitoring the impact and the compensation project and taking appropriate corrective measures.

C. Identification of Critical Areas and Required Buffers on Construction Plans. Critical areas and required buffers shall be clearly identified on all construction plans such as, but not limited to, site development plans, residential building plans, commercial building plans, forest harvest plans, etc.

D. Building Setbacks.

1. Unless otherwise provided in this title, buildings and other structures shall be set back a distance of 15 feet from the edge of all critical area buffers or, where no buffers are required, the edge of the critical area.

2. The following uses and activities may be allowed in the building setback area:

a. Landscaping;

b. Uncovered decks;

c. Building overhangs if such overhangs do not extend more than 18 inches into the setback area;

d. Impervious ground surfaces, such as driveways, parking lots, roads, walkways, and patios; provided, that such improvements conform to the water quality standards set forth in the city's adopted stormwater management manual and that construction equipment does not enter the buffer during the construction process; and

e. Clearing and grading. (Ord. 02-200 § 2).

f. All others are prohibited.

E. Financial Guarantees.

1. The city may require an applicant to submit one or more financial guarantees to the city, as set forth in each chapter of this title (and other titles of Edgewood's Municipal Code as required), to guarantee any performance, mitigation, maintenance, or monitoring required as a condition of permit approval. The approval for the project will not be granted until the financial guarantee is received by the department. Projects where the city or one of its departments is the applicant shall not be required to post a financial guarantee.

2. Financial guarantee instruments required under this title shall be:

a. In addition to any other site development guarantees required for project approval;

b. Submitted on financial guarantee forms approved by the city;

c. In the amount of 125 percent of the City Engineer's estimate of the cost of mitigation or monitoring to allow for inflation and administration should the city have to complete the mitigation or monitoring, unless the provisions set forth in subsection (B)(2)(D) of this section are applicable; and

d. Released by the city only when the applicant's appropriate technical professional has provided written confirmation that the performance, mitigation, or monitoring requirements have been met and department staff, or agent, inspected the site(s) for compliance.

3. Failure to complete any performance, mitigation, or monitoring may result in the forfeiture or release of the guarantee. Applicants who have previously defaulted will no longer be allowed to post a ~~"bond"~~ financial guarantee for improvements necessary for approval of a land use or critical area permit application. Applicants who have previously defaulted will be allowed to post cash guarantees for subsequent critical area mitigation work needed for approval of a land use application or critical areas permit, but the guarantee must be by cash guarantee only.

Formatted: Strikethrough

F. Title and Land Division Notification.

1. General.

- a. Title and/or land division notice shall be required to be recorded with the Pierce County auditor on each site that contains a critical area, prior to approval of any regulated activity on a site.
- b. If more than one critical area subject to the provisions of this title exists on the site, then one notice which addresses all of the critical areas shall be sufficient.
- c. Title and land division notifications and notes shall be approved by the department and shall be consistent with EMC 14.10.140, Appendix A.

2. Title Notification.

- a. When the city determines that regulated activities not exempt from this title are proposed, the property owner shall file a notice with the Pierce County auditor. The notice shall provide a public record of the presence of a critical area and associated buffer, if applicable; the application of this title to the property; and that limitations on actions in or affecting such critical area and associated buffer, if applicable, may exist.
- b. The notice shall be notarized and shall be recorded by the City at the applicant's cost with the Pierce County auditor at the time of, but prior to approval of any regulated use or activity for the site.
- c. Notice on title is not required for utility line easements on lands not owned by the jurisdiction conducting the regulated activity (e.g., gas pipelines).

3. Land Division Notification and Notes. As referenced in EMC 14.10.140, Appendix A there shall be notes included on the face of any final plat, final binding site plan, short plat, or boundary line adjustment that contain critical areas or critical area buffers. The critical area boundaries and the boundary of any associated buffers shall be identified on the face of these documents prior to submission to the City for approval.

G. Conservation Easements. Prior to any final critical area approval, the part of the critical area and required buffer which is located on the site shall be protected with a conservation easement or other similar permanent deed restriction. The conservation easement shall indicate allowable and prohibited uses within the critical area and required buffer.

H. Tracts. Prior to final approval of any subdivisions, short subdivisions, large lot divisions, or binding site plans, the part of the critical area and required buffer which is located on the site, shall be placed in a separate tract or tracts, and the face of the plat shall include the requirement that the owners of all lots shall be required to preserve, protect and maintain the critical areas...

I. Homeowner's Covenants. A description of the critical area and required buffer shall be placed in any required homeowner's covenants to provide notice to the Homeowners of their responsibility to preserve, protect and maintain the critical areas in perpetuity. Such covenants shall contain a detailed description of the allowable uses within the critical area and, if applicable, associated buffer and long-term management and maintenance requirements of that critical area.

J. Markers, Fencing, and Signage.

1. Markers. Prior to final approval of any critical area application, the outer edge of the critical area boundaries or, if applicable, required buffer boundaries on the site shall be flagged by the qualified professional, as outlined in each chapter. These boundaries shall then be identified with permanent markers (rebar and cap) and flagged by a licensed surveyor, unless otherwise stated in this title. The permanent markers shall be clearly visible, durable, and permanently affixed to the ground.

2. Fencing.

a. Temporary Construction Fencing. Temporary fencing is required when vegetation is to be retained in an undisturbed condition within the critical area and required buffer. In such cases, the applicant will be required to construct silt fencing, construction fencing, or other city-approved method of temporary fencing at the edge of the critical area or, if applicable, the edge of the required buffer prior to beginning construction on the site.

b. Permanent Fencing. Where deemed necessary by the department to provide protection to the critical area, the applicant will be required to construct permanent, wildlife-passable fencing along the buffer boundary.

3. Signage.

a. The department shall require permanent signage to be installed at the edge of the critical area or, if applicable, the edge of the required buffer.

b. The sign shall indicate the type of critical area and if the area is to remain in a natural condition as permanent open space.

c. Exact sign locations, wording, size, and design specifications shall be established by the department. Required signage shall be clearly visible, durable, and permanently affixed to the ground.

d. Prior to final approval of any critical area application, the applicant shall submit an affidavit of posting to the department as proof that the required signs were posted on the site.

14.120.082 Critical areas reports

A. When required in accordance with this title, the applicant shall submit a critical areas report.

B. The critical areas report shall use scientifically valid methods and studies in the analysis of critical area data and field reconnaissance to evaluate the proposed development and all probable impacts to critical areas in accordance with the provisions of this title. The report shall reference the source(s) of science used in accordance with WAC 365-195-900 through WAC 365-195-~~925~~-925.

C. At a minimum the report shall contain the following:

1. The name and contact information of the applicant and a description of the proposal;
2. The site plan for the proposed development, including a map drawn to scale depicting critical areas, buffers, the proposed development, and any areas to be cleared or altered;
3. The date of the report and names and qualifications of the persons preparing the report;
4. Documentation of any fieldwork performed on the site;
5. Identification and characterization of all critical areas and buffers on and adjacent to the proposed development;
6. A statement specifying the accuracy of the report, and all assumptions made and relied upon;

7. A discussion of the performance standards applicable to the critical area and proposed development;
8. A mitigation plan in accordance with EMC 14.10.083 if mitigation is required; and
9. Any additional report information required for the critical area as specified in the following chapters.

14.120.083 Mitigation plans

When mitigation is required, the applicant shall submit a mitigation plan. The mitigation plan shall include all of the following:

- A. Mitigation sequencing. A description of reasonable efforts made to apply mitigation sequencing pursuant to EMC 14.10.080(B) to avoid, minimize, and mitigate impacts to critical areas and buffers.
- B. Mitigation details.
 1. A description of the anticipated impacts to the critical area and buffer, including impacts to critical area functions and values;
 2. The mitigating actions proposed, including: type of mitigation proposed (e.g., on-site or off-site); site selection criteria; identification of compensation goals; and identification of critical area functions.
 3. The environmental goals and objectives of the mitigation, together with specific measurable criteria and performance standards for evaluating whether or not the goals and objectives of the mitigation project have been successfully attained;
 4. A review of the best available science supporting the proposed mitigation; and
 5. An analysis of the likelihood of success of the mitigation project.
- C. Construction details. The mitigation plan shall include written specifications, descriptions, and drawings of the mitigation proposed, including:
 1. Construction sequence, timing, and duration;
 2. Grading and excavation details;
 3. Erosion and sediment control features; and
 4. Planting plan specifying plant species, quantities, locations, size, spacing, density, and measures to protect and maintain plants until established. All plant species must be native to the region.
- D. Monitoring details.
 1. A program for monitoring construction and assessing the outcome of the mitigation project, including the schedule for site monitoring (for example, monitoring shall occur in year 1, 3, and 5 after site construction), and how the monitoring data will be evaluated to determine if the performance standards are being met. Monitoring reports shall be submitted to document milestones, successes, problems, and contingency actions of the compensation project. The mitigation project shall be monitored for a period necessary to establish that performance standards have been met, but not for a period less than five (5) years. Mitigation monitoring shall be the responsibility of the applicant.
 2. A contingency plan with courses of action and corrective measures to be taken if monitoring or evaluation indicates project performance standards are not being met.
- E. Mitigation Cost Estimate. A Mitigation Cost Estimate for the entire compensatory mitigation project, per the requirements of EMC 14.10.080(E).

F. Other requirements. The mitigation plan shall address any additional mitigation requirements relevant to the specific critical area as specified in the following chapters.

14.10.085 Variances to critical areas.

A. General. Variances are reviewed pursuant to ~~permit type, outlined with Chapter 18.40, EMC, EMC 18.50.080, Variances.~~ Conditions may be attached to a critical area(s) variance, which will serve to meet the goals, objectives, and policies of this title.

B. Complete Application. A complete application for a Critical Areas Variance shall consist of:

1. A completed application form, signed by the property owner or property owner's representative. If the property owner's representative signs the form, it must be accompanied by the signed written authorization of the property owner of record.
2. Address, parcel number, etc.
3. Description of the proposed development activity;
4. Identification of the specific requirements of this title from which the applicant desire to vary, the extent to which such variance is required (add more?)
5. Application fee, as established by City resolution.

B. Variance Criteria. A variance may be granted from the requirements of this ~~chapter title~~ only if the decision maker makes written findings that the applicant has demonstrated that the requested action conforms to all of the criteria set forth as follows:

1. Special conditions and circumstances exist that are peculiar to the land, the lot, or something inherent in the land, and that are not applicable to other lands in the same district; and
2. The special conditions and circumstances do not result from the actions of the applicant; and
3. A literal interpretation of the provisions of this title would deprive the applicant of all reasonable economic uses and privileges permitted to other properties in the vicinity and zone of the subject property under the terms of this title, and the variance requested is the minimum necessary to provide the applicant with such rights; and
4. Granting the variance requested will not confer on the applicant any special privilege that is denied by this title to other lands, structures, or buildings under similar circumstances; and
5. The granting of the variance is consistent with the general purpose and intent of this title, and will not further degrade the functions or values of the associated critical areas or otherwise be materially detrimental to the public welfare or injurious to the property or improvements in the vicinity of the subject property; and
6. The decision to grant the variance ~~incorporates~~ incorporates the best available science and gives special consideration to conservation or protection measures necessary to preserve or enhance anadromous fish habitat; and
7. The granting of the variance is consistent with the general purpose and intent of the Edgewood Comprehensive Plan and adopted development regulations.

C. Additional Criteria for Flood Hazard Area Variances. In addition to the variance criteria specified above in subsection (B) of this section, in order for the decisionmaker to approve a flood hazard variance, the decisionmaker must make written findings that the applicant has demonstrated, that the proposal satisfies all of the following:

1. Generally, the only condition under which a variance from the elevation standard may be issued is for new construction and substantial improvements to be erected on a small or irregularly shaped lot contiguous to and surrounded by lots with existing structures constructed below the base flood level. As the lot size increases the technical justification required for issuing the variance increases.

Formatted: Highlight

Formatted: Highlight

Formatted: Underline, Font color: Red

Formatted: Strikethrough

2. Variances shall not be issued within a designated floodway if any increase in flood levels during the base flood discharge would result.
3. Variances shall only be issued upon a determination that the variance is the minimum necessary, considering the flood hazard, to afford relief.
4. Variances shall only be issued upon:
 - a. A showing of good and sufficient cause;
 - b. A determination that failure to grant the variance would result in exceptional hardship to the applicant and that the hardship was not created by the applicant;
 - c. A determination that the granting of a variance will not result in increased flood heights, additional threats to public safety, extraordinary public expense, create nuisances, cause fraud on or victimization of the public, or conflict with existing local laws or ordinances.
5. Variances as interpreted in the National Flood Insurance Program are based on the general zoning law principle that they pertain to a physical piece of property; they are not personal in nature and do not pertain to the structure, its inhabitants, economic or financial circumstances. They primarily address small lots in densely populated residential neighborhoods. As such, variances from flood elevations should be quite rare.
6. Variances may be issued for nonresidential buildings in very limited circumstances to allow a lesser degree of flood proofing than watertight or dry-flood proofing, where it can be determined that such action will have low damage potential, complies with all other variance criteria (except 4.4-1), and otherwise complies with Sections 5.1-1, 5.1-3, and 5.1-4 of the General Standards.
7. Any applicant to whom a variance is granted shall be given written notice that the permitted structure will be built with its lowest floor below the base flood elevation and that the cost of flood insurance will be commensurate with the increased risk.

D. Should a variance be denied, the applicant may submit an application for a ~~ra~~ reasonable use exception pursuant to EMC 14.20.050. (Ord. 17-492 § 2 (Exh. A); Ord. 02-200 § 2).

14.10.090 Reconsideration and appeal procedures.

Procedures for appeal of a final decision on a critical areas permit, a decision relating to critical areas in the underlying permit, a critical areas variance or a critical areas flood hazard variance are set forth in [chapter-EMC 18.40-](#).

14.10.100 Fees.

Fees for applications and/or review of reports, studies, or plans filed pursuant to this title are set forth in the adopted fee schedule and as identified below:

A. Fee Establishment. The city, by resolution, shall establish fees for filing of critical area review processing and other services provided by the city as required by this title. These fees shall be based on the anticipated sum of direct costs incurred by the city for any individual development or action and may be established as a sliding scale that will recover all of the city costs. Basis for these fees shall include, but not be limited to, the cost of engineering and planning review time, cost of inspection time, costs for administration, and any other special costs attributable to the critical area review process.

B. Applicant Responsibilities. Unless otherwise indicated in this title, the applicant shall be responsible for the initiation, preparation, submission, and expense of all required reports, assessment(s), studies, plans, reconnaissance(s), peer review(s) by qualified consultants, and other work prepared in support of or necessary to review the application.

C. Fee Schedule. The director is charged with the responsibility of collecting appropriate fees charged to applicants for any permits or discretionary approval processes provided for in this title. The amount of the fees charged shall be

as established by resolution ~~or ordinance~~ of the city council filed in the office of the city clerk and may be, from time to time, changed without amendment to this title.

Formatted: Strikethrough

D. Payment. Fees established in accordance with this title shall be paid upon submission of a signed application or petition for appeal, or as otherwise provided by any fee ~~ordinance or~~ resolution adopted by the city council. ~~Where such an application will require substantial review time or expenditures, the mayor may, at his/her sole discretion, direct that the department initiating the permit request to reimburse the community development department for some or all of costs expended for the application review.~~

Formatted: Strikethrough

Formatted: Highlight

E. Investigation Fee. ~~To investigate violations of this title, all city fees associated with investigation of violations of this title may be assessed at the adopted billable staff hour rate in addition to any required consultant costs, legal costs, and other expenses necessary to complete the investigation of the violation. The payment of such investigation fees shall not exempt any person from compliance with all other provisions of this title, nor from penalties prescribed by law.~~

14.10.110 Compliance.

A. The regulations for compliance with the provisions of this title are set forth in EMC 18.30.040, Scope and compliance.

B. When a critical area or its required buffer has been altered in violation of this title, the department shall require the property owner to bring the site into compliance. The property owner shall be required to submit the appropriate critical area application and commence a departmental review, as applicable for each chapter of this title. In addition to any required site investigation, delineations, assessments, reports, etc., the property owner shall be required to submit a restoration plan that identifies the proposed mitigation to bring the subject property into compliance with the requirements of this title. (Ord. 02-200 § 2).

14.10.120 Warning and disclaimer of liability.

The degree of protection required through application of this title is deemed to be reasonable for regulatory purposes and is based on best available science; however, natural events that may exceed the geographic boundaries regulated under this title can and will occur (e.g., flood heights that are higher than anticipated). This title does not mean to imply that land outside designated hazard areas or uses permitted within such areas will be free from damages.

The express purpose of this title is to provide for the health, safety and welfare of the general public, and not to protect individuals or create or otherwise establish or designate any particular class or group of persons who will or should be especially protected or benefitted by the terms of this title. The obligation of complying with the requirements of this title and the liability for failing to do so is hereby placed upon the property owner and/or persons responsible for the condition of the property, buildings or premises.

Nothing in this title is intended to be nor shall be construed to create or form the basis for any liability on the part of the City, its officers, officials, employees or agents, for any injury or damage resulting from the failure of the owner of property or land to comply with the provisions of this title or by reason or in consequence of any inspection, notice, order, certificate, permission or approval, authorized or issued or done in connection with the implementation or enforcement of this title, or by reason of any action or inaction on the part of the City, related in any manner to the enforcement of the title by its officers, officials, employees or agents.

14.10.140 Appendix.

A. Title and Plat Notification Forms.

APPENDIX A

Formatted: Centered

TITLE AND PLAT NOTIFICATION FORMS

A. Notice for Title Notification.

1. (Example: Appropriate Critical Area from EMC 14.10.030)

Tax Parcel Number:

Address:

Legal Description:

Present Owner:

NOTICE: This property contains (e.g., wetlands or wetland buffers) as defined by EMC 14.10.030. The site was the subject of a development proposal for _____ application number filed on _____ (date). Restrictions on use or alteration of the site may exist due to natural conditions of the property and resulting regulations. Review of such application has provided information on the location of the (e.g., wetland or wetland buffers) and any restriction on use.

Date Signature of owner

Notary acknowledgment and notary seal

B. Additional Title Notification Statements.

1. Title notification for liquefaction and dynamic settlement hazard areas shall include a statement of the performance criteria (i.e., protection of life safety only, provision for minimal structural damage so that post-earthquake functionality is substantially unchanged, no structural damage for the design earthquake).
2. Title notification for fault rupture hazard areas shall include a statement that a fault rupture hazard area or associated buffer exists on the site. The title notification shall include a site plan of the subject property with the fault rupture hazard area and associated buffer identified.
3. Properties that contain flood hazard areas pursuant to Chapter 14.70 EMC shall include the following statement:

Flood Elevation Certificates are kept on file by the department.

C. Notice for Plat Notification/Plat Notes.

1. General. The following notice shall be placed on the face of the final plat, short plat, large lot, or binding site plan documents when said subdivision contains critical areas or critical area buffers:

Notice: This site lies within a (e.g., landslide hazard area) as defined in EMC Title 14. Restrictions on use or alteration of the site may exist due to natural conditions of the site and resulting regulation.

2. Native Vegetation Preservation Areas. The following notice shall be placed on the face of the final plat, short plat, large lot, or binding site plan documents when said subdivision contains critical areas or critical area buffers and when said critical areas or critical area buffers have been identified as native/natural vegetation preservation areas.

|

Notice: The Critical Areas appearing on this (final site plan/preliminary plat/final plat/short plat/large lot/engineering drawing) contain areas of native vegetation intended to buffer the Critical Area from the adverse effects of development. These Critical Areas shall remain and be maintained in a natural, undeveloped, open space state. There shall be no clearing, grading, filling, or construction within the Critical Areas, except as shown on plans or documents approved by the City of Edgewood and contained in the official files for this development. Each Critical Area shall remain undisturbed except for periodic watering and hand weeding of plants designated as noxious by the State of Washington.

3. Plat Notes for Flood Hazard Areas. The following notes shall be placed on the face of any of final plat, short plat, large lot, or binding site plan documents which lie within a flood hazard area.

- a. Grading, clearing, and/or filling within the limits of the 100-year floodplain is prohibited except for watercourse related construction, repair, and/or maintenance work that is done by the city for management operations.
- b. If a higher frequency event occurs or if existing conditions upon which the flood hazard area boundaries were based were to change or occur differently than depicted, then the level of protection afforded by the existing levee, if applicable, and flood hazard area standards may not be adequate to prevent the subject site from flooding.
- c. All purchasers and developers (and/or their agents) of property within the subject development area and/or parcel shall take notice of the above conditions and hereby agree to defend, indemnify, and hold harmless Edgewood from any and all claims, losses, costs, liabilities, or damages of any nature imposed upon or asserted against Edgewood arising out of or caused by the city's issuance of approval or by issuance of any other permits arising out of this approval.
- d. All occupants and/or owners of property in the subject area assume the risk of flooding which may occur and waive any claims against Edgewood arising out of damage or injury to person or property resulting therefrom. (Ord. 17-492 § 2 (Exh. A); Ord. 16-461 § 3; Ord. 02-200 § 2).

Chapter 14.15

DEFINITIONS

This title shall rely on the definitions contained in Chapter 18.20 EMC, Definitions. **The city also adopts by reference the definitions stated in WAC 197-11-700 through 197-11-799 as now or hereafter amended.** Additional definitions that apply to this title are:

Formatted: Highlight

“Abutting” means bordering upon, to touch upon, in physical contact with. Sites are considered abutting even though the area of contact may be only a point.

“Activity” means any use conducted on a site.

“Addition” means an alteration to an existing structure that increases the floor area. There are two types of additions: additions affixed to the side of an existing structure and an upper story addition.

“Agricultural activities” means the production of crops and/or raising or keeping livestock, including operation and maintenance of farm and stock ponds, drainage ditches, irrigation systems, and normal operation, maintenance, and repair of existing serviceable agricultural structures, facilities, or improved areas, and the practice of aquaculture. Activities which bring an area into agricultural use are not part of an ongoing activity. An operation ceases to be ongoing when the area in which it was conducted is proposed for conversion to a non-agricultural use or has lain idle for a period of longer than five (5) years, unless the idle land is registered in a federal or state soils conversation program. Forest practices regulated under Chapter 76.09 RCW and WAC Title 222 are not included in this definition.

“Agricultural land” means land primarily devoted to the commercial production of horticultural, viticultural, floricultural, dairy, apiary, vegetable, or animal products or of berries, grain, hay, straw, turf, seed, Christmas trees not subject to the excise tax imposed by RCW 84.33.100 through 84.33.140, finfish in upland hatcheries, or livestock, and that has long-term commercial significance for agricultural production.

“Animal containment area” means a site where two or more animal units of large animals per acre or 0.75 of an animal unit of small animals per acre are kept, and where a high volume of waste material is deposited in quantities capable of impacting groundwater resources.

“Animal unit” means the equivalent of 1,000 pounds of animal.

“Appeal” means a request for a review of the ~~interpretation of any provision of this chapter~~, a decision on a Critical Areas Permit or an underlying permit per EMC 14.10.090.

“Applicant” means any person or entity, including an agency, applying for a ~~license permit or approval from an the City under this Title agency.~~

“Application” means a request for a ~~permit or approval under this Title license.~~

Formatted: Strikethrough

Formatted: Strikethrough

“Aquifer” means a saturated geologic formation, which will yield a sufficient quantity of water to serve as a private or public water supply.

“Area of shallow flooding” means areas designated as AO or AH zones on the FIRM(s). AO zones are characterized as sheet flows, having base flood depths that range from one to three feet above the natural ground, where a clearly defined channel does not exist, the path of flooding is unpredictable and indeterminate, and velocity flow may be evident. AH zones indicate similar depth ponding, shown with standard base flood elevations on the FIRM(s).

“Area of special flood hazard” means land in the floodplain within a community subject to a one percent or greater chance of flooding in any given year. Designation on FIRM(s) always includes the letter A or V.

“Base flood” means the flood having a one percent chance of being equaled or exceeded in any given year, also referred to as the “100-year flood,” and is designated on FIRM(s) by the letter A or V.

“Basement” means any area of the building having its floor sub-grade (below ground level) on all sides, for the purposes of this title.

“Best available science” means scientific information applicable to the critical area prepared by local, state, or federal natural resource agencies, a qualified scientific professional, or team of qualified scientific professionals that is consistent with criteria established in WAC 365-195-900 through WAC 365-195-925.

“Best management practices” means conservation practices or systems of practices and management measures that:

- A. Control soil loss and reduce water quality degradation caused by high concentrations of nutrients, animal waste, toxics and sediment;
- B. Minimize adverse impacts to surface water and ground water flow and circulation patterns and to the chemical, physical, and biological characteristics of wetlands;
- C. Protect trees and vegetation designated to be retained during and following site construction and use native plant species appropriate to the site for re-vegetation of disturbed areas; and
- D. Provide standards for proper use of chemical herbicides within critical areas.

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

“Buffer” means an area contiguous with a critical area that is required for the integrity, maintenance, function, and structural stability of the critical area.

“Building footprint” means the horizontal area measured within the outside of the exterior walls of the ground floor of all principal and accessory buildings on a lot.

“City” means the city of Edgewood.

“Classification” means defining value and hazard categories to which critical areas and land resource lands will be assigned.

“Clearing” means the removal of timber, brush, grass, ground cover, or other vegetative matter from a site, which exposes the earth’s surface on the site.

“Colluvium” means loose materials deposited by gravity on the face of or at the foot of a slope (e.g., talus, soil creep, etc.).

“Compensatory mitigation” means replacing project-induced losses or impacts to a critical area.

“Conservation easement” means a recorded deed restriction or covenant that runs in perpetuity on a parcel of land restricting the use of the property by preventing future real estate development such as residential, industrial, or commercial use. Conservation easements may allow for continued current uses (e.g., residential, recreational, agriculture, forestry, or ranching); however, conservation easements most often restrict both the current use as well as future uses of the land to some important conservation quality such as habitat preservation, open space, or scenic views. A land trust or governmental entity that manages properties for long-term goals typically holds conservation easements.

“Contaminant” means any chemical, physical, biological, or radiological substance that does not occur naturally or occurs at concentrations and duration as to be injurious to human health or welfare or shown to be ecologically damaging.

“Council” means the Edgewood city council.

“County” means Pierce County.

“Crawl space” means the shallow space beneath the bottom floor of a house with no basement; used for access and inspection of framing, electrical, plumbing, insulation, vapor barriers, or duct work. For purposes of the National Flood Insurance Program Elevation Certificate, a crawl space that has subgrade around all sides shall be considered a basement.

“Critical aquifer recharge areas” means areas with a critical recharging effect on aquifers used for potable water, including areas where an aquifer that is a source of drinking water is vulnerable to contamination that would affect the potability of the water, or is susceptible to reduced recharge.

“Critical areas” means the following areas and ecosystems: (a) Wetlands; (b) areas with a critical recharging effect on aquifers used for potable water; (c) fish and wildlife habitat conservation areas; (d) frequently flooded areas; and (e) geologically hazardous areas.

“Critical facilities” means those facilities occupied by populations or which handle dangerous substances including but not limited to hospitals, medical facilities, nursing homes; structures housing, supporting, or containing toxic or explosive substances; covered public assembly structures; school buildings through secondary, including daycare centers; buildings for colleges or adult education; police, fire, and emergency response installations; jails and detention facilities; and all structures with occupancy of greater than 5,000 people. These facilities are such that even a slight chance of flooding might be too great. Essential public facilities (as defined under EMC 18.20.080 and 18.100.050) are considered critical facilities, for floodplain management purposes.

“Debris flow” means the rapid downslope movement of a viscous mass of water-saturated sediments.

“Degraded” means to have suffered a decrease in naturally occurring functions and values due to activities undertaken or managed by persons on or off a site.

“Delineation” means a wetland study conducted in accordance with the approved federal wetland delineation manual and applicable regional supplements.

“Department” means the City of Edgewood Department of Community Development.

“Depressional pothole” means a relatively sunken or low-lying area of the earth’s surface, especially one having no natural outlet for surface drainage.

“Development” means any human-induced change to improved or unimproved real property, including but not limited to: the construction of buildings or other structures, placement of a manufactured home/mobile home, mining, dredging, clearing, filling, grading, paving, excavation, drilling operations, storage of equipment or materials located within an area of special flood hazard, or activities otherwise governed by EMC Title 16, Subdivisions.

“Development activity” means any construction, development, earth movement, clearing, or other site disturbance of the land, except as listed under exemptions.

“Director” means the director of the city of Edgewood Department of Community Development or his/her designee.

“DRASTIC” is an acronym for a computer model developed by the National Water Well Association and Environmental Protection Agency used to measure aquifer susceptibility.

“Dwelling unit” means one or more rooms designed for or occupied by one family for living or sleeping purposes and containing kitchen facilities for use solely by one family.

“Earth/earth material” means naturally occurring rock, soil, stone, sediment, or combination thereof.

“Earthflow” means a slow downslope movement of viscous, saturated sediments.

“Elevated building” means, for insurance purposes, a non-basement building that has its lowest elevated floor raised above ground level by foundation walls, shear walls, posts, piers, pilings, or columns.

“Elevation certificate” means the official form (FEMA Form 81-31) used to track development, provide elevation information necessary to ensure compliance with community floodplain management ordinances, and determine the proper insurance premium rate with Section B completed by community officials.

“Encroachment” means any development or regulated activity conducted inside the boundaries of a designated critical area and/or its associated buffer.

“Engineer” as defined by Chapter 18.43 RCW.

“Engineering geologist” means a geologist who, by reason of his or her knowledge of engineering geology, acquired by education and practical experience, is qualified to engage in the practice of engineering geology, has met the qualifications in engineering geology established under Chapter 18.220 RCW, and has been issued a license in engineering geology by the Washington State Geologist Licensing Board.

“Engineering geology” means a specialty of geology affecting the planning, design, operation, and maintenance of engineering works and other human activities where geological factors and conditions impact the public welfare or the safeguarding of life, health, property, and the environment.

“Enhancement” means actions performed within an existing degraded critical area and/or buffer to intentionally increase or augment one or more ecological functions or values of the existing area. Enhancement actions include, but are not limited to, increasing plant diversity and cover; increasing wildlife habitat and structural complexity (snags, woody debris); installing environmentally compatible erosion controls; removing non-native plant or animal species; or removing human-made structures or fill that are degrading ecological functions or values.

“Erosion” means the wearing away of the earth’s surface as a result of the movement of wind, water, or ice.

“Erosion hazard areas” means those areas that because of natural characteristics, including vegetative cover, soil texture, slope, gradient, and rainfall patterns, or human-induced changes to such characteristics, are vulnerable to erosion.

“Excavation” means the mechanical removal of earth material.

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

“Expansion to an existing manufactured home park or subdivision” means the preparation of additional sites by the construction of facilities for servicing the lots on which the manufactured homes are to be affixed (including the installation of utilities, the construction of streets, and either final site grading or the pouring of concrete pads).

“Facility” means all structures, contiguous land, appurtenances, and other improvements on the land used for recycling, reusing, reclaiming, transferring, storing, treating, disposing, or otherwise handling a hazardous substance. Use of the term “facility” includes underground and aboveground tanks and operations, which handle, use, dispose of, or store hazardous substances.

“Fill/fill material” means a deposit of earth material placed by human or mechanical means.

“Filling” means the act of placing fill/fill material on any surface, including temporary stockpiling of fill material.

“Financial guarantee” a surety bond or other security, such as a cash escrow, cash set aside, assignment of funds, letter of credit, that the City may allow a developer to utilize in lieu of completion of the actual construction of required improvements prior to the City’s approval and acceptance of the improvements. The City establishes the amount and conditions which will ensure completion within a specific time period.

“Finished floor” means the top of the next higher floor above the lowest floor. For purposes of the National Flood Insurance Program Elevation Certificate, the finished floor referenced in this regulation shall equal the top of the next higher floor.

“Fish and wildlife habitat conservation areas” means areas necessary for maintaining species in suitable habitats within their natural geographic distribution so that isolated subpopulations are not created as designated by WAC 365-190-080(5). “Fish and wildlife habitat conservation areas” does not include such artificial features or constructs as irrigation delivery systems, irrigation infrastructure, irrigation canals, or drainage ditches that lie within the boundaries of and are maintained by a port district or an irrigation district or company.

“Fisheries biologist” means a professional with a degree in fisheries or certification by the American Fisheries Society, or with five years’ professional experience as a fisheries biologist.

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

1. The overflow of inland or tidal waters; and/or
2. The unusual and rapid accumulation of runoff of surface waters from any source.

“Flood hazard areas” means areas of flooding identified by verifiable flooded areas using:

1. Aerial photographs of the city, especially those taken in wintertime 1996 and 1997;
2. Relevant and verifiable information from the city’s capacity analysis technical review Adhoc committee (CATRAC) draft report, 2000;
3. Relevant and verifiable government and citizen photographs, notes, observations, etc. regarding historic ponding/flooding levels
4. Relevant and verifiable information available through Pierce County;
5. Relevant and verifiable information available through the Federal Emergency Management Agency (FEMA); or
6. Areas of land located in floodplains, which are subject to a one percent or greater chance of flooding in any given year, including, but not limited to, streams, rivers, lakes, ponds, wetlands, depressional potholes and the like.

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

“Flood Insurance Study (FIS)” means the official report provided by the Federal Insurance Administration (FIA) that includes flood profiles, FIRM(s), and the water surface elevation of the base flood.

“Flood fringe” means the area subject to inundation by the base flood, but outside the limits of the floodway, and which may provide needed temporary storage capacity for floodwaters.

“Floodplain” means the total area subject to inundation by the base flood, including the flood fringe and the floodway areas.

“Floodway” means the channel of a river or other watercourse and the adjacent land areas that must be reserved in order to convey and discharge the base flood without cumulatively increasing the water surface elevation by more than one foot, and those areas designated as deep and/or fast-flowing water.

“Fluvial processes” means the physical interaction of flowing water and the natural channels of rivers and streams.

“Foundation footing setback” means a typical geotechnical recommendation intended to assure that a proposed structure is protected in the event of a slope failure or sloughage. A foundation footing setback is measured horizontally from the face of the foundation footing to the face of the slope. A foundation footing setback for this purpose should not be confused with a building or construction setback from a landslide hazard area buffer. A foundation footing setback is also not a buffer.

“Frequently flooded area” means lands in the floodplain subject to at least a one percent or greater chance of flooding in any given year, or within areas subject to flooding due to high groundwater. These areas include, but are not limited to, streams, rivers, lakes, wetlands, and areas where high groundwater forms ponds on the ground surface.

“Geologically hazardous areas” means areas that because of their susceptibility to erosion, sliding, earthquake, or other geological events are not suited to the siting of commercial, residential, or industrial development consistent with public health or safety concerns.

“Geologist” means engineering geologist, or hydrogeologist, registered in the state of Washington.

“Geotechnical professional” means a person with experience and training in analyzing, evaluating, and mitigating landslide, erosion, and/or seismic hazards. A geotechnical professional shall be licensed in the state of Washington as a geologist or professional engineer, and must have five or more years’ experience specializing in landslide, erosion, or seismic hazards, as applicable.

“Geotechnical report” means a report prepared by a professional engineer licensed by the state of Washington with expertise in geotechnical engineering, evaluating the site conditions and mitigating measures necessary to reduce the risks associated with development in geologically hazardous areas.

“Grading” means any excavating, filling, clearing, or creating of impervious surfaces or combination thereof.

“Groundwater” means all water found beneath the ground surface, including slowly moving subsurface water present in aquifers and recharge areas.

“Habitat management plan” means a report prepared by a professional wildlife biologist or fisheries biologist, which discusses and evaluates the measures necessary to maintain fish and wildlife habitat conservation areas on a proposed development site.

“Habitat of local importance” means an area, range, or habitat within which a species has a primary association and which, if altered, may reduce the likelihood that the species will maintain and reproduce over the long term. Examples include areas of high relative density or species richness, breeding habitat, winter range, and movement corridors. These areas may also include habitats that are of limited availability or high vulnerability to alteration.

“Hard armoring” means the use of large rock and/or human-made materials to protect property from shoreline erosion. Such techniques include cement/concrete bulkheads, steel structures, rock wall revetments, and rock gabion structures. Hard armoring typically does not utilize or integrate any of soft armoring or soil bioengineering techniques.

“Hazardous substance(s)” means any liquid, solid, gas, or sludge, including any materials, substance, product, commodity, or waste, regardless of quantity, that exhibits any of the characteristics or criteria of hazardous waste; and including waste oil and petroleum products.

“Hazardous substance processing or handling” means the use, storage, manufacture, or other land use activity involving hazardous substances, but does not include individually packaged household consumer products or quantities of hazardous substances of less than five gallons in volume per container. Hazardous substances shall not be disposed on-site unless in compliance with Dangerous Waste Regulations, Chapter 173-303 WAC, and any pertinent local ordinances such as sewer discharge standards.

“Hazardous waste” means and includes all dangerous waste and extremely hazardous waste as designated pursuant to Chapter 70.105 RCW and Chapter 173-303 WAC.

1. "Dangerous waste" means any discarded, useless, unwanted, or abandoned substances including but not limited to certain pesticides or any residues or containers of such substances which are disposed of in such quantity or concentrations as to pose a substantial present or potential hazard to human health, wildlife, or the environment because such wastes or constituents or combinations of such wastes:

- a. Have short-lived, toxic properties that may cause death, injury, or illness, or have mutagenic, teratogenic, or carcinogenic properties; or
- b. Are corrosive, explosive, flammable, or may generate pressure through decomposition or other means.

2. "Extremely hazardous waste" means any waste which:

- a. Will persist in a hazardous form for several years or more at a disposal site and which in its persistent form presents a significant environmental hazard and may be concentrated by living organisms through a food chain or may affect the genetic make-up of humans or wildlife; and
- b. Is disposed of at a disposal site in such quantities as would present an extreme hazard to humans or the environment.

"Hazardous waste treatment and storage facility" means a facility that treats and stores hazardous waste and is authorized pursuant to Chapter 70.105 RCW and Chapter 173-303 WAC. It includes all contiguous land and structures used for recycling, reusing, reclaiming, transferring, storing, treating, or disposing of hazardous waste. Treatment includes using physical, chemical, or biological processing of hazardous wastes to make such waste non-dangerous or less dangerous and safer for transport, amenable for energy or material resource recovery. Storage includes the holding of waste for a temporary period, but not the accumulation of waste on the site of generation as long as the storage complies with applicable requirements of Chapter 173-303 WAC.

"Holocene Epoch" means that part of the geologic record that post-dates the youngest deposits associated with the late Pleistocene Age Fraser Glaciation and is typically considered to be the past 10,000 years.

"Hydrogeologic assessment" means a report detailing the subsurface conditions, the design of a proposed land use action, and the facilities operation which indicates the susceptibility and potential for contamination of groundwater supplies.

"Impervious surface" means a hard surface, which prevents or retards the entry of water into the soil mantle as under natural conditions prior to development, and/or a hard surface area, which causes water to run off the surface in greater quantities or at an increased rate of flow than the flow present under natural conditions prior to development. Common impervious surfaces include, but are not limited to, roof tops, walkways, patios, driveways, parking lots or storage areas, concrete or asphalt paving, gravel roads, gravel parking lots, packed earthen materials, and oiled, macadam or other surfaces which similarly impede the natural infiltration of stormwater. Open, uncovered retention/detention facilities shall not be considered as impervious surfaces.

"Increased cost of compliance (ICC)" means a flood insurance claim payment up to \$30,000 directly to a property owner for the cost to comply with floodplain management regulations after a direct physical loss caused by a flood. Eligibility for an ICC claim can be through a single instance of "substantial damage" or as a result of a "cumulative substantial damage." (More information can be found in FEMA ICC Manual 301.)

"Lahar" means a mudflow or debris flow mobilized by water, which originates on the slopes of a volcano.

"Lakes" means impoundments of open water 20 acres or larger.

"Landfill" means a place to dispose of refuse and other waste material by burying it and covering it over with soil.

"Landslide" means the abrupt downslope movement of soil, rocks, or other surface matter on a site. Landslides may include but are not limited to slumps, debris flows, mudflows, earthflows, rockfalls, and snow avalanches.

"Landslide hazard areas" means areas which are potentially subject to risk of mass movement due to a combination of geologic, topographic, and hydrologic factors.

“Large animal” means an animal with an average weight of 100 pounds or more.

“License” means any form of written permission given to any person, organization, or agency to engage in any activity, as required by law or agency rule. A license includes all or part of a city permit, certificate, approval, registration, charter, or plat approvals or rezones to facilitate a particular proposal. The term does not include a license required solely for revenue purposes.

“LiDAR” means Light Detection and Ranging imaging.

“Liquefaction” means a process by which a water-saturated granular (sandy) soil layer loses strength because of ground shaking caused by an earthquake.

“Long-term commercial significance” means the growing capacity, productivity, and soil composition of land, which makes it suitable for long-term commercial production, in consideration with the land’s proximity to population areas, and the possibility of more intense uses of land.

“Lowest floor” means the lowest floor of the lowest enclosed area (including basement and crawl space). 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 title.

“Maintenance” means those usual acts to prevent a decline, lapse, or cessation from a lawfully established condition without any expansion of or significant change from that originally established condition. For the purposes of this document, activities within landscaped areas within areas subject to native vegetation retention requirements may be considered maintenance only if they maintain or enhance the canopy and understory cover.

“Manufactured home/mobile home” means a structure, transportable in one or more sections, which is built on a permanent chassis and is designed for use with or without a permanent foundation when connected to the required utilities. For floodplain management purposes, the term “manufactured home/mobile home” also includes park trailers, travel trailers, and other similar recreational vehicles placed on a site for greater than 180 consecutive days. For insurance purposes, the term “manufactured home/mobile home” does not include park trailers, travel trailers, recreational vehicles, or other similar vehicles.

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

“Mineral resource lands” means lands primarily devoted to the extraction of minerals or which have known or potential long-term commercial significance for the extraction of minerals.

“Minerals” include gravel, sand, or other resources that are extracted from the ground, and valuable metallic substances.

“Mitigation” means:

1. Avoiding the impact altogether by not taking a certain action or parts of an action;
2. Minimizing impacts by limiting the degree or magnitude of the action and its implementation, by using appropriate technology, or by taking affirmative steps to avoid or reduce impacts;
3. Rectifying the impact by repairing, rehabilitating, or restoring the affected environment;
4. Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action;
5. Compensating for the impact by replacing, enhancing, or providing substitute resources or environments; and
6. Monitoring the impact and taking appropriate corrective measures;

–“Mudflow” means a debris flow containing an abundance of fine particles.

“Native vegetation” or “native plants” means a mix of plant species comprising herbs, grasses, grass-like plants, shrubs and trees indigenous to the Puget Sound region that reasonably could be expected to naturally occur on the site.

“Natural resource lands” means agricultural and mineral resource lands, which have long-term commercial significance.

“New construction” means structures for which the “start of construction” commenced on or after the following:

1. For the purposes of determining flood insurance rates, the effective date of an initial FIRM (i.e., August 19, 1987, or August 4, 1988, specifically for Panel 350 only), and includes any subsequent improvements to such structures.
2. For floodplain management purposes, the effective date of this floodplain management ordinance and includes any subsequent improvements to such structures.
3. For all other cases, the effective date of the applicable critical areas ordinance.

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

“Ordinance” means the ordinance, resolution, or other procedure used by the city to adopt regulatory requirements.

“Ordinary high water mark (OHWM)” means the mark on all lakes, streams and tidal waters that will be found by examining the beds and banks and ascertaining where the presence and action of waters are so common and usual, and so long continued in all ordinary years, as to mark upon the soil a character distinct from that of the abutting upland and vegetation, as that condition exists on the effective date of the ordinance codified in this title, or as it may naturally change thereafter. In any area where the ordinary high water mark cannot be found, the ordinary high water mark shall be the line of mean higher high tide in areas adjoining saltwater, and the line of mean high water in areas adjoining freshwater.

“Plat” means:

1. “Short subdivision” or “short plat” means the division or redivision of land into six or fewer lots, tracts, parcels, sites, or divisions for the purpose of sale, lease, or transfer of ownership.
2. “Subdivision” or “formal subdivision” means the division or redivision of land into seven or more lots, tracts, parcels, sites, or division for the purpose of sale, lease, or transfer of ownership. For floodplain management regulation purposes, this includes land over five acres in area situated within a flood hazard area.

“Ponds” means naturally occurring impoundments of open water less than 20 acres in size and larger than 2,500 square feet, which maintain standing water throughout the year. Also see “depressional pothole.”

“Professional engineer” means an engineer currently licensed and registered in the state of Washington.

“Reconstruction” means the rebuilding of an existing structure which has been partially or completely destroyed by any cause, such as but not limited to fire, wind, landslides, and water, without increasing the original floor area or square footage area.

“Recreational vehicle (RV)” means a vehicle built on a single chassis, 400 square feet or less when measured at the largest horizontal projection, designed to be self-propelled or permanently towable by a light duty truck, and designed primarily not for use as a permanent dwelling but as a temporary living quarters for recreational, camping, travel, or seasonal use.

“Regulated activities” means, but is not limited to, any of the following activities which are directly undertaken or originate in a regulated critical area or its buffer: building permit, commercial or residential; binding site plan; franchise right-of-way construction permit; site development permit; right-of-way permit; shoreline permits; short subdivision; use permits; subdivision; utility permits; or any subsequently adopted permit or required approval not expressly exempted by this title.

“Rehabilitation” means any improvements and repairs which are made to the interior and exterior of an existing structure, but which do not result in any increase in the floor area of the structure. This is also commonly referred to as a “remodel” of an existing structure.

“Restoration” means an action which returns habitat to a state in which its stability and functions approach its unaltered state as closely as possible. This may be accomplished through measures including, but not limited to, revegetation, removal of intrusive stream bank structures, and removal or treatment of toxic materials. Restoration does not imply a requirement for returning the critical area to aboriginal or pre-European settlement conditions.

“Revised Code of Washington (RCW)” means all laws of a general and permanent nature heretofore or hereafter enacted by the legislature, and assign permanent numbers as provided by law to all new titles, chapters, and sections thereof.

“Riparian” means the area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other. Riparian habitat begins at the ordinary high water mark and includes the entire extent of the floodplain and riparian areas of wetlands that are directly connected to the stream course.

“Seismic hazard areas” means areas subject to severe risk of damage as a result of earthquake-induced ground shaking, slope failure, settlement, or soil liquefaction.

“Sensitive areas” mean agricultural lands and mineral resource lands and all associated buffers.

“Shoreline” for this title means the line where a body of water and the shore meet or the strip of land along the shoreline. There are no waters within the city of Edgewood meeting the criteria of shorelines of statewide significance as defined by RCW 90.58.030.

“Single-family dwelling” means a detached building designed exclusively for occupancy by one family and containing one dwelling unit.

“Site” means a lot, parcel, tract, or combination of lots, parcels, or tracts on which a regulated activity is proposed.

“Slope” means an inclined earth surface, the inclination of which is expressed as the ratio of horizontal distance to vertical distance.

“Sludge” means a semisolid substance consisting of settled solids combined with varying amounts of water and dissolved materials generated from a wastewater treatment plant or system or other sources, including septage sludge, sewage sludge, and industrial sludge.

“Sludge land application site” means a site where stabilized sludge, septage, and other organic wastes are applied to the surface of the land in accordance with established agronomic rates for fertilization or soil conditioning.

“Slump” means the downward and outward movement of a mass of bedrock, colluvium, or other sediments along a distinct surface of failure.

“Small animal” means an animal with an average weight of less than 100 pounds.

“Special occupancy structures” means those structures that have the potential to provide capacity for large numbers of people or special groups of people or assemblies such as but not limited to schools, jails and detention facilities, and resident incapacitated patients.

“Species of local importance” means species that are of local concern due to their population status or their sensitivity to habitat manipulation.

“Soft armoring techniques” means the use of woody plants and limited structural-mechanical systems that are integrated in a structurally and environmentally sound manner to repair and protect slopes and shorelines against shallow mass wasting and surface erosion. Measures such as live stake, live fascine, brushlayer, live cribwall, vegetated geogrid, branchpacking, live slope grading, beach berms, or earthen berms are examples of soft armoring techniques. Soft armoring techniques may also be referred to as soil bioengineering methods.

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

“Stockpiling” means the placement of material with the intent to remove it later.

“Stream” means a feature where surface waters produce a defined channel or bed. A defined channel or bed is an area that demonstrates clear evidence of the passage of water and includes, but is not limited to, bedrock channels, gravel beds, sand and silt beds, and defined-channel swales. The channel or bed need not contain water year-round. This definition is not intended to include artificially created irrigation ditches, canals, storm or surface water devices, or other entirely artificial watercourses, unless they are used by salmonids or created for the purposes of stream mitigation.

“Structure” means a walled and roofed building, including a gas or liquid storage tank that is principally above ground.

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

“Substantial improvement” means any repair, reconstruction, addition, rehabilitation, or other improvement of a structure, whereby the cost for the work exceeds 50 percent of the market value of the existing 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:

1. Any project for improvement of a structure to correct existing violations of state or local health, sanitary, or safety code specifications which have been identified by the local code enforcement official and which are the minimum necessary to assure safe living conditions; or
2. Any alteration of a structure listed on the National Register of Historic Places or a State Inventory of Historic Places; provided, that the alteration will not preclude the structure’s continued designation as a “historic structure.”

Except for floodplain management regulation, the “cost” and “market value” may be determined using the current permit valuation. The building official shall determine the current permit valuation based on the cost per square foot values in effect at the time of permit application. Substantial improvement shall be accumulative from the effective date of the ordinance codified in this chapter.

“Talus” means a homogenous area of rock rubble ranging in average size 0.15 to 2.0 meters (0.5 to 6.5 feet), including riprap slides and mine tailings. Talus areas may be associated with cliffs.

“Toe of slope” means a distinct topographic break in slope at the lowermost limit of the landslide or erosion hazard area.

“TPCHD” means the Tacoma-Pierce County Health Department.

“Underground storage tank” means any one or a combination of tanks (including underground pipes connected thereto) which are used to contain or dispense an accumulation of hazardous substances or hazardous wastes, and the volume of which (including the volume of underground pipes connected thereto) is 10 percent or more beneath the surface of the ground.

“Urban governmental services” means those governmental services historically and typically delivered by cities, and includes storm and sanitary sewer systems, domestic water systems, street cleaning services, and other public utilities associated with urban areas and normally not associated with nonurban areas.

“Urban growth” means growth that makes intensive use of the land for the location of buildings, structures, and impermeable surfaces to such a degree as to be incompatible with the primary use of such land for the production of food, other agricultural products, or fiber, or the extraction of mineral resources. When allowed to spread over wide areas, urban growth typically requires urban governmental services. “Characterized by urban growth” refers to land having urban growth located on it or to land located in relationship to an area with urban growth on it as to be appropriate for urban growth.

“Utility line” means pipe, conduit, cable, or other similar facility by which services are conveyed to the public or individual recipients. Such services shall include, but are not limited to, water supply, electric power, gas, communications, and sanitary sewers.

“[Critical Areas](#) Variance” means a grant of relief from the requirements of this title [or](#) that permits construction in a manner that would otherwise be prohibited by this title, per EMC 14.10.085.

“View corridor” means an area, which affords views of lakes, mountains, or other scenic amenities normally enjoyed by residential property owners.

“Violation” means the failure of a structure or other development activity to be fully compliant with the provisions of this title. With regard to the floodplain management regulations, projects without the elevation certificate, other certifications, or other evidence of compliance required in Chapter 14.70 EMC are presumed to be in violation until such time as that documentation is provided. See Chapter 1.10 EMC for penalties.

“Volcanic hazard areas” means those areas subject to pyroclastic flows, lava flows, and inundation by debris flows, mudflows, or related flooding resulting from geologic or volcanic events on Mount Rainier.

“Washington Administrative Code (WAC)” means state of Washington Administrative Code.

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

“Wellhead protection area” means the area within the 10-year time-of-travel zone boundary of a group A public water system well, as delineated by the water system purveyor or its designee, pursuant to WAC 246-290-135.

“Wetland” means areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas. Wetlands do not include those artificial wetlands intentionally created from non-wetland sites, including, but not limited to, irrigation and drainage ditches, grass-lined swales, canals, detention facilities, wastewater treatment facilities, farm ponds, and landscape amenities, or those wetlands created after July 1, 1990, that were unintentionally created as a result of the construction of a road, street, or highway. Wetlands may include those artificial wetlands intentionally created from non-wetland areas created to mitigate conversion of wetlands.

“Wetland category” means the numeric designation (I through IV) assigned to a wetland to indicate the wetland’s overall function and value. Wetland categories rank the city’s wetlands from highest (Category I) to lowest (Category IV) using the current version of the Washington State Wetland Rating System for Western Washington (Hruby, 2014)

“Wetland ~~class~~ “class”” means the U.S. Fish and Wildlife Service wetland classification scheme that uses a hierarchy of systems, subsystems, classes, and subclasses to describe wetland habitat types (refer to USFWS, December 1979, Classification of Wetlands and Deepwater Habitats of the United States for a complete explanation of the wetland classification scheme). These include, for example: forested, scrub-shrub, emergent, and aquatic bed.

“Wetland mosaic” means a patchwork of wetlands that is considered one unit where each patch of wetland is less than one acre and the areas delineated as vegetated wetland are more than fifty percent of the total area of the wetlands and uplands together.

“Wetland specialist” means a wetland scientist with at least two years of full-time work experience as a wetlands professional, including delineating wetlands using the federal manual and supplements, preparing wetland reports, conducting function assessment, and development and implementing mitigation plans.

“Wildlife biologist” means a professional with a degree in wildlife, or certification by the Wildlife Society, or with five years’ professional experience as a wildlife biologist. (Ord. 17-492 § 2 (Exh. A); Ord. 16-461 § 2; Ord. 15-447 § 1 (Exh. A); Ord. 02-200 § 2).

Chapter 14.20

USE AND ACTIVITY REGULATIONS

Sections:

- 14.20.010 Permitted uses.
- 14.20.020 Regulated uses and activities.
- 14.20.030 Exemptions.
- 14.20.040 Nonconforming uses and structures.
- 14.20.050 Reasonable use exceptions.
- 14.20.060 Current use assessment program.

14.20.010 Permitted uses.

Uses permitted on properties designated as critical areas shall be the same as those permitted in the zone classification shown in the City's Official Zoning Map unless specifically prohibited by this title. (Ord. 02-200 § 2).

14.20.020 Regulated uses and activities.

A. Unless the requirements of this title are met, the department shall not grant any approval or permission to alter the condition of any land, water, or vegetation, or to construct or alter any structure or improvement regulated through the following: building permit, commercial or residential; binding site plan; franchise right-of-way construction permit; site development permit; right-of-way permit; short subdivision; large lots; use permits; subdivision; utility permits; [Critical Areas Permit](#); [Critical Areas Variance](#); or any subsequently adopted permit or required approval not expressly exempted by this chapter.

B. The following activities [shall comply with the requirements of this Title if such activities take place are regulated](#) within critical areas and/or their buffers, unless exempted by EMC 14.20.030:

1. Removing, excavating, disturbing, or dredging soil, sand, gravel, minerals, organic matter, or materials of any kind;
2. Dumping, discharging, or filling;
3. Draining, flooding, or disturbing the water level or water table. In addition, an activity which involves intentional draining, flooding, or disturbing the water level or water table in a wetland or stream in which the activity itself occurs outside the regulated area shall be considered a regulated activity;
4. Driving, piling or placing obstructions, including placement of utilities;
5. Constructing, reconstructing, installing, demolishing, or altering the size of any structure or infrastructure, including manufactured and/or mobile homes;
6. Altering the character of a regulated area by destroying or altering vegetation through clearing, harvesting, cutting, intentional burning, shading, or planting;
7. The division of land;
8. The creation of hard surfaces.

14.20.030 Exemptions.

A. Individuals, organizations or associated parties's shall avoid potential impacts to critical areas and their buffers to the greatest degree feasible. [For an activity to](#) be exempt from this title does not give permission to degrade a critical area or its buffer or ignore risk from natural hazards. Any incidental damage to, or alteration of, a critical area or its buffer that is not a necessary outcome of the exempted activity shall be restored, rehabilitated, or replaced at the responsible party's expense.

B. The following activities are exempt from the provisions of this title and shall not be required to obtain any permit and/or approval under this title:

1. Operation, maintenance, or repair of existing structures, infrastructure improvements, utilities, public or private roads, dikes, levees, or drainage systems, that do not require construction permits, if the activity does not further alter or increase the impact to, or encroach further within, the critical area or buffer and there is no increased risk to life or property as a result of the proposed operation, maintenance, or repair. Operation and maintenance includes vegetation management performed in accordance with best management practices that is part of ongoing maintenance of structures, infrastructure, or utilities, provided that such management actions are part of ongoing maintenance, do not expand further into the critical area or buffer, are not the result of an expansion of the structure or utility, and do not directly impact an endangered or threatened species.
2. Normal maintenance or repair of existing structures or developments, including damage by accident, fire, or elements. "Normal maintenance" includes those usual acts to prevent a decline, lapse, or cessation from a lawfully established condition. "Normal repair" means to restore a development to a state comparable to its original condition including, but not limited to, its size, shape, configuration, location, and external appearance, within a reasonable period after decay or partial destruction, except where repair causes substantial adverse effects to critical areas or their buffers. Replacement of a structure or development may be authorized as repair where such replacement is the common method of repair for the type of structure or development and the replacement structure or development is comparable to the original structure or development including, but not limited to, its size, shape, configuration, location, and external appearance and the replacement does not expand further into the critical area or buffer. Refer to EMC 14.20.040 (D) for requirements associated with repair of substantial damage of non-conforming structures.
3. Reconstruction, remodeling, or maintenance of existing single-family residential structures and accessory structures that are located outside a flood hazard area and active landslide hazard area; provided, that a one-time only expansion of the building footprint does not increase by more than 25 percent and that the new construction or related activity does not further intrude into the critical area or related buffer. The exemption shall not apply to reconstruction which is proposed as a result of structural damage associated with a critical area, such as slope failure in a landslide hazard area or flooding in a flood hazard area.
4. Reconstruction, remodeling, or maintenance of structures, other than single-family structures and accessory structures that are located outside a flood hazard area or active landslide hazard area; provided, that such reconstruction, remodeling, or maintenance does not increase the floor area nor extend beyond the existing ground coverage. The exemption shall not apply to reconstruction which is proposed as a result of site or structural damage associated with a critical area, such as slope failure in a landslide hazard area or flooding in a flood hazard area.
5. Site investigative work necessary for land use application submittals such as surveys, soil logs, percolation tests, and other related activities. Critical area impacts shall be minimized and disturbed areas shall be immediately restored.
6. Emergency actions necessary to prevent imminent threat or danger to public health or safety, or to public or private property, or serious environmental degradation.
 - a. The department shall review all proposed emergency actions to determine the existence of the emergency and reasonableness of the proposed actions taken; however, post-emergency actions, such as submittal of permits, completion of city review, modification or removal of the emergency repair work, or mitigation shall be required by the department.
 - b. Erosion protection measures shall only be allowed as an emergency action when the owner can demonstrate that there is an imminent threat to an existing residential, commercial, industrial, or agricultural structure. The owner shall retain either city staff or an engineering geologist to conduct a site investigation and provide adequate documentation that the situation is actually an emergency. An emergency action is not warranted when the structure is located outside the active landslide area.

c. After the emergency, the person or agency undertaking the action shall fully fund and conduct necessary restoration and/or mitigation for any impacts to the critical area and buffers resulting from the emergency action in accordance with an approved critical area report and mitigation plan. The person or agency undertaking the action shall apply for review, and the alteration, critical area report, and mitigation shall be reviewed by the department in accordance with the review procedures contained herein. Restoration and/or mitigation activities must be initiated within 90 days of the date of the emergency activity, and completed within one (1) year.

7. Installation, construction, replacement, repair, operation or alteration of natural gas, cable and telecommunication facilities, electric facilities and lines, water, sewer or storm lines, pipes, mains, equipment or appurtenances in publicly owned right-of-way (which may be within or adjacent to a critical area or its buffer), subject to full department review and approval of the department utility installation, including any mitigation and restoration requirements established by the department.

8. Removal by hand of manmade litter and control of noxious weeds that are included on the state noxious weed list (Chapter 16-750 WAC) or invasive plant species as identified by the city. Control may be conducted by clipping, pulling, or digging, or by an alternative non-mechanical method upon approval of a plan by the department.

9. Activities undertaken to comply with a United States Environmental Protection Agency superfund order, or a Washington Department of Ecology order, pursuant to the Model Toxics Control Act, including the following activities:

- a. Remediation or removal of hazardous or toxic substances;
- b. Source control; and
- c. Natural resource damage restoration.

10. Activities within a portion of a wetland buffer or fish and wildlife habitat conservation area buffer located landward of an existing, substantially developed area, such as a paved area, dike, levee, or permanent structure which eliminates or greatly reduces the impact of the proposed activities on the wetland or fish and wildlife habitat conservation area. The department shall review the proposal to determine the likelihood of associated impacts.

11. Passive recreation such as hunting, hiking, fishing, and wildlife viewing that does not involve the construction of trails.

12. Enhancement actions that do not involve clearing, grading, or construction activities (e.g., revegetation with native plants and installation of nest boxes). Enhancement activity proposals shall be reviewed by the department.

13. Forest practices conducted in accordance with the requirements of the Forest Practice Act (Chapter 76.09 RCW) and its rules, with the exception of the conversion of forest land to a use other than commercial forestry (Class IV conversions).

14. Existing and ongoing agricultural activities, provided that they implement applicable Best Management Practices (BMPs) contained in the latest editions of the USDA Natural Resources Conservation Service Field Official Technical Guide; or develop a farm conservation plan in coordinate with the local conservation district. BMPs and/or farm plans should address potential impacts to critical areas from livestock, nutrient and farm chemicals, soil erosion and sediment control and agricultural drainage infrastructure. BMPs and/or farm plans should ensure that ongoing agricultural activities minimize their effects on water quality, riparian ecology, salmonid populations, and wildlife habitat.

(Ord. 02-200 § 2).

Commented [AN36]: No, approval of the utility installation.

14.20.040 Nonconforming uses and structures.

An established use or existing structure located in a wetland, fish and wildlife habitat conservation area, landslide or erosion hazard area, flood hazard area, and their associated buffers that was lawfully permitted prior to the effective date of this title, but which is not currently in compliance with this title, may continue subject to the following:

A. Nonconforming Use Expansion. Nonconforming uses shall not be expanded or changed in any way that increases the nonconformity without a permit issued pursuant to the provisions of this title.

B. Nonconforming Structure Expansion. Existing structures shall not be expanded or altered in any manner that will increase the nonconformity without a permit issued pursuant to the provisions of this title, except as provided in EMC 14.20.030(B).

C. Discontinued Uses. Activities or uses which are discontinued for twelve (12) consecutive months shall be allowed to resume only if they are in compliance with this title.

D. Substantial Damage. Nonconforming structures, except for structures located in a flood hazard area or active landslide hazard area which are damaged or destroyed by fire, explosion, flood, or other casualty, may be restored or replaced if reconstruction is commenced within one year of such damage and is substantially completed within eighteen (18) months of the date such damage occurred. The reconstruction or restoration shall not serve to expand, enlarge, or increase the nonconformity except as allowed through the provisions in EMC 14.20.030(B). Structures in a floodway or active landslide hazard area may be allowed to be restored only up to the limits of substantial improvement, as set forth in each chapter. (Ord. 02-200 § 2).

14.20.050 Reasonable use exceptions.

A. General Requirements.

1. If, after a property owner makes application for a variance, and the variance is denied, the property owner may apply for a reasonable use exception. A reasonable use exception may be requested when it is alleged that the application of this title would deny all reasonable use of a site. Approval of a reasonable use exception allows development which is consistent with the general purposes of this title and the public interest. Nothing in this title is intended to preclude all reasonable use of property.

2. The provisions outlined in this section shall only be used when application of this title would deny all reasonable use of a site.

3. Applications for a reasonable use shall automatically constitute an application for a variance to reduce front, side, or rear yard setback requirements. The decision maker shall examine the feasibility of reducing setbacks as a method of locating a structure outside a critical area or its associated buffer prior to granting a reasonable use exception for allowing construction to occur within a critical area or its associated buffer. Reductions in setback requirements shall be given preference over granting of a reasonable use exception.

5. The proposed impact to the critical area shall be the minimum necessary to allow for reasonable use of the property.

6. Mitigation may be required to assure that the proposal will result in no net loss of critical area functions and values, consistent with the best available science.

7. The creation of new lots within critical areas and their associated buffers is prohibited.

8. The proposal must comply with all provisions in Chapter 14.70 EMC, Flood Hazard Areas, and Chapter 14.80 EMC, Landslide Hazard Areas.

B. Application Requirements. A complete application for a reasonable use exception shall include the following information:

1. A description of the areas of the site that contains a critical area, buffers, or within setbacks required under this title;

2. A description of the amount of the site that is within setbacks required by other standards of the zoning code;
3. A description of the proposed development, including a site plan;
4. An analysis of the impact that the amount of development described in subsection (B)(3) of this section would have on the critical area(s);
5. An analysis of whether any other reasonable use with less impact on the critical area(s) and associated buffer(s) is possible;
6. A design of the proposal so that the amount of development proposed as reasonable use will have the least impact practicable on the critical area(s);
7. An analysis of the modifications needed to the standards of this title to accommodate the proposed development;
8. A description of any modifications needed to the required front, side, and rear setbacks; building height; and buffer widths to provide for a reasonable use while providing greater protection to the critical area(s);
9. Such other information as the department determines is reasonably necessary to evaluate the issue of reasonable use as it relates to the proposed development, such as but not limited to a wetland analysis report, mitigation plan, habitat evaluation study, and/or a buffer enhancement plan.

C. Review. A reasonable use exception is a Type III permit and shall be processed according to the procedures in chapter 18.40.100 — EMC.

1. Public Hearing Required. The department shall set a date for a public hearing after all requests for additional information or plan correction, as set forth in EMC 18.40.150, have been satisfied. The public hearing shall follow the procedures set forth in EMC 18.40.190, Notice of public hearing.
2. Decision Criteria. ~~The decisionmaker~~The decisionmaker may approve a reasonable use exception if ~~the decisionmaker~~the decisionmaker determines that the applicant has ~~demonstrated~~demonstrated that all of the following criteria are met:
 - a. The proposed development is located on an existing lot of record that was created prior to the effective date of the ordinance codified in this title and there is no other reasonable use or feasible alternative to the proposed development with less impact on the critical area(s) and/or associated buffers including phasing or project implementation, change in timing of activities, buffer averaging or reduction, setback variance, relocation of driveway, or placement of structure; and
 - b. The development cannot be located outside the critical area and/or its associated buffer due to topographic constraints of the parcel or size and/or location of the parcel in relation to the limits of the critical area and/or its associated buffer and a building setback variance or road variance has been reviewed, analyzed, and rejected as a feasible alternative; and
 - c. The proposed development does not pose a threat to the public health, safety, or welfare on or off the site, nor shall it damage nearby public or private property; and
 - d. Any alteration of the critical area(s) shall be the minimum necessary to allow for reasonable use of the property; and
 - e. The inability of the applicant to derive reasonable use of the property is not the result of actions by the applicant in subdividing the property or adjusting a boundary line thereby creating the undevelopable condition after February 1, 1992; and
 - f. The proposal mitigates the impacts on the critical area(s) to ensure no net loss of critical area functions, while still allowing reasonable use of the site; and

g. The proposed activities will not jeopardize the continued existence of species listed by the state or federal government as endangered, threatened, sensitive, or documented priority species or priority habitats; and.

h. The proposed activities will not cause significant degradation of groundwater or surface water quality.

3. Decisionmaker's Authority. The decisionmaker has the authority to approve an application for a reasonable use exception, approve with additional requirements above those specified in this title, require modification of the proposal to comply with specified requirements or local conditions, or deny the application if it fails to comply with the requirements of this section.

4. Required Written Findings and Determinations. A reasonable use exception may be approved by the decisionmaker only if all of the findings are made in writing regarding the proposal and are supported by the record, as outlined in the decision criteria identified within EMC 14.20.050 (C)(2).

14.20.060 Current use assessment program.

A. An owner of agricultural land, timberland, or open space desiring current use classification under Chapter 84.34 RCW may file for such current use classification with the Pierce County assessor-treasurer's office.

B. The department shall notify the assessor-treasurer's office when restrictions on development occur on a particular site.

C. The assessor-treasurer's office shall consider the critical areas and buffering requirements of this title in determining the fair market value of land. Any owner of an undeveloped buffer which has been placed in a separate tract or tracts, protective easement, public or private land trust dedication, or other similarly preserved area shall have that portion of land assessed consistent with those restrictions. (Ord. 02-200 § 2).

Chapter 14.30

WETLANDS

Sections:

- 14.30.010 Purpose.
- 14.30.020 Wetland identification, delineation, and rating.
- 14.30.025 Buffer standards—Wetlands
- 14.30.030 Wetland review procedures.
- 14.30.040 Allowed activities.
- 14.30.060 Mitigation requirements.
- 14.30.070 Appendices.

14.30.010 Purpose.

The purpose of this chapter is to avoid or, in appropriate circumstances, to minimize, rectify, reduce, or compensate for impacts arising from land development and other activities affecting wetlands, and to maintain and enhance the biological and physical functions and values of wetlands with respect to water quality maintenance, stormwater and floodwater storage and conveyance, fish and wildlife habitat, primary productivity, recreation, education, and historic and cultural preservation. When wetland impacts occur, mitigation will be required to achieve no net loss of wetlands in terms of acreage, function, and value. (Ord. 02-200 § 2).

14.30.020 Wetland identification, delineation, and rating.

A. Designation. All areas within the city meeting the meeting the definition of “wetland” in Chapter 14.15 EMC are hereby designated critical areas.

B. Identification and Delineation. Wetlands shall be identified and delineated by a qualified wetland scientist in accordance with the approved federal wetland delineation manual and applicable regional supplements. Wetland delineations are valid for 5 years, after which date the City shall require verification that the wetland boundaries and prior conditions have not changed.

Formatted: Highlight

C. Mapping. The approximate location and extent of wetlands are shown on maps maintained by the city. These maps are useful as a guide for project applicants and/or property owners but do not provide a conclusive or definitive indication of wetland presence or extent. Other wetlands may exist that do not appear on the maps, and some wetlands that appear on the maps may not meet all of the wetland designation criteria. The city shall update the maps periodically as new wetland areas are identified and as new wetland information becomes available

D. Wetland Categories. Wetlands shall be categorized by a qualified wetland scientist in accordance with the current version of the Washington State Wetland Rating System for Western Washington (Hruby, 2014) and the appropriate rating forms approved by the Washington State Department of Ecology. The wetland shall also be classified according to the U.S. Fish and Wildlife Service “Classification of Wetlands and Deep Water Habitats in the U.S”.

14.30.025 Buffer standards – Wetlands.

A. Determining buffer widths. Buffer widths shall be measured horizontally from the perpendicular line established at the wetland edge as shown in Table 14.20.050(1).

Table 14.30.025(1)
Buffer Standards - Wetlands

Wetland Category	Buffer Width (Wetlands scores 3-4 habitat points)	Buffer Width (Wetland scores 5 habitat points)	Buffer Width (Wetland scores 6- 7 habitat points)	Buffer Width (Wetland scores 8- 9 habitat points)
Category I: Based on total score	75 ft.	105 ft.	165 ft.	225 ft.
Category I: Bogs and Wetlands of High Conservation Value	190 ft.	190 ft.	190 ft.	225 ft.
Category I: Forested	75 ft.	105 ft.	165 ft.	225 ft.
Category II (all)	75 ft.	105 ft.	165 ft.	225 ft.
Category III (all)	60 ft.	105 ft.	165 ft.	225 ft.
Category IV (all)	40 ft.	40 ft.	40 ft.	40 ft.

B. Required Measures to Minimize Impacts to Wetlands. Measures to minimize the impacts of the land use adjacent to wetlands shall be applied, as shown in Table 14.20.050(2).

Table 14.30.025(2)
Wetland Impact Minimization Measures

Disturbance	Required Measures to Minimize Impacts
Lights	• Direct lights away from wetland
Noise	• Locate activity that generates noise away from wetland • For activities that generate relatively continuous, potentially disruptive noise, such as certain heavy industry or mining, establish an additional 10-foot heavily vegetated buffer strip immediately adjacent to the outer wetland buffer
Toxic runoff	• Route all new, untreated runoff away from wetland while ensuring wetland is not dewatered • Establish covenants limiting use of pesticides within 150 feet of wetlands • Apply integrated pest management
Stormwater runoff	• Retrofit stormwater detention and treatment for roads and existing adjacent development • Prevent channelized flow from lawns that directly enters the buffer • Use Low Impact Development techniques
Change in water regime	• Infiltrate or treat, detain, and disperse into buffer new runoff from impervious surfaces and new lawns
Pets and human disturbance	• Use privacy fencing OR plant dense vegetation to delineate buffer edge and to discourage disturbance using vegetation appropriate for the ecoregion

	Place wetland and its buffer in a separate tract or protect with a conservation easement
Dust	Use best management practices to control dust

C. Modification of Buffer Widths. The standard buffer widths of subsection (A) of this section may be modified by averaging, reducing, or increasing.

1. Buffer Averaging. Buffer width averaging may be allowed only where the applicant demonstrates all of the following:

- a. Buffer encroachment is unavoidable.
- b. The wetland contains variations in sensitivity due to existing physical characteristics.
- c. Width averaging will provide equal or greater protection of current wetland functions and values.
- f. The total buffer area after averaging is no less than the buffer area prior to averaging.
- g. The minimum width of the buffer at any given point shall be at least seventy-five percent (75%) of the standard width, or twenty-five (25) feet, whichever is greater.
- h. The averaging is accomplished within the project boundaries.

2. Buffer Width Reductions. Buffer width reduction up to a maximum of twenty-five (25) percent may be allowed when the applicant demonstrates the following circumstances:

- a. Buffer encroachment is unavoidable.
- b. All exposed areas are stabilized with native vegetation, as appropriate.
- c. The project includes a buffer enhancement plan as part of the mitigation required by EMC 14.30.060. The buffer enhancement plan shall use plant species which are native, noninvasive to the project area.
- d. Buffer reduction with enhancement will provide equal or greater protection of current wetland functions and values.
- e. Buffer reductions may not be used in combination with buffer averaging.

3. Buffer Increases. The department may require increased buffer width(s) when any of the following are identified:

- a. A larger buffer is necessary to maintain viable populations of existing species;
- b. The wetland is used by, or associated with, species listed by the federal government or the state as endangered, threatened, sensitive, or as documented priority species or habitats, or essential or outstanding potential sites such as heron rookeries or raptor nesting areas;
- c. The adjacent land is susceptible to severe erosion and erosion control measures will not effectively prevent adverse wetland impacts;
- d. The adjacent land has minimal vegetative cover, or slopes greater than 20 percent. (Ord. 02-200 § 2).

14.30.030 Wetland review procedures.

A. Wetland Report Requirements. When the department's maps, sources, or field investigations indicate that the proposed project area is located within 300 feet of a known or suspected wetland, an applicant shall submit a wetland critical areas report prepared by a qualified wetland scientist. The requirement to provide a wetland critical areas report may be waived if the department determines that there are no potential direct and/or indirect impacts on wetlands or their buffers that would result from the proposed development. Wetland critical areas reports shall comply with the requirements established in EMC 14.30.070, Appendix A.

B. Single-Family Dwelling Wetland Review. Construction of a single-family dwelling and regulated activities accessory to a single-family dwelling (such as driveways, gardens, fences, walls, lawns, and on-site septic systems) may utilize an alternative wetland review procedure, subject to the following:

1. Prior to issuance of a building permit, site development permit, or on-site sewage system permit, the applicant shall submit a single-family wetland certification form completed by a wetland specialist that certifies either:
 - a. No regulated wetlands are present within 300 feet of the project area; or
 - b. Wetlands are present within 300 feet of the project area, but the buffer does not extend onto the project site.
2. The single-family certification form may be used only to authorize single-family dwellings and accessory structures. It may not be used for new agricultural activities, expansion of existing agricultural activities, forest practices activities, commercial projects, land divisions, and buffer width modifications.

C. Time Limitation. Wetland delineations and reports that have been accepted by the city shall be valid for a period of five (5) years, unless the department determines that new information warrants revision of the delineation or report.

14.30.040 Allowed activities.

A. The following wetlands are exempt from the requirement to avoid impacts in EMC 14.10.080(B) and may be altered if the impacts are fully mitigated based on the remaining mitigation sequencing actions in EMC 14.10.080(B). In order to verify the following conditions, a wetland critical areas report meeting the requirements of EMC 14.30.070, Appendix A must be submitted.

1. All isolated Category IV wetlands less than 4,000 square feet that:
 - a. Are not associated with riparian areas or their buffers;
 - b. Are not part of a wetland mosaic;
 - c. Are not associated with shorelines of the state or their associated buffers;
 - d. Do not score 5 or more points for habitat functions based on current version of the Washington State Wetland Rating System for Western Washington (Ecology, 2014).
 - e. Do not contain a Priority Habitat or a Priority Area for a Priority Species identified by the Washington Department of Fish and Wildlife, federally listed species or their critical habitat, or habitats or species of local importance as identified in EMC 14.40.030(A).
2. Wetlands less than 1,000 square feet that meet the criteria specified in subsection (A)(1) of this section.
3. Utility projects within wetland buffers which have minor or short-duration impacts, as determined by the department in accordance with the criteria below, and which do not significantly impact the function or values of wetlands; provided, that such projects are constructed with best management practices and additional restoration measures are provided. Minor activities shall not result in the

transport of sediment or increased stormwater. Such allowed minor utility projects shall meet the following criteria:

- a. There is no practical alternative to the proposed activity with less impact on wetlands;
- b. The activity involves the placement of a utility pole, street signs, anchor, or vault or other small component of a utility facility; and
- c. The activity involves disturbance of an area less than 75 square feet.

B. The activities listed below are allowed in wetlands and their buffers, and do not require submission of a critical area report, except where such activities would result in a loss of the functions and values of a wetland or wetland buffer. These activities include:

1. Activities in wetlands in areas managed according to a special area management plan or other plan adopted by the department and specifically designed to protect wetland resources.
2. Trimming of vegetation for purposes of providing view corridors will be allowed; provided, that trimming shall be limited to view corridors of a maximum 20-foot width and that benefit to fish and wildlife habitat are not reduced. Trimming shall be limited to hand pruning of branches and vegetation. Trimming shall not include felling, topping, or removal of trees. (Ord. 02-200 § 2).
3. Drilling for utilities/utility corridors under a wetland, with entrance/exit portal located completely outside of the wetland buffer, provided that the drilling does not interrupt the ground water connection to the wetland or percolation of surface water down through the soil column. Specified studies by a hydrologist are necessary to determine whether the ground water connection to the wetland or percolation of surface water down through the soil column will be disturbed.

14.30.060 Mitigation requirements.

A. Mitigation. Compensatory mitigation is required for all unavoidable alterations to wetlands or their buffers, except for buffer averaging when done in accordance with EMC 14.30.025(C)(1). Compensatory mitigation actions shall replace functions affected by the alteration and shall provide equal or greater functions compared to the impacted wetland. All projects must first demonstrate compliance with EMC 14.10.080(B) (Mitigation Sequencing) prior to development of compensatory mitigation plans.

B. Preference of Mitigation Actions. Compensatory wetland mitigation shall occur in the following order of preference:

1. Restoration: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural or historic functions to a former or degraded wetland. For the purpose of tracking net gains in wetland acres, restoration is divided into:
 - a. Re-establishment: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural or historic functions to a former wetland. Re-establishment results in a gain in wetland acres (and functions). Activities could include removing fill material, plugging ditches, or breaking drain tiles.
 - b. Rehabilitation: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of repairing natural or historic functions of a degraded wetland. Rehabilitation results in a gain in wetland function but does not result in a gain in wetland acres. Activities could involve breaching a dike to reconnect wetlands to a floodplain or return tidal influence to a wetland
2. Creation: The manipulation of the physical, chemical, or biological characteristics of a site to develop a wetland on an upland or deepwater site where a wetland did not previously exist. Creation results in a gain in wetland acres. Activities typically involve excavation of upland soils to elevations that will produce a wetland hydroperiod, create hydric soils, and support the growth of hydrophytic plant species.
3. Enhancement: The manipulation of the physical, chemical, or biological characteristics of a wetland site to heighten, intensify, or improve specific function(s) or to change the growth stage or composition of the

vegetation present. Enhancement is undertaken for specified purposes such as water quality improvement, flood water retention, or wildlife habitat. Enhancement results in a change in some wetland functions and can lead to a decline in other wetland functions, but does not result in a gain in wetland acres. Activities typically consist of planting vegetation, controlling non-native or invasive species, modifying site elevations or the proportion of open water to influence hydroperiods, or some combination of these activities

C. Approaches to Compensatory Mitigation. Mitigation for alterations to wetland and their buffers shall rely on the approaches listed below.

1. Wetland Mitigation Banks. Credits from a certified wetland mitigation bank may be used to compensate for impacts within the service area specified in the mitigation bank instrument. Use of credits from a wetland mitigation bank certified under Chapter 173-700 WAC is allowed if:
 - a. The department determines that it would provide appropriate compensation for the proposed impacts; and
 - b. The impact site is located in the service area of the bank.
 - c. The proposed use of credits is consistent with the terms and conditions of the certified bank instrument.
 - d. Replacement ratios for projects using bank credits is consistent with replacement ratios specified in the certified mitigation bank instrument.
2. In-Lieu Fee Mitigation. Credits from an approved in-lieu-fee program may be used when all the following apply:
 - a. The approval authority determines that it would provide environmentally appropriate compensation for the proposed impacts.
 - b. The proposed use of credits is consistent with the terms and conditions of the approved in-lieu-fee program instrument.
 - c. Project using in-lieu-fee credits shall have debits associated with the proposed impacts calculated by the applicant's qualified wetland scientist using the credit assessment method specified in the approved instrument for the in-lieu-fee program.
 - d. The impacts are located within the service area specified in the approved in-lieu-fee instrument.
3. Permittee-responsible mitigation. In this situation, the permittee performs the mitigation after the permit is issued and is ultimately responsible for implementation and success of the mitigation. Permittee-responsible mitigation may occur at the site of the permitted impacts or at an off-site location within the same watershed. If available, the use of wetland mitigation banks and in-lieu-fee programs are preferable to permittee-responsible mitigation.

D. Wetland mitigation ratios. The ratios listed in Table 14.30.060 apply to permittee-responsible mitigation. The first number specifies the acreage of replacement wetlands required, and the second number specifies the acreage of wetlands altered or relocated.

Table 14.30.060
Wetland Mitigation Ratios

Category and Type of Wetland	Creation or Re-establishment	Rehabilitation	Enhancement
Category I: High conservation value/bog	Not considered possible	Not considered possible	Not considered possible
Category I: Mature and old growth forest	6:1	12:1	24:1
Category I: Based on functions	4:1	8:1	16:1
Category II	3:1	6:1	12:1
Category III	2:1	4:1	8:1
Category IV	1.5:1	3:1	6:1

The director may increase the ratios under the following circumstances:

1. Uncertainty as to the probable success of the proposed restoration or creation;
2. Significant period of time between destruction and replication of wetland values;
3. Projected losses in functional value;
4. The compensatory mitigation is off site.

E. Wetland buffer mitigation. To mitigate unavoidable impacts to functions and values of wetland buffers, a minimum buffer ratio of 1:1 (alteration area: mitigation area) is required. This ratio assumes that creation/restoration of a wetland buffer with appropriate native vegetation is sufficient to compensate for the wetland buffer functions and values affected by alteration of an existing wetland buffer. If enhancement of an existing wetland buffer is proposed as mitigation, a higher mitigation ratio may be required. For any proposed wetland buffer activities, the applicant must demonstrate that the functions and values of the altered wetland buffer will be fully replaced by the proposed mitigation. The department may increase the buffer mitigation ratios under the following circumstances:

1. The replacement ratio needed to recover the lost functions and values of buffer area is greater than 1:1 based upon the existing type of vegetative cover of either the impact site or the proposed mitigation site.
2. Uncertainty exists as to the probable success of the proposed restoration or creation;
3. A significant period of time will elapse between impact and replication of wetland functions;
4. The impact was an unauthorized impact.

F. Wetland and buffer mitigation plans. Compensatory wetland mitigation plans shall be consistent with Wetland Mitigation in Washington State – Part 2: Developing Mitigation Plans (Ecology, 2006); and Selecting Wetland Mitigation Sites Using a Watershed Approach (Ecology, 2009), or as revised. Mitigation plans shall comply with the requirements established in EMC 14.30.070, Appendix B.

14.30.070 Appendices.

A. Wetland Report.

B. Wetland Mitigation Plan

APPENDIX A

Formatted: Centered

WETLAND REPORT

A. A wetland critical areas report shall, at a minimum, include the following:

1. The general critical areas report requirements in EMC 14.10.082;
2. Map showing the location of all wetlands and required buffers within three hundred (300) feet of the proposed development;
3. An analysis of the onsite wetland(s) include the following site- and proposal-related information:
 - a. Documentation of any fieldwork performed on the site, including, but not limited to, field delineation data sheets for delineations and wetland rating forms;
 - b. Wetland acreage;
 - c. Wetland category;
 - d. A discussion of the water sources supplying the wetland and documentation of hydrologic regime (locations of inlet and outlet features, water depths throughout the wetland, evidence of recharge or discharge);
 - e. A discussion of the functions of existing wetlands, including vegetative, faunal, and hydrologic conditions; and
 - f. A description of the methodologies used to conduct the wetland delineations;
4. A discussion of measures, including avoidance, minimization, and mitigation, proposed to preserve existing wetlands;
5. A detailed discussion of the direct and/or indirect potential impacts on the wetland by the project; and
6. The wetland mitigation plan requirements of EMC 14.30.070, Appendix B, if the activity will result in unavoidable impacts to wetlands or their buffers.

APPENDIX B

Formatted: Centered

WETLAND MITIGATION PLAN

A. A wetland mitigation plan shall, at a minimum, include the following:

1. The general mitigation plan requirements in EMC 14.10.083 and the following information:
2. Existing and proposed wetland acreage;
3. Vegetative and faunal conditions;
4. Surface and subsurface hydrologic conditions including an analysis of existing and future hydrologic regime and proposed hydrologic regime for enhanced, created, or restored mitigation areas;
5. Relationship within watershed and to existing waterbodies;
6. Soils and substrate conditions, topographic elevations;

|

7. Existing and proposed adjacent site conditions;

8. Required wetland buffers (including any buffer reduction or averaging and mitigation proposed to enhance buffers);

9. Property ownership;

10. A discussion of ongoing management practices that will protect wetlands after the project site has been developed, including proposed monitoring and maintenance programs;

10. A bond estimate for the installation (including site preparation, plant materials and installation, fertilizers, mulch) and the proposed monitoring and maintenance work for the required number of years, pursuant to EMC 14.10.080(E).

Chapter 14.40

FISH AND WILDLIFE HABITAT CONSERVATION AREAS

Sections:

- 14.40.010 Purpose.
- 14.40.020 Fish and wildlife habitat conservation area identification and classification.
- 14.40.025 Buffer standards—Fish and wildlife habitat conservation areas.
- 14.40.030 Fish and wildlife habitat conservation area review procedures.
- 14.40.040 Allowed activities.
- 14.40.050 Alteration of Watercourses
- 14.40.060 Mitigation requirements.
- 14.40.070 Appendix

14.40.010 Purpose.

Many land use activities can impact the habitats of fish and wildlife. Special care must be taken in the management of lands that support fish and wildlife species to ensure that development occurs in a manner that is sensitive to their habitat needs. The purpose of this chapter is to identify fish and wildlife habitat conservation areas and establish habitat protection procedures and mitigation measures that are designed to result in no net loss of habitat functions and values. (Ord. 02-200 § 2).

14.40.020 Fish and wildlife habitat conservation area identification and classification.

A. Designation. Fish and wildlife habitat conservation areas include:

1. Waters of the state. Waters of the state include lakes, rivers, ponds, streams, and all other surface waters and watercourses within jurisdiction of the state of Washington, as classified in WAC 222-16-030.
2. Areas with which federally designated endangered, threatened, and sensitive species have a primary association. The U.S. Fish and Wildlife Service and the National Marine Fisheries Service should be consulted for current federal listing status.
3. Areas with which state designated endangered, threatened, and sensitive species have a primary association. The Washington State Department of Fish and Wildlife should be consulted for current state listing status.
4. State priority habitats and areas associated with state priority species. The state Department of Fish and Wildlife should be consulted for current listing of priority habitats and species.
5. Habitats and species of local importance. The following fish and wildlife species and their associated habitat areas shall be regulated under this chapter:
 - a. Fish. Coho salmon (*Oncorhynchus kisutch*), pink salmon (*Oncorhynchus gorbuscha*), chum salmon (*Oncorhynchus keta*), cutthroat trout (*Oncorhynchus clarkia*), and steelhead (*Oncorhynchus mykiss*).
 - b. Birds. Great blue heron (*Ardea herodias*) and green heron (*Butorides virescens*).
 - c. Areas with which state-listed monitor or candidate fish or wildlife species or federally listed candidate fish or wildlife species have a primary association, and which if altered may reduce the likelihood that the species will survive and reproduce over the long term.
 - d. Heron rookeries.

B. Habitat boundary survey. If the department determines that a regulated habitat conservation area may be present within the project vicinity, the department may require the habitat area to be delineated and/or mapped by a qualified

fisheries biologist or wildlife biologist who is knowledgeable of fish and wildlife habitat within western Washington, or by the Washington Department of Fish and Wildlife. The boundary of aquatic habitats shall be the ordinary high water mark of the waterbody. The management recommendations for Washington's priority habitats and species or federal equivalent should be used as a tool for identifying and delineating wildlife habitat boundaries. The city may waive this requirement if there is adequate information available on the area proposed for development to determine the impacts of the proposed development and appropriate mitigating measures.

C. Mapping. The approximate location and extent of waters of the state and fish presence within the city are shown on maps maintained by the city. The city shall update the maps periodically as new information becomes available. The approximate location and extent of other fish and wildlife habitat conservation areas are shown on maps maintained by the Washington State Department of Fish and Wildlife and other state and federal agencies. These maps are to be used as a guide and do not provide definitive information about fish and wildlife habitat conservation area size or presence. Fish and wildlife habitat conservation areas may exist that do not appear on the maps.

D. Waters of the state classification. The city hereby adopts the water typing system specified in WAC 222-16-030, as described below:

1. Type S. All waters, within their ordinary high water mark, meeting the criteria as "shorelines of the state" and "shorelines of statewide significance" under RCW Chapter 90.58. As of the effective date of this title, there are no Type S streams within city jurisdiction.
2. Type F: segments of natural waters other than Type S Waters, which are within the bankfull widths of defined channels and periodically inundated area of their associated wetlands, or within lakes, ponds, or impoundments having a surface area of 0.5 acre or greater at seasonal low water and which in any case contain fish habitat.
3. Type Np: all segments of natural waters within the bankfull width of defined channels that are perennial non-fish habitat stream. Perennial stream waters do not go dry any time of a year of normal rainfall. However, for the purpose of water typing, Type Np Waters include the intermittent dry portions of the perennial channel below the uppermost point of perennial flow.
4. Type Ns: All segments of natural waters within the bankfull width of the defined channels that are not Type S, F, or Np waters. These are seasonal, non-fish habitat streams in which surface flow is not present for at least some portion of a year of normal rainfall and are not located downstream from any stream reach that is a Type Np Water. Ns Waters must be physically connected by an above-ground channel system to Type S, F, or Np Waters.

14.40.025 Buffer standards—Fish and wildlife habitat conservation areas.

A. Determining buffer widths. Buffers shall be required as set forth for each habitat type. The required buffers shall be delineated, both on a site plan or plat, and on the property prior to approval of any regulated activity.

1. Aquatic habitat conservation areas.

- a. Buffers for aquatic habitat conservation areas shall be based upon the water type classification of the water body as specified in WAC 22-16-030. Refer to Table 14.40.025 for the water types and the associated buffer requirements.
- b. The required buffer width shall be measured in all directions from the ordinary high water mark.
- c. The required buffer shall be extended to include any adjacent regulated wetland(s), landslide hazard areas, and/or erosion hazard areas and required buffers.

2. Non-aquatic habitat conservation areas. Appropriate buffers for critical habitat areas and species not listed in Table 14.40.025 shall be determined by the Washington Department of Fish and Wildlife or by a qualified wildlife biologist and documented in an approved habitat management plan.

**Table 14.40.025
Buffer Standards**

Water Type	Buffer Width ¹
Type S	150 ft. ²
Type F	100 ft.
Type Np	60 ft.
Type Ns	35 ft.

¹ In the event that buffers for any habitat conservation area or other critical area are contiguous or overlapping, the landward-most edge of all such buffers shall apply.

² As of the effective date of this title, there are no Type S streams within city jurisdiction.

BC. Modification to Buffer Width Requirements. The standard buffer widths of subsection (A) of this section may be modified as follows:

1. Buffer Width Reductions. A buffer width reduction may be proposed through submittal of a habitat management plan. Buffer reductions of up to a maximum of 25 percent may be allowed when the applicant demonstrates the following circumstances:

- a. Buffer encroachment is unavoidable.
- b. The existing buffer is predominately un-vegetated, composed of nuisance species, or is in an otherwise highly disturbed condition.
- c. Buffer reduction with enhancement will provide equal or greater protection of current habitat functions and values, and will not adversely affect salmon habitat.
- d. The buffer reduction will not increase the risk of slope failure or downslope stormwater drainage impacts.
- e. The minimum width of the buffer at any given point shall be at least seventy-five (75) percent of the standard width, or twenty-five (25) feet, whichever is greater.
- f. The project includes a buffer enhancement plan as part of the mitigation required by EMC 14.40.060. The buffer enhancement plan shall use native plant species.

2. Buffer Width Increases. The department may require increased buffer width(s) when any of the following are identified:

- a. A larger buffer is necessary to maintain viable populations of existing species or protect the existing functions of the habitat area;
- b. The adjacent land is susceptible to severe erosion and erosion control measures will not effectively prevent adverse habitat impacts;
- c. The adjacent land has minimal vegetative cover or slopes greater than 20 percent; or
- d. The habitat area is in an area of high tree blow down potential. In these cases the habitat area may be expanded an additional 50 feet on the windward side.

Formatted: Indent: Left: 0.5"

14.40.030 Fish and wildlife habitat conservation area review procedures.

A. Habitat management plan. When the department's maps, sources, or field investigations indicate that the proposed project area is located within 300 feet of a known or suspected fish or wildlife habitat conservation area, an applicant shall submit a habitat management plan prepared by a qualified fisheries biologist or wildlife biologist. The requirement to provide a habitat conservation plan for habitat conservation areas may be waived if the department determines that there are no potential direct and/or indirect impacts on designated species or habitats that would result from the proposed development. Habitat management plans shall comply with the requirements established in EMC 14.40.070, Appendix A.

14.40.040 Allowed activities.

A. The following activities may be permitted in habitat conservation areas and/or their buffers when all reasonable measures have been taken to avoid and mitigate adverse effects on species and habitats and a net loss of habitat functions will not occur. In order to verify the following conditions, a habitat management plan meeting the requirements of EMC 14.40.070, Appendix A must be submitted.

1. Stream Erosion Control Measures. New or replacement stream erosion control measures shall be subject to the following standards:

- a. The proposal complies with the provisions set forth in Chapter 14.110 EMC.
- b. The required habitat management plan demonstrates the following:
 - i. Natural stream processes will be maintained. The project will not result in increased beach erosion or alterations to, or loss of, stream substrate within one-quarter mile of the site.
 - ii. The stream erosion control measure will not adversely impact fish or wildlife habitat conservation areas or associated wetlands.

2. Docks and launching ramps. Construction, reconstruction, repair, and maintenance of docks and public or private launching ramps are subject to all of the following:

- a. The dock or ramp is located and oriented and constructed in a manner that minimizes adverse effects on water quality, movement of aquatic and terrestrial life, ecological processes, spawning habitat, and wetlands.
- b. Docks and ramps shall meet or exceed all relevant state and federal permit requirements.

3. Roads, Trails, Bridges, and Rights-of-Way. Construction of trails, roadways, bridges, and culverts may be allowed subject to the following standards:

- a. There is no other feasible alternative route with less impact on the environment.
- b. The crossing minimizes interruption of downstream movement of wood, ice, and gravel and the movement of all fish and wildlife.
- c. Stream crossings, where necessary, shall only occur as near to the perpendicular with the stream as possible and be limited to the minimum width necessary.
- d. Road bridges and culverts are designed according to the latest versions of the Washington Department of Fish and Wildlife Water Crossing Design Guidelines (Washington Department of Fish and Wildlife) the Anadromous Salmonid Passage Facility Design guidelines (National Marine Fisheries Service).
- e. Trails and associated viewing platforms shall be made of pervious materials.

4. Utility Facilities. New utility lines and facilities are permitted to cross habitat conservation areas if they comply with the following standards

- a. Avoid fish and wildlife habitat conservation areas to the maximum extent possible.
- b. Cross at an angle greater than 60 degrees to the centerline of the channel in streams or perpendicular to the channel centerline whenever boring under the channel is not feasible.
- c. Crossings are contained within the footprint of an existing road or utility crossing where possible.
- d. Avoid paralleling the stream or following a down-valley course near the channel.
- e. Do not increase or decrease the natural rate of shore migration or channel migration.
- f. Bore beneath the scour depth and hyporheic zone of the water body and channel migration zone (CMZ) where feasible.

5. Public Flood Protection Measures. New public flood protection measures and expansion of existing facilities may be approved, subject to the department's review and approval of a habitat management plan.

6. Instream Structures. New instream structures (e.g., such as, but not limited to, high flow bypass, sediment ponds, instream ponds, retention and detention facilities, dams, weirs, etc.) shall be allowed only as part of an approved mitigation or restoration project or watershed basin plan approved by the department and upon acquisition of any required state or federal permits. The structure shall be designed to avoid modifying flows and water quality in ways that may adversely affect critical fish species. Proposals for placement of water quality, water quantity, or other instruments or structures within a stream to gather data, or as a mitigation measure, shall be exempt from the provisions of this title upon review and approval by the department.

7. Stormwater Conveyance Facilities. Conveyance structures whose sole purpose is to convey stormwater already treated for quality, or water bypassed around water quality treatment facilities pursuant to an approved stormwater plan, may be constructed subject to the following standards:

- a. No other feasible alternatives with less impact exist;
- b. Mitigation for impacts is provided;
- c. Stormwater conveyance facilities shall incorporate fish habitat features;
- d. Vegetation shall be maintained and, if necessary, added adjacent to all open channels and ponds in order to retard erosion, filter out sediments, and shade the water.

8. On-Site Sewage Systems and Wells.

- a. New on-site sewage systems and individual wells are permitted if accessory to an approved structure.
- b. Repairs to failing on-site sewage systems associated with an existing structure shall be accomplished by utilizing one of the following methods that result in the least impact:
 - i. Connection to an available public sewer system;
 - ii. Replacement with a new on-site sewage system located in a portion of the site that has already been disturbed by development and is located landward as far as possible, provided the proposed sewage system is in compliance with the provisions in Chapter 14.70 EMC; or
 - iii. Repair to the existing on-site septic system.

B. The activities listed below are allowed in habitat conservation areas and their buffers, and do not require submission of a habitat management plan, except where such activities would result in a loss of the functions and values of habitat conservation areas or buffers.

1. Vegetation Removal, Disturbance, and Introduction. Limited vegetation removal shall be allowed subject to EMC 18.90.180 (tree preservation) and the following standards:

a. Hazard trees may be cut; provided, that:

- i. The applicant submits a report from a certified arborist, licensed architect, or professional forester that documents the hazard and provides a replanting schedule for the replacement trees and receives written approval from the city authorizing the tree removal;
- ii. Tree cutting shall be limited to limbing and crown thinning, unless otherwise justified by the landowner's expert. Where limbing or crown thinning is not sufficient to address the hazard, trees should be topped to remove the hazard rather than cut at or near the base of the tree. All vegetation cuttings (tree stems, branches, tops, etc.) shall be left within the habitat area or buffer unless removal is warranted due to the potential for disease transmittal to other healthy vegetation;
- iii. The landowner shall replace any trees that are felled or topped with new trees at a ratio of two replacement trees for each tree felled or topped. Tree species that are native and indigenous to the site shall be used;
- iv. Hazard trees determined to pose an imminent threat or danger to public health or safety, or to public or private property, or serious environmental degradation may be removed or topped by the landowner prior to receiving written approval from the department; provided, that within 14 days following such action, the landowner shall submit the necessary report and replanting schedule demonstrating compliance with subsections (B)(1)(a)(i) through (iii) of this section.

b. Trimming of vegetation for purposes of providing view corridors will be allowed; provided, that trimming shall be limited to view corridors of 20 feet in width or less, that no more than 30 percent of the live crown is removed, and that benefits to fish and wildlife habitat are not reduced. Trimming shall be limited to hand pruning of branches and vegetation. Trimming shall not include felling, topping, or removal of trees.

2. Fencing. Fencing shall be placed in such a manner as to maintain wildlife movement corridors and not create any fish passage blockages. The department shall approve the location, type, and height of any proposed fencing.

14.40.050 Alteration of Watercourses

Alteration of Watercourses. Any alteration of a watercourse shall comply with the following standards:

1. The city will notify adjacent communities and the Washington State Department of Ecology prior to any alteration or relocation of a watercourse proposed by the applicant and submit evidence of such notification to the Federal Insurance Administration.
2. The city shall require that maintenance be provided within the altered or relocated portion of said watercourse, so that the flood-carrying capacity is not diminished. Therefore, if the maintenance program calls for future cutting of planted native vegetation used in performing the alteration, the system shall be oversized at the time of construction to compensate for said vegetation growth or any other natural factor that may need future maintenance.
3. Alterations and relocations, including stabilization projects, shall not degrade fish habitat and shall be subject to the following provisions:
 - a. Structures that cross all watercourses and water bodies shall meet fish habitat requirements of the Washington Department of Fish and Wildlife.

b. Any culverts that are used on fish-bearing watercourses shall be arch/bottomless culverts or equivalent that provide comparable fish protection, and must meet fish habitat requirements of the latest edition of Washington Department of Fish and Wildlife's Design Manual for Culverts.

c. Bridges or other crossings shall allow for uninterrupted downstream movement of wood and gravel, be as close to perpendicular to the watercourse as possible, and be designed to minimize fill and to pass the base flood flows.

d. Watercourse alterations shall maintain natural meander patterns, channel complexity, and floodplain connectivity. Where feasible, such characteristics shall be restored as part of the watercourse alteration.

e. The applicant shall identify the channel migration zone for the watercourse at the project site and for a reasonable reach upstream and downstream of the site, and shall not undertake actions as part of the alteration that would in any way inhibit movement of the channel.

f. Existing culverts that do not meet fish habitat requirements shall be removed or replaced as part of the approved watercourse alteration project.

g. Watercourse alteration projects shall not result in a fish blockage of side channels. Known fish barriers into side channels shall be removed as part of the approved watercourse alteration project.

h. For any watercourse alteration of a Type S or F water (pursuant to EMC 14.40.020(D)) whose channel is subject to migration, bioengineered (soft) armoring of streambanks is required to allow for woody debris recruitment, gravels for spawning, and creation of side channels. The bioengineering technique used must be designed in accordance with the latest edition of Washington Department of Fish and Wildlife's Integrated Streambank Protection Guidelines.

4. The project engineer shall design the watercourse alteration so the activity does not increase the water surface elevation (zero-rise); decrease the capacity, storage, and conveyance of the watercourse; or cause an adverse impact to adjacent, cross-channel, or upstream or downstream properties. (Ord. 17-492 § 2 (Exh. A); Ord. 02-200 § 2).

14.40.060 Mitigation requirements.

A. Mitigation. Compensatory mitigation is required for all unavoidable alterations to fish and wildlife habitat conservation areas or their buffers. Mitigation of alteration to habitat areas shall achieve equivalent or greater biological functions. Mitigation shall address each functional attribute affected by the alteration to achieve functional equivalency or improvement on a per function basis. Mitigation elements to be addressed may include, but are not limited to: restoration of previously degraded areas and key habitat features, restoration of riparian vegetation communities to provide shade and large woody debris, addition of large woody debris, and installation of upland habitat features. All projects must first demonstrate compliance with EMC 14.10.080(B) (Mitigation Sequencing) prior to development of compensatory mitigation plans.

B. Type of mitigation required. In determining the extent and type of mitigation required, the department may consider all of the following:

1. The ecological processes that affect and influence habitat structure and function within the watershed or sub-basin;
2. The individual and cumulative effects of the action upon the functions of the critical area and associated watershed;
3. Observed or predicted trends regarding the gains or losses of specific habitats or species in the watershed, in light of natural and human processes;
4. The likely success of the proposed mitigation measures;
5. Effects of the mitigation actions on neighboring properties; and

6. Opportunities to implement restoration actions formally identified by an adopted shoreline restoration plan, watershed planning document prepared and adopted pursuant to Chapter 90.82 RCW, a salmonid recovery plan or project that has been identified on the Salmon Recovery Board Habitat Project List or by the Washington State Department of Fish and Wildlife as essential for fish and wildlife habitat enhancement.

C. Location. Compensatory mitigation shall be provided on-site or off-site in the location that will provide the greatest ecological benefit to the species and/or habitats affected and have the greatest likelihood of success. Mitigation shall occur as close to the impact site as possible, within the same sub-basin, and in a similar habitat type as the permitted alteration unless the applicant demonstrates to the satisfaction of the department through a watershed- or landscape-based analysis that mitigation within an alternative sub-basin of the same watershed would have greater ecological benefit.

D. Mitigation plans. When required by this chapter, the applicant shall submit a fish and wildlife habitat conservation area mitigation plan meeting the requirements of EMC 14.40.060.

14.40.070. Appendix.

APPENDIX A

Formatted: Centered

HABITAT MANAGEMENT PLAN

A. A habitat management plan shall, at a minimum, include the following:

1. The general critical areas report requirements in EMC 14.10.082.
2. Identification of any endangered, threatened, sensitive, or candidate species that have a primary association with habitat on the project area;
3. Map showing the location of the ordinary high water mark and/or locations of wildlife habitat conservation area(s) and their buffers in accordance with EMC 14.40.025;
4. The vegetative, faunal, topographic, and hydrologic characteristics of the habitat conservation area;
5. A discussion of any federal, state, or local special management recommendations, including Washington Department of Fish and Wildlife habitat management recommendations, that have been developed for species or habitat located on or adjacent to the project area;
6. A detailed discussion of the direct and/or indirect potential impacts on the habitat conservation area by the project. Such discussion shall include a discussion of the ongoing management practices that will protect habitat after the project site has been developed;
7. The mitigation plan requirements of EMC 14.10.083 if the activity will result in unavoidable impacts to habitat conservation areas. Mitigation measures may include:
 - a. Prohibition or limitation of use and development activities within the habitat conservation area;
 - b. Retention of vegetation and/or re-vegetation of areas/habitats critically important to species;
 - c. Special construction techniques;
 - d. Implementation of erosion and sediment control measures;
 - e. Habitat restoration or enhancement (i.e., fish passage barrier removal);
 - f. Seasonal restrictions on construction activities on the subject property;
 - g. Clustering of development activities on the subject property; and/or
 - h. Any other requirements and/or recommendations from federal, state, or local special management recommendations, including the Washington State Department of Fish and Wildlife's habitat management guidelines.

Chapter 14.50

CRITICAL AQUIFER RECHARGE AREAS

Sections:

- 14.50.010 Purpose.
- 14.50.020 Critical aquifer recharge area identification.
- 14.50.030 Critical aquifer recharge area review procedures.
- 14.50.040 Critical aquifer recharge area standards.

14.50.010 Purpose.

The purpose of this chapter is to protect critical aquifer recharge areas from degradation or depletion resulting from new or changed land use activities. Due to the exceptional susceptibility and/or vulnerability of groundwater underlying aquifer recharge areas to contamination and the importance of such groundwater as sources of public water supply, it is the intent of this chapter to safeguard groundwater resources and wellhead protection areas by mitigating or precluding future discharges of contaminants from new land use activities. (Ord. 02-200 § 2).

14.50.020 Critical aquifer recharge area identification.

A. General. Critical aquifer recharge areas are areas that have a critical recharging effect on groundwater used for potable water supplies and/or that demonstrate a high level of susceptibility or vulnerability to groundwater contamination from land use activities. These areas include the following:

1. Aquifer Recharge Areas. The boundaries of the two highest DRASTIC zones that are rated 180 and above on the DRASTIC index range, as identified in Map of Groundwater Pollution Potential, Edgewood, Washington, National Water Well Association, U.S. Environmental Protection Agency;
2. Wellhead Protection Areas. Wellhead protection areas that lie within the 10-year time of travel zone boundary of a group A public water system well, as delineated by the water system purveyor or its designee, pursuant to WAC 246-290-135; and
3. Sole Source Aquifers. Sole source aquifers are areas that have been designated by the U.S. Environmental Protection Agency pursuant to the Federal Safe Water Drinking Act. As of the effective date of this title, there are no designated sole source aquifers within city limits.

14.50.030 Critical aquifer recharge area review procedures.

A. General Requirements

1. The city's critical aquifer recharge area map provides an indication of where critical aquifer recharge areas are located within the city and the map is updated as necessary.
2. Any proposed development located within protection critical aquifer recharge area shall comply with the standards set forth in EMC 14.50.040.
3. Any hazardous uses, as defined in EMC 14.50.040, shall require the submittal of a hydrogeologic assessment, as set forth in subsection (B) of this section.
4. The department may waive some of the critical area protective measure provisions contained in EMC 14.10.080, as deemed appropriate by the Department Director and can be shown to meet the requirements associated with Best Available Science, if required.

B. Hydrogeologic Assessment.

1. The hydrogeologic assessment shall be prepared, signed, and dated by a state licensed geologist/hydrogeologist.

2. The hydrogeologic assessment shall be submitted in the form of a report detailing the subsurface conditions, the design of a proposed land use action, and the facilities operation which indicates the susceptibility and potential for contamination of groundwater supplies. The hydrogeologic assessment shall, at a minimum, include the general critical area report requirements of EMC 14.10.082 in addition to the following:

- a. Information sources;
- b. Geologic setting – includes well logs or borings used to identify information;
- c. Background water quality;
- d. Groundwater elevations;
- e. Location/depth to perched water tables;
- f. Recharge potential of facility site (permeability/transmissivity);
- g. Groundwater flow direction and gradient;
- h. Current available data on wells located within one-quarter mile of the site;
- i. Current available data on any spring within one-quarter mile of the site;
- j. Surface water location and recharge potential;
- k. Water source supply to facility (e.g., high capacity well);
- l. Any sampling schedules necessary;
- m. Discussion of the effects of the proposed project on the groundwater resource;
- n. Discussion of potential mitigation measures, should it be determined that the proposed project will have an adverse impact on groundwater resources; and
- o. Any other information as required by the TPCHD, including information required under Washington Department of Ecology Publication 97-30.

C. Storage Tank Permits. In addition to the requirements set forth in this title, the following agencies also have the authority to regulate the installation, repair, replacement, or removal of underground storage tanks:

1. The Pierce County Fire Prevention Bureau regulates and authorizes permits for underground storage tanks, pursuant to the International Fire Code (Article 79) and this chapter.
2. The Washington Department of Ecology regulates and authorizes permits for underground storage tanks (Chapter 173-360 WAC).
3. The TPCHD regulates and authorizes permits for the removal of underground storage tanks (Pierce County Code, Chapter 8.34). (Ord. 02-200 § 2).

14.50.040 Critical aquifer recharge area standards.

A. General. All regulated activities that are not exempt or prohibited under the provisions of this chapter shall ensure sufficient groundwater recharge. In order to achieve sufficient groundwater recharge, the applicant shall comply with city's adopted stormwater manual (Chapter 13.05 EMC) and demonstrate that the total post-development infiltration rate for the project area will be equal to or better than the predevelopment rate.

B. Prohibited Uses. Landfills (other than inert and demolition landfills), Class I, III, and IV underground injection wells, metals mining, wood treatment facilities, pesticide manufacturing, petroleum refining facilities (including distilled petroleum facilities), the storage of large volumes of petroleum products, and other uses or activities

determined by the department to have a significant adverse impact on ground water are prohibited within critical aquifer recharge areas.

C. Exemptions. In addition to the general exemptions listed in EMC 14.20.030, the following uses or activities are exempt from the requirements of this chapter:

1. Sewer lines and appurtenances;
2. Biosolids and sludge land application sites; provided, that these activities comply with the requirements established in Chapters 173-200, 173-216, and 173-304 WAC; and
3. Single-family and two-family dwellings and associated accessory structures.

D. Agricultural Activities. New agricultural activities that do not involve hazardous substance handling or application are allowed within an aquifer recharge or wellhead protection area subject to the following:

1. The applicant is required to submit a farm management plan prepared by the USDA, NRCS, Pierce County Conservation District, or Washington State University, Cooperative Extension Office, that certifies that water quality and quantity within the aquifer recharge area is maintained. The farm management plan shall at a minimum address the following:
 - a. The limits of the proposed agricultural activities.
 - b. The proposed scope of agricultural activities, including the use of any pesticides, fertilizers, or other chemicals.
 - c. The existing nitrate levels on the site and any proposed increases in nitrate levels.
2. Integrated pest management (IPM) practices for pest control and best management practices (BMPs) for the use of fertilizers, as described by the Washington State University, Pierce County Cooperative Extension Office, shall be utilized.
3. Nitrate levels at down-gradient property line shall not exceed 2.5 mg/L or, if the background nitrate concentration exceeds 2.5 mg/L, that the concentration will not be increased more than 0.1 mg/L.
4. Additional protective measures may be required if deemed necessary by the department or TPCPD to protect public health or safety.

ED. Nonhazardous Uses. Subdivision of land as defined in EMC Title 16, residential structures housing three or more units and all commercial and industrial sites or activities that do not include or involve hazardous substance processing or handling in protection critical aquifer recharge area are allowed subject to the following standards:

1. Stormwater quality treatment and flow control shall be provided in conformance with the city's adopted stormwater management manual.
2. Floor drains shall not be allowed to drain to the stormwater system and must be designed and installed to meet the Uniform Plumbing Code (UPC) Section 303.
3. If any roof venting carries contaminants, then the portion of the roof draining from this area must go through pretreatment pursuant to UPC Section 304(b).
4. All nonresidential vehicle washing must be self-contained or be discharged to a sanitary sewer system, if approved by the sewer utility, and is subject to UPC Sections 708 and 711.
5. Integrated pest management (IPM) practices for pest control and best management practices (BMPs) for the use of fertilizers as described by the Washington State University, Pierce County Cooperative Extension Office, shall be utilized.

6. For new or changes in regulated activities served by on-site sewage systems, the applicant must demonstrate to the TPCHD that nitrate levels at the down-gradient property line will not exceed 2.5 mg/L or that if the background nitrate concentration exceeds 2.5 mg/L the concentration will not be increased more than 0.1 mg/L.

7. Additional protective measures may be required if deemed necessary by the department or TPCHD to protect public health or safety.

FF. Hazardous Uses – General. Hazardous substance processing or handling, hazardous waste treatment and storage facilities, animal containment areas, and solid waste facilities that require a solid waste handling permit from the TPCHD, requiring approval from the city, shall be allowed only in protection critical aquifer recharge area subject to review and approval of a hydrogeologic assessment by the department and review by the TPCHD. The department has the authority to apply whatever standards deemed necessary to mitigate any negative impacts that may be associated with the proposed development and will consider comments by TPCHD.

GF. Hazardous Uses – Storage Tanks. In addition to the requirement to submit a hydrogeologic assessment, the following standards apply to storage tanks in protection critical aquifer recharge area:

1. Underground Tanks. All new underground storage facilities used or to be used for the underground storage of hazardous substances or hazardous wastes shall be designed and constructed so as to:

- a. Prevent releases due to corrosion or structural failure for the operational life of the tank;
- b. Be protected against corrosion, constructed of noncorrosive material, steel clad with a noncorrosive material, or designed to include a secondary containment system to prevent the release or threatened release of any stored substance;
- c. Use material in the construction or lining of the tank which is compatible with the substance to be stored; and
- d. The installation of underground storage tanks shall also be subject to other state and local permit requirements.

2. Aboveground Tanks.

- a. No new aboveground storage facility or part thereof shall be fabricated, constructed, installed, used, or maintained in any manner which may allow the release of a hazardous substance to the ground, groundwater, or surface waters of the city within a critical aquifer recharge area.
- b. A new aboveground tank that will contain a hazardous substance will require both a double-walled tank and a secondary containment system separate from the tank that will hold 110 percent of the tank's capacity. The secondary containment system or dike system must be designed and constructed to contain material stored in the tank(s). (Ord. 16-482 § 2 (Exh. C); Ord. 02-200 § 2).

Chapter 14.60

VOLCANIC HAZARD AREAS

Sections:

- 14.60.010 Purpose.
- 14.60.020 Volcanic hazard areas.
- 14.60.030 Volcanic hazard area review procedures.
- 14.60.040 Volcanic hazard area standards.

14.60.010 Purpose.

At over 14,411 feet high, Mount Rainier dominates the skyline of the southern Puget Sound region. This glacier-clad mountain is a dormant volcano capable of generating large floods and lahars which have historically reached the floors of the lowlands south of the city of Seattle and out to Commencement Bay in the Port of Tacoma, spewing ash from pyroclastic eruptions. The purpose of this chapter is to promote the public health, safety, and general welfare of the citizens of Edgewood by providing standards that minimize the loss of life that may occur as a result of volcanic events emanating from Mount Rainier. (Ord. 02-200 § 2).

14.60.020 Volcanic hazard areas.

A. General. Volcanic hazard areas are areas subject to pyroclastic flows, lava flows, and inundation by debris flows, mudflows, or related flooding resulting from geologic and volcanic events on Mount Rainier.

B. Volcanic Hazard Area Categories. Volcanic hazard areas are areas that have been historically inundated by Case I, Case II, or Case III lahars or other types of debris flow; affected by pyroclastic flows, pyroclastic surges, lava flows, or ballistic projectiles in future eruptions; or are located in other drainages expected to be inundated by a future Case I, Case II, or Case III debris flow. Volcanic hazard areas are classified into the following categories:

1. Inundation Zone for Case I Lahars. Areas that could be affected by cohesive lahars that originate as enormous avalanches of weak chemically altered rock from the volcano. Case I lahars can occur with or without eruptive activity. The average recurrence rate for Case I lahars on Mount Rainier is about 500 to 1,000 years.
2. Inundation Zone for Case II Lahars. Areas that could be affected by relatively large non-cohesive lahars, which most commonly are caused by the melting of snow and glacier ice by hot rock fragments during an eruption, but which can also have a non-eruptive origin. The average time interval between Case II lahars from Mount Rainier is near the lower end of the 100- to 500-year range, making these flows analogous to the so-called "100-year flood" commonly considered in engineering practice.
3. Inundation Zone for Case III Lahars. Areas that could be affected by moderately large debris avalanches or small non-cohesive lahars, glacial outburst floods, or other types of debris flow, all of non-eruptive origin. The average time interval between Case III lahars at Mount Rainier is about one to 100 years.
4. Pyroclastic Flow Hazard Zone. Areas that could be affected by pyroclastic flows, pyroclastic surges, lava flows, and ballistic projectiles in future eruptions. During any single eruption, some drainages may be unaffected by any of these phenomena, while other drainages are affected by some or all phenomena. The average time interval between eruptions of Mount Rainier is about 100 to 1,000 years.

C. Time Travel Zones. The ability to evacuate people from within a volcanic hazard area correlates to the distance from the source of an event (i.e., those areas closest to the event will have less time to evacuate than those areas farther away from the source of an event). The amount of time that is anticipated for a debris flow, lahar, flood, or avalanche to travel geographically has been classified into the following time travel zones:

1. Time Zone A. Time Zone A is an estimated one-hour travel distance from the source of the event.
2. Time Zone B. Time Zone B is an estimated one and one-half hour travel distance from the source of the event.

3. Time Zone C. Time Zone C is an estimated two-hour travel distance from the source of the event.

4. Time Zone D. Time Zone D is an estimated two hours or greater travel distance from the source of the event. (Ord. 02-200 § 2).

14.60.030 Volcanic hazard area review procedures.

A. The City's Critical Areas Atlas – Volcanic Hazard Area Map provides an indication of where volcanic hazard areas are located within the city.

B. The department will complete a review of the volcanic hazard area maps for any development proposal to determine whether the proposed project area for a regulated activity falls within a volcanic hazard area.

C. When the department's maps or sources indicate that the proposed project area for a regulated activity is located within a volcanic hazard area, the department shall apply the standards for regulated activities in volcanic hazard areas, as set forth in EMC 14.60.040.

14.60.040 Volcanic hazard area standards.

The following standards apply within the inundation zones for Case I, II, and III lahars and within the pyroclastic flow hazard zone (refer to Table 14.60.040):

A. Bonus densities, as set forth in EMC 18.90.080, Housing incentives program, shall be prohibited.

B. All critical facilities, as defined in Chapter 14.15 EMC, shall be prohibited, except sewer collection facilities and any other utilities that are located underground or not likely to cause harm to people or the environment if inundated by a lahar.

C. Special occupancy structures, as defined in Chapter 14.15 EMC, are subject to the following:

1. Time Travel Zone A. Special occupancy structures located within the Time Travel Zone A area shall be limited to a maximum 100-person occupancy.

2. Time Travel Zone B. Special occupancy structures located within the Time Travel Zone B area shall be limited to a maximum 500-person occupancy.

3. Time Travel Zone C. Special occupancy structures located within the Time Travel Zone C area shall be limited to a maximum 1,000-person occupancy.

4. Time Travel Zone D. Special occupancy structures located within the Time Travel Zone D area shall be limited to a maximum 5,000-person occupancy.

Table 14.60.040 Volcanic Hazard Area Standards

Facility/Occupancy List	Case I Lahar Inundation Zone	Case II Lahar Inundation Zone	Case III Lahar Inundation Zone	Pyroclastic Flow Hazard Zone
Bonus Densities ⁽¹⁾	Not Allowed	Not Allowed	Not Allowed	Not Allowed
Critical Facilities ⁽²⁾	Not Allowed	Not Allowed	Not Allowed	Not Allowed
Special Occupancies ⁽³⁾	In Time Travel Zone A – Limited to 100 person occupant load. In Time Travel Zone B – Limited to 500 person occupant load. In Time Travel Zone C – Limited to 1,000 person occupant load. In Time Travel Zone D – Limited to 5,000 person occupant load.			
Other Occupancies	No Limitation	No Limitation	No Limitation	No Limitation

I

- (1) Bonus density as set forth in EMC 18.90.080, Housing incentives program.
 - (2) Essential facility as defined in EMC Chapter 14.15 EMC.
 - (3) Special occupancy structures as defined in Chapter 14.15 EMC
- (Ord. 02-200 § 2).

Chapter 14.70

FLOOD HAZARD AREAS

Sections:

- 14.70.010 Purpose.
- 14.70.015 Flood Insurance Study Adoption
- 14.70.020 Flood hazard areas.
- 14.70.030 Flood hazard area review procedures.
- 14.70.040 Flood hazard area standards.
- 14.70.050 Appendices.

14.70.010 Purpose.

The purpose of this chapter is to promote the public health, safety, and general welfare of the citizens of Edgewood. The standards contained in this chapter are intended to minimize public and private losses due to flood conditions in flood hazard areas and provide special criteria necessary for regulated activities located within flood hazard areas of the city. The following statements describe the purpose of this chapter:

- A. Protect human life and health;
- B. Minimize expenditure of public money and costly flood control projects;
- C. Minimize the need for rescue and relief efforts associated with flooding;
- D. Minimize prolonged business interruptions;
- E. Minimize damage to public infrastructure, facilities and utilities;
- F. Minimize damage to critical fish and wildlife habitat areas;
- G. Minimize net loss of ecological functions of floodplains;
- H. Ensure that potential buyers are notified that property is in a flood hazard area;
- I. Ensure that those who occupy flood hazard areas assume responsibility for their actions; and
- J. Qualify Edgewood for participation in the National Flood Insurance Program, thereby giving the citizens of Edgewood the opportunity to purchase flood insurance with particular emphasis to those in flood hazard areas. (Ord. 02-200 § 2).

14.70.015 Flood Insurance Study Adoption

The areas of special flood hazard identified by the Federal Insurance Administration in a scientific and engineering report entitled "The Flood Insurance Study for Pierce County, Washington and Incorporated Areas" dated March 7, 2017, with accompanying FIRMs and any map amendments or corrections are hereby adopted by reference and declared to be a part of this title. The Flood Insurance Study and FIRMs are on file at Edgewood City Hall, 2224 104th Avenue East, Edgewood, Washington, 98371. The city may add or delete land from areas of special flood hazard or revise base flood elevations, utilizing best-available information for flood hazard identification in accordance with federal regulations.

14.70.020 Flood hazard areas.

Edgewood regulates the following flood hazard areas:

A. Potential Flood Hazard Areas.

1. Potential flood hazard areas, as depicted on the Critical Areas Atlas – Flood Hazard Area Map, include:

Formatted: Font color: Auto

a. Detailed Study Areas.

i. FEMA Flood Insurance Rate Map and Floodway Map AE and AH zones.

ii. Areas within 300 feet horizontal distance from the base flood elevation established for the mapped AE and AH zones.

iii. Areas within five feet of vertical height from the base flood elevation established for the mapped AE and AH zones.

b. Unstudied Areas. FEMA Flood Insurance Rate Map A zones and shaded X zones, and areas within 300 feet horizontal distance from said mapped areas.

c. Natural Waters/Watercourse. Areas within five feet of vertical height above the ordinary high water mark of an identified natural watercourse.

d. Groundwater Flooding Areas. Areas within 300 feet horizontal distance from a mapped groundwater flooding area.

e. Potholes. Areas not identified as a mapped flood hazard area as described above, but within 10 feet of vertical relief from the bottom of an identified pothole or within two feet of vertical relief of a potential surface water spillway or other type of outlet. Potholes may be identified by city topographic mapping, field survey, or site inspections.

f. Channel Migration Zones (CMZs). Channel migration zones shall apply only to those watercourses specifically identified by the city or listed in subsection (B)(4) of this section. In those areas where detailed CMZ studies have been completed and accepted by the department, additional horizontal and vertical review threshold criteria (i.e., 300 feet horizontal and five feet vertical) shall not apply.

2. The Critical Areas Atlas – Flood Hazard Areas Map may not show all potential flood hazard areas that may be necessary for a specific site analysis. The department may make interpretations, where needed, as to the approximate location of the boundaries of potential flood hazard areas. When there is a conflict between the elevations and the mapped potential flood hazard area boundaries, the elevations shall govern.

3. Where there is insufficient information shown on the potential flood hazard area maps, the department may require the applicant to verify that the site is out of the flood hazard area using the flood hazard area review procedures set forth in EMC 14.70.030.

B. Floodway. A floodway is an extremely hazardous area due to the depth and/or velocity of floodwaters, which carry debris, potential projectiles, and have erosion potential. The following areas are regulated by the city as floodways:

1. Regulatory Floodway. Regulatory floodway designated by flood hazard area maps.

2. Deep and/or Fast Flowing Water Areas. Areas of deep and/or fast flowing water shall be regulated as a floodway. Based on the criteria set forth in EMC 14.70.030(E), the department shall make the determination after review and approval of applicant's analysis of whether the project site falls within the floodway area based on deep and/or fast flowing waters.

3. Potholes and Shaded X Zones. That portion of a pothole ~~and—zone~~ and zone area that is three feet or greater in depth shall be regulated as a floodway.

4. Channel Migration Zones (CMZs).

a. Channel migration zones shall be regulated as a floodway.

b. Channel migration zones are equivalent to the base flood elevation limits (i.e., 100-year floodplain limits).

C. Flood Fringe. All areas subject to inundation by the base flood, but outside the limits of the floodway as set forth in subsection (B) of this section. Those portions of the A, AE, AH, and shaded X zones not defined as floodway, and that portion of a pothole and FEMA shaded X zone area that is between zero feet (base flood elevation) and three feet in depth shall be regulated as a flood fringe.

D. Other Areas of Special Flood Hazard.

1. Groundwater Flooding Areas. Groundwater flooding areas are those areas identified by Edgewood and shown on flood hazard maps and are subject to flood inundation from subsurface waters that result from a fluctuation of the groundwater table. Groundwater flooding areas shall be regulated as a floodway or flood fringe pothole.

2. Natural Waters/Watercourse. Natural waters/watercourse as identified on city topographic, planimetric or orthophoto maps, WDNR stream classification maps, USGS quadrangle maps, or other source maps that are not identified as a flood hazard area on the FEMA maps. That portion of the natural watercourse located between the ordinary high water mark and a topographic elevation five feet above the ordinary high water mark shall be regulated as a floodway or flood fringe. If the applicant chooses to accept the five-foot topographic elevation line above the ordinary high water mark as the base flood elevation (i.e., floodplain elevation limits), a flood study shall not be required for a natural water/watercourse.

3. Frequently Flooded Areas. See EMC 14.70.030(A)(9) as the areas defined by this section. (Ord. 17-492 § 2 (Exh. A); Ord. 02-200 § 2).

14.70.030 Flood hazard area review procedures.

A. General Requirements.

1. The city's Critical Areas [MapAtlas](#) – Flood Hazard Area Map provides an indication of where potential flood hazard areas are located within the city. The actual presence or location of a flood hazard area shall be determined using the procedures and criteria contained in this chapter.

2. The department will complete a review of the flood hazard area maps, and other source documents, for any development proposal to determine whether the proposed project area for a regulated activity falls within a potential flood hazard area. When there is a conflict between the elevations and the mapped 100- or 500-year floodplain or floodway boundaries, the elevations shall govern. In the instance where base flood elevation data has not been provided within a mapped A zone, the department shall obtain, review, and reasonably utilize any base flood elevation and floodway data available from a federal, state, or other source to complete their review.

3. When the department's maps or sources indicate that the proposed project area for a regulated activity is or may be located within a potential flood hazard area (except for coastal flood hazard areas), the department shall require a flood boundary verification survey as outlined in subsection (C) of this section, and may require a flood study as outlined in subsection (D) of this section, a deep and/or fast flowing water analysis as outlined in subsection (E) of this section, and/or a zero-rise analysis as outlined in subsection (F) of this section.

4. Any proposed development located within a flood hazard area shall comply with the flood hazard area standards set forth in EMC 14.70.040.

5. Prior to approval of any proposed flood hazard area development, all necessary permits from those governmental agencies from which prior approval is required by federal or state law, including but not limited to Section 404 of the Federal Water Pollution Control Act Amendments of 1972, 33 U.S.C. 1334, must be provided to the city by the applicant.

6. A FEMA letter of map amendment (LOMA) or letter of map revision (LOMR) shall not be submitted to FEMA until review and approval has been granted by the department. The city shall not recognize any LOMA or LOMR as an amendment to the department's flood hazard maps unless the department has granted prior approval.

7. Unless otherwise stated in this chapter, the critical area protective measure provisions contained in EMC 14.10.080 shall apply.

8. The Federal Emergency Management Agency (FEMA) administers the nation's floodplain management program. FEMA has identified some of the flood prone areas in the city; however, it is generally recognized that FEMA's Flood Insurance Rate Maps (FIRMs) may not accurately reflect the degree or frequency of flooding within all areas of the city. Therefore, information available through FEMA may not meet best available science criteria and cannot be used exclusively to address frequently flooded areas.

9. The city has determined that the following documents and sources are the most current and accurate information concerning frequently flooded areas within the city, and therefore represent best available science:

- a. The city's Surface Water Management Plan, 1997, or as amended thereafter.
- b. Aerial photographs of the city, especially those taken in wintertime 1996 and 1997.
- c. The city's two-foot elevation contour mapping performed by Nies Mapping Group, Inc., 1999, or as subsequently updated.
- d. Relevant and verifiable information from the city's Capacity Analysis Technical Review ~~AdHoc~~Adhoc Committee draft report, 2000.
- e. Relevant and verifiable government and citizen photographs, notes, observations, etc., regarding historic ponding/flooding levels, including but not limited to the City of Edgewood Potholes Water Level Monitoring 2006-2007 report prepared by Robinson Engineers, LLC.
- f. Relevant and verifiable information available through Pierce County.
- g. Relevant and verifiable information available through FEMA.

10. Flooding conditions within the city generally fall into three distinct hydrologic settings: (a) upland areas within enclosed depressions, (b) streams that flow off the upland areas, and (c) valley lowlands. Accordingly, the city manages frequently flooded areas within these three zones, as described below:

- a. Upland Areas Within Enclosed Depressions. From the above list use the historic ponding elevation, determined by subsection (A)(9) of this section, or the FEMA 100-year base flood elevation, whichever is highest.
- b. Streams Which Flow Off the Upland Areas. From the above list use the historic flood elevation, determined by subsection (A)(9) of this section, or the FEMA 100-year base flood elevation, whichever is highest.
- c. Valley Lowlands. From the above list use the historic flood elevation determined by subsection (A)(9) of this section, or the FEMA 100-year base flood elevation, whichever is highest.

11. The city will provide local flood information to FEMA, and request FEMA's assistance in accurately mapping and evaluating frequently flooded areas.

12. Warning and Disclaimer of Liability. The degree of flood protection required by this chapter is considered reasonable for regulatory purposes and is based on scientific and engineering considerations. Larger floods can and will occur on rare occasions. Flood heights may be increased by manmade or natural causes. This chapter does not imply that land outside frequently flooded areas or uses permitted within such areas will be free from flooding or flood damages. This chapter shall not create liability on the part of city, any officer or employee thereof, or the Federal Insurance Administration, for any flood damages that result from reliance on this chapter or any administrative decision lawfully made hereunder.

B. Channel Migration Zone Study.

1. In areas where Edgewood has not conducted a detailed channel migration zone study, an applicant may submit an independent channel migration zone study to demonstrate that the channel migration zone limits for those watercourses listed in EMC 14.70.020(B)(4) are located inside the 100-year floodplain limits.

2. The channel migration zone study shall be prepared, signed, and dated by a professional engineer or professional geologist with at least five years of experience in fluvial geomorphology, river dynamics, or geotechnical engineering.

3. The channel migration zone study shall, at a minimum, contain the information set forth in EMC 14.70.050, Appendix B.

4. The department shall review the channel migration zone study and either accept the new channel migration zone limits or reject the study and require the use of the 100-year floodplain limits. Once the department has reviewed and approved the channel migration zone study, the applicant shall be required to provide a flood boundary verification survey, as outlined in subsection (C) of this section, utilizing the newly established channel migration zone limits as the floodway limits.

C. Flood Boundary Verification Survey.

1. A flood boundary verification survey that delineates the horizontal and vertical limits of the base flood elevation shall be submitted to the department when the department's maps or sources indicate that the proposed project area for a regulated activity is located within a potential flood hazard area.

a. Where a base flood elevation has not been determined, a flood study shall be required pursuant to subsection (D) of this section.

b. A base flood elevation that has been established through a detailed flood study accepted by the department may be used in lieu of conducting a flood study.

c. The base flood elevation for a natural watercourse as set forth in EMC 14.70.020(D)(2) shall be established at the five-foot topographic elevation line above the ordinary high water mark.

2. The requirement to submit a flood boundary verification survey may be waived at the department's discretion, when the department can determine, using contour elevations, base flood data, orthophotos, and parcel data, that the extent of the regulated activity is clearly above the base flood elevation.

3. The flood boundary verification survey shall be prepared, signed, and dated by a registered land surveyor.

4. The department shall review the flood boundary verification survey to determine if the proposed development is located within a flood hazard area.

5. If the proposed development lies within the flood hazard area, the limits of the floodway, as well as the base flood elevation, shall be shown on the flood boundary verification survey.

D. Flood Study.

1. A flood study shall be conducted when the department's maps or sources indicate that the proposed project area for a regulated activity is, or may be located within, a potential flood hazard area where base flood elevation data is not available through the flood insurance study or other authoritative sources, or when an established base flood elevation is contested. A full engineering analysis to determine the base flood elevation shall be required by the department. Base flood elevations shall be determined using the detailed methods established in EMC 14.70.050, Appendix A. The department may approve alternative methods.

2. The flood study shall be prepared, signed, and dated by a professional engineer.

3. Once the department has reviewed and approved the flood study, the applicant shall be required to provide a flood boundary verification survey, utilizing the newly established base flood elevation, as outlined in subsection (C) of this section.

4. Flood studies shall not be required for coastal flood hazard areas.

E. Deep and/or Fast Flowing Water Analysis.

1. When the department determines that a proposed project area for a regulated activity is located within a flood hazard area, a deep and/or fast flowing water analysis based on EMC 14.70.050, Appendix A, shall be required to determine the floodway limits.
2. The floodway limits and flood fringe limits identified in the deep and/or fast flowing water analysis shall be depicted on the flood boundary verification survey, as outlined in subsection (C) of this section.
3. The deep and/or fast flowing water analysis shall be prepared, signed, and dated by a professional engineer.
4. Deep and/or fast flowing water analysis shall not be required for coastal flood hazard areas.

F. Zero-Rise Analysis.

1. When the department determines that a proposed project area for a regulated activity is located within a flood hazard area, a zero-rise analysis shall be required to determine that no increase in base flood elevation, displacement of flood volume, or flow conveyance reduction will occur as a result of the development.
2. The zero-rise analysis shall be conducted utilizing HEC-RAS (Hydrologic Engineering Center – River Analysis System) modeling methodology (for stream/channel floodways), the Western Washington Hydrology Model (i.e., WWHM, for pothole/closed depression floodways), or by other alternative methodologies approved by the city (see EMC 14.70.050, Appendix A). HEC-RAS can be found at the following website: <http://www.hec.usace.army.mil/software/hec-ras/>. WWHM can be found here: <http://www.ecy.wa.gov/programs/wq/stormwater/wwhmtraining/index.html>. The analysis shall show that no rise (0.01 foot or less) has occurred as a result of the proposed development. The proposed development may need to be reduced or specially engineered (such as utilizing piers or pilings) to achieve zero-rise.
3. The zero-rise analysis shall be prepared, signed, and dated by a professional engineer.
4. The zero-rise analysis shall be documented on the zero-rise analysis form, as set forth in EMC 14.70.050, Appendix A, and shall be attached to the flood hazard area permit.
5. Zero-rise analysis shall not be required for coastal flood hazard areas.
6. When structures are elevated by pier or pilings and no fill is placed in the flood hazard area, the requirement to submit a zero rise analysis may be waived at the department's discretion. (Ord. 17-492 § 2 (Exh. A); Ord. 02-200 § 2).

14.70.040 Flood hazard area standards.

A. General.

1. New construction done by or for the city, such as bridges, roads, flood control works, revetments, retaining walls, drainage structures, sewer or water lines, parks, or other structures necessary to promote the public's health, safety, and welfare shall be allowed in a flood hazard area when:
 - a. The project is prepared, dated, and stamped by a registered professional engineer in the state of Washington and is designed so the project does not result in any increase in flood levels during the occurrence of the base flood discharge (zero-rise) and shall not obstruct the floodway or cause an adverse impact to critical fish or wildlife habitat or adjacent, cross-channel, or upstream or downstream properties; and
 - b. The improvements utilize appropriate flood hazard protection standards.

2. Elevation Certificate. A Federal Emergency Management Agency (FEMA) elevation certificate shall be required for new construction, additions affixed to the side of a structure, and substantial improvements located within flood hazard areas. The most current version of the FEMA elevation certificate must be completed and certified by a professional land surveyor, currently licensed in the state of Washington, kept on file by the city for public inspection, recording the actual (as-built) elevation (in relation to mean sea level) of:

- a. The lowest floor (including basement) of all new or substantially improved structures, whether or not the structure contains a basement;
- b. For flood proofed nonresidential structures, where the structure was flood proofed (including flood proofing certifications).

B. Floodways. Any development, encroachments, filling, clearing or grading, new construction, and substantial improvements shall be prohibited within the floodway (including structures that do not require a building permit), except as allowed in the following standards:

1. Agricultural activities that do not require the installation of structures and that do not have any associated fill.
2. Park and recreational uses and facilities that do not require the installation of structures and that do not have any associated fill.
3. Individual recreational vehicles, not located in an RV park, that are licensed and ready for highway use, on wheels or jacking system, and are not permanently attached to the site (attached only by quick disconnect type utilities and security devices, with no permanently attached additions).
4. Habitat enhancement/stream restoration activities are permitted subject to the provisions outlined in subsection (D) of this section.
5. Rehabilitation, reconstruction, or an upper story addition to an existing structure that does not exceed the limits for a substantial improvement.
6. Private bridges may be allowed to cross the floodway; provided, that the structure meets the requirements contained in EMC 14.70.030 and the following:
 - a. The lowest structural member of a private bridge proposed to cross a channel migration zone shall be a minimum of six feet above the base flood elevation.
 - b. The lowest structural member of a private bridge proposed to cross the floodway portion of any other watercourse shall be a minimum of one foot above the base flood elevation.

C. Flood Fringe Areas. All activities allowed in subsection (B) of this section shall be permitted in a flood fringe area. Any other proposed development, encroachments, filling, clearing or grading, new construction, and substantial improvements are prohibited in a flood fringe area except as permitted under the following standards:

1. Structures that do not require a building permit and that do not have any associated fill are allowed, subject to flood hazard area review and permitting.
2. All other regulated activities shall only be allowed when the proposed development is located on an existing lot of record that was created prior to the effective date of the ordinance codified in this chapter. Applicants shall demonstrate there are no other feasible alternatives that would allow the proposed development to occur completely outside the flood hazard area. At a minimum, the following shall be demonstrated:
 - a. The development cannot be located outside the flood hazard area due to topographic constraints of the parcel or size and/or location of the parcel in relation to the limits of the flood hazard area and a building setback variance has been reviewed, analyzed, and rejected as a feasible alternative to encroachment into the flood hazard area; and

b. The proposed development shall not cause an adverse impact to adjacent, cross-channel, or upstream or downstream properties.

3. Roads, Bridges, Trails, and Parking Lots.

a. Roads, bridges, driveways, trails, emergency vehicle access, and access routes and easements, where allowed, shall be constructed and armored based on the standards in subsection (C)(4) of this section and elevated a minimum of one foot above the base flood elevation.

b. Parking lots shall be elevated to a minimum of one-half foot below the base flood elevation.

4. Grading and Filling. When development is permitted under this subsection, it shall be designed to a zero-rise standard as set forth in EMC 14.70.030(F) and 14.70.050, Appendix A. Any filling, grading, or clearing associated with the permitted development shall not increase flood hazards, water velocities, or flood elevations. In addition to meeting the requirements for zero-rise, all permitted development must also meet the following requirements:

a. Compensatory Storage. New excavated storage volume shall be equivalent to the flood storage capacity eliminated by filling or grading within the flood fringe. Equivalent shall mean that the storage removed shall be replaced by equal live storage volume between corresponding one-foot contour intervals that are hydraulically connected to the floodplain through their entire depth.

b. Flow Conveyance. New excavated conveyance areas shall be equivalent to existing conveyance within the flood fringe. Equivalent shall mean a mechanism for transporting water from one point to another using an open channel system.

c. Erosion Protection. Development shall be protected from flow velocities greater than two feet per second through the use of bio-engineering methods or, when bioengineering methods have been deemed insufficient to protect development, then hard armoring may be utilized. All erosion protection shall extend one to three feet, depending on development requirements, above the base flood elevation and shall be covered with topsoil and planted with native vegetation.

5. Critical Facilities.

a. New construction, additions affixed to the side of an existing structure, and substantial improvement of hazardous facilities, and special occupancy structures are prohibited.

b. New construction of an essential facility, reconstruction of an existing essential facility, or additions to an existing essential facility that exceed the threshold for substantial improvement shall be permitted when no feasible alternative site is available outside the flood hazard area. Such regulated activities are subject to the following:

i. Essential facilities with a crawlspace elevated by fill shall have the lowest floor and any utilities and ductwork elevated a minimum of three feet above base flood elevation, or to the height of the 500-year flood, whichever is higher.

ii. Essential facilities elevated by piers or pilings shall have the finished floor and any utilities and ductwork elevated a minimum of three feet above the base flood elevation (or to the height of the 500-year flood, whichever is higher) and must be designed by a professional structural engineer.

iii. Access to and from the critical facility shall be protected to the height utilized under subsections (C)(5)(b)(i) and/or (ii) of this section. Access routes shall be elevated to or above the same elevation to the maximum extent possible.

iv. Essential facilities shall be armored based on the standards in subsection (C)(4) of this section.

v. Flood proofing and sealing measures must be taken to ensure that toxic or explosive substances will not be displaced or released into floodwaters.

6. Structures. Single-family, two-family, multifamily, mobile/manufactured homes, commercial, industrial, etc., except for critical facilities as set forth in subsection (C)(5) of this section, shall be allowed subject to the following standards:

- a. New construction, additions affixed to the side of an existing structure, and substantial improvement of any structure with a crawlspace shall have the lowest floor elevated a minimum of two feet above base flood elevation.
- b. New construction, additions affixed to the side of an existing structure, and substantial improvement of any structure elevated by piers or pilings shall have the bottom of the lowest horizontal structural member elevated a minimum of two feet above the base flood elevation and must be designed by a professional structural engineer. Electrical, heating, ventilation, plumbing, air-conditioning equipment, and other service facilities and associated ductwork shall be elevated a minimum of two feet above base flood elevation; however, the department may approve a lesser minimum distance above base flood elevation; provided, that the systems are designed to prevent floodwater from entering or accumulating within the components. Areas below the lowest horizontal structural member shall not be enclosed and shall remain free of obstructions.
- c. Mobile/manufactured homes shall be anchored to prevent flotation, collapse, or lateral movement, and shall be installed using methods and practices to minimize flood damage. Anchoring methods may include, but are not limited to, use of over-the-top or frame ties to ground anchors. This is in addition to applicable state and local anchoring requirements for resisting wind forces.

7. Agricultural Accessory Structures. The lowest floor in an agricultural accessory structure shall be located at the base flood elevation or higher; provided, that the structure be designed to automatically equalize hydrostatic flood forces on exterior walls by allowing for the entry and exit of floodwaters. Designs for meeting this requirement must either be certified by a professional engineer in the state of Washington or must meet or exceed the following minimum criteria:

- a. A minimum of two openings having a total net area of not less than one square inch for every square foot of enclosed area subject to flooding shall be provided;
- b. The bottom of all openings shall be no higher than one foot above grade; and
- c. Openings may be equipped with screens, louvers, or other covering or devices; provided, that they permit the automatic entry and exit of floodwaters.

8. Construction Standards.

- a. Construction of a basement is prohibited.
- b. Crawl spaces shall be backfilled with clean earth material and shall meet International Building Code requirements. Finished grade within the crawlspace shall be at least two feet above the base flood elevation.
- c. Flood proofing in lieu of elevating the structure is prohibited.
- d. All single-family, two-family, multifamily, mobile/manufactured homes, commercial, and industrial structures shall be placed on standard concrete stemwall/footing foundations or piles, piers, or column foundations and engineered pursuant to International Building Code requirements.

9. Sewage Disposal and Potable Water Installation.

- a. New and replacement public water sources (i.e., wells and water supply lines) and public sanitary sewage conveyance systems are allowed. These systems shall be designed to withstand scour resulting from flow velocity, minimize or eliminate infiltration of floodwaters into the systems, and minimize or eliminate discharge from the systems into floodwaters

b. All replacement wells and replacement on-site sewage system (OSS) shall be designed to minimize or eliminate impairment to them or contamination from/to them during flooding (i.e., infiltration of floodwaters into or discharge out of the systems). They shall not be located in pothole or no-outlet floodplains.

c. All new individual wells and new on-site sewage system (OSS) shall be prohibited. Conveyance systems from a structure to a well or OSS located outside of the flood hazard area shall be allowed provided these systems are designed to meet the standards in subsection (C)(4) of this section.

14.70.050 Appendices.

A. Floodplain/Floodway Analysis.

B. Channel Migration Zone Study.

APPENDIX A

Formatted: Centered

FLOODPLAIN/FLOODWAY ANALYSIS

This Appendix describes the flood hazard analyses and studies as required by Chapter 14.70 EMC, Flood Hazard Areas. Flood hazard studies establish the base flood elevation and delineate floodplain and/or floodway(s) when a proposed project contains or is adjacent to a river, stream, lake, or closed depression.

Flood hazard studies must conform to FEMA regulations described in Part 65 of 44 Code of Federal Regulations (CFR). In addition, the following information must be provided and procedures performed for flood hazard studies used under Chapter 14.70 EMC to examine development proposals or improvements within a floodplain.

Article I. Floodway Determination

The city recognizes two distinct floodways. The FEMA floodway describes the limit to which encroachment into the natural conveyance channel can cause one foot or less rise in water surface elevation. The deep and/or fast flowing (DFF) water floodways are hazardous areas and conditions of the floodplain for both people and habitable structures. Life safety and protection to improved properties are compromised if encroached upon. Encroachment cannot occur within these areas.

A. FEMA Floodways.

1. FEMA floodways are determined through the procedures outlined in the FEMA publication Guidelines and Specifications for Study Contractors using the one-foot maximum allowable rise criteria.
2. Transitions shall take into account obstructions to flow such as road approach grades, bridges, piers, culverts, or other restrictions. General guidelines for transitions may be found in HEC-RAS, Water Surface Profiles – User's Manual, Appendix IV, Application of HEC-RAS Bridge Routines, published by the Hydrologic Engineering Center, Davis, California.

B. Deep and/or Fast Flowing (DFF) Floodways.

1. DFF floodways are generally assumed to include the entire 100-year floodplain until the department approves a detailed floodway analysis that defines areas of DFF within the entire floodplain area based on the criteria.
2. The hydraulic model must adequately be calibrated to known or recorded stage elevations of past flood events with computed recurrence frequency intervals for the 100-year flood recurrence interval. This is to ensure model accuracy.

Article II. Flood Study Content and Required Information

Three copies of the completed floodplain/floodway analysis study report and the modeling digital files shall be submitted. The report submittal must be stamped by a licensed professional civil engineer and include the following information in addition to that required for the drainage plan of a proposed project:

A. Floodplain/Floodway Map.

1. A scaled survey base map stamped by a licensed professional land surveyor registered in the state of Washington. The map must accurately locate the proposed development with respect to

the floodplain and floodway, the channel of the subject stream, river, and/or pothole location, and the existing improvements within the subject study area. It must also supply all pertinent information such as the nature of the proposed project, legal description of the property on which the project would be located, fill quantity, limits and elevation, the building floor elevations, and use of compensatory storage.

2. The map must show elevation contours at a minimum of two-foot vertical intervals and shall comply with survey and map guidelines published in the FEMA publication Guidelines and Specifications for Study Contractors. The map must show the following:

- a. Elevations and ground contours, spot elevations, and vertical datum NAVD 88 (North American Vertical Datum of 1988) (or most recent vertical datum accepted by the department).
- b. Elevations and dimensions of existing structures, fill, and compensatory storage areas.
- c. Size, location, elevation and spatial arrangement of all proposed structures on the site.
- d. Location and elevations of roadways, drainage facilities, water supply lines, and sanitary sewer facilities.
- e. Areas of DFF must clearly be shown and plotted on the map sheet depicting the bounded area of the floodway on both sides of the study channel through the subject site. DFF floodway studies must reflect all transitions as referenced above as well.
- f. The base maps must also be accompanied by all field survey notes/computations, drawings, etc., for each cross-section with water surface elevation at the time the cross-section field survey was done.

B. Study Report.

1. Soil maps, groundcover maps, and photographs.

2. A narrative report containing the purpose of the study and description of the study area, data collection, methodology for both the hydrology and hydraulics, detailed discussion on the input parameters used, modeling results, and conclusions.

3. A floodplain/floodway analysis must include calculations and all computer analysis input and output information, supporting graphical illustrations, as well as the following additional information:

- a. Scaled cross-sections showing the current/existing conditions of the river/stream channel, the floodplain adjoining each side of the channel, the computed floodway, the cross-sectional area to be occupied by any proposed development and all historic high water information.
- b. Profiles showing the bottom of the channel, the top of both left and right banks and computed base flood water surface elevations for the 10-, 25-, 50- and 100-year events.
- c. Plans and specifications of any flood protection for structures, construction areas, filling, dredging, channel improvements, storage of materials, water supply, and sanitary facilities within the floodplain.

d. Complete printout of input and output data of the model that was used for the analysis. Liberal use of comments and written discussion will assist considerably in understanding the model logic and minimize misinterpretations and/or questions.

e. A map, showing the graphical/plotted location and limits of the computed floodway and/or floodplain.

f. Three copies of ready-to-run digital files of both the hydrologic and hydraulic model and its input and output files used in the study. Data shall be submitted on a disk in standard ASCII format, ready to use on an IBM-compatible personal computer and in the applicable software application (i.e., HEC-RAS, HSPF – Hydrological Simulation Program – FORTRAN, SBUH, etc.).

g. A section on the flood flow including computer modeling and/or calculations (see below for additional requirements on flood flow determinations).

h. Aerial photographs of the site including pre-February 1996 and post-February 1996 photos of the site.

i. All field survey notes/computations, maps, and drawings for each cross-section with water surface elevation at the time of the cross-section field survey.

C. Computer Modeling Information. Floodway/floodplain studies submitted to the city for review must include output summary tables and include the following (but not limited to) items:

1. Cross-section(s) identification number.

2. Range of flows being examined.

3. Computed water surface elevation at each cross-section.

4. Energy grade line at each cross-section.

5. Graphical plots of the channel cross-sections with computed water surface elevations for all model runs including calibrated model runs.

6. All model input and output printouts.

7. Graphical plots of the model output data that show the points and segments along each cross-section where deep and/or fast flowing water occurs. This shall include cross-section plots of depth and velocity in one-unit increments. The plots shall also be accompanied with a table listing the station distance (right and left bank), flow rate, area, hydraulic depth, velocity, and whether each point is a floodway.

8. A plan sheet clearly showing the graphical representation of the bounded area of the floodway based on DFF criteria through the entire study site and reach. Note that identified islands or pockets within the middle of the bounded floodway area are generally considered as part of the floodway, unless otherwise approved by the department.

9. Discussion on the starting water surface elevation for the hydraulic model.

Article III. Determining Flood Flows

The three techniques used to determine the flows used in a flood study depend on whether gauge data is available, whether a basin plan has been adopted, or a detailed flood study has been done and approved for use by the Department. The first technique is for basins with adopted basin plan areas. The second technique is used if a gauging station exists on the stream. The third technique is used on ungauged catchments or those with an insufficient length of record. In all cases, the engineer shall be responsible for assuring that the hydrologic methods used are technically reasonable, conservative, conform to the FEMA publication, Guidelines and Specifications for Study Contractors, and are acceptable by FEMA and the department.

A. Flood Flows from Adopted Basin Plan Information. Flood flows may be determined using information from the city's basin plan. The hydrologic model used in the basin plan shall be updated to include the latest changes in zoning or any additional information regarding the basin which has been acquired since the adoption of the basin plan.

B. Flood Flows from Stream Gauge Data. Determining flood flows from stream gauge data uses the Log-Pearson Type III distribution method as described in the Guidelines for Determining Flood Flow Frequency, Bulletin 17B of the Hydrology Committee, United States Water Resources Council (revised October 1981).

1. This technique may be used only if data from a gauging station in the basin is available for a period of at least 10 years.
2. If the difference in the drainage area on the stream at the study site and the drainage area to a gauging station on the stream at a different location in the same basin is less than or equal to 50 percent, the flow at the study site shall be determined by transferring the calculated flow at the gauge to the study site using a drainage area ratio raised to the 0.86 power, as in the following equation:

where

- Q_{ss} = estimated flow for the given return frequency on the stream at the study site.
- Q_G = flow for the given return frequency on the stream at the gauge site.
- A_{ss} = drainage area tributary to the stream at the study site.
- A_G = drainage area tributary to the stream at the gauge site.

3. If the difference in the drainage area at the study site and the drainage area at a gauging station in the basin is more than 50 percent and a basin plan has not been prepared, a continuous model shall be used as described below to determine the flood flows at the study site.

4. In all cases where dams or reservoirs, floodplain development, or land use upstream may have altered the storage capacity or runoff characteristics of the basin so as to affect the validity of this technique, a continuous model shall be used to determine flood flows at the study site.

C. Flood Flows from a Calibrated Continuous Model. Flood flows may be determined by utilizing a continuous flow simulation model such as HSPF or other equivalent continuous flow simulation model, as approved by the city. Where flood elevation or stream gauging data are available, the model shall be calibrated to the known data. Otherwise, regional parameters may be used.

Article IV. Determining Flood Elevations, Profiles and Floodways (Hydraulic Model)

A. Reconnaissance. The applicant's project engineer is responsible for the collection of all existing data with regard to flooding in the study area. This shall include a literature search of all published reports in the study area and adjacent communities and an information search to obtain all unpublished information on flooding in the immediate and adjacent areas from federal, state, and local units of government. This search shall include specific information on past flooding in the area, drainage structures such as bridges and culverts that affect flooding in the area, available topographic maps, available community maps, photographs of past flood events, and general flooding problems within the community. Documented discussions with nearby property owners should also be done to obtain a witness account of the flooding extent. A field reconnaissance shall be made by the applicant's project engineer to determine hydraulic conditions of the study area, including type and number of structures, locations of cross-sections, and other parameters including the roughness values necessary for the hydraulic analysis.

B. Base Data. Channel cross-sections used in the hydraulic analysis shall be current/existing at the time the study is performed and shall be obtained by field survey. Topographic information obtained from aerial photographs/mapping may be used in combination with surveyed channel cross-sections in the hydraulic analysis.

The elevation datum of all information used in the hydraulic analysis shall be verified. All information shall be referenced directly to NAVD 1988 (and include local correlation to NGVD) unless otherwise approved by the city.

C. Methodology. Flood studies and analysis (including deep and/or fast flowing floodways and zero-rise analysis) shall be calculated using the U.S. Army Corps of Engineers HEC-RAS computer model (or subsequent revision) unless otherwise approved by the city.

D. Adequacy of the Hydraulic Model. Edgewood considers the following (but not limited to) factors when determining the adequacy of the hydraulic model for use in the floodway/floodplain model:

1. Cross-section of a downstream starting location and spacing.
2. Differences in energy grade line (significant differences in the energy grade line from cross-section to cross-section are an indication that cross-sections should be more closely spaced or that other inaccuracies exist in the hydraulic model).
3. Methods and results for analyzing the hydraulics of structures such as bridges and culverts.
4. Lack of flow continuity.
5. Use of a gradually varied flow model. In certain cases, rapidly varied flow techniques may need to be used in combination with a gradually varied flow model such as weir flow over a levee, flow through a spillway of a dam, or special application of bridge flow (pressure flow if bridge superstructure is shown to be submerged for the study event).
6. Manning's "n" value.
7. Calibration of hydraulic model to known and/or observed flow stage elevations including past flood events.
8. Special applications. In some cases, steady state one-dimensional hydraulic models may not be sufficient for preparing the floodplain/floodway analysis. This may occur where sediment transport, two-dimensional flow, or other unique hydraulic circumstances affect the accuracy of the model. In these cases, the project engineer must propose and obtain department approval of alternative models for establishing the water surface elevations.
9. All reported error and/or warning messages by the model must be properly and adequately addressed and/or resolved and included in the report for review verification.

Article V. Zero-Rise Analysis (ZRA)

A. Zero-rise analysis (ZRA) is required where encroachment within the flood fringe area is allowed and approved by the department. The ZRA must show that the proposed development encroachment in the flood fringe area will not show a measurable rise in the base flood elevation (i.e., less than 0.01 foot), resulting from a comparison of existing conditions and proposed conditions. This is directly attributable to development in the floodplain but not attributable to manipulation of mathematical variables such as roughness factors, coefficients, discharge, and other hydraulic parameters.

B. In addition to those items listed in subsection (A) of this article, the following shall be included in a ZRA:

1. Floodway boundaries (based on zero-rise) are to follow the stream lines and reasonably balance the rights of property owners on either side of the floodway. Use of the automatic equal conveyance encroachment option in the model will be considered equitable.
2. The ZRA must include a sufficient number of cross-sections in order to accurately model the subject fill and compensatory storage areas of the site. In all cases, cross-sections shall be located downstream, through the subject site and upstream of the site at a very minimum. They shall also be located where changes in channel and the fill material characteristics occur, such as slope, shape, and roughness. The sections shall also be located perpendicular to the flow path in the channel and the outside overbank areas. The department shall

review and approve the proposed number and location of cross-sections. All cross-sections and surveys shall be prepared and certified by a professional land surveyor or registered professional engineer in the state of Washington.

3. The difference between two profiles of water surface elevation at the cross-section (e.g., difference between existing and encroached water surface). The model must report 0.01 feet or less an allowable change in the water surface elevation. This must be shown in the profile graphical plot as well.

4. The difference between profiles of the energy grade line at the cross-section. The model must report 0.01 feet or less. This is the allowable change in the energy grade line. This must be shown in the profile graphical plot as well.

C. Conveyance Capacity.

1. The ZRA must also show that the proposed development encroachment in the flood fringe area will not show a measurable decrease (less than 0.01 CFS) in the conveyance capacity of the channel, resulting from a comparison of existing conditions and proposed conditions, for each of the cross-sections. This is also directly attributable to development in the floodplain but not attributable to manipulation of mathematical variables such as roughness factors, coefficients, discharge, and other hydraulic parameters.

2. The analysis must provide calculations of the reduction in conveyance caused by the proposed development encroachment, assuming no change in the water surface elevation, and using the roughness coefficient value(s) appropriate for the proposed development.

3. The analysis must then provide calculations for the increase in conveyance of the proposed compensatory measure, using the roughness coefficient value(s) appropriate for the proposed development.

4. Include a comparison analysis and discussion from subsections (C)(2) and (3) of this article. The comparison must adequately show that the conveyance capacity has not measurably decreased between the existing condition and proposed development condition.

Floodplain/Floodway Zero-Rise Certification

This is to certify that I am a duly qualified professional engineer licensed to practice in the state of Washington.

This is to further certify that the attached floodplain/floodway zero-rise analysis conclusively shows that the proposed development of:

(Name of Development) Parcel Number

will not increase the 100-year base flood elevation(s) and widths nor reduce the conveyance capacity of the floodplain/floodway and its associated channel to the

(Name of River, Stream, Pothole or other Watercourse)

Supporting Data

Base Flood Elevation (Pre-Development) = _____ FT (NAVD 88)

Base Flood Elevation (Post-Development) = _____ FT (NAVD 88)

Conveyance Capacity (Pre-Development) = _____ CFS

Conveyance Capacity (Post-Development) = _____ CFS

with compensatory storage)

Signature Date

Title Firm Name

Address

City

State Zip Code

APPENDIX B

Formatted: Centered

CHANNEL MIGRATION ZONE STUDY REQUIREMENTS

The channel migration zone (CMZ) is the area within the lateral extent of likely stream channel movement due to stream bank destabilization and erosion, rapid stream incision, and shifts in location of stream channels. The CMZ will define areas in which, to the best information available, development should be regulated due to the dangers expected from erosion.

Article I. Determining Channel Migration Zone Limits

A. The CMZ shall be based on available historic records of channel migration, or 100 years of calculated channel migration whichever is greater, and will generally include those areas that encompass:

1. The limit of geologic controls, such as hill slope, bedrock outcrop, or abandoned floodplain terrace;
2. Side channels, abandoned channels, and oxbows; and
3. Outside edges of progressive bank erosion at meander bends.

B. Channel migration over the 100-year time frame can be estimated and predicted from geomorphic analysis of annual bank erosion rates, historic meander belt width, and measured meander bend amplitudes, potential avulsion sites, and previous river channel locations as depicted on historic aerial photographs and maps. The 100-year time span represents the time required to grow mature trees that can provide functional large woody debris to streams.

C. The CMZ boundaries will be determined using the following specific criteria:

1. The representative average annual rate of channel migration in the affected river reach is calculated by dividing the lateral distance eroded with the corresponding elapsed time shown in sequential aerial photographs or historic maps (distance/time equals channel movement). Measurements from reaches that have had some form of bank armoring shall not be included. Historical records will need to be checked closely for this information.
2. Identify the width of the channel migration zone by multiplying the representative average annual erosion rate by 100 years.

D. Areas separated from the active channel by legally existing artificial channel constraints (levees, roads, driveways, etc.) that limit bank erosion and channel avulsion to the 100-year recurrence interval flood elevation plus three feet of freeboard shall serve as a boundary for the outer limit of the CMZ.

Article II. Channel Migration Zone Study Content and Required Information

Three copies of the completed channel migration zone study shall be submitted. The study submittal must be stamped by a licensed professional engineer or professional geologist with five years' experience in fluvial geomorphology, river dynamics, or geotechnical engineering. The CMZ study shall include the following information in addition to that required for the drainage plan of a proposed project. The CMZ study will consist of a written technical report including:

- A. Detailed methods, techniques, and assumptions used in determining the location of the CMZ.
- B. A vicinity map and site with scale, north arrow, and parcel number(s) or specific site being studied.
- C. A clear statement of the requested revision to the county's determination of the 100-year floodplain limits as the CMZ.
- D. A clearly stated conclusion of the study results that support the requested revision. The conclusion needs to document the basis for the revision, show how the data presented refutes the 100-year floodplain limits as the CMZ, and calculates the new results using the new information.
- E. A map clearly delineating the subject property and the CMZ of the adjacent watercourse. In addition to providing a hard copy of the CMZ map, the CMZ map shall also be provided in ARC-View shapefile format. Contact the city GIS department for mapping and aerial imaging standards. (Ord. 02-200 § 2).

Chapter 14.80

LANDSLIDE HAZARD AREAS

Sections:

- 14.80.010 Purpose.
- 14.80.020 Landslide hazard areas.
- 14.80.030 Landslide hazard area review procedures.
- 14.80.040 Landslide and erosion hazard area standards.
- 14.80.050 Buffer requirements.
- 14.80.060 Appendices.

14.80.010 Purpose.

The following statements describe the purpose of this chapter is to:

- A. Protect human life and health.
- B. Regulate uses of land in order to avoid damage to structures and property being developed and damage to neighboring land and structures.
- C. Identify and map active landslide hazard areas.
- D. Minimize the ill effects on wetlands and critical fish and wildlife habitat that can result from landslides.
- E. Establish permit requirement and review procedures for development proposals in areas with potential landslides. (Ord. 02-200 § 2).

14.80.020 Landslide hazard areas.

A. Landslide Hazard Areas Indicators. Landslide hazard areas are areas potentially subject to mass movement due to a combination of geologic, seismic, topographic, hydrologic, or manmade factors. Landslide hazard areas can be identified by the presence of any of the following indicators:

1. Areas of historic failures, including areas of unstable, old and recent landslides or landslide debris within a head scarp.
2. Areas with all of the following characteristics:
 - a. Slopes steeper than 15 percent with a vertical relief of 20 feet or more; and
 - b. Hillsides that intersect geologic contacts with a relatively permeable sediment overlying a relatively impermeable sediment or bedrock; and
 - c. Springs or groundwater seepage.
3. Areas exhibiting geomorphological features indicative of past slope failure within the last 10,000 years, such as hummocky ground, back-rotated benches on slopes, tension cracks, etc.
4. Any area with a slope of 40 percent or steeper and with a vertical relief of 15 or more feet. Manmade slopes of 40 percent or steeper with a vertical relief of 15 feet or more may be exempted from the requirements of this section of the code provided that it can be demonstrated by a qualified geotechnical professional that such an exemption does not result in an increased risk of landsliding or damage to the subject site, nearby properties, or existing structures and, any associated hazards to proposed structures are suitably mitigated. For the purposes of determining whether a slope is considered to be a landslide hazard area, the horizontal and vertical distance between the top and toe of slope are utilized.
5. Areas that are at risk of mass movement due to seismic events.

B. Potential Landslide Hazard Areas. Potential landslide hazard areas, as depicted on the Geologically Hazardous Areas map, are those areas where the suspected risk of slope instability and landslide is sufficient to require a geological assessment to assess the potential for active landslide activity. Potential landslide hazard areas are determined by using the following criteria:

1. Areas that possess one or more of the landslide hazard area indicators (stratigraphy, topography, emergent groundwater seepage, etc.) as set forth in subsection (A) of this section and any adjacent area within a distance of 65 feet. These areas include, but are not necessarily limited to, those areas designated on the City's Geologically Hazardous Areas map as moderate or steep slope areas.

14.80.030 Landslide hazard area review procedures.

A. General Requirements.

1. The city's Geologically Hazardous Areas map provides an indication of where potential landslide hazard areas are located within the city. The actual presence or location of landslide hazard areas that have not been mapped, but may be present on or adjacent to a site, shall be determined using the geological assessment procedures established in this chapter.
2. The department will complete a review of the Geologically Hazardous Areas map and other source documents for any proposed regulated activity to determine whether the site is, or may be, located within a landslide hazard area or potential landslide hazard area. Identification of a landslide hazard area or potential landslide hazard area may also occur as a result of field investigations conducted by department staff.
3. When the department's maps or sources indicate that the site for a proposed regulated activity is or may be located within a landslide hazard area or potential landslide hazard area, the department shall require the submittal of a geological assessment as outlined in subsection (B) of this section.
4. Unless otherwise stated in this chapter, the critical protective measure provisions contained in EMC 14.10.080 shall apply.

B. Geological Assessment. A geological assessment is a site investigation process to evaluate the on-site geology affecting a subject property. The findings of the geological assessment shall be presented in a Landslide Hazard Geotechnical Verification or Geotechnical Report.

1. Geological assessments shall be submitted to the department for review and approval together with a landslide hazard area application and associated fee.
2. A geological assessment shall include a field investigation and may include the use of historical air photo analysis, LiDAR mapping, review of regional geologic mapping, review of public records and documentation, and interviews with adjacent property owners, etc.
3. The geological assessment shall include the following information and analysis:
 - a. A determination of which areas on the site or within the vicinity of the site meet the criteria for a landslide hazard area as set forth in EMC 14.80.020(A).
 - b. Consider the run-out hazard of landslide debris to the proposed development that starts upslope (whether part of the subject property or on a neighboring property) and/or the impacts of landslide run-out on down slope properties.
 - c. The geological assessment shall include a detailed review of the field investigations, published data and references, data and conclusions from past geological assessments, or geotechnical investigations of the site, site-specific measurements, tests, investigations, or studies, as well as the methods of data analysis and calculations that support the results, conclusions, and recommendations.
4. Geological assessments shall be prepared, signed, and dated by a geotechnical professional (as defined in Chapter 14.15 EMC and established in this chapter) and the format shall be pre-approved by the department.

5. A geotechnical professional shall complete a field investigation and geological assessment to determine whether or not a landslide hazard area is likely to exist within 300 feet of the site. Where access to off-site properties is not available by the geotechnical professional, evaluation of off-site landslide hazards must include review of regional geologic mapping and LiDAR based topographic mapping.

a. The geological assessment shall be submitted in the form of geotechnical verification when the geotechnical professional finds that no landslide hazard area exists within 300 feet of the project area. The geotechnical verification shall meet the requirements contained in EMC 14.80.060, Appendix A.

b. The geological assessment shall be submitted in the form of a geotechnical report when the geotechnical professional finds that a landslide hazard area exists within 300 feet of the proposed project area or when a geotechnical professional determines that mitigation measures are necessary in order to construct or develop within a potential landslide hazard area. The geotechnical report shall meet the requirements contained in EMC 14.80.060, Appendix B.

6. Geological assessments that do not contain the minimum required information or comply with the landslide hazard area standards set forth in EMC 14.80.030 will be returned to the geotechnical professional for revision.

7. The department shall review the geological assessment and either:

a. Accept the geological assessment; or

b. Reject the geological assessment and require revisions or additional information.

8. When the geological assessment has been accepted, the department shall issue a decision on the landslide hazard area application.

9. A geological assessment for a specific site may be valid for a period of up to five years when the proposed land use activity and surrounding site conditions are unchanged. However, if any environmental conditions associated with the site change during that five-year period, the applicant may be required to submit an amendment to the geological assessment. (Ord. 02-200 § 2).

14.80.040 Landslide and erosion hazard area standards.

A. Landslide Hazard Areas. Any development, encroachment, filling, clearing or grading, building structures, impervious surfaces, and vegetation removal shall be prohibited within landslide hazard areas and associated buffers except as specified in the following standards:

1. Stormwater Conveyance. Stormwater conveyance shall be allowed when it is conveyed through a high-density polyethylene stormwater pipe with fuse-welded joints and when no other stormwater conveyance alternative is available. The pipe shall be located on the surface of the ground and be properly anchored so that it will continue to function in the event of an underlying slide.

2. Utility Lines. Utility lines will be permitted when no other conveyance alternative is available. The line shall be located above ground and properly anchored and/or designed so that it will continue to function in the event of an underlying slide.

3. Roads, Bridges, and Trails. Roads, bridges, and trails shall be allowed when all of the following conditions have been met:

a. Mitigation measures are provided that ensure the roadway prism and/or bridge structure will not be susceptible to damage from landslide-induced ground deformation or impact/coverage by landslide debris. Mitigation measures shall be designed for static and seismic loading conditions in accordance with the most recent version of the American Association of State Highway and Transportation Officials (AASHTO) Manual.

b. The road is not a sole access for a development.

c. The removal or disturbance of vegetation, clearing or grading shall be prohibited during the wet season (November 1st to May 1st).

B. Landslide Hazard Management Areas. All regulated activities may be allowed in areas located within 300 feet of a landslide hazard area subject to the following standards:

1. The department reviews and approves a geological assessment – geotechnical report and determines that the potential landslide hazard area is stable.
2. The proposed development is located outside of a landslide hazard area and any required buffer, as set forth in EMC 14.80.050.
3. The proposed recommendations and mitigation measures contained within the geotechnical report are adequate to reduce or mitigate risks to health and safety.
4. The proposed development shall not decrease the factor of safety for landslide occurrence below the limits of 1.5 for static conditions and 1.1 for dynamic conditions. Analysis of dynamic (seismic) conditions shall be based on a minimum horizontal acceleration as established by the current version of the International Building Code.
5. The removal and disturbance of vegetation, clearing or grading shall be limited to the area of the approved development and shall not be allowed during the wet season (November 1st through May 1st) unless adequate provisions for wet season erosion have been addressed in the geotechnical report and approved by the department.
6. Surface drainage from developed areas, including downspouts and runoff from paved or unpaved surfaces up slope, shall not be directed through a landslide hazard area or its associated buffer unless it is conveyed in conformance with the provisions in EMC 14.80.030.
7. Stormwater retention facilities, including infiltration systems utilizing perforated pipe, are prohibited unless the slope stability impacts of such systems have been analyzed and mitigated by a geotechnical professional and the impacts have been determined to be negligible.
8. The proposed development shall not create a need for larger landslide hazard area buffers and setbacks on neighboring properties unless approved through a notarized written agreement with the affected property owner(s).
9. The proposed development shall be sited far enough from regressing slope faces to project 120 years of useful life for the proposed structure(s) or infrastructure.
10. Any proposed lots must be completely located outside any identified landslide hazard areas or their associated buffers.
11. Landslide hazard areas that are directly adjacent to any riparian areas, or wetlands, may be subject to additional buffer requirements and standards as set forth in Chapter 14.40 EMC, Fish and Wildlife Habitat Conservation Areas, or wetlands as set forth in Chapter 14.30 EMC, Wetlands. (Ord. 02-200 § 2).

14.80.050 Buffer requirements.

A. Determining Buffer Widths.

1. The buffer width shall be measured on a horizontal plane from a perpendicular line established at the edge of the landslide hazard area limits (both from the top and toe of the slope).
2. A buffer of undisturbed vegetation shall be required for a landslide hazard area. The required buffer width is the greater amount of the distances described in EMC 14.80.050:
 - a. Fifty feet from all edges of the active landslide hazard area limits;

b. A distance of one-third the height of the slope at the top of the active landslide hazard area and a distance of one-half the height of the slope at the bottom of an active landslide hazard area; or

c. The buffer widths may be reduced below the widths specified in EMC 14.80.050, or eliminated upon approval by the department of a geotechnical report that demonstrates that such a reduction would not result in an increased risk of landslide activity either on or off of the subject property.

B. Modification of Buffer Widths. The department may require a larger buffer width than the buffer distance, as determined in subsection (A) of this section, if any of the following are identified:

1. The adjacent land is susceptible to severe erosion and erosion control measures will not effectively prevent adverse impacts.
2. The area has a severe risk of slope failure or downslope stormwater drainage impacts. (Ord. 02-200 § 2).

14.80.060 Appendices.

A. Geological Assessment – Landslide Hazard Geotechnical Verification.

B. Geological Assessment – Landslide Hazard Geotechnical Report.

APPENDIX A

GEOLOGICAL ASSESSMENT – LANDSLIDE HAZARD GEOTECHNICAL VERIFICATION

A. A geotechnical verification shall include the following:

1. The general critical areas report requirements in EMC 14.10.082.
2. A description of the surface and subsurface geology, hydrology, soils, and vegetation at the site and a list of the landslide hazard area indicators, as set forth in EMC 14.80.020(A), that were found on or in the vicinity of the site.
3. A summary of the results, conclusions, and recommendations resulting from the geological assessment of the landslide hazards on or in the vicinity of the site. This summary shall address all of the information required in EMC 14.80.030(B). The summary should include a description of observations during the site visit and a discussion of information obtained from review of the listed documents in EMC 14.80.030(B)(2).
4. An accurate site plan drawn at a scale of one inch equals 20 feet, one inch equals 30 feet, one inch equals 50 feet (or other scale deemed appropriate by the department) is required. The department may require that the site plan information listed below be based on a field survey by a licensed surveyor. The site plan shall include:
 - a. The limits/location of the active landslide hazard area(s).
 - b. The limits/location of the required landslide hazard buffer based upon the requirements set forth in EMC 14.80.050(A).
 - c. The location of any existing and proposed structures, utilities, on-site septic systems, wells, and stormwater management facilities.
 - d. The full geographical limits of the proposed project area (area to be developed).
 - e. Dimension the closest distance between the identified active landslide hazard area boundary and the project area.
 - f. Existing topography on the site presented in two-foot contours.
 - g. Property lines for the site.
 - h. North arrow and plan scale.

Formatted: Centered

B. The geotechnical professional who prepared the verification document shall stamp the verification with his or her license stamp/seal.

C. Geotechnical verifications shall be in conformance with a format that is pre-approved by the department.

APPENDIX B

Formatted: Centered

GEOLOGICAL ASSESSMENT – LANDSLIDE HAZARD GEOTECHNICAL REPORT

A. At a minimum, a geotechnical report shall include the following:

1. The general critical areas report requirements in EMC 14.10.082.
2. A description of the surface and subsurface geology, hydrology, soils, and vegetation of the site and a list of the landslide hazard area indicators, as set forth in EMC 14.80.020(A), that were found on or in the vicinity of the site.
3. A summary of the results, conclusions, and recommendations resulting from the geological assessment of the landslide hazards on or in the vicinity of the site. This summary shall address all of the information required in EMC 14.80.030(B).
4. An accurate site plan drawn at a scale of one inch equals 20 feet, one inch equals 30 feet, one inch equals 50 feet (or other scale deemed appropriate by the department) is required. The department may require that the site plan information listed below be based on a field survey by a licensed surveyor. The site plan shall include:
 - a. The limits/location of the landslide hazard area(s) within the site. Delineation of the landslide hazard area limits shall identify any areas of historic landslide activity.
 - b. The limits/location of the required landslide hazard buffer based upon the requirements set forth in EMC 14.80.050(A).
 - d. The location of any existing and proposed structures, utilities, on-site septic systems, wells, and stormwater management facilities.
 - e. The full geographical limits of the proposed project area (area to be developed).
 - f. Location and unique identifier of geotechnical borings, CPT soundings, or other surveys or explorations used to characterize subsurface conditions.
 - g. Extent of cross-section(s) used to evaluate the three-dimensional subsurface geologic and groundwater conditions at the site.
 - h. Extent of cross-section(s) used in the evaluation of slope instability.
 - i. Existing topography on the site presented in two-foot contours.
 - j. Property lines for the site.
 - k. North arrow and plan scale.
5. Subsurface characterization data must be provided. The data shall be based on both existing and new information that may include soil borings, test pits, geophysical surveys, or other appropriate subsurface exploration methods, development of site-specific soil and/or rock stratigraphy, and measurement of groundwater levels including variability resulting from seasonal changes, alterations to the site, etc.
 - a. Geotechnical borings or CPT soundings will be advanced to a depth sufficient to characterize geologic conditions within and below the existing or potential landslide mass.

b. Other methods used for subsurface characterization shall be assigned a unique identifier, and the basic data presented in appropriate graphical and/or tabular format.

c. The three-dimensional subsurface conditions at the site shall be presented using one or more cross-sections showing location and depth penetration of geotechnical borings, CPT soundings, or other subsurface characterization methods, interpretation of the geometry of major soil units, and projected location of the static groundwater surface determined from the subsurface exploration. The cross-sections shall be presented at a scale of one inch equals 20 feet, one inch equals 30 feet, one inch equals 50 feet (or other scale deemed appropriate by the department). Each cross-section shall have a legend with a description of the various major soil units.

6. A detailed description of any prior grading activity, soil instability, or slope failure.

7. Where deemed appropriate by the geotechnical professional assessments and conclusions regarding slope stability for both the existing and developed conditions shall be presented and documented. These assessments and conclusions shall include the information provided below in EMC 14.80.060, Appendix B. The project geotechnical professional must provide justification for not including a slope stability analysis if one is excluded. The City's geotechnical professional reserves the right to request a slope stability analysis based on site conditions. If a dispute arises between the project geotechnical professional and the City's geotechnical professional regarding the need for a slope stability analysis, then the City reserves the right to require an independent, third party review to be paid for by the applicant to resolve the dispute.

a. Determination of the potential types of landslide failure mechanisms (e.g., debris flow, rotational slump, translational slip, etc.) that may affect the site.

b. Quantitative stability evaluation of slope conditions of the various failure mechanisms using state-of-the-practice modeling techniques. Limiting equilibrium methods of analysis shall state the stability conditions as a factor of safety. The most unstable failure geometry(ies) shall be presented in the form of a cross-section(s), with the least stable failure geometry for each failure mechanism clearly indicated. The stability evaluation shall also consider dynamic (earthquake) loading, and shall use a minimum horizontal acceleration as established by the current version of the International Building Code.

c. An analysis of slope regression rate shall be presented in those cases where stability is impacted or influenced by erosional processes (e.g., wave cutting, stream meandering, etc.) acting on the toe of the slope.

8. Mitigation recommendations using engineered measures to protect the proposed structure(s) and any adjacent structures, infrastructure, adjacent wetlands, or critical fish and wildlife habitat from damage or destruction as a result of proposed construction activities shall be designed by a professional engineer. Design plans and detailed geotechnical recommendations may be provided in a document separate from the geotechnical report. When appropriate, such recommendations/plans may include, but are not necessarily limited to:

a. Design plans and associated design calculations for engineered structures or drainage systems (e.g., structural foundation requirements, retaining wall design, etc.).

b. Recommendations and requirements pertaining to the handling of surface and subsurface runoff in the developed condition.

c. Identification of necessary geotechnical inspections to assure conformance with the report mitigation and recommendations.

d. Proposed angles of cut and fill slopes, site grading requirements, final site topography (shown as two-foot contours), and the location of any proposed structures, on-site septic systems, wells, and stormwater management features or facilities associated with the development detailed within the body of the report and shown on a site map at the same scale as that required in subsection (A)(8) of this appendix.

e. Soil compaction criteria and compaction inspection requirements.

f. An analysis that indicates how the proposal meets the standards outlined in EMC 14.80.040.

g. Structural foundation requirements and estimated foundation settlement shall be provided if structures are proposed.

h. Lateral earth pressures.

i. Suitability of on-site soil for use as fill.

j. Mitigation measures for building construction on each lot for short plats, large lots, or formal plats such that additional geotechnical professional involvement is minimized during building construction.

B. The geotechnical report shall be prepared by an engineering geologist and shall be co-written by both an engineering geologist and professional engineer where both geological interpretations and engineering analyses and designs are necessary or prudent in the mitigation of the landslide hazard.

C. The geotechnical professional(s) who prepared the geotechnical report shall stamp the report with his or her license stamp/seal.

D. The department may request a geotechnical professional to provide additional information in the geotechnical report based upon existing conditions, changed conditions, or unique circumstances occurring on a case-by-case basis.

E. Geotechnical reports shall be in conformance with a format that is pre-approved by the department. (Ord. 05-247 § 1; Ord. 02-200 § 2).

Chapter 14.90

SEISMIC (EARTHQUAKE) HAZARD AREAS

Sections:

- 14.90.010 Purpose.
- 14.90.020 Seismic hazard areas.
- 14.90.030 Seismic hazard area review procedures.
- 14.90.040 Seismic hazard area standards.
- 14.90.050 Buffer requirements.
- 14.90.060 Appendices.

14.90.010 Purpose.

Earthquakes have historically occurred throughout the Puget Sound region. Large earthquakes have caused loss of life and over a billion dollars in property damage. The purpose of this chapter is to protect the public health, safety, and general welfare of the citizens of Edgewood from the damaging effects of earthquakes. This chapter provides standards to ensure life safety and minimize public and private losses that may occur within a seismic hazard area. (Ord. 02-200 § 2).

14.90.020 Seismic hazard areas.

A. General. Seismic hazard areas are areas subject to severe risk of damage as a result of earthquake-induced landsliding, seismic ground shaking, dynamic settlement, fault rupture, or soil liquefaction.

B. Potential Seismic Hazard Areas. Potential seismic hazard areas are those areas where the suspected risk of earthquake induced landsliding, dynamic settlement, fault rupture, ground deformation caused by soil liquefaction, or flooding is sufficient to require a further seismic hazard area review as set forth in EMC 14.90.030. These potential seismic hazard areas are determined using the following criteria:

1. Earthquake Induced Landslide Hazard Areas. Areas identified as potential landslide hazard areas in EMC 14.80.020.
2. Liquefaction and/or Dynamic Settlement Hazard Areas. Areas identified as high and moderate liquefaction and dynamic settlement hazard areas on the Geologically Hazardous Areas map.
3. Fault Rupture Hazard Areas.

C. Seismic Hazard Area Categories.

1. Earthquake Induced Landslide Hazard Areas. Earthquake induced landslide hazard areas include slopes that can become unstable as a result of strong ground shaking, even though these areas may be stable under non-seismic conditions.
2. Liquefaction and/or Dynamic Settlement Hazard Areas.
 - a. Liquefaction hazard areas are areas underlain by unconsolidated (corrected Standard Penetration Test blow counts, $[(N_1)_{60}]$ less than 30) sandy or silt soils (Unified Soil Classification System S or M soil-types) and a shallow groundwater table (static groundwater depth less than 30 feet) capable of liquefying in response to earthquake shaking.
 - b. Dynamic settlement hazard areas are areas underlain by a significant thickness (more than 10 feet) of loose or soft soil not susceptible to liquefaction (e.g., peats or organic silts and clays, unsaturated loose sands or silts), but that could result in vertical settlement of the ground surface in response to earthquake shaking.
3. Fault Rupture Hazard Areas. Fault rupture hazard areas include:

- a. Active fault rupture hazard areas are areas where displacement (movement up, down, or laterally) of the ground surface has occurred during past earthquake(s) in the Holocene Epoch; and
- b. Areas adjacent to the active fault rupture hazard area that may be potentially subject to ground surface displacement in a future earthquake.

14.90.030 Seismic hazard area review procedures.

A. General Requirements.

1. The city's Geologically Hazardous Areas map provides an indication of where potential seismic hazard areas are located within the city.
2. The department will complete a review of the Critical Areas Atlas – Seismic Hazard Area Map for any regulated activity to determine whether the site for a proposed regulated activity is located within a seismic hazard area.
3. When the department's maps indicate that the site for a proposed regulated activity is located within a potential liquefaction or dynamic settlement hazard area, the department shall require the submittal of a geological assessment as outlined in subsection (B) of this section.
4. When the department's maps indicate that the site for a proposed regulated activity is located within a potential fault rupture hazard area, the department shall require the submittal of a geological assessment as outlined in subsection (B) of this section. The requirement to submit a geological assessment may be waived at the department's discretion when it is determined that the proposed project area for the regulated activity is located outside the potential fault rupture hazard area.
5. When the department's maps indicate that the site for a proposed regulated activity is or may be located within a potential earthquake-induced landslide hazard area, the department shall conduct a review pursuant to the requirements set forth in EMC 14.80.030.
6. Unless otherwise stated in this chapter, the critical area protective measure provisions contained in EMC 14.10.080 shall apply.

B. Geological Assessments. A geological assessment is a site investigation process to evaluate the on-site geology affecting a subject property and define the extent and severity of potential seismic hazards.

1. A geological assessment shall be required when the department's maps, sources, or field investigation indicate a site contains a potential liquefaction, dynamic settlement, or fault rupture hazard area. Geological assessments shall be submitted to the department for review and approval together with a seismic hazard area application.
2. A geotechnical professional(s) shall complete a field investigation and geological assessment to determine whether or not the site for a proposed regulated activity is located within a liquefaction or dynamic settlement hazard area.
 - a. The geological assessment shall be submitted in the form of a geotechnical verification when the geotechnical professional(s) finds that no liquefaction or dynamic settlement hazard area exists within the proposed project area. The geotechnical verification shall meet the requirements contained in EMC 14.90.060, Appendix A.
 - b. The geological assessment shall be submitted in the form of a geotechnical report when the geotechnical professional(s) finds that a liquefaction or dynamic settlement hazard area exists within the proposed project area. The geotechnical report shall meet the requirements contained in EMC 14.90.060, Appendix A.
3. A geotechnical professional shall complete a field investigation and geological assessment presented in the form of a geotechnical report to determine whether or not the site for a proposed regulated activity is located within a fault rupture hazard area. The geological assessment shall meet the requirements contained in EMC

14.90.060, Appendix B. Any structural recommendations proposed to mitigate the fault rupture hazard that are included in the geotechnical report shall be prepared by an engineer.

4. All geological assessments for seismic hazards submitted under this chapter shall include, at a minimum, the following:

- a. The dates when the geological assessment was conducted and when the assessment was prepared.
- b. The parcel number(s) of the subject property.
- c. Site address, if the city has assigned one.
- d. A brief description of the project (including the proposed land use) and the area to be developed.
- e. A map showing the property lines for the site, existing two-foot contours of the existing site topography, and the location of any existing structures, utilities, wells, stormwater or septic systems, or other developments.
- f. A site plan delineating the limits of the proposed development and the location of all areas of the site subject to potential seismic hazards based on the Geologically Hazardous Areas map and, if applicable, limits of associated buffers.
- g. A description of the surface and subsurface geology, hydrology, soils, and vegetation of the site.
- h. A detailed overview of the field investigations, published data and references, data and conclusions from past geological assessments or geotechnical investigations of the site, site-specific measurements, tests, investigations, or studies, as well as the methods of data analysis and calculations that support the determination regarding whether liquefaction and/or dynamic settlement hazards are present on the site.
- i. The results, conclusions, and recommendations resulting from the geological assessment of the liquefaction and/or dynamic settlement hazards on the subject property as prepared by a geotechnical professional(s).

5. Geological assessments shall be prepared, signed, stamped, and dated by the appropriate geotechnical professional(s) (as defined in Chapter 14.15 EMC and established in this chapter) and the format shall be pre-approved by the department.

6. Geological assessments that do not contain the minimum required information will be returned to the geotechnical professional(s) for revision.

7. The department shall review the geological assessment and either:

- a. Accept the geological assessment and approve the application; or
- b. Reject the geological assessment and require revisions or additional information.

8. A geological assessment for a specific site may be valid for a period of up to five years when the proposed land use activity and surrounding site conditions are unchanged. However, if any environmental conditions associated with the site change during that five-year period, the applicant may be required to submit an amendment to the geological assessment. (Ord. 02-200 § 2).

14.90.040 Seismic hazard area standards.

A. Earthquake Induced Landslide Hazard Areas. All standards set forth in Chapter 14.80 EMC shall apply to earthquake induced landslide hazard areas.

B. Liquefaction and/or Dynamic Settlement Hazard Areas.

1. All building structures shall conform to the standards set forth in EMC Title 15, Buildings and Construction.

2. Utility Lines. Utility lines, except for gas pipelines, which are prohibited, will be permitted when no other conveyance alternative is available. The line shall be located above ground and properly anchored and/or designed so that it will continue to function in the event of seismically induced ground deformation. Provision for automatic shut-off of utilities in a ground-rupturing event will be required.

3. Roads, Bridges, and Trails. Roads, bridges, and trails shall be allowed when mitigation measures are provided that ensure the roadway prism and/or bridge structure will not be susceptible to damage from seismic induced ground deformation. Mitigation measures shall be designed for static and seismic loading conditions in accordance with the most recent version of the American Association of State Highway and Transportation Officials (AASHTO) Manual and also for an estimated range of ground surface offset presented in the geotechnical report.

C. Fault Rupture Hazard Areas. Any development, encroachment, filling, grading, or building structures shall be prohibited within fault rupture hazard areas and associated buffers except as specified in the following standards:

1. Utility Lines. Utility lines, except for gas pipelines, which are prohibited, will be permitted when no other conveyance alternative is available. The line shall be located above ground and properly anchored and/or designed so that it will continue to function in the event of seismically-induced ground deformation. Provision for automatic shutoff of utilities in a ground-rupturing event will be required.

2. Roads, Bridges, and Trails. Roads, bridges, and trails shall be allowed when all of the following conditions have been met:

a. Mitigation measures are provided that ensure the roadway prism and/or bridge structure will not be susceptible to damage from seismically-induced ground deformation. Mitigation measures shall be designed for static and seismic loading conditions in accordance with the most recent version of the American Association of State Highway and Transportation Officials (AASHTO) Manual and also for an estimated range of ground surface offset presented in the geotechnical report.

b. The road is not a sole access for a development. (Ord. 02-200 § 2).

14.90.050 Buffer requirements.

A. Determining Buffer Widths.

1. The buffer width shall be measured on a horizontal plane from a perpendicular line established at the edge of the fault rupture hazard area limits.

2. A buffer is an area that is adjacent to a fault rupture hazard area that may be potentially subject to ground surface displacement in a future earthquake. No development shall be permitted within a fault rupture hazard area and its associated buffer. The required buffer width is the greater amount of the following distances:

a. Fifty feet from all edges of a fault rupture hazard area, except for high occupancy or essential facilities, where the minimum buffer distance shall be 100 feet; or

b. The required buffer width is the minimum distance recommended by the geotechnical professional(s).

B. Modification of Buffer Widths. The Department may require a larger buffer width than the buffer distance, as determined in subsection (A) of this section, if the department determines the standard or proposed buffer is not adequate to protect the health, safety, or welfare of any proposed development. (Ord. 02-200 § 2).

14.90.060 Appendices.

A. Geological Assessments – Liquefaction or Dynamic Settlement Hazard Areas.

B. Geological Assessments – Fault Rupture Hazard Area Geotechnical Report.

APPENDIX A

GEOLOGICAL ASSESSMENTS – LIQUEFACTION OR DYNAMIC SETTLEMENT HAZARD AREAS

Formatted: Centered

Article I. Geotechnical Verification

A. A geotechnical verification shall, at a minimum, include the following:

1. The general critical areas report requirements in EMC 14.10.082.
2. The geotechnical verification shall include all mandatory items listed in EMC 14.90.030(B)(4).
3. The geological assessment must include a determination that no liquefaction and/or dynamic settlement hazard exists within the proposed project area.
4. The verification shall include an accurate site plan drawn at a scale of one inch equals 20 feet, one inch equals 30 feet, one inch equals 50 feet (or other scale deemed appropriate by the department) is required. The department may require that the site plan information be based on a field survey by a licensed surveyor. The site plan shall include:
 - a. Property lines for the site, and the location of any existing structures.
 - b. The full geographical limits of the proposed project area or conceptual project area (i.e., area to be developed) and the location of any proposed structures, on-site septic systems, wells, and stormwater management features or facilities associated with the development, if known.

B. The geotechnical professional(s) who prepared the geotechnical verification shall stamp the verification with his or her license stamp/seal.

C. Hold harmless clauses, disclaimers, and limitations are not allowed within a geotechnical verification.

Article II Geotechnical Report

A. A geotechnical report shall, at a minimum, include the following:

1. The general critical areas report requirements in EMC 14.10.082.
2. The document shall include all mandatory items listed in EMC 14.90.030(B)(4). The report shall be prepared by an engineer and shall be co-written by an engineering geologist where geological interpretations and conclusions critical to the assessment of liquefaction and/or dynamic settlement hazard and potential effects are necessary or prudent. The report shall specify the desired performance level of the structures and other development facilities (e.g., safety to building occupants, minimal damage to structure, post-earthquake serviceability for pre-earthquake operations, no damage, etc.).
3. The results, conclusions, and recommendations resulting from the geological assessment of the liquefaction and/or dynamic settlement hazards on the subject property as prepared by the geotechnical professional(s).
4. The geological assessment-geotechnical report shall include:
 - a. A statement that the proposed project area falls within a liquefaction and/or dynamic settlement hazard area.
 - b. A detailed engineering evaluation of expected ground displacements or other liquefaction and/or dynamic settlement effects (e.g., bearing failures, flotation of buried tanks, etc.) and proposed mitigation measures to ensure an acceptable level of risk for the proposed structure type or other development facilities, as well as the proposed land use type (i.e., occupancy category). The minimum level of acceptable risk for any proposed structure or development facility shall ensure the life safety of any occupant. Where appropriate, a range of mitigation options should be considered depending on site conditions, the intended use of the structures, and acceptable levels of settlement.
5. The report shall include a site plan drawn to scale. The department may require that the site plan information be based on a field survey by a licensed surveyor. The site plan shall include:

- a. Property lines for the site and the location of any existing structures.
- b. The limits/location of any liquefaction and/or dynamic settlement hazard area(s) as set forth in EMC 14.90.020(C)(2).
- c. The full geographical limits of the proposed project area or conceptual project area (i.e., area to be developed) and the location of any proposed structures, on-site septic systems, wells, and stormwater management features or facilities associated with the development, if known.
- d. Location and unique identifier of geotechnical explorations used to characterize subsurface conditions.

6. The geotechnical study shall include field exploration sufficient to assess the potential for liquefaction or dynamic settlement hazards and options for mitigation of those hazards. Copies of the exploration logs shall be provided in the report. The geotechnical study shall include field exploration sufficient to assess the potential for liquefaction or dynamic settlement hazards and options for mitigation of those hazards. Copies of the exploration logs shall be included in the report. The project geotechnical professional must provide justification for the scope of the field exploration program. The City's geotechnical professional reserves the right to request additional exploration if deemed appropriate. If a dispute arises between the City's geotechnical professional and the project geotechnical professional regarding the scope of the field exploration, the City reserves the right to require an independent, third party review to be paid for by the applicant to resolve the dispute.

7. If beneficial to the assessment of seismic hazards for the project, the three-dimensional subsurface conditions at the site shall be presented using one or more cross-sections showing location and depth penetration of borings or CPT soundings, interpretation of the geometry of major soil units, and projected location of the static groundwater surface determined from the subsurface exploration. The cross-sections shall be presented at a scale of one inch equals 20 feet, one inch equals 30 feet, one inch equals 50 feet (or other scale deemed appropriate by the department). Each cross-section shall have a legend with a description of the various major soil units. The City's geotechnical professional reserves the right to request inclusion of one or more cross sections in the geotechnical report. If a dispute arises between the project geotechnical professional and the City's geotechnical professional regarding this issue, then the City reserves the right to require an independent, third party review to be paid for by the applicant to resolve the dispute.

8. All assessments of liquefaction and/or dynamic settlement hazards and effects will be based on a design earthquake using ground motion parameters consistent and equivalent to those specified in the most current version of the International Building Code. These assessments shall use the shallowest groundwater table observed during or inferred from subsurface exploration and characterization (e.g., the measured depth of static groundwater immediately prior to abandonment of borings, observation of iron-oxide mottling of soils samples, etc.).

9. Results of laboratory testing of samples retrieved during drilling and sampling shall be presented in order to support the values of fines contents used in subsequent analysis of liquefaction and/or dynamic settlement hazard. Where only CPT methods are used in site assessment, the correlation between fines content and CPT measurements will be discussed and documented. This documentation will require rigorous correlation of CPT and fines content measurements from similar geological deposits within the Puget Sound region.

10. The geotechnical report shall include a detailed assessment of the liquefaction and/or dynamic settlement hazard based on analysis of available subsurface data using state-of-the-practice methodologies. The results of the analysis shall be documented, and all results of intermediate and final calculations and results, including factors of safety, shall be included.

11. When appropriate, the geotechnical report shall include an assessment of the potential for large lateral spreads or flow failures, bearing failures, settlement, limited lateral displacement, and flotation of buried facilities. The methodologies used must be, at a minimum, state-of-the-practice, and the conclusions regarding the potential and severity of the possible liquefaction and/or dynamic settlement induced failure modes shall be presented.

12. Alternative mitigative measures including structural and foundation design options and/or soil improvement techniques shall be evaluated and compared for their effectiveness in reaching the level of performance specified in the report introduction. Effectiveness of soil improvement techniques shall be specified in terms of post-treatment densification or strength improvement as measured by appropriate subsurface investigation and testing. The extent of the post-treatment verification testing shall be provided on a site map at the same scale as the map presented in subsection (A)(4) of this article. Geotechnical review of all final plans is required and the findings of the review shall be documented in writing.

B. The geotechnical professional(s) who prepared the geotechnical report shall stamp the report with his or her license stamp/seal.

C. Hold harmless clauses, disclaimers, and limitations are not allowed within a geotechnical report.

APPENDIX B

Formatted: Centered

GEOLOGICAL ASSESSMENTS – FAULT RUPTURE HAZARD AREA GEOTECHNICAL REPORT

A. A geotechnical report shall, at a minimum, include the following:

1. The general critical areas report requirements in EMC 14.10.082.
2. The document shall include all mandatory items listed in EMC 14.90.030(B)(4). The report shall be prepared by an engineer and shall be co-written by an engineering geologist where geological interpretations and conclusions critical to the assessment of liquefaction and/or dynamic settlement hazard and potential effects are necessary or prudent.
3. The following topics should be considered and addressed in detail where essential to support opinions, conclusions, and recommendations in any geologic report on faults. It is not expected that all the topics or investigative methods would be necessary in a single investigation. In specific cases, it may be necessary to extend some of the investigative methods well beyond the site or property being investigated.
 - a. Purpose and scope of investigation; description of proposed development.
 - b. Geologic and tectonic setting. Include seismicity and earthquake history.
 - c. Site description and conditions, including dates of site visits and observations. Include information on geologic units, graded and filled areas, vegetation, existing structures, and other factors that may affect the choice of investigative methods and interpretation of data.
 - d. Methods of Investigation.
 - i. Review of published and unpublished literature, maps, and records concerning geologic units, faults, groundwater barriers, and other factors.
 - ii. Stereoscopic interpretation of aerial photographs, review of LiDAR based topography, and other remotely sensed images to detect fault-related topography (geomorphic features), vegetation and soil contrasts, and other lineaments of possible fault origin. The area interpreted usually should extend beyond the site boundaries.
 - iii. Surface observations, including mapping of geologic and soil units, geologic structures, geomorphic features and surfaces, springs, deformation of engineered structures due to fault creep, both on and beyond the site.
 - iv. Subsurface Investigations.

(A) Trenching and other excavations to permit detailed and direct observation of continuously exposed geologic units, soils, and structures; must be of adequate depth and be carefully logged (Taylor & Cluff 1973, Hatheway & Leighton 1979, McCalpin 1996b).

(B) Borings and test pits to permit collection of data on geologic units and groundwater at specific locations. Data points must be sufficient in number and spaced adequately to permit valid correlations and interpretations.

(C) Cone penetrometer testing (CPT) (Grant et al., 1997, Edelman et al., 1996). CPT must be done in conjunction with continuously logged borings to correlate CPT results with on-site materials. The number of borings and spacing of CPT soundings should be sufficient to adequately image site stratigraphy. The existence and location of a fault based on CPT data are interpretative.

v. Geophysical Investigations. These are indirect methods that require a knowledge of specific geologic conditions for reliable interpretations. They should seldom, if ever, be employed alone without knowledge of the geology (Chase & Chapman 1976). Geophysical methods alone never prove the absence of a fault nor do they identify the recency of activity. The types of equipment and techniques used should be described and supporting data presented (California Board of Registration for Geologists and Geophysicists, 1993).

(A) High-resolution seismic reflection (Stephenson et al., 1995, McCalpin, 1996b).

(B) Ground penetrating radar (Cai et al., 1996).

(C) Other methods include: seismic refraction, magnetic profiling, electrical resistivity, and gravity (McCalpin, 1996b).

vi. Age-dating techniques are essential for determining the ages of geologic units, soils, and surfaces that bracket the time(s) of faulting (Pierce 1986, Birkeland et al., 1991, Rutter & Catto, 1995, McCalpin, 1996a).

(A) Radiometric dating (especially ¹⁴C).

(B) Soil-profile development.

(C) Rock and mineral weathering.

(D) Landform development.

(E) Stratigraphic correlation of rocks/minerals/fossils.

(F) Other methods – artifacts, historical records, tephrochronology, fault scarp modeling, thermoluminescence, lichenometry, paleomagnetism, dendrochronology, etc.

vii. Other methods should be included when special conditions permit or requirements for critical structures demand a more intensive investigation.

(A) Aerial reconnaissance overflights.

(B) Geodetic and strain measurements.

(C) Microseismicity monitoring.

e. Conclusions.

i. Location and existence (or absence) of hazardous faults on or adjacent to the site; ages of past rupture events.

ii. Type of faults and nature of anticipated offset, including sense and magnitude of displacement, if possible.

iii. Distribution of primary and secondary faulting (fault zone width) and fault-related deformation.

iv. Probability of, or relative potential for, future surface displacement. The likelihood of future ground rupture seldom can be stated mathematically, but may be stated in semiquantitative terms such as low, moderate, or high, or in terms of slip rates determined for specific fault segments.

v. Degree of confidence in, and limitations of data and conclusions.

f. Recommendations.

i. The recommended increase from the standard buffer distance (50 feet) of proposed structures from fault rupture hazard areas. The recommended buffer distance generally will depend on the quality of data and type and complexity of fault(s) encountered at the site and the proposed land use type (i.e., occupancy). In order to establish an appropriate buffer distance from a fault located by indirect or interpretative methods (e.g., borings or cone penetrometer testing), the area between data points also should be considered underlain by a fault unless additional data are used to more precisely locate the fault. Additional measures (e.g., strengthened foundations, engineering design, and flexible utility connections) to accommodate warping and distributive deformation associated with faulting (Lazarte and others, 1994).

ii. Risk evaluation relative to the proposed development.

iii. Limitations of the investigation; need for additional studies.

g. References.

i. Literature and records cited or reviewed; citations should be complete.

ii. Aerial photographs or images interpreted – list type, data, scale, source, and index numbers.

iii. Other sources of information, including well records, personal communications, and other data sources.

h. Illustrations. The following illustrations should be provided:

i. A location map that identifies site locality, significant faults, geographic features, regional geology, seismic epicenters, and other pertinent data; 1:24,000 scale is recommended.

ii. A site development map that shows site boundaries, existing and proposed structures and limits of the proposed project area, graded areas, streets, exploratory trenches, borings geophysical traverses, locations of faults, and other data; recommended scale is 1:2,400 (one inch equals 200 feet), or larger.

iii. A geologic map that shows the distribution of geologic units (if more than one), faults and other structures, geomorphic features, aerial photographic lineaments, and springs; on topographic map 1:24,000 scale or larger; can be combined with subsection (B)(h)(i) or (ii) of this appendix.

iv. Geologic cross-sections, if needed, to provide three-dimensional picture.

v. Logs of exploratory trenches and borings that show details of observed features and conditions (note: these should not be generalized or diagrammatic). Trench logs should show topographic profile and geologic structure at a 1:1 horizontal to vertical scale; scale should be 1:60 (one inch equals five feet) or larger.

vi. Geophysical data and geologic interpretations.

i. Appendix. Attach any supporting data not included above (e.g., water well data, photographs, aerial photographs).

4. The geotechnical professional who prepared the geotechnical shall stamp the report with his or her license stamp/seal.

5. The department may request a geotechnical professional to provide additional information in the geotechnical report based upon existing conditions, changed conditions, or unique circumstances occurring on a case-by-case basis.

6. Hold harmless clauses, disclaimers, and limitations are not allowed to be included, neither expressly nor implied, within a geological assessment. (Ord. 02-200 § 2).

Chapter 14.110

EROSION HAZARD AREAS

Sections:

- 14.110.010 Purpose.
- 14.110.020 Erosion hazard areas.
- 14.110.030 Erosion hazard area review procedures.
- 14.110.040 Erosion hazard area standards.
- 14.110.050 Buffer requirements.
- 14.110.060 Appendices.

14.110.010 Purpose.

The following statements describe the purpose of this chapter:

- A. Protect human life and health;
- B. Regulate uses of land in order to avoid damage to structures and property being developed and damage to neighboring land and structures;
- C. Identify and map erosion hazard areas;
- D. Minimize impacts on wetlands and critical fish and wildlife species and their associated habitat that can result from erosion;
- E. Establish a permit requirement and review procedures for development proposals in areas with potential erosion hazards;
- F. Strike a balance between the need to maintain natural shoreline erosion/regression processes and the need to protect existing and proposed development. (Ord. 02-200 § 2).

14.110.020 Erosion hazard areas.

A. Shoreline Erosion Hazard Indicators. Shoreline erosion hazard areas are areas potentially subject to land regression or retreat due to a combination of geologic, seismic, and/or hydrologic or manmade factors. Shoreline hazard areas can be identified by indicators of active land retreat as a result of fluvial processes.

B. Erosion Hazard Area Categories.

1. Potential Erosion Hazard Areas. Potential erosion hazard areas, as depicted on the Geologically Hazardous Areas map, are those areas where the suspected risk of erosion through either loss of soil, slope instability, or land regression is sufficient to require additional review to assess the potential for active erosion activity or apply additional standards. These potential erosion hazard areas are determined using the following criteria:

- a. Shoreline Erosion Hazard Areas. Areas within 200 feet of a freshwater (lake, pond, or shoreline) as measured landward perpendicularly from the edge of the ordinary high water mark.
- b. Riverine Erosion Hazard Areas. The rivers subject to regulation as a channel migration zone listed in EMC 14.70.020(B)(4).
- c. Soil Erosion Hazard Areas. Areas identified as having slopes of 20 percent or greater and that are classified as having severe, or very severe erosion potential by the Soil Conservation Service, United States Department of Agriculture (USDA).

2. Active Shoreline Erosion Hazard Areas. Land areas located directly adjacent to surface water bodies that, through the geological assessment process, are identified as regressing, retreating, or potentially unstable as a result of undercutting by wave action or bluff erosion. The limits of the active shoreline erosion hazard area

shall extend landward to include that land area that is calculated, based on the rate of regression, to be subject to erosion processes within the next 10-year time period.

3. Riverine Erosion Hazard Areas. Riverine erosion hazard areas are located within the lateral extent of likely watercourse channel movement due to bank destabilization and erosion, rapid incision, and shifts in location of watercourse channels. Riverine erosion hazard areas are also referred to as channel migration zones (CMZs). Rivers and streams subject to erosion are regulated as a CMZ as listed in EMC 14.70.020(B)(4).

4. Soil Erosion Hazard Areas. Soil erosion hazard areas are identified by the presence or absence of natural vegetative cover, soil texture condition, slope, and rainfall patterns, or man-induced changes to such characteristics that create site conditions which are vulnerable to erosion of the upper soil horizon. Soil erosion hazard areas include those areas with slopes of 20 percent or greater and that are classified as having severe, or very severe erosion potential by the USDA Natural Resources Conservation Service. (Ord. 02-200 § 2).

14.110.030 Erosion hazard area review procedures.

A. General Requirements.

1. The City's Geologically Hazardous Areas map provides an indication of where potential erosion hazard areas are located. The actual presence or location of an erosion hazard area and/or additional potential erosion hazard area that have not been mapped, but may be present on or adjacent to a site, shall be determined using the procedures and criteria established in this chapter.
2. The department will complete a review of the Geologically Hazardous Areas map, and any other source documents for any proposed regulated activity to determine whether the site for the regulated activity is located within a potential erosion hazard area.
3. When the department's maps, sources, or field investigations indicate that the site for a proposed regulated activity is located within a potential shoreline erosion hazard area, the department shall require a geological assessment as outlined in subsection (B) of this section.
4. When the department's maps, sources, or field investigations indicate that the proposed project area for a regulated activity is located within a potential riverine erosion hazard area (channel migration zone), the department shall conduct a review pursuant to the requirements set forth in EMC 14.70.030. All standards set forth in Chapter 14.70 EMC shall apply to riverine erosion hazard areas (CMZs).
5. When the department's maps, sources, or field investigations indicate that the proposed project area for a regulated activity is located within a potential soil erosion hazard area, the department shall require submittal of an erosion control plan pursuant to the requirements set forth in EMC Title 15, Buildings and Construction.
6. Applicants requesting to develop a bulkhead along a shoreline shall be required to submit a geotechnical report. The geotechnical report shall comply with the requirements established in EMC 14.110.060, Appendix C.
7. Unless otherwise stated in this chapter, the critical area protective measure provisions contained in EMC 14.10.080 shall apply.

B. Geological Assessment. A geological assessment is a site investigation process to evaluate the on-site geology affecting a subject property and proposed development.

1. Geological assessments shall be submitted to the department for review and approval together with a shoreline erosion hazard area application.
2. The geological assessment shall include a field investigation and may also include review of public records and documentation, analysis of historical air photos, LiDAR mapping, published data and references, etc.
3. The geological assessment shall include the following information and analysis:

a. An analysis of the shoreline erosion processes on and in the vicinity of the site including an evaluation of erosion and shoreline retreat that has occurred over the past decade and an estimated probable rate of erosion based upon the historic rate of erosion that has occurred on the site.

b. A determination of which areas on the site meet the criteria for an active shoreline erosion hazard area as set forth in EMC 14.110.020(B)(2).

c. A determination of the area on the site or in the vicinity of the site that will experience regression in the next 120 years given natural processes.

4. Geological assessments shall be prepared, signed, and dated by a geotechnical professional (as defined in Chapter 14.15 EMC and established in this chapter) and the format shall be pre-approved by the department.

5. A geotechnical professional shall complete a field investigation and geological assessment to determine whether or not an active shoreline erosion hazard area exists within 200 feet of the site.

a. The geological assessment shall be submitted in the form of a geotechnical letter when the geotechnical professional finds that no active shoreline erosion hazard area exists within 200 feet of the site. The geotechnical letter shall meet the requirements contained in EMC 14.110.060, Appendix A.

b. The geological assessment shall be submitted in the form of geotechnical verification when the geotechnical professional finds that an active shoreline erosion hazard area exists but is located more than 200 feet away from the proposed project area. The geotechnical verification shall meet the requirements contained in EMC 14.110.060, Appendix B.

c. The geological assessment shall be submitted in the form of a geotechnical report when the geotechnical professional finds that an active shoreline erosion hazard area exists within 200 feet of the proposed project area or when a geotechnical professional determines that mitigation measures, such as a bulkhead, are necessary in order to construct or develop within a potential shoreline erosion hazard area. The geotechnical report shall meet the requirements contained in EMC 14.110.060, Appendix C.

6. The department shall review the geological assessment and either:

a. Accept the geological assessment and approve the application; or

b. Reject the geological assessment and require revisions or additional information.

7. A geological assessment for a specific site may be valid for a period of up to five years when the proposed land use activity and surrounding site conditions are unchanged. However, if any environmental conditions associated with the site change during that five-year period, the applicant may be required to submit an amendment to the geological assessment.

C. Riverine Erosion Hazard Area (Channel Migration Zones) Review. Riverine erosion hazard areas shall be reviewed pursuant to the requirements set forth in EMC 14.70.030.

D. Soil Erosion Hazard Area Review. Soil erosion hazard areas shall be reviewed pursuant to the requirements set forth in EMC Title 15, Buildings and Construction. (Ord. 02-200 § 2).

14.110.040 Erosion hazard area standards.

A. Active Shoreline Erosion Hazard Areas. Any development, encroachment, filling, clearing, or grading, timber harvest, building structures, impervious surfaces, and vegetation removal shall be prohibited within active shoreline erosion hazard areas and associated buffers except as specified in the following standards:

1. Shoreline Erosion Protection Measures. Shoreline erosion protection measures located within or adjacent to freshwater or marine shorelines shall be allowed subject to the following:

a. The proposed shoreline protection measure shall comply with the standards set forth in Chapter 14.40 EMC, Fish and Wildlife Habitat Conservation Areas.

b. A geological assessment-shoreline erosion geotechnical report has been conducted in accordance with the provisions set forth in EMC 14.110.030(B) that indicates that the shoreline is currently experiencing active erosion (i.e., land retreat or regression).

c. The use of the shoreline erosion protection measure will not cause a significant adverse impact on adjacent properties or critical fish and wildlife species and their associated habitat (i.e., increase erosion on adjacent properties).

d. The use of soft armoring techniques (soil bioengineering erosion control measures) is the preferred method for shoreline protection.

e. Hard armoring shoreline erosion control measures shall be approved only when a geological assessment-shoreline erosion geotechnical report, as set forth in EMC 14.110.030(B), has been completed and indicates the following:

i. The regression has been monitored on a yearly interval for a period of at least five consecutive years prior to allowing a bulkhead to be constructed. This monitoring shall be conducted by field survey measurements of a licensed surveyor. The department may shorten or eliminate the monitoring period if there are indicators that the regression rate is rapid and an existing structure may be threatened prior to completion of the monitoring period;

ii. The use of beach nourishment alone or in combination with soft armoring techniques is not adequate to protect the property from shoreline erosion processes; and

iii. The property contains an existing structure(s) that will be threatened within the next 10 years or the buildability of an undeveloped site will be threatened within the next 10 years if a hard armoring method of shoreline erosion protection is not provided.

f. Hard armoring shoreline protection measures shall not be allowed when structures can be located landward of the 120-year rate of regression area.

2. Stormwater Conveyance. Surface drainage into an active shoreline erosion hazard area should be avoided. If there are no other alternatives for discharge, then drainage must be collected upland of the top of the active shoreline erosion hazard area and directed downhill in a high density polyethylene stormwater pipe with fuse welded joints that includes an energy dissipating device at the base of the active landslide hazard area. The pipe shall be located on the surface of the ground and be properly anchored so that it will continue to function in the event of an underlying slide. The number of these pipes should be minimized along the slope frontage.

3. Utility Lines. Utility lines will be permitted when no other conveyance alternative is available. The line shall be located above ground and properly anchored and/or designed so that it will continue to function in the event of an underlying slide.

4. Roads, Bridges, and Trails. Roads, bridges, and trails shall be allowed when all of the following conditions have been met:

a. Mitigation measures are provided that ensure the roadway prism and/or bridge structure will not be susceptible to damage from active erosion.

b. The road is not a sole access for a development.

B. Shoreline Erosion Hazard Management Area. All regulated activities such as but not limited to building structures, impervious surfaces, vegetation removal, timber harvest, and clearing or grading activities may be allowed in areas located within 200 feet of an active shoreline erosion hazard area subject to the following standards:

1. The department reviews and approves a geological assessment – shoreline erosion hazard geotechnical report and determines that the proposed project area is located outside an active shoreline hazard area and the required buffer, as set forth in EMC 14.110.050.

2. The proposed recommendations and mitigation measures contained within the geotechnical report are adequate to reduce or mitigate risks to the natural environment, health, and safety.

3. Surface drainage from the proposed project area, including downspouts, landscape irrigation systems, and runoff from paved or unpaved surfaces upland of the shoreline, shall not be directed through an active shoreline erosion hazard area or its associated buffer unless it is conveyed in conformance with the provisions in subsection (A)(2) of this section.

4. Stormwater retention and detention systems, such as dry wells and infiltration systems utilizing buried pipe or french drains, shall not be permitted unless such systems are designed by a professional engineer and the geotechnical report indicates that such a system will not affect the stability of the shoreline.

5. Proposed developments, with the exception of shoreline erosion protection measures, shall be sited far enough from regressing shorelines to ensure 120 years of useful life for any proposed structures or infrastructure.

C. Riverine Erosion Hazard Area (Channel Migration Zones) Review. Riverine erosion hazard areas shall be reviewed pursuant to the requirements set forth in EMC 14.70.030.

D. Soil Erosion Hazard Area Review. Soil erosion hazard areas shall be reviewed pursuant to the requirements set forth in EMC Title 15, Buildings and Construction. (Ord. 02-200 § 2).

14.110.050 Buffer requirements.

A. Determining Buffer Widths.

1. The buffer width shall be measured on a horizontal plane from a perpendicular line established at the edge of the active shoreline erosion hazard area limits.

2. An undisturbed buffer of existing vegetation shall be required for an active shoreline erosion hazard area. The required standard buffer width is the greatest amount of the distances in EMC 14.110.050(A)(2)(a) and (b):

a. Fifty feet from all edges of the active shoreline erosion hazard area limits;

b. A distance of one-third the height of the slope at the top of the slope and a distance of one-half the height at the bottom of the slope; or

c. The buffer width may be reduced below the widths specified in EMC 14.110.050(A)(2)(a) and (b) or eliminated upon approval by the Department of a geotechnical report that demonstrates that such a reduction would not result in an increased risk of erosion either on or off of the subject property.

B. Modification of Buffer Widths. The department may require a larger buffer width than the standard buffer distance, as determined in subsection (A) of this section, if any of the following are identified through the geological assessment process:

1. The adjacent land is susceptible to severe erosion and erosion control measures will not effectively prevent adverse impacts.

2. The area has a severe risk of slope failure or downslope stormwater drainage impacts. (Ord. 02-200 § 2).

14.110.060 Appendices.

A. Geological Assessment – Shoreline Erosion Hazard Geotechnical Letter.

B. Geological Assessment – Shoreline Erosion Hazard Geotechnical Verification.

C. Geological Assessment – Shoreline Erosion Hazard Geotechnical Report.

APPENDIX A

Formatted: Centered

GEOLOGICAL ASSESSMENT – SHORELINE EROSION HAZARD GEOTECHNICAL LETTER

A. A geotechnical letter shall, at a minimum, include the following:

1. The general critical areas report requirements in EMC 14.10.082.
2. A summary of the findings of the site visit, a site plan, and a summary of the findings from the review of documents listed in EMC 14.110.030(B)(2). The appropriate professional preparing the geotechnical letter shall provide conclusions and recommendations as to shoreline stability for the proposed development.

B. The geotechnical professional who prepared the geotechnical letter shall stamp the letter with his or her seal.

C. Hold harmless clauses, disclaimers, and limitations are not allowed within a geotechnical letter.

APPENDIX B

Formatted: Centered

GEOLOGICAL ASSESSMENT – SHORELINE EROSION HAZARD GEOTECHNICAL VERIFICATION

A. A geotechnical verification shall, at a minimum, include the following:

1. The general critical areas report requirements in EMC 14.10.082.
2. A summary of the results, conclusions, and recommendations resulting from the geological assessment, as set forth in EMC 14.110.030(B). The verification will also include a summary of the findings of the site visit, a site plan, and a summary of the findings from the review of the documents listed in EMC 14.110.030(B)(2).
3. An accurate site plan drawn at a scale of one inch equals 20 feet, one inch equals 30 feet, one inch equals 50 feet (or other scale deemed appropriate by the department) is required. The department may require that the site plan information listed below be based on a field survey by a licensed surveyor. The site plan shall include:
 - a. The limits/location of the active shoreline erosion hazard area(s) set forth in EMC 14.110.020(B)(2).
 - b. The limits of the required shoreline erosion hazard buffer based upon the requirements set forth in EMC 14.110.050(A).
 - c. The limits/location of the shoreline erosion hazard management area.
 - d. The limits/location of the 120-year regression area.
 - e. The location of any existing structures, utilities, on-site septic systems, wells, and stormwater management facilities.
 - f. The location of any proposed structures, utilities, on-site septic systems, wells, and stormwater management facilities.
 - g. The full geographical limits of the proposed project area (area to be developed).
 - h. Dimension of the closest distance between the identified active shoreline hazard area boundary and the proposed project area.
 - i. Dimension of the closest distance between the 120-year regression line and the proposed project area.
 - j. Existing contours on the site at two-foot intervals.
 - k. Property lines for the site.
 - l. North arrow and scale.

B. The geotechnical professional who prepared the geotechnical verification shall stamp the verification with his or her seal.

C. Hold harmless clauses, disclaimers, and limitations are not allowed within a geotechnical verification.

APPENDIX C

Formatted: Centered

GEOLOGICAL ASSESSMENT – SHORELINE EROSION HAZARD GEOTECHNICAL REPORT

A. A geotechnical report shall, at a minimum, include the following:

1. The general critical areas report requirements in EMC 14.10.082.
2. A summary of the results, conclusions, and recommendations resulting from the geological assessment, as set forth in EMC 14.110.030(B). The report will also include a summary of the findings of the site visit, a site plan, and a summary of the findings from the review of documents listed in EMC 14.110.030(B)(2). The summary shall specifically address:
 - a. Whether it is possible given the physical constraints of the property (size, shape, building setbacks, utility requirements, etc.) to locate the proposed development outside of the 120-year area of regression based on natural shoreline processes.
 - b. If it is not possible to locate the development outside of the 120-year area of regression (based on natural processes), determine whether beach nourishment and/or soft armoring techniques can be used to slow the rate of regression such that the proposed development is no longer within the 120-year regression area.
 - c. If it is not possible to locate the development outside of the 120-year area of regression (based on the use of beach nourishment and/or soft armoring techniques), outline the strategy, as set forth in EMC 14.110.040(A)(1), to monitor the rate of regression on the site.
 - d. Determine whether any proposed shoreline erosion protection measures will cause an increase in the rate of regression on neighboring properties.
3. An accurate site plan drawn at a scale of one inch equals 20 feet, one inch equals 30 feet, one inch equals 50 feet (or other scale deemed appropriate by the department) is required. The department may require that the site plan information listed below be based on a field survey by a licensed surveyor. The site plan shall include:
 - a. The limits/location of the active shoreline erosion hazard area(s) set forth in EMC 14.110.020(B)(2).
 - b. The limits of the required shoreline erosion hazard buffer based upon the requirements set forth in EMC 14.110.050(A).
 - c. The limits/location of the shoreline erosion hazard management area.
 - d. The limits/location of the 120-year regression area based on natural shoreline processes and, if applicable, based upon proposed shoreline protection measures.
 - e. The location of any existing structures, utilities, on-site septic systems, wells, and stormwater management facilities.
 - f. The location of any proposed structures, utilities, on-site septic systems, wells, and stormwater management facilities.
 - g. The full geographical limits of the proposed project area (area to be developed).
 - h. Dimension of the closest distance between the identified active shoreline hazard area boundary and the proposed project area.

i. Dimension of the closest distance between the 120-year regression line and the proposed project area.

j. Existing contours on the site at two-foot intervals.

k. Property lines for the site.

l. North arrow and scale.

4. A discussion of any proposed shoreline protection measures including design and construction drawings is required.

5. A list of references utilized in preparation of the report.

B. The geotechnical professional(s) who performed the geological assessment shall stamp the report with his or her license stamp/seal. The report must be co-authored by a licensed professional engineer when engineering designs or interpretations are necessary to address the report requirements. The engineer must also stamp the report with his or her license stamp/seal.

C. The department may request a geotechnical professional to provide additional information in the geotechnical report based upon existing conditions, changed conditions, or unique circumstances occurring on a case-by-case basis.

D. Hold harmless clauses, disclaimers, and limitations are not allowed within a geotechnical report.

E. Geotechnical reports shall be in conformance with a format that is pre-approved by the department. (Ord. 02-200 § 2).

..

Chapter 14.500

NATURAL RESOURCE LANDS

Sections:

14.500.010	Purpose.
14.500.020	Intent.
14.500.030	Applicability.
14.500.031	Mineral resource lands designation.
14.500.040	Natural resource lands noticing requirements.
14.500.050	Current use assessment.
14.500.060	Variances and appeals.
14.500.070	Review process.
14.500.080	Title, plat, and regulated activities notification.
14.500.090	Permitted uses.
14.500.100	Appendices.

14.500.010 Purpose.

This chapter establishes requirements and regulations to protect natural resource lands and is established pursuant to WAC 197-11-908 and RCW 36.70A.170 and 36.70A.060. The city therefore designates agricultural lands and mineral resource lands, and all associated buffers as being environmentally sensitive areas and designated natural resource lands. By regulating development within 500 feet of natural resource lands, this title seeks to implement the following goals and policies to:

- A. Inform the public of the existence, location and potential incompatibility impacts of development on, or within 500 feet of, these environmentally sensitive areas within the city.
- B. Encourage the retention of open space, development of recreational opportunities, conserve priority habitat, increase access to natural resource lands and water, and develop parks.
- C. Assure the conservation of resource lands and related activities by limiting encroachment of incompatible development thereon.
- D. Promote the conservation of mineral resource lands through inclusion of known deposits of minerals and materials.
- E. Assure that undeveloped mineral and material resources will not be forever lost by prior development of the land for other purposes.
- F. Allow for the necessary mineral processing to convert such minerals and materials into marketable products.
- G. Protect the environment and enhance the state's high quality of life, including air and water quality and the availability of water.
- H. Maintain and enhance the biological and physical functions and values of wetlands. (Ord. 02-200 § 2).

14.500.020 Intent.

Resource lands are of special concern to the citizens, the city, and the state. The intent of this chapter is to conserve resource lands by establishing standards for development of sites which contain, or are within 500 feet of, resource lands to promote the public health, safety, and welfare by:

- A. Noticing of property on, or within, natural resource land areas;
- B. Mitigating unavoidable impacts by regulating development;
- C. Protecting from development impacts;

D. Protecting the public against losses from:

1. Costs of public emergency rescue and relief operations where the causes are avoidable;
2. Degradation of the natural environment and the expense associated with repair or replacement;

E. Preventing adverse impacts on water availability, water quality, wetlands, and streams;

F. Protecting unique, fragile, and valuable elements of the environment, including fish and wildlife habitat;

G. Providing sufficient information to show that critical areas are adequately protected prior to approving, conditioning, or denying public or private development activity;

H. Providing the public with sufficient information and notice of potential risks associated with development in critical and sensitive areas;

I. Implementing the goals and requirements of the Growth Management Act (RCW 36.70A.060), the city of Edgewood comprehensive plan, and all updates and amendments, functional plans, and other land use policies formally adopted or accepted by the city. (Ord. 02-200 § 2).

14.500.030 Applicability.

This chapter shall apply to all properties designated as resource lands (agricultural lands or mineral resource lands) or properties within 500 feet of designated resource lands within Edgewood. When the requirements of this title are more stringent than those of other local, state or federal law, codes, or regulations, the requirements of this title shall apply.

A. Agricultural Lands. Lands that are not already characterized by urban growth and that have long-term significance for the commercial production of food or other agricultural products. Agricultural lands are those lands meeting all of the following criteria:

1. Lands in parcels which are 10 acres or larger in size;
2. Lands which are on prime or unique soils as identified in:
 - a. United States Department of Agriculture (USDA), Soil Conservation Service, February 1979, Soil Survey of Pierce County Area, Washington; or
 - b. USDA, Soil Conservation Service, June 1981, Important Farmlands of Pierce County, Washington;
 - c. Lands which are primarily devoted to the commercial production of horticultural, viticultural, floricultural, dairy, apiary, vegetable, or animal products or of berries, grain, hay, straw, turf, seed, Christmas trees not subject to the excise tax imposed by RCW 84.33.100 through 84.33.140, or livestock, and which have long-term commercial significance for agricultural production; and
 - d. Lands which are not within 500 feet of lots of record of one acre or less on more than 50 percent of the perimeter of the parcel.

B. Mineral Resource Lands. Mineral resource lands shall be identified by the city using the criteria set forth in WAC 365-190-070 as now exists or as may hereafter be amended or modified.

C. Property Adjacent to Resource Lands. All plats, short plats, development permits, and building permits issued for development activities within 500 feet of lands designated as natural resource lands shall contain a notice that a variety of commercial activities may occur that are not compatible with residential development for certain periods of limited duration. (Ord. 04-221 § 1; Ord. 02-200 § 2).

14.500.031 Mineral resource lands designation.

A. The city has classified the following areas as potential mineral resource lands based on the criteria in EMC 14.500.030(B).

1. Parcels: 0420164023, 0420164024, 0420164016 (commonly known as Olson); and
2. Parcels: 0420162047, 0420162048 (commonly known as Josties); and
3. Parcels: 0420084072, 0420084002, 0420084005, 0420084069, 0420084068, 0420171073, 0420171057, 0420171000, 0420171059 (commonly known as Fife Sand and Gravel).

B. The city staff shall study each area and prepare a written analysis of each area.

C. The city council's land use and economic development committee shall review the staff analysis and either send the analysis back to staff for clarification or recommend approval/denial of each area as a mineral resource land to the city council. The staff analysis and land use and economic development committee's recommendation shall be forwarded to the city council for review and action.

D. The city council shall review the staff analysis and recommendation(s) of the land use committee and shall, by ordinance, approve, deny or modify the particular study area designation using the criteria in EMC 14.500.050(B). (Ord. 04-234 § 1).

14.500.040 Natural resource lands noticing requirements.

Pursuant to RCW 36.70A.060, the city shall require that all plats, development applications, or permits issued for development activities on, abutting, or within 500 feet of lands designated as natural resource lands contain a notice (see Appendices A through C).

A. General. If more than one natural resource land subject to the provisions of this title intersects the subject parcel, then one notice addressing all of the natural resource areas shall be sufficient.

B. Title Notification.

1. When the city determines that activities not exempt from this title are proposed, the owner shall file a notice with the Pierce County auditor (Appendices A through C). The notice shall provide a public record of the presence of the sensitive area(s); the application of this title to the property; and any limitations on activity in or affecting such sensitive area.

2. The notice shall be notarized and recorded with the Pierce County auditor before approval of any regulated use or activity on the site.

C. Plat Notification. For all proposals requiring a plat within sensitive areas, the applicant shall note the face of the plat consistent with the language set forth in Appendices A through C.

D. Permit Notification. The department shall require that all permits issued for regulated activities on or within 500 feet of natural resource lands contain a notice as set forth in Appendices A through C. (Ord. 02-200 § 2).

14.500.050 Current use assessment.

A. An owner of natural resource lands or open space desiring current use classification under Chapter 84.40 RCW may file for such current use classification.

B. An owner of undeveloped land with critical areas which has been placed in a separate tract or tracts, protective easement, public or private land trust dedication, or other similarly preserved area for the protection of these critical areas may have that portion of land reviewed for reassessment by the assessor-treasurer's office consistent with those restrictions to determine the fair market value of the land pursuant to RCW 84.40.030.

C. The owner shall notify the assessor-treasurer's office when restrictions on development occur on a particular site, and shall provide a plat map in addition to the following, or other special study documents as may be required by the department.

14.500.060 Variances and appeals.

Procedures for variances and appeals of an administrative decision issued pursuant to this chapter are set forth in EMC 18.40.090, ~~Process II, Administrative action~~. (Ord. 02-200 § 2).

Commented [cm60]: See my comment earlier on adopting codes which tell the County what to do.

Commented [cm61]: Why is this here? There already is a chapter dealing with variances and appeals.

14.500.070 Review process.

A. The department shall review any permit or application requested for any regulated activity, including, but not limited to, those set forth in EMC 14.500.010 on a site which includes, or is within 500 feet of, one or more resource land is located, unless otherwise provided in this title.

B. As part of all development applications, the department shall review the information submitted by the applicant to:

1. Confirm the nature and type of the resource land and evaluate any required title, plat, and/or regulated activity notification;
2. Determine whether the development proposal is consistent with this title; and
3. Determine whether any proposed alterations to the site containing resource lands are necessary.

C. The city may approve, approve with conditions, or deny any development proposal in order to comply with the requirements and carry out the goals, purposes, objectives, and requirements of this title.

D. Approval of a development proposal does not discharge the obligation of the applicant to comply with the provisions of this title. (Ord. 02-200 § 2).

14.500.080 Title, plat, and regulated activities notification.

A. If more than one resource land subject to the provisions of this title exists on the site, then one notice addressing all of the resource lands shall be sufficient.

B. Notification shall be approved by the department and shall be consistent with the forms set forth in EMC 14.500.100, Appendices A through C as applicable.

C. Title notifications shall be notarized and recorded with the Pierce County auditor prior to approval of any regulated use or activity for the site. (Ord. 02-200 § 2).

14.500.090 Permitted uses.

Uses permitted on designated resource land sites shall be the same as those permitted in the zone classifications shown on the city zoning map. (Ord. 02-200 § 2).

14.500.100 Appendices.

A. Property Adjacent to Resource Lands.

B. Agriculture Lands Noticing.

C. Mineral Resource Lands Noticing.

APPENDIX A

PROPERTY ADJACENT TO RESOURCE LANDS

A. Title Notification.

Parcel Number: _____

Site Address: _____

NOTICE: This parcel lies within 500 feet of land designated resource lands by Edgewood. A variety of commercial and industrial activities occur in the area that may be inconvenient or cause discomfort to area residents. This may arise from the use of chemicals, or from spraying or extraction which occasionally generates dust, smoke, noise, and odor. The city has established resource uses as priority uses on productive resource lands, and residents of

Formatted: Centered

adjacent property should be prepared to accept such inconveniences or discomfort from normal, necessary commercial resource lands operations.

Signature of Owner

(NOTARY ACKNOWLEDGMENT)

B. Plat Notification. The owner of any site within 500 feet of land designated as resource lands on which a large lot, short subdivision, or formal subdivision is submitted, shall record a notice on the face of the plat. Such notification shall be in the form as set forth below:

PROPERTY ADJACENT TO RESOURCE LANDS PLAT NOTIFICATION. This property lies within 500 feet of land designated resource lands by Edgewood. A variety of commercial and industrial activities occur in the area that may be inconvenient or cause discomfort to area residents. This may arise from the use of chemicals, or from spraying or extraction which occasionally generates dust, smoke, noise, and odor. The city has established resource uses as priority uses on productive resource lands, and residents of adjacent property should be prepared to accept such inconveniences or discomfort from normal, necessary commercial resource lands operations.

C. Regulated Activities Notification. The department shall require that permits issued for regulated activities, as defined in Chapter 14.500 EMC, within 500 feet of lands designated as resource lands, contain a notice as set forth below.

REGULATED ACTIVITIES NOTIFICATION. This property lies within 500 feet of land designated resource lands by Edgewood. A variety of commercial and industrial activities occur in the area that may be inconvenient or cause discomfort to area residents. This may arise from the use of chemicals, or from spraying or extraction which occasionally generates dust, smoke, noise, and odor. The city has established resource uses as priority uses on productive resource lands, and residents of adjacent property should be prepared to accept such inconveniences or discomfort from normal, necessary commercial resource lands operations.

APPENDIX B

AGRICULTURAL LANDS NOTICING

A. Title Notification.

Parcel Number: _____

Site Address: _____

NOTICE: This parcel lies within 500 feet of an area identified as agricultural lands by Edgewood. A variety of commercial agricultural activities occur in the area that may be inconvenient or cause discomfort to area residents. This may arise from the use of agricultural chemicals, including herbicides, pesticides, and fertilizers; or from spraying, pruning, and harvesting which occasionally generate dust, smoke, noise, and odor. Edgewood has established agriculture as a priority use on productive agricultural lands, and residents of adjacent property should be prepared to accept such inconveniences or discomfort from normal, necessary farm operations.

Signature of Owner

Formatted: Centered

Signature of Owner

(NOTARY ACKNOWLEDGMENT)

B. Plat Notification. The owner of any site within this designation on which a large lot, short subdivision, or formal subdivision is submitted, shall record a notice on the face of the plat. Such notification shall be in the form as set forth below.

AGRICULTURAL LANDS PLAT NOTIFICATION. This parcel lies within an area identified as agricultural lands by Edgewood. A variety of commercial agricultural activities occur in the area that may be inconvenient or cause discomfort to area residents. This may arise from the use of agricultural chemicals, including herbicides, pesticides, and fertilizers; or from spraying, pruning, and harvesting which occasionally generate dust, smoke, noise, and odor. The city has established agriculture as a priority use on productive agricultural lands, and residents of adjacent property should be prepared to accept such inconveniences or discomfort from normal, necessary farm operations.

C. Regulated Activities Notification. The department shall require that all permits issued for regulated activities, as defined in Chapter 14.500 EMC, within this zone classification contain a notice as set forth below.

REGULATED ACTIVITIES NOTIFICATION. This parcel lies within 500 feet of an area identified as agricultural lands by Edgewood. A variety of commercial agricultural activities occur in the area that may be inconvenient or cause discomfort to area residents. This may arise from the use of agricultural chemicals, including herbicides, pesticides, and fertilizers; or from spraying, pruning, and harvesting which occasionally generate dust, smoke, noise, and odor. The city has established agriculture as a priority use on productive agricultural lands, and residents of adjacent property should be prepared to accept such inconveniences or discomfort from normal, necessary farm operations.

APPENDIX C

Formatted: Centered

MINERAL RESOURCE LANDS NOTICING

A. Title Notification.

Parcel Number: _____

Site Address: _____

NOTICE: This parcel lies within 500 feet of an area of land designated mineral resource lands by the city. A variety of commercial mineral extraction activities occur in the area that may be inconvenient or cause discomfort to area residents. This may arise from the use of heavy equipment, chemicals, and spraying which may generate dust, smoke, and noise associated with the extraction of mineral resources. Edgewood has established mineral resource extraction as a priority use on productive mineral resource lands, and residents of adjacent property should be prepared to accept such inconveniences or discomfort from normal, necessary mineral resource extraction operations.

Signature of Owner

(NOTARY ACKNOWLEDGMENT)

B. Plat Notification. The owner of any site within this overlay district on which a large lot, short subdivision, or formal subdivision is submitted, shall record a notice on the face of the plat. Such notification shall be in the form as set forth below:

MINERAL RESOURCE LANDS PLAT NOTIFICATION. This property lies within 500 feet of an area of land designated mineral resource lands by the city of Edgewood. A variety of mineral resource extraction activities occur in the area that may be inconvenient or cause discomfort to area residents. This may arise from the use of heavy equipment, chemicals, and spraying which may generate dust, smoke, and noise associated with the extraction of mineral resources. Edgewood has established mineral resource extraction as a priority use on productive mineral resource lands, and residents of adjacent property should be prepared to accept such inconveniences or discomfort from normal, necessary mineral resource extraction lands.

C. Regulated Activities Notification. The department shall require that all permits issued for regulated activities, as defined in Chapter 14.500 EMC, within this designation contain a notice as set forth below:

REGULATED ACTIVITIES NOTIFICATION. This property lies within 500 feet of an area of land designated mineral resource lands by Edgewood. A variety of mineral resource extraction activities occur in the area that may be inconvenient or cause discomfort to area residents. This may arise from the use of chemicals and extraction of minerals, which occasionally generates dust, smoke, noise, and odor. The city has established mineral resource extraction as a priority use on productive mineral resource lands, and residents of adjacent property should be prepared to accept such inconveniences or discomfort from normal, necessary mineral resource extraction lands.

(Ord. 02-200 § 2).

-Title 14

CRITICAL AREAS

Chapters:

- 14.10 General Provisions**
- 14.1520 Definitions**
- 14.2030 Use and Activity Regulations**
- 14.3040 Wetlands**
- 14.4050 Critical Fish and Wildlife Habitat Areas**
- 14.5060 Aquifer Recharge and Wellhead Protection Areas**
- 14.6070 Volcanic Hazard Areas**
- 14.7080 Flood Hazard Areas**
- 14.8090 Landslide Hazard Areas**
- 14.90100 Seismic (Earthquake) Hazard Areas**
- 14.110 Erosion Hazard Areas**
- 14.500120 Natural Resource Lands**

Chapter 14.10

GENERAL PROVISIONS

Sections:

14.10. 0100 10	Authority.
14.10. 0300 20	Purpose.
14.10. 0400 30	Interpretation.
14.10. 0500 40	Applicability.
14.10. 0700 50	Administration.
14.10. 0750 60	Relationship to Other Regulations.
14.10. 0800 70	Critical a Area protective measures.
14.10. 0820 80	Critical a Areas r Reports.
14.10. 0830 90	Mitigation plans.
14.10. 0851 00	Variances to e Critical a Areas.
14.10. 0901 10	Reconsideration and appeal procedures.
14.10. 1001 20	Fees.
14.10. 1101 30	Compliance.
14.10. 1201 40	Warning and disclaimer of liability.
14.10.130	Severability.
14.10.135	Violation Civil infraction.
14.10. 1401 50	Appendix.

14.10.010 Authority.

A. This title is established and adopted pursuant to the Growth Management Act (RCW 36.70A.060).

B. As provided herein, the ~~d~~Director or ~~their his/her~~ designee is given the authority to interpret and apply, and the responsibility to enforce this title ~~to accomplish the purposes identified in EMC 14.10.030.~~

14.10.030 Purpose.

~~A.~~ The purpose of this title is to protect ~~environmentally sensitive the e~~Critical ~~a~~Areas of Edgewood from the impacts of development ~~Activity and vice versa protect development from the impacts of hazard areas by~~ establishing minimum standards for ~~development~~Development Activity ~~of on sites which that~~ contain or ~~adjoin are adjacent to identified any e~~Critical ~~a~~Area ~~or its Buffer(s)s~~. Further, the purpose of these regulations is to ~~mitigate the potential hazard(s) to development in and near Critical Areas.~~

~~B.~~ The purpose is further envisioned to ~~and thus~~ promote the ~~_~~ public health, safety, and welfare by:

~~A1.~~ Avoiding impacts to critical areas;

~~B2.~~ Mitigating unavoidable impacts ~~by regulating development of~~ Regulated Activities;

~~C3.~~ Protecting ~~e~~Critical ~~a~~Areas from impacts of development;

~~D4.~~ Protecting the public against losses from:

~~1a.~~ Costs of public emergency rescue and relief operations where the causes are avoidable; and

~~2b.~~ Degradation of the natural environment and the expense associated with repair or replacement;

~~E5.~~ Preventing adverse impacts on water availability, water quality, ~~wetland~~Wetlands, and streams;

~~F6.~~ Protecting unique, fragile, and valuable elements of the environment, including critical ~~Fish and Wildlife Habitat~~ Conservation Areas ~~fish and wildlife habitat~~;

~~G7.~~ Providing ~~d~~Department staff with sufficient information to adequately protect ~~e~~Critical ~~a~~Areas and proposed ~~d~~Development ~~Activity~~ when approving, conditioning, or denying public or private ~~Regulated Activities~~~~development proposals~~;

~~H8.~~ Providing the public with sufficient information and notice of potential risks associated with ~~d~~Development in ~~natural hazard e~~Critical ~~a~~Areas; and

~~I9.~~ Implementing the goals and requirements of the Growth Management Act (RCW 36.70A.060), ~~the State Environmental Policy Act (SEPA), and the e~~City's of Edgewood-comprehensive plan, and all updates, ~~and~~ amendments, functional plans, and other land use policies formally adopted or accepted by the ~~e~~City of Edgewood.

14.10.0430 Interpretation.

~~A.~~ In the interpretation and application of this title, all provisions shall be:

~~A1.~~ Considered the minimum necessary ~~for compliance~~; ~~and~~

~~B2.~~ Liberally construed to serve the purposes of this title; ~~and~~

~~CB.~~ Nothing contained herein shall be ~~d~~eemed ~~neither~~ to limit ~~nor~~ repeal any other powers under state statute. (~~Ord. 02-200 § 2~~).

~~14.10.035~~ ——— ~~Best Available Science.~~

~~Critical area reports and decisions to alter critical areas shall be based on the best available science to protect the functions and values of critical areas and must give special consideration to conservation or protection measures necessary to preserve or enhance anadromous fish, such as salmon and bull trout, and their habitat (WAC 365-195-900).~~

14.10.0540 Applicability.

A. This title shall apply to all lands and waters within Edgewood that are designated as ~~e~~Critical ~~a~~Areas and their corresponding ~~buffer~~Buffers and setbacks.

B. No ~~d~~Development ~~Activity (see "development" definition) or Regulated Activities~~ shall hereafter take place without full compliance ~~with the terms~~ of this title.

C. When the requirements of this title are more stringent than those of other ~~Edgewood-City~~ codes and regulations, ~~including the adopted International Building Code (EMC 15.05),~~ the requirements of this title shall apply.

D. Compliance with these regulations does not remove an applicant's obligation to comply with applicable provisions of any other federal, state, or local law or regulation.

E. Criteria for determining ~~the presence of a~~ ~~e~~Critical ~~a~~Areas is contained within each chapter of this title.

F. When a site contains two or more ~~e~~Critical ~~a~~Areas, the site shall meet the minimum standards and requirements for each ~~identified critical area as set forth in this title.~~

G. Critical ~~a~~Areas, ~~as defined and regulated by this title,~~ are identified ~~on~~, but ~~may not be~~ limited to, the following Edgewood critical areas maps:

1. Wetlands;
2. Geologically ~~h~~Hazardous ~~a~~Areas;
3. Critical ~~a~~Aquifer ~~r~~Recharge ~~a~~Areas;
4. Streams; and
5. Frequently ~~f~~Flooded ~~a~~Areas.

H. The ~~exact~~ boundary of each ~~mapped eCritical aArea depicted on the City's critical areas maps~~ is approximate and is only intended to provide an indication of the presence of a ~~eCritical aArea~~ on a particular site. Additional ~~eCritical aAreas~~ that have not been mapped may ~~also~~ be present on a site. The actual presence of a ~~eCritical aArea, or areas~~ and the applicability of these regulations shall be determined based upon the ~~eClassification~~ or categorization criteria and review procedures established for each ~~eCritical aArea~~. City staff ~~and/or the City's consultant(s)~~ may ~~request the ability to perform an conduct~~ on-site inspections to assess the site in order to ~~determine advise~~ if additional studies or reports ~~shall be included with any Development Application identified in this title are necessary~~. An inspection report of findings shall be written after the on-site inspection and will become a part of any site development application as a future reference.

I. ~~The Edgewood eCritical aAreas atlas maps~~ shall be updated and maintained by the ~~Department city's department of community development geospatial information system (GIS) division~~.

14.10.0750 Administration.

A. ~~Critical Areas Permit or Approval Required. In order to conduct any Development Activity or Regulated Activity on any property located within three hundred (300) feet of a Critical Area, as each Critical Area is defined in this Title or as shown on the City's Critical Areas Map(s), a Critical Areas Permit or an Approval must be obtained from the City.~~

B. ~~Critical Areas Approval.~~

1. ~~If the City requires that another permit application be submitted under a different code chapter in order to allow the proposed Development Activity or Regulated Activity, then a separate Critical Areas Permit is not required. Instead, the City shall review the underlying application, together with the application materials required herein, to determine compliance or noncompliance with this title. The determination on such compliance or noncompliance shall be incorporated within the decision on the underlying application.~~

2. ~~In addition to the materials required to make the underlying application complete as required by the City's code outside of this Title, the applicant shall also submit the materials set forth herein, where the subject property is within three hundred (300) feet of a Critical Area. The City shall not issue a determination that the underlying application is complete until all materials have been submitted.~~

3. ~~The Critical Areas materials shall be reviewed following the same process as the underlying application.~~

C. ~~Critical Areas Permit.~~

1. ~~If the City does not require any other permit in order to allow the proposed Development Activity or Regulated Activity, the applicant shall be required to obtain a separate Critical Areas Permit in order for the proposed development activity to proceed.~~

2. ~~A complete application for a Critical Areas Permit shall consist of the materials set forth in EMC Section 14.10.050.D.~~

3. ~~The process for review of a Critical Area Permit where there is no underlying application is the Type II Process, as set forth within EMC Section 18.40.090.~~

D. ~~Elements of a Complete Permit Application. A complete application for Approval of a Critical Areas Permit under this Title shall consist of the following materials:~~

1. ~~A completed permit application form, which must be signed by the record owner of the property (the person(s) whose name is on the most recently recorded deed or contract purchaser with written permission from the record owner). An application form may be signed by an agent for the record owner, as long as the application is also accompanied by a verified statement signed by the record owner, which specifically authorizes the agent to submit the application on the record owner's behalf.~~

2. ~~The subject site's street address, legal description, or both items if necessary for property identification;~~

3. A complete description of the proposed development activity;

4. All items identified in this title that are necessary to complete the application for the specific Critical Area; and

5. The required application fee.

A. Approvals Required. An approval must be obtained from the city when the department determines that the site or project area is or may be located within 300 feet of a critical area, as set forth in each chapter.

B. Application Requirements.

1. Preliminary Review. The provisions for conducting a preliminary review of an application is set forth in EMC 18.40.070, Process types.

2. Application Filing.

a. Applications shall be reviewed for completeness in accordance with department submittal standards, checklists and pursuant to EMC 18.40.150, Determination of completeness or as outlined within section c. below.

bE. Applications and associated Critical Areas reports shall not be submitted without an accompanying permit aApplication for an underlying action, such as, but not limited to, a building permit, subdivision or boundary line adjustment alteration action, site development application, TPCHD permit, or an administrative, conditional, or special use permit, with the exception of aApplications required by the departmentDepartment as a result of an enforcement action, or reports required by TPCHD for septic design approval, or associated with a request for under the Pierce County Open Space public benefit rating system Tax Valuation program.

c. In cases where no accompany permit applications are required for potentially regulated activities within a critical area, a separate critical areas permit application shall be filed and include the following items in order to be deemed a complete application:

i. A completed Critical Area Permit Application;

ii. Submittal and review criteria and standards of this title, as outlined within each section of the specific critical area potentially being impacted;

iii. Associated Critical Area Permit Fee, as outlined within EMC 14.10.100.

iv. Review for a Critical Area Permit shall follow a Type II Process, as outlined within EMC 18.40.0980.

3F. Modifications. The dDepartment may request an update of any required assessment, report, or dDelineation, etc., due to the potential for change in the existing environment that may have been caused by a natural event, (e.g., seismic event, landslides, or flooding, etc.) or human induced activity that dDegrade the existing conditions that occurred after the original document was initially submitted.

C. Public Notice. Public notice provisions for notice of aApplication; public hearing, if applicable; and final decision pursuant to this title are outlined in EMC Section 18.40.190, Notice of public hearing.

D. Review.

1. Initial Review. The dDepartment shall conduct an initial review of any aApplication in accordance with the provisions outlined in EMC Section 18.40.150, Determination of eCompleteness.

2. Review Responsibilities.

a. The ~~d~~Department is responsible for administration, circulation, and review of any ~~a~~Applications and approvals required by this title.

b. ~~The City Council shall be the decision authority for r~~Any Reasonable ~~u~~Use Exception ~~a~~Applications shall follow EMC Section 14.20.050.

c. Other ~~e~~City or ~~Pierce e~~County departments and state agencies, as determined by the ~~d~~Department, may review an ~~a~~Application and forward their respective recommendations to the ~~d~~Director or ~~h~~Hearing ~~e~~Examiner, as appropriate.

3. Review Process.

a. The ~~d~~Department shall perform a ~~e~~Critical ~~a~~Area review for any building or land use ~~a~~Application submitted for a ~~r~~Regulated ~~a~~Activity; ~~including, but not limited to, those set forth in EMC 14.20.020.~~ Reviews for multiple ~~e~~Critical ~~a~~Areas shall occur concurrently.

b. The ~~d~~Department shall, to the extent reasonable, consolidate the processing of related aspects of other ~~e~~City regulatory programs which affect activities in ~~any~~ regulated ~~e~~Critical ~~a~~Areas; ~~such as subdivision or site development, with the approval process established herein so as to provide a timely and coordinated review process.~~

c. As part of the initial review of all ~~development or related approvals or permit~~ ~~a~~Applications, the ~~d~~Department shall review the information ~~submitted by the applicant to:~~

i. Confirm the nature and type of the ~~e~~Critical ~~a~~Area and evaluate ~~whether~~ any ~~required~~ assessments, reports, or studies ~~are required;~~

ii. Determine whether the development proposal is consistent with this title;

iii. Determine whether any proposed alterations to the site containing ~~e~~Critical ~~a~~Areas are necessary; and

iv. Determine if the mitigation and monitoring plans ~~proposed-submitted~~ by the applicant are sufficient to protect the public health, safety, and welfare consistent with the goals, purposes, objectives, and requirements of this title.

d. Regulated ~~a~~Activities subject to SEPA shall also be reviewed with consideration for impacts on ~~e~~Critical ~~a~~Areas as identified in this title. Regulated ~~a~~Activities that pose a significant adverse impact which are not addressed by the standards and criteria established in this title ~~(gaps)~~, may be subject to additional mitigation measures as determined through the SEPA process. A threshold determination issued pursuant to EMC Title 20, ~~SEPA~~, may not be made prior to ~~the d~~Department's ~~a~~ review of any special studies or technical reports required by this title, except where the applicant requests a declaration of significance so that environmental review is required.

d. Critical ~~a~~Areas ~~a~~Applications required under this title shall be approved prior to approval of any underlying permit action ~~such as, but not limited to, a building permit, subdivision approval, site-development forest practice application, or identified use permit.~~

e. ~~The Department may waive T~~he requirement to submit a ~~e~~Critical ~~a~~Area ~~Report assessment, report, etc., required under this title, outlined within each critical area heading herein, may be waived at the department's discretion~~ when the proposed project area for a regulated activity is located in an area that has been the subject of a previously submitted and approved assessment ~~or, report, etc.~~, if all of the following conditions have been met:

i. The provisions of this title have been previously addressed as part of another approval;

ii. There has been no material change in the potential impact to the ~~e~~Critical ~~a~~Area or required ~~buffer~~Buffer since the prior review;

iii. There is no new information available that is applicable to any critical review of the site or particular ~~eCritical~~ ~~aA~~area;

iv. The permit or approval has not expired or, if there is no expiration date, no more than five years have elapsed since the issuance of that permit or approval; and

v. Compliance with any standards or conditions placed upon the prior permit or approval has been achieved or secured.

4. Burden of Proof. The applicant has the burden of proving that a proposed ~~aA~~application complies with the standards set forth in this title.

5. Final Decision.

a. The ~~dD~~Department may approve, approve with conditions, or deny ~~any—critical~~~~any eCritical~~ ~~aA~~areas ~~aA~~applications or underlying ~~aA~~applications for development ~~within any eCritical aA~~area ~~in order to comply with the requirements and carry out the goals, purposes, objectives, and requirements of this title based on the decision-makers' evaluation of the ability of any proposed mitigation measures to reduce risks associated with the critical area and compliance with required standards.~~ Approval of a development proposal does not discharge the obligation of the applicant to comply with the provisions of this title.

b. Applicants shall comply with the recommendations ~~and/or~~ mitigation measures contained in final approved assessments or reports and any final decision and conditions of approval.

c. Approval of an ~~aA~~application required under this title must be given prior to the start of any development activity on a site.

6. Time Period for Final Decision. The provisions for issuing a notice of final decision on any ~~aA~~application filed pursuant to this title is set forth in EMC ~~Section~~ 18.40.040, Coordination of development permit procedures.

E. Time Limitations.

1. Expiration of Approval.

a. Approvals granted under this title shall be valid for the same time period as the underlying permit ~~(e.g., preliminary plat, site development, building permit)~~. If the underlying permit does not contain a specified expiration date, then approvals granted under this title shall be valid for a period of three ~~(3)~~ years from the date of issue, unless a longer or shorter period is specified in the final decision.

b. The approval shall be considered null and void upon expiration, unless a time extension is requested and granted as set forth in ~~EMC subs~~Section ~~14.10.050.E.2 (E)(2) of this section.~~

2. Time Extensions.

a. The applicant or owner(s) may request in writing a one-time, one-year extension of the original approval. ~~To receive the extension, the applicant must upon demonstrating to the Director that circumstances beyond their control of the Applicant dictated the need for the extension. The extension would set a new expiration date one year later than the initial expiration.~~

b. Knowledge of the expiration date and initiation of a request for a time extension is the responsibility of the applicant or owner(s).

c. A written request for a time extension shall be filed with the ~~dD~~Department at least ~~sixty (60)~~ days prior to the expiration of the approval.

d. Upon filing of a written request for a time extension, a copy shall be sent to each party of record together with governmental departments or agencies that were involved in the original approval process.

By letter, the ~~d~~Department shall request written comments be delivered to the ~~department~~Department within 30 days of the date of the letter.

e. Prior to the granting of a time extension, the ~~d~~Department may require a new ~~a~~Application(s), updated study(ies), and fee(s) if:

- i. The original intent of the approval is altered or enlarged by the renewal;
- ii. The circumstances relevant to the review and issuance of the original approval have changed substantially; or
- iii. The applicant failed to abide by the terms of the original approval.

~~f. If approved, the one-year time extension shall be calculated from the date of granting said approval.~~

F. Recording.

1. Approvals.

a. ~~Critical-a~~Area regulation-aApprovals to modify a Critical Area or which otherwise require mitigation and or monitoring shall be are to be recorded on the title of the project parcel(s) at the Pierce County auditor's office by City of Edgewood Staff prior to issuance of any permit authorizing the project to proceed and at the sole expense of Applicant. ~~Also refer to-~~

b. EMC Section 14.10.070.F80(F), Title and Land Division Notification ~~contains, for~~ additional recording requirements.

~~b.c. Work within a recorded, existing utility easement is not required to meet EMC Section 14.10.050.F.1.aRecording of a wetland approval for work completed within utility line easements on lands not owned by the jurisdiction conducting the regulated activity shall be required.~~

2. Right of Entry Agreement.

a. ~~When an Application has been submitted, the City shall have a right of entry to verify the submitted information is correct; to ensure any applicable condition(s) of approval were satisfied; to confirm any required monitoring is being performed; or to attest that all outstanding items subject to a performance bond were completed.~~

b. ~~The right of entry shall extend until the last condition in the permit has been satisfied.~~

~~The city may require the applicant to record a right of entry agreement, which shall be consistent with a format approved by the department. The right of entry agreement shall:~~

- a. ~~Allow the department and agents of the department to access the site for purposes of inspection during the course of application review, construction, and post-construction monitoring.~~
- b. ~~Allow the department and agents of the department to enter a property to construct required improvements, mitigation measures, or monitoring that have been financially guaranteed.~~
- c. ~~Run with the land, and be binding on all parties having or acquiring any right, title, interest, or any part thereof of the site, including the grantor, heirs, successors, and assigns. (Ord. 02-200 § 2).~~

14.10.07560 Relationship to Other Regulations

A. This title shall apply ~~as an overlay and~~ in addition to zoning and other regulations adopted by the City ~~and concurrently with review conducted under SEPA.~~

~~B. These critical areas regulations shall apply concurrently with review conducted under SEPA, as adopted under Chapter EMC 20.05.~~

~~C.B.~~ Compliance with the provisions of this title does not constitute compliance with other federal, state, and local regulations and permit requirements that may be required ~~(for example, Hydraulic Permit Act [HPA] permits,~~

~~Section 106 of the National Historic Preservation Act, U.S. Army Corps of Engineers Section 404 permits, National Pollution Discharge Elimination System permits).~~ The applicant is responsible for complying with all other these requirements, apart from the process established in this title.

~~DC.~~ Regulated aActivities that may impact eCritical aAreas ~~and/or~~ their bufferBuffers, but do not require any other City permits or approvals, may be reviewed as a eCritical aAreas pPermit, ~~as outlined within EMC 14.10.070 (c).~~

14.10.0870 Critical aArea protective measures.

A. General. All eCritical aArea tracts, eConservation eEasements, land trust dedications, and other similarly preserved areas shall remain undeveloped in perpetuity, except as they may be allowed to be altered pursuant to this title.

1. Conservation Easements and other similarly preserved areas restrict both the current use as well as future uses of the land to some important conservation quality such as habitat preservation, open space, or scenic views.

2. A land trust or governmental entity that manages properties for long-term goals typically holds the Conservation Easement or other similarly preserved area.

B. Mitigation Sequence. Adverse impacts caused by new activities and developments shall be mitigated using the following action(s) in order of priority:

1. Avoiding the impact altogether by not taking a certain action or parts of an action;
2. Minimizing impacts by limiting the degree or magnitude of the action and its implementation, by using appropriate technology, or by taking affirmative steps, such as project redesign, relocation, or timing, to avoid or reduce impacts;
3. Rectifying the impact by repairing, rehabilitating, or restoring the affected environment;
4. Reducing or eliminating the impact over time by preservation and maintenance operations;
5. Compensating for the impact by replacing, enhancing, or providing substitute resources or environments; and
6. Monitoring the impact and the compensation project and taking appropriate corrective measures.

C. Identification of Critical Areas and Required Buffers on Construction Plans. Critical aAreas and required bufferBuffers shall be clearly identified on all construction plans ~~such as, but not limited to, site development plans, residential building plans, commercial building plans, forest harvest plans, etc.~~

D. Building Setbacks.

1. Unless otherwise provided in this title, buildings and other structures shall be set back a distance of 15 feet from the edge of all eCritical aArea bufferBuffers or, where no bufferBuffers are required, the edge of the eCritical aArea.
2. The following uses and activities may be allowed in the building setback area:
 - a. Landscaping;
 - b. Uncovered decks;
 - c. Building overhangs extending if such overhangs do not extend more than 18 inches or less into less into the setback area;
 - d. Impervious ground surfaces, such as driveways, parking lots, roads, walkways, and patios; provided, that such improvements conform to the water quality standards set forth in the city's adopted stormwater

management manual and that construction equipment does not enter the ~~buffer~~Buffer during the construction process; ~~and~~

e. Clearing and ~~g~~G grading; or

f. Any combination of items a-e. (Ord. 02-200 § 2).

~~§~~3. All other uses and activities not listed in EMC Section 14.10.070.D.2.a-e are prohibited.

E. Financial Guarantees.

1. The ~~e~~City may require an applicant to submit one or more financial guarantees, e.g., surety bond, cash escrow, cash set aside, assignment of funds, or letter of credit, to the city, as set forth in each chapter of this title (and other titles of Edgewood's Municipal Code as required), to guarantee any performance, mitigation, maintenance, or monitoring required as a condition of permit approval. The approval for the project will not be granted until the financial guarantee is received by the ~~d~~Department. Projects where the ~~e~~City or one of its departments is the applicant shall not be required to post a financial guarantee.

2. Financial guarantee instruments required under this title shall be:

a. In addition to any other site development guarantees required for project approval;

b. Submitted on financial guarantee forms approved by the city;

c. In the amount of 125 percent of the City Engineer's estimate of the cost of mitigation or monitoring to allow for inflation and administration should the city have to complete the mitigation or monitoring, ~~unless the provisions set forth in subsection (B)(2)(D) of this section are applicable;~~ and

d. Released by the ~~e~~City only when the applicant's appropriate technical professional has provided written confirmation that the performance, mitigation, or monitoring requirements have been met and the ~~d~~Department ~~staff,~~ or its agent, inspected the site(s) for compliance.

3. Failure to complete any performance, mitigation, or monitoring may result in the forfeiture or release of the guarantee. Applicants who have previously defaulted will no longer be allowed to post a "bond" guarantee for improvements necessary for approval of a land use ~~a~~A application. Applicants who have previously defaulted will be allowed to post cash guarantees for subsequent ~~e~~Critical ~~a~~A area ~~m~~Mitigation work needed for approval of a land use ~~a~~A application or permit, but the guarantee must be by cash guarantee only.

F. Title and Land Division Notification.

1. General.

a. Title ~~and~~ or land division notice~~(s)~~ shall be required to be recorded with the Pierce County auditor on each site that contains a ~~e~~Critical ~~a~~A area, ~~prior to at the time of~~ approval of any regulated activity on a site.

b. If more than one ~~e~~Critical ~~a~~A area subject to the provisions of this title exists on the site, then one notice which addresses all of the ~~e~~Critical ~~a~~A areas ~~shall may~~ be sufficient.

c. Title ~~and or~~ land division notifications and notes shall be approved by the ~~d~~Department and shall be consistent with EMC Section 14.10.170~~40~~, Appendix A.

d. Applicant shall be responsible for the recording costs of the notice.

e. Notice on title is not required for utility line easements on lands not owned by the jurisdiction conducting the regulated activity, e.g., gas pipelines.

2. Title Notification.

a. When the city determines that regulated activities not exempt from this title are proposed, the property owner shall file a notice with the Pierce County auditor. The notice shall provide a public record of the presence of a critical area and associated buffer, if applicable; the application of this title to the property; and that limitations on actions in or affecting such critical area and associated buffer, if applicable, may exist.

b. The notice shall be notarized and shall be recorded by the City at the applicant's cost with the Pierce County auditor at the time of, but prior to approval of any regulated use or activity for the site.

c. Notice on title is not required for utility line easements on lands not owned by the jurisdiction conducting the regulated activity (e.g., gas pipelines).

32. Land Division Notification and Notes. As referenced in EMC 14.10.17040, Appendix A there shall be notes included on the face of any final plat, final binding site plan, short plat, or boundary line adjustment that contain any eCritical aAreas or critical area-bufferBuffers. The eCritical aArea boundaries and the boundary of any associated bufferBuffers shall be identified on the face of these documents prior to submission to the City for approval.

G. Conservation Easements.

1. Prior to any final eCritical aArea approval, the part of the eCritical aArea and required bufferBuffer which is located on the site shall be protected with a eConservation eEasement or other similar permanent deed restriction.

2. The eConservation eEasement shall indicate allowable and prohibited uses within the eCritical aArea and required bufferBuffer.

H. Tracts. Critical Area tracts must adhere to the provisions in EMC Section 16.01.100 and the face of the plat shall include the requirement that the owners of all lots shall be required to preserve, protect, and maintain the Critical Areas.

Prior to final approval of any subdivisions, short subdivisions, large lot divisions, or binding site plans, the part of the critical area and required buffer which is located on the site, shall be placed in a separate tract or tracts, and the face of the plat shall include the requirement that the owners of all lots shall be required to preserve, protect and maintain the critical areas...

I. Homeowner's Covenants.

1. A description of the eCritical aArea and required bufferBuffer shall be placed in any required homeowner's covenants to provide notice to the Hhomeowners of their responsibility to preserve, protect, and maintain the eCritical aAreas in perpetuity.

2. Such covenants shall contain a detailed description of the allowable uses within the eCritical aArea and, if applicable, associated bufferBuffer and long-term management and maintenance requirements of the eCritical aArea.

J. Markers, Fencing, and Signage.

1. Markers.

a. Prior to final approval of any eCritical aAreas aApplication, the outer edge of the eCritical aAreas boundaries or, if applicable, required bufferBuffer boundaries on the site shall be flagged by the qualified professional, as outlined in each chapter.

b. These boundaries shall then be identified with permanent markers (rebar and cap permanent markers) and flagged by a licensed surveyor, unless otherwise stated in this title. The permanent markers shall be clearly visible, durable, and permanently affixed to the ground.

Commented [JM1]: Updated 14.10.080(E) reference in 16.01.100.

2. Fencing.

a. Temporary Construction Fencing.

~~i.~~ Temporary fencing is required when vegetation is to be retained in an undisturbed condition within the ~~eCritical a~~Area and required ~~buffer~~Buffer.

~~ii. When temporary fencing is requiredIn such cases,~~ the applicant ~~shall will be required to~~ construct silt fencing, construction fencing, or other ~~eCity~~-approved method of temporary fencing at the edge of the ~~eCritical a~~Area or, ~~if applicable,~~ the edge of the required ~~buffer~~Buffer prior to beginning construction on the site.

b. Permanent Fencing. Where deemed necessary by the ~~d~~Department to provide protection to the ~~eCritical a~~Area, the applicant will be required to construct permanent, wildlife-passable fencing along the ~~buffer~~Buffer boundary.

3. Signage.

a. The ~~d~~Department shall require permanent signage to be installed at the edge of the ~~eCritical a~~Area or, ~~if applicable,~~ the edge of the required ~~buffer~~Buffer.

b. The sign shall indicate the type of ~~eCritical a~~Area and if the area is to remain in a natural condition as permanent open space.

c. Exact sign locations, wording, size, and design specifications shall be established by the ~~d~~Department.

~~d. Required s~~Signage shall be clearly visible, durable, and permanently affixed to the ground.

~~ed.~~ Prior to final approval of any ~~eCritical a~~Area ~~a~~Application, the applicant shall submit an affidavit of posting to the ~~d~~Department as proof that the required signs were posted on the site.

14.120.0820 Critical ~~a~~Areas ~~r~~Reports.

A. ~~When required in accordance with this title, t~~The applicant shall submit a ~~eCritical a~~Areas report ~~as required per this Title.~~

B. The ~~eCritical a~~Areas report shall use scientifically valid methods and studies in the analysis of ~~eCritical a~~Area data and field reconnaissance to evaluate the proposed development and all probably impacts to ~~eCritical a~~Areas in accordance with the provisions of this title. The report shall reference the source(s) of science used in accordance with WAC 365-195-900 through WAC 365-195-925.

C. At a minimum the report shall contain the following ~~ten (10) items:~~

~~1.~~ The name and contact information of the applicant;

~~1-2.~~ ~~and a~~ description of the proposal;

~~2-3.~~ The site plan for the proposed development, including a map drawn to scale depicting ~~eCritical a~~Areas, ~~buffer~~Buffers, the proposed development, and any areas to be cleared or altered;

~~3-4.~~ The date of the report and names and qualifications of the persons preparing the report;

~~4-5.~~ Documentation of any fieldwork performed on the site;

~~5-6.~~ Identification and characterization of all ~~eCritical a~~Areas and ~~buffer~~Buffers on and adjacent to the proposed development;

~~6-7.~~ A statement specifying the accuracy of the report, and all assumptions made and relied upon;

~~7.8.~~ A discussion of the performance standards applicable to the eCritical aArea and proposed development;

~~8.9.~~ A mitigation plan in accordance with EMC ~~Section 14.10.09083~~, if mitigation is required; and

~~9.10.~~ Any additional report information required for the eCritical aArea as specified ~~herein the following chapters.~~

14.120.08390 Mitigation plans.

A. When mitigation is required, the applicant shall submit a mitigation plan.

B. The mitigation plan shall include all of the following ~~details outlined in paragraphs 1-6:~~

1. Mitigation sequencing. A description of reasonable efforts made to apply mitigation sequencing pursuant to EMC ~~Section 14.10.070.B 080(B)~~ to avoid, minimize, and mitigate impacts to eCritical aAreas and ~~bufferBuffers~~.
2. Mitigation details.
 - a. A description of the anticipated impacts to the eCritical aArea and ~~bufferBuffer~~, including impacts to eCritical aArea functions and values;
 - b. ~~The mitigating actions proposed, including:~~ type of mitigation proposed, (e.g., on-site or off-site); site selection criteria; identification of compensation goals; and identification of eCritical aArea functions.
 - c. The environmental goals and objectives of the mitigation, together with specific measurable criteria and performance standards for evaluating whether or not the goals and objectives of the mitigation project have been successfully attained;
 - d. A review of the ~~bBest~~ aAvailable sScience supporting the proposed mitigation; and
 - e. An analysis of the likelihood of success of the mitigation project.
3. Construction details. The mitigation plan shall include written specifications, descriptions, and drawings of the mitigation proposed, including:
 - a. Construction sequence, timing, and duration;
 - b. Grading and excavation details;
 - c. Erosion and sediment control features; and
 - d. Planting plan specifying plant species, quantities, locations, size, spacing, density, and measures to protect and maintain plants until established. All plant species must be native to the region.
4. Monitoring details.
 - a. A program for monitoring construction and assessing the outcome of the mitigation project, including the schedule for site monitoring, ~~e.g., (for example, monitoring shall occur in year 1, 3, and 5 after site construction),~~ and how the monitoring data will be evaluated to determine if the performance standards are being met. Monitoring reports shall be submitted to document milestones, successes, problems, and contingency actions of the compensation project. The mitigation project shall be monitored for a period necessary to establish that performance standards have been met, but not for a period less than five (5) years. ~~For example, ten years or more of monitoring are needed for forested and scrub-shrub communities.~~ Mitigation monitoring shall be the responsibility of the applicant.
 - b. A contingency plan with courses of action and corrective measures to be taken if monitoring or

evaluation indicates project performance standards are not being met.

5. Mitigation Cost Estimate. A Mitigation Cost Estimate for the entire ~~e~~C~~ompensatory m~~Mitigation project, per the requirements of EMC ~~Section 14.10.070.E80(E)~~.
6. Other requirements. The mitigation plan shall address any additional mitigation requirements relevant to the specific ~~e~~C~~ritical a~~A~~rea~~ as specified in the following chapters.

14.10.085100 Variances to ~~e~~C~~ritical a~~A~~reas~~.

A. General. Variances are reviewed pursuant to ~~the same permit process as a general variance, -permit type, as outlined in with EMC Chapter 18.40, and 18.50.080. The criteria for approval for a Critical Area Variances are contained herein, and are not subject to the criteria for general variances contained in EMC 18.50.080(D)(2)-~~ **EMC.EMC 18.50.080, Variances.** ~~Conditions may be attached to any ~~e~~C~~ritical a~~A~~rea(s)~~ variance, which will serve to meet the goals, objectives, and policies of this title.~~

B. Variance Criteria. A variance may be granted from the requirements of this chapter only if the decision maker makes written findings that the applicant has demonstrated that the requested action conforms to all of the criteria set forth as follows:

1. Special conditions and circumstances exist that are peculiar to the land, the lot, or something inherent in the land, and that are not applicable to other lands in the same district; and
2. The special conditions and circumstances do not result from the actions of the applicant; and
3. A literal interpretation of the provisions of this title would deprive the applicant of all reasonable economic uses and privileges permitted to other properties in the vicinity and zone of the subject property under the terms of this title, and the variance requested is the minimum necessary to provide the applicant with such rights; and
4. Granting the variance requested will not confer on the applicant any special privilege that is denied by this title to other lands, structures, or buildings under similar circumstances; and
5. The granting of the variance is consistent with the general purpose and intent of this title, and will not further degrade the functions or values of the associated ~~e~~C~~ritical a~~A~~reas~~ or otherwise be materially detrimental to the public welfare or injurious to the property or improvements in the vicinity of the subject property; and
6. The decision to grant the variance ~~incorporates~~ **incorporates** the ~~b~~B~~est a~~A~~available s~~S~~cience~~ and gives special consideration to conservation or protection measures necessary to preserve or enhance anadromous fish habitat; and
7. The granting of the variance is consistent with the general purpose and intent of the Edgewood Comprehensive Plan and adopted development regulations.

C. Additional Criteria for Flood Hazard Area Variances. ~~Refer to EMC Chapter 14.80 – Flood Hazard Areas for specific criteria. In addition to the variance criteria specified above in subsection (B) of this section, in order for the decision maker to approve a flood hazard variance, the decision maker must make written findings that the applicant has demonstrated, that the proposal satisfies all of the following:-~~

1. ~~Generally, the only condition under which a variance from the elevation standard may be issued is for nNew-
eConstruction and sSubstantial iImprovements to be erected on a small or irregularly shaped lot contiguous to
and surrounded by lots with existing structures constructed below the bBase fFlood level. As the lot size
increases the technical justification required for issuing the variance increases.~~
2. ~~Variances shall not be issued within a designated floodwayFloodway if any increase in flood levels during
the bBase fFlood discharge would result.~~
3. ~~Variances shall only be issued upon a determination that the variance is the minimum necessary, considering
the flood hazard, to afford relief.~~
4. ~~Variances shall only be issued upon:~~

a. A showing of good and sufficient cause;

b. A determination that failure to grant the variance would result in exceptional hardship to the applicant and that the hardship was not created by the applicant;

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

5. Variances as interpreted in the National Flood Insurance Program are based on the general zoning law principle that they pertain to a physical piece of property; they are not personal in nature and do not pertain to the structure, its inhabitants, economic or financial circumstances. They primarily address small lots in densely populated residential neighborhoods. As such, variances from flood elevations should be quite rare.

6. Variances may be issued for nonresidential buildings in very limited circumstances to allow a lesser degree of flood proofing than watertight or dry flood proofing, where it can be determined that such action will have low damage potential, complies with all other variance criteria (except 4.4-1), and otherwise complies with Sections 5.1-1, 5.1-3, and 5.1-4 of the General Standards;

7. Any applicant to whom a variance is granted shall be given written notice that the permitted structure will be built with its lowest floor below the base flood elevation and that the cost of flood insurance will be commensurate with the increased risk.

~~D~~D. Should a variance be denied, the applicant may submit an Reasonable Use Exception aApplication for a reasonable use exception pursuant to EMC 14.20.050. (Ord. 17-492 § 2 (Exh. A); Ord. 02-200 § 2).

14.10.090110 Reconsideration and appeal procedures.

Procedures for appeal of a final decision on a eCritical aAreas permit, a decision relating to eCritical aAreas in the underlying permit, a eCritical aAreas variance, or a eCritical aAreas flood hazard variance are set forth in EMC Chapter 18.40.

14.10.100120 Fees.

A. Fees for aApplications and/or reviews of reports, studies, or plans filed pursuant to this title are set forth in the adopted fee schedule and as identified hereinbelow.

AB. Fee Establishment. The eCity, by resolution, shall establish fees for filing of eCritical aArea review processing and other services provided by the eCity as required by this title. ~~These fees shall be based on the anticipated sum of direct costs incurred by the city for any individual development or action and may be established as a sliding scale that will recover all of the city costs. Basis for these fees shall include, but not be limited to, the cost of engineering and planning review time, cost of inspection time, costs for administration, and any other special costs attributable to the critical area review process.~~

BC. Applicant Responsibilities. Unless otherwise indicated in this title, the applicant shall be responsible for the initiation, preparation, submission, and expense of all required reports, assessment(s), studies, plans, reconnaissance(s), peer review(s) by qualified consultants, and other work prepared in support of or necessary to review the aApplication. For those items initiated by the City, e.g., per review(s), the applicant is responsible for the expense and both the preparation and submission of the application materials and not initiation of the review or preparation of the package submitted to the respective Peer Reviewer.

C. Fee Schedule. ~~The director is charged with the responsibility of collecting appropriate fees charged to applicants for any permits or discretionary approval processes provided for in this title. The amount of the fees charged shall be as established by resolution or ordinance of the city council filed in the office of the city clerk and may be, from time to time, changed without amendment to this title.~~

D. Payment. Fees established in accordance with this title shall be paid upon submission of a signed aApplication or petition for appeal, or as otherwise provided by any fee ordinance or resolution adopted by the eCity eCouncil. ~~Where such an application will require substantial review time or expenditures, the mayor may, at his/her sole~~

Commented [JM2]: Fixed references to Model Ordinance Sections, routed to relevant sections of EMC.
5.1-1: Anchoring → 14.80.050 C.6.c
5.1-3: Utilities → 14.80.050 C.9
5.1-4: Subdivision Proposals → 15.10.150 D, moved to 14.80...

discretion, direct that the department initiating the permit request to reimburse the community development department for some or all of costs expended for the application review.

E. Investigation Fee. To investigate ~~v~~Violations of this title, all city fees associated with investigation of ~~v~~Violations of this title may be assessed at the adopted billable staff hour rate in addition to any required consultant costs, legal costs, and other expenses necessary to complete the investigation of the ~~v~~Violation. The payment of such investigation fees shall not exempt any person from compliance with all other provisions of this title, nor from penalties prescribed by law.

14.10.1430 Compliance.

A. The regulations for compliance with the provisions of this title are set forth in EMC Section 18.30.040, Scope and compliance.

B. When a ~~c~~Critical ~~a~~Area or its required ~~buffer~~Buffer has been altered in ~~v~~Violation of this title, the ~~d~~Department shall require the property owner to bring the site into compliance. The property owner shall be required to submit the appropriate ~~c~~Critical ~~a~~Areas ~~a~~Application and commence a departmental review, as applicable for each chapter of this title. In addition to any required site investigation, ~~d~~Delineations, assessments, ~~or~~ reports, ~~etc.~~, the property owner shall be required to submit a ~~r~~Restoration plan that identifies the proposed mitigation to bring the subject property into compliance with the requirements of this title. (Ord. 02-200 § 2).

14.10.1240 Warning and disclaimer of liability.

A. The degree of protection required through application of this title is deemed to be reasonable for regulatory purposes and is based on ~~b~~Best ~~a~~Available ~~s~~Science; however, natural events that may exceed the geographic boundaries regulated under this title can and will occur, (e.g., flood heights that are higher than anticipated). This title does not ~~mean to~~ imply that land outside designated hazard areas or uses permitted within such areas will be free from damages.

B. The express purpose of this title is to provide for the health, safety and welfare of the general public, and not to protect individuals or create or otherwise establish or designate any particular class or group of persons who will or should be especially protected or benefitted by the terms of this title. The obligation of complying with the requirements of this title and the liability for failing to do so is hereby placed upon the property owner and/or persons responsible for the condition of the property, buildings or premises.

C. Nothing in this title is intended to be nor shall be construed to create or form the basis for any liability on the part of the City, its officers, officials, employees or agents, for any injury or damage resulting from the failure of the owner of property or land to comply with the provisions of this title or by reason or in consequence of any inspection, notice, order, certificate, permission or approval, authorized or issued or done in connection with the implementation or enforcement of this title, or by reason of any action or inaction on the part of the City, related in any manner to the enforcement of the title by its officers, officials, employees or agents.

14.10.1450 Appendix.

A. Title and Plat Notification Forms.

APPENDIX A

TITLE AND PLAT NOTIFICATION FORMS

A. Notice for Title Notification.

1. (Example: ~~Appropriate Critical Area from EMC 14.10.030~~)

Tax Parcel Number:

Address:

Legal Description:

Present Owner:

NOTICE: This property contains [identify Critical Area, (e.g., wetland/Wetlands or wetland/Wetland buffer/Buffer)] as defined by EMC Title 14.10.030. The site was the subject of a development proposal for _____ application number [insert case file number] filed on _____ [insert date]. Restrictions on use or alteration of the site may exist due to natural conditions of the property and resulting regulations. Review of such application has provided information on the location of the [identify Critical Area, e.g., Wetlands or Wetland Buffers] (e.g., wetland or wetland buffers) and any restriction on use.

Date _____ Signature of owner _____

Notary acknowledgment and notary seal

B. Additional Title Notification Statements.

1. Title notification for liquefaction and dynamic settlement hazard areas shall include a statement of the performance criteria, (i.e., protection of life safety only, provision for minimal structural damage so that post-earthquake functionality is substantially unchanged, no structural damage for the design earthquake).
2. Title notification for fault rupture hazard areas shall include a statement that a fault rupture hazard area or associated buffer/Buffer exists on the site. The title notification shall include a site plan of the subject property with the fault rupture hazard area and associated buffer/Buffer identified.
3. Properties that contain flood hazard areas pursuant to EMC Chapter 14.8070 EMC shall include the following statement:
4. Flood Elevation Certificates are kept on file by the dDepartment.

C. Notice for Plat Notification/Plat Notes.

1. General. The following notice shall be placed on the face of the final plat, short plat, large lot, or binding site plan documents when said subdivision contains any eCritical aAreas or critical-area-buffer/Buffer:

Notice: This site lies within a [insert type of Critical Area] (e.g., landslide hazard area) as defined in EMC Title 14. Restrictions on use or alteration of the site may exist due to natural conditions of the site and resulting regulation.

2. Native Vegetation Preservation Areas. The following notice shall be placed on the face of the final plat, short plat, large lot, or binding site plan documents when said subdivision contains any eCritical aAreas or critical-area-buffer/Buffer and when said eCritical aAreas or critical-area-buffer/Buffer have been identified as native or natural vegetation preservation areas.

Notice: The Critical Areas appearing on this [final site plan/preliminary plat/final plat/short plat/large lot/engineering drawing] contain areas of aNative vVegetation intended to buffer/Buffer the Critical Area from the adverse effects of development. These Critical Areas shall remain and be maintained in a natural, undeveloped, open space state. There shall be no eClearing and, gGrading, filling, or construction within the Critical Areas, except as shown on plans or documents approved by the City of Edgewood and contained in the official files for this development. Each Critical Area shall remain undisturbed except for periodic watering and hand weeding of plants designated as noxious by the State of Washington.

3. Plat Notes for Flood Hazard Areas. The following notes shall be placed on the face of any of final plat, short plat, large lot, or binding site plan documents which lie within a flood hazard area.

a. ~~Clearing and~~ Grading, ~~clearing, and/or filling~~ within the limits of the 100-year ~~floodplain~~Floodplain is prohibited, except for watercourse related construction, repair, ~~and/or~~ maintenance work that is done by the ~~e~~City for management operations.

b. If a higher frequency event occurs or if existing conditions upon which the ~~f~~Flood ~~h~~Hazard ~~a~~Area boundaries were based were to change or occur differently than depicted, then the level of protection afforded by the existing levee, if applicable, and ~~f~~Flood ~~h~~Hazard ~~a~~Area standards may not be adequate to prevent the subject site from flooding.

c. All purchasers, ~~and~~ developers, (~~and/or~~ their agents) of property within the subject development area ~~and/or~~ parcel shall take notice of the above conditions and hereby agree to defend, indemnify, and hold harmless ~~the City -Edgewood~~ from any and all claims, losses, costs, liabilities, or damages of any nature imposed upon or asserted against Edgewood arising out of or caused by the ~~e~~City's issuance of approval or by issuance of any other permits arising out of this approval.

d. All occupants ~~and/or~~ owners of property in the subject area assume the risk of flooding which may occur and waive any claims against ~~the City Edgewood~~ arising out of damage or injury to person or property resulting therefrom. (Ord. 17-492 § 2 (Exh. A); Ord. 16-461 § 3; Ord. 02-200 § 2).

Chapter 14.1520

DEFINITIONS

A. This title ~~shall rely~~ on the definitions contained in EMC Chapter 18.20 - Definitions-EMC, Definitions. Any word or phrase not contained herein shall be first referenced to EMC Chapter 18.20 for meaning. The ~~e~~City also adopts by reference the definitions stated in WAC 197-11-700 through 197-11-799 as now or hereafter amended.

1. For any word or term not defined herein, the latest edition of Webster's Dictionary shall be used.

~~1.2.~~ The Director, or their designee, has the final authority to determine the interpretation or usage of terms used in this Chapter.

B. Additional definitions not contained in EMC Chapter 18.20 that apply to this title are:

~~1. Abutting—bordering upon, to touch upon, in physical contact with. Sites are considered abutting even though the area of contact may be only a point.~~

~~2. Activity—any use conducted on a site.~~

~~3.1.~~ Addition – an alteration to an existing structure that increases the floor area, either. ~~There are two types of additions: additions affixed to the structure's side of an existing structure and or an upper story addition.~~

~~4.2.~~ Agricultural Activities – the production of crops ~~and/or~~ raising or keeping livestock, including operation and maintenance of farm and stock ponds, drainage ditches, irrigation systems, and normal operation, maintenance, and repair of existing serviceable agricultural structures, facilities, or improved areas, and the practice of aquaculture.– Activities which bring an area into agricultural use are not part of an ongoing activity.– An operation ceases to be ongoing when the area in which it was conducted is proposed for conversion to a non-agricultural use or has lain idle for a period of longer than five (5) years, unless the iedle land is registered in a federal or state soils conversation program. Forest practices regulated under RCW Chapter 76.09 ~~RCW and or~~ WAC Title 222 are not included in this definition.

~~5.3.~~ Agricultural Land(s) – land primarily devoted to the commercial production of horticultural, viticultural, floricultural, dairy, apiary, vegetable, or animal products or of berries, grain, hay, straw, turf, seed, Christmas trees not subject to the excise tax imposed by RCW Sections 84.33.100 through 84.33.140, finfish in upland hatcheries, or livestock, and that has Long-~~Term~~ eCommercial ~~s~~Significance for agricultural production.

~~4.~~ Animal Containment Area – a site keeping where at least 2,000 pounds two or more animal units of large animals per acre or 0.75-750 pounds of an animal unit of small animals per acre are kept, and or where a high volume of waste material is deposited in quantities capable of impacting groundwater resources.

~~5.~~ Animal, Large – an animal weighing 100 pounds or more.

~~6.~~ Animal, Small – an animal with an average weight of less than 100 pounds.

~~7.6.~~ Animal Unit—the equivalent of 1,000 pounds of animal.

~~8.~~ Appeal—a request for a review of the interpretation of any provision of this chapter, per EMC 14.10.090.

~~9.~~ Applicant—any person or entity, including an agency, applying for a license from an agency.–

~~10.~~ Application – a request for a license.

~~11.~~ Aquifer—a saturated geologic formation, which will yield a sufficient quantity of water to serve as a private or public water supply.

Commented [JM3]: UPDATED 15.05.060 O, Table R301.2.(1) reference to 14.80 and remove 15.10 reference, update 16.01.065 B reference from 15.10 to 14.80, and repeal EMC 15.10 in its entirety

12. ~~Area of Shallow Flooding~~—areas designated as AO or AH zones on the FIRM(s). AO zones are characterized as sheet flows, having base flood depths that range from one to three feet above the natural ground, where a clearly defined channel does not exist, the path of flooding is unpredictable and indeterminate, and velocity flow may be evident. AH zones indicate similar depth ponding, shown with standard base flood elevations on the FIRM(s).

13. ~~Area of Special Flood Hazard~~—land in the floodplain within a community subject to a one percent or greater chance of flooding in any given year. Designation on FIRM(s) always includes the letter A or V.

Commented [JM4]: These definitions were added with the FEMA Flood Code Update – moved to 14.80

14. ~~Base Flood~~ – the flood having a one percent chance of being equaled or exceeded in any given year, also referred to as the “100-year flood,” and is designated on FIRM(s) by the letter A or V.

15.7. ~~Basement~~—any area of the building having its floor sub-grade (below ground level) on all sides, for the purposes of this title.

Commented [JM5]: This definition was added with the FEMA Flood Code Update – moved to 14.80

16.8. ~~Best Available Science~~ – scientific information applicable to the eCritical aArea prepared by local, state, or federal natural resource agencies, a qualified scientific professional, or team of qualified scientific professionals that is consistent with criteria established in WAC Sections 365-195-900 through WAC 365-195-925.

17.9. ~~Best Management Practices (BMP)~~ – conservation practices or systems of practices and management measures that:

- a. Control soil loss and reduce water quality degradation caused by high conservations of nutrients, animal waste, toxics and sediment;
- b. Minimize adverse impacts to surface water and ground water flow and circulation patterns and to the chemical, physical, and biological characteristics of ~~wetland~~Wetlands;
- c. Protect trees and vegetation designated to be retained during and following site construction and use nNative pPlant species appropriate to the site for re-vegetation of disturbed areas; and
- d. Provide standards for proper use of chemical herbicides within eCritical aAreas.

18. ~~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.

Commented [JM6]: This definition was added with the FEMA Flood Code Update – moved to 14.80

19.10. ~~Buffer~~Buffer – an area contiguous with a eCritical aAreas that is are required for the integrity, maintenance, function, and structural stability of the said eCritical aAreas.

20.11. ~~Building Footprint~~ – the horizontal area measured within the outside of the exterior walls of the ground floor of all principal and accessory buildings on a lot.

12. ~~City~~ – the eCity of Edgewood municipal corporation.

21.13. ~~City Council~~ – the Edgewood City Council.

22.14. ~~Classification~~ – defining value and hazard categories to which eCritical aAreas and land resource lands will be assigned.

23. ~~Clearing~~—the removal of timber, brush, grass, ground cover, or other vegetative matter from a site, which exposes the earth's surface on the site.

24. ~~Colluvium~~—loose materials deposited by gravity on the face or at the foot of a slope, e.g., talus or soil creep.

25.15. Compensatory Mitigation – replacing project-induced losses or impacts to a ~~e~~Critical ~~a~~Area.

26.16. Conservation Easement – a recorded deed restriction or covenant that runs in perpetuity on a parcel of land restricting the use of the property by preventing future real estate development such as residential, industrial, or commercial use ~~that. Conservation easements~~ may allow for continued current uses, (e.g., residential, recreational, agriculture, forestry, or ranching.); ~~however, conservation easements most often restrict both the current use as well as future uses of the land to some important conservation quality such as habitat preservation, open space, or scenic views. A land trust or governmental entity that manages properties for long-term goals typically holds conservation easements.~~

27.17. Contaminant – any chemical, physical, biological, or radiological substance that does not occur naturally or occurs at concentrations and durations as to be injurious to human health or welfare or shown to be ecologically damaging.

28. Council – ~~the Edgewood City Council.~~

29. County – ~~means Pierce County.~~

30.18. Crawl Space – the shallow space beneath the bottom floor of a house with no basement; used for access and inspection of framing, electrical, plumbing, insulation, vapor barriers, or duct work. For purposes of the National Flood Insurance Program Elevation Certificate, this definition does not include spaces a crawl space that have subgrade around all sides, which shall be considered a basement.

31.19. Critical ~~a~~Aquifer ~~r~~Recharge ~~a~~Areas – areas with a critical recharging effect on aquifers used for potable water, including areas where an aquifer that is a source of drinking water is vulnerable to contamination that would affect the potability of the water, or is susceptible to reduced recharge.

32.20. Critical ~~a~~Areas – land that contains any of the following area, areas, and/or ecosystems: Aquifer Recharge Areas, Fish and Wildlife Habitat Conservation Areas, Frequently Flooded Areas, Geologically Hazardous Areas, or Wetlands; as defined in RCW 36.70A, as it now exists or may be hereinafter amended, and this Chapter(a) Wetlands; (b) areas with a critical recharging effect on aquifers used for potable water; (c) fish and wildlife habitat conservation areas; (d) frequently flooded areas; and (e) geologically hazardous areas.

33.21. Critical ~~f~~Facilities – those facilities occupied by populations or which handle dangerous substances including but not limited to hospitals, medical facilities, nursing homes; structures housing, supporting, or containing toxic or explosive substances; covered public assembly structures; school buildings through secondary, including daycare centers; buildings for colleges or adult education; police, fire, and emergency response installations; jails and detention facilities; and all structures with occupancy of greater than 5,000 people. These facilities are such that even a slight chance of flooding might be too great. ~~Essential public facilities (as defined under EMC 18.20.080 and 18.100.050) are considered critical facilities, for floodplain management purposes.~~

34.22. Debris Flow – the rapid downslope movement of a viscous mass of water-saturated sediments.

35.23. Degraded – to have suffered a decrease in naturally occurring functions ~~and/or values due to activities undertaken or managed by persons on or off a site.~~

36.24. Delineation – a ~~wetland~~Wetland study conducted in accordance with the approved federal ~~wetland~~Wetland delineation manual and applicable regional supplements.

37. Department – ~~the City of Edgewood Department of Community Development.~~

38.25. Depressional Pothole – a relatively sunken or low-lying area of the earth's surface, especially one having no natural outlet for surface drainage.

39.26. Development – ~~any human-induced change to improved or unimproved real property, including but not limited to: the construction of buildings or other structures, placement of a manufactured~~

home/mobile home, mining, dredging, clearing, filling, grading, paving, excavation, drilling operations, storage of equipment or materials located within an area of special flood hazard, or activities otherwise governed by EMC Title 16, Subdivisions. See EMC Section 18.20.070.

40.27. Development activity – any construction, development, earth movement, clearing, or other site disturbance of the land, except as listed under exemptions. See EMC Section 18.20.070.

41.28. Director – the director-head of the city City's of Edgewood Department of Community Development Department or his/her their designee.

42.29. DRASTIC – an acronym for a computer model developed by the National Water Well Association and Environmental Protection Agency used to measure aquifer susceptibility.

43. Dwelling Unit – one or more rooms designed for or occupied by one family for living or sleeping purposes and containing kitchen facilities for use solely by one family.

44.30. Earth or Earth Material – naturally occurring rock, soil, stone, sediment, or combination thereof.

45.31. Earthflow – a slow downslope movement of viscous, saturated sediments.

46. Elevated Building – a non-basement building that has its lowest elevated floor raised above ground level by foundation walls, shear walls, posts, piers, pilings, or columns.

Commented [JM7]: Required for FEMA – moved to 14.80

47.32. Elevation Certificate – the official form (FEMA Form 81-31) used to track development, provide elevation information necessary to ensure compliance with community floodplain management ordinances, and determine the proper insurance premium rate with Section B completed by community officials.

48.33. Encroachment – any development or regulated activity conducted inside the boundaries of any designated eCritical aAreas and/or its associated bufferBuffer.

49.34. Engineer – as defined by RCW Chapter 18.43.

50.35. Engineering Geologist – a geologist who, by reason of his or her knowledge of engineering geology, acquired by education and practical experience, is qualified to engage in the practice of engineering geology, has met the qualifications in engineering geology established under Chapter 18.220 RCW, and has been issued a license in engineering geology by the Washington State Geologist Licensing Board.

51. Engineering Geology – a specialty of geology affecting the planning, design, operation, and maintenance of engineering works and other human activities where geological factors and conditions impact the public welfare or the safeguarding of life, health, property, and the environment.

52.36. Enhancement – actions performed within an existing degraded eCritical aAreas and/or bufferBuffers to intentionally increase or augment one or more ecological functions or values of the existing area. Enhancement actions include, but are not limited to, increasing plant diversity and cover; increasing wildlife habitat and structural complexity with (snags or; woody debris); installing environmentally compatible erosion controls; removing non-nNative pPlant or animal species; or removing human-made structures or fill that are degrading ecological functions or values.

53. Erosion – the wearing away of the earth's surface as a result of the movement of wind, water, or ice.

54.37. Erosion Hazard Areas – those areas that because of natural characteristics, including vegetative cover, soil texture, slope, gradient, and rainfall patterns, or human-induced changes to such characteristics, are vulnerable to erosion.

55. Excavation – the mechanical removal of earth material.

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

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

Commented [JM8]: Required for FEMA – moved to 14.80

58.38. ~~Facility~~ – all structures, contiguous land, appurtenances, and other improvements on the land used for recycling, reusing, reclaiming, transferring, storing, treating, disposing, or otherwise handling a hazardous substance. ~~Use of the~~ This term “facility” includes underground and aboveground tanks and operations, which handle, use, dispose of, or store hazardous substances.

59. ~~Fill or Fill Material~~—a deposit of earth material placed by human or mechanical means.

60.39. ~~Filling~~ – the act of placing fill ~~or~~ fill material on any surface, including temporary stockpiling of fill material.

61. ~~Financial Guarantee~~—a surety bond or other security, e.g., cash escrow, cash set aside, assignment of funds, or letter of credit, which the City may allow a developer to utilize in lieu of completing the construction of required improvements prior to the City's approval and acceptance of the improvements. The City establishes the amount and conditions which will ensure completion within a specific time period.

62.40. ~~Finished Floor~~ – the top of the next higher floor above the ~~l~~Lowest ~~f~~Floor. For purposes of the National Flood Insurance Program Elevation Certificate, the finished floor referenced in this regulation shall equal the top of the next higher floor.

63. ~~Fish and Wildlife Habitat Conservation Areas~~—areas necessary for maintaining species in suitable habitats within their natural geographic distribution so that isolated subpopulations are not created as designated by WAC 365-190-080(5). “Fish and wildlife habitat conservation areas” does not include such artificial features or constructs as irrigation delivery systems, irrigation infrastructure, irrigation canals, or drainage ditches that lie within the boundaries of and are maintained by a port district or an irrigation district or company.

64.41. ~~Fisheries Biologist~~ – a professional with a degree in fisheries or certification by the American Fisheries Society, or with five (5) years ~~of~~ professional experience as a fisheries biologist.

65. ~~Flood or Flooding~~—a general and temporary condition of partial or complete inundation of normally dry land areas from:

- a. ~~The overflow of inland or tidal waters; or~~
- b. ~~The unusual and rapid accumulation of runoff of surface waters from any source.~~

66.42. ~~Flood Hazard Areas~~ – areas of flooding identified by verifiable flooded areas using:

- a. Aerial photographs of the city, especially those taken in wintertime 1996 and 1997;
- b. Relevant and verifiable information from the ~~city~~City's capacity analysis technical review Ad-hoc committee (CATRAC) draft report, 2000;
- c. Relevant and verifiable government and citizen photographs, notes, observations, etc. regarding historic ponding/flooding levels;

- d. Relevant and verifiable information available through Pierce County;
- e. Relevant and verifiable information available through the Federal Emergency Management Agency (FEMA); or
- f. Areas of land located in floodplains, which are subject to a one percent or greater chance of flooding in any given year, including, but not limited to, streams, rivers, lakes, ponds, ~~wetland~~Wetlands, or ~~d~~Depressional ~~p~~Potholes ~~and the like~~.

~~67.43.~~ Flood Insurance Rate Map (FIRM) – the official map on which the Federal Insurance Administration (FIA) has delineated both the areas of special flood hazard and the risk premium zones applicable to the community.

~~68.~~ Flood Insurance Study (FIS) – the official report provided by the Federal Insurance Administration (FIA) that includes flood profiles, FIRM(s), and the water surface elevation of the ~~b~~Base ~~f~~Flood.

Commented [JM9]: Moved to 14.80 since definition is not used anywhere else in Title 14.

~~69.44.~~ Flood Fringe – the area subject to inundation by the ~~b~~Base ~~f~~Flood, but outside the limits of the ~~floodway~~Floodway, and which may provide needed temporary storage capacity for floodwaters.

~~70.45.~~ Floodplain – the total area subject to inundation by the ~~b~~Base ~~f~~Flood, including the flood fringe and the ~~floodway~~Floodway areas.

~~71.46.~~ Floodway – the channel of a river or other watercourse and the adjacent land areas that must be reserved in order to convey and discharge the ~~b~~Base ~~f~~Flood without cumulatively increasing the water surface elevation by more than one foot, and those areas designated as deep and/or fast-flowing water.

~~72.47.~~ Fluvial Processes – the physical interaction of flowing water and the natural channels of rivers and streams.

~~73.~~ Foundation Footing Setback – a typical geotechnical recommendation intended to assure that a proposed structure is protected in the event of a slope failure or sloughage. A foundation footing setback is measured horizontally from the face of the foundation footing to the face of the slope. A foundation footing setback for this purpose should not be confused with a building or construction setback from a landslide hazard area buffer. A foundation footing setback is also not a buffer.

~~74.48.~~ Frequently Flooded Area – lands in the floodplain subject to at least a one percent or greater chance of flooding in any given year, or within areas subject to flooding due to high groundwater. These areas include, but are not limited to, streams, rivers, lakes, ~~wetland~~Wetlands, and areas where high groundwater forms ponds on the ground surface.

~~75.49.~~ Geologically Hazardous Areas – areas that because of their susceptibility to erosion, sliding, earthquake, or other geological events are not suited to the siting of commercial, residential, or industrial development consistent with public health or safety concerns.

~~76.50.~~ Geologist – an ~~e~~Engineering ~~g~~Geologist, or hydrogeologist, ~~that is~~ registered in the ~~s~~State of Washington.

~~77.51.~~ Geotechnical Professional – a person with experience and training in analyzing, evaluating, and mitigating landslide, erosion, ~~and~~ or seismic hazards. A geotechnical professional shall be licensed in the state of Washington as a ~~g~~Geologist or ~~p~~Professional ~~e~~Engineer, and must have five or more years' experience specializing in landslide, erosion, or seismic hazards, as applicable.

~~78.52.~~ Geotechnical Report – a report prepared by a ~~Geologist or Professional Engineer~~ ~~professional engineer~~ licensed by the state of Washington with expertise in geotechnical engineering, evaluating the site conditions and mitigating measures necessary to reduce the risks associated with development in ~~g~~Geologically ~~h~~Hazardous ~~a~~Areas.

79.53. Grading or Clearing and Grading – any excavating, filling, clearing, ~~or~~ creating of impervious surfaces, or any combination thereof of these items.

80. Groundwater—all water found beneath the ground surface, including slowly moving subsurface water present in aquifers and recharge areas.

81.54. Habitat Management Plan – a report prepared by a professional ~~w~~Wildlife ~~b~~Biologist or ~~f~~Fisheries ~~b~~Biologist, which discusses and evaluates the measures necessary to maintain fish and wildlife habitat conservation areas on a proposed development site.

82.55. Habitat of Local Importance – an area, range, or habitat within which a species has a primary association and which, if altered, may reduce the likelihood that the species will maintain and reproduce over the long term. Examples include areas of high relative density or species richness, breeding habitat, winter range, and movement corridors. These areas may also include habitats that are of limited availability or high vulnerability to alteration.

83.56. Hard Armoring – the use of large rock ~~and~~/or human-made materials to protect property from shoreline erosion. Such techniques include cement ~~or~~ concrete bulkheads, steel structures, rock wall revetments, and rock gabion structures. Hard ~~a~~Armoring typically does not utilize or integrate any of soft armoring or ~~s~~Soil ~~b~~Bioengineering ~~techniques~~Methods.

84. Hazardous Substance—any liquid, solid, gas, or sludge, including any materials, substance, product, commodity, or waste, regardless of quantity, that exhibits any of the characteristics or criteria of hazardous waste; and including waste oil and petroleum products.

85. Hazardous Substance Processing or Handling—the use, storage, manufacture, or other land use activity involving hazardous substances, but does not include individually packaged household consumer products or quantities of hazardous substances of less than five gallons in volume per container. Hazardous substances shall not be disposed on site unless in compliance with Dangerous Waste Regulations, Chapter 173-303 WAC, and any pertinent local ordinances such as sewer discharge standards.

86. Hazardous Waste—all dangerous waste and extremely hazardous waste as designated pursuant to RCW Chapter 70.105 and WAC Chapter 173-303.

1. “Dangerous waste” means any discarded, useless, unwanted, or abandoned substances including but not limited to certain pesticides or any residues or containers of such substances which are disposed of in such quantity or concentrations as to pose a substantial present or potential hazard to human health, wildlife, or the environment because such wastes or constituents or combinations of such wastes:

- a. Have short-lived, toxic properties that may cause death, injury, or illness, or have mutagenic, teratogenic, or carcinogenic properties; or
- b. Are corrosive, explosive, flammable, or may generate pressure through decomposition or other means.

2. “Extremely hazardous waste” means any waste which:

- a. Will persist in a hazardous form for several years or more at a disposal site and which in its persistent form presents a significant environmental hazard and may be concentrated by living organisms through a food chain or may affect the genetic make-up of humans or wildlife; and
- b. Is disposed of at a disposal site in such quantities as would present an extreme hazard to humans or the environment.

87. Hazardous Waste Treatment and Storage Facility—a facility that treats and stores hazardous waste and is authorized pursuant to Chapter 70.105 RCW and Chapter 173-303 WAC. It includes all contiguous land and structures used for recycling, reusing, reclaiming, transferring, storing, treating, or disposing of hazardous waste. Treatment includes using physical, chemical, or biological processing of hazardous wastes to make such waste non-dangerous or less dangerous and safer for transport, amenable for energy or

material resource recovery. Storage includes the holding of waste for a temporary period, but not the accumulation of waste on the site of generation as long as the storage complies with applicable requirements of Chapter 173-303 WAC.

~~88.57.~~ Holocene Epoch – that part of the geologic record that post-dates the youngest deposits associated with the late Pleistocene Age Fraser Glaciation and is typically considered to be the past 10,000 years.

~~89.58.~~ Hydrogeologic Assessment – a report detailing the subsurface conditions, the design of a proposed land use action, and the facilities operation which indicates the susceptibility and potential for contamination of groundwater supplies.

~~90.~~ Impervious Surface – a hard surface, which prevents or retards the entry of water into the soil mantle as under natural conditions prior to development, and/or a hard surface area, which causes water to run off the surface in greater quantities or at an increased rate of flow than the flow present under natural conditions prior to development. Common impervious surfaces include, but are not limited to, roof tops, walkways, patios, driveways, parking lots or storage areas, concrete or asphalt paving, gravel roads, gravel parking lots, packed earthen materials, and oiled, macadam or other surfaces which similarly impede the natural infiltration of stormwater. Open, uncovered retention/detention facilities shall not be considered as impervious surfaces.

~~91.~~ Increased Cost of Compliance (ICC) – a flood insurance claim payment up to \$30,000 directly to a property owner for the cost to comply with floodplain management regulations after a direct physical loss caused by a flood. Eligibility for an ICC claim can be through a single instance of “substantial damage” or as a result of a “cumulative substantial damage.” (More information can be found in FEMA ICC Manual 301.)

Commented [JM10]: FEMA Definition – moved to 14.80

~~92.~~ Lahar – a mudflow or debris flow mobilized by water, which originates on the slopes of a volcano.

~~93.~~ Lake – any impoundments of open water 20 acres or larger.

~~94.~~ Landfill – a place to dispose of refuse and other waste material by burying it and covering it over with soil.

~~95.~~ Landslide – the abrupt downslope movement of soil, rocks, or other surface matter on a site. Landslides may include but are not limited to slumps, debris flows, mudflows, earthflows, rockfalls, and snow avalanches.

~~96.59.~~ Landslide Hazard Areas – any areas which are potentially subject to risk of mass movement due to a combination of geologic, topographic, and hydrologic factors.

~~97.~~ Large Animal – an animal with an average weight of 100 pounds or more.

~~98.~~ License – any form of written permission given to any person, organization, or agency to engage in any activity, as required by law or agency rule. A license includes all or part of a city permit, certificate, approval, registration, charter, or plat approvals or rezones to facilitate a particular proposal. The term does not include a license required solely for revenue purposes.

~~99.60.~~ LiDAR – an acronym that stands for Light Detection and Ranging imaging.

~~100.~~ Liquefaction – a process by which a water-saturated granular (sandy) soil layer loses strength because of ground shaking caused by an earthquake.

~~101.61.~~ Long-Term Commercial Significance – the growing capacity, productivity, and soil composition of land, which makes it suitable for long-term commercial production, in consideration with the land’s proximity to population areas, and the possibility of more intense uses of land.

~~102.62.~~ Lowest Floor – the lowest floor of the lowest enclosed area (including basement and crawl space). 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 ~~v~~Violation of the applicable non-elevation design requirements of this title.

~~103. Maintenance~~—those usual acts to prevent a decline, lapse, or cessation from a lawfully established condition without any expansion of or significant change from that originally established condition. For the purposes of this document, activities within landscaped areas within areas subject to native vegetation retention requirements may be considered maintenance only if they maintain or enhance the canopy and understory cover.

~~104. Manufactured Home or Mobile Home~~—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 connected to the required utilities. For floodplain management purposes, the term “manufactured home/mobile home” also includes park trailers, travel trailers, and other similar recreational vehicles placed on a site for greater than 180 consecutive days. For insurance purposes, the term “manufactured home/mobile home” does not include park trailers, travel trailers, recreational vehicles, or other similar vehicles.

Commented [JM11]: FEMA Definition – moved to 14.80

~~105. Manufactured Home Park or Subdivision~~—a parcel (or contiguous parcels) of land divided into two or more manufactured home lots for rent or sale.

Commented [JM12]: FEMA Definition – moved to 14.80

~~106.63.~~ Mineral Resource Lands – those lands primarily devoted to the extraction of minerals or which have known or potential long-term commercial significance for the extraction of minerals.

~~107. Minerals~~—gravel, sand, valuable metallic substances, or other resources that are extracted from the ground.

~~108. Mitigation~~—means:

- a. Avoiding the impact altogether by not taking a certain action or parts of an action;
- b. Minimizing impacts by limiting the degree or magnitude of the action and its implementation, by using appropriate technology, or by taking affirmative steps to avoid or reduce impacts;
- c. Rectifying the impact by repairing, rehabilitating, or restoring the affected environment;
- d. Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action;
- e. Compensating for the impact by replacing, enhancing, or providing substitute resources or environments; and
- f. Monitoring the impact and taking appropriate corrective measures;

~~109.64.~~ Mudflow – a ~~d~~Debris ~~f~~low containing an abundance of fine particles.

~~110.65.~~ Native Vegetation or Native Plants – a mix of plant species comprising herbs, grasses, grass-like plants, shrubs and trees indigenous to the Puget Sound region that reasonably could be expected to naturally occur on the site.

~~111.66.~~ Natural Resource Lands – agricultural and mineral resource lands, which have long-term commercial significance.

~~112. New Construction~~ – structures for which the “~~s~~Start of ~~e~~Construction” commenced on or after the following:

~~113. For the purposes of determining flood insurance rates, the effective date of an initial FIRM (i.e., August 19, 1987, or August 4, 1988, specifically for Panel 350 only), and includes any subsequent improvements to such structures.~~

114. For floodplain management purposes, the effective date of this floodplain management ordinance and includes any subsequent improvements to such structures.

115. 67. For all other cases, the effective date of this applicable critical areas ordinance.

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

117. *Ordinance*—the ordinance, resolution, or other procedure used by the city to adopt regulatory requirements.

118. *Ordinary High Water Mark (OHWM)*—the mark on all lakes, streams and tidal waters that will be found by examining the beds and banks and ascertaining where the presence and action of waters are so common and usual, and so long continued in all ordinary years, as to mark upon the soil a character distinct from that of the abutting upland and vegetation, as that condition exists on the effective date of the ordinance codified in this title, or as it may naturally change thereafter. In any area where the ordinary high water mark cannot be found, the ordinary high water mark shall be the line of mean higher high tide in areas adjoining saltwater, and the line of mean high water in areas adjoining freshwater.

“Plat” means:

1. “Short subdivision” or “short plat” means the division or redivision of land into six or fewer lots, tracts, parcels, sites, or divisions for the purpose of sale, lease, or transfer of ownership.

2. “Subdivision” or “formal subdivision” means the division or redivision of land into seven or more lots, tracts, parcels, sites, or division for the purpose of sale, lease, or transfer of ownership. For floodplain management regulation purposes, this includes land over five acres in area situated within a flood hazard area.

119. *Pond*—naturally occurring impoundments of open water less than 20 acres in size and larger than 2,500 square feet, which maintain standing water throughout the year. See also *Depressional Pothole*.

120. 68. *Professional Engineer* – an engineer currently licensed and registered in the state of Washington.

121. *Reconstruction*—the rebuilding of an existing structure which has been partially or completely destroyed by any cause, such as but not limited to fire, wind, landslides, and water, without increasing the original floor area or square footage area.

122. *Recreational Vehicle (RV)*—a vehicle built on a single chassis, 400 square feet or less when measured at the largest horizontal projection, designed to be self-propelled or permanently towable by a light duty truck, and designed primarily not for use as a permanent dwelling but as a temporary living quarters for recreational, camping, travel, or seasonal use.

123. 69. *Regulated Activities* – means, but is not limited to, any of the following activities which are directly undertaken or originate in a regulated critical area or its buffer: building permit; commercial or residential; binding site plan; franchise right-of-way construction permit; site development permit; right-of-way permit; shoreline permits; short subdivision; use permits; subdivision; utility permits; or any subsequently adopted permit or required approval not expressly exempted by this title. See EMC Section 14.30.020.

124. *Rehabilitation*—any improvements and repairs which are made to the interior and exterior of an existing structure, but which do not result in any increase in the floor area of the structure. This is also commonly referred to as a “remodel” of an existing structure.

125. 70. *Restoration* – an action which returns habitat to a state in which its stability and functions approach its unaltered state as closely as possible. This may be accomplished through measures including,

Commented [JM13]: FEMA-specific definition – moved to 14.80

Commented [JM14]: FEMA Definition – moved to 14.80

Commented [JM15]: FEMA Definition – moved to 14.80

but not limited to, re-vegetation, removal of intrusive stream bank structures, and removal or treatment of toxic materials. Restoration does not imply a requirement for returning the ~~e~~Critical ~~a~~Area to aboriginal or pre-European settlement conditions.

~~126-71. Revised Code of Washington (RCW) – an acronym that stands for Revised Code of Washington all laws of a general and permanent nature heretofore or hereafter enacted by the legislature, and assign permanent numbers as provided by law to all new titles, chapters, and sections thereof.~~

~~127-72. Riparian – the area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other. Riparian habitat begins at the ordinary high water mark and includes the entire extent of the floodplain and riparian areas of ~~wetland~~Wetlands that are directly connected to the stream course.~~

~~128-73. Seismic Hazard Areas – areas subject to severe risk of damage as a result of earthquake-induced ground shaking, slope failure, settlement, or soil liquefaction.~~

~~129-74. Sensitive Areas – agricultural lands and mineral resource lands and all associated ~~buffer~~BufferBuffers.~~

~~130-75. Shoreline – the line where a body of water and the shore meet or the strip of land along the shoreline. There are no waters within the ~~City~~city of Edgewood meeting the criteria of shorelines of statewide significance as defined by RCW 90.58.030.~~

~~131. Single Family Dwelling – a detached building designed exclusively for occupancy by one family and containing one dwelling unit.~~

~~132-76. Site – a lot, parcel, tract, or combination of lots, parcels, or tracts on which a regulated activity is proposed.~~

~~133. Slope – an inclined earth surface, the inclination of which is expressed as the ratio of horizontal distance to vertical distance.~~

~~134-77. Sludge – a semi-solid substance consisting of settled solids combined with varying amounts of water and dissolved materials generated from a wastewater treatment plant or system or other sources, including septage sludge, sewage sludge, and industrial sludge.~~

~~135-78. Sludge Land Application Site – a site where stabilized sludge, septage, and other organic wastes are applied to the surface of the land in accordance with established agronomic rates for fertilization or soil conditioning.~~

~~136. Slump – the downward and outward movement of a mass of bedrock, colluvium, or other sediments along a distinct surface of failure.~~

~~137. Small Animal – an animal with an average weight of less than 100 pounds.~~

~~138-79. Special Occupancy Structures – those structures that have the potential to provide capacity for large numbers of people or special groups of people or assemblies such as but not limited to schools, jails and detention facilities, and resident incapacitated patients.~~

~~139-80. Species of Local Importance – species that are of local concern due to their population status or their sensitivity to habitat manipulation.~~

~~140-81. Soft Armoring Techniques or Soil Bioengineering Methods – the use of woody plants and limited structural-mechanical systems that are integrated in a structurally and environmentally sound manner to repair and protect slopes and shorelines against shallow mass wasting and surface erosion. Examples include, but are not limited to Measures such as live stake, live fascine, brushlayer, live cribwall, vegetated geogrid, branchpacking, live slope grading, beach berms, or earthen berms ~~are examples of soft armoring techniques. Soft armoring techniques may also be referred to as soil bioengineering methods.~~~~

~~141. *Start of Construction* – includes substantial improvement, and means the date the building permit was issued, provided the actual start of construction, repair, reconstruction, placement or other improvement was within 180 days of the permit date. The “actual start” means either the first placement of permanent construction of a structure on a site, such as the pouring of slab or footings, the installation of piles, the construction of columns, or any work beyond the stage of excavation; or the placement of a manufactured home on a foundation. Permanent construction does not include land preparation, such as clearing, grading and filling; nor does it include the installation of streets and/or walkways; nor does it include excavation for a basement, footings, piers, or foundations or the erection of temporary forms; nor does it include the installation on the property of accessory buildings, such as garages or sheds not occupied as dwelling units or not part of the main structure. For a substantial improvement, the “actual start of construction” means the first alteration of any wall, ceiling, floor, or other structural part of a building, whether or not that alteration affects the external dimensions of the building.~~

Commented [JM16]: FEMA Definition – not used elsewhere in Title 14, so moved it to 14.80.

~~142.82. *Stockpiling* – the placement of material with the intent to remove it later.~~

~~143. *Stream* – a feature where surface waters produce a defined channel or bed. A defined channel or bed is an area that demonstrates clear evidence of the passage of water and includes, but is not limited to, bedrock channels, gravel beds, sand and silt beds, and defined-channel swales. The channel or bed need not contain water year-round. This definition is not intended to include artificially created irrigation ditches, canals, storm or surface water devices, or other entirely artificial watercourses, unless they are used by salmonids or created for the purposes of stream mitigation.~~

~~83.~~

~~144. *Structure* – a walled and roofed building, including a gas or liquid storage tank that is principally above ground.~~

Commented [JM17]: FEMA Definition – moved to 14.80

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 fifty (50) percent of the market value of the structure before the damage occurred.

~~145.84. *Substantial Improvement* – any repair, reconstruction, addition, rehabilitation, or other improvement of a structure, whereby the cost for the work exceeds fifty (50) percent of the market value of the existing structure before the “start of construction” of the improvement. ~~Except for floodplain management regulation,~~ The “cost” and “market value” may be determined using the current permit valuation. The ~~building official~~ Director shall determine the current permit valuation based on the cost per square foot values in effect at the time of permit application. Substantial improvement shall be accumulative from the effective date of the ordinance codified in this chapter. 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 structure listed on the National Register of Historic Places or a State Inventory of Historic Places; provided, that the alteration will not preclude the structure’s continued designation as a “historic structure.”~~

~~146. *Talus* – a homogenous area of rock rubble ranging in average size 0.15 to 2.0 meters (0.5 to 6.5 feet), including riprap slides and mine tailings. Talus areas may be associated with cliffs.~~

~~147.85. *Toe of Slope* – a distinct topographic break in slope at the lowermost limit of the landslide or erosion hazard area.~~

~~148.86. *TPCHD* – an acronym that stands for the Tacoma-Pierce County Health Department.~~

~~149.87. _____~~ *Underground Storage Tank or UST* – one ~~tank~~ or a combination of multiple tanks, ~~(including the underground pipes connected thereto,)~~ which are used to contain or dispense an accumulation of hazardous substances or hazardous wastes, and the ~~total~~ volume of which ~~(including the volume of underground pipes connected thereto)~~ is 10 percent or more beneath the surface of the ground.

~~150. Urban Governmental Services~~ – those governmental services historically and typically delivered by cities, and includes storm and sanitary sewer systems, domestic water systems, street cleaning services, and other public utilities associated with urban areas and normally not associated with nonurban areas.

~~151.88. _____~~ *Urban Growth* – growth that makes intensive use of the land for the location of buildings, structures, and impermeable surfaces to such a degree as to be incompatible with the primary use of such land for the production of food, other agricultural products, or fiber, or the extraction of mineral resources. When allowed to spread over wide areas, ~~u~~Urban ~~g~~Growth typically requires urban governmental services. “Characterized by urban growth” refers to land having urban growth located on it or to land located in relationship to an area with urban growth on it as to be appropriate for urban growth.

~~152. Utility Line~~ – pipe, conduit, cable, or other similar facility by which services are conveyed to the public or individual recipients. Such services shall include, but are not limited to, water supply, electric power, gas, communications, and sanitary sewers.

~~153. Variance~~ – a grant of relief from the requirements of this title ~~r~~ that permits construction in a manner that would otherwise be prohibited by this title, per EMC 14.10.085.

~~154.89. _____~~ *View Corridor* – an area, which affords views of lakes, mountains, or other scenic amenities normally enjoyed by residential property owners.

~~155.90. _____~~ *Violation* – the failure of a structure or other development activity to be fully compliant with the provisions of this title. With regard to the floodplain management regulations, projects without the elevation certificate, other certifications, or other evidence of compliance required in Chapter 14.70 EMC are presumed to be in violation until such time as that documentation is provided. See EMC Chapter 1.10 EMC for penalties.

~~156.91. _____~~ *Volcanic Hazard Areas* – those areas subject to pyroclastic flows, lava flows, and inundation by ~~d~~Debris ~~F~~Flows, ~~m~~Mudflows, or related flooding resulting from geologic or volcanic events on Mount Rainier.

~~157.92. _____~~ *Washington Administrative Code (WAC)* – ~~an acronym that stands for~~ the State of Washington Administrative Code.

~~158. Water Dependent~~ – a structure for commerce or industry that cannot exist in any other location and is dependent on the water by reason of the intrinsic nature of its operations.

~~159.93. _____~~ *Wellhead Protection Area* – the area within the 10-year time-of-travel zone boundary ~~or zone of contribution area~~ of a Group A public water system well, as delineated ~~on the Critical Aquifer Recharge Areas Critical Area Map, by the water system purveyor or its designee, pursuant to WAC 246-290-135.~~

~~160.94. _____~~ *Wetland* – areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas. Wetlands do not include those artificial ~~wetland~~Wetlands intentionally created from non-~~wetland~~Wetland sites, including, but not limited to, irrigation and drainage ditches, grass-lined swales, canals, detention facilities, wastewater treatment facilities, farm ponds, and landscape amenities, or those ~~wetland~~Wetlands created after July 1, 1990, that were unintentionally created as a result of the construction of a road, street, or highway. Wetlands may include those artificial ~~wetland~~Wetlands intentionally created from non-~~wetland~~Wetland areas created to mitigate conversion of ~~wetland~~Wetlands.

Commented [JM18]: FEMA Definition – moved to 14.80

Commented [JM19]: This was added in January 2017 after FEMA peer review. Moved flood code specifics to 14.80.

Commented [JM20]: FEMA Definition – moved to 14.80

Commented [DG21]: On June 14, this definition was revised based on input from MTVE.

~~161-95.~~ Wetland Category – the numeric designation (I through IV) assigned to a ~~wetland~~Wetland to indicate the ~~wetland~~Wetland's overall function and value. Wetland categories rank the ~~city~~City's ~~wetland~~Wetlands from highest (Category I) to lowest (Category IV) using the current version of the Washington State Wetland Rating System for Western Washington (Hruby, 2014)

~~162.~~Wetland Class – the U.S. Fish and Wildlife Service wetland classification scheme that uses a hierarchy of systems, subsystems, classes, and subclasses to describe wetland habitat types (refer to USFWS, December 1979, Classification of Wetlands and Deepwater Habitats of the United States for a complete explanation of the wetland classification scheme). These include, for example: forested, scrub-shrub, emergent, and aquatic bed.

~~163-96.~~ Wetland Mosaic – a patchwork of ~~wetland~~Wetlands that is considered one unit where each patch of ~~wetland~~Wetland is less than one acre and the areas delineated as vegetated ~~wetland~~Wetland are more than fifty percent of the total area of the ~~wetland~~Wetlands and uplands together.

~~97.~~ Wetland sSpecialist – a person that obtained Professional Wetland Scientist (PWS) or Wetland Professional In-Training (WPIT) certification from the Society of Wetland Scientists or a qualified Wetland professional with experience and training in Wetlands issues and with experience in performing a Delineation, analyzing Wetland functions and values, analyzing Wetland impacts, and recommending Wetland mitigation and Restoration. A Qualified Wetland Professional is a person with experience and training that includes, at a minimum:

- a. A B.S., B.A., or equivalent degree in biology, botany, environmental studies, fisheries, soil science, wildlife, agriculture, or related field; and
- b. Two years of related work experience; and
- c. One-year experience delineating Wetlands using the federal delineation manual and applicable regional supplements Unified Federal Manual and preparing Wetland reports and mitigation plans; OR
- d. Four years of related work experience and training; and
- e. Two years of experience delineating Wetlands using the Unified Federal Manual and preparing Wetland reports, and mitigation plans.

wetland scientist with at least two years of full-time work experience as a wetlands professional, including delineating wetlands using the federal manual and supplements, preparing wetland reports, conducting function assessment, and development and implementing mitigation plans.

~~164-98.~~ Wildlife Biologist – a professional with a degree in wildlife, or certification by the Wildlife Society, or with five (5) years of professional experience as a ~~w~~Wildlife ~~b~~Biologist. (Ord. 17-492 § 2 (Exh. A); Ord. 16-461 § 2; Ord. 15-447 § 1 (Exh. A); Ord. 02-200 § 2).

Chapter 14.2030

USE AND ACTIVITY REGULATIONS

Sections:

- 14.230.010 Permitted uses.
- 14.230.020 Regulated uses and activities.
- 14.230.030 Exemptions.
- 14.230.040 Nonconforming uses and structures.
- 14.230.050 Reasonable use exceptions.
- 14.230.060 Current use assessment program.

14.230.010 Permitted uses.

Uses permitted on properties designated as ~~e~~Critical ~~a~~Areas shall be the same as those permitted in the zone ~~e~~Cclassification shown in the City's Official Zoning Map unless specifically prohibited by this title. (Ord. 02-200 § 2).

14.230.020 Regulated uses and activities.

A. Unless the requirements of this title are met, the ~~department~~Department shall not grant any approval or permission to alter the condition of any land, water, or vegetation, or to construct or alter any structure or improvement regulated through the following: building permit, commercial or residential; binding site plan; franchise right-of-way construction permit; site development permit; right-of-way permit; short subdivision; large lots; use permits; subdivision; utility permits; or any subsequently adopted permit or required approval not expressly exempted by this chapter.

B. The following activities are regulated within ~~any e~~Critical ~~a~~Areas ~~and its and/or their buffer~~Buffers, unless exempted by EMC 14.230.030:

1. Removing, excavating, disturbing, or dredging soil, sand, gravel, minerals, organic matter, or materials of any kind;
2. Dumping, discharging, ~~or filling~~ Grading, or Clearing and Grading;
3. Draining, flooding, or disturbing the water level or water table. In addition, an activity which involves intentional draining, flooding, or disturbing the water level or water table in a ~~wetland~~Wetland or stream in which the activity itself occurs outside the regulated area shall be considered a regulated activity;
4. Driving, piling, or placing obstructions, including placement of utilities;
5. Constructing, reconstructing, installing, demolishing, or altering the size of any structure or infrastructure, including manufactured and ~~or~~ mobile homes;
6. Altering the character of a regulated area by destroying or altering vegetation through clearing, harvesting, cutting, intentional burning, shading, or planting;
7. The division of land;
8. The creation of hard surfaces; ~~and~~;

9. Any additional activities regulated in EMC Chapter 14-80 – Flood Hazard Areas.

14.230.030 Exemptions.

A. Individuals, organizations, or associated ~~party's~~parties shall avoid potential impacts to ~~e~~Critical ~~a~~Areas and their ~~buffer~~Buffers to the greatest degree feasible. To be exempt from this title does not give permission to degrade a ~~e~~Critical ~~a~~Area or its ~~buffer~~Buffer or ignore risk from natural hazards. Any incidental damage to, or alteration of, a

~~eCritical a~~Area or its ~~bufferBuffer~~ that is not a necessary outcome of the exempted activity shall be restored, rehabilitated, or replaced at the responsible party's expense.

B. The following activities are exempt from the provisions of this title:

1. Operation, maintenance, or repair of existing structures, infrastructure improvements, utilities, public or private roads, dikes, levees, or drainage systems, that do not require construction permits, if the activity does not further alter or increase the impact to, or encroach further within, the ~~eCritical a~~Area or ~~bufferBuffer~~ and there is no increased risk to life or property as a result of the proposed operation, maintenance, or repair. Operation and maintenance includes vegetation management performed in accordance with ~~best-management-practices-BMPs~~ that ~~is-are~~ a part of ongoing maintenance of structures, infrastructure, or utilities, provided that such management actions are part of ongoing maintenance, do not expand further into the ~~eCritical a~~Area or ~~bufferBuffer~~, are not the result of an expansion of the structure or utility, and do not directly impact an endangered or threatened species.

2. Normal maintenance or repair of existing structures or developments, including damage by accident, fire, or elements ~~within the past three (3) years~~. "Normal maintenance" includes those usual acts to prevent a decline, lapse, or cessation from a lawfully established condition. "Normal repair" means to restore a development to a state comparable to its original condition including, but not limited to, its size, shape, configuration, location, and external appearance, within ~~three (3) years~~ a reasonable period after decay or partial destruction, except where repair causes substantial adverse effects to ~~eCritical a~~Areas or their ~~bufferBuffers~~. Replacement of a structure or development may be authorized as repair where such replacement is the common method of repair for the type of structure or development and the replacement structure or development is comparable to the original structure or development including, but not limited to, its size, shape, configuration, location, and external appearance and the replacement does not expand further into the ~~eCritical a~~Area or ~~bufferBuffer~~. - Refer to EMC Section 14.230.040.D (D) for requirements associated with repair of ~~sSubstantial d~~Damage of non-conforming structures.

3. Reconstruction, remodeling, or maintenance of existing single-family residential structures and accessory structures that are located outside a ~~fFlood h~~Hazard ~~a~~Area and active ~~lL~~andslide ~~h~~Hazard ~~a~~Area; provided, that a one-time only expansion of the ~~bBuilding f~~Footprint does not increase by more than 25 percent and that the ~~aNew e~~Construction or related activity does not further intrude into the ~~eCritical a~~Area or related ~~bufferBuffer~~. The exemption shall not apply to reconstruction which is proposed as a result of structural damage associated with a ~~eCritical a~~Area, such as slope failure in a landslide hazard area or flooding in a flood hazard area.

4. Reconstruction, remodeling, or maintenance of structures, other than single-family structures and accessory structures that are located outside a ~~fFlood h~~Hazard ~~a~~Area or active ~~lL~~andslide ~~h~~Hazard ~~a~~Area; provided, that such reconstruction, remodeling, or maintenance does not increase the floor area nor extend beyond the existing ground coverage. The exemption shall not apply to reconstruction which is proposed as a result of site or structural damage associated with a ~~eCritical a~~Area, such as slope failure in a ~~lL~~andslide ~~h~~Hazard ~~a~~Area or flooding in a ~~fFlood h~~Hazard ~~a~~Area.

5. Site investigative work necessary for land use ~~a~~Application submittals such as surveys, soil logs, percolation tests, and other related activities. Critical ~~a~~Area impacts shall be minimized and disturbed areas shall be immediately restored.

6. Emergency actions necessary to prevent imminent threat or danger to public health or safety, or to public or private property, or serious environmental degradation.

a. The ~~department~~Department shall review all proposed emergency actions to determine the existence of the emergency and reasonableness of the proposed actions taken; however, post-emergency actions, such as submittal of permits, completion of ~~city~~City review, modification or removal of the emergency repair work, or mitigation shall be required by the ~~department~~Department.

b. Erosion protection measures shall only be allowed as an emergency action when the owner can demonstrate that there is an imminent threat to an existing residential, commercial, industrial, or agricultural structure. The owner shall retain either ~~city~~City staff or an ~~e~~Engineering ~~g~~Geologist to conduct

a site investigation and provide adequate documentation that the situation is actually an emergency. An emergency action is not warranted when the structure is located outside the active landslide area.

c. After the emergency, the person or agency undertaking the action shall fully fund and conduct necessary ~~r~~Restoration ~~and/or m~~Mitigation for any impacts to the ~~e~~Critical ~~a~~Area and ~~buffer~~Buffers resulting from the emergency action in accordance with an approved ~~e~~Critical ~~a~~Area report and mitigation plan. The person or agency undertaking the action shall apply for review, and the alteration, ~~e~~Critical ~~a~~Area report, and mitigation shall be reviewed by the ~~department~~Department in accordance with the review procedures contained herein. Restoration ~~and/or~~ mitigation activities must be initiated within 90 days of the date of the emergency activity, and ~~both must be fully~~ completed within one (1) year.

7. Installation, construction, replacement, repair, operation or alteration of natural gas, cable and telecommunication facilities, electric facilities and lines, water, sewer or storm lines, pipes, mains, equipment, or appurtenances in publicly owned right-of-way, (which may be within or adjacent to ~~any e~~Critical ~~a~~Areas or ~~its buffer~~Buffers), subject to full review and approval of the ~~d~~Department, including any ~~m~~Mitigation ~~and/or~~ ~~r~~Restoration requirements established by the ~~d~~Department.

8. Removal by hand of manmade litter and control of noxious weeds that are included on the state noxious weed list (Chapter 16-750 WAC) or invasive plant species as identified by the ~~city~~City. Control may be conducted by clipping, pulling, or digging, or by an alternative non-mechanical method upon approval of a plan by the ~~department~~Department.

9. Activities undertaken to comply with a United States Environmental Protection Agency superfund order, or a Washington Department of Ecology order, pursuant to the Model Toxics Control Act, including the following activities:

- a. Remediation or removal of hazardous or toxic substances;
- b. Source control; and
- c. Natural resource damage ~~r~~Restoration.

10. Activities within a portion of a ~~wetland~~Wetland ~~buffer~~Buffer or fish and wildlife habitat conservation area ~~buffer~~Buffer located landward of an existing, substantially developed area, such as a paved area, dike, levee, or permanent structure which eliminates or greatly reduces the impact of the proposed activities on the ~~wetland~~Wetland or fish and wildlife habitat conservation area. The ~~department~~Department shall review the proposal to determine the likelihood of associated impacts.

11. Passive recreation such as hunting, hiking, fishing, and wildlife viewing that does not involve the construction of trails.

12. Enhancement actions that do not involve clearing, ~~Grading~~, or construction activities, (e.g., revegetation with ~~n~~Native ~~p~~Plants and installation of nest boxes). Enhancement activity proposals shall be reviewed by the ~~d~~Department.

13. Forest practices conducted in accordance with the requirements of the Forest Practice Act (Chapter 76.09 RCW) and its rules, with the exception of the conversion of forest land to a use other than commercial forestry (Class IV conversions).

14. Existing and ongoing ~~a~~Agricultural ~~a~~Activities, provided that they ~~comply with the provisions of Chapter 14.80 EMC, Flood Hazard Areas, and~~ implement applicable ~~Best Management Practices (BMPs)~~ contained in the latest editions of the USDA Natural Resources Conservation Service Field Official Technical Guide; or develop a farm conservation plan in coordinate with the local conservation district. ~~The~~ ~~BPMs~~ ~~and/or~~ farm plans should address potential impacts to ~~e~~Critical ~~a~~Areas from livestock, nutrient and farm chemicals, soil erosion and sediment control, and agricultural drainage infrastructure. ~~The~~ ~~BMPs~~ ~~and/or~~ farm plans should ensure that ongoing ~~a~~Agricultural ~~a~~Activities minimize their effects on water quality, ~~r~~Riparian ecology, salmonid populations, and wildlife habitat.

-(Ord. 02-200 § 2):

14.230.040 Nonconforming uses and structures.

A. An established use or existing structure located in a ~~wetland~~Wetland, fish and wildlife habitat conservation area, landslide or ~~e~~Erosion ~~h~~Hazard ~~a~~Area, ~~f~~Flood ~~h~~Hazard ~~a~~Area, and their associated ~~buffer~~Buffers that was lawfully permitted prior to the effective date of this title, but which is not currently in compliance with this title, may continue subject to the following:

A1. Nonconforming Use Expansion. Nonconforming uses shall not be expanded or changed in any way that increases the nonconformity without a permit issued pursuant to the provisions of this title.

B2. Nonconforming Structure Expansion. Existing structures shall not be expanded or altered in any manner that will increase the nonconformity without a permit issued pursuant to the provisions of this title, except as provided in EMC 14.230.030(B).

C3. Discontinued Uses. Activities or uses which are discontinued for twelve (12) consecutive months shall be allowed to resume only if they are in compliance with this title.

D4. Substantial Damage. Nonconforming structures, except for structures located in a ~~f~~Flood ~~h~~Hazard ~~a~~Area or active ~~l~~Landslide ~~h~~Hazard ~~a~~Area which are damaged or destroyed by fire, explosion, flood, or other casualty, may be restored or replaced if reconstruction is commenced within one year of such damage and is substantially completed within 18 months of the date such damage occurred. The reconstruction or ~~r~~Restoration shall not serve to expand, enlarge, or increase the nonconformity except as allowed through the provisions in EMC 14.230.030(B). Structures in a ~~h~~oodwayFloodway or active ~~l~~Landslide ~~h~~Hazard ~~a~~Area may be allowed to be restored only up to the limits of ~~s~~Substantial ~~i~~Improvement, as set forth in each chapter. (Ord. 02-200 § 2).

B. The provisions of EMC Section 18.90.110 may also apply to nonconformities not expressly described in this chapter.

14.230.050 Reasonable ~~u~~Use ~~e~~Exceptions.

A. General Requirements:

A. If the application of this chapter would deny all reasonable use of the property, the applicant may apply for a Reasonable Use Exception pursuant to this subsection. The Hearing Examiner may approve alterations to a Critical Area or its Buffers to allow a reasonable use not otherwise allowed by this chapter when the following criteria are met:

1. The application of this chapter would deny all reasonable use of the property;
2. There is no other reasonable use with less impact on the Critical Area;
3. The proposed development does not pose an unreasonable threat to the public health, safety, or welfare on or off the development proposal site and is consistent with the general purposes of this title and the public interest; and
4. Any alterations permitted to the Critical Area or its Buffer shall be the minimum necessary to allow for reasonable use of the property; and any authorized alteration of a Critical Area under this subsection shall be subject to conditions established by the Department including, but not limited to, mitigation under an approved mitigation plan.

If, after a property owner makes application for a variance, and the variance is denied, the property owner may apply for a reasonable use exception. A reasonable use exception may be requested when it is alleged that that the application of this title would deny all reasonable use of a site. Approval of a reasonable use exception allows development which development which is consistent with the general purposes of this title and the public interest. Nothing in this title is intended to preclude all reasonable use of property.

2. The provisions outlined in this section shall only be used when application of this title would deny all reasonable use of a site.

~~3. Applications for a reasonable use shall automatically constitute an application for a variance to reduce front, side, or rear yard setback requirements. The decision maker shall examine the feasibility of reducing setbacks as a method of locating a structure outside a critical area or its associated buffer prior to granting a reasonable use exception for allowing construction to occur within a critical area or its associated buffer. Reductions in setback requirements shall be given preference over granting of a reasonable use exception.~~

~~5. The proposed impact to the critical area shall be the minimum necessary to allow for reasonable use of the property.~~

~~6. Mitigation may be required to assure that the proposal will result in no net loss of critical area functions and values, consistent with the best available science.~~

~~7. The creation of new lots within critical areas and their associated buffers is prohibited.~~

~~8. The proposal must comply with all provisions in Chapter 14.70 EMC, Flood Hazard Areas, and Chapter 14.80 EMC, Landslide Hazard Areas.~~

B. Application Requirements. A complete ~~a~~Application for a ~~r~~Reasonable ~~u~~Use ~~e~~Exception shall include the following ~~information~~nine (9) items:

1. A description of the areas of the site that contains a ~~e~~Critical ~~a~~Area, ~~buffer~~Buffer(s), or within setbacks required under this title;
2. A description of the amount of the site that is within setbacks required by other standards of the zoning code;
3. A description of the proposed development, including a site plan;
4. An analysis of the impact that the amount of development described in subsection (B)(3) of this section would have on the ~~e~~Critical ~~a~~Area(s);
5. An analysis of whether any other reasonable use with less impact on the ~~e~~Critical ~~a~~Area(s) and associated ~~buffer~~Buffer(s) is possible;
6. A design of the proposal so that the amount of development proposed as reasonable use will have the least impact practicable on the ~~e~~Critical ~~a~~Area(s);
7. An analysis of the modifications needed to the standards of this title to accommodate the proposed development;
8. A description of any modifications needed to the required front, side, and rear setbacks; building height; and ~~buffer~~Buffer widths to provide for a reasonable use while providing greater protection to the ~~e~~Critical ~~a~~Area(s);
9. Such other information ~~as~~ the ~~d~~Department determines is reasonably necessary to evaluate the issue of reasonable use as it relates to the proposed development, such as but not limited to a ~~w~~Wetland ~~a~~Analysis ~~r~~Report, mitigation plan, habitat evaluation study, and/or a ~~buffer~~Buffer ~~e~~Enhancement ~~p~~Plan.

C. Review. ~~A rReasonable uUse eException is a Type III permit and shall be processed according to the procedures in EMC chapter Section 18.40.080-100 EMC.~~

~~1. Public Hearing Required. The department shall set a date for a public hearing after all requests for additional information or plan correction, as set forth in EMC 18.40.150, have been satisfied. The public hearing shall follow the procedures set forth in EMC 18.40.190, Notice of public hearing.~~

~~2. Decision Criteria. The decisionmakerThe decisionmaker may approve a reasonable use exception if the decisionmakerthe decisionmaker determines that the applicant has demonsrateddemonstrated that all of the following criteria are met:~~

a. The proposed development is located on an existing lot of record that was created prior to the effective date of the ordinance codified in this title and there is no other reasonable use or feasible alternative to the proposed development with less impact on the critical area(s) and/or associated buffers including phasing or project implementation, change in timing of activities, buffer averaging or reduction, setback variance, relocation of driveway, or placement of structure; and

b. The development cannot be located outside the critical area and/or its associated buffer due to topographic constraints of the parcel or size and/or location of the parcel in relation to the limits of the critical area and/or its associated buffer and a building setback variance or road variance has been reviewed, analyzed, and rejected as a feasible alternative; and

c. The proposed development does not pose a threat to the public health, safety, or welfare on or off the site, nor shall it damage nearby public or private property; and

d. Any alteration of the critical area(s) shall be the minimum necessary to allow for reasonable use of the property; and

e. The inability of the applicant to derive reasonable use of the property is not the result of actions by the applicant in subdividing the property or adjusting a boundary line thereby creating the undevelopable condition after February 1, 1992; and

f. The proposal mitigates the impacts on the critical area(s) to ensure no net loss of critical area functions, while still allowing reasonable use of the site; and

g. The proposed activities will not jeopardize the continued existence of species listed by the state or federal government as endangered, threatened, sensitive, or documented priority species or priority habitats; and

h. The proposed activities will not cause significant degradation of groundwater or surface water quality.

3. Decisionmaker's Authority. The decisionmaker has the authority to approve an application for a reasonable use exception, approve with additional requirements above those specified in this title, require modification of the proposal to comply with specified requirements or local conditions, or deny the application if it fails to comply with the requirements of this section

4D. Required Written Findings and Determinations. A ~~r~~Reasonable ~~u~~Use ~~e~~Exception may be approved by the decisionmaker only if all of the findings are made in writing regarding the proposal and are supported by the record, as outlined in the decision criteria identified within EMC 14.20.050 (C)(2).

14.230.060 Current use assessment program.

A. An owner of a ~~a~~Agricultural ~~l~~Land, timberland, or open space desiring current use ~~e~~CClassification under Chapter 84.34 RCW may file for such current use ~~e~~CClassification with the Pierce County assessor-treasurer's office.

B. The ~~department~~Department shall notify the assessor-treasurer's office when restrictions on development occur on a particular site.

C. The assessor-treasurer's office shall consider the ~~e~~Critical ~~a~~Areas and ~~buffer~~Buffering requirements of this title in determining the fair market value of land. Any owner of an undeveloped ~~buffer~~Buffer which has been placed in a separate tract or tracts, protective easement, public or private land trust dedication, or other similarly preserved area shall have that portion of land assessed consistent with those restrictions. (Ord. 02-200 § 2).

Chapter 14.340

WETLANDS

Sections:

- 14.340.010 Purpose.
- 14.340.020 ~~Wetland~~ Identification, ~~d~~ Delineation, ~~M~~ Mapping, and ~~R~~ Rating.
- 14.340.025030 ~~Buffer~~ standards—Wetlands
- 14.340.0340 Wetland review procedures.
- 14.340.0450 Allowed activities.
- 14.340.060 Mitigation requirements.
- 14.340.070 Appendices.

14.340.010 Purpose.

A. The purpose of this chapter is to avoid or, in appropriate circumstances, to minimize, rectify, reduce, or compensate for impacts arising from land development and other activities affecting ~~wetland~~ Wetlands, and to maintain and enhance the biological and physical functions and values of ~~wetland~~ Wetlands with respect to water quality maintenance, stormwater and floodwater storage and conveyance, fish and wildlife habitat, primary productivity, recreation, education, and historic and cultural preservation. When ~~wetland~~ Wetland impacts occur, mitigation will be required to achieve no net loss of ~~wetland~~ Wetlands in terms of acreage, function, and value. (Ord. 02-200 § 2).

B. This Chapter is intended to be consistent with the requirements of RCW Chapter 36.70A and to implement the goals and policies of the City's Comprehensive Plan for protecting Wetlands.

14.340.020 ~~Wetland~~ Identification, ~~d~~ Delineation, ~~M~~ Mapping, and ~~R~~ Rating.

A. Designation. All areas within the city meeting the meeting the definition of "~~w~~Wetland" in EMC Chapter 14.2015 EMC are hereby designated as ~~e~~Critical ~~a~~Areas.

B. Identification and Delineation.

1. Wetlands shall be identified and delineated by a qualified ~~w~~Wetland ~~Specialist~~scientist in accordance with the approved federal wetland delineation manual and applicable regional supplements.

2. ~~A Wetland~~ ~~d~~ Delineation ~~is~~ ~~are~~ valid for five (5) years, after which date the City shall require verification that the ~~wetland~~ Wetland boundaries and prior conditions have not changed to determine whether a revision or additional assessment is needed.

C. Mapping.

1. The approximate location and extent of ~~w~~Wetlands are shown on maps maintained by the ~~city~~City.

2. These maps are useful as a guide for project applicants and ~~or~~ property owners, but the maps do not provide a conclusive or definitive indication of a ~~w~~Wetland presence or its extent.

3. ~~Other ~~w~~Wetlands~~ may exist that do not appear on the maps; and some ~~w~~Wetlands that appear on the maps may not meet all of the ~~w~~Wetland designation criteria. ~~The city shall update the maps periodically as new wetland areas are identified and as new wetland information becomes available~~

D. Wetland-CategoriesRating. Wetlands shall be rated according to the Washington Department of Ecology Wetland rating system, as set forth in the categorized by a qualified wetland scientist in accordance with the current version of the Washington State Wetland Rating System for Western Washington: 2014 Update (Ecology Publication #14-06-029, or as revised and approved by the Department of Ecology)(Hruby, 2014) and the appropriate rating forms approved by the Washington State Department of Ecology. ~~The wetland shall also be classified according to the U.S. Fish and Wildlife Service "Classification of Wetlands and Deep Water Habitats in the U.S".~~

E. Illegal Modifications. Wetland rating categories shall not change due to illegal modifications made by the applicant or with the applicant's knowledge.

14.340.02530 Buffer standards – Wetlands.

A. Determining ~~buffer~~ widths. ~~Buffer~~ widths shall be measured horizontally from the perpendicular line established at the ~~wetland~~ edge as shown in Table 14.240.0530.1(1). Note that Table 1 is Reduced Wetland Buffers with minimization of impacts. See Table 3 for buffers that apply without minimization techniques.

B. The following buffer widths have been established in accordance with the best available science. They are based on the category of wetland and the habitat score as determined by a qualified wetland professional using the Washington State Wetland Rating System for Western Washington: 2014 Update (Ecology Publication #14-06-029, or as revised and approved by Ecology). The adjacent land use intensity is assumed to be high.

1. For wetlands that score 5 points or more for habitat function, the buffers in Table 14.30.050.1 can be used if both of the following criteria are met:
 - i. A relatively undisturbed, vegetated corridor at least 100 feet wide is protected between the wetland and any other Priority Habitats as defined by the Washington State Department of Fish and Wildlife.
 1. The latest definitions of priority habitats and their locations are available on the WDFW web site at: <http://wdfw.wa.gov/hab/phshabs.htm>)
 2. The corridor must be protected for the entire distance between the wetland and the Priority Habitat by some type of legal protection such as a conservation easement.
 3. Presence or absence of a nearby habitat must be confirmed by a qualified biologist. If no option for providing a corridor is available, Table 14.30.050.1 may be used with the required measures in Table 14.030.050.2 alone.
 - ii. The measures in Table 14.30.050.2 are implemented, where applicable, to minimize the impacts of the adjacent land uses.
2. For wetlands that score 3-4 habitat points, only the measures in Table 14.30.050.2 are required for the use of Table 14.30.050.1

Table 14.340.02530.1(1)
~~Buffer~~ Standards - Wetlands

Wetland Category	Buffer Width (Wetlands scores 3-4 habitat points)	Buffer Width (Wetland scores 5 habitat points)	Buffer Width (Wetland scores 6-7 habitat points)	Buffer Width (Wetland scores 8-9 habitat points)
Category I: Based on total score	75 ft.	105 ft.	165 ft.	225 ft.
Category I: Bogs and Wetlands of High Conservation Value	190 ft.	190 ft.	190 ft.	225 ft.
Category I: Forested	75 ft.	105 ft.	165 ft.	225 ft.
Category II (all)	75 ft.	105 ft.	165 ft.	225 ft.

Category III (all)	60 ft.	105 ft.	165 ft.	225 ft.
Category IV (all)	40 ft.	40 ft.	40 ft.	40 ft.

BC. Required Measures to Minimize Impacts to Wetlands. Measures to minimize the impacts of the land use adjacent to ~~wetland~~Wetlands shall be applied, as shown in Table 14.240.0530.2(2).

Table 14.340.02530.2(2)
Wetland Impact Minimization Measures

Disturbance	Required Measures to Minimize Impacts
Lights	Direct lights away from any wWetland
Noise	- Locate activity that generates noise away from any wWetland - For activities that generate relatively continuous, potentially disruptive noise, such as certain heavy industry or mining, establish an additional 10-foot heavily vegetated buffer strip immediately adjacent to the outer wetland-bufferBuffer
Toxic runoff	- Route all new, untreated runoff away from any wWetland while ensuring the wWetland is not dewatered - Establish covenants limiting use of pesticides within 150 feet of wWetlands - Apply integrated pest management
Stormwater runoff	- Retrofit stormwater detention and treatment for roads and existing adjacent development - Prevent channelized flow from lawns that directly enters the bufferBuffer - Use Low Impact Development techniques
Change in water regime	Infiltrate or treat, detain, and disperse into bufferBuffer new runoff from impervious surfaces and new lawns
Pets and human disturbance	- Use privacy fencing OR or plant dense vegetation to delineate bufferBuffer edge and to discourage disturbance using vegetation appropriate for the ecoregion - Place wWetland and its bufferBuffer in a separate tract or protect with a eConservation eEasement
Dust	Use BMPsbest management practices to control dust

CD. Modification of ~~Buffer~~Buffer Widths. The standard ~~buffer~~Buffer widths of subsection (A) of this section may be modified by averaging, ~~reducing~~, or increasing.

1. ~~Buffer~~Buffer Averaging. ~~Buffer~~Buffer width averaging may be allowed only where the applicant demonstrates all of the following ~~through the submittal of a Wetland Report that is prepared by a qualified professional~~:

- ~~Buffer~~Buffer ~~e~~Encroachment is unavoidable;
- The ~~w~~Wetland contains variations in sensitivity due to existing physical characteristics;

c. Width averaging will provide equal or greater protection of current ~~wetland~~Wetland functions and values;

f. The total ~~buffer~~Buffer area after averaging is no less than the ~~buffer~~Buffer area prior to averaging;

g. ~~The minimum width of the buffer at any given point shall be at least seventy-five percent (75%) of the standard width, or twenty-five (25) feet, whichever is greater. The width of the Buffer at any given point after averaging shall be no smaller than 75 percent of the standard Buffer;~~

h. The averaging is accomplished within the project boundaries; ~~and~~.

i. Measures will be taken to ensure that there is no loss of Wetland function due to the Buffer averaging.

~~2. Buffer Width Reductions. Buffer width reduction up to a maximum of twenty-five (25) percent may be allowed when the applicant demonstrates the following circumstances:~~

~~a. Buffer encroachment is unavoidable;~~

~~b. All exposed areas are stabilized with native vegetation, as appropriate.~~

~~c. The project includes a buffer enhancement plan as part of the mitigation required by EMC 14.30.060. The buffer enhancement plan shall use plant species which are native, noninvasive to the project area.~~

~~d. Buffer reduction with enhancement will provide equal or greater protection of current wetland functions and values;~~

~~e. Buffer reductions may not be used in combination with buffer averaging;~~

~~32. Buffer~~Buffer Increases.

~~a. The department~~Department may require increased ~~buffer~~Buffer width(s) when any of the following are identified:

~~ai. A larger buffer~~Buffer is necessary to maintain viable populations of existing species;

~~bii. The wetland~~Wetland is used by, or associated with, species listed by the federal government or the state as endangered, threatened, sensitive, or as documented priority species or habitats, or essential or outstanding potential sites such as heron rookeries or raptor nesting areas;

~~ciii. The adjacent land is susceptible to severe erosion and erosion control measures will not effectively prevent adverse wetland~~Wetland impacts;

~~dii. The adjacent land has minimal vegetative cover, or slopes greater than 20 percent. (Ord. 02-200 § 2).~~

~~b. If an applicant chooses not to apply the Wetland Impact Minimization Measures identified in Table 14.40.030.2, then the Wetland Buffers applicable to the site shall be per Table 14.40.030.3.~~

~~Table 14.40.030.3
Wetland Buffers without Minimization of Impacts~~

Wetland Category	Buffer Width (Wetlands scores 3-4 habitat points)	Buffer Width (Wetland scores 5 habitat points)	Buffer Width (Wetland scores 6- 7 habitat points)	Buffer Width (Wetland scores 8- 9 habitat points)
Category I: Based on total score	100 ft.	140 ft.	220 ft.	300 ft.
Category I:	250			300 ft.

Commented [DG22]: Per a conversation with the DoE, their buffer standards in the table above were already reduced. If we propose another 25 percent reduction, then we are no longer in line with their best available science supported buffer distances. See Page 13 of the Wetlands Guidance for Small Cities, Western WA Version. Buffer Width Reductions section removed.

<u>Bogs and Wetlands of High Conservation Value</u>				
Category I: <u>Forested</u>	<u>100 ft.</u>	<u>140 ft.</u>	<u>220 ft.</u>	<u>300 ft.</u>
Category II (all)	<u>100 ft.</u>	<u>140 ft.</u>	<u>220 ft.</u>	<u>300 ft.</u>
Category III (all)	<u>80 ft.</u>	<u>140 ft.</u>	<u>220 ft.</u>	<u>300 ft.</u>
Category IV (all)	<u>50 ft.</u>			

14.340.0340 Wetland review procedures.

A. Wetland Report Requirements. ~~When If the dDepartment's maps, sources, or field investigations indicate that the a proposed project area is may be located within 300 feet of a known or suspected wWetland, an the applicant shall submit a wWetland eCritical aAreas report prepared by a qualified wWetland sSpecialisteientist. The report requirement to provide a wetland critical areas report may be waived if the dDepartment determines that there are no potential direct and/or indirect impacts on the wWetlands or its their bufferBuffers that would result from the proposed development. Wetland eCritical aAreas reports shall comply with the requirements of this Chapter established in EMC 14.30.070, Appendix A.~~

B. Single-Family Dwelling Wetland Review. Construction of a single-family dwelling and ~~rRegulated aActivities~~ accessory to a single-family dwelling, ~~(such as driveways, gardens, fences, walls, lawns, and or on-site septic systems,)~~ may utilize an alternative ~~wWetland~~ review procedure, subject to the following:

1. Prior to issuance of a building permit, site development permit, or on-site sewage system permit, the applicant shall submit a single-family ~~wWetland~~ certification form completed by a ~~wWetland sSpecialist~~ that certifies either:
 - a. No regulated ~~wWetlands~~ are present within 300 feet of the project area; or
 - b. Wetlands are present within 300 feet of the project area, but the ~~bufferBuffer~~ does not extend onto the project site.
2. The single-family certification form may be used only to authorize single-family dwellings and accessory structures. It may not be used for new ~~aAgricultural aActivities~~, expansion of existing ~~aAgricultural aActivities~~, forest practices activities, commercial projects, land divisions, ~~or and bufferBuffer~~ width modifications.

~~C. Time Limitation. Wetland delineations and reports that have been accepted by the city shall be valid for a period of five (5) years, unless the department determines that new information warrants revision of the delineation or report.~~

14.340.0450 Allowed activities.

A. ~~The three (3) types of Wetlands identified in the paragraphs 1-3 The following wetlands~~ are exempt from the requirement to avoid impacts in EMC 14.10.070.B080(B) and may be altered if the impacts are fully mitigated based on the remaining mitigation sequencing actions in EMC 14.10.070.B080(B). In order to verify the following

conditions, a ~~wetland~~Wetland ~~e~~Critical ~~a~~Area ~~r~~Report meeting the requirements of EMC 14.340.070, Appendix A must be submitted.

1. All isolated Category IV ~~wetland~~Wetlands less than 4,000 square feet that:
 - a. Are not associated with ~~r~~Riparian areas or their ~~buffer~~Buffers;
 - b. Are not part of a ~~wetland~~Wetland ~~m~~Mosaic;
 - c. Are not associated with shorelines of the state or their associated ~~buffer~~Buffers;
 - d. Do not score 5 or more points for habitat functions based on current version of the Washington State Wetland Rating System for Western Washington (Ecology, 2014).
 - e. Do not contain a Priority Habitat or a Priority Area for a Priority Species identified by the Washington Department of Fish and Wildlife, federally listed species or their critical habitat, or ~~h~~Habitats of ~~and~~ ~~r~~Species of ~~l~~Local ~~i~~Importance as identified in EMC 14.450.0340(A).
2. Wetlands less than 1,000 square feet that meet the criteria specified in subsection (A)(1) of this section.
3. Utility projects within the outer 25 percent of any wetlandWetland ~~buffer~~Buffers which have minor or short-duration impacts, as determined by the ~~department~~Department in accordance with the criteria below, and which do not significantly impact the function or values of ~~wetland~~Wetlands; provided, that such projects are constructed with ~~best management practices-BMPs~~ and additional ~~r~~Restoration measures are provided. Minor activities shall not result in the transport of sediment or increased stormwater. Such allowed minor utility projects shall meet the following criteria:
 - a. There is no practical alternative to the proposed activity with less impact on ~~wetland~~Wetlands;
 - b. The activity involves the placement of a utility pole, street signs, anchor, or vault or other small component of a utility facility; and
 - c. The activity involves disturbance of an area less than 75 square feet.

B. The activities listed below are allowed in ~~wetland~~Wetlands and their ~~buffer~~Buffers, ~~and do not require submission of a eCritical aArea rReport~~, except where such activities would result in a loss of the functions and values of a ~~wetland~~Wetland or ~~wetland~~Wetland ~~buffer~~Buffer. A Critical Areas Report must be submitted to the Department to determine if function or value will be lost. These activities include:

1. Activities in ~~w~~Wetlands in areas managed according to a special area management plan or other plan adopted by the ~~d~~Department and specifically designed to protect ~~w~~Wetland resources.
- ~~2.~~ 2. Trimming of vegetation for purposes of providing ~~a v~~View ~~e~~Corridors will be allowed. ~~The ; provided, that trimming is shall be limited to view corridors of a maximum 20-foot width and that the benefit to fish and wildlife habitat may are not be reduced. No more than thirty (30) percent of the live crown of a tree may be removed. Trimming shall be limited to hand pruning of branches and vegetation and does- Trimming shall _not include felling, topping, or the removal of trees. (Ord. 02-200 § 2).~~

a. Trimming and limbing of vegetation for the creation and maintenance of view corridors shall occur in accordance with the pruning standards of the International Society of Arboriculture (See articles published by the International Society of Arboriculture, Consumer Information Program, updated July, 2005)

a.b. The activity will not increase the risk of landslide or erosion.

3. Drilling for utilities ~~or~~ utility corridors under a ~~wetland~~Wetland, with ~~an~~ entrance ~~or~~ exit portal located completely outside of the ~~wetland~~Wetland ~~buffer~~Buffer, provided that the drilling does not interrupt the ground water connection to the ~~wetland~~Wetland or percolation of surface water down through the soil column. Specified studies by a hydrologist are necessary to determine whether the ground water connection to the ~~wetland~~Wetland or percolation of surface water down through the soil column will be disturbed.

14.340.060 Mitigation requirements.

A. Mitigation. Compensatory ~~m~~Mitigation is required for all unavoidable alterations to ~~w~~Wetlands or their ~~buffer~~Buffers, except for ~~buffer~~Buffer averaging when done in accordance with ~~this Chapter-EMC-14.30.025(C)(1).~~ Compensatory ~~m~~Mitigation actions shall replace functions affected by the alteration and shall provide equal or greater functions compared to the impacted ~~w~~Wetland. All projects must first demonstrate compliance with EMC ~~Section 14.10.080070.B(B)-(Mitigation-Sequencing)~~ prior to development of ~~e~~Compensatory ~~m~~Mitigation plans.

B. Preference of Mitigation Actions. Compensatory ~~wetland~~ Mitigation of Wetland areas shall occur in the following order of preference:

1. Restoration: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural or historic functions to a former or ~~d~~Degraded ~~wetland~~ Wetland. For the purpose of tracking net gains in ~~wetland~~ Wetland acres, ~~r~~Restoration is divided into:

a. Re-establishment: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural or historic functions to a former ~~wetland~~ Wetland. The ~~R~~Re-establishment must results in a gain in ~~wetland~~ Wetland acres (and functions). Activities could include removing fill material, plugging ditches, or breaking drain tiles.

b. Rehabilitation: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of repairing natural or historic functions of a ~~d~~Degraded ~~wetland~~ Wetland. The ~~R~~Rehabilitation must results in a gain in ~~wetland~~ Wetland function but does not result in a gain in ~~wetland~~ Wetland acres. Activities could involve breaching a dike to reconnect ~~wetland~~ Wetlands to a floodplain or return tidal influence to a ~~wetland~~ Wetland

2. Creation: The manipulation of the physical, chemical, or biological characteristics of a site to develop a ~~wetland~~ Wetland on an upland or deepwater site where a ~~wetland~~ Wetland did not previously exist. Creation results in a gain in ~~wetland~~ Wetland acres. Activities typically involve excavation of upland soils to elevations that will produce a ~~wetland~~ Wetland hydroperiod, create hydric soils, and support the growth of hydrophytic plant species.

3. Enhancement: The manipulation of the physical, chemical, or biological characteristics of a ~~wetland~~ Wetland site to heighten, intensify, or improve specific function(s) or to change the growth stage or composition of the vegetation present. Enhancement is undertaken for specified purposes such as water quality improvement, flood water retention, or wildlife habitat. Enhancement results in a change in some ~~wetland~~ Wetland functions and can lead to a decline in other ~~wetland~~ Wetland functions, but does not result in a gain in ~~wetland~~ Wetland acres. Activities typically consist of planting vegetation, controlling non-native or invasive species, modifying site elevations or the proportion of open water to influence hydroperiods, or some combination of these activities

C. Approaches to Compensatory Mitigation. Mitigation for alterations to ~~wetland~~ Wetland and their ~~buffer~~ Buffers shall rely on the approaches listed below.

1. Wetland Mitigation Banks. Credits from a certified ~~wetland~~ Wetland mitigation bank may be used to compensate for impacts within the service area specified in the mitigation bank instrument. Use of credits from a ~~wetland~~ Wetland mitigation bank certified under Chapter 173-700 WAC is allowed if:
 - a. The ~~department~~ Department determines that it would provide appropriate compensation for the proposed impacts; and
 - b. The impact site is located in the service area of the bank.
 - c. The proposed use of credits is consistent with the terms and conditions of the certified bank instrument.
 - d. Replacement ratios for projects using bank credits is consistent with replacement ratios specified in the certified mitigation bank instrument.
2. In-Lieu Fee Mitigation. Credits from an approved in-lieu-fee program may be used when all the following apply:
 - a. The approval authority determines that it would provide environmentally appropriate compensation for the proposed impacts.

- b. The proposed use of credits is consistent with the terms and conditions of the approved in-lieu-fee program instrument.
- c. Project using in-lieu-fee credits shall have debits associated with the proposed impacts calculated by the applicant's qualified ~~wWetland~~ ~~Specialist~~ ~~scientist~~ using the credit assessment method specified in the approved instrument for the in-lieu-fee program.
- d. The impacts are located within the service area specified in the approved in-lieu-fee instrument.

3. Permittee-responsible mitigation. In this situation, the permittee performs the mitigation after the permit is issued and is ultimately responsible for implementation and success of the mitigation. Permittee-responsible mitigation may occur at the site of the permitted impacts or at an off-site location within the same watershed. If available, the use of ~~wetland~~ ~~Wetland~~ mitigation banks and in-lieu-fee programs are preferable to permittee-responsible mitigation.

D. Wetland mitigation ratios. The ratios listed in Table 14.340.060 apply to permittee-responsible mitigation. The first number ~~specifiesspecies~~ the acreage of replacement ~~wetland~~ ~~Wetlands~~ required, and the second number specifies the acreage of ~~wetland~~ ~~Wetlands~~ altered or relocated.

Table 14.340.060
Wetland Mitigation Ratios

Category and Type of Wetland	Creation or Re-establishment	Rehabilitation	Enhancement
Category I: High conservation value/bog	Not considered possible	Not considered possible	Not considered possible
Category I: Mature and old growth forest	6:1	12:1	24:1
Category I: Based on functions	4:1	8:1	16:1
Category II	3:1	6:1	12:1
Category III	2:1	4:1	8:1
Category IV	1.5:1	3:1	6:1

The ~~d~~Director may increase the ratios under the following circumstances:

1. Uncertainty as to the probable success of the proposed ~~r~~Restoration or creation;
2. Significant period of time between destruction and replication of ~~wetland~~ ~~Wetland~~ values;
3. Projected losses in functional value; ~~or~~
4. The ~~e~~Compensatory ~~m~~Mitigation is off-site.

E. Wetland ~~buffer~~ ~~Buffer~~ mitigation. To mitigate unavoidable impacts to functions and values of ~~wetland~~ ~~Wetland~~ ~~buffer~~ ~~Buffers~~, a minimum ~~buffer~~ ~~Buffer~~ ratio of 1:1 (alteration area: mitigation area) is required. This ratio assumes that creation ~~or~~ ~~r~~Restoration of a ~~w~~Wetland ~~buffer~~ ~~Buffer~~ with appropriate ~~n~~Native ~~v~~Vegetation is sufficient to compensate for the ~~wetland~~ ~~Wetland~~ ~~buffer~~ ~~Buffer~~ functions and values affected by alteration of an existing ~~wetland~~ ~~Wetland~~ ~~buffer~~ ~~Buffer~~. If ~~e~~Enhancement of an existing ~~wetland~~ ~~Wetland~~ ~~buffer~~ ~~Buffer~~ is proposed as mitigation, a

higher mitigation ratio may be required. For any proposed ~~wetland-buffer~~Buffer activities, the applicant must demonstrate that the functions and values of the altered ~~wetland-buffer~~Buffer will be fully replaced by the proposed mitigation. The ~~d~~Department may increase the ~~buffer~~Buffer mitigation ratios under the following circumstances:

1. The replacement ratio needed to recover the lost functions and values of ~~buffer~~Buffer area is greater than 1:1 based upon the existing type of vegetative cover of either the impact site or the proposed mitigation site.
2. Uncertainty exists as to the probable success of the proposed ~~r~~Restoration or creation;
3. A significant period of time will elapse between impact and replication of ~~wetland~~Wetland functions; ~~or~~
4. The impact was an unauthorized impact.

F. Wetland and ~~buffer~~Buffer mitigation plans. Compensatory ~~wetland~~Wetland mitigation plans shall be consistent with Wetland Mitigation in Washington State – Part 2: Developing Mitigation Plans (Ecology, 2006); and Selecting Wetland Mitigation Sites Using a Watershed Approach (Ecology, 2009), or as revised. Mitigation plans shall comply with the requirements established in EMC 14.~~34~~0.070, Appendix B.

14.~~34~~0.070 Appendices.

A. Wetland Report.

B. Wetland Mitigation Plan

APPENDIX A

WETLAND REPORT

A. A ~~wetland~~Wetland ~~e~~Critical ~~a~~Areas ~~r~~Report shall, at a minimum, include the following:

1. The general ~~e~~Critical ~~a~~Areas report requirements in EMC Chapter 14.10.0802;
2. Map showing the location of all ~~wetland~~Wetlands and required ~~buffer~~Buffers within three hundred (300) feet of the proposed development;
3. An analysis of the onsite ~~wetland~~Wetland(s) include the following site- and proposal-related information:
 - a. Documentation of any fieldwork performed on the site, including, but not limited to, field ~~d~~Delineation data sheets for ~~d~~Delineations and ~~w~~Wetland rating forms;
 - b. Wetland acreage;
 - c. Wetland ~~e~~Category;
 - d. A discussion of the water sources supplying the ~~wetland~~Wetland and documentation of hydrologic regime (locations of inlet and outlet features, water depths throughout the ~~wetland~~Wetland, evidence of recharge or discharge);
 - e. A discussion of the functions of existing ~~wetland~~Wetlands, including vegetative, faunal, and hydrologic conditions; and
 - f. A description of the methodologies used to conduct the ~~w~~Wetland ~~d~~Delineations;
4. A discussion of measures, including avoidance, minimization, and mitigation, proposed to preserve existing ~~wetland~~Wetlands;

5. A detailed discussion of the direct and/or indirect potential impacts on the ~~wetland~~Wetland by the project; and
6. The ~~wetland~~Wetland mitigation plan requirements of EMC ~~Chapter 14.340.070~~, Appendix B, if the activity will result in unavoidable impacts to ~~wetland~~Wetlands or their ~~buffer~~Buffers.

APPENDIX B

WETLAND MITIGATION PLAN

- A. A ~~wetland~~Wetland mitigation plan shall, at a minimum, include the general mitigation plan requirements in EMC Chapter 14.10.090 and the following information:
 - ~~1. The general mitigation plan requirements in EMC 14.10.083 and the following information:~~
 - ~~21.~~ Existing and proposed ~~wetland~~Wetland acreage;
 - ~~32.~~ Vegetative and faunal conditions;
 - ~~43.~~ Surface and subsurface hydrologic conditions including an analysis of existing and future hydrologic regime and proposed hydrologic regime for enhanced, created, or restored mitigation areas;
 - ~~54.~~ Relationship within watershed and to existing waterbodies;
 - ~~65.~~ Soils and substrate conditions, topographic elevations;
 - ~~76.~~ Existing and proposed adjacent site conditions;
 - ~~87.~~ Required ~~wetland~~Wetland ~~buffer~~Buffers (including any ~~buffer~~Buffer reduction or averaging and mitigation proposed to enhance ~~buffer~~Buffers);
 - ~~98.~~ Property ownership;
 - ~~109.~~ A discussion of ongoing management practices that will protect ~~wetland~~Wetlands after the project site has been developed, including proposed monitoring and maintenance programs;
 10. A bond estimate for the installation, ~~(including~~ site preparation, plant materials and installation, fertilizers, mulch,) and the proposed monitoring and maintenance work for the required number of years, pursuant to EMC ~~Chapter 14.10.080070.E(E).~~

Chapter 14.450

CRITICAL FISH AND WILDLIFE HABITAT CONSERVATION AREAS

Sections:

- 14.450.010 Purpose.
- 14.450.020 Fish and wildlife habitat conservation area identification and classification.
- 14.450.02530 ~~Buffer~~ standards—Fish and wildlife habitat conservation areas.
- 14.450.0340 Fish and wildlife habitat conservation area review procedures.
- 14.450.0450 Allowed activities.
- 14.450.0560 Alteration of Watercourses
- 14.450.0670 Mitigation requirements.
- 14.450.0780 Appendix

14.450.010 Purpose.

Many land use activities can impact the habitats of fish and wildlife. Special care must be taken in the management of lands that support fish and wildlife species to ensure that development occurs in a manner that is sensitive to their habitat needs. The purpose of this chapter is to identify fish and wildlife habitat conservation areas and establish habitat protection procedures and mitigation measures that are designed to result in no net loss of habitat functions and values. These areas are necessary for maintaining species in suitable habitats within their natural geographic distribution so that isolated subpopulations are not created as designated by WAC 365-190-080(5). (Ord. 02-200 § 2).

14.450.020 Fish and wildlife habitat conservation area identification and classification.

A. Designation. Fish and wildlife habitat conservation areas include:

1. Waters of the state. Waters of the state include lakes, rivers, ponds, streams, and all other surface waters and watercourses within jurisdiction of the state of Washington, as classified in WAC 222-16-030.
2. Areas with which federally designated endangered, threatened, and sensitive species have a primary association. The U.S. Fish and Wildlife Service and the National Marine Fisheries Service should be consulted for current federal listing status.
3. Areas with which state designated endangered, threatened, and sensitive species have a primary association. The Washington State Department of Fish and Wildlife should be consulted for current state listing status.
4. State priority habitats and areas associated with state priority species. The state Department of Fish and Wildlife should be consulted for current listing of priority habitats and species.
5. Habitats ~~of~~ and ~~s~~Species of ~~l~~ocal ~~i~~mportance. The following fish and wildlife species and their associated habitat areas shall be regulated under this chapter:
 - a. Fish. Coho salmon (*Oncorhynchus kisutch*), pink salmon (*Oncorhynchus gorbuscha*), chum salmon (*Oncorhynchus keta*), cutthroat trout (*Oncorhynchus clarkia*), and steelhead (*Oncorhynchus mykiss*).
 - b. Birds. Great blue heron (*Ardea herodias*) and green heron (*Butorides virescens*).
 - c. Areas with which state-listed monitor or candidate fish or wildlife species or federally listed candidate fish or wildlife species have a primary association, and which if altered may reduce the likelihood that the species will survive and reproduce over the long term.
 - d. Heron rookeries.

6. Areas not included. Fish and wildlife habitat conservation areas does not include such artificial features or constructs as irrigation delivery systems, irrigation infrastructure, irrigation canals, or drainage ditches that lie within the boundaries of and are maintained by a port district or an irrigation district or company.

B. Habitat boundary survey. If the ~~department~~Department determines that a regulated habitat conservation area may be present within the project vicinity, the ~~department~~Department may require the habitat area to be delineated and/or mapped by a qualified ~~f~~Fisheries ~~b~~Biologist or ~~w~~Wildlife ~~b~~Biologist who is knowledgeable of fish and wildlife habitat within western Washington, or by the Washington Department of Fish and Wildlife. The boundary of aquatic habitats shall be the ordinary high water mark of the waterbody. The management recommendations for Washington's priority habitats and species or federal equivalent should be used as a tool for identifying and delineating wildlife habitat boundaries. The ~~city~~City may waive this requirement if there is adequate information available on the area proposed for development to determine the impacts of the proposed development and appropriate mitigating measures.

C. Mapping. The approximate location and extent of waters of the state and fish presence within the city are shown on maps maintained by the ~~city~~City. The ~~city~~City shall update the maps periodically as new information becomes available. The approximate location and extent of other fish and wildlife habitat conservation areas area shown on maps maintained by the Washington State Department of Fish and Wildlife and other state and federal agencies. These maps are to be used as a guide and do not provide definitive information about fish and wildlife habitat conservation area size or presence. Fish and wildlife habitat conservation areas may exist that do not appear on the maps.

D. Waters of the state classification. The ~~city~~City hereby adopts the water typing system specified in WAC 222-16-030, as described below:

1. Type S. All waters, within their ordinary high water mark, meeting the criteria as "shorelines of the state" and "shorelines of statewide significance" under RCW Chapter 90.58. As of the effective date of this title, there are no Type S streams within ~~the City's~~city jurisdiction.
2. Type F: segments of natural waters other than Type S Waters, which are within the bankfull widths of defined channels and periodically inundated area of their associated ~~wetland~~Wetlands, or within lakes, ponds, or impoundments having a surface area of 0.5 acre or greater at seasonal low water and which in any case contain fish habitat.
3. Type Np: all segments of natural waters within the bankfull width of defined channels that are perennial non-fish habitat stream. Perennial stream waters do not go dry any time of a year of normal rainfall. However, for the purpose of water typing, Type Np Waters include the intermittent dry portions of the perennial channel below the uppermost point of perennial flow.
4. Type Ns: All segments of natural waters within the bankfull width of the defined channels that are not Type S, F, or Np waters. These are seasonal, non-fish habitat streams in which surface flow is not present for at least some portion of a year of normal rainfall and are not located downstream from any stream reach that is a Type Np Water. Ns Waters must be physically connected by an above-ground channel system to Type S, F, or Np Waters.

14.450.02530 ~~Buffer~~Buffer standards—Fish and wildlife habitat conservation areas.

A. Determining ~~buffer~~Buffer widths. ~~Buffer~~Buffers shall be required as set forth for each habitat type. The required ~~buffer~~Buffers shall be delineated, both on a site plan or plat, and on the property prior to approval of any regulated activity.

1. Aquatic habitat conservation areas.

- a. ~~Buffer~~Buffers for aquatic habitat conservation areas shall be based upon the water type ~~e~~Classification of the water body as specified in WAC 22-16-030. Refer to Table 14.450.02530 for the water types and the associated ~~buffer~~Buffer requirements.

b. The required ~~buffer~~Buffer width shall be measured in all directions from the ordinary high water mark.

c. The required ~~buffer~~Buffer shall be extended to include any adjacent regulated ~~w~~Wetland(s), ~~H~~andslide ~~h~~Hazard ~~a~~Areas, and/or ~~e~~Erosion ~~h~~Hazard ~~a~~Areas and ~~required buffer~~ their respective Buffers.

2. Non-aquatic habitat conservation areas. Appropriate ~~buffer~~Buffers for critical habitat areas and species not listed in Table 14.450.02530 shall be determined by the Washington Department of Fish and Wildlife or by a qualified ~~w~~Wildlife ~~b~~Biologist and documented in an approved ~~h~~Habitat ~~m~~Management ~~p~~Plan.

Table 14.450.02530
~~Buffer~~Buffer Standards

Water Type	Buffer Buffer Width ¹
Type S	150 ft. ²
Type F	100 ft.
Type Np	60 ft.
Type Ns	35 ft.

¹ In the event that ~~buffer~~Buffers for any habitat conservation area or other ~~e~~Critical ~~a~~Area are contiguous or overlapping, the landward-most edge of all such ~~buffer~~Buffers shall apply.

² As of the effective date of this title, there are no Type S streams within ~~the City's~~city jurisdiction.

BC. Modification to ~~Buffer~~Buffer Width Requirements. The standard ~~buffer~~Buffer widths of subsection (A) of this section may be modified as follows:

1. ~~Buffer~~Buffer Width Reductions. A ~~buffer~~Buffer width reduction may be proposed through submittal of a ~~h~~Habitat ~~m~~Management ~~p~~Plan. ~~Buffer~~Buffer reductions of up to a maximum of 25 percent may be allowed when the applicant demonstrates the following circumstances:

a. ~~Buffer~~Buffer ~~e~~Encroachment is unavoidable.

b. The existing ~~buffer~~Buffer is predominately un-vegetated, composed of nuisance species, or is in an otherwise highly disturbed condition.

c. ~~Buffer~~Buffer reduction with ~~e~~Enhancement will provide equal or greater protection of current habitat functions and values, and will not adversely affect salmon habitat.

d. The ~~buffer~~Buffer reduction will not increase the risk of slope failure or downslope stormwater drainage impacts.

e. The minimum width of the ~~buffer~~Buffer at any given point shall be at least seventy-five (75) percent of the standard width, or twenty-five (25) feet, whichever is greater.

f. The project includes a ~~buffer~~Buffer ~~e~~Enhancement ~~p~~Plan as part of the mitigation required by EMC Chapter 14.450.060070. The ~~buffer~~Buffer ~~e~~Enhancement ~~p~~Plan shall use ~~n~~Native ~~p~~Plant species.

2. ~~Buffer~~Buffer Width Increases. The ~~department~~Department may require increased ~~buffer~~Buffer width(s) when any of the following are identified:

a. A larger ~~buffer~~Buffer is necessary to maintain viable populations of existing species or protect the existing functions of the habitat area;

- b. The adjacent land is susceptible to severe erosion and erosion control measures will not effectively prevent adverse habitat impacts;
- c. The adjacent land has minimal vegetative cover or slopes greater than 20 percent; or
- d. The habitat area is in an area of high tree blow down potential. In these cases the habitat area may be expanded an additional 50 feet on the windward side.

14.450.0340 Fish and wildlife habitat conservation area review procedures.

A. Habitat ~~m~~Management ~~p~~Plan. ~~When-If~~ the ~~d~~Department's maps, sources, or field investigations indicate that the proposed project area is located within 300 feet of a known or suspected fish or wildlife habitat conservation area, ~~then the an~~ applicant shall submit a ~~h~~Habitat ~~m~~Management ~~p~~Plan prepared by a qualified ~~f~~isheries ~~b~~Biologist or ~~w~~Wildlife ~~b~~Biologist. The requirement to provide a habitat conservation plan for habitat conservation areas may be waived if the ~~d~~Department determines that there are no potential direct ~~and/or~~ indirect impacts on designated species or habitats that would result from the proposed ~~d~~Development Activity. Habitat ~~m~~Management ~~p~~Plans shall comply with the requirements established in EMC 14.450.0780, Appendix A.

14.450.0450 Allowed activities.

A. The following activities may be permitted in habitat conservation areas and/or their ~~buffer~~Buffers when all reasonable measures have been taken to avoid and mitigate adverse effects on species and habitats and a net loss of habitat functions will not occur. In order to verify the following conditions, a ~~h~~Habitat ~~m~~Management ~~p~~Plan meeting the requirements of EMC 14.450.0780, Appendix A must be submitted.

1. Stream Erosion Control Measures. New or replacement stream erosion control measures shall be subject to the following standards:

- a. The proposal complies with the provisions set forth in EMC Chapter 14.110-~~EMC~~.
- b. The required ~~h~~Habitat ~~m~~Management ~~p~~Plan demonstrates the following:
 - i. Natural stream processes will be maintained. The project will not result in increased beach erosion or alterations to, or loss of, stream substrate within one-quarter mile of the site.
 - ii. The stream erosion control measure will not adversely impact fish or wildlife habitat conservation areas or associated ~~wetland~~Wetlands.

2. Docks and launching ramps. Construction, reconstruction, repair, and maintenance of docks and public or private launching ramps are subject to all of the following:

- a. The dock or ramp is located and oriented and constructed in a manner that minimizes adverse effects on water quality, movement of aquatic and terrestrial life, ecological processes, spawning habitat, and ~~wetland~~Wetlands.
- b. Docks and ramps shall meet or exceed all relevant state and federal permit requirements.

3. Roads, Trails, Bridges, and Rights-of-Way. Construction of trails, roadways, bridges, and culverts may be allowed subject to the following standards:

- a. There is no other feasible alternative route with less impact on the environment.
- b. The crossing minimizes interruption of downstream movement of wood, ice, and gravel and the movement of all fish and wildlife.
- c. Stream crossings, where necessary, shall only occur as near to the perpendicular with the stream as possible and be limited to the minimum width necessary.

d. Road bridges and culverts are designed according to the latest versions of the Washington Department of Fish and Wildlife Water Crossing Design Guidelines (Washington Department of Fish and Wildlife) the Anadromous Salmonid Passage Facility Design guidelines (National Marine Fisheries Service).

e. Trails and associated viewing platforms shall be made of pervious materials.

4. Utility Facilities. New utility lines and facilities are permitted to cross habitat conservation areas if they comply with the following standards

a. Avoid fish and wildlife habitat conservation areas to the maximum extent possible.

b. Cross at an angle greater than 60 degrees to the centerline of the channel in streams or perpendicular to the channel centerline whenever boring under the channel is not feasible.

c. Crossings are contained within the footprint of an existing road or utility crossing where possible.

d. Avoid paralleling the stream or following a down-valley course near the channel.

e. Do not increase or decrease the natural rate of shore migration or channel migration.

f. Bore beneath the scour depth and hyporheic zone of the water body and channel migration zone (CMZ) where feasible.

5. Public Flood Protection Measures. New public flood protection measures and expansion of existing facilities may be approved, subject to the ~~d~~Department's review and approval of a ~~h~~Habitat ~~m~~Management ~~p~~Plan.

6. Instream Structures. New instream structures (e.g., such as, but not limited to, high flow bypass, sediment ponds, instream ponds, retention and detention facilities, dams, weirs, etc.) shall be allowed only as part of an approved ~~m~~Mitigation or ~~r~~Restoration project or watershed basin plan approved by the ~~department~~Department and upon acquisition of any required state or federal permits. The structure shall be designed to avoid modifying flows and water quality in ways that may adversely affect critical fish species. Proposals for placement of water quality, water quantity, or other instruments or structures within a stream to gather data, or as a mitigation measure, shall be exempt from the provisions of this title upon review and approval by the ~~department~~Department.

7. Stormwater Conveyance Facilities. Conveyance structures whose sole purpose is to convey stormwater already treated for quality, or water bypassed around water quality treatment facilities pursuant to an approved stormwater plan, may be constructed subject to the following standards:

a. No other feasible alternatives with less impact exist;

b. Mitigation for impacts is provided;

c. Stormwater conveyance facilities shall incorporate fish habitat features;

d. Vegetation shall be maintained and, if necessary, added adjacent to all open channels and ponds in order to retard erosion, filter out sediments, and shade the water.

8. On-Site Sewage Systems and Wells.

a. New on-site sewage systems and individual wells are permitted if accessory to an approved structure.

b. Repairs to failing on-site sewage systems associated with an existing structure shall be accomplished by utilizing one of the following methods that result in the least impact:

i. Connection to an available public sewer system;

ii. Replacement with a new on-site sewage system located in a portion of the site that has already been disturbed by development and is located landward as far as possible, provided the proposed sewage system is in compliance with the provisions in EMC Chapter 14.8070-EMC; or

iii. Repair to the existing on-site septic system.

B. The activities listed below are allowed in habitat conservation areas and their ~~buffer~~ Buffers, and do not require submission of a ~~hHabitat mManagement pPlan~~, except where such activities would result in a loss of the functions and values of habitat conservation areas or ~~buffer~~ Buffers.

1. Vegetation Removal, Disturbance, and Introduction. Limited vegetation removal shall be allowed subject to EMC Section 18.90.180 ~~-(Tree pPreservation)~~ and the following standards in paragraphs a-b:

a. Hazard trees may be cut; provided, that:

i. The applicant submits a report from a certified arborist, licensed architect, or professional forester that documents the hazard and provides a replanting schedule for the replacement trees and receives written approval from the ~~city~~ City authorizing the tree removal;

ii. Tree cutting shall be limited to limbing and crown thinning, unless otherwise justified by the landowner's expert. Where limbing or crown thinning is not sufficient to address the hazard, trees should be topped to remove the hazard rather than cut at or near the base of the tree. All vegetation cuttings (tree stems, branches, tops, etc.) shall be left within the habitat area or ~~buffer~~ Buffer unless removal is warranted due to the potential for disease transmittal to other healthy vegetation;

iii. The landowner shall replace any trees that are felled or topped with new trees at a ratio of two replacement trees for each tree felled or topped. Tree species that are native and indigenous to the site shall be used;

iv. Hazard trees determined to pose an imminent threat or danger to public health or safety, or to public or private property, or serious environmental degradation may be removed or topped by the landowner prior to receiving written approval from the ~~department~~ Department; provided, that within 14 days following such action, the landowner shall submit the necessary report and replanting schedule demonstrating compliance with subsections (B)(1)(a)(i) through (iii) of this section.

b. Trimming of vegetation for purposes of providing a ~~vView~~ eCorridors will be allowed. ~~;- provided, that The trimming is shall be limited to view corridors of a maximum 20-foot width-feet in width or less, that no more than 30 percent of the live crown is removed, and that- and the benefits to fish and wildlife habitat are not may not be reduced. No more than 30 percent of the live crown may be removed.~~ Trimming shall be limited to hand pruning of branches and vegetation and does. ~~Trimming shall~~ not include felling, topping, or ~~the~~ removal of trees.

2. Fencing. Fencing shall be placed in such a manner as to maintain wildlife movement corridors and not create any fish passage blockages. The ~~department~~ Department shall approve the location, type, and height of any proposed fencing.

14.450.0560 Alteration of Watercourses

Alteration of Watercourses. Any alteration of a watercourse shall comply with the following standards:

1. The ~~city~~ City will notify adjacent communities and the Washington State Department of Ecology prior to any alteration or relocation of a watercourse proposed by the applicant and submit evidence of such notification to the Federal Insurance Administration.

2. The ~~city~~ City shall require that maintenance be provided within the altered or relocated portion of said watercourse, so that the flood-carrying capacity is not diminished. Therefore, if the maintenance program calls for future cutting of planted ~~nNative~~ vVegetation used in performing the alteration, the system shall be oversized at the time of construction to compensate for said vegetation growth or any other natural factor that may need future maintenance.

3. Alterations and relocations, including stabilization projects, shall not degrade fish habitat and shall be subject to the following provisions:

- a. Structures that cross all watercourses and water bodies shall meet fish habitat requirements of the Washington Department of Fish and Wildlife.
- b. Any culverts that are used on fish-bearing watercourses shall be arch/bottomless culverts or equivalent that provide comparable fish protection, and must meet fish habitat requirements of the latest edition of Washington Department of Fish and Wildlife's Design Manual for Culverts.
- c. Bridges or other crossings shall allow for uninterrupted downstream movement of wood and gravel, be as close to perpendicular to the watercourse as possible, and be designed to minimize fill and to pass the ~~b~~Base ~~f~~Flood flows.
- d. Watercourse alterations shall maintain natural meander patterns, channel complexity, and floodplain connectivity. Where feasible, such characteristics shall be restored as part of the watercourse alteration.
- e. The applicant shall identify the channel migration zone for the watercourse at the project site and for a reasonable reach upstream and downstream of the site, and shall not undertake actions as part of the alteration that would in any way inhibit movement of the channel.
- f. Existing culverts that do not meet fish habitat requirements shall be removed or replaced as part of the approved watercourse alteration project.
- g. Watercourse alteration projects shall not result in a fish blockage of side channels. Known fish barriers into side channels shall be removed as part of the approved watercourse alteration project.
- h. For any watercourse alteration of a Type S or F water (pursuant to EMC 14.450.020.D(~~D~~)) whose channel is subject to migration, bioengineered (soft) armoring of streambanks is required to allow for woody debris recruitment, gravels for spawning, and creation of side channels. The bioengineering technique used must be designed in accordance with the latest edition of Washington Department of Fish and Wildlife's Integrated Streambank Protection Guidelines.

4. The project ~~e~~Engineer shall design the watercourse alteration so the activity does not increase the water surface elevation (zero-rise); decrease the capacity, storage, and conveyance of the watercourse; or cause an adverse impact to adjacent, cross-channel, or upstream or downstream properties. (Ord. 17-492 § 2 (Exh. A); Ord. 02-200 § 2).

14.450.0670 Mitigation requirements.

A. Mitigation. Compensatory ~~m~~Mitigation is required for all unavoidable alterations to fish and wildlife habitat conservation areas or their ~~buffer~~Buffers. Mitigation of alteration to habitat areas shall achieve equivalent or greater biological functions. Mitigation shall address each functional attribute affected by the alteration to achieve functional equivalency or improvement on a per function basis. Mitigation elements to be addressed may include, but are not limited to: ~~r~~Restoration of previously ~~d~~Degraded areas and key habitat features, ~~r~~Restoration of ~~r~~Riparian vegetation communities to provide shade and large woody debris, addition of large woody debris, and installation of upland habitat features. All projects must first demonstrate compliance with EMC 14.10.080070.B (~~B~~) (~~Mitigation-Sequencing~~) prior to development of ~~e~~Compensatory ~~m~~Mitigation plans.

B. Type of mitigation required. In determining the extent and type of mitigation required, the ~~department~~Department may consider all of the following:

1. The ecological processes that affect and influence habitat structure and function within the watershed or sub-basin;
2. The individual and cumulative effects of the action upon the functions of the ~~e~~Critical ~~a~~Area and associated watershed;

3. Observed or predicted trends regarding the gains or losses of specific habitats or species in the watershed, in light of natural and human processes;

4. The likely success of the proposed mitigation measures;

5. Effects of the mitigation actions on neighboring properties; and

6. Opportunities to implement ~~e~~Restoration actions formally identified by an adopted shoreline ~~e~~Restoration plan, watershed planning document prepared and adopted pursuant to Chapter [90.82](#) RCW, a salmonid recovery plan or project that has been identified on the Salmon Recovery Board Habitat Project List or by the Washington State Department of Fish and Wildlife as essential for fish and wildlife habitat ~~e~~Enhancement.

C. Location. Compensatory ~~m~~Mitigation shall be provided on-site or off-site in the location that will provide the greatest ecological benefit to the species ~~and~~/or habitats affected and have the greatest likelihood of success. Mitigation shall occur as close to the impact site as possible, within the same sub-basin, and in a similar habitat type as the permitted alteration. ~~unless-If the applicant demonstrates to the satisfaction of the department through~~ ~~submits~~ a watershed- or landscape-based analysis that ~~demonstrates~~ mitigation within an alternative sub-basin of the same watershed would have greater ecological benefit, ~~then the Director may approve the demonstrated alternate~~ ~~mitigation~~.

D. Mitigation plans. When required by this chapter, the applicant shall submit a fish and wildlife habitat conservation area mitigation plan meeting the requirements of ~~this Chapter EMC 14.40.060~~.

14.450.0780. Appendix.

APPENDIX A

HABITAT MANAGEMENT PLAN

A. A ~~h~~Habitat ~~m~~Management ~~p~~Plan shall, at a minimum, include the following:

1. The general ~~e~~Critical ~~a~~Areas report requirements ~~in EMC 14.10.082.~~
2. Identification of any endangered, threatened, sensitive, or candidate species that have a primary association with habitat on the project area;
3. Map showing the location of the ordinary high water mark and/or locations of wildlife habitat conservation area(s) and their ~~buffer~~Buffers ~~in accordance with EMC 14.40.025;~~
4. The vegetative, faunal, topographic, and hydrologic characteristics of the habitat conservation area;
5. A discussion of any federal, state, or local special management recommendations, including Washington Department of Fish and Wildlife habitat management recommendations, that have been developed for species or habitat located on or adjacent to the project area;
6. A detailed discussion of the direct and/or indirect potential impacts on the habitat conservation area by the project. Such discussion shall include a discussion of the ongoing management practices that will protect habitat after the project site has been developed;
7. ~~The m~~Mitigation plan, ~~requirements of EMC 14.10.083~~ if the activity will result in unavoidable impacts to habitat conservation areas. Mitigation measures may include:
 - a. Prohibition or limitation of use and development activities within the habitat conservation area;
 - b. Retention of vegetation and/or re-vegetation of areas/habitats critically important to species;
 - c. Special construction techniques;
 - d. Implementation of erosion and sediment control measures;
 - e. Habitat ~~r~~Restoration or ~~e~~Enhancement, (i.e., fish passage barrier removal);
 - f. Seasonal restrictions on construction activities on the subject property;
 - g. Clustering of development activities on the subject property; and/or
 - h. Any other requirements and/or recommendations from federal, state, or local special management recommendations, including the Washington State Department of Fish and Wildlife's habitat management guidelines.

Chapter 14.560

CRITICAL-AQUIFER RECHARGE AND WELLHEAD PROTECTION AREAS

Sections:

- 14.560.010 Purpose.
- 14.560.020 Critical ~~a~~Aquifer ~~r~~Recharge ~~a~~Areas identification.
- 14.560.030 Critical ~~a~~Aquifer ~~r~~Recharge ~~a~~Areas review procedures.
- 14.560.040 Critical ~~a~~Aquifer ~~r~~Recharge ~~a~~Areas standards.

14.560.010 Purpose.

The purpose of this chapter is to protect ~~e~~Critical ~~a~~Aquifer ~~r~~Recharge ~~a~~Areas from degradation or depletion resulting from new or changed land use activities. Due to the exceptional susceptibility and/or vulnerability of groundwater underlying aquifer recharge areas to contamination and the importance of such groundwater as sources of public water supply, it is the intent of this chapter to safeguard groundwater resources and ~~w~~Wellhead ~~p~~Protection ~~a~~Areas by mitigating or precluding future discharges of ~~any e~~Contaminants from new land use activities. (Ord. 02-200 § 2).

14.560.020 Critical ~~a~~Aquifer ~~r~~Recharge ~~a~~Areas identification.

A. General. Critical ~~a~~Aquifer ~~r~~Recharge ~~a~~Areas are areas that have a critical recharging effect on groundwater used for potable water supplies and/or that demonstrate a high level of susceptibility or vulnerability to groundwater contamination from land use activities. These areas include the following:

1. Aquifer Recharge Areas, ~~which are the~~ ~~The~~ boundaries of the two highest DRASTIC zones that are rated 180 and above on the DRASTIC index range, as identified in Map of Groundwater Pollution Potential, Edgewood, Washington, National Water Well Association, U.S. Environmental Protection Agency (~~EPA~~);
2. Wellhead Protection Areas, ~~as defined in Chapter 14.20. Wellhead protection areas that lie within the 10-year time of travel zone boundary of a group A public water system well, as delineated by the water system purveyor or its designee, pursuant to WAC 246-290-135; and~~
3. Sole Source Aquifers, ~~which~~ ~~Sole source aquifers~~ are areas that have been designated by the ~~EPA~~U.S. Environmental Protection Agency pursuant to the Federal Safe Water Drinking Act. As of the effective date of this title, there are no designated ~~s~~Sole ~~s~~Source ~~a~~Aquifers within city limits.

14.560.030 Critical ~~a~~Aquifer ~~r~~Recharge ~~a~~Areas review procedures.

A. General Requirements

1. The ~~city~~City's ~~e~~Critical ~~a~~Aquifer ~~r~~Recharge ~~a~~Areas map provides an indication of where ~~e~~Critical ~~a~~Aquifer ~~r~~Recharge ~~a~~Areas are located within the city and the map is updated as necessary.
2. Any proposed development located within protection ~~e~~Critical ~~a~~Aquifer ~~r~~Recharge ~~a~~Areas shall comply with the standards set forth in EMC ~~Chapter 14.560.040~~.
3. Any hazardous uses, ~~as defined in EMC 14.50.040~~, shall require the submittal of a ~~h~~Hydrogeologic ~~a~~Assessment, as set forth in subsection (B) of this section.
4. The ~~d~~Department may waive ~~some of the e~~Critical ~~a~~Area protective measure provisions contained in EMC ~~Chapter 14.10.000~~, as deemed appropriate by the ~~Department~~ Director and can be shown to meet the requirements associated with Best Available Science, if required.

B. Hydrogeologic Assessment.

1. The ~~h~~Hydrogeologic ~~a~~Assessment shall be prepared, signed, and dated by a state licensed ~~g~~Geologist ~~or~~ ~~A~~Hydrogeologist.

2. The ~~h~~Hydrogeologic ~~a~~Assessment shall be submitted in the form of a report detailing the subsurface conditions, the design of a proposed land use action, and the facilities operation which indicates the susceptibility and potential for contamination of groundwater supplies. The ~~h~~Hydrogeologic ~~a~~Assessment shall, at a minimum, include the general ~~e~~Critical ~~a~~Area report requirements of EMC ~~Chapter 14.10.002~~ in addition to the following ~~fifteen (15) items listed in paragraphs a-o~~:

- a. Information sources;
- b. Geologic setting – includes well logs or borings used to identify information;
- c. Background water quality;
- d. Groundwater elevations;
- e. Location ~~and~~/ depth to perched water tables;
- f. Recharge potential of ~~a f~~Facility site, ~~(i.e., the permeability and /transmissivity)~~;
- g. Groundwater flow direction and gradient;
- h. Current available data on wells located within one-quarter mile of the site;
- i. Current available data on any spring within one-quarter mile of the site;
- j. Surface water location and recharge potential;
- k. Water source supply to ~~a f~~Facility, ~~(e.g., a high capacity well)~~;
- l. Any sampling schedules necessary;
- m. Discussion of the effects of the proposed project on the groundwater resource;
- n. Discussion of potential mitigation measures, should it be determined that the proposed project will have an adverse impact on groundwater resources; and
- o. Any other information as required by the TPCHD, including information required under Washington Department of Ecology Publication 97-30.

C. Storage Tank Permits. In addition to the requirements set forth in this title, the following agencies also have the authority to regulate the installation, repair, replacement, or removal of ~~any UST~~underground storage tanks:

1. The Pierce County Fire Prevention Bureau regulates and authorizes permits for ~~all UST~~underground storage tanks, pursuant to the International Fire Code (Article 79) and this chapter.
2. The Washington Department of Ecology regulates and authorizes permits for ~~all UST~~underground storage tanks (Chapter 173-360 WAC).
3. The TPCHD regulates and authorizes permits for the removal of ~~any UST~~underground storage tanks (Pierce County Code, Chapter 8.34). (Ord. 02-200 § 2).

14.560.040 Critical ~~a~~Aquifer ~~r~~Recharge ~~a~~Areas standards.

A. General. All ~~r~~Regulated ~~a~~Activities that are not exempt or prohibited under the provisions of this chapter shall ensure sufficient groundwater recharge. In order to achieve sufficient groundwater recharge, the applicant shall comply with ~~the e~~City's adopted stormwater manual, ~~EMC Chapter 13.05, (Chapter 13.05 EMC)~~ and demonstrate that the total post-development infiltration rate for the project area will be equal to or better than the predevelopment rate.

B. Prohibited Uses. Landfills (other than inert and demolition landfills), Class I, III, and IV underground injection wells, metals mining, wood treatment facilities, pesticide manufacturing, petroleum refining facilities (including

distilled petroleum facilities), the storage of large volumes of petroleum products, and other uses or activities determined by the ~~department~~Department to have a significant adverse impact on ground water are prohibited within ~~eCritical aAquifer rRecharge aAreas~~.

C. Exemptions. In addition to the general exemptions listed in EMC ~~Section 14.230.030~~, the following uses or activities are exempt from the requirements of this chapter:

1. Sewer lines and appurtenances;
2. Biosolids and ~~sSludge lLand aApplication sSites~~; provided, that these activities comply with the requirements established in Chapters 173-200, 173-216, and 173-304 WAC; and
3. Single-family and two-family dwellings and associated accessory structures.

D. Agricultural Activities. New ~~aAgricultural aActivities~~ that do not involve hazardous substance handling or application are allowed within an aquifer recharge or ~~wWellhead pProtection aArea~~ subject to the following:

1. The applicant is required to submit a farm management plan prepared by the USDA, NRCS, Pierce County Conservation District, or Washington State University, Cooperative Extension Office, that certifies that water quality and quantity within the aquifer recharge area is maintained. The farm management plan shall at a minimum address the following:
 - a. The limits of the proposed ~~aAgricultural aActivities~~.
 - b. The proposed scope of ~~aAgricultural aActivities~~, including the use of any pesticides, fertilizers, or other chemicals.
 - c. The existing nitrate levels on the site and any proposed increases in nitrate levels.
2. Integrated pest management (IPM) practices for pest control and ~~best management practices (BMPs)~~ for the use of fertilizers, as described by the Washington State University, Pierce County Cooperative Extension Office, shall be utilized.
3. Nitrate levels at down-gradient property line shall not exceed 2.5 mg/L or, if the background nitrate concentration exceeds 2.5 mg/L, that the concentration will not be increased more than 0.1 mg/L.
4. Additional protective measures may be required if deemed necessary by the ~~department~~Department or TPCHD to protect public health or safety.

~~ED~~. Nonhazardous Uses. Subdivision of land as defined in EMC Title 16, residential structures housing three or more units, and all commercial and industrial sites or activities that do not include or involve hazardous substance processing or handling in ~~protection-eCritical aAquifer rRecharge aAreas~~ are allowed subject to the following standards:

1. Stormwater quality treatment and flow control shall be provided in conformance with the ~~city~~City's adopted stormwater management manual.
2. Floor drains shall not be allowed to drain to the stormwater system and must be designed and installed to meet the Uniform Plumbing Code (UPC) Section 303.
3. If any roof venting carries ~~a eContaminants~~, then the portion of the roof draining from this area must go through pretreatment pursuant to UPC Section 304(b).
4. All nonresidential vehicle washing must be self-contained or be discharged to a sanitary sewer system, if approved by the sewer utility, and is subject to UPC Sections 708 and 711.

5. Integrated pest management (IPM) practices for pest control and ~~best management practices~~ (BMPs) for the use of fertilizers as described by the Washington State University, Pierce County Cooperative Extension Office, shall be utilized.

6. For new or changes in ~~r~~Regulated ~~a~~Activities served by on-site sewage systems, the applicant must demonstrate to the TPCHD that nitrate levels at the down-gradient property line will not exceed 2.5 mg/L or that if the background nitrate concentration exceeds 2.5 mg/L the concentration will not be increased more than 0.1 mg/L.

7. Additional protective measures may be required if deemed necessary by the ~~department~~Department or TPCHD to protect public health or safety.

FE. Hazardous Uses – General. Hazardous substance processing or handling, hazardous waste treatment and storage facilities, ~~a~~Animal ~~e~~Containment ~~a~~Areas, and solid waste facilities that require a solid waste handling permit from the TPCHD, requiring approval from the ~~city~~City, shall be allowed only in ~~protection e~~Critical ~~a~~Aquifer ~~r~~Recharge ~~a~~Areas subject to review and approval of a ~~h~~Hydrogeologic ~~a~~Assessment by the ~~d~~Department and review by the TPCHD. The ~~d~~Department has the authority to apply whatever standards deemed necessary to mitigate any negative impacts that may be associated with the proposed development and will consider comments by TPCHD.

GF. Hazardous Uses – Storage Tanks. In addition to the requirement to submit a ~~h~~Hydrogeologic ~~a~~Assessment, the following standards apply to storage tanks in ~~protection e~~Critical ~~a~~Aquifer ~~r~~Recharge ~~a~~Areas:

1. Underground Tanks. All new underground storage facilities used or to be used for the underground storage of hazardous substances or hazardous wastes shall be designed and constructed so as to:

- a. Prevent releases due to corrosion or structural failure for the operational life of the tank;
- b. Be protected against corrosion, constructed of noncorrosive material, steel clad with a noncorrosive material, or designed to include a secondary containment system to prevent the release or threatened release of any stored substance;
- c. Use material in the construction or lining of the tank which is compatible with the substance to be stored; and
- d. The installation of ~~any UST~~underground storage tanks shall also be subject to other state and local permit requirements.

2. Aboveground Tanks.

- a. No new aboveground storage ~~f~~Facility or part thereof shall be fabricated, constructed, installed, used, or maintained in any manner which may allow the release of a hazardous substance to the ground, groundwater, or surface waters ~~of the city~~ within ~~any e~~Critical ~~a~~Aquifer ~~r~~Recharge ~~a~~Areas.
- b. A new aboveground tank that will contain a hazardous substance will require both a double-walled tank and a secondary containment system separate from the tank that will hold 110 percent of the tank's capacity. The secondary containment system or dike system must be designed and constructed to contain material stored in the tank(s). (Ord. 16-482 § 2 (Exh. C); Ord. 02-200 § 2).

Chapter 14.670

VOLCANIC HAZARD AREAS

Sections:

- 14.670.010 Purpose.
- 14.670.020 Volcanic ~~h~~Hazard ~~a~~Areas.
- 14.670.030 Volcanic ~~h~~Hazard ~~a~~Area review procedures.
- 14.670.040 Volcanic ~~h~~Hazard ~~a~~Area standards.

14.670.010 Purpose.

At over 14,411 feet high, Mount Rainier dominates the skyline of the southern Puget Sound region. This glacier-clad mountain is a dormant volcano capable of generating large floods and lahars which have historically reached the floors of the lowlands south of the ~~city~~City of Seattle and out to Commencement Bay in the Port of Tacoma, spewing ash from pyroclastic eruptions. The purpose of this chapter is to promote the public health, safety, and general welfare of the citizens of Edgewood by providing standards that minimize the loss of life that may occur as a result of volcanic events emanating from Mount Rainier. (Ord. 02-200 § 2).

14.670.020 Volcanic ~~h~~Hazard ~~a~~Areas.

A. General. Volcanic ~~h~~Hazard ~~a~~Areas are areas subject to pyroclastic flows, lava flows, and inundation by ~~d~~Debris ~~f~~Flows, ~~m~~Mudflows, or related flooding resulting from geologic and volcanic events on Mount Rainier.

B. Volcanic Hazard Area Categories. Volcanic ~~h~~Hazard ~~a~~Areas are areas that have been historically inundated by Case I, Case II, or Case III lahars or other types of ~~d~~Debris ~~f~~Flow; affected by pyroclastic flows, pyroclastic surges, lava flows, or ballistic projectiles in future eruptions; or are located in other drainages expected to be inundated by a future Case I, Case II, or Case III ~~d~~Debris ~~f~~Flow. Volcanic ~~h~~Hazard ~~a~~Areas are classified into the following categories:

1. Inundation Zone for Case I Lahars. Areas that could be affected by cohesive lahars that originate as enormous avalanches of weak chemically altered rock from the volcano. Case I lahars can occur with or without eruptive activity. The average reoccurrence rate for Case I lahars on Mount Rainier is about 500 to 1,000 years.
2. Inundation Zone for Case II Lahars. Areas that could be affected by relatively large non-cohesive lahars, which most commonly are caused by the melting of snow and glacier ice by hot rock fragments during an eruption, but which can also have a non-eruptive origin. The average time interval between Case II lahars from Mount Rainier is near the lower end of the 100- to 500-year range, making these flows analogous to the so-called "100-year flood" commonly considered in engineering practice.
3. Inundation Zone for Case III Lahars. Areas that could be affected by moderately large debris avalanches or small non-cohesive lahars, glacial outburst floods, or other types of ~~d~~Debris ~~f~~Flow, all of non-eruptive origin. The average time interval between Case III lahars at Mount Rainier is about one to 100 years.
4. Pyroclastic Flow Hazard Zone. Areas that could be affected by pyroclastic flows, pyroclastic surges, lava flows, and ballistic projectiles in future eruptions. During any single eruption, some drainages may be unaffected by any of these phenomena, while other drainages are affected by some or all phenomena. The average time interval between eruptions of Mount Rainier is about 100 to 1,000 years.

C. ~~Time~~-Travel ~~Time~~ Zones. The ability to evacuate people from within a ~~v~~Volcanic ~~h~~Hazard ~~a~~Area correlates to the distance from the source of an event, (i.e., those areas closest to the event will have less time to evacuate than those areas farther away from the source of an event). The amount of time that is anticipated for a ~~d~~Debris ~~f~~Flow, lahar, flood, or avalanche to travel geographically has been classified into the following ~~time~~-travel ~~time~~ zones:

1. Time Zone A. Time Zone A is an estimated one-hour travel distance from the source of the event.

2. Time Zone B. Time Zone B is an estimated one and one-half hour travel distance from the source of the event.
3. Time Zone C. Time Zone C is an estimated two-hour travel distance from the source of the event.
4. Time Zone D. Time Zone D is an estimated two hours or greater travel distance from the source of the event. (Ord. 02-200 § 2).

14.670.030 Volcanic Hazard Area review procedures.

A. The City's Critical Areas Atlas – Volcanic Hazard Area Map provides an indication of where Volcanic Hazard Areas are located within the city.

B. The Department will complete a review of the Volcanic Hazard Area maps for any development proposal to determine whether the proposed project area for a regulated activity falls within a Volcanic Hazard Area.

C. When the Department's maps or sources indicate that the proposed project area for a regulated activity is located within a Volcanic Hazard Area, the Department shall apply the standards for Regulated Activities in Volcanic Hazard Areas, as set forth in EMC Chapter 14.670.040.

14.670.040 Volcanic Hazard Area standards.

The following standards apply within the inundation zones for Case I, II, and III lahars and within the pyroclastic flow hazard zone (refer to Table 14.670.040):

- A. Bonus densities, as set forth in EMC 18.90.080, Housing incentives program, shall be prohibited.
- B. All Critical Facilities, as defined in Chapter 14.15 EMC, shall be prohibited, except sewer collection facilities and any other utilities that are located underground or not likely to cause harm to people or the environment if inundated by a lahar.
- C. Special Occupancy Structures, as defined in EMC Chapter Section 14.1520.107 EMC, are subject to the following:
 1. Time-Travel Time Zone A. Special Occupancy Structures located within the Time-Travel Time Zone A area shall be limited to a maximum 100-person occupancy.
 2. Time-Travel Time Zone B. Special Occupancy Structures located within the Time-Travel Time Zone B area shall be limited to a maximum 500-person occupancy.
 3. Time-Travel Time Zone C. Special Occupancy Structures located within the Time-Travel Time Zone C area shall be limited to a maximum 1,000-person occupancy.
 4. Time-Travel Time Zone D. Special Occupancy Structures located within the Time-Travel Time Zone D area shall be limited to a maximum 5,000-person occupancy.

Table 14.670.040 Volcanic Hazard Area Standards

Facility/Occupancy List	Case I Lahar Inundation Zone	Case II Lahar Inundation Zone	Case III Lahar Inundation Zone	Pyroclastic Flow Hazard Zone
Bonus Densities ⁽¹⁾	Not Allowed	Not Allowed	Not Allowed	Not Allowed
Critical Facilities ⁽²⁾	Not Allowed	Not Allowed	Not Allowed	Not Allowed
Special Occupancies ⁽³⁾	In Time Travel Zone A – Limited to 100 person occupant load. In Time Travel Zone B – Limited to 500 person occupant load.			

Facility/Occupancy List	Case I Lahar Inundation Zone	Case II Lahar Inundation Zone	Case III Lahar Inundation Zone	Pyroclastic Flow Hazard Zone
	In Time Travel Zone C – Limited to 1,000 person occupant load. In Time Travel Zone D – Limited to 5,000 person occupant load.			
Other Occupancies	No Limitation	No Limitation	No Limitation	No Limitation

(1) Bonus density as set forth in EMC [Chapter](#) 18.90.080, Housing incentives program.

(2) Essential facility as defined in EMC Chapter 14, [2015 EMC](#).

(3) Special ~~o~~Occupancy ~~s~~Structures as defined in [EMC](#) Chapter 14, [2015 EMC](#).

(Ord. 02-200 § 2).

Chapter 14.780

FLOOD HAZARD AREAS

Sections:

- 14.780.010 Purpose.
- 14.780.015020 Flood Insurance Study Adoption
- 14.80.030 Definitions.
- 14.780.0240040 Flood hHazard aAreas.
- 14.780.0350050 Flood hHazard aArea review procedures.
- 14.780.0460060 Flood hHazard aArea standards.
- 14.80.070 Variances to Flood Hazard Areas
- 14.780.05100080 Appendices.

14.780.010 Purpose.

The purpose of this chapter is to promote the public health, safety, and general welfare of the citizens of Edgewood. The standards contained in this chapter are intended to minimize public and private losses due to flood conditions in fFlood hHazard aAreas and provide special criteria necessary for rRegulated aActivities located within fFlood hHazard aAreas of the city. The following statements describe the purpose of this chapter:

- A. Protect human life and health;
- B. Minimize expenditure of public money and costly flood control projects;
- C. Minimize the need for rescue and relief efforts associated with flooding;
- D. Minimize prolonged business interruptions;
- E. Minimize damage to public infrastructure, facilities and utilities;
- F. Minimize damage to critical fish and wildlife habitat areas;
- G. Minimize net loss of ecological functions of floodplains;
- H. Ensure that potential buyers are notified that property is in a fFlood hHazard aArea;
- I. Ensure that those who occupy fFlood hHazard aAreas assume responsibility for their actions; and
- J. Qualify Edgewood for participation in the National Flood Insurance Program, thereby giving the citizens of Edgewood the opportunity to purchase flood insurance with particular emphasis to those in fFlood hHazard aAreas. (Ord. 02-200 § 2).

14.780.02015 Flood Insurance Study Adoption

The areas of special flood hazard identified by the Federal Insurance Administration in a scientific and engineering report entitled "The Flood Insurance Study for Pierce County, Washington and Incorporated Areas" dated March 7, 2017, with accompanying FIRMs and any map amendments or corrections are hereby adopted by reference and declared to be a part of this title. The Flood Insurance Study and FIRMs are on file at Edgewood City Hall, 2224 104th Avenue East, Edgewood, Washington, 98371. The cityCity may add or delete land from areas of special flood hazard or revise bBase fFlood elevations, utilizing best-available information for flood hazard identification in accordance with federal regulations.

14.80.030 Definitions.

A. Refer to Chapter 14.20 for definitions of any word or phrase not otherwise contained herein. ~~T~~For this Chapter (EMC 04.80) shall rely first on the definitions listed below shall apply:

1. *Appeal* – a request for a review of the interpretation of any provision of this chapter, per EMC 14.10.110, or request for a Flood Hazard Area Variance per EMC 14.80.070.
2. *Area of Shallow Flooding* – areas designated as AO or AH zones on the FIRM(s). AO zones are characterized as sheet flows, having base flood depths that range from one to three feet above the natural ground, where a clearly defined channel does not exist, the path of flooding is unpredictable and indeterminate, and velocity flow may be evident. AH zones indicate similar depth ponding, shown with standard base flood elevations on the FIRM(s).
3. *Area of Special Flood Hazard* – land in the floodplain within a community subject to a one percent or greater chance of flooding in any given year. Designation on FIRM(s) always includes the letter A or V.
4. *Basement* – any area of the building having its floor sub-grade (below ground level) on all sides, for the purposes of this title.
5. *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.
6. *Critical Facilities* – See EMC 14.20 B.22. For floodplain management purposes, Essential public facilities as defined under EMC 18.20.080 and 18.100.050 are considered *Critical Facilities*.
7. *Development* – any human-induced change to improved or unimproved real estate, including but not limited to: the construction of buildings or other structures, placement of a manufactured home/mobile home, mining, dredging, clearing, filling, grading, paving, excavation, drilling operations, storage of equipment or materials located within an area of special flood hazard, or activities otherwise governed by EMC Title 16, Subdivisions.
8. *Elevated Building* – a non-basement building that has its lowest elevated floor raised above ground level by foundation walls, shear walls, posts, piers, pilings, or columns.
9. *Existing Manufactured Home Park or Subdivision* – a manufactured home park or subdivision for which the construction of facilities for servicing the lots on which the manufactured homes are to be affixed (including, at a minimum, the installation of utilities, the construction of streets, and either final site grading or the pouring of concrete pads) is completed before the effective date of the adopted floodplain management regulations.
10. *Expansion to an Existing Manufactured Home Park or Subdivision* – the preparation of additional sites by the construction of facilities for servicing the lots on which the manufactured homes are to be affixed (including the installation of utilities, the construction of streets, and either final site grading or the pouring of concrete pads).
11. *Flood or Flooding* – a general and temporary condition of partial or complete inundation of normally dry land areas from:
 - a. The overflow of inland or tidal waters; or
 - b. The unusual and rapid accumulation of runoff of surface waters from any source.
12. *Flood Insurance Study (FIS)* – the official report provided by the Federal Insurance Administration (FIA) that includes flood profiles, FIRM(s), and the water surface elevation of the Base Flood.
13. *Increased Cost of Compliance (ICC)* – a flood insurance claim payment up to \$30,000 directly to a property owner for the cost to comply with floodplain management regulations after a direct physical loss

caused by a flood. Eligibility for an ICC claim can be through a single instance of “substantial damage” or as a result of a “cumulative substantial damage.” (More information can be found in FEMA ICC Manual 301.)

14. *Manufactured Home or Mobile Home* – 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 connected to the required utilities. For floodplain management purposes, the term “manufactured home/mobile home” also includes park trailers, travel trailers, and other similar recreational vehicles placed on a site for greater than 180 consecutive days. For insurance purposes, the term “manufactured home/mobile home” does not include park trailers, travel trailers, recreational vehicles, or other similar vehicles.
15. *Manufactured Home Park or Subdivision* – a parcel (or contiguous parcels) of land divided into two or more manufactured home lots for rent or sale.
16. *New Construction* – structures for which the Start of Construction commenced on or after the following:
 - a. For the purposes of determining flood insurance rates, the effective date of an initial FIRM (i.e., August 19, 1987, or specifically for Panel 350 August 4, 1988), and includes any subsequent improvements to such structures.
 - b. For floodplain management purposes, March 7, 2017 (the effective date of this floodplain management ordinance), including any subsequent improvements to such structures.
17. *New Manufactured Home Park or Subdivision* – a manufactured home park or subdivision for which the construction of facilities for servicing the lots on which the manufactured homes are to be affixed (including, at a minimum, the installation of utilities, the construction of streets, and either final site grading or the pouring of concrete pads) is completed on or after March 7, 2017 (the effective date of this floodplain management regulation).
18. *Recreational Vehicle (RV)* – a vehicle built on a single chassis, 400 square feet or less when measured at the largest horizontal projection, designed to be self-propelled or permanently towable by a light duty truck, and designed primarily not for use as a permanent dwelling but as a temporary living quarters for recreational, camping, travel, or seasonal use.
19. *Start of Construction* – includes Substantial Improvement, and means the date the building permit was issued, provided the actual Start of Construction, repair, reconstruction, placement or other improvement was within 180 days of the permit date. The “actual start” means either the first placement of permanent construction of a structure on a site, such as the pouring of slab or footings, the installation of piles, the construction of columns, or any work beyond the stage of excavation; or the placement of a manufactured home on a foundation. Permanent construction does not include land preparation, such as clearing, grading and filling; nor does it include the installation of streets and/or walkways; nor does it include excavation for a basement, footings, piers, or foundations or the erection of temporary forms; nor does it include the installation on the property of accessory buildings, such as garages or sheds not occupied as dwelling units or not part of the main structure. For a Substantial Improvement, the “actual Start of Construction” means the first alteration of any wall, ceiling, floor, or other structural part of a building, whether or not that alteration affects the external dimensions of the building.
20. *Structure* – a walled and roofed building, including a gas or liquid storage tank that is principally above ground.
21. *Substantial Improvement* – any repair, reconstruction, or improvement of a structure, the cost of which equals or exceeds fifty (50) percent of the market value of the structure either:
 - a. before the improvement or repair is started; or
 - b. if the structure has been damaged and is being restored, before the damage occurred. For the purposes of this definition “Substantial Improvement” is considered to occur when the first

alteration of any wall, ceiling, floor, or other structural part of the building commences, whether or not that alteration affects the external dimensions of the structure.

The term "Substantial Improvement" does not, however, include either:

- a. Any project for improvement of a structure to correct pre-cited existing Violations of state or local health, sanitary, or safety code specifications which have been previously identified by the local code enforcement official and which are the minimum necessary to assure safe living conditions;
or
- b. Any alteration of a structure listed on the National Register of Historic Places or a State Inventory of Historic Places; provided, that the alteration will not preclude the structure's continued designation as a historic structure.

22. Variance – a grant of relief from the requirements of this chapter that permits construction in a manner that would otherwise be prohibited, per EMC 14.80.070.

23. Violation – See 14.20 B.88. With regard to floodplain management, projects without an Elevation Certificate, other certifications, or other evidence of compliance required in EMC Chapter 14.80 are presumed to be in Violation until such time as said documentation is provided.

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

14.780.040 0240 Flood hHazard aAAreas.

Edgewood regulates the following fFlood hHazard aA

A. Potential Flood Hazard Areas.

1. Potential fFlood hHazard aA

a. Detailed Study Areas.

i. FEMA Flood Insurance Rate Map (FIRM) and Floodway Floodway Map AE and AH zones.

ii. Areas within 300 feet horizontal distance from the bBase fFlood elevation established for the mapped AE and AH zones.

iii. Areas within five feet of vertical height from the bBase fFlood elevation established for the mapped AE and AH zones.

b. Unstudied Areas. FEMA Flood Insurance Rate Map (FIRM)-A zones and shaded X zones, and areas within 300 feet horizontal distance from said mapped areas.

c. Natural Waters /or Watercourse. Areas within five feet of vertical height above the ordinary high water mark of an identified natural watercourse.

d. Groundwater Flooding Areas. Areas within 300 feet horizontal distance from a mapped groundwater flooding area.

e. Potholes. Areas not identified as a mapped fFlood hHazard aA

f. Channel Migration Zones (CMZs). Channel migration zones shall apply only to those watercourses specifically identified by the cityCity or listed in subsection (B)(4) of this section. In those areas where detailed CMZ studies have been completed and accepted by the departmentDepartment, additional horizontal and vertical review threshold criteria (i.e., 300 feet horizontal and five feet vertical) shall not apply.

2. The Critical Areas Atlas – Flood Hazard Areas Map may not show all potential ~~f~~Flood ~~h~~Hazard ~~a~~Areas that may be necessary for a specific site analysis. The ~~d~~Department may make interpretations, where needed, as to the approximate location of the boundaries of potential ~~f~~Flood ~~h~~Hazard ~~a~~Areas. When there is a conflict between the elevations and the mapped potential ~~f~~Flood ~~h~~Hazard ~~a~~Area boundaries, the elevations shall govern.

3. Where there is insufficient information shown on the potential ~~f~~Flood ~~h~~Hazard ~~a~~Area maps, the ~~d~~Department may require the applicant to verify that the site is out of the ~~f~~Flood ~~h~~Hazard ~~a~~Area using the ~~f~~Flood ~~h~~Hazard ~~a~~Area review procedures set forth in EMC ~~Chapter 14.780.030~~.

B. ~~Floodway~~Floodway. A ~~floodway~~Floodway is an extremely hazardous area due to the depth ~~and~~/or velocity of floodwaters, which carry debris, potential projectiles, and have erosion potential. The following areas are regulated by the ~~city~~City as ~~floodways~~Floodways:

1. Regulatory ~~Floodway~~Floodway. Regulatory ~~floodway~~FloodwayFloodway designated by ~~f~~Flood ~~h~~Hazard ~~a~~Area maps.

2. Deep ~~and~~/or Fast Flowing Water Areas. Areas of deep ~~and~~/or fast flowing water shall be regulated as a ~~floodway~~Floodway. Based on the criteria set forth in EMC ~~Chapter 14.780.030(E)~~, the ~~department~~Department shall make the determination after review and approval of applicant's analysis of whether the project site falls within the ~~floodway~~Floodway area based on deep ~~and~~/or fast flowing waters.

3. Potholes and Shaded X Zones. That portion of a pothole ~~and—zone~~and zone area that is three feet or greater in depth shall be regulated as a ~~floodway~~Floodway.

4. Channel Migration Zones (CMZs).

a. ~~CMZs~~Channel-migration-zones shall be regulated as a ~~floodway~~Floodway.

b. ~~CMZs~~Channel-migration-zones are equivalent to the ~~b~~Base ~~f~~Flood elevation limits, (i.e., 100-year floodplain limits).

C. Flood Fringe. All areas subject to inundation by the ~~b~~Base ~~f~~Flood, but outside the limits of the ~~floodway~~Floodway as set forth in subsection (B) of this section. Those portions of the A, AE, AH, and shaded X zones not defined as ~~floodway~~Floodway, and that portion of a pothole and FEMA shaded X zone area that is between zero feet (~~b~~Base ~~f~~Flood elevation) and three feet in depth shall be regulated as a ~~f~~Flood ~~f~~Fringe.

D. Other Areas of Special Flood Hazard.

1. Groundwater Flooding Areas. Groundwater flooding areas are those areas identified by Edgewood and shown on flood hazard maps and are subject to flood inundation from subsurface waters that result from a fluctuation of the groundwater table. Groundwater flooding areas shall be regulated as a ~~floodway~~Floodway or ~~f~~Flood ~~f~~Fringe pothole.

2. Natural Waters ~~or~~/Watercourses. Natural waters ~~or~~/watercourses as identified on ~~city~~City topographic, planimetric or orthophoto maps, WDNR ~~s~~Stream ~~e~~Classification maps, USGS ~~q~~Quadrangle maps, or other source maps that are not identified as a ~~f~~Flood ~~h~~Hazard ~~a~~Area on the FEMA maps. That portion of the natural watercourse located between the ordinary high water mark and a topographic elevation five feet above the ordinary high water mark shall be regulated as a ~~floodway~~Floodway or ~~f~~Flood ~~f~~Fringe. If the applicant chooses to accept the five-foot topographic elevation line above the ordinary high water mark as the ~~b~~Base ~~f~~Flood elevation (i.e., floodplain elevation limits), a flood study shall not be required for a natural water/watercourse.

3. Frequently Flooded Areas. See EMC ~~Chapter 14.780.0350(A)(9)~~ as the areas defined by this section. (~~Ord-~~17-492 § 2 (Exh. A); Ord. 02-200 § 2).

14.780.050 350 Flood ~~h~~Hazard ~~a~~Area review procedures.

A. General Requirements.

1. The ~~e~~City's Critical Areas ~~Map~~Atlas – Flood Hazard Area Map provides an indication of where potential ~~f~~Flood ~~h~~Hazard ~~a~~Areas are located within the city. The actual presence or location of a ~~f~~Flood ~~h~~Hazard ~~a~~Area shall be determined using the procedures and criteria contained in this chapter.
2. The ~~d~~Department will complete a review of the ~~f~~Flood ~~h~~Hazard ~~a~~Area maps, and other source documents, for any development proposal to determine whether the proposed project area for a regulated activity falls within a potential ~~f~~Flood ~~h~~Hazard ~~a~~Area. When there is a conflict between the elevations and the mapped 100- or 500-year ~~f~~Floodplain or ~~floodway~~Floodway boundaries, the elevations shall govern. In the instance where ~~b~~Base ~~f~~Flood elevation data has not been provided within a mapped A zone, the ~~department~~Department shall obtain, review, and reasonably utilize any ~~b~~Base ~~f~~Flood elevation and ~~floodway~~Floodway data available from a federal, state, or other source to complete their review.
3. When the ~~d~~Department's maps or sources indicate that the proposed project area for a regulated activity is or may be located within a potential ~~f~~Flood ~~h~~Hazard ~~a~~Area, (except for coastal flood hazard areas), the ~~d~~Department shall require a flood boundary verification survey as outlined in subsection (C) of this section, and may require a flood study as outlined in subsection (D) of this section, a deep ~~and~~/or fast flowing water analysis as outlined in subsection (E) of this section, ~~and~~/or a zero-rise analysis as outlined in subsection (F) of this section.
4. Any proposed development located within a ~~f~~Flood ~~h~~Hazard ~~a~~Area shall comply with the ~~f~~Flood ~~h~~Hazard ~~a~~Area ~~s~~Standards set forth in EMC ~~Chapter 14.780-040.060~~ Chapter 14.780-040.060.
5. Prior to approval of any proposed ~~f~~Flood ~~h~~Hazard ~~a~~Area development, all necessary permits from those governmental agencies from which prior approval is required by federal or state law, including but not limited to Section 404 of the Federal Water Pollution Control Act Amendments of 1972, 33 U.S.C. 1334, must be provided to the ~~city~~City by the applicant.
6. A FEMA letter of map amendment (LOMA) or letter of map revision (LOMR) shall not be submitted to FEMA until review and approval has been granted by the ~~department~~Department. The ~~city~~City shall not recognize any LOMA or LOMR as an amendment to the ~~department~~Department's flood hazard maps unless the ~~department~~Department has granted prior approval.
7. Unless otherwise stated in this chapter, the ~~e~~Critical ~~a~~Area protective measure provisions contained in EMC ~~Section 14.10.070080~~ Section 14.10.070080 shall apply.
8. The Federal Emergency Management Agency (FEMA) administers the nation's floodplain management program. FEMA has identified some of the flood prone areas in the city; however, it is generally recognized that FEMA's Flood Insurance Rate Maps (FIRMs) may not accurately reflect the degree or frequency of flooding within all areas of the city. Therefore, information available through FEMA may not meet ~~b~~Best ~~a~~Available ~~s~~Science criteria and cannot be used exclusively to address ~~f~~Frequently ~~f~~Flooded ~~a~~Areas.
9. The ~~city~~City has determined that the following documents and sources are the most current and accurate information concerning ~~f~~Frequently ~~f~~Flooded ~~a~~Areas within the city, and therefore represent ~~b~~Best ~~a~~Available ~~s~~Science:
 - a. The ~~city~~City's Surface Water Management Plan, 1997, or as amended thereafter.
 - b. Aerial photographs of the city, especially those taken in wintertime 1996 and 1997.
 - c. The ~~city~~City's two-foot elevation contour mapping performed by Nies Mapping Group, Inc., 1999, or as subsequently updated.
 - d. Relevant and verifiable information from the ~~city~~City's Capacity Analysis Technical Review ~~AdHoc~~Ad hoc Committee draft report, 2000.
 - e. Relevant and verifiable government and citizen photographs, notes, observations, etc., regarding historic ponding/flooding levels, including but not limited to the City of Edgewood Potholes Water Level Monitoring 2006-2007 report prepared by Robinson Engineers, LLC.

f. Relevant and verifiable information available through Pierce County.

g. Relevant and verifiable information available through FEMA.

10. Flooding conditions within the city generally fall into three distinct hydrologic settings: (a) upland areas within enclosed depressions, (b) streams that flow off the upland areas, and (c) valley lowlands. Accordingly, the ~~city~~City manages ~~frequently~~Flooded ~~a~~Areas within these three zones, as described below:

a. Upland Areas Within Enclosed Depressions. From the above list use the historic ponding elevation, determined by subsection (A)(9) of this section, or the FEMA 100-year ~~b~~Base ~~f~~Flood elevation, whichever is highest.

b. Streams Which Flow Off the Upland Areas. From the above list use the historic flood elevation, determined by subsection (A)(9) of this section, or the FEMA 100-year ~~b~~Base ~~f~~Flood elevation, whichever is highest.

c. Valley Lowlands. From the above list use the historic flood elevation determined by subsection (A)(9) of this section, or the FEMA 100-year ~~b~~Base ~~f~~Flood elevation, whichever is highest.

11. The ~~city~~City will provide local flood information to FEMA, and request FEMA's assistance in accurately mapping and evaluating ~~frequently~~Flooded ~~a~~Areas.

12. Warning and Disclaimer of Liability. The degree of flood protection required by this chapter is considered reasonable for regulatory purposes and is based on scientific and engineering considerations. Larger floods can and will occur on rare occasions. Flood heights may be increased by manmade or natural causes. This chapter does not imply that land outside ~~frequently~~Flooded ~~a~~Areas or uses permitted within such areas will be free from flooding or flood damages. This chapter shall not create liability on the part of ~~city~~City, any officer or employee thereof, or the Federal Insurance Administration, for any flood damages that result from reliance on this chapter or any administrative decision lawfully made hereunder.

B. Channel Migration Zone Study.

1. In areas where Edgewood has not conducted a detailed channel migration zone study, an applicant may submit an independent channel migration zone study to demonstrate that the channel migration zone limits for those watercourses listed in EMC ~~Chapter 14.780.020(B)(4)~~ are located inside the 100-year floodplain limits.

2. The channel migration zone study shall be prepared, signed, and dated by a professional ~~e~~Engineer or ~~professional-g~~ Engineering Geologist with at least five years of experience in fluvial geomorphology, river dynamics, or geotechnical engineering.

3. The channel migration zone study shall, at a minimum, contain the information set forth in EMC ~~Section 14.780.060-950~~, Appendix B.

4. The ~~department~~Department shall review the channel migration zone study and either accept the new channel migration zone limits or reject the study and require the use of the 100-year floodplain limits. Once the ~~department~~Department has reviewed and approved the channel migration zone study, the applicant shall be required to provide a flood boundary verification survey, as outlined in subsection (C) of this section, utilizing the newly established channel migration zone limits as the ~~floodway~~Floodway limits.

C. Flood Boundary Verification Survey.

1. A flood boundary verification survey that delineates the horizontal and vertical limits of the ~~b~~Base ~~f~~Flood elevation shall be submitted to the ~~department~~Department when the ~~department~~Department's maps or sources indicate that the proposed project area for a regulated activity is located within a potential ~~f~~Flood ~~h~~Hazard ~~a~~Area.

a. Where a ~~b~~Base ~~f~~Flood elevation has not been determined, a flood study shall be required pursuant to subsection (D) of this section.

b. A ~~b~~Base ~~f~~Flood elevation that has been established through a detailed flood study accepted by the ~~department~~Department may be used in lieu of conducting a flood study.

c. The ~~b~~Base ~~f~~Flood elevation for a natural watercourse as set forth in EMC ~~Chapter 14.780.020(D)(2)~~ shall be established at the five-foot topographic elevation line above the ordinary high water mark.

2. The requirement to submit a flood boundary verification survey may be waived at the ~~department~~Department's discretion, when the ~~department~~Department can determine, using contour elevations, ~~b~~Base ~~f~~Flood data, orthophotos, and parcel data, that the extent of the regulated activity is clearly above the ~~b~~Base ~~f~~Flood elevation.

3. The flood boundary verification survey shall be prepared, signed, and dated by a registered land surveyor.

4. The ~~department~~Department shall review the flood boundary verification survey to determine if the proposed development is located within a ~~f~~Flood ~~h~~Hazard ~~a~~Area.

5. If the proposed development lies within the ~~f~~Flood ~~h~~Hazard ~~a~~Area, the limits of the ~~floodway~~Floodway, as well as the ~~b~~Base ~~f~~Flood elevation, shall be shown on the flood boundary verification survey.

D. Flood Study.

1. A flood study shall be conducted when the ~~department~~Department's maps or sources indicate that the proposed project area for a regulated activity is, or may be located within, a potential ~~f~~Flood ~~h~~Hazard ~~a~~Area where ~~b~~Base ~~f~~Flood elevation data is not available through the ~~f~~Flood ~~i~~nsurance ~~s~~tudy or other authoritative sources, or when an established ~~b~~Base ~~f~~Flood elevation is contested. A full engineering analysis to determine the ~~b~~Base ~~f~~Flood elevation shall be required by the ~~department~~Department. Base ~~f~~Flood elevations shall be determined using the detailed methods established in EMC ~~Section 14.780.0560~~, Appendix A. The ~~department~~Department may approve alternative methods.

2. The flood study shall be prepared, signed, and dated by a ~~p~~Professional ~~e~~Engineer.

3. Once the ~~department~~Department has reviewed and approved the flood study, the applicant shall be required to provide a flood boundary verification survey, utilizing the newly established ~~b~~Base ~~f~~Flood elevation, as outlined in subsection (C) of this section.

4. Flood studies shall not be required for coastal ~~f~~Flood ~~h~~Hazard ~~a~~Areas.

E. Deep and/or Fast Flowing Water Analysis.

1. When the ~~d~~Department determines that a proposed project area for a regulated activity is located within a ~~f~~Flood ~~h~~Hazard ~~a~~Area, a deep and/or fast flowing water analysis based on EMC ~~Section 14.780.0560~~, Appendix A, shall be required to determine the ~~floodway~~Floodway limits.

2. The ~~floodway~~Floodway -limits and ~~f~~Flood ~~f~~Eringe limits identified in the deep and/or fast flowing water analysis shall be depicted on the flood boundary verification survey, as outlined in subsection (C) of this section.

3. The deep and/or fast flowing water analysis shall be prepared, signed, and dated by a professional ~~e~~Engineer.

4. Deep and/or fast flowing water analysis shall not be required for coastal ~~f~~Flood ~~h~~Hazard ~~a~~Areas.

F. Zero-Rise Analysis.

1. When the ~~department~~Department determines that a proposed project area for a regulated activity is located within a ~~f~~Flood ~~h~~Hazard ~~a~~Area, a zero-rise analysis shall be required to determine that no increase in ~~b~~Base ~~f~~Flood elevation, displacement of flood volume, or flow conveyance reduction will occur as a result of the development.

2. The zero-rise analysis shall be conducted utilizing ~~HEC-RAS~~ (Hydrologic Engineering Center – River Analysis System (~~HEC-RAS~~) modeling methodology (for stream ~~and~~ /channel ~~Floodway~~~~Floodways~~); the Western Washington Hydrology Model, (i.e., WWHM, for pothole ~~or~~ closed depression ~~floodways~~~~Floodways~~); or ~~by another~~ alternative methodologies approved by the ~~e~~City, (see EMC ~~Section~~ 14.780.10560, Appendix A). ~~HEC-RAS can be found at the following website:-~~ ~~http://www.hec.usace.army.mil/software/hec-ras/~~. ~~WWHM can be found here:-~~ ~~http://www.ecy.wa.gov/programs/wq/stormwater/wwhmtraining/index.html~~. The analysis shall show that no rise ~~greater than~~ (0.01 foot ~~or less~~) has occurred as a result of the proposed development. The ~~scope of the~~ proposed development may need to be reduced or special~~ly~~ engineering ~~may be requireded, e.g., (such as~~ utilizing piers or pilings) to achieve zero-rise.

3. The zero-rise analysis shall be prepared, signed, and dated by a ~~p~~Professional ~~e~~Engineer.

4. The zero-rise analysis shall be documented on the zero-rise analysis form, as set forth in EMC ~~Section~~ 14.780.10560, Appendix A, and shall be attached to the ~~f~~Flood ~~h~~Hazard ~~a~~Area permit.

5. Zero-rise analysis shall not be required for coastal ~~f~~Flood ~~h~~Hazard ~~a~~Areas.

6. When structures are elevated by pier or pilings and no fill is placed in the ~~f~~Flood ~~h~~Hazard ~~a~~Area, the requirement to submit a zero rise analysis may be waived at the ~~department~~Department's discretion. (~~Ord. 17-492 § 2 (Exh. A); Ord. 02-200 § 2~~).

14.780.060 460 Flood ~~h~~Hazard ~~a~~Area ~~s~~Standards.

A. General.

1. All subdivision proposals shall:

a. be consistent with the need to minimize flood damage;

b. have public utilities and facilities such as sewer, gas, electrical, and water systems located and constructed to minimize flood damage;

c. have adequate drainage provided to reduce exposure to flood damage; and,

2. Where base flood elevation data has not been provided or is not available from another authoritative source, it shall be generated for subdivision proposals and other proposed developments which contain at least 50 lots or five acres (whichever is less).

3. New ~~e~~Construction done by or for the ~~e~~ityCity, such as bridges, roads, flood control works, revetments, retaining walls, drainage structures, sewer or water lines, parks, or other structures necessary to promote the public's health, safety, and welfare shall be allowed in a ~~f~~Flood ~~h~~Hazard ~~a~~Area when:

a. The project is prepared, dated, and stamped by a registered ~~p~~Professional ~~e~~Engineer in the state of Washington and is designed so the project does not result in any increase in flood levels during the occurrence of the ~~b~~Base ~~f~~Flood discharge (zero-rise) and shall not obstruct the ~~floodway~~~~Floodway~~ or cause an adverse impact to critical fish or wildlife habitat or adjacent, cross-channel, or upstream or downstream properties; and

b. The improvements utilize appropriate flood hazard protection standards.

24. Elevation Certificate. A Federal Emergency Management Agency (FEMA) ~~e~~Elevation ~~e~~Certificate shall be required for ~~a~~New ~~e~~Construction, ~~any~~ ~~a~~Additions affixed to the side of a structure, and ~~s~~Substantial ~~i~~Improvements located within ~~f~~Flood ~~h~~Hazard ~~a~~Areas. The most current version of the FEMA ~~e~~Elevation ~~e~~Certificate must be completed and certified by a professional land surveyor, currently licensed in the state of Washington, kept on file by the ~~e~~ityCity for public inspection, recording the actual (as-built) elevation (in relation to mean sea level) of:

Commented [JM23]: Added from 15.10.150 D (missed in last year's flood code update)

- a. The ~~Lowest~~ ~~Floor,~~ (including basement,) of all new or substantially improved structures, whether or not the structure contains a basement;
- b. For flood proofed nonresidential structures, where the structure was flood proofed (including flood proofing certifications).

B. ~~Floodway~~~~Floodways~~. Any development, ~~e~~Encroachments, ~~filling,~~ ~~e~~Clearing ~~and~~ ~~or~~ ~~g~~Grading, ~~n~~New ~~e~~Construction, ~~and~~ ~~or~~ ~~s~~Substantial ~~i~~Improvements, ~~including structures that do not require a building permit~~, shall be prohibited within the ~~floodway~~~~Floodway~~ ~~(including structures that do not require a building permit)~~, except as allowed in the following standards:

1. Agricultural ~~a~~Activities that do not require the installation of structures and that do not have any associated fill.
2. Park and recreational uses and facilities that do not require the installation of structures and that do not have any associated fill.
3. Individual recreational vehicles, not located in an RV park, that are licensed and ready for highway use, on wheels or jacking system, and are not permanently attached to the site ~~or~~ (i.e., attached only by quick disconnect type utilities and security devices, with no permanently attached additions).
4. Habitat ~~e~~Enhancement ~~or~~ /stream ~~r~~Restoration activities are permitted subject to the provisions outlined in subsection (D) of this section.
5. Rehabilitation, reconstruction, or an upper story ~~a~~Addition to an existing structure that does not exceed the limits for a ~~s~~Substantial ~~i~~Improvement.
6. Private bridges may be allowed to cross the ~~floodway~~~~Floodway~~; provided, that the structure meets the requirements contained in EMC ~~Section 14.780.03450~~ and the following:
 - a. The lowest structural member of a private bridge proposed to cross a channel migration zone shall be a minimum of six (6) feet above the ~~b~~Base ~~f~~Flood elevation.
 - b. The lowest structural member of a private bridge proposed to cross the ~~floodway~~~~Floodway~~ portion of any other watercourse shall be a minimum of one foot above the ~~b~~Base ~~f~~Flood elevation.

C. Flood Fringe Areas. All activities allowed in subsection (B) of this section shall be permitted in a ~~f~~Flood ~~f~~Fringe area. Any other proposed development, ~~e~~Encroachments, ~~filling,~~ ~~e~~Clearing ~~and~~ ~~or~~ ~~g~~Grading, ~~n~~New ~~e~~Construction, ~~and~~ ~~or~~ ~~s~~Substantial ~~i~~Improvements are prohibited in a ~~f~~Flood ~~f~~Fringe area, except as permitted under the following standards:

1. Structures that do not require a building permit and that do not have any associated fill are allowed, subject to ~~f~~Flood ~~h~~Hazard ~~a~~Area review and permitting.
2. All other ~~r~~Regulated ~~a~~Activities shall only be allowed when the proposed development is located on an existing lot of record that was created prior to the effective date of the ordinance codified in this chapter. Applicants shall demonstrate there are no other feasible alternatives that would allow the proposed development to occur completely outside the ~~f~~Flood ~~h~~Hazard ~~a~~Area. At a minimum, the following shall be demonstrated:
 - a. The development cannot be located outside the ~~f~~Flood ~~h~~Hazard ~~a~~Area due to topographic constraints of the parcel or ~~its~~ size ~~and~~ ~~or~~ location ~~of the parcel~~ in relation to the limits of the ~~f~~Flood ~~h~~Hazard ~~a~~Area and a building setback variance has been reviewed, analyzed, and rejected as a feasible alternative to encroachment into the ~~f~~Flood ~~h~~Hazard ~~a~~Area; and
 - b. The proposed development shall not cause an adverse impact to adjacent, cross-channel, or upstream or downstream properties.

3. Roads, Bridges, Trails, and Parking Lots.

a. Roads, bridges, driveways, trails, emergency vehicle access, and access routes and easements, where allowed, shall be constructed and armored based on the standards in subsection (C)(4) of this section and elevated a minimum of one foot above the ~~b~~Base ~~f~~Flood elevation.

b. Parking lots shall be elevated to a minimum of one-half foot below the ~~b~~Base ~~f~~Flood elevation.

4. ~~Clearing and~~ Grading and Filling. When development is permitted under this subsection, it shall be designed to a zero-rise standard ~~as set forth in EMC 14.70.030(F) and 14.70.050, Appendix A. Any filling, g~~ Grading, ~~or clearing~~ associated with the permitted development shall not increase flood hazards, water velocities, or flood elevations. In addition to meeting the requirements for zero-rise, all permitted development must also meet the following requirements:

a. Compensatory Storage. New excavated storage volume shall be equivalent to the flood storage capacity eliminated by ~~filling or g~~ Grading within the ~~f~~Flood ~~f~~Fringe. Equivalent shall mean that the storage removed shall be replaced by equal live storage volume between corresponding one-foot contour intervals that are hydraulically connected to the floodplain through their entire depth.

b. Flow Conveyance. New excavated conveyance areas shall be equivalent to existing conveyance within the ~~f~~Flood ~~f~~Fringe. Equivalent shall mean a mechanism for transporting water from one point to another using an open channel system.

c. Erosion Protection. Development shall be protected from flow velocities greater than two feet per second through the use of bio-engineering methods or, when bioengineering methods have been deemed insufficient to protect development, then ~~h~~Hard ~~a~~Armoring may be utilized. All erosion protection shall extend one to three feet, depending on development requirements, above the ~~b~~Base ~~f~~Flood elevation and shall be covered with topsoil and planted with ~~a~~Native ~~v~~Vegetation.

5. Critical Facilities.

a. New ~~e~~Construction, ~~a~~Additions affixed to ~~the side of~~ an existing structure, and ~~s~~Substantial ~~i~~Improvement of hazardous facilities, and ~~s~~Special ~~o~~Occupancy ~~s~~Structures are prohibited.

b. New ~~e~~Construction of an ~~essential-Critical f~~Facility, reconstruction of an existing ~~Critical essential-f~~Facility, or ~~any a~~Additions to an existing ~~Critical essential-f~~Facility that exceed the threshold for ~~s~~Substantial ~~i~~Improvement shall be permitted when no feasible alternative site is available outside the ~~f~~Flood ~~h~~Hazard ~~a~~Area. Such ~~r~~Regulated ~~a~~Activities are subject to the following:

i. ~~Essential-Critical f~~Facilities with a ~~e~~Crawl~~s~~Space elevated by fill shall have the ~~l~~Lowest ~~f~~Floor and any utilities and ductwork elevated a minimum of three feet above ~~b~~Base ~~f~~Flood elevation, or to the height of the 500-year flood, whichever is higher.

ii. ~~Essential-Critical f~~Facilities elevated by piers or pilings shall have the ~~f~~Finished ~~f~~Floor and any utilities and ductwork elevated a minimum of three feet above the ~~b~~Base ~~f~~Flood elevation ~~(or to the height of the 500-year flood, whichever is higher)~~ and must be designed by a professional structural ~~e~~Engineer.

iii. Access to and from the ~~e~~Critical ~~f~~Facility shall be protected to the height utilized under ~~s~~Subsections (C)(5)(b)(i) ~~and/or~~ (ii) of this ~~s~~Section. Access routes shall be elevated to or above the same elevation to the maximum extent possible.

iv. ~~Critical Essential-f~~Facilities shall be armored based on the standards in subsection (C)(4) of this section.

v. Flood proofing and sealing measures must be taken to ensure that toxic or explosive substances will not be displaced or released into floodwaters.

6. Structures. ~~Single-family, two-family, multifamily, mobile/manufactured homes, commercial, industrial, etc.,~~ except for ~~eCritical fF~~ facilities as set forth in subsection (C)(5) of this section, shall be allowed subject to the following standards:

- a. New ~~eConstruction~~, ~~aAdditions~~ affixed to ~~the side of~~ an existing structure, and ~~sSubstantial iImprovement~~ of any structure with a ~~eCrawl sSpace~~ shall have the ~~lLowest fFloor~~ elevated a minimum of two feet above ~~bBase fFlood~~ elevation.
- b. New ~~eConstruction~~, ~~aAdditions~~ affixed to ~~the side of~~ an existing structure, and ~~sSubstantial iImprovement~~ of any structure elevated by piers or pilings shall have the bottom of the lowest horizontal structural member elevated a minimum of two feet above the ~~bBase fFlood~~ elevation and must be designed by a professional structural ~~eEngineer~~. Electrical, heating, ventilation, plumbing, air-conditioning equipment, and other service facilities and associated ductwork shall be elevated a minimum of two feet above ~~bBase fFlood~~ elevation; however, the ~~dDepartment~~ may approve a lesser minimum distance above ~~bBase fFlood~~ elevation; provided, that the systems are designed to prevent floodwater from entering or accumulating within the components. Areas below the lowest horizontal structural member shall not be enclosed and shall remain free of obstructions.
- c. Mobile ~~or/~~ manufactured homes shall be anchored to prevent flotation, collapse, or lateral movement, and shall be installed using methods and practices to minimize flood damage. Anchoring methods may include, but are not limited to, use of over-the-top or frame ties to ground anchors. This is in addition to applicable state and local anchoring requirements for resisting wind forces.

7. Agricultural Accessory Structures. The ~~lLowest fFloor~~ in an agricultural accessory structure shall be located at the ~~bBase fFlood~~ elevation or higher; provided, that the structure be designed to automatically equalize hydrostatic flood forces on exterior walls by allowing for the entry and exit of floodwaters. Designs for meeting this requirement must either be certified by a professional ~~eEngineer~~ in the state of Washington or must meet or exceed the following minimum criteria:

- a. A minimum of two openings having a total net area of not less than one square inch for every square foot of enclosed area subject to flooding shall be provided;
- b. The bottom of all openings shall be no higher than one foot above grade; and
- c. Openings may be equipped with screens, louvers, or other coverings ~~s~~ or devices; provided, that they permit the automatic entry and exit of floodwaters.

8. Construction Standards.

- a. Construction of a basement is prohibited.
- b. Crawl ~~sSpaces~~ shall be backfilled with clean ~~eEarth mMaterial~~ and shall meet International Building Code requirements. Finished grade within the crawlspace shall be at least two feet above the ~~bBase fFlood~~ elevation.
- c. Flood proofing in lieu of elevating the structure is prohibited.
- d. All single-family, two-family, multifamily, mobile ~~or/~~ manufactured homes, commercial, and industrial structures shall be placed on standard concrete stemwall ~~or/~~ footing foundations or piles, piers, or column foundations and engineered pursuant to International Building Code requirements.

9. Sewage Disposal and Potable Water Installation.

- a. New and replacement public water sources, ~~(i.e., wells and water supply lines)~~ and public sanitary sewage conveyance systems are allowed. These systems shall be designed to withstand scour resulting from flow velocity, minimize or eliminate infiltration of floodwaters into the systems, and minimize or eliminate discharge from the systems into floodwaters

b. All replacement wells and replacement on-site sewage system (OSS) shall be designed to minimize or eliminate impairment to them or contamination from/to them during flooding, (i.e., infiltration of floodwaters into or discharge out of the systems). They shall not be located in pothole or no-outlet floodplains.

c. All new individual wells and new on-site sewage system (OSS) shall be prohibited. Conveyance systems from a structure to a well or OSS located outside of the flood hazard area shall be allowed provided these systems are designed to meet the standards in subsection (C)(4) of this section.

14.80.070 Variances to Flood Hazard Areas.

A. General. Variances are reviewed pursuant to the process and criteria outlined in EMC 14.10.100, Variances to Critical Areas.

B. Additional Criteria for Flood Hazard Area Variances. In addition to the variance criteria referenced above in subsection (A) of this section, in order for the decision maker to approve a Flood Hazard Area variance, there must be written findings that the applicant has demonstrated the proposal satisfies all of the following:

1. Generally, the only condition under which a variance from the elevation standard may be issued is for New Construction and Substantial Improvements to be erected on a small or irregularly shaped lot contiguous to and surrounded by lots with existing structures constructed below the Base Flood level. As the lot size increases the technical justification required for issuing the variance increases.
2. Variances shall not be issued within a designated Floodway if any increase in flood levels during the Base Flood discharge would result.
3. Variances shall only be issued upon a determination that the variance is the minimum necessary, considering the flood hazard, to afford relief.
4. Variances shall only be issued upon:
 - a. A showing of good and sufficient cause;
 - b. A determination that failure to grant the variance would result in exceptional hardship to the applicant and that the hardship was not created by the applicant;
 - c. A determination that the granting of a variance will not result in increased flood heights, additional threats to public safety, extraordinary public expense, create nuisances, cause fraud on or victimization of the public, or conflict with existing local laws or ordinances.
5. Variances as interpreted in the National Flood Insurance Program are based on the general zoning law principle that they pertain to a physical piece of property; they are not personal in nature and do not pertain to the structure, its inhabitants, economic or financial circumstances. They primarily address small lots in densely populated residential neighborhoods. As such, variances from flood elevations should be quite rare.
6. Variances may be issued for nonresidential buildings in very limited circumstances to allow a lesser degree of flood proofing than watertight or dry-flood proofing, where it can be determined that such action will have low damage potential, complies with all other variance criteria except B.1, above, and otherwise complies with EMC 14.80.060, Flood Hazard Area Standards.
7. Any applicant to whom a variance is granted shall be given written notice that the permitted structure will be built with its Lowest Floor below the Base Flood elevation and that the cost of flood insurance will be commensurate with the increased risk.

14.780.080 1050 Appendices.

A. Floodplain/~~Floodway~~Floodway Analysis.

B. Channel Migration Zone Study.

APPENDIX A

FLOODPLAIN/FLOODWAY ANALYSIS

This Appendix describes the flood hazard analyses and studies as required by EMC Chapter 14.780 —EMC, Flood Hazard Areas. Flood hazard studies establish the base flood elevation and delineate floodplain and/or floodway(s) when a proposed project contains or is adjacent to a river, stream, lake, or closed depression.

Flood hazard studies must conform to FEMA regulations described in Part 65 of 44 Code of Federal Regulations (CFR). In addition, the following information must be provided and procedures performed for flood hazard studies used under EMC Chapter 14.7800-EMC to examine development proposals or improvements within a floodplain.

Article I. FloodwayFloodway Determination

The cityCity recognizes two distinct floodwayFloodways. The FEMA floodwayFloodway describes the limit to which encroachment into the natural conveyance channel can cause one foot or less rise in water surface elevation. The deep and/or fast flowing (DFF) water floodwayFloodways are hazardous areas and conditions of the floodplain for both people and habitable structures. Life safety and protection to improved properties are compromised if encroached upon. Encroachment cannot occur within these areas.

A. FEMA FloodwayFloodways.

1. FEMA floodwayFloodways are determined through the procedures outlined in the FEMA publication Guidelines and Specifications for Study Contractors using the one-foot maximum allowable rise criteria.
2. Transitions shall take into account obstructions to flow such as road approach grades, bridges, piers, culverts, or other restrictions. General guidelines for transitions may be found in HEC-RAS, Water Surface Profiles – User’s Manual, Appendix IV, Application of HEC-RAS Bridge Routines, published by the Hydrologic Engineering Center, Davis, California.

B. Deep and/or Fast Flowing (DFF) FloodwayFloodways.

1. DFF floodwayFloodways are generally assumed to include the entire 100-year floodplain until the departmentDepartment approves a detailed floodwayFloodway analysis that defines areas of DFF within the entire floodplain area based on the criteria.
2. The hydraulic model must adequately be calibrated to known or recorded stage elevations of past flood events with computed recurrence frequency intervals for the 100-year flood recurrence interval. This is to ensure model accuracy.

Article II. Flood Study Content and Required Information

Three copies of the completed floodplain/floodwayFloodway analysis study report and the modeling digital files shall be submitted. The report submittal must be stamped by a licensed professional civil eEngineer and include the following information in addition to that required for the drainage plan of a proposed project:

A. Floodplain/FloodwayFloodway Map.

1. A scaled survey base map stamped by a licensed professional land surveyor registered in the state of Washington. The map must accurately locate the proposed development with respect to the floodplain and floodwayFloodway, the channel of the subject stream, river, and/or pothole location, and the existing improvements within the subject study area. It must also supply all pertinent information such as the nature of the proposed project, legal description of the property on which the project would be located, fill quantity, limits and elevation, the building floor elevations, and use of compensatory storage.
2. The map must show elevation contours at a minimum of two-foot vertical intervals and shall comply with survey and map guidelines published in the FEMA publication Guidelines and Specifications for Study Contractors. The map must show the following:
 - a. Elevations and ground contours, spot elevations, and vertical datum NAVD 88 (North American Vertical Datum of 1988) (or most recent vertical datum accepted by the departmentDepartment).
 - b. Elevations and dimensions of existing structures, fill, and compensatory storage areas.
 - c. Size, location, elevation and spatial arrangement of all proposed structures on the site.

d. Location and elevations of roadways, drainage facilities, water supply lines, and sanitary sewer facilities.

e. Areas of DFF must clearly be shown and plotted on the map sheet depicting the bounded area of the ~~floodway~~Floodway on both sides of the study channel through the subject site. DFF ~~floodway~~Floodway studies must reflect all transitions as referenced above as well.

f. The base maps must also be accompanied by all field survey notes/computations, drawings, etc., for each cross-section with water surface elevation at the time the cross-section field survey was done.

B. Study Report.

1. Soil maps, groundcover maps, and photographs.

2. A narrative report containing the purpose of the study and description of the study area, data collection, methodology for both the hydrology and hydraulics, detailed discussion on the input parameters used, modeling results, and conclusions.

3. A floodplain/~~floodway~~Floodway analysis must include calculations and all computer analysis input and output information, supporting graphical illustrations, as well as the following additional information:

a. Scaled cross-sections showing the current, ~~existing~~ conditions of the river ~~or~~ stream channel, the floodplain adjoining each side of the channel, the computed ~~floodway~~Floodway, the cross-sectional area to be occupied by any proposed development and all historic high water information.

b. Profiles showing the bottom of the channel, the top of both left and right banks and computed ~~b~~Base ~~f~~Flood water surface elevations for the 10-, 25-, 50- and 100-year events.

c. Plans and specifications of any flood protection for structures, construction areas, ~~filling~~Clearing, dredging, channel improvements, storage of materials, water supply, and sanitary facilities within the floodplain.

d. Complete printout of input and output data of the model that was used for the analysis. Liberal use of comments and written discussion will assist considerably in understanding the model logic and minimize misinterpretations and/or questions.

e. A map, showing the graphical/plotted location and limits of the computed ~~floodway~~Floodway and/or floodplain.

f. Three copies of ready-to-run digital files of both the hydrologic and hydraulic model and its input and output files used in the study. Data shall be submitted on a disk in standard ASCII format, ready to use on an IBM-compatible personal computer and in the applicable software application, ~~(i.e., g. HEC-RAS, HSPF – Hydrological Simulation Program – FORTRAN, SBUH, or similar application, etc.)~~.

g. A section on the flood flow including computer modeling ~~and/or calculations (see below for additional requirements on flood flow determinations)~~.

h. Aerial photographs of the site including pre-February 1996 and post-February 1996 photos of the site.

i. All field survey notes/computations, maps, and drawings for each cross-section with water surface elevation at the time of the cross-section field survey.

C. Computer Modeling Information. ~~Floodway~~Floodway/floodplain studies submitted to the ~~city~~City for review must include output summary tables and include the following (but not limited to) items:

1. Cross-section(s) identification number.

2. Range of flows being examined.

3. Computed water surface elevation at each cross-section.
4. Energy grade line at each cross-section.
5. Graphical plots of the channel cross-sections with computed water surface elevations for all model runs including calibrated model runs.
6. All model input and output printouts.
7. Graphical plots of the model output data that show the points and segments along each cross-section where deep and/or fast flowing water occurs. This shall include cross-section plots of depth and velocity in one-unit increments. The plots shall also be accompanied with a table listing the station distance (right and left bank), flow rate, area, hydraulic depth, velocity, and whether each point is a ~~floodway~~Floodway.
8. A plan sheet clearly showing the graphical representation of the bounded area of the ~~floodway~~Floodway based on DFF criteria through the entire study site and reach. Note that identified islands or pockets within the middle of the bounded ~~floodway~~Floodway area are generally considered as part of the ~~floodway~~Floodway, unless otherwise approved by the ~~department~~Department.
9. Discussion on the starting water surface elevation for the hydraulic model.

Article III. Determining Flood Flows

The three techniques used to determine the flows used in a flood study depend on whether gauge data is available, whether a basin plan has been adopted, or a detailed flood study has been done and approved for use by the Department. The first technique is for basins with adopted basin plan areas. The second technique is used if a gauging station exists on the stream. The third technique is used on ungauged catchments or those with an insufficient length of record. In all cases, the ~~e~~Engineer shall be responsible for assuring that the hydrologic methods used are technically reasonable, conservative, conform to the FEMA publication, Guidelines and Specifications for Study Contractors, and are acceptable by FEMA and the ~~department~~Department.

A. Flood Flows from Adopted Basin Plan Information. Flood flows may be determined using information from the ~~city~~City's basin plan. The hydrologic model used in the basin plan shall be updated to include the latest changes in zoning or any additional information regarding the basin which has been acquired since the adoption of the basin plan.

B. Flood Flows from Stream Gauge Data. Determining flood flows from stream gauge data uses the Log-Pearson Type III distribution method as described in the Guidelines for Determining Flood Flow Frequency, Bulletin 17B of the Hydrology Committee, United States Water Resources Council (revised October 1981).

1. This technique may be used only if data from a gauging station in the basin is available for a period of at least 10 years.
2. If the difference in the drainage area on the stream at the study site and the drainage area to a gauging station on the stream at a different location in the same basin is less than or equal to 50 percent, the flow at the study site shall be determined by transferring the calculated flow at the gauge to the study site using a drainage area ratio raised to the 0.86 power, as in the following equation:

where

- Q_{ss} = estimated flow for the given return frequency on the stream at the study site.
- Q_G = flow for the given return frequency on the stream at the gauge site.
- A_{ss} = drainage area tributary to the stream at the study site.
- A_G = drainage area tributary to the stream at the gauge site.

3. If the difference in the drainage area at the study site and the drainage area at a gauging station in the basin is more than 50 percent and a basin plan has not been prepared, a continuous model shall be used as described below to determine the flood flows at the study site.

4. In all cases where dams or reservoirs, floodplain development, or land use upstream may have altered the storage capacity or runoff characteristics of the basin so as to affect the validity of this technique, a continuous model shall be used to determine flood flows at the study site.

C. Flood Flows from a Calibrated Continuous Model. Flood flows may be determined by utilizing a continuous flow simulation model such as HSPF or other equivalent continuous flow simulation model, as approved by the ~~city~~City. Where flood elevation or stream gauging data are available, the model shall be calibrated to the known data. Otherwise, regional parameters may be used.

Article IV. Determining Flood Elevations, Profiles and ~~Floodway~~Floodways (Hydraulic Model)

A. Reconnaissance. The applicant's project ~~e~~Engineer is responsible for the collection of all existing data with regard to flooding in the study area. This shall include a literature search of all published reports in the study area and adjacent communities and an information search to obtain all unpublished information on flooding in the immediate and adjacent areas from federal, state, and local units of government. This search shall include specific information on past flooding in the area, drainage structures such as bridges and culverts that affect flooding in the area, available topographic maps, available community maps, photographs of past flood events, and general flooding problems within the community. Documented discussions with nearby property owners should also be done to obtain a witness account of the flooding extent. A field reconnaissance shall be made by the applicant's project ~~e~~Engineer to determine hydraulic conditions of the study area, including type and number of structures, locations of cross-sections, and other parameters including the roughness values necessary for the hydraulic analysis.

B. Base Data. Channel cross-sections used in the hydraulic analysis shall be current/existing at the time the study is performed and shall be obtained by field survey. Topographic information obtained from aerial photographs/mapping may be used in combination with surveyed channel cross-sections in the hydraulic analysis. The elevation datum of all information used in the hydraulic analysis shall be verified. All information shall be referenced directly to NAVD 1988 (and include local correlation to NGVD) unless otherwise approved by the ~~city~~City.

C. Methodology. Flood studies and analysis (including deep and/or fast flowing ~~floodway~~Floodways and zero-rise analysis) shall be calculated using the U.S. Army Corps of Engineers HEC-RAS computer model (or subsequent revision) unless otherwise approved by the ~~city~~City.

D. Adequacy of the Hydraulic Model. Edgewood considers the following (but not limited to) factors when determining the adequacy of the hydraulic model for use in the ~~floodway~~Floodway/floodplain model:

1. Cross-section of a downstream starting location and spacing.
2. Differences in energy grade line (significant differences in the energy grade line from cross-section to cross-section are an indication that cross-sections should be more closely spaced or that other inaccuracies exist in the hydraulic model).
3. Methods and results for analyzing the hydraulics of structures such as bridges and culverts.
4. Lack of flow continuity.
5. Use of a gradually varied flow model. In certain cases, rapidly varied flow techniques may need to be used in combination with a gradually varied flow model such as weir flow over a levee, flow through a spillway of a dam, or special application of bridge flow (pressure flow if bridge superstructure is shown to be submerged for the study event).
6. Manning's "n" value.

7. Calibration of hydraulic model to known ~~and~~/or observed flow stage elevations including past flood events.
8. Special applications. In some cases, steady state one-dimensional hydraulic models may not be sufficient for preparing the floodplain/~~floodway~~~~Floodway~~ analysis. This may occur where sediment transport, two-dimensional flow, or other unique hydraulic circumstances affect the accuracy of the model. In these cases, the project ~~e~~Engineer must propose and obtain ~~department~~~~Department~~ approval of alternative models for establishing the water surface elevations.
9. All reported error ~~and~~/or warning messages by the model must be properly and adequately addressed ~~and~~/or resolved and included in the report for review verification.

Article V. Zero-Rise Analysis (ZRA)

A. Zero-rise analysis (ZRA) is required where ~~e~~Encroachment within the ~~f~~Flood ~~f~~Fringe area is allowed and approved by the ~~department~~~~Department~~. The ZRA must show that the proposed development ~~e~~Encroachment in the ~~f~~Flood ~~f~~Fringe area will not ~~create show a measurable more than a 0.01-foot rise in the b~~Base ~~f~~Flood elevation (~~i.e., less than 0.01 foot~~), resulting from a comparison of existing conditions and proposed conditions. This is directly attributable to development in the floodplain but not attributable to manipulation of mathematical variables such as roughness factors, coefficients, discharge, and other hydraulic parameters.

B. In addition to those items listed in subsection (A) of this article, the following shall be included in a ZRA:

1. ~~Floodway~~~~Floodway~~ boundaries (based on zero-rise) are to follow the stream lines and reasonably balance the rights of property owners on either side of the ~~floodway~~~~Floodway~~. Use of the automatic equal conveyance encroachment option in the model will be considered equitable.
2. The ZRA must include a sufficient number of cross-sections in order to accurately model the subject fill and compensatory storage areas of the site. In all cases, cross-sections shall be located downstream, through the subject site and upstream of the site at a very minimum. They shall also be located where changes in channel and the fill material characteristics occur, such as slope, shape, and roughness. The sections shall also be located perpendicular to the flow path in the channel and the outside overbank areas. The ~~department~~~~Department~~ shall review and approve the proposed number and location of cross-sections. All cross-sections and surveys shall be prepared and certified by a professional land surveyor or registered professional ~~e~~Engineer in the state of Washington.
3. The difference between two profiles of water surface elevation at the cross-section, (~~e.g., difference between existing and encroached water surface~~). The model must report 0.01 feet or less an allowable change in the water surface elevation. This must be shown in the profile graphical plot as well.
4. The difference between profiles of the energy grade line at the cross-section. The model must report 0.01 feet or less. This is the allowable change in the energy grade line. This must be shown in the profile graphical plot as well.

C. Conveyance Capacity.

1. The ZRA must also show that the proposed development ~~e~~Encroachment in the ~~f~~Flood ~~f~~Fringe area will not show a measurable decrease (less than 0.01 CFS) in the conveyance capacity of the channel, resulting from a comparison of existing conditions and proposed conditions, for each of the cross-sections. This is also directly attributable to development in the ~~floodplain~~~~Floodplain~~ but not attributable to manipulation of mathematical variables such as roughness factors, coefficients, discharge, and other hydraulic parameters.
2. The analysis must provide calculations of the reduction in conveyance caused by the proposed development ~~e~~Encroachment, assuming no change in the water surface elevation, and using the roughness coefficient value(s) appropriate for the proposed development.
3. The analysis must then provide calculations for the increase in conveyance of the proposed compensatory measure, using the roughness coefficient value(s) appropriate for the proposed development.

4. Include a comparison analysis and discussion from subsections (C)(2) and (3) of this article. The comparison must adequately show that the conveyance capacity has not measurably decreased between the existing condition and proposed development condition.

Floodplain/~~Floodway~~Floodway Zero-Rise Certification

This is to certify that I am a duly qualified professional ~~e~~Engineer licensed to practice in the state of Washington.

This is to further certify that the attached ~~floodplain~~Floodplain/~~floodway~~Floodway zero-rise analysis conclusively shows that the proposed development of:

(Name of Development) Parcel Number

will not increase the 100-year ~~b~~Base ~~f~~Flood elevation(s) and widths nor reduce the conveyance capacity of the ~~floodplain~~Floodplain, ~~floodway~~Floodway, and its associated channel to the

(Name of River, Stream, Pothole or other Watercourse)

Supporting Data

Base Flood Elevation (Pre-Development) = _____ FT (NAVD 88)

Base Flood Elevation (Post-Development) = _____ FT (NAVD 88)

Conveyance Capacity (Pre-Development) = _____ CFS

Conveyance Capacity (Post-Development) = _____ CFS

with compensatory storage)

Signature Date

Title Firm Name

Address

City

State Zip Code

APPENDIX B

CHANNEL MIGRATION ZONE STUDY REQUIREMENTS

The channel migration zone (CMZ) is the area within the lateral extent of likely stream channel movement due to stream bank destabilization and erosion, rapid stream incision, and shifts in location of stream channels. The CMZ will define areas in which, to the best information available, development should be regulated due to the dangers expected from erosion.

Article I. Determining Channel Migration Zone Limits

A. The CMZ shall be based on available historic records of channel migration, or 100 years of calculated channel migration whichever is greater, and will generally include those areas that encompass:

1. The limit of geologic controls, such as hill slope, bedrock outcrop, or abandoned ~~floodplain~~Floodplain terrace;
2. Side channels, abandoned channels, and oxbows; and
3. Outside edges of progressive bank erosion at meander bends.

B. Channel migration over the 100-year time frame can be estimated and predicted from geomorphic analysis of annual bank erosion rates, historic meander belt width, and measured meander bend amplitudes, potential avulsion sites, and previous river channel locations as depicted on historic aerial photographs and maps. The 100-year time span represents the time required to grow mature trees that can provide functional large woody debris to streams.

C. The CMZ boundaries will be determined using the following specific criteria:

1. The representative average annual rate of channel migration in the affected river reach is calculated by dividing the lateral distance eroded with the corresponding elapsed time shown in sequential aerial photographs or historic maps (distance/time equals channel movement). Measurements from reaches that have had some form of bank armoring shall not be included. Historical records will need to be checked closely for this information.
2. Identify the width of the channel migration zone by multiplying the representative average annual erosion rate by 100 years.

D. Areas separated from the active channel by legally existing artificial channel constraints (levees, roads, driveways, etc.) that limit bank erosion and channel avulsion to the 100-year recurrence interval flood elevation plus three feet of freeboard shall serve as a boundary for the outer limit of the CMZ.

Article II. Channel Migration Zone Study Content and Required Information

Three copies of the completed channel migration zone study shall be submitted. The study submittal must be stamped by a licensed professional ~~e~~Engineer or professional ~~g~~Geologist with five (5) years² of experience in fluvial geomorphology, river dynamics, or geotechnical engineering. The CMZ study shall include the following information in addition to that required for the drainage plan of a proposed project. The CMZ study will consist of a written technical report including:

A. Detailed methods, techniques, and assumptions used in determining the location of the CMZ.

B. A vicinity map and site with scale, north arrow, and parcel number(s) or specific site being studied.

C. A clear statement of the requested revision to ~~the Pierce c~~County's determination of the 100-year ~~floodplain~~Floodplain limits as the CMZ.

D. A clearly stated conclusion of the study results that support the requested revision. The conclusion needs to document the basis for the revision, show how the data presented refutes the 100-year ~~floodplain~~Floodplain limits as the CMZ, and calculates the new results using the new information.

E. A map clearly delineating the subject property and the CMZ of the adjacent watercourse. In addition to providing a hard copy of the CMZ map, the CMZ map shall also be provided in ARC-View shapefile format. Contact the ~~city-~~
~~GIS d~~Department for mapping and aerial imaging standards. (Ord. 02-200 § 2).

Chapter 14.890

LANDSLIDE HAZARD AREAS

Sections:

- 14.890.010 Purpose.
- 14.890.020 Landslide ~~h~~Hazard ~~a~~Areas.
- 14.890.030 Landslide ~~h~~Hazard ~~a~~Area review procedures.
- 14.890.040 Landslide and ~~e~~Erosion ~~h~~Hazard ~~a~~Area standards.
- 14.890.050 ~~Buffer~~Buffer requirements.
- 14.890.060 Appendices.

14.890.010 Purpose.

The ~~following statements describe the~~ purpose of this chapter is to:

- A. Protect human life and health.
- B. Regulate uses of land in order to avoid damage to structures and property being developed and damage to neighboring land and structures.
- C. Identify and map active ~~L~~andslide ~~h~~Hazard ~~a~~Areas.
- D. Minimize the ill effects on ~~wetland~~Wetlands and critical fish and wildlife habitat that can result from landslides.
- E. Establish permit requirement and review procedures for development proposals in areas with potential landslides. (Ord. 02-200 § 2).

14.890.020 Landslide ~~h~~Hazard ~~a~~Areas.

A. Landslide Hazard Areas ~~Indicators~~. Landslide ~~h~~Hazard ~~a~~Areas are areas potentially subject to mass movement due to a combination of geologic, seismic, topographic, hydrologic, or manmade factors. Landslide ~~h~~Hazard ~~a~~Areas ~~can be are~~ identified by the presence of any of the following ~~five (5)~~ indicators.:

1. Areas of historic failures, including areas of unstable, old and recent landslides or landslide debris within a head scarp.
2. Areas with all ~~three (3)~~ of the following characteristics:
 - a. Slopes steeper than 15 percent with a vertical relief of 20 feet or more; and
 - b. Hillsides that intersect geologic contacts with a relatively permeable sediment overlying a relatively impermeable sediment or bedrock; and
 - c. Springs or groundwater seepage.
3. Areas exhibiting geomorphological features indicative of past slope failure within the last 10,000 years, such as hummocky ground, back-rotated benches on slopes, tension cracks, etc.
4. Any area with a slope of 40 percent or steeper and with a vertical relief of 15 or more feet. ~~-Manmade-~~
 - ~~a. Slopes of 40 percent or steeper with a vertical relief of 15 feet or more~~ may be exempted from the requirements of this section ~~of the code~~ provided that it can be demonstrated by a qualified ~~g~~Geotechnical ~~p~~Professional that such an exemption does not result in an increased risk of landsliding or damage to the subject site, nearby properties, ~~or and~~ existing structures, ~~and, a~~Any associated hazards to proposed structures ~~are must be~~ suitably mitigated.

b. For the purposes of determining whether a slope is considered to be a Landslide hazard area, the horizontal and vertical distance between the top of Slope and toe of slope are utilized.

5. Areas that are at risk of mass movement due to seismic events.

B. Potential Landslide Hazard Areas. Potential Landslide hazard areas, as depicted on the Geologically Hazardous Areas map, are those areas where the suspected risk of slope instability and landslide is sufficient to require a geological assessment to assess the potential for active landslide activity. Potential Landslide hazard areas are determined by using the following criteria:

1. Areas that possess one or more of the Landslide hazard area indicators (stratigraphy, topography, emergent groundwater seepage, etc.) as set forth in subsection (A) of this section and any adjacent area within a distance of 65 feet. These areas include, but are not necessarily limited to, those areas designated on the City's Geologically Hazardous Areas map as moderate or steep slope areas.

14.890.030 Landslide hazard area review procedures.

A. General Requirements.

1. The cityCity's Geologically Hazardous Areas map provides an indication of where potential Landslide hazard areas are located within the city. The actual presence or location ~~of~~ Landslide hazard areas that have not been mapped, but may be present on or adjacent to a site, shall be determined using the geological assessment procedures established in this chapter.

2. The departmentDepartment will complete a review of the Geologically Hazardous Areas map and other source documents for any proposed regulated activity to determine whether the site is, or may be, located within a Landslide hazard area or potential Landslide hazard area. Identification of a Landslide hazard area or potential Landslide hazard area may also occur as a result of field investigations conducted by dDepartment staff.

3. When the dDepartment's maps or sources indicate that the site for a proposed regulated activity is or may be located within a Landslide hazard area or potential Landslide hazard area, the dDepartment shall require the submittal of a geological assessment as outlined in subsection (B) of this section.

4. Unless otherwise stated in this chapter, the critical protective measure provisions contained in EMC Chapter 14.10.000 shall apply.

B. Geological Assessment. A geological assessment is a site investigation process to evaluate the on-site geology affecting a subject property. The findings of the geological assessment shall be presented in a Landslide Hazard Geotechnical Verification or Geotechnical Report.

1. Geological assessments shall be submitted to the departmentDepartment for review and approval together with a Landslide hazard area application and associated fee.

2. A geological assessment shall include a field investigation and may include the use of historical air photo analysis, LiDAR mapping, review of regional geologic mapping, review of public records and documentation, and interviews with adjacent property owners, etc.

3. The geological assessment shall include the following information and analysis contained in paragraphs a-d.:

a. A determination of which areas on the site or within the vicinity of the site meet the criteria for a Landslide hazard area as set forth hereinEMC 14.80.020(A).

b. Consider the run-out hazard of landslide debris to the proposed development that starts upslope (whether part of the subject property or on a neighboring property) and/or the impacts of landslide run-out on down slope properties.

c. The geological assessment shall include a detailed review of the field investigations, published data and references, data and conclusions from past geological assessments, or geotechnical investigations of the

site, site-specific measurements, tests, investigations, or studies, as well as the methods of data analysis and calculations that support the results, conclusions, and recommendations.

d. All of the information required per EMC Section 14.10.080.C.

4. Geological assessments shall be prepared, signed, and dated by a gGeotechnical pProfessional, ~~(as defined in Chapter 14.15 EMC and established in this chapter)~~ and ~~t~~The format shall be pre-approved by the dDepartment.

5. A gGeotechnical pProfessional shall complete a field investigation and geological assessment to determine whether or not a lLandslide hHazard aArea is likely to exist within 300 feet of the site. Where access to off-site properties is not available by the gGeotechnical pProfessional, evaluation of off-site landslide hazards must include review of regional geologic mapping and LiDAR based topographic mapping.

a. The geological assessment shall be submitted in the form of geotechnical verification when the gGeotechnical pProfessional finds that no lLandslide hHazard aArea exists within 300 feet of the project area. ~~The geotechnical verification shall meet the requirements contained in EMC 14.80.060, Appendix A.~~

b. The geological assessment shall be submitted in the form of a gGeotechnical rReport when the gGeotechnical pProfessional finds that a lLandslide hHazard aArea exists within 300 feet of the proposed project area or when a gGeotechnical pProfessional determines that mitigation measures are necessary in order to construct or develop within a potential lLandslide hHazard aArea. ~~The geotechnical report shall meet the requirements contained in EMC 14.80.060, Appendix B.~~

6. Geological assessments that do not contain the ~~minimum~~ required information ~~or comply with the landslide hazard area standards set forth in EMC 14.80.030~~ will be returned to the gGeotechnical pProfessional for revision.

7. The ~~department~~Department shall review the geological assessment and either:

- a. Accept the geological assessment; or
- b. Reject the geological assessment and require revisions or additional information.

~~8. When the geological assessment has been accepted, the department shall issue a decision on the landslide hazard area application.~~

98. A geological assessment for a specific site may be valid for a period of up to five years when the proposed land use activity and surrounding site conditions are unchanged. However, if any environmental conditions associated with the site change during that five-year period, the applicant may be required to submit an amendment to the geological assessment. (Ord. 02-200 § 2).

14.890.040 Landslide and eErosion hHazard aArea standards.

A. Landslide Hazard Areas. Any development, eEncroachment, ~~filling, eClearing or and gGrading~~, building structures, impervious surfaces, ~~and or~~ vegetation removal shall be prohibited within lLandslide hHazard aAreas and associated buffer~~Buffers~~ except as specified in the following standards:

1. Stormwater Conveyance. Stormwater conveyance shall be allowed when it is conveyed through a high-density polyethylene stormwater pipe with fuse-welded joints and when no other stormwater conveyance alternative is available. The pipe shall be located on the surface of the ground and be properly anchored so that it will continue to function in the event of an underlying slide.
2. Utility Lines. Utility lines will be permitted when no other conveyance alternative is available. The line shall be located above ground and properly anchored and/or designed so that it will continue to function in the event of an underlying slide.
3. Roads, Bridges, and Trails. Roads, bridges, and trails shall be allowed when all of the following conditions have been met:

a. Mitigation measures are provided that ensure the roadway prism and/or bridge structure will not be susceptible to damage from landslide-induced ground deformation or impact/coverage by landslide debris. Mitigation measures shall be designed for static and seismic loading conditions in accordance with the most recent version of the American Association of State Highway and Transportation Officials (AASHTO) Manual.

b. The road is not a sole access for a development.

c. The removal or disturbance of vegetation ~~and, clearing or g~~ Grading activities shall be prohibited during the wet season ~~from~~ (November 1st ~~to~~ until May 1st).

B. Landslide Hazard Management Areas. All ~~r~~Regulated ~~a~~A activities may be allowed in areas located within 300 feet of a ~~l~~andslide ~~h~~Hazard ~~a~~Area subject to the following standards:

1. The ~~department~~Department reviews and approves a geological assessment – ~~g~~Geotechnical ~~r~~R report and determines that the potential ~~l~~andslide ~~h~~Hazard ~~a~~Area is stable.

2. The proposed development is located outside of a ~~l~~andslide ~~h~~Hazard ~~a~~Area and any required ~~buffer~~Buffer-~~as set forth in EMC 14.80.050.~~

3. The proposed recommendations and mitigation measures contained within the ~~g~~Geotechnical ~~r~~R report are adequate to reduce or mitigate risks to health and safety.

4. The proposed development shall not decrease the factor of safety for landslide occurrence below the limits of 1.5 for static conditions and 1.1 for dynamic conditions. Analysis of dynamic (seismic) conditions shall be based on a minimum horizontal acceleration as established by the current version of the International Building Code.

5. The removal and disturbance of vegetation ~~and, clearing or g~~ Grading activities shall be limited to the area of the approved development and shall not be allowed during the wet season ~~from~~ (November 1st ~~through~~ until May 1st) unless adequate provisions for wet season erosion have been addressed in the ~~g~~Geotechnical ~~r~~R report and approved by the ~~d~~Department.

6. Surface drainage from developed areas, including downspouts and runoff from paved or unpaved surfaces up slope, shall not be directed through a ~~l~~andslide ~~h~~Hazard ~~a~~Area or its associated ~~buffer~~Buffer unless it is conveyed in conformance with the provisions in EMC 14.~~89~~0.030.

7. Stormwater retention facilities, including infiltration systems utilizing perforated pipe, are prohibited unless the slope stability impacts of such systems have been analyzed and mitigated by a ~~g~~Geotechnical ~~p~~Professional and the impacts have been determined to be negligible.

8. The proposed development shall not create a need for larger ~~l~~andslide ~~h~~Hazard ~~a~~Area ~~buffer~~Buffers and setbacks on neighboring properties unless approved through a notarized written agreement with the affected property owner(s).

9. The proposed development shall be sited far enough from regressing slope faces to project 120 years of useful life for the proposed structure(s) or infrastructure.

10. Any proposed lots must be completely located outside any identified ~~l~~andslide ~~h~~Hazard ~~a~~Areas or their associated ~~buffer~~Buffers.

11. Landslide ~~h~~Hazard ~~a~~Areas that are directly adjacent to any ~~r~~Riparian areas, or ~~wetland~~Wetlands, may be subject to additional ~~buffer~~Buffer requirements and standards. ~~See as set forth in EMC Chapter 14.450, Critical Fish and Wildlife Habitat Areas-EMC, Fish and Wildlife Habitat Conservation Areas, or wetlands as set forth in- and EMC Chapter 14.340, Wetlands-EMC, Wetlands for additional details.~~ (Ord. 02-200 § 2).

14.~~89~~0.050 BufferBuffer requirements.

A. Determining ~~Buffer~~Buffer Widths.

1. The ~~buffer~~Buffer width shall be measured on a horizontal plane from a perpendicular line established at the edge of the ~~l~~Landslide ~~h~~Hazard ~~a~~Area limits, ~~(both from the top and toe of the slope).~~

2. A ~~buffer~~Buffer of undisturbed vegetation shall be required for a ~~l~~Landslide ~~h~~Hazard ~~a~~Area. The required ~~buffer~~Buffer width is the greater amount of the distances described in EMC ~~Chapter 14.890.050:~~

a. Fifty feet from all edges of the active ~~l~~Landslide ~~h~~Hazard ~~a~~Area limits;

b. A distance of one-third the height of the slope at the top of the active ~~l~~Landslide ~~h~~Hazard ~~a~~Area and a distance of one-half the height of the slope at the bottom of an active ~~l~~Landslide ~~h~~Hazard ~~a~~Area; or

~~c. The buffer widths may be reduced below the widths specified in EMC 14.80.050, or eliminated upon approval by the department of a geotechnical report that demonstrates that such a reduction would not result in an increased risk of landslide activity either on or off of the subject property.~~

B. Modification of ~~Buffer~~Buffer Widths. The ~~department~~Department may require a larger ~~buffer~~Buffer width than the ~~buffer~~Buffer distance, as determined in subsection (A) of this section, if any of the following are identified:

1. The adjacent land is susceptible to severe erosion and erosion control measures will not effectively prevent adverse impacts.

2. The area has a severe risk of slope failure or downslope stormwater drainage impacts. (Ord. 02-200 § 2).

14.890.060 Appendices.

A. Geological Assessment – Landslide Hazard Geotechnical Verification.

B. Geological Assessment – Landslide Hazard Geotechnical Report.

APPENDIX A

GEOLOGICAL ASSESSMENT – LANDSLIDE HAZARD GEOTECHNICAL VERIFICATION

A. A geotechnical verification shall include the following:

1. The general ~~e~~Critical ~~a~~Areas report requirements ~~in EMC 14.10.082.~~

2. A description of the surface and subsurface geology, hydrology, soils, and vegetation at the site and a list of the ~~l~~Landslide ~~h~~Hazard ~~a~~Area indicators, ~~as set forth in EMC 14.80.020(A),~~ that were found on or in the vicinity of the site.

3. A summary of the results, conclusions, and recommendations resulting from the geological assessment of the landslide hazards on or in the vicinity of the site. ~~This summary shall address all of the information required in EMC 14.80.030(B). The summary should include a description of observations during the site visit and a discussion of information obtained from review of the listed documents in EMC 14.80.030(B)(2)~~

4. An accurate site plan drawn at a scale of one inch equals 20 feet, one inch equals 30 feet, one inch equals 50 feet (or other scale deemed appropriate by the ~~department~~Department) is required. The ~~department~~Department may require that the site plan information listed below be based on a field survey by a licensed surveyor. The site plan shall include:

a. The limits ~~and/~~ location of ~~the any~~ active ~~l~~Landslide ~~h~~Hazard ~~a~~Area(s).

b. The limits ~~and/~~ location of the required landslide hazard ~~buffer~~Buffer ~~based upon the requirements set forth in EMC 14.80.050(A).~~

c. The location of any existing and proposed structures, utilities, on-site septic systems, wells, and stormwater management facilities.

- d. The full geographical limits of the proposed project area ~~or~~ (area to be developed).
- e. Dimension the closest distance between the identified active ~~l~~andslide ~~h~~azard ~~a~~rea boundary and the project area.
- f. Existing topography on the site presented in two-foot contours.
- g. Property lines for the site.
- h. North arrow and plan scale.

B. The ~~g~~Geotechnical ~~p~~Professional who prepared the verification document shall stamp the verification with ~~his or her~~ ~~their~~ license stamp ~~or~~ /seal.

C. Geotechnical verifications shall be in conformance with a format that is pre-approved by the ~~department~~Department.

APPENDIX B

GEOLOGICAL ASSESSMENT – LANDSLIDE HAZARD GEOTECHNICAL REPORT

A. At a minimum, a ~~g~~Geotechnical ~~r~~Report shall include the following:

1. The general ~~e~~Critical ~~a~~reas report requirements ~~in EMC 14.10.082~~.
2. A description of the surface and subsurface geology, hydrology, soils, and vegetation of the site and a list of the ~~l~~andslide ~~h~~azard ~~a~~rea indicators, ~~as set forth in EMC 14.80.020(A)~~, that were found on or in the vicinity of the site.
3. A summary of the results, conclusions, and recommendations resulting from the geological assessment of the landslide hazards on or in the vicinity of the site. ~~This summary shall address all of the information required in EMC 14.80.030(B)~~.
4. An accurate site plan drawn at a scale of one inch equals 20 feet, one inch equals 30 feet, one inch equals 50 feet (or other scale deemed appropriate by the ~~department~~Department) is required. The ~~department~~Department may require that the site plan information listed below be based on a field survey by a licensed surveyor. The site plan shall include:
 - a. The limits ~~and~~/location of ~~the any~~ ~~l~~andslide ~~h~~azard ~~a~~rea(s) within the site. Delineation of the ~~l~~andslide ~~h~~azard ~~a~~rea limits shall identify any areas of historic landslide activity.
 - b. The limits ~~and~~/location of the required landslide hazard ~~buffer~~Buffer ~~based upon the requirements set forth in EMC 14.80.050(A)~~.
 - d. The location of any existing and proposed structures, utilities, on-site septic systems, wells, and stormwater management facilities.
 - e. The full geographical limits of the proposed project area ~~or~~ (area to be developed).
 - f. Location and unique identifier of geotechnical borings, CPT soundings, or other surveys or explorations used to characterize subsurface conditions.
 - g. Extent of cross-section(s) used to evaluate the three-dimensional subsurface geologic and groundwater conditions at the site.
 - h. Extent of cross-section(s) used in the evaluation of slope instability.
 - i. Existing topography on the site presented in two-foot contours.

j. Property lines for the site.

k. North arrow and plan scale.

5. Subsurface characterization data must be provided. The data shall be based on both existing and new information that may include soil borings, test pits, geophysical surveys, or other appropriate subsurface exploration methods, development of site-specific soil and/or rock stratigraphy, and measurement of groundwater levels including variability resulting from seasonal changes, alterations to the site, etc.

a. Geotechnical borings or CPT soundings will be advanced to a depth sufficient to characterize geologic conditions within and below the existing or potential landslide mass.

b. Other methods used for subsurface characterization shall be assigned a unique identifier, and the basic data presented in appropriate graphical and/or tabular format.

c. The three-dimensional subsurface conditions at the site shall be presented using one or more cross-sections showing location and depth penetration of geotechnical borings, CPT soundings, or other subsurface characterization methods, interpretation of the geometry of major soil units, and projected location of the static groundwater surface determined from the subsurface exploration. The cross-sections shall be presented at a scale of one inch equals 20 feet, one inch equals 30 feet, one inch equals 50 feet (or other scale deemed appropriate by the ~~department~~Department). Each cross-section shall have a legend with a description of the various major soil units.

6. A detailed description of any prior ~~g~~G grading activity, soil instability, or slope failure.

7. Where deemed appropriate by the ~~g~~G geotechnical ~~p~~P professional assessments and conclusions regarding slope stability for both the existing and developed conditions shall be presented and documented. These assessments and conclusions shall include the information provided below in EMC ~~Section 14.890.060~~Section 14.890.060, Appendix B. The project ~~g~~G geotechnical ~~p~~P professional must provide justification for not including a slope stability analysis if one is excluded. The City's ~~g~~G geotechnical ~~p~~P professional reserves the right to request a slope stability analysis based on site conditions. If a dispute arises between the project ~~g~~G geotechnical ~~p~~P professional and the City's ~~g~~G geotechnical ~~p~~P professional regarding the need for a slope stability analysis, then the City reserves the right to require an independent, third party review to be paid for by the applicant to resolve the dispute.

a. Determination of the potential type(s) of landslide failure mechanisms, ~~(e.g., dDebris fFlow, rotational slump, or translational slip, etc.)~~ that may affect the site.

b. Quantitative stability evaluation of slope conditions of the various failure mechanisms using state-of-the-practice modeling techniques. Limiting equilibrium methods of analysis shall state the stability conditions as a factor of safety. The most unstable failure geometry(ies) shall be presented in the form of a cross-section(s), with the least stable failure geometry for each failure mechanism clearly indicated. The stability evaluation shall also consider dynamic (earthquake) loading, and shall use a minimum horizontal acceleration as established by the current version of the International Building Code.

c. An analysis of slope regression rate shall be presented in those cases where stability is impacted or influenced by erosional processes (e.g., wave cutting, stream meandering, etc.) acting on the toe of the slope.

8. Mitigation recommendations using engineered measures to protect the proposed structure(s) and any adjacent structures, infrastructure, adjacent ~~wetland~~Wetlands, or critical fish and wildlife habitat from damage or destruction as a result of proposed construction activities shall be designed by a professional ~~e~~E engineer. Design plans and detailed geotechnical recommendations may be provided in a document separate from the ~~g~~G geotechnical ~~r~~R report. When appropriate, such recommendations/plans may include, but are not necessarily limited to:

a. Design plans and associated design calculations for engineered structures or drainage systems (e.g., structural foundation requirements, retaining wall design, etc.).

b. Recommendations and requirements pertaining to the handling of surface and subsurface runoff in the developed condition.

c. Identification of necessary geotechnical inspections to assure conformance with the report mitigation and recommendations.

d. Proposed angles of cut and fill slopes, site ~~g~~G grading requirements, final site topography (~~shown as two-foot contours~~), and the location of any proposed structures, on-site septic systems, wells, ~~and~~ stormwater management features, or facilities associated with the development detailed within the body of the report and shown on a site map at the same scale as that required in subsection (A)(8) of this appendix.

e. Soil compaction criteria and compaction inspection requirements.

f. An analysis that indicates how the proposal meets the standards outlined in EMC ~~Chapter 14.890.040~~.

g. Structural foundation requirements and estimated foundation settlement shall be provided if structures are proposed.

h. Lateral earth pressures.

i. Suitability of on-site soil for use as fill.

j. Mitigation measures for building construction on each lot for short plats, large lots, or formal plats such that additional ~~g~~Geotechnical ~~p~~Professional involvement is minimized during building construction.

B. The ~~g~~Geotechnical ~~r~~Report shall be prepared by an ~~e~~Engineering ~~g~~Geologist and shall be co-written by both an ~~e~~Engineering ~~g~~Geologist and professional ~~e~~Engineer where both geological interpretations and engineering analyses and designs are necessary or prudent in the mitigation of the landslide hazard.

C. The ~~g~~Geotechnical ~~p~~Professional(s) who prepared the ~~g~~Geotechnical ~~r~~Report shall stamp the report with ~~his or her~~ their license stamp or /seal.

D. The ~~d~~Department may request a ~~g~~Geotechnical ~~p~~Professional to provide additional information in the ~~g~~Geotechnical ~~r~~Report based upon existing conditions, changed conditions, or unique circumstances occurring on a case-by-case basis.

E. Geotechnical ~~r~~Reports shall be in conformance with a format that is pre-approved by the ~~d~~Department. (Ord. 05-247 § 1; Ord. 02-200 § 2).

Chapter 14.9100

SEISMIC (EARTHQUAKE) HAZARD AREAS

Sections:

- 14.9100.010 Purpose.
- 14.9100.020 Seismic ~~h~~Hazard ~~a~~Areas.
- 14.9100.030 Seismic ~~h~~Hazard ~~a~~Area review procedures.
- 14.9100.040 Seismic ~~h~~Hazard ~~a~~Area standards.
- 14.9100.050 ~~Buffer~~Buffer requirements.
- 14.9100.060 Appendices.

14.9100.010 Purpose.

Earthquakes have historically occurred throughout the Puget Sound region. Large earthquakes have caused loss of life and over a billion dollars in property damage. The purpose of this chapter is to protect the public health, safety, and general welfare of the citizens of Edgewood from the damaging effects of earthquakes. This chapter provides standards to ensure life safety and minimize public and private losses that may occur within a ~~s~~Seismic ~~h~~Hazard ~~a~~Area. (Ord. 02-200 § 2).

14.90100.020 Seismic ~~h~~Hazard ~~a~~Areas.

A. General. Seismic ~~h~~Hazard ~~a~~Areas are areas subject to severe risk of damage as a result of earthquake-induced landsliding, seismic ground shaking, dynamic settlement, fault rupture, or soil liquefaction.

B. Potential Seismic Hazard Areas. Potential ~~s~~Seismic ~~h~~Hazard ~~a~~Areas ~~are~~ those areas where the suspected risk of earthquake induced landsliding, dynamic settlement, fault rupture, ground deformation caused by soil liquefaction, or flooding is sufficient to require a further ~~s~~Seismic ~~h~~Hazard ~~a~~Area review ~~as set forth in EMC 14.90.030~~. These potential ~~s~~Seismic ~~h~~Hazard ~~a~~Areas are determined using the following criteria:

1. Earthquake Induced Landslide Hazard Areas. Areas identified as potential ~~l~~Landslide ~~h~~Hazard ~~a~~Areas in EMC ~~Section 14.890.020~~.
2. Liquefaction ~~and/or~~ Dynamic Settlement Hazard Areas. Areas identified as high and moderate liquefaction and dynamic settlement hazard areas on the Geologically Hazardous Areas map.
3. Fault Rupture Hazard Areas.

C. Seismic Hazard Area Categories.

1. Earthquake Induced Landslide Hazard Areas. Earthquake induced ~~l~~Landslide ~~h~~Hazard ~~a~~Areas include slopes that can become unstable as a result of strong ground shaking, even though these areas may be stable under non-seismic conditions.
2. Liquefaction and/or Dynamic Settlement Hazard Areas.
 - a. Liquefaction hazard areas are areas underlain by unconsolidated (corrected Standard Penetration Test blow counts, $[(N_1)_{60}]$ less than 30) sandy or silt soils (Unified Soil Classification System S or M soil-types) and a shallow groundwater table (static groundwater depth less than 30 feet) capable of liquefying in response to earthquake shaking.
 - b. Dynamic settlement hazard areas are areas underlain by a significant thickness (more than 10 feet) of loose or soft soil not susceptible to liquefaction (e.g., peats or organic silts and clays, unsaturated loose sands or silts), but that could result in vertical settlement of the ground surface in response to earthquake shaking.
3. Fault Rupture Hazard Areas. Fault rupture hazard areas include:

- a. Active fault rupture hazard areas are areas where displacement (movement up, down, or laterally) of the ground surface has occurred during past earthquake(s) in the Holocene Epoch; and
- b. Areas adjacent to the active fault rupture hazard area that may be potentially subject to ground surface displacement in a future earthquake.

14.90100.030 Seismic ~~h~~Hazard ~~a~~AArea review procedures.

A. General Requirements.

- 1. The ~~city~~City's Geologically Hazardous Areas map provides an indication of where potential ~~s~~Seismic ~~h~~Hazard ~~a~~Areas are located within the city.
- 2. The ~~d~~Department will complete a review of the Critical Areas Atlas – Seismic Hazard Area Map for any regulated activity to determine whether the site for a proposed regulated activity is located within a ~~s~~Seismic ~~h~~Hazard ~~a~~Area.
- 3. When the ~~d~~Department's maps indicate that the site for a proposed regulated activity is located within a potential liquefaction or dynamic settlement hazard area, the ~~department~~Department shall require the submittal of a geological assessment as outlined in subsection (B) of this section.
- 4. When the ~~d~~Department's maps indicate that the site for a proposed regulated activity is located within a potential fault rupture hazard area, the ~~department~~Department shall require the submittal of a geological assessment as outlined in subsection (B) of this section. The requirement to submit a geological assessment may be waived at the ~~department~~Department's discretion when it is determined that the proposed project area for the regulated activity is located outside the potential fault rupture hazard area.
- 5. When the ~~d~~Department's maps indicate that the site for a proposed regulated activity is or may be located within a potential earthquake-induced ~~l~~Landslide ~~h~~Hazard ~~a~~Area, the ~~d~~Department shall conduct a review pursuant to the requirements set forth in EMC ~~Chapter 14.890.030~~.
- 6. Unless otherwise stated in this chapter, the ~~e~~Critical ~~a~~Area protective measure provisions contained in EMC ~~Chapter 14.10.000~~ shall apply.

B. Geological Assessments. A geological assessment is a site investigation process to evaluate the on-site geology affecting a subject property and define the extent and severity of potential seismic hazards.

- 1. A geological assessment shall be required when the ~~department~~Department's maps, sources, or field investigation indicate a site contains a potential liquefaction, dynamic settlement, or fault rupture hazard area. Geological assessments shall be submitted to the ~~department~~Department for review and approval together with a ~~s~~Seismic ~~h~~Hazard ~~a~~Area ~~a~~Application.
- 2. A ~~g~~Geotechnical ~~p~~Professional(s) shall complete a field investigation and geological assessment to determine whether or not the site for a proposed regulated activity is located within a liquefaction or dynamic settlement hazard area.
 - a. The geological assessment shall be submitted in the form of a geotechnical verification when the ~~g~~Geotechnical ~~p~~Professional(s) finds that no liquefaction or dynamic settlement hazard area exists within the proposed project area. ~~The geotechnical verification shall meet the requirements contained in EMC-14.90.060, Appendix A.~~
 - b. The geological assessment shall be submitted in the form of a ~~g~~Geotechnical ~~r~~Report when the ~~g~~Geotechnical ~~p~~Professional(s) finds that a liquefaction or dynamic settlement hazard area exists within the proposed project area. ~~The geotechnical report shall meet the requirements contained in EMC-14.90.060, Appendix A.~~
- 3. A ~~g~~Geotechnical ~~p~~Professional shall complete a field investigation and geological assessment presented in the form of a ~~g~~Geotechnical ~~r~~Report to determine whether or not the site for a proposed regulated activity is located within a fault rupture hazard area. ~~The geological assessment shall meet the requirements contained in-~~

~~EMC 14.90.060, Appendix B.~~ Any structural recommendations proposed to mitigate the fault rupture hazard that are included in the ~~g~~Geotechnical ~~r~~Report shall be prepared by an ~~e~~Engineer.

4. All geological assessments for seismic hazards submitted under this chapter shall include, at a minimum, the following ~~items identified in paragraphs a-i:~~

- ~~a. The dates when the geological assessment was conducted and when the assessment was prepared. All of the items required per EMC Section 14.10.080.C.~~
- b. The parcel number(s) of the subject property.
- c. Site address, if the ~~city~~City has assigned one.
- d. A brief description of the project (including the proposed land use) and the area to be developed.
- e. A map showing the property lines for the site, existing two-foot contours of the existing site topography, and the location of any existing structures, utilities, wells, stormwater or septic systems, or other developments.
- f. A site plan delineating the limits of the proposed development and the location of all areas of the site subject to potential seismic hazards based on the Geologically Hazardous Areas map and, if applicable, limits of associated ~~buffer~~Buffers.
- g. A description of the surface and subsurface geology, hydrology, soils, and vegetation of the site.
- h. A detailed overview of the field investigations, published data and references, data and conclusions from past geological assessments or geotechnical investigations of the site, site-specific measurements, tests, investigations, or studies, as well as the methods of data analysis and calculations that support the determination regarding whether liquefaction and/or dynamic settlement hazards are present on the site.
- i. The results, conclusions, and recommendations resulting from the geological assessment of the liquefaction and/or dynamic settlement hazards on the subject property as prepared by a ~~g~~Geotechnical ~~p~~Professional(s).

5. Geological assessments shall be prepared, signed, stamped, and dated by the appropriate ~~g~~Geotechnical ~~p~~Professional(s) ~~(as defined in Chapter 14.15 EMC and established in this chapter)~~ and the format shall be pre-approved by the ~~d~~Department.

6. Geological assessments that do not contain the minimum required information will be returned to the ~~g~~Geotechnical ~~p~~Professional(s) for revision.

7. The ~~d~~Department shall review the geological assessment and either:

- a. Accept the geological assessment and approve the ~~a~~Application; or
- b. Reject the geological assessment and require revisions or additional information.

8. A geological assessment for a specific site may be valid for a period of up to five years when the proposed land use activity and surrounding site conditions are unchanged. However, if any environmental conditions associated with the site change during that five-year period, the applicant may be required to submit an amendment to the geological assessment. (Ord. 02-200 § 2).

~~14.90100.040~~ Seismic ~~h~~Hazard ~~a~~Area standards.

A. Earthquake Induced Landslide Hazard Areas. All standards set forth in ~~EMC~~ Chapter 14.890 ~~EMC~~ shall apply to earthquake induced ~~h~~Landslide ~~h~~Hazard ~~a~~Areas.

B. Liquefaction ~~and/or~~ Dynamic Settlement Hazard Areas.

1. All building structures shall conform to the standards set forth in EMC Title 15, Buildings and Construction.

2. Utility Lines. Utility lines, except for gas pipelines, which are prohibited, will be permitted when no other conveyance alternative is available. The line shall be located above ground and properly anchored and/or designed so that it will continue to function in the event of seismically induced ground deformation. Provision for automatic shut-off of utilities in a ground-rupturing event will be required.

3. Roads, Bridges, and Trails. Roads, bridges, and trails shall be allowed when mitigation measures are provided that ensure the roadway prism ~~and~~/or bridge structure will not be susceptible to damage from seismic induced ground deformation. Mitigation measures shall be designed for static and seismic loading conditions in accordance with the most recent version of the American Association of State Highway and Transportation Officials (AASHTO) Manual and also for an estimated range of ground surface offset presented in the ~~g~~Ceotechnical ~~r~~Report.

C. Fault Rupture Hazard Areas. Any development, ~~e~~Encroachment, ~~filling, g~~Clearing and Grading, or building structures shall be prohibited within fault rupture hazard areas and associated ~~buffer~~Buffers except as specified in the following standards:

1. Utility Lines. Utility lines, except for gas pipelines, which are prohibited, will be permitted when no other conveyance alternative is available. The line shall be located above ground and properly anchored and/or designed so that it will continue to function in the event of seismically-induced ground deformation. Provision for automatic shutoff of utilities in a ground-rupturing event will be required.

2. Roads, Bridges, and Trails. Roads, bridges, and trails shall be allowed when all of the following conditions have been met:

a. Mitigation measures are provided that ensure the roadway prism and/or bridge structure will not be susceptible to damage from seismically-induced ground deformation. Mitigation measures shall be designed for static and seismic loading conditions in accordance with the most recent version of the American Association of State Highway and Transportation Officials (AASHTO) Manual and also for an estimated range of ground surface offset presented in the ~~g~~Ceotechnical ~~r~~Report.

b. The road is not a sole access for a development. (Ord. 02-200 § 2).

14.90100.050 ~~Buffer~~Buffer requirements.

A. Determining ~~Buffer~~Buffer Widths.

1. The ~~buffer~~Buffer width shall be measured on a horizontal plane from a perpendicular line established at the edge of the fault rupture hazard area limits.

2. A ~~buffer~~Buffer is an area that is adjacent to a fault rupture hazard area that may be potentially subject to ground surface displacement in a future earthquake. No development shall be permitted within a fault rupture hazard area and its associated ~~buffer~~Buffer. The required ~~buffer~~Buffer width is the greater amount of the following distances:

a. Fifty feet from all edges of a fault rupture hazard area, except for high occupancy or essential facilities, where the minimum ~~buffer~~Buffer distance shall be 100 feet; or

b. The required ~~buffer~~Buffer width is the minimum distance recommended by the ~~g~~Ceotechnical ~~p~~Professional(s).

B. Modification of ~~Buffer~~Buffer Widths. The Department may require a larger ~~buffer~~Buffer width than the ~~buffer~~Buffer distance, as determined in subsection (A) of this section, if the ~~department~~Department determines the standard or proposed ~~buffer~~Buffer is not adequate to protect the health, safety, or welfare of any proposed development. (Ord. 02-200 § 2).

14.90100.060 ~~Appendices~~.

A. Geological Assessments – Liquefaction or Dynamic Settlement Hazard Areas.

B. Geological Assessments – Fault Rupture Hazard Area Geotechnical Report.

APPENDIX A

GEOLOGICAL ASSESSMENTS – LIQUEFACTION OR DYNAMIC SETTLEMENT HAZARD AREAS

Article I. Geotechnical Verification

A. A geotechnical verification shall, at a minimum, include the following:

1. The general ~~e~~Critical ~~a~~Areas report requirements ~~in EMC 14.10.082~~.
2. The geotechnical verification shall include all mandatory items listed in EMC ~~Chapter 14.9100-030(B)(4)~~.
3. The geological assessment must include a determination that no liquefaction ~~and/or~~ dynamic settlement hazard exists within the proposed project area.
4. The verification shall include an accurate site plan drawn at a scale of one inch equals 20 feet, one inch equals 30 feet, one inch equals 50 feet (or other scale deemed appropriate by the ~~department~~Department) is required. The ~~department~~Department may require that the site plan information be based on a field survey by a licensed surveyor. The site plan shall include:
 - a. Property lines for the site, and the location of any existing structures.
 - b. The full geographical limits of the proposed project area or conceptual project area (i.e., area to be developed) and the location of any proposed structures, on-site septic systems, wells, and stormwater management features or facilities associated with the development, if known.

B. The ~~g~~Geotechnical ~~p~~Professional(s) who prepared the geotechnical verification shall stamp the verification with ~~his or her/their~~ license stamp ~~or/~~ seal.

C. Hold harmless clauses, disclaimers, and limitations are not allowed within a geotechnical verification.

Article II Geotechnical Report

A. A ~~g~~Geotechnical ~~r~~Report shall, at a minimum, include the following:

1. The general ~~e~~Critical ~~a~~Areas report requirements ~~in EMC 14.10.082~~.
2. The document shall include all mandatory items listed in EMC ~~Chapter 14.9100-030(B)(4)~~. The report shall be prepared by an ~~e~~Engineer and shall be co-written by an ~~e~~Engineering ~~g~~Geologist where geological interpretations and conclusions critical to the assessment of liquefaction and/or dynamic settlement hazard and potential effects are necessary or prudent. The report shall specify the desired performance level of the structures and other development facilities, (e.g., safety to building occupants, minimal damage to structure, post-earthquake serviceability for pre-earthquake operations, ~~or no damage, etc.~~).
3. The results, conclusions, and recommendations resulting from the geological assessment of the liquefaction ~~and/or~~ dynamic settlement hazards on the subject property as prepared by the ~~g~~Geotechnical ~~p~~Professional(s).
4. The geological assessment- ~~g~~Geotechnical ~~r~~Report shall include:
 - a. A statement that the proposed project area falls within a liquefaction and/or dynamic settlement hazard area.
 - b. A detailed engineering evaluation of expected ground displacements or other liquefaction ~~and/or~~ dynamic settlement effects, (e.g., bearing failures, flotation of buried tanks, ~~or similar, etc.~~) and proposed mitigation measures to ensure an acceptable level of risk for the proposed structure type or other development facilities, as well as the proposed land use type ~~or~~ (~~i.e.,~~ occupancy category). The minimum

level of acceptable risk for any proposed structure or development ~~fe~~ facility shall ensure the life safety of any occupant. Where appropriate, a range of mitigation options should be considered depending on site conditions, the intended use of the structures, and acceptable levels of settlement.

5. The report shall include a site plan drawn to scale. The ~~department~~Department may require that the site plan information be based on a field survey by a licensed surveyor. The site plan shall include:

- a. Property lines for the site and the location of any existing structures.
- b. The limits ~~or~~ location of any liquefaction ~~and~~ or dynamic settlement hazard area(s) ~~as set forth in EMC-14.90.020(C)(2).~~
- c. The full geographical limits of the proposed project area or conceptual project area (i.e., area to be developed) and the location of any proposed structures, on-site septic systems, wells, and stormwater management features or facilities associated with the development, if known.
- d. Location and unique identifier of geotechnical explorations used to characterize subsurface conditions.

6. The geotechnical study shall include field exploration sufficient to assess the potential for liquefaction or dynamic settlement hazards and options for mitigation of those hazards. Copies of the exploration logs shall be provided in the report. The geotechnical study shall include field exploration sufficient to assess the potential for liquefaction or dynamic settlement hazards and options for mitigation of those hazards. Copies of the exploration logs shall be included in the report. The project ~~g~~Geotechnical ~~p~~Professional must provide justification for the scope of the field exploration program. The City's ~~g~~Geotechnical ~~p~~Professional reserves the right to request additional exploration if deemed appropriate. If a dispute arises between the City's ~~g~~Geotechnical ~~p~~Professional and the project ~~g~~Geotechnical ~~p~~Professional regarding the scope of the field exploration, the City reserves the right to require an independent, third party review to be paid for by the applicant to resolve the dispute.

7. If beneficial to the assessment of seismic hazards for the project, the three-dimensional subsurface conditions at the site shall be presented using one or more cross-sections showing location and depth penetration of borings or CPT soundings, interpretation of the geometry of major soil units, and projected location of the static groundwater surface determined from the subsurface exploration. The cross-sections shall be presented at a scale of one inch equals 20 feet, one inch equals 30 feet, one inch equals 50 feet (or other scale deemed appropriate by the ~~department~~Department). Each cross-section shall have a legend with a description of the various major soil units. ~~The City's gGeotechnical pProfessional reserves the right to request inclusion of one or more cross sections in the gGeotechnical rReport. If a dispute arises between the project gGeotechnical pProfessional and the City's gGeotechnical pProfessional regarding this issue, then the City reserves the right to require an independent, third party review to be paid for by the applicant to resolve the dispute.~~

8. All assessments of liquefaction ~~and~~ or dynamic settlement hazards and effects will be based on a design earthquake using ground motion parameters consistent and equivalent to those specified in the most current version of the International Building Code. ~~These assessments shall use the shallowest groundwater table observed during or inferred from subsurface exploration and characterization, (e.g., the measured depth of static groundwater immediately prior to abandonment of borings, or observation of iron-oxide mottling of soils samples, etc.).~~

9. Results of laboratory testing of samples retrieved during drilling and sampling shall be presented in order to support the values of fines contents used in subsequent analysis of liquefaction and/or dynamic settlement hazard. Where only CPT methods are used in site assessment, the correlation between fines content and CPT measurements will be discussed and documented. This documentation will require rigorous correlation of CPT and fines content measurements from similar geological deposits within the Puget Sound region.

10. The ~~g~~Geotechnical ~~r~~Report shall include a detailed assessment of the liquefaction and/or dynamic settlement hazard based on analysis of available subsurface data using state-of-the-practice methodologies. The results of the analysis shall be documented, and all results of intermediate and final calculations and results, including factors of safety, shall be included.

11. When appropriate, the ~~g~~Geotechnical ~~r~~Report shall include an assessment of the potential for large lateral spreads or flow failures, bearing failures, settlement, limited lateral displacement, and flotation of buried facilities. The methodologies used must be, at a minimum, state-of-the-practice, and the conclusions regarding the potential and severity of the possible liquefaction and/or dynamic settlement induced failure modes shall be presented.

12. Alternative mitigative measures including structural and foundation design options and/or soil improvement techniques shall be evaluated and compared for their effectiveness in reaching the level of performance specified in the report introduction. Effectiveness of soil improvement techniques shall be specified in terms of post-treatment densification or strength improvement as measured by appropriate subsurface investigation and testing. The extent of the post-treatment verification testing shall be provided on a site map at the same scale as the map presented in subsection (A)(4) of this article. Geotechnical review of all final plans is required and the findings of the review shall be documented in writing.

B. The ~~g~~Geotechnical ~~p~~Professional(s) who prepared the ~~g~~Geotechnical ~~r~~Report shall stamp the report with ~~his or her~~ ~~their~~ license stamp ~~or~~ seal.

C. Hold harmless clauses, disclaimers, and limitations are not allowed within a ~~g~~Geotechnical ~~r~~Report.

APPENDIX B

GEOLOGICAL ASSESSMENTS – FAULT RUPTURE HAZARD AREA GEOTECHNICAL REPORT

A. A ~~g~~Geotechnical ~~r~~Report shall, at a minimum, include the following:

1. The general ~~e~~Critical ~~a~~Areas report requirements ~~contained herein in EMC 14.10.082~~.

2. ~~The document shall include all mandatory items listed in EMC 14.90.030(B)(4).~~ The report shall be prepared by an ~~e~~Engineer and shall be co-written by an ~~e~~Engineering ~~g~~Geologist where geological interpretations and conclusions critical to the assessment of liquefaction and/or dynamic settlement hazard and potential effects are necessary or prudent.

3. The following topics should be considered and addressed in detail where essential to support opinions, conclusions, and recommendations in any geologic report on faults. It is not expected that all the topics or investigative methods would be necessary in a single investigation. In specific cases, it may be necessary to extend some of the investigative methods well beyond the site or property being investigated.

a. Purpose and scope of investigation; description of proposed development.

b. Geologic and tectonic setting. Include seismicity and earthquake history.

c. Site description and conditions, including dates of site visits and observations. Include information on geologic units, graded and filled areas, vegetation, existing structures, and other factors that may affect the choice of investigative methods and interpretation of data.

d. Methods of Investigation.

i. Review of published and unpublished literature, maps, and records concerning geologic units, faults, groundwater barriers, and other factors.

ii. Stereoscopic interpretation of aerial photographs, review of LiDAR based topography, and other remotely sensed images to detect fault-related topography (geomorphic features), vegetation and soil contrasts, and other lineaments of possible fault origin. The area interpreted usually should extend beyond the site boundaries.

iii. Surface observations, including mapping of geologic and soil units, geologic structures, geomorphic features and surfaces, springs, deformation of engineered structures due to fault creep, both on and beyond the site.

iv. Subsurface Investigations.

(A) Trenching and other excavations to permit detailed and direct observation of continuously exposed geologic units, soils, and structures; must be of adequate depth and be carefully logged (Taylor & Cluff 1973, Hatheway & Leighton 1979, McCalpin 1996b).

(B) Borings and test pits to permit collection of data on geologic units and groundwater at specific locations. Data points must be sufficient in number and spaced adequately to permit valid correlations and interpretations.

(C) Cone penetrometer testing (CPT) (Grant et al., 1997, Edelman et al., 1996). CPT must be done in conjunction with continuously logged borings to correlate CPT results with on-site materials. The number of borings and spacing of CPT soundings should be sufficient to adequately image site stratigraphy. The existence and location of a fault based on CPT data are interpretative.

v. Geophysical Investigations. These are indirect methods that require a knowledge of specific geologic conditions for reliable interpretations. They should seldom, if ever, be employed alone without knowledge of the geology (Chase & Chapman 1976). Geophysical methods alone never prove the absence of a fault nor do they identify the recency of activity. The types of equipment and techniques used should be described and supporting data presented (California Board of Registration for Geologists and Geophysicists, 1993).

(A) High-resolution seismic reflection (Stephenson et al., 1995, McCalpin, 1996b).

(B) Ground penetrating radar (Cai et al., 1996).

(C) Other methods include: seismic refraction, magnetic profiling, electrical resistivity, and gravity (McCalpin, 1996b).

vi. Age-dating techniques are essential for determining the ages of geologic units, soils, and surfaces that bracket the time(s) of faulting (Pierce 1986, Birkeland et al., 1991, Rutter & Catto, 1995, McCalpin, 1996a).

(A) Radiometric dating (especially ¹⁴C).

(B) Soil-profile development.

(C) Rock and mineral weathering.

(D) Landform development.

(E) Stratigraphic correlation of rocks, ~~and~~ minerals, ~~and~~ fossils.

(F) Other methods – artifacts, historical records, tephrochronology, fault scarp modeling, thermoluminescence, lichenometry, paleomagnetism, dendrochronology, etc.

vii. Other methods should be included when special conditions permit or requirements for critical structures demand a more intensive investigation.

(A) Aerial reconnaissance overflights.

(B) Geodetic and strain measurements.

(C) Microseismicity monitoring.

e. Conclusions.

- i. Location and existence (or absence) of hazardous faults on or adjacent to the site; ages of past rupture events.
- ii. Type of faults and nature of anticipated offset, including sense and magnitude of displacement, if possible.
- iii. Distribution of primary and secondary faulting (fault zone width) and fault-related deformation.
- iv. Probability of, or relative potential for, future surface displacement. The likelihood of future ground rupture seldom can be stated mathematically, but may be stated in semiquantitative terms such as low, moderate, or high, or in terms of slip rates determined for specific fault segments.
- v. Degree of confidence in, and limitations of data and conclusions.

f. Recommendations.

- i. The recommended increase from the standard ~~buffer~~Buffer distance (50 feet) of proposed structures from fault rupture hazard areas. The recommended ~~buffer~~Buffer distance generally will depend on the quality of data and type and complexity of fault(s) encountered at the site and the proposed land use type (i.e., occupancy). In order to establish an appropriate ~~buffer~~Buffer distance from a fault located by indirect or interpretative methods (e.g., borings or cone penetrometer testing), the area between data points also should be considered underlain by a fault unless additional data are used to more precisely locate the fault. Additional measures (e.g., strengthened foundations, engineering design, and flexible utility connections) to accommodate warping and distributive deformation associated with faulting (Lazarte and others, 1994).
- ii. Risk evaluation relative to the proposed development.
- iii. Limitations of the investigation; need for additional studies.

g. References.

- i. Literature and records cited or reviewed; citations should be complete.
- ii. Aerial photographs or images interpreted – list type, data, scale, source, and index numbers.
- iii. Other sources of information, including well records, personal communications, and other data sources.

h. Illustrations. The following illustrations should be provided:

- i. A location map that identifies site locality, significant faults, geographic features, regional geology, seismic epicenters, and other pertinent data; 1:24,000 scale is recommended.
- ii. A site development map that shows site boundaries, existing and proposed structures and limits of the proposed project area, graded areas, streets, exploratory trenches, borings geophysical traverses, locations of faults, and other data; recommended scale is 1:2,400 (one inch equals 200 feet), or larger.
- iii. A geologic map that shows the distribution of geologic units (if more than one), faults and other structures, geomorphic features, aerial photo graphic lineaments, and springs; on topographic map 1:24,000 scale or larger; can be combined with subsection (B)(h)(i) or (ii) of this appendix.
- iv. Geologic cross-sections, if needed, to provide three-dimensional picture.
- v. Logs of exploratory trenches and borings that show details of observed features and conditions (note: these should not be generalized or diagrammatic). Trench logs should show topographic profile and geologic structure at a 1:1 horizontal to vertical scale; scale should be 1:60 (one inch equals five feet) or larger.

vi. Geophysical data and geologic interpretations.

i. Appendix. Attach any supporting data not included above, (e.g., water well data, photographs, and aerial photographs).

4. The ~~g~~G~~eotechnical~~ ~~p~~P~~rofessional~~ who prepared the ~~g~~G~~eotechnical~~ Report shall stamp the report with ~~his or her~~their license stamp or seal.

5. The ~~d~~D~~epartment~~ may request a ~~g~~G~~eotechnical~~ ~~p~~P~~rofessional~~ to provide additional information in the ~~g~~G~~eotechnical~~ ~~r~~R~~eport~~ based upon existing conditions, changed conditions, or unique circumstances occurring on a case-by-case basis.

6. Hold harmless clauses, disclaimers, and limitations are not allowed to be included, neither expressly nor implied, within a geological assessment. (Ord. 02-200 § 2).

Chapter 14.110

EROSION HAZARD AREAS

Sections:

- 14.110.010 Purpose.
- 14.110.020 Erosion ~~h~~Hazard ~~a~~Areas.
- 14.110.030 Erosion ~~h~~Hazard ~~a~~Area review procedures.
- 14.110.040 Erosion ~~h~~Hazard ~~a~~Area standards.
- 14.110.050 ~~Buffer~~Buffer requirements.
- 14.110.060 Appendices.

14.110.010 Purpose.

The following statements describe the purpose of this chapter:

- A. Protect human life and health;
- B. Regulate uses of land in order to avoid damage to structures and property being developed and damage to neighboring land and structures;
- C. Identify and map ~~any e~~Erosion ~~h~~Hazard ~~a~~Areas;
- D. Minimize impacts on ~~wetland~~Wetlands and critical fish and wildlife species and their associated habitat that can result from erosion;
- E. Establish a permit requirement and review procedures for development proposals in areas with potential erosion hazards;
- F. Strike a balance between the need to maintain natural shoreline erosion/regression processes and the need to protect existing and proposed development. (Ord. 02-200 § 2).

14.110.020 Erosion ~~h~~Hazard ~~a~~Areas.

A. ~~Shoreline~~Erosion Hazard ~~Area~~ Indicators. ~~Shoreline e~~Erosion ~~h~~Hazard ~~a~~Areas are areas potentially subject to land regression or retreat due to a combination of geologic, seismic, ~~and/or~~hydrologic, or manmade factors. ~~Shoreline Erosion h~~Hazard ~~a~~Areas can be identified by indicators of active land retreat as a result of ~~f~~fluvial ~~p~~Processes.

B. Erosion Hazard Area Categories.

1. Potential Erosion Hazard Areas. Potential ~~e~~Erosion ~~h~~Hazard ~~a~~Areas, as depicted on the Geologically Hazardous Areas map, are those areas where the suspected risk of erosion through either loss of soil, slope instability, or land regression is sufficient to require additional review to assess the potential for active erosion activity or apply additional standards. These potential ~~e~~Erosion ~~h~~Hazard ~~a~~Areas are determined using the following criteria:

- a. Shoreline Erosion Hazard Areas. Areas within 200 feet of a freshwater ~~(lake, pond, or shoreline.)~~ The distance shall be as-measured landward perpendicularly from the edge of the ordinary high water mark.
- b. Riverine Erosion Hazard Areas. The rivers subject to regulation as a ~~CMZ~~channel-migration-zone listed in EMC ~~Section 14.8070.030020.B.4(B)(4).~~ Section 14.8070.030020.B.4(B)(4).
- c. Soil Erosion Hazard Areas. Areas identified as having slopes of 20 percent or greater and that are classified as having severe, or very severe erosion potential by the Soil Conservation Service, United States Department of Agriculture (USDA).

2. Active Shoreline Erosion Hazard Areas. Land areas located directly adjacent to surface water bodies that, through the geological assessment process, are identified as regressing, retreating, or potentially unstable as a result of undercutting by wave action or bluff erosion. The limits of the active shoreline ~~eErosion hHazard aArea~~ shall extend landward to include that land area that is calculated, based on the rate of regression, to be subject to erosion processes within the next 10-year time period.

3. Riverine Erosion Hazard Areas ~~or CMZs~~. Riverine ~~eErosion hHazard aArea~~s are located within the lateral extent of likely watercourse channel movement due to bank destabilization and erosion, rapid incision, and shifts in location of watercourse channels. ~~Riverine erosion hazard areas are also referred to as channel-migration zones (CMZs).~~ Rivers and streams subject to erosion are regulated as a CMZ ~~as listed in EMC 14.70.020(B)(4).~~

4. Soil Erosion Hazard Areas. Soil ~~eErosion hHazard aArea~~s are identified by the presence or absence of natural vegetative cover, soil texture condition, slope, and rainfall patterns, or man-induced changes to such characteristics that create site conditions which are vulnerable to erosion of the upper soil horizon. Soil ~~eErosion hHazard aArea~~s include those areas with slopes of 20 percent or greater and that are classified as having severe, or very severe erosion potential by the USDA Natural Resources Conservation Service. (Ord. 02-200 § 2).

14.110.030 Erosion ~~hHazard aArea~~ review procedures.

A. General Requirements.

1. The City's Geologically Hazardous Areas map provides an indication of where potential ~~eErosion hHazard aArea~~s are located. The actual presence or location of an ~~eErosion hHazard aArea~~ and/or additional potential ~~eErosion hHazard aArea~~ that have not been mapped, but may be present on or adjacent to a site, shall be determined using the procedures and criteria established in this chapter.

2. The ~~departmentDepartment~~ will complete a review of the Geologically Hazardous Areas map, and any other source documents for any proposed regulated activity to determine whether the site for the regulated activity is located within a potential ~~eErosion hHazard aArea~~.

3. When the ~~departmentDepartment~~'s maps, sources, or field investigations indicate that the site for a proposed regulated activity is located within a potential shoreline ~~eErosion hHazard aArea~~, the ~~departmentDepartment~~ shall require a geological assessment as outlined in subsection (B) of this section.

4. When the ~~departmentDepartment~~'s maps, sources, or field investigations indicate that the proposed project area for a regulated activity is located within a potential riverine ~~eErosion hHazard aArea~~ or CMZ ~~(channel-migration zone)~~, the ~~departmentDepartment~~ shall conduct a review pursuant to ~~the requirements set forth in EMC Chapter 14.8070.030. All standards set forth in Chapter 14.70 EMC shall apply to riverine erosion hazard areas (CMZs).~~

5. When the ~~departmentDepartment~~'s maps, sources, or field investigations indicate that the proposed project area for a regulated activity is located within a potential soil ~~eErosion hHazard aArea~~, the ~~dDepartment~~ shall require submittal of an erosion control plan pursuant to the requirements set forth in EMC Title 15, ~~Buildings and Construction~~.

6. Applicants requesting to develop a bulkhead along a shoreline shall be required to submit a ~~gGeotechnical rReport~~. ~~The geotechnical report shall comply with the requirements established in EMC 14.110.060, Appendix C.~~

~~7. Unless otherwise stated in this chapter, the critical area protective measure provisions contained in EMC 14.10.080 shall apply.~~

B. Geological Assessment. A geological assessment is a site investigation process to evaluate the on-site geology affecting a subject property and proposed development.

1. Geological assessments shall be submitted to the ~~department~~Department for review and approval together with a shoreline ~~eErosion hHazard aArea~~ application.
2. The geological assessment shall include a field investigation and may also include review of public records and documentation, analysis of historical air photos, LiDAR mapping, published data and references, etc.
3. The geological assessment shall include the following information and analysis ~~identified in paragraphs a-d~~:

- a. An analysis of the shoreline erosion processes on and in the vicinity of the site including an evaluation of erosion and shoreline retreat that has occurred over the past decade and an estimated probable rate of erosion based upon the historic rate of erosion that has occurred on the site.
- b. A determination of which areas on the site meet the criteria for an active shoreline ~~eErosion hHazard aArea~~ as set forth in EMC 14.110.020(B)(2).
- c. A determination of the area on the site or in the vicinity of the site that will experience regression in the next 120 years given natural processes.

~~d. All of the information required per EMC Section 14.10.080.C.~~

4. Geological assessments shall be prepared, signed, and dated by a ~~gGeotechnical pProfessional~~ (as defined in Chapter 14.15 EMC and established in this chapter) and the format shall be pre-approved by the ~~department~~Department.

5. A ~~gGeotechnical pProfessional~~ shall complete a field investigation and geological assessment to determine whether or not an active shoreline ~~eErosion hHazard aArea~~ exists within 200 feet of the site.

- a. The geological assessment shall be submitted in the form of a geotechnical letter when the ~~gGeotechnical pProfessional~~ finds that no active shoreline ~~eErosion hHazard aArea~~ exists within 200 feet of the site. ~~The geotechnical letter shall meet the requirements contained in EMC 14.110.060, Appendix A.~~

- b. The geological assessment shall be submitted in the form of geotechnical verification when the ~~gGeotechnical pProfessional~~ finds that an active shoreline ~~eErosion hHazard aArea~~ exists but is located more than 200 feet away from the proposed project area. ~~The geotechnical verification shall meet the requirements contained in EMC 14.110.060, Appendix B.~~

- c. The geological assessment shall be submitted in the form of a ~~gGeotechnical rReport~~ when the ~~gGeotechnical pProfessional~~ finds that an active shoreline ~~eErosion hHazard aArea~~ exists within 200 feet of the proposed project area or when a ~~gGeotechnical pProfessional~~ determines that mitigation measures, such as a bulkhead, are necessary in order to construct or develop within a potential shoreline ~~eErosion hHazard aArea~~. ~~The geotechnical report shall meet the requirements contained in EMC 14.110.060, Appendix C.~~

6. The ~~department~~Department shall review the geological assessment and either:

- a. Accept the geological assessment and approve the ~~aApplication~~; or
- b. Reject the geological assessment and require revisions or additional information.

7. A geological assessment for a specific site may be valid for a period of up to five years when the proposed land use activity and surrounding site conditions are unchanged. However, if any environmental conditions associated with the site change during that five-year period, the applicant may be required to submit an amendment to the geological assessment.

C. Riverine Erosion Hazard Area (Channel Migration Zones) Review. Riverine ~~eErosion hHazard aAreas~~ shall be reviewed pursuant to the requirements set forth in EMC ~~Chapter 14.8070.030~~.

D. Soil Erosion Hazard Area Review. Soil ~~e~~Erosion ~~h~~Hazard ~~a~~Areas shall be reviewed pursuant to the requirements set forth in EMC Title 15, Buildings and Construction. (Ord. 02-200 § 2).

14.110.040 Erosion ~~h~~Hazard ~~a~~Area standards.

A. Active Shoreline Erosion Hazard Areas. Any development, ~~e~~Encroachment, ~~filling~~, ~~e~~Clearing, ~~or~~ and ~~g~~Grading, timber harvest, building structures, impervious surfaces, and vegetation removal shall be prohibited within active shoreline ~~e~~Erosion ~~h~~Hazard ~~a~~Areas and associated ~~buffer~~Buffers except as specified in the following standards:

1. Shoreline Erosion Protection Measures. Shoreline erosion protection measures located within or adjacent to freshwater or marine shorelines shall be allowed subject to the following:

a. The proposed shoreline protection measure shall comply with the standards set forth in ~~EMC~~ Chapter 14.4050 – ~~EMC, Critical~~ Fish and Wildlife Habitat ~~Conservation~~ Areas.

b. A geological assessment ~~shoreline erosion~~ ~~g~~Geotechnical ~~r~~Report ~~has been conducted in accordance with the provisions set forth in EMC 14.110.030(B)~~ that indicates that the shoreline is currently experiencing active erosion, (i.e., land retreat or regression).

c. The use of the shoreline erosion protection measure will not cause a significant adverse impact on adjacent properties or critical fish and wildlife species and their associated habitat (i.e., increase erosion on adjacent properties).

d. The use of ~~s~~Soft ~~a~~Armoring ~~t~~Techniques ~~(soil bioengineering erosion control measures)~~ is the preferred method for shoreline protection.

e. Hard ~~a~~Armoring shoreline erosion control measures shall be approved only when a geological assessment ~~shoreline erosion~~ ~~g~~Geotechnical ~~r~~Report ~~as set forth in EMC 14.110.030(B)~~ has been completed and indicates the following:

i. The regression has been monitored on a yearly interval for a period of at least five consecutive years prior to allowing a bulkhead to be constructed. This monitoring shall be conducted by field survey measurements of a licensed surveyor. The ~~department~~Department may shorten or eliminate the monitoring period if there are indicators that the regression rate is rapid and an existing structure may be threatened prior to completion of the monitoring period;

ii. The use of beach nourishment alone or in combination with ~~s~~Soft ~~a~~Armoring ~~t~~Techniques is not adequate to protect the property from shoreline erosion processes; and

iii. The property contains an existing structure(s) that will be threatened within the next 10 years or the buildability of an undeveloped site will be threatened within the next 10 years if a ~~h~~Hard ~~a~~Armoring method of shoreline erosion protection is not provided.

f. Hard ~~a~~Armoring shoreline protection measures shall not be allowed when structures can be located landward of the 120-year rate of regression area.

2. Stormwater Conveyance. Surface drainage into an active shoreline ~~e~~Erosion ~~h~~Hazard ~~a~~Area should be avoided. If there are no other alternatives for discharge, then drainage must be collected upland of the top of the active shoreline ~~e~~Erosion ~~h~~Hazard ~~a~~Area and directed downhill in a high density polyethylene stormwater pipe with fuse welded joints that includes an energy dissipating device at the base of the active ~~h~~Landslide ~~h~~Hazard ~~a~~Area. The pipe shall be located on the surface of the ground and be properly anchored so that it will continue to function in the event of an underlying slide. The number of these pipes should be minimized along the slope frontage.

3. Utility Lines. Utility lines will be permitted when no other conveyance alternative is available. The line shall be located above ground and properly anchored and/or designed so that it will continue to function in the event of an underlying slide.

4. Roads, Bridges, and Trails. Roads, bridges, and trails shall be allowed when all of the following conditions have been met:

- a. Mitigation measures are provided that ensure the roadway prism and/or bridge structure will not be susceptible to damage from active erosion.
- b. The road is not a sole access for a development.

B. Shoreline Erosion Hazard Management Area. All ~~r~~Regulated ~~a~~Activities such as but not limited to building structures, impervious surfaces, vegetation removal, timber harvest, ~~and clearing~~ or ~~g~~Grading activities may be allowed in areas located within 200 feet of an active shoreline ~~e~~Erosion ~~h~~Hazard ~~a~~Area subject to the following standards:

1. The ~~department~~Department reviews and approves a geological assessment – shoreline erosion hazard ~~g~~Geotechnical ~~r~~Report and determines that the proposed project area is located outside an active shoreline hazard area and the required ~~buffer~~Buffer, ~~as set forth in EMC 14.110.050~~.
2. The proposed recommendations and mitigation measures contained within the ~~g~~Geotechnical ~~r~~Report are adequate to reduce or mitigate risks to the natural environment, health, and safety.
3. Surface drainage from the proposed project area, including downspouts, landscape irrigation systems, and runoff from paved or unpaved surfaces upland of the shoreline, shall not be directed through an active shoreline ~~e~~Erosion ~~h~~Hazard ~~a~~Area or its associated ~~buffer~~Buffer unless it is conveyed in conformance with the provisions in subsection (A)(2) of this section.
4. Stormwater retention and detention systems, such as dry wells and infiltration systems utilizing buried pipe or french drains, shall not be permitted unless such systems are designed by a professional ~~e~~Engineer and the ~~g~~Geotechnical ~~r~~Report indicates that such a system will not affect the stability of the shoreline.
5. Proposed developments, with the exception of shoreline erosion protection measures, shall be sited far enough from regressing shorelines to ensure 120 years of useful life for any proposed structures or infrastructure.

C. Riverine Erosion Hazard Area ~~or CMZ(Channel Migration Zones)~~ Review. Riverine ~~e~~Erosion ~~h~~Hazard ~~a~~Areas shall be reviewed pursuant to the requirements set forth in EMC ~~Chapter 14.870.030~~.

D. Soil Erosion Hazard Area Review. Soil ~~e~~Erosion ~~h~~Hazard ~~a~~Areas shall be reviewed pursuant to the requirements set forth in EMC Title 15, Buildings and Construction. (Ord. 02-200 § 2).

14.110.050 ~~Buffer~~Buffer requirements.

A. Determining ~~Buffer~~Buffer Widths.

1. The ~~buffer~~Buffer width shall be measured on a horizontal plane from a perpendicular line established at the edge of the active shoreline ~~e~~Erosion ~~h~~Hazard ~~a~~Area limits.
2. An undisturbed ~~buffer~~Buffer of existing vegetation shall be required for an active shoreline ~~e~~Erosion ~~h~~Hazard ~~a~~Area. The required standard ~~buffer~~Buffer width is ~~either a or b below, whichever is the greater~~
~~amount of the distances in EMC 14.110.050(A)(2)(a) and (b):~~
 - a. Fifty feet from all edges of the active shoreline ~~e~~Erosion ~~h~~Hazard ~~a~~Area limits;
 - b. A distance of one-third the height of the slope at the top of the slope and a distance of one-half the height at the bottom of the slope; or

~~3. e-~~The ~~buffer~~Buffer width may be reduced ~~below the widths specified in EMC 14.110.050(A)(2)(a) and (b)~~ or eliminated upon ~~the Director's~~ approval ~~by the Department~~ of a ~~g~~Geotechnical ~~r~~Report that demonstrates that such a reduction would not result in an increased risk of erosion either on or off of the subject property.

B. Modification of ~~Buffer~~ Widths. The ~~department~~ may require a larger ~~buffer~~ width than the standard ~~buffer~~ distance, as determined in subsection (A) of this section, if any of the following are identified through the geological assessment process:

1. The adjacent land is susceptible to severe erosion and erosion control measures will not effectively prevent adverse impacts.
2. The area has a severe risk of slope failure or downslope stormwater drainage impacts. (Ord. 02-200 § 2).

14.110.060 Appendices.

A. Geological Assessment – Shoreline Erosion Hazard Geotechnical Letter.

B. Geological Assessment – Shoreline Erosion Hazard Geotechnical Verification.

C. Geological Assessment – Shoreline Erosion Hazard Geotechnical Report.

APPENDIX A

GEOLOGICAL ASSESSMENT – SHORELINE EROSION HAZARD GEOTECHNICAL LETTER

A. A geotechnical letter shall, at a minimum, include the following:

1. The general ~~c~~ritical ~~a~~reas report requirements ~~in EMC 14.10.082~~.
2. A summary of the findings of the site visit, a site plan, and a summary of the findings from the review of documents listed in EMC 14.110.030 ~~B.2(B)(2)~~. The appropriate professional preparing the geotechnical letter shall provide conclusions and recommendations as to shoreline stability for the proposed development.

B. The ~~g~~Geotechnical ~~p~~Professional who prepared the geotechnical letter shall stamp the letter with his or her seal.

C. Hold harmless clauses, disclaimers, and limitations are not allowed within a geotechnical letter.

APPENDIX B

GEOLOGICAL ASSESSMENT – SHORELINE EROSION HAZARD GEOTECHNICAL VERIFICATION

A. A geotechnical verification shall, at a minimum, include the following:

1. The general ~~c~~ritical ~~a~~reas report requirements ~~in EMC 14.10.082~~.
2. A summary of the results, conclusions, and recommendations resulting from the geological assessment, as set forth in EMC 14.110.030 ~~(B)~~. The verification will also include a summary of the findings of the site visit, a site plan, and a summary of the findings from the review of the documents listed in EMC 14.110.030 ~~B.2(B)(2)~~.
3. An accurate site plan drawn at a scale of one inch equals 20 feet, one inch equals 30 feet, one inch equals 50 feet (or other scale deemed appropriate by the ~~department~~) is required. The ~~department~~ may require that the site plan information listed below be based on a field survey by a licensed surveyor. The site plan shall include:
 - a. The limits ~~and~~ location of the active shoreline ~~e~~Erosion ~~h~~Hazard ~~a~~Area(s) ~~set forth in EMC 14.110.020(B)(2)~~.
 - b. The limits of the required shoreline erosion hazard ~~buffer~~ ~~based upon the requirements set forth in EMC 14.110.050(A)~~.
 - c. The limits ~~and~~ location of the shoreline erosion hazard management area.
 - d. The limits ~~and~~ location of the 120-year regression area.

e. The location of any existing structures, utilities, on-site septic systems, wells, and stormwater management facilities.

f. The location of any proposed structures, utilities, on-site septic systems, wells, and stormwater management facilities.

g. The full geographical limits of the proposed project area (~~area to be developed~~).

h. Dimension of the closest distance between the identified active shoreline hazard area boundary and the proposed project area.

i. Dimension of the closest distance between the 120-year regression line and the proposed project area.

j. Existing contours on the site at two-foot intervals.

k. Property lines for the site.

l. North arrow and scale.

B. The ~~g~~Geotechnical ~~p~~Professional who prepared the geotechnical verification shall stamp the verification with ~~his or her~~ their seal.

C. Hold harmless clauses, disclaimers, and limitations are not allowed within a geotechnical verification.

APPENDIX C

GEOLOGICAL ASSESSMENT – SHORELINE EROSION HAZARD GEOTECHNICAL REPORT

A. A ~~g~~Geotechnical ~~r~~Report shall, at a minimum, include the following:

1. The general ~~c~~Critical ~~a~~Areas report requirements ~~in EMC 14.10.082~~.

2. A summary of the results, conclusions, and recommendations resulting from the geological assessment, ~~as set forth in EMC 14.110.030(B)~~. The report will also include a summary of the findings of the site visit, a site plan, and a summary of the findings from the review of documents listed in EMC 14.110.030 ~~B.2(B)(2)~~. The summary shall specifically address:

a. Whether it is possible given the physical constraints of the property (size, shape, building setbacks, utility requirements, etc.) to locate the proposed development outside of the 120-year area of regression based on natural shoreline processes.

b. If it is not possible to locate the development outside of the 120-year area of regression (based on natural processes), determine whether beach nourishment, ~~and/or s~~Soft ~~a~~Armoring ~~t~~Techniques, ~~or both~~ can be used to slow the rate of regression such that the proposed development is no longer within the 120-year regression area.

c. If it is not possible to locate the development outside of the 120-year area of regression, ~~(based on the use of beach nourishment and/or s~~Soft ~~a~~Armoring ~~t~~Techniques), outline the strategy, ~~as set forth in EMC 14.110.040(A)(1)~~, to monitor the rate of regression on the site.

d. Determine whether any proposed shoreline erosion protection measures will cause an increase in the rate of regression on neighboring properties.

3. An accurate site plan drawn at a scale of one inch equals 20 feet, one inch equals 30 feet, one inch equals 50 feet (or other scale deemed appropriate by the ~~department~~Department) is required. The ~~department~~Department may require that the site plan information listed below be based on a field survey by a licensed surveyor. The site plan shall include:

- a. The limits and/ location of the active shoreline ~~e~~Erosion ~~h~~Hazard ~~a~~Area(s) ~~set forth in EMC 14.110.020(B)(2).~~
- b. The limits of the required shoreline erosion hazard ~~buffer~~Buffer based upon the requirements ~~set forth in EMC 14.110.050(A).~~
- c. The limits and/ location of the shoreline erosion hazard management area.
- d. The limits and/ location of the 120-year regression area based on natural shoreline processes and, if applicable, based upon proposed shoreline protection measures.
- e. The location of any existing structures, utilities, on-site septic systems, wells, and stormwater management facilities.
- f. The location of any proposed structures, utilities, on-site septic systems, wells, and stormwater management facilities.
- g. The full geographical limits of the proposed project area (~~area to be developed~~).
- h. Dimension of the closest distance between the identified active shoreline hazard area boundary and the proposed project area.
- i. Dimension of the closest distance between the 120-year regression line and the proposed project area.
- j. Existing contours on the site at two-foot intervals.
- k. Property lines for the site.
- l. North arrow and scale.

4. A discussion of any proposed shoreline protection measures including design and construction drawings is required.

5. A list of references utilized in preparation of the report.

B. The ~~g~~Geotechnical ~~p~~Professional(s) who performed the geological assessment shall stamp the report with ~~his or her~~their license stamp ~~or~~ /seal. The report must be co-authored by a licensed professional ~~e~~Engineer when engineering designs or interpretations are necessary to address the report requirements. The ~~e~~Engineer must also stamp the report with ~~his or her~~their license stamp ~~or~~ /seal.

C. The ~~department~~Department may request a ~~g~~Geotechnical ~~p~~Professional to provide additional information in the ~~g~~Geotechnical ~~r~~Report based upon existing conditions, changed conditions, or unique circumstances occurring on a case-by-case basis.

D. Hold harmless clauses, disclaimers, and limitations are not allowed within a ~~g~~Geotechnical ~~r~~Report.

E. Geotechnical ~~r~~Reports shall be in conformance with a format that is pre-approved by the ~~department~~Department. (Ord. 02-200 § 2).

..

Chapter 14.50120

NATURAL RESOURCE LANDS

Sections:

- 14.50120.010 Purpose.
- 14.50120.020 Intent.
- 14.50120.030 Applicability.
- 14.50120.04031 Mineral ~~R~~esource ~~L~~ands designation.
- 14.50120.0450 Natural ~~R~~esource ~~L~~ands noticing requirements.
- 14.50120.0560 Current use assessment.
- 14.50120.0670 Variances and appeals.
- 14.50120.0780 Review process.
- 14.50120.0890 Title, plat, and ~~R~~egulated ~~a~~Activities notification.
- 14.50120.1090 Permitted uses.
- 14.50120.1100 Appendices.

14.50120.010 Purpose.

This chapter establishes requirements and regulations to protect ~~a~~Natural ~~R~~esource ~~L~~ands and is established pursuant to WAC 197-11-908 and RCW 36.70A.170 and 36.70A.060. The ~~e~~City therefore designates ~~a~~Agricultural ~~L~~ands and ~~m~~Mineral ~~R~~esource ~~L~~ands, and all associated ~~buffer~~Buffers as being ~~environmentally sensitive~~ ~~Critical~~ ~~a~~Areas and designated ~~a~~Natural ~~R~~esource ~~L~~ands. By regulating development within 500 feet of ~~a~~Natural ~~R~~esource ~~L~~ands, this title seeks to implement the following goals and policies to:

- A. Inform the public of the existence, location and potential incompatibility impacts of development on, or within 500 feet of, these ~~environmentally sensitive~~ ~~Critical~~ ~~a~~Areas within the city.
- B. Encourage the retention of open space, development of recreational opportunities, conserve priority habitat, increase access to ~~a~~Natural ~~R~~esource ~~L~~ands and water, and develop parks.
- C. Assure the conservation of resource lands and related activities by limiting encroachment of incompatible development thereon.
- D. Promote the conservation of ~~m~~Mineral ~~R~~esource ~~L~~ands through inclusion of known deposits of minerals and materials.
- E. Assure that undeveloped mineral and material resources will not be forever lost by prior development of the land for other purposes.
- F. Allow for the necessary mineral processing to convert such minerals and materials into marketable products.
- G. Protect the environment and enhance the state's high quality of life, including air and water quality and the availability of water.
- H. Maintain and enhance the biological and physical functions and values of ~~wetland~~Wetlands. (Ord. 02-200 § 2).

14.500120.020 Intent.

Resource lands are of special concern to the citizens, the ~~city~~City, and the state. The intent of this chapter is to conserve resource lands by establishing standards for development of sites which contain, or are within 500 feet of, resource lands to promote the public health, safety, and welfare by:

- A. Noticing of property on, or within, natural resource land areas;
- B. Mitigating unavoidable impacts by regulating development;
- C. Protecting from development impacts;

D. Protecting the public against losses from:

1. Costs of public emergency rescue and relief operations where the causes are avoidable;
2. Degradation of the natural environment and the expense associated with repair or replacement;

E. Preventing adverse impacts on water availability, water quality, ~~wetland~~Wetlands, and streams;

F. Protecting unique, fragile, and valuable elements of the environment, including fish and wildlife habitat;

G. Providing sufficient information to show that ~~e~~Critical ~~a~~Areas are adequately protected prior to approving, conditioning, or denying public or private development activity;

H. Providing the public with sufficient information and notice of potential risks associated with development in ~~any~~ ~~e~~Critical ~~Area~~ ~~or~~ ~~s~~Sensitive ~~a~~Areas;

I. Implementing the goals and requirements of the Growth Management Act (RCW 36.70A.060), the ~~city of Edgewood City's~~ comprehensive plan, and all updates and amendments, functional plans, and other land use policies formally adopted or accepted by the ~~city~~City. (Ord. 02-200 § 2).

14.500.120.030 Applicability.

This chapter shall apply to all properties designated as resource lands, ~~(a)~~Agricultural ~~I~~Lands, ~~or m~~Mineral ~~r~~Resource ~~I~~Lands, ~~or~~ properties within 500 feet of designated resource lands within Edgewood. When the requirements of this title are more stringent than those of other local, state, or federal law, codes, or regulations, the requirements of this title shall apply.

A. Agricultural Lands. Lands that are not already characterized by ~~u~~Urban ~~g~~Growth and that have long-term significance for the commercial production of food or other agricultural products. Agricultural ~~I~~Lands are those lands meeting all of the following criteria:

1. Lands in parcels which are 10 acres or larger in size;
2. Lands which are on prime or unique soils as identified in:
 - a. United States Department of Agriculture (USDA), Soil Conservation Service, February 1979, Soil Survey of Pierce County Area, Washington; or
 - b. USDA, Soil Conservation Service, June 1981, Important Farmlands of Pierce County, Washington;
 - c. Lands which are primarily devoted to the commercial production of horticultural, viticultural, floricultural, dairy, apiary, vegetable, or animal products or of berries, grain, hay, straw, turf, seed, Christmas trees not subject to the excise tax imposed by RCW 84.33.100 through 84.33.140, or livestock, and which have ~~I~~Long-~~t~~Term ~~e~~Commercial ~~s~~Significance for agricultural production; and
 - d. Lands which are not within 500 feet of lots of record of one acre or less on more than 50 percent of the perimeter of the parcel.

B. Mineral Resource Lands. Mineral ~~r~~Resource ~~I~~Lands shall be identified by the ~~city~~City using the criteria set forth in WAC 365-190-070 as now exists or as may hereafter be amended or modified.

C. Property Adjacent to Resource Lands. All plats, short plats, development permits, and building permits issued for development activities within 500 feet of lands designated as ~~n~~Natural ~~r~~Resource ~~I~~Lands shall contain a notice that a variety of commercial activities may occur that are not compatible with residential development for certain periods of limited duration. (Ord. 04-221 § 1; Ord. 02-200 § 2).

14.500.120.031040 Mineral ~~r~~Resource ~~I~~Lands designation.

A. The ~~city~~City has classified the following areas as potential ~~m~~Mineral ~~r~~Resource ~~I~~Lands ~~based on the criteria in EMC 14.500.030(B).~~

1. Parcels: 0420164023, 0420164024, 0420164016 (commonly known as Olson); and
2. Parcels: 0420162047, 0420162048 (commonly known as Josties); and
3. Parcels: 0420084072, 0420084002, 0420084005, 0420084069, 0420084068, 0420171073, 0420171057, 0420171000, 0420171059 (commonly known as Fife Sand and Gravel).

B. The ~~city~~City staff shall study each area and prepare a written analysis of each area.

~~C. The city council's land use and economic development committee shall review the staff analysis and either send the analysis back to staff for clarification or recommend approval/denial of each area as a mineral resource land to the city council. The staff analysis and land use and economic development committee's recommendation shall be forwarded to the city council for review and action.~~

~~D.C.~~ The ~~e~~City ~~e~~Council shall review the staff analysis and recommendation(s) ~~of the land use committee~~ and shall, by ordinance, approve, deny, or modify the particular study area designation using the criteria in EMC ~~Section 14.500120.0560(B)~~. (Ord. 04-234 § 1).

~~14.500120.040050~~ Natural ~~r~~Resource ~~H~~ands noticing requirements.

Pursuant to RCW 36.70A.060, the ~~city~~City shall require that all plats, ~~d~~Development ~~a~~Applications, or permits issued for development activities on, abutting, or within 500 feet of lands designated as ~~n~~Natural ~~r~~Resource ~~H~~ands contain a notice (see Appendices A through C).

A. General. If more than one natural resource land subject to the provisions of this title intersects the subject parcel, then one notice addressing all of the natural resource areas shall be sufficient.

B. Title Notification.

1. When the ~~city~~City determines that activities not exempt from this title are proposed, the owner shall file a notice with the Pierce County auditor ~~in accordance with~~ (Appendices A through C ~~of this Chapter~~). The notice shall provide a public record of the presence of ~~the any s~~Sensitive ~~a~~Area(s); the application of this title to the property; and any limitations on activity in or affecting such ~~s~~Sensitive ~~a~~Area.
2. The notice shall be notarized and recorded with the Pierce County auditor before approval of any regulated use or activity on the site.

C. Plat Notification. For all proposals requiring a plat within ~~any s~~Sensitive ~~a~~Areas, the applicant shall note the face of the plat consistent with the language set forth in Appendices A through C ~~of this Chapter~~.

D. Permit Notification. The ~~department~~Department shall require that all permits issued for ~~r~~Regulated ~~a~~Activities on or within 500 feet of ~~n~~Natural ~~r~~Resource ~~H~~ands contain a notice as set forth in Appendices A through C. (Ord. 02-200 § 2).

~~14.500120.050060~~ Current use assessment.

A. An owner of ~~n~~Natural ~~r~~Resource ~~H~~ands or open space desiring current use ~~e~~Classification under Chapter 84.40 RCW may file for such current use ~~e~~Classification.

B. An owner of undeveloped land with ~~e~~Critical ~~a~~Areas which has been placed in a separate tract or tracts, protective easement, public or private land trust dedication, or other similarly preserved area for the protection of these ~~e~~Critical ~~a~~Areas may have that portion of land reviewed for reassessment by the assessor-treasurer's office consistent with those restrictions to determine the fair market value of the land pursuant to RCW 84.40.030.

C. The owner shall notify the assessor-treasurer's office when restrictions on development occur on a particular site, and shall provide a plat map in addition to the following, or other special study documents as may be required by the ~~department~~Department.

14.500120.0670 Variances and appeals.

Procedures for variances and appeals of an administrative decision issued pursuant to this chapter are set forth in EMC 18.40.090, ~~Process II, Administrative action.~~ (Ord. 02-200 § 2).

14.500120.0780 Review process.

A. The ~~d~~Department shall review any permit or ~~a~~Application requested for any regulated activity, including, but not limited to, those set forth in EMC ~~Chapter 14.500.049~~ on a site which includes, or is within 500 feet of, one or more resource land is located, unless otherwise provided in this title.

B. As part of all development ~~a~~Applications, the ~~department~~Department shall review the information submitted by the applicant to:

1. Confirm the nature and type of the resource land and evaluate any required title, plat, ~~and~~or regulated activity notification;
2. Determine whether the development proposal is consistent with this title; and
3. Determine whether any proposed alterations to the site containing resource lands are necessary.

C. The ~~city~~City may approve, approve with conditions, or deny any development proposal in order to comply with the requirements and carry out the goals, purposes, objectives, and requirements of this title.

D. Approval of a development proposal does not discharge the obligation of the applicant to comply with the provisions of this title. (Ord. 02-200 § 2).

14.500120.0890 Title, plat, and ~~r~~Regulated ~~a~~Activities notification.

A. If more than one resource land subject to the provisions of this title exists on the site, then one notice addressing all of the resource lands shall be sufficient.

B. Notification shall be approved by the ~~department~~Department and shall be consistent with the forms set forth in EMC 14.500120.11000, Appendices A through C, as applicable.

C. Title notifications shall be notarized and recorded with the Pierce County auditor prior to approval of any regulated use or activity for the site. (Ord. 02-200 § 2).

14.500120.090100 Permitted uses.

Uses permitted on designated resource land sites shall be the same as those permitted in the zone ~~e~~Classifications shown on the ~~city~~City zoning map. (Ord. 02-200 § 2).

14.500120.1100 Appendices.

A. Property Adjacent to Resource Lands.

B. Agriculture Lands Noticing.

C. Mineral Resource Lands Noticing.

APPENDIX A

PROPERTY ADJACENT TO RESOURCE LANDS

A. Title Notification.

Parcel Number: _____

Site Address: _____

NOTICE: This parcel lies within 500 feet of land designated resource lands by Edgewood. A variety of commercial and industrial activities occur in the area that may be inconvenient or

cause discomfort to area residents. This may arise from the use of chemicals, or from spraying or extraction which occasionally generates dust, smoke, noise, and odor. The ~~city~~City has established resource uses as priority uses on productive resource lands, and residents of adjacent property should be prepared to accept such inconveniences or discomfort from normal, necessary commercial resource lands operations.

Signature of Owner

(NOTARY ACKNOWLEDGMENT)

B. Plat Notification. The owner of any site within 500 feet of land designated as resource lands on which a large lot, short subdivision, or formal subdivision is submitted, shall record a notice on the face of the plat. Such notification shall be in the form as set forth below:

PROPERTY ADJACENT TO RESOURCE LANDS PLAT NOTIFICATION. This property lies within 500 feet of land designated resource lands by Edgewood. A variety of commercial and industrial activities occur in the area that may be inconvenient or cause discomfort to area residents. This may arise from the use of chemicals, or from spraying or extraction which occasionally generates dust, smoke, noise, and odor. The ~~city~~City has established resource uses as priority uses on productive resource lands, and residents of adjacent property should be prepared to accept such inconveniences or discomfort from normal, necessary commercial resource lands operations.

C. Regulated Activities Notification. The ~~department~~Department shall require that permits issued for regulated activities, as defined in EMC Chapter 14.120500-EMC, within 500 feet of lands designated as resource lands, contain a notice as set forth below.

REGULATED ACTIVITIES NOTIFICATION. This property lies within 500 feet of land designated resource lands by Edgewood. A variety of commercial and industrial activities occur in the area that may be inconvenient or cause discomfort to area residents. This may arise from the use of chemicals, or from spraying or extraction which occasionally generates dust, smoke, noise, and odor. The ~~city~~City has established resource uses as priority uses on productive resource lands, and residents of adjacent property should be prepared to accept such inconveniences or discomfort from normal, necessary commercial resource lands operations.

APPENDIX B

AGRICULTURAL LANDS NOTICING

A. Title Notification.

Parcel Number: _____

Site Address: _____

NOTICE: This parcel lies within 500 feet of an area identified as ~~a~~Agricultural ~~L~~ands by Edgewood. A variety of commercial ~~a~~Agricultural ~~a~~Activities occur in the area that may be inconvenient or cause discomfort to area residents. This may arise from the use of agricultural chemicals, including herbicides, pesticides, and fertilizers; or from spraying, pruning, and harvesting which occasionally generate dust, smoke, noise, and odor. Edgewood has established agriculture as a priority use on productive ~~a~~Agricultural ~~L~~ands, and residents of adjacent property should be prepared to accept such inconveniences or discomfort from normal, necessary farm operations.

Signature of Owner

Signature of Owner

(NOTARY ACKNOWLEDGMENT)

B. Plat Notification. The owner of any site within this designation on which a large lot, short subdivision, or formal subdivision is submitted, shall record a notice on the face of the plat. Such notification shall be in the form as set forth below.

AGRICULTURAL LANDS PLAT NOTIFICATION. This parcel lies within an area identified as ~~a~~Agricultural ~~H~~Lands by Edgewood. A variety of commercial ~~a~~Agricultural ~~a~~Activities occur in the area that may be inconvenient or cause discomfort to area residents. This may arise from the use of agricultural chemicals, including herbicides, pesticides, and fertilizers; or from spraying, pruning, and harvesting which occasionally generate dust, smoke, noise, and odor. The ~~city~~City has established agriculture as a priority use on productive ~~a~~Agricultural ~~H~~Lands, and residents of adjacent property should be prepared to accept such inconveniences or discomfort from normal, necessary farm operations.

C. Regulated Activities Notification. The ~~department~~Department shall require that all permits issued for regulated activities, as defined in ~~EMC~~ Chapter 14.120500 ~~EMC~~, within this zone ~~e~~Classification contain a notice as set forth below.

REGULATED ACTIVITIES NOTIFICATION. This parcel lies within 500 feet of an area identified as ~~a~~Agricultural ~~H~~Lands by Edgewood. A variety of commercial ~~a~~Agricultural ~~a~~Activities occur in the area that may be inconvenient or cause discomfort to area residents. This may arise from the use of agricultural chemicals, including herbicides, pesticides, and fertilizers; or from spraying, pruning, and harvesting which occasionally generate dust, smoke, noise, and odor. The ~~city~~City has established agriculture as a priority use on productive ~~a~~Agricultural ~~H~~Lands, and residents of adjacent property should be prepared to accept such inconveniences or discomfort from normal, necessary farm operations.

APPENDIX C

MINERAL RESOURCE LANDS NOTICING

A. Title Notification.

Parcel Number: _____

Site Address: _____

NOTICE: This parcel lies within 500 feet of an area of land designated mineral resource lands by the ~~city~~City. A variety of commercial mineral extraction activities occur in the area that may be inconvenient or cause discomfort to area residents. This may arise from the use of heavy equipment, chemicals, and spraying which may generate dust, smoke, and noise associated with the extraction of mineral resources. Edgewood has established mineral resource extraction as a priority use on productive mineral resource lands, and residents of adjacent property should be prepared to accept such inconveniences or discomfort from normal, necessary mineral resource extraction operations.

Signature of Owner

(NOTARY ACKNOWLEDGMENT)

B. Plat Notification. The owner of any site within this overlay district on which a large lot, short subdivision, or formal subdivision is submitted, shall record a notice on the face of the plat. Such notification shall be in the form as set forth below:

MINERAL RESOURCE LANDS PLAT NOTIFICATION. This property lies within 500 feet of an area of land designated mineral resource lands by the ~~city~~City of Edgewood. A variety of mineral resource extraction activities occur in the area that may be inconvenient or cause discomfort to area residents. This may arise from the use of heavy equipment, chemicals, and spraying which may generate dust, smoke, and noise associated with the extraction of mineral resources. Edgewood has established mineral resource extraction as a priority use on productive mineral resource lands, and residents of adjacent property should be prepared to accept such inconveniences or discomfort from normal, necessary mineral resource extraction lands.

C. Regulated Activities Notification. The ~~department~~Department shall require that all permits issued for regulated activities, as defined in ~~EMC~~ Chapter 14.590120-EMC, within this designation contain a notice as set forth below:

REGULATED ACTIVITIES NOTIFICATION. This property lies within 500 feet of an area of land designated mineral resource lands by Edgewood. A variety of mineral resource extraction activities occur in the area that may be inconvenient or cause discomfort to area residents. This may arise from the use of chemicals and extraction of minerals, which occasionally generates dust, smoke, noise, and odor. The ~~city~~City has established mineral resource extraction as a priority use on productive mineral resource lands, and residents of adjacent property should be prepared to accept such inconveniences or discomfort from normal, necessary mineral resource extraction lands.

(Ord. 02-200 § 2).

Title 14

CRITICAL AREAS

Chapters:

- 14.10 General Provisions**
- 14.20 Definitions**
- 14.30 Use and Activity Regulations**
- 14.40 Wetlands**
- 14.50 Critical Fish and Wildlife Habitat Areas**
- 14.60 Aquifer Recharge and Wellhead Protection Areas**
- 14.70 Volcanic Hazard Areas**
- 14.80 Flood Hazard Areas**
- 14.90 Landslide Hazard Areas**
- 14.100 Seismic (Earthquake) Hazard Areas**
- 14.110 Erosion Hazard Areas**
- 14.120 Natural Resource Lands**

Chapter 14.10

GENERAL PROVISIONS

Sections:

14.10.010	Authority.
14.10.020	Purpose.
14.10.030	Interpretation.
14.10.040	Applicability.
14.10.050	Administration.
14.10.060	Relationship to Other Regulations.
14.10.070	Critical Area protective measures.
14.10.080	Critical Areas Reports.
14.10.090	Mitigation plans.
14.10.100	Variances to Critical Areas.
14.10.110	Reconsideration and appeal procedures.
14.10.120	Fees.
14.10.130	Compliance.
14.10.140	Warning and disclaimer of liability.
14.10.150	Appendix.

14.10.010 Authority.

A. This title is established and adopted pursuant to the Growth Management Act (RCW 36.70A.060).

B. As provided herein, the Director or their designee is given the authority to interpret and apply, and the responsibility to enforce this title.

14.10.020 Purpose.

A. The purpose of this title is to protect the Critical Areas of Edgewood from the impacts of development by establishing minimum standards for Development Activity on sites that contain or adjoin any Critical Area or its Buffer(s). Further, the purpose of these regulations is to mitigate the potential hazard(s) to development in and near Critical Areas.

B. The purpose is further envisioned to promote the public health, safety, and welfare by:

1. Avoiding impacts to critical areas;
2. Mitigating unavoidable impacts of Regulated Activities;
3. Protecting Critical Areas from impacts of development;
4. Protecting the public against losses from:
 - a. Costs of public emergency rescue and relief operations where the causes are avoidable; and
 - b. Degradation of the natural environment and the expense associated with repair or replacement;
5. Preventing adverse impacts on water availability, water quality, Wetlands, and streams;
6. Protecting unique, fragile, and valuable elements of the environment, including critical Fish and Wildlife Habitat Conservation Areas;
7. Providing Department staff with sufficient information to adequately protect Critical Areas and proposed Development Activity when approving, conditioning, or denying public or private Regulated Activities;

8. Providing the public with sufficient information and notice of potential risks associated with Development in Critical Areas; and

9. Implementing the goals and requirements of the Growth Management Act (RCW 36.70A.060), the State Environmental Policy Act (SEPA), the City's comprehensive plan, and all updates, amendments, functional plans, and other land use policies formally adopted or accepted by the City.

14.10.030 Interpretation.

A. In the interpretation and application of this title, all provisions shall be:

1. Considered the minimum necessary for compliance; and
2. Liberally construed to serve the purposes of this title.

B. Nothing contained herein shall be deemed to limit or repeal any other powers under state statute.

14.10.040 Applicability.

A. This title shall apply to all lands and waters within Edgewood that are designated as Critical Areas and their corresponding Buffers and setbacks.

B. No Development Activity or Regulated Activities shall hereafter take place without full compliance of this title.

C. When the requirements of this title are more stringent than those of other City codes and regulations, the requirements of this title shall apply.

D. Compliance with these regulations does not remove an applicant's obligation to comply with applicable provisions of any other federal, state, or local law or regulation.

E. Criteria for determining the presence of a Critical Area is contained within each chapter of this title.

F. When a site contains two or more Critical Areas, the site shall meet the minimum standards and requirements for each.

G. Critical Areas are identified on, but may not be limited to, the following maps:

1. Wetlands;
2. Geologically Hazardous Areas;
3. Critical Aquifer Recharge Areas;
4. Streams; and
5. Frequently Flooded Areas.

H. The boundary of each mapped Critical Area is approximate and is only intended to provide an indication of the presence of a Critical Area on a particular site. Additional Critical Areas that have not been mapped may also be present on a site. The actual presence of a Critical Area and the applicability of these regulations shall be determined based upon the Classification or categorization criteria and review procedures established for each Critical Area. City staff or the City's consultant(s) may request the ability to perform an on-site inspection to assess the site in order to advise if additional studies or reports shall be included with any Development Application.

I. Critical Area maps shall be updated and maintained by the Department.

14.10.050 Administration.

A. Critical Areas Permit or Approval Required. In order to conduct any Development Activity or Regulated Activity on any property located within three hundred (300) feet of a Critical Area, as each Critical Area is defined

in this Title or as shown on the City's Critical Areas Map(s), a Critical Areas Permit or an Approval must be obtained from the City.

B. Critical Areas Approval.

1. If the City requires that another permit application be submitted under a different code chapter in order to allow the proposed Development Activity or Regulated Activity, then a separate Critical Areas Permit is not required. Instead, the City shall review the underlying application, together with the application materials required herein, to determine compliance or noncompliance with this title. The determination on such compliance or noncompliance shall be incorporated within the decision on the underlying application.

2. In addition to the materials required to make the underlying application complete as required by the City's code outside of this Title, the applicant shall also submit the materials set forth herein, where the subject property is within three hundred (300) feet of a Critical Area. The City shall not issue a determination that the underlying application is complete until all materials have been submitted.

3. The Critical Areas materials shall be reviewed following the same process as the underlying application.

C. Critical Areas Permit.

1. If the City does not require any other permit in order to allow the proposed Development Activity or Regulated Activity, the applicant shall be required to obtain a separate Critical Areas Permit in order for the proposed development activity to proceed.

2. A complete application for a Critical Areas Permit shall consist of the materials set forth in EMC Section 14.10.050.D.

3. The process for review of a Critical Area Permit where there is no underlying application is the Type II Process, as set forth within EMC Section 18.40.090.

D. Elements of a Complete Permit Application. A complete application for Approval of a Critical Areas Permit under this Title shall consist of the following materials:

1. A completed permit application form, which must be signed by the record owner of the property (the person(s) whose name is on the most recently recorded deed or contract purchaser with written permission from the record owner). An application form may be signed by an agent for the record owner, as long as the application is also accompanied by a verified statement signed by the record owner, which specifically authorizes the agent to submit the application on the record owner's behalf.

2. The subject site's street address, legal description, or both items if necessary for property identification;

3. A complete description of the proposed development activity;

4. All items identified in this title that are necessary to complete the application for the specific Critical Area; and

5. The required application fee.

E. Critical Areas reports shall not be submitted without an accompanying permit Application for an underlying action, such as, but not limited to, a building permit, subdivision or boundary line adjustment action, site development, TPCHD permit, or an administrative, conditional, or special use permit, with the exception of Applications required by the Department as a result of an enforcement action, reports required by TPCHD for septic design approval, or associated with a request under the Pierce County Open Space public benefit rating system tax program.

F. Modifications. The Department may request an update of any required assessment, report, or Delineation due to the potential for change in the existing environment that may have been caused by a natural event, e.g., seismic event, landslides, or flooding or human induced activity that Degraded the existing conditions after the original document was submitted.

C. Public Notice. Public notice provisions for notice of Application; public hearing, if applicable; and final decision pursuant to this title are outlined in EMC Section 18.40.190, Notice of public hearing.

D. Review.

1. Initial Review. The Department shall conduct an initial review of any Application in accordance with the provisions outlined in EMC Section 18.40.150, Determination of Completeness.

2. Review Responsibilities.

a. The Department is responsible for administration, circulation, and review of any Applications and approvals required by this title.

b. Any Reasonable Use Exception Applications shall follow EMC Section 14.20.050.

c. Other City or Pierce County departments and state agencies, as determined by the Department, may review an Application and forward their respective recommendations to the Director or Hearing Examiner, as appropriate.

3. Review Process.

a. The Department shall perform a Critical Area review for any building or land use Application submitted for a Regulated Activity. Reviews for multiple Critical Areas shall occur concurrently.

b. The Department shall, to the extent reasonable, consolidate the processing of related aspects of other City regulatory programs which affect activities in any regulated Critical Area.

c. As part of the initial review of all related permit Applications, the Department shall review the information to:

i. Confirm the nature and type of the Critical Area and evaluate whether any assessments, reports, or studies are required;

ii. Determine whether the development proposal is consistent with this title;

iii. Determine whether any proposed alterations to the site containing Critical Areas are necessary; and

iv. Determine if the mitigation and monitoring plans submitted by the applicant are sufficient to protect the public health, safety, and welfare consistent with the goals, purposes, objectives, and requirements of this title.

d. Regulated Activities subject to SEPA shall also be reviewed with consideration for impacts on Critical Areas as identified in this title. Regulated Activities that pose a significant adverse impact which are not addressed by the standards and criteria established in this title, may be subject to additional mitigation measures as determined through the SEPA process. A threshold determination issued pursuant to EMC Title 20 - SEPA, may not be made prior to the Department's review of any special studies or technical reports required by this title, except where the applicant requests a declaration of significance so that environmental review is required.

d. Critical Areas Applications required under this title shall be approved prior to approval of any underlying permit action.

e. The Department may waive the requirement to submit a Critical Area Report when the proposed project area for a regulated activity is located in an area that has been the subject of a previously submitted and approved assessment or report, if all of the following conditions have been met:

- i. The provisions of this title have been previously addressed as part of another approval;
- ii. There has been no material change in the potential impact to the Critical Area or required Buffer since the prior review;
- iii. There is no new information available that is applicable to any critical review of the site or particular Critical Area;
- iv. The permit or approval has not expired or, if there is no expiration date, no more than five years have elapsed since the issuance of that permit or approval; and
- v. Compliance with any standards or conditions placed upon the prior permit or approval has been achieved or secured.

4. Burden of Proof. The applicant has the burden of proving that a proposed Application complies with the standards set forth in this title.

5. Final Decision.

- a. The Department may approve, approve with conditions, or deny any Critical Areas Applications or underlying Applications for development within any Critical Area . Approval of a development proposal does not discharge the obligation of the applicant to comply with the provisions of this title.
- b. Applicants shall comply with the recommendations or mitigation measures contained in final approved assessments or reports and any final decision and conditions of approval.
- c. Approval of an Application required under this title must be given prior to the start of any development activity on a site.

6. Time Period for Final Decision. The provisions for issuing a notice of final decision on any Application filed pursuant to this title is set forth in EMC Section 18.40.040, Coordination of development permit procedures.

E. Time Limitations.

1. Expiration of Approval.

- a. Approvals granted under this title shall be valid for the same time period as the underlying permit. If the underlying permit does not contain a specified expiration date, then approvals granted under this title shall be valid for a period of three (3) years from the date of issue, unless a longer or shorter period is specified in the final decision.
- b. The approval shall be considered null and void upon expiration, unless a time extension is requested and granted as set forth in EMC Section 14.10.050.E.2.

2. Time Extensions.

- a. The applicant or owner(s) may request in writing a one-time, one-year extension of the original approval. To receive the extension, the applicant must demonstrate that circumstances beyond their control dictated the need for the extension. The extension would set a new expiration date one year later than the initial expiration.
- b. Knowledge of the expiration date and initiation of a request for a time extension is the responsibility of the applicant or owner(s).

- c. A written request for a time extension shall be filed with the Department at least sixty (60) days prior to the expiration of the approval.
- d. Upon filing of a written request for a time extension, a copy shall be sent to each party of record together with governmental departments or agencies that were involved in the original approval process. By letter, the Department shall request written comments be delivered to the Department within 30 days of the date of the letter.
- e. Prior to the granting of a time extension, the Department may require a new Application(s), updated study(ies), and fee(s) if:
 - i. The original intent of the approval is altered or enlarged by the renewal;
 - ii. The circumstances relevant to the review and issuance of the original approval have changed substantially; or
 - iii. The applicant failed to abide by the terms of the original approval.

F. Recording.

1. Approvals.

- a. Approvals to modify a Critical Area or which otherwise require mitigation and or monitoring shall be recorded on the title of the project parcel(s) at the Pierce County auditor's office by City of Edgewood Staff prior to issuance of any permit authorizing the project to proceed and at the sole expense of Applicant.
- b. EMC Section 14.10.070.F, Title and Land Division Notification contains additional recording requirements.
- c. Work within a recorded, existing utility easement is not required to meet EMC Section 14.10.050.F.1.a.

2. Right of Entry.

- a. When an Application has been submitted, the City shall have a right of entry to verify the submitted information is correct; to ensure any applicable condition(s) of approval were satisfied; to confirm any required monitoring is being performed; or to attest that all outstanding items subject to a performance bond were completed.
- b. The right of entry shall extend until the last condition in the permit has been satisfied.

14.10.060 Relationship to Other Regulations

A. This title shall apply in addition to zoning and other regulations adopted by the City and concurrently with review conducted under SEPA.

B. Compliance with the provisions of this title does not constitute compliance with other federal, state, and local regulations and permit requirements that may be required. The applicant is responsible for complying with all other requirements, apart from the process established in this title.

C. Regulated Activities that may impact Critical Areas or their Buffers, but do not require any other City permits or approvals, may be reviewed as a Critical Areas Permit.

14.10.070 Critical Area protective measures.

A. General. All Critical Area tracts, Conservation Easements, land trust dedications, and other similarly preserved areas shall remain undeveloped in perpetuity, except as they may be allowed to be altered pursuant to this title.

1. Conservation Easements and other similarly preserved areas restrict both the current use as well as future uses of the land to some important conservation quality such as habitat preservation, open space, or scenic views.

2. A land trust or governmental entity that manages properties for long-term goals typically holds the Conservation Easement or other similarly preserved area.

B. Mitigation Sequence. Adverse impacts caused by new activities and developments shall be mitigated using the following action(s) in order of priority:

1. Avoiding the impact altogether by not taking a certain action or parts of an action;
2. Minimizing impacts by limiting the degree or magnitude of the action and its implementation, by using appropriate technology, or by taking affirmative steps, such as project redesign, relocation, or timing, to avoid or reduce impacts;
3. Rectifying the impact by repairing, rehabilitating, or restoring the affected environment;
4. Reducing or eliminating the impact over time by preservation and maintenance operations;
5. Compensating for the impact by replacing, enhancing, or providing substitute resources or environments; and
6. Monitoring the impact and the compensation project and taking appropriate corrective measures.

C. Identification of Critical Areas and Required Buffers on Construction Plans. Critical Areas and required Buffers shall be clearly identified on all construction plans.

D. Building Setbacks.

1. Unless otherwise provided in this title, buildings and other structures shall be set back a distance of 15 feet from the edge of all Critical Area Buffers or, where no Buffers are required, the edge of the Critical Area.
2. The following uses and activities may be allowed in the building setback area:
 - a. Landscaping;
 - b. Uncovered decks;
 - c. Building overhangs extending 18 inches or less into the setback area;
 - d. Impervious ground surfaces, such as driveways, parking lots, roads, walkways, and patios; provided, that such improvements conform to the water quality standards set forth in the city's adopted stormwater management manual and that construction equipment does not enter the Buffer during the construction process;
 - e. Clearing and Grading; or
 - f. Any combination of items a-e. (Ord. 02-200 § 2).
3. All other uses and activities not listed in EMC Section 14.10.070.D.2.a-e are prohibited.

E. Financial Guarantees.

1. The City may require an applicant to submit one or more financial guarantees, e.g., surety bond, cash escrow, cash set aside, assignment of funds, or letter of credit, to guarantee any performance, mitigation, maintenance, or monitoring required as a condition of permit approval. The approval for the project will not be granted until the financial guarantee is received by the Department. Projects where the City or one of its departments is the applicant shall not be required to post a financial guarantee.

2. Financial guarantee instruments required under this title shall be:

- a. In addition to any other site development guarantees required for project approval;
- b. Submitted on financial guarantee forms approved by the city;
- c. In the amount of 125 percent of the City Engineer's estimate of the cost of mitigation or monitoring to allow for inflation and administration should the city have to complete the mitigation or monitoring; and
- d. Released by the City only when the applicant's appropriate technical professional has provided written confirmation that the performance, mitigation, or monitoring requirements have been met and the Department or its agent inspected the site(s) for compliance.

3. Failure to complete any performance, mitigation, or monitoring may result in the forfeiture or release of the guarantee. Applicants who have previously defaulted will no longer be allowed to post a bond guarantee for improvements necessary for approval of a land use Application. Applicants who have previously defaulted will be allowed to post cash guarantees for subsequent Critical Area Mitigation work needed for approval of a land use Application or permit, but the guarantee must be by cash guarantee only.

F. Title and Land Division Notification.

1. General.

- a. Title or land division notice(s) shall be required to be recorded with the Pierce County auditor on each site that contains a Critical Area, at the time of approval of any regulated activity on a site.
- b. If more than one Critical Area subject to the provisions of this title exists on the site, then one notice which addresses all of the Critical Areas may be sufficient.
- c. Title or land division notifications and notes shall be approved by the Department and shall be consistent with EMC Section 14.10.170, Appendix A.
- d. Applicant shall be responsible for the recording costs of the notice.
- e. Notice on title is not required for utility line easements on lands not owned by the jurisdiction conducting the regulated activity, e.g., gas pipelines.

2. Land Division Notification and Notes. As referenced in EMC 14.10.170, Appendix A there shall be notes included on the face of any final plat, final binding site plan, short plat, or boundary line adjustment that contain any Critical Area or Buffers. The Critical Area boundaries and the boundary of any associated Buffers shall be identified on the face of these documents prior to submission to the City for approval.

G. Conservation Easements.

1. Prior to any final Critical Area approval, the part of the Critical Area and required Buffer which is located on the site shall be protected with a Conservation Easement or other similar permanent deed restriction.

2. The Conservation Easement shall indicate allowable and prohibited uses within the Critical Area and required Buffer.

H. Tracts. Critical Area tracts must adhere to the provisions in EMC Section 16.01.100 and the face of the plat shall include the requirement that the owners of all lots shall be required to preserve, protect, and maintain the Critical Areas.

I. Homeowner's Covenants.

1. A description of the Critical Area and required Buffer shall be placed in any required homeowner's covenants to provide notice to the homeowners of their responsibility to preserve, protect, and maintain the Critical Areas in perpetuity.

2. Such covenants shall contain a detailed description of the allowable uses within the Critical Area and, if applicable, associated Buffer and long-term management and maintenance requirements of the Critical Area.

J. Markers, Fencing, and Signage.

1. Markers.

a. Prior to final approval of any Critical Areas Application, the outer edge of the Critical Areas boundaries or required Buffer boundaries on the site shall be flagged by the qualified professional, as outlined in each chapter.

b. The boundaries shall then be identified with rebar and cap permanent markers and flagged by a licensed surveyor, unless otherwise stated in this title. The permanent markers shall be clearly visible, durable, and permanently affixed to the ground.

2. Fencing.

a. Temporary Construction Fencing.

i. Temporary fencing is required when vegetation is to be retained in an undisturbed condition within the Critical Area and required Buffer.

ii. When temporary fencing is required, the applicant shall construct silt fencing, construction fencing, or other City-approved method of temporary fencing at the edge of the Critical Area or the edge of the required Buffer prior to beginning construction on the site.

b. Permanent Fencing. Where deemed necessary by the Department to provide protection to the Critical Area, the applicant will be required to construct permanent, wildlife-passable fencing along the Buffer boundary.

3. Signage.

a. The Department shall require permanent signage to be installed at the edge of the Critical Area or the edge of the required Buffer.

b. The sign shall indicate the type of Critical Area and if the area is to remain in a natural condition as permanent open space.

c. Exact sign locations, wording, size, and design specifications shall be established by the Department.

d. Signage shall be clearly visible, durable, and permanently affixed to the ground.

e. Prior to final approval of any Critical Area Application, the applicant shall submit an affidavit of posting to the Department as proof that the required signs were posted on the site.

14.10.080 Critical Areas Reports.

A. The applicant shall submit a Critical Areas report as required per this Title.

B. The Critical Areas report shall use scientifically valid methods and studies in the analysis of Critical Area data and field reconnaissance to evaluate the proposed development and all probable impacts to Critical Areas in accordance with the provisions of this title. The report shall reference the source(s) of science used in accordance with WAC 365-195-900 through WAC 365-195-925.

C. At a minimum the report shall contain the following ten (10) items:

1. The name and contact information of the applicant;
2. A description of the proposal;
3. The site plan for the proposed development, including a map drawn to scale depicting Critical Areas, Buffers, the proposed development, and any areas to be cleared or altered;
4. The date of the report and names and qualifications of the persons preparing the report;
5. Documentation of any fieldwork performed on the site;
6. Identification and characterization of all Critical Areas and Buffers on and adjacent to the proposed development;
7. A statement specifying the accuracy of the report, and all assumptions made and relied upon;
8. A discussion of the performance standards applicable to the Critical Area and proposed development;
9. A mitigation plan in accordance with EMC Section 14.10.090, if mitigation is required; and
10. Any additional report information required for the Critical Area as specified herein.

14.10.090 Mitigation plans.

A. When mitigation is required, the applicant shall submit a mitigation plan.

B. The mitigation plan shall include all of the following details outlined in paragraphs 1-6:

1. Mitigation sequencing. A description of reasonable efforts made to apply mitigation sequencing pursuant to EMC Section 14.10.070.B to avoid, minimize, and mitigate impacts to Critical Areas and Buffers.
2. Mitigation details.
 - a. A description of the anticipated impacts to the Critical Area and Buffer, including impacts to Critical Area functions and values;
 - b. The type of mitigation proposed, e.g., on-site or off-site; site selection criteria; identification of compensation goals; and identification of Critical Area functions.
 - c. The environmental goals and objectives of the mitigation, together with specific measurable criteria and performance standards for evaluating whether or not the goals and objectives of the mitigation project have been successfully attained;
 - d. A review of the Best Available Science supporting the proposed mitigation; and
 - e. An analysis of the likelihood of success of the mitigation project.
3. Construction details. The mitigation plan shall include written specifications, descriptions, and drawings of the mitigation proposed, including:
 - a. Construction sequence, timing, and duration;
 - b. Grading and excavation details;
 - c. Erosion and sediment control features; and

- d. Planting plan specifying plant species, quantities, locations, size, spacing, density, and measures to protect and maintain plants until established. All plant species must be native to the region.
4. Monitoring details.
 - a. A program for monitoring construction and assessing the outcome of the mitigation project, including the schedule for site monitoring, e.g., monitoring shall occur in year 1, 3, and 5 after site construction, and how the monitoring data will be evaluated to determine if the performance standards are being met. Monitoring reports shall be submitted to document milestones, successes, problems, and contingency actions of the compensation project. The mitigation project shall be monitored for a period necessary to establish that performance standards have been met, but not for a period less than five (5) years. For example, ten years or more of monitoring are needed for forested and scrub-shrub communities. Mitigation monitoring shall be the responsibility of the applicant.
 - b. A contingency plan with courses of action and corrective measures to be taken if monitoring or evaluation indicates project performance standards are not being met.
 5. Mitigation Cost Estimate. A Mitigation Cost Estimate for the entire Compensatory Mitigation project, per the requirements of EMC Section 14.10.070.E.
 6. Other requirements. The mitigation plan shall address any additional mitigation requirements relevant to the specific Critical Area as specified in the following chapters.

14.10.100 Variances to Critical Areas.

A. General. Variances are reviewed pursuant to the same permit process as a general variance, as outlined in EMC Chapter 18.40, and 18.50.080. The criteria for approval for a Critical Area Variances are contained herein, and are not subject to the criteria for general variances contained in EMC 18.50.080(D)(2) Conditions may be attached to any Critical Area variance, which will serve to meet the goals, objectives, and policies of this title.

B. Variance Criteria. A variance may be granted from the requirements of this chapter only if the decision maker makes written findings that the applicant has demonstrated that the requested action conforms to all of the criteria set forth as follows:

1. Special conditions and circumstances exist that are peculiar to the land, the lot, or something inherent in the land, and that are not applicable to other lands in the same district; and
2. The special conditions and circumstances do not result from the actions of the applicant; and
3. A literal interpretation of the provisions of this title would deprive the applicant of all reasonable economic uses and privileges permitted to other properties in the vicinity and zone of the subject property under the terms of this title, and the variance requested is the minimum necessary to provide the applicant with such rights; and
4. Granting the variance requested will not confer on the applicant any special privilege that is denied by this title to other lands, structures, or buildings under similar circumstances; and
5. The granting of the variance is consistent with the general purpose and intent of this title, and will not further degrade the functions or values of the associated Critical Areas or otherwise be materially detrimental to the public welfare or injurious to the property or improvements in the vicinity of the subject property; and
6. The decision to grant the variance incorporates the Best Available Science and gives special consideration to conservation or protection measures necessary to preserve or enhance anadromous fish habitat; and
7. The granting of the variance is consistent with the general purpose and intent of the Edgewood Comprehensive Plan and adopted development regulations.

C. Additional Criteria for Flood Hazard Area Variances. Refer to EMC Chapter 14.80 – Flood Hazard Areas for specific criteria. D. Should a variance be denied, the applicant may submit a Reasonable Use Exception Application.

14.10.110 Reconsideration and appeal procedures.

Procedures for appeal of a final decision on a Critical Areas permit, a decision relating to Critical Areas in the underlying permit, a Critical Areas variance, or a Critical Areas flood hazard variance are set forth in EMC Chapter 18.40.

14.10.120 Fees.

A. Fees for Applications or reviews of reports, studies, or plans filed pursuant to this title are set forth in the adopted fee schedule and as identified herein.

B. Fee Establishment. The City, by resolution, shall establish fees for filing of Critical Area review processing and other services provided by the City as required by this title.

C. Applicant Responsibilities. Unless otherwise indicated in this title, the applicant shall be responsible for the initiation, preparation, submission, and expense of all required reports, assessment(s), studies, plans, reconnaissance(s), peer review(s) by qualified consultants, and other work prepared in support of or necessary to review the Application. For those items initiated by the City, e.g., per review(s), the applicant is responsible for the expense and both the preparation and submission of the application materials and not initiation of the review or preparation of the package submitted to the respective Peer Reviewer.

D. Payment. Fees established in accordance with this title shall be paid upon submission of a signed Application or petition for appeal, or as otherwise provided by any fee ordinance or resolution adopted by the City Council.

E. Investigation Fee. To investigate Violations of this title, all city fees associated with investigation of Violations of this title may be assessed at the adopted billable staff hour rate in addition to any required consultant costs, legal costs, and other expenses necessary to complete the investigation of the Violation. The payment of such investigation fees shall not exempt any person from compliance with all other provisions of this title, nor from penalties prescribed by law.

14.10.130 Compliance.

A. The regulations for compliance with the provisions of this title are set forth in EMC Section 18.30.040, Scope and compliance.

B. When a Critical Area or its required Buffer has been altered in Violation of this title, the Department shall require the property owner to bring the site into compliance. The property owner shall be required to submit the appropriate Critical Areas Application, as applicable for each chapter of this title. In addition to any required site investigation, Delineations, assessments, or reports, the property owner shall be required to submit a Restoration plan that identifies the proposed mitigation to bring the subject property into compliance with the requirements of this title. (Ord. 02-200 § 2).

14.10.140 Warning and disclaimer of liability.

A. The degree of protection required through application of this title is deemed to be reasonable for regulatory purposes and is based on Best Available Science; however, natural events that may exceed the geographic boundaries regulated under this title can and will occur, e.g., flood heights that are higher than anticipated. This title does not imply that land outside designated hazard areas or uses permitted within such areas will be free from damages.

B. The express purpose of this title is to provide for the health, safety and welfare of the general public, and not to protect individuals or create or otherwise establish or designate any particular class or group of persons who will or should be especially protected or benefitted by the terms of this title. The obligation of complying with the requirements of this title and the liability for failing to do so is hereby placed upon the property owner and/or persons responsible for the condition of the property, buildings or premises.

C. Nothing in this title is intended to be nor shall be construed to create or form the basis for any liability on the part of the City, its officers, officials, employees or agents, for any injury or damage resulting from the failure of the owner of property or land to comply with the provisions of this title or by reason or in consequence of any inspection, notice, order, certificate, permission or approval, authorized or issued or done in connection with the

implementation or enforcement of this title, or by reason of any action or inaction on the part of the City, related in any manner to the enforcement of the title by its officers, officials, employees or agents.

14.10.150 Appendix.

A. Title and Plat Notification Forms.

APPENDIX A

TITLE AND PLAT NOTIFICATION FORMS

A. Notice for Title Notification.

1. Example:

Tax Parcel Number:

Address:

Legal Description:

Present Owner:

NOTICE: This property contains [identify Critical Area, e.g., Wetlands or Wetland Buffers] as defined by EMC Title 14. The site was the subject of a development proposal for application number [insert case file number] filed on [insert date]. Restrictions on use or alteration of the site may exist due to natural conditions of the property and resulting regulations. Review of such application has provided information on the location of the [identify Critical Area, e.g., Wetlands or Wetland Buffers] and any restriction on use.

Date

Signature of owner

Notary acknowledgment and notary seal

B. Additional Title Notification Statements.

1. Title notification for liquefaction and dynamic settlement hazard areas shall include a statement of the performance criteria, i.e., protection of life safety only, provision for minimal structural damage so that post-earthquake functionality is substantially unchanged, no structural damage for the design earthquake.
2. Title notification for fault rupture hazard areas shall include a statement that a fault rupture hazard area or associated Buffer exists on the site. The title notification shall include a site plan of the subject property with the fault rupture hazard area and associated Buffer identified.
3. Properties that contain Flood Hazard Areas pursuant to EMC Chapter 14.80 shall include the following statement:
4. Flood Elevation Certificates are kept on file by the Department.

C. Notice for Plat Notification/Plat Notes.

1. General. The following notice shall be placed on the face of the final plat, short plat, large lot, or binding site plan documents when said subdivision contains any Critical Area or Buffer:

Notice: This site lies within a [insert type of Critical Area] as defined in EMC Title 14. Restrictions on use or alteration of the site may exist due to natural conditions of the site and resulting regulation.

2. Native Vegetation Preservation Areas. The following notice shall be placed on the face of the final plat, short plat, large lot, or binding site plan documents when said subdivision contains any Critical Area or Buffer and when said Critical Area or Buffers have been identified as native or natural vegetation preservation areas.

Notice: The Critical Areas appearing on this [final site plan/preliminary plat/final plat/short plat/large lot/engineering drawing] contain areas of Native Vegetation intended to Buffer the Critical Area from the adverse effects of development. These Critical Areas shall remain and be maintained in a natural, undeveloped, open space state. There shall be no Clearing and Grading or construction within the Critical Areas, except as shown on plans or documents approved by the City of Edgewood and contained in the official files for this development. Each Critical Area shall remain undisturbed except for periodic watering and hand weeding of plants designated as noxious by the State of Washington.

3. Plat Notes for Flood Hazard Areas. The following notes shall be placed on the face of any of final plat, short plat, large lot, or binding site plan documents which lie within a Flood Hazard Area.

a. Clearing and Grading within the limits of the 100-year Floodplain is prohibited, except for watercourse related construction, repair, or maintenance work that is done by the City for management operations.

b. If a higher frequency event occurs or if existing conditions upon which the Flood Hazard Area boundaries were based were to change or occur differently than depicted, then the level of protection afforded by the existing levee, if applicable, and Flood Hazard Area standards may not be adequate to prevent the subject site from flooding.

c. All purchasers, developers, and their agents of property within the subject development area or parcel shall take notice of the above conditions and hereby agree to defend, indemnify, and hold harmless the City from any and all claims, losses, costs, liabilities, or damages of any nature imposed upon or asserted against Edgewood arising out of or caused by the City's issuance of approval or by issuance of any other permits arising out of this approval.

d. All occupants or owners of property in the subject area assume the risk of flooding which may occur and waive any claims against the City arising out of damage or injury to person or property resulting therefrom. (Ord. 17-492 § 2 (Exh. A); Ord. 16-461 § 3; Ord. 02-200 § 2).

Chapter 14.20

DEFINITIONS

- A. This title relies on the definitions contained in EMC Chapter 18.20 - Definitions. Any word or phrase not contained herein shall be first referenced to EMC Chapter 18.20 for meaning. The City also adopts by reference the definitions stated in WAC 197-11-700 through 197-11-799 as now or hereafter amended.
1. For any word or term not defined herein, the latest edition of Webster's Dictionary shall be used.
 2. The Director, or their designee, has the final authority to determine the interpretation or usage of terms used in this Chapter.
- B. Additional definitions not contained in EMC Chapter 18.20 that apply to this title are:
1. *Addition* – an alteration to an existing structure that increases the floor area, either affixed to the structure's side or an upper story addition.
 2. *Agricultural Activities* – the production of crops or raising or keeping livestock, including operation and maintenance of farm and stock ponds, drainage ditches, irrigation systems, and normal operation, maintenance, and repair of existing serviceable agricultural structures, facilities, or improved areas, and the practice of aquaculture. Activities which bring an area into agricultural use are not part of an ongoing activity. An operation ceases to be ongoing when the area in which it was conducted is proposed for conversion to a non-agricultural use or has lain idle for a period of longer than five (5) years, unless the idle land is registered in a federal or state soils conversation program. Forest practices regulated under RCW Chapter 76.09 or WAC Title 222 are not included in this definition.
 3. *Agricultural Land(s)* – land primarily devoted to the commercial production of horticultural, viticultural, floricultural, dairy, apiary, vegetable, or animal products or of berries, grain, hay, straw, turf, seed, Christmas trees not subject to the excise tax imposed by RCW Sections 84.33.100 through 84.33.140, finfish in upland hatcheries, or livestock, and that has Long-Term Commercial Significance for agricultural production.
 4. *Animal Containment Area* – a site keeping at least 2,000 pounds of large animals per acre or 750 pounds of small animals per acre, or where a high volume of waste material is deposited in quantities capable of impacting groundwater resources.
 5. *Animal, Large* – an animal weighing 100 pounds or more.
 6. *Animal, Small* – an animal with an average weight of less than 100 pounds.
 7. *Application* – a request for a license. *Base Flood* – the flood having a one percent chance of being equaled or exceeded in any given year, also referred to as the “100-year flood,” and is designated on FIRM(s) by the letter A or V.
 8. *Best Available Science* – scientific information applicable to the Critical Area prepared by local, state, or federal natural resource agencies, a qualified scientific professional, or team of qualified scientific professionals that is consistent with criteria established in WAC Sections 365-195-900 through WAC 365-195-925.
 9. *Best Management Practices (BMP)* – conservation practices or systems of practices and management measures that:
 - a. Control soil loss and reduce water quality degradation caused by high conservations of nutrients, animal waste, toxics and sediment;

- b. Minimize adverse impacts to surface water and ground water flow and circulation patterns and to the chemical, physical, and biological characteristics of Wetlands;
 - c. Protect trees and vegetation designated to be retained during and following site construction and use Native Plant species appropriate to the site for re-vegetation of disturbed areas; and
 - d. Provide standards for proper use of chemical herbicides within Critical Areas.
- 10. *Buffer* – areas contiguous with Critical Areas that are required for the integrity, maintenance, function, and structural stability of said Critical Areas.
 - 11. *Building Footprint* – the horizontal area measured within the outside of the exterior walls of the ground floor of all principal and accessory buildings on a lot.
 - 12. *City* – the City of Edgewood municipal corporation.
 - 13. *City Council* – the Edgewood City Council.
 - 14. *Classification* – defining value and hazard categories to which Critical Areas and land resource lands will be assigned.
 - 15. *Compensatory Mitigation* – replacing project-induced losses or impacts to a Critical Area.
 - 16. *Conservation Easement* – a recorded deed restriction or covenant that runs in perpetuity on a parcel of land restricting the use of the property by preventing future real estate development such as residential, industrial, or commercial use that may allow for continued current uses, e.g., residential, recreational, agriculture, forestry, or ranching.
 - 17. *Contaminant* – any chemical, physical, biological, or radiological substance that does not occur naturally or occurs at concentrations and durations as to be injurious to human health or welfare or shown to be ecologically damaging.
 - 18. *Crawl Space* – the shallow space beneath the bottom floor of a house with no basement; used for access and inspection of framing, electrical, plumbing, insulation, vapor barriers, or duct work. For purposes of the National Flood Insurance Program Elevation Certificate, this definition does not include spaces that have subgrade around all sides, which shall be considered a basement.
 - 19. *Critical Aquifer Recharge Areas* – areas with a critical recharging effect on aquifers used for potable water, including areas where an aquifer that is a source of drinking water is vulnerable to contamination that would affect the potability of the water, or is susceptible to reduced recharge.
 - 20. *Critical Area* – land that contains any of the following area, areas, or ecosystems: Aquifer Recharge Areas, Fish and Wildlife Habitat Conservation Areas, Frequently Flooded Areas, Geologically Hazardous Areas, or Wetlands; as defined in RCW 36.70A, as it now exists or may be hereinafter amended, and this Chapter.
 - 21. *Critical Facilities* – those facilities occupied by populations or which handle dangerous substances including but not limited to hospitals, medical facilities, nursing homes; structures housing, supporting, or containing toxic or explosive substances; covered public assembly structures; school buildings through secondary, including daycare centers; buildings for colleges or adult education; police, fire, and emergency response installations; jails and detention facilities; and all structures with occupancy of greater than 5,000 people. These facilities are such that even a slight chance of flooding might be too great.
 - 22. *Debris Flow* – the rapid downslope movement of a viscous mass of water-saturated sediments.
 - 23. *Degraded* – to have suffered a decrease in naturally occurring function or value.
 - 24. *Delineation* – a Wetland study conducted in accordance with the approved federal Wetland delineation manual and applicable regional supplements.

25. *Depressional Pothole* – a relatively sunken or low-lying area of the earth’s surface, especially one having no natural outlet for surface drainage.
26. *Development* – See EMC Section 18.20.070.
27. *Development activity* – See EMC Section 18.20.070.
28. *Director* – the head of the City’s Community Development Department or their designee.
29. *DRASTIC* – an acronym for a computer model developed by the National Water Well Association and Environmental Protection Agency used to measure aquifer susceptibility.
30. *Earth Material* – naturally occurring rock, soil, stone, sediment, or combination thereof.
31. *Earthflow* – a slow downslope movement of viscous, saturated sediments.
32. *Elevation Certificate* – the official form (FEMA Form 81-31) used to track development, provide elevation information necessary to ensure compliance with community floodplain management ordinances, and determine the proper insurance premium rate with Section B completed by community officials.
33. *Encroachment* – development or regulated activity conducted inside the boundaries of any Critical Areas or Buffer.
34. *Engineer* – as defined by RCW Chapter 18.43.
35. *Engineering Geologist* – a geologist who has met the qualifications in engineering geology established under Chapter 18.220 RCW.
36. *Enhancement* – actions performed within existing Critical Areas or Buffers to intentionally increase or augment one or more ecological functions or values of the existing area. Enhancement actions include, but are not limited to, increasing plant diversity and cover; increasing wildlife habitat and structural complexity with snags or woody debris; installing environmentally compatible erosion controls; removing non-Native Plant or animal species; or removing human-made structures or fill that are degrading ecological functions or values.
37. *Erosion Hazard Areas* – those areas that because of natural characteristics, including vegetative cover, soil texture, slope, gradient, and rainfall patterns, or human-induced changes to such characteristics, are vulnerable to erosion.
38. *Facility* – all structures, contiguous land, appurtenances, and other improvements on the land used for recycling, reusing, reclaiming, transferring, storing, treating, disposing, or otherwise handling a hazardous substance. This term includes underground and aboveground tanks and operations, which handle, use, dispose of, or store hazardous substances.
39. *Filling* – the act of placing fill or fill material on any surface, including temporary stockpiling of fill material.
40. *Finished Floor* – the top of the next higher floor above the Lowest Floor. For purposes of the National Flood Insurance Program Elevation Certificate, the finished floor referenced in this regulation shall equal the top of the next higher floor.
41. *Fisheries Biologist* – a professional with a degree in fisheries or certification by the American Fisheries Society, or with five (5) years of professional experience as a fisheries biologist.
42. *Flood Hazard Areas* – areas of flooding identified by verifiable flooded areas using:
 - a. Aerial photographs of the city, especially those taken in wintertime 1996 and 1997;

- b. Relevant and verifiable information from the City's capacity analysis technical review Ad-hoc committee (CATRAC) draft report, 2000;
 - c. Relevant and verifiable government and citizen photographs, notes, observations, etc. regarding historic ponding/flooding levels;
 - d. Relevant and verifiable information available through Pierce County;
 - e. Relevant and verifiable information available through the Federal Emergency Management Agency (FEMA); or
 - f. Areas of land located in floodplains, which are subject to a one percent or greater chance of flooding in any given year, including, but not limited to, streams, rivers, lakes, ponds, Wetlands, or Depressional Potholes.
43. *Flood Insurance Rate Map (FIRM)* – the official map on which the Federal Insurance Administration (FIA) has delineated both the areas of special flood hazard and the risk premium zones applicable to the community.
 44. *Flood Fringe* – the area subject to inundation by the Base Flood, but outside the limits of the Floodway, and which may provide needed temporary storage capacity for floodwaters.
 45. *Floodplain* – the total area subject to inundation by the Base Flood, including the flood fringe and the Floodway areas.
 46. *Floodway* – the channel of a river or other watercourse and the adjacent land areas that must be reserved in order to convey and discharge the Base Flood without cumulatively increasing the water surface elevation by more than one foot, and those areas designated as deep and/or fast-flowing water.
 47. *Fluvial Processes* – the physical interaction of flowing water and the natural channels of rivers and streams.
 48. *Frequently Flooded Area* – lands in the floodplain subject to at least a one percent or greater chance of flooding in any given year, or within areas subject to flooding due to high groundwater. These areas include, but are not limited to, streams, rivers, lakes, Wetlands, and areas where high groundwater forms ponds on the ground surface.
 49. *Geologically Hazardous Areas* – areas that because of their susceptibility to erosion, sliding, earthquake, or other geological events are not suited to the siting of commercial, residential, or industrial development consistent with public health or safety concerns.
 50. *Geologist* – an Engineering Geologist or hydrogeologist that is registered in the State of Washington.
 51. *Geotechnical Professional* – a person with experience and training in analyzing, evaluating, and mitigating landslide, erosion, or seismic hazards. A geotechnical professional shall be licensed in the state of Washington as a Geologist or Professional Engineer, and must have five or more years' experience specializing in landslide, erosion, or seismic hazards, as applicable.
 52. *Geotechnical Report* – a report prepared by a Geologist or Professional Engineer licensed by the state of Washington with expertise in geotechnical engineering, evaluating the site conditions and mitigating measures necessary to reduce the risks associated with development in Geologically Hazardous Areas.
 53. *Grading or Clearing and Grading* – any excavating, filling, clearing, creating of impervious surfaces, or any combination of these items.
 54. *Habitat Management Plan* – a report prepared by a professional Wildlife Biologist or Fisheries Biologist, which discusses and evaluates the measures necessary to maintain fish and wildlife habitat conservation areas on a proposed development site.

55. *Habitat of Local Importance* – an area, range, or habitat within which a species has a primary association and which, if altered, may reduce the likelihood that the species will maintain and reproduce over the long term. Examples include areas of high relative density or species richness, breeding habitat, winter range, and movement corridors. These areas may also include habitats that are of limited availability or high vulnerability to alteration.
56. *Hard Armoring* – the use of large rock or human-made materials to protect property from shoreline erosion. Such techniques include cement or concrete bulkheads, steel structures, rock wall revetments, and rock gabion structures. Hard Armoring typically does not utilize or integrate any of soft armoring or Soil Bioengineering Methods.
57. *Holocene Epoch* – that part of the geologic record that post-dates the youngest deposits associated with the late Pleistocene Age Fraser Glaciation and is typically considered to be the past 10,000 years.
58. *Hydrogeologic Assessment* – a report detailing the subsurface conditions, the design of a proposed land use action, and the facilities operation which indicates the susceptibility and potential for contamination of groundwater supplies.
59. *Landslide Hazard Area* – any area subject to risk of mass movement due to a combination of geologic, topographic, and hydrologic factors.
60. *LiDAR* – an acronym that stands for Light Detection and Ranging imaging.
61. *Long-Term Commercial Significance* – the growing capacity, productivity, and soil composition of land, which makes it suitable for long-term commercial production, in consideration with the land's proximity to population areas, and the possibility of more intense uses of land.
62. *Lowest Floor* – the lowest floor of the lowest enclosed area (including basement and crawl space). 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 title.
63. *Mineral Resource Lands* – those lands primarily devoted to the extraction of minerals or which have known or potential long-term commercial significance for the extraction of minerals.
64. *Mudflow* – a Debris Flow containing an abundance of fine particles.
65. *Native Vegetation or Native Plants* – a mix of plant species comprising herbs, grasses, grass-like plants, shrubs and trees indigenous to the Puget Sound region that reasonably could be expected to naturally occur on the site.
66. *Natural Resource Lands* – agricultural and mineral resource lands, which have long-term commercial significance.
67. *New Construction* – structures for which the Start of Construction commenced on or after the effective date of this Critical Areas ordinance.
68. *Professional Engineer* – an engineer currently licensed and registered in the state of Washington.
69. *Regulated Activities* – See EMC Section 14.30.020.
70. *Restoration* – an action which returns habitat to a state in which its stability and functions approach its unaltered state as closely as possible. This may be accomplished through measures including, but not limited to, re-vegetation, removal of intrusive stream bank structures, and removal or treatment of toxic materials. Restoration does not imply a requirement for returning the Critical Area to aboriginal or pre-European settlement conditions.

71. *RCW* – an acronym that stands for Revised Code of Washington.
72. *Riparian* – the area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other. Riparian habitat begins at the ordinary high water mark and includes the entire extent of the floodplain and riparian areas of Wetlands that are directly connected to the stream course.
73. *Seismic Hazard Areas* – areas subject to severe risk of damage as a result of earthquake-induced ground shaking, slope failure, settlement, or soil liquefaction.
74. *Sensitive Areas* – agricultural lands and mineral resource lands and all associated Buffers.
75. *Shoreline* – the line where a body of water and the shore meet or the strip of land along the shoreline. There are no waters within the City meeting the criteria of shorelines of statewide significance as defined by RCW 90.58.030.
76. *Site* – a lot, parcel, tract, or combination of lots, parcels, or tracts on which a regulated activity is proposed.
77. *Sludge* – a semi-solid substance consisting of settled solids combined with varying amounts of water and dissolved materials generated from a wastewater treatment plant or system or other sources, including septage sludge, sewage sludge, and industrial sludge.
78. *Sludge Land Application Site* – a site where stabilized sludge, septage, and other organic wastes are applied to the surface of the land in accordance with established agronomic rates for fertilization or soil conditioning.
79. *Special Occupancy Structures* – those structures that have the potential to provide capacity for large numbers of people or special groups of people or assemblies such as but not limited to schools, jails and detention facilities, and resident incapacitated patients.
80. *Species of Local Importance* – species that are of local concern due to their population status or their sensitivity to habitat manipulation.
81. *Soft Armoring Techniques or Soil Bioengineering Methods* – the use of woody plants and limited structural-mechanical systems that are integrated in a structurally and environmentally sound manner to repair and protect slopes and shorelines against shallow mass wasting and surface erosion. Examples include, but are not limited to live stake, live fascine, brushlayer, live cribwall, vegetated geogrid, branchpacking, live slope grading, beach berms, or earthen berms.
- 82.
83. *Stream* – a feature where surface waters produce a defined channel or bed. A defined channel or bed is an area that demonstrates clear evidence of the passage of water and includes, but is not limited to, bedrock channels, gravel beds, sand and silt beds, and defined-channel swales. The channel or bed need not contain water year-round. This definition is not intended to include artificially created irrigation ditches, canals, storm or surface water devices, or other entirely artificial watercourses, unless they are used by salmonids or created for the purposes of stream mitigation.
- 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 fifty (50) percent of the market value of the structure before the damage occurred.
84. *Substantial Improvement* – any repair, reconstruction, addition, rehabilitation, or other improvement of a structure, whereby the cost for the work exceeds fifty (50) percent of the market value of the existing structure before the “Start of Construction” of the improvement. The “cost” and “market value” may be determined using the current permit valuation. The Director shall determine the current permit valuation based on the cost per square foot values in effect at the time of permit application. Substantial improvement shall be accumulative from the effective date of the ordinance codified in this chapter. 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 structure listed on the National Register of Historic Places or a State Inventory of Historic Places; provided, that the alteration will not preclude the structure's continued designation as a historic structure.
85. *Toe of Slope* – a distinct topographic break in slope at the lowermost limit of the landslide or erosion hazard area.
86. *TPCHD* – an acronym that stands for the Tacoma-Pierce County Health Department.
87. *Underground Storage Tank or UST* – one tank or a combination of multiple tanks, including the underground pipes connected thereto, which are used to contain or dispense an accumulation of hazardous substances or hazardous wastes, and the total volume of which is 10 percent or more beneath the surface of the ground.
88. *Urban Growth* – growth that makes intensive use of the land for the location of buildings, structures, and impermeable surfaces to such a degree as to be incompatible with the primary use of such land for the production of food, other agricultural products, or fiber, or the extraction of mineral resources. When allowed to spread over wide areas, Urban Growth typically requires urban governmental services.
89. *View Corridor* – an area, which affords views of lakes, mountains, or other scenic amenities normally enjoyed by residential property owners.
90. *Violation* – See EMC Chapter 1.10 for penalties.
91. *Volcanic Hazard Areas* – those areas subject to pyroclastic flows, lava flows, and inundation by Debris Flows, Mudflows, or related flooding resulting from geologic or volcanic events on Mount Rainier.
92. *WAC* – an acronym that stands for the Washington Administrative Code.
93. *Wellhead Protection Area* – the area within the 10-year time-of-travel zone boundary or zone of contribution area of a Group A public water system well, as delineated on the Critical Aquifer Recharge Areas Critical Area Map, pursuant to WAC 246-290-135.
94. *Wetland* – areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas. Wetlands do not include those artificial Wetlands intentionally created from non-Wetland sites, including, but not limited to, irrigation and drainage ditches, grass-lined swales, canals, detention facilities, wastewater treatment facilities, farm ponds, and landscape amenities, or those Wetlands created after July 1, 1990, that were unintentionally created as a result of the construction of a road, street, or highway. Wetlands may include those artificial Wetlands intentionally created from non-Wetland areas created to mitigate conversion of Wetlands.
95. *Wetland Category* – the numeric designation (I through IV) assigned to a Wetland to indicate the Wetland's overall function and value. Wetland categories rank the City's Wetlands from highest (Category I) to lowest (Category IV) using the current version of the Washington State Wetland Rating System for Western Washington (Hruby, 2014)
96. *Wetland Mosaic* – a patchwork of Wetlands that is considered one unit where each patch of Wetland is less than one acre and the areas delineated as vegetated Wetland are more than fifty percent of the total area of the Wetlands and uplands together.

97. *Wetland Specialist* – a person that obtained Professional Wetland Scientist (PWS) or Wetland Professional In-Training (WPIT) certification from the Society of Wetland Scientists or a qualified Wetland professional with experience and training in Wetlands issues and with experience in performing a Delineation, analyzing Wetland functions and values, analyzing Wetland impacts, and recommending Wetland mitigation and Restoration. A Qualified Wetland Professional is a person with experience and training that includes, at a minimum:
- a. A B.S., B.A., or equivalent degree in biology, botany, environmental studies, fisheries, soil science, wildlife, agriculture, or related field; and
 - b. Two years of related work experience; and
 - c. One-year experience delineating Wetlands using the federal delineation manual and applicable regional supplements and preparing Wetland reports and mitigation plans; OR
 - d. Four years of related work experience and training; and
 - e. Two years of experience delineating Wetlands using the Unified Federal Manual and preparing Wetland reports, and mitigation plans.
98. *Wildlife Biologist* – a professional with a degree in wildlife, or certification by the Wildlife Society, or with five (5) years of professional experience as a Wildlife Biologist. (Ord. 17-492 § 2 (Exh. A); Ord. 16-461 § 2; Ord. 15-447 § 1 (Exh. A); Ord. 02-200 § 2).

Chapter 14.30

USE AND ACTIVITY REGULATIONS

Sections:

- 14.30.010 Permitted uses.
- 14.30.020 Regulated uses and activities.
- 14.30.030 Exemptions.
- 14.30.040 Nonconforming uses and structures.
- 14.30.050 Reasonable use exceptions.
- 14.30.060 Current use assessment program.

14.30.010 Permitted uses.

Uses permitted on properties designated as Critical Areas shall be the same as those permitted in the zone Classification shown in the City's Official Zoning Map unless specifically prohibited by this title. (Ord. 02-200 § 2).

14.30.020 Regulated uses and activities.

A. Unless the requirements of this title are met, the Department shall not grant any approval or permission to alter the condition of any land, water, or vegetation, or to construct or alter any structure or improvement regulated through the following: building permit, commercial or residential; binding site plan; franchise right-of-way construction permit; site development permit; right-of-way permit; short subdivision; large lots; use permits; subdivision; utility permits; or any subsequently adopted permit or required approval not expressly exempted by this chapter.

B. The following activities are regulated within any Critical Area and its Buffer, unless exempted by EMC

14.30.030:

1. Removing, excavating, disturbing, or dredging soil, sand, gravel, minerals, organic matter, or materials of any kind;
2. Dumping, discharging, Grading, or Clearing and Grading;
3. Draining, flooding, or disturbing the water level or water table. In addition, an activity which involves intentional draining, flooding, or disturbing the water level or water table in a Wetland or stream in which the activity itself occurs outside the regulated area shall be considered a regulated activity;
4. Driving, piling, or placing obstructions, including placement of utilities;
5. Constructing, reconstructing, installing, demolishing, or altering the size of any structure or infrastructure, including manufactured and mobile homes;
6. Altering the character of a regulated area by destroying or altering vegetation through clearing, harvesting, cutting, intentional burning, shading, or planting;
7. The division of land;
8. The creation of hard surfaces; and
9. Any additional activities regulated in EMC Chapter 14-80 – Flood Hazard Areas.

14.30.030 Exemptions.

A. Individuals, organizations, or associated parties shall avoid potential impacts to Critical Areas and their Buffers to the greatest degree feasible. To be exempt from this title does not give permission to degrade a Critical Area or its Buffer or ignore risk from natural hazards. Any incidental damage to, or alteration of, a Critical Area or its Buffer that is not a necessary outcome of the exempted activity shall be restored, rehabilitated, or replaced at the responsible party's expense.

B. The following activities are exempt from the provisions of this title:

1. Operation, maintenance, or repair of existing structures, infrastructure improvements, utilities, public or private roads, dikes, levees, or drainage systems, that do not require construction permits, if the activity does not further alter or increase the impact to, or encroach further within, the Critical Area or Buffer and there is no increased risk to life or property as a result of the proposed operation, maintenance, or repair. Operation and maintenance includes vegetation management performed in accordance with BMPs that are a part of ongoing maintenance of structures, infrastructure, or utilities, provided that such management actions are part of ongoing maintenance, do not expand further into the Critical Area or Buffer, are not the result of an expansion of the structure or utility, and do not directly impact an endangered or threatened species.
2. Normal maintenance or repair of existing structures or developments, including damage by accident, fire, or elements within the past three (3) years. "Normal maintenance" includes those usual acts to prevent a decline, lapse, or cessation from a lawfully established condition. "Normal repair" means to restore a development to a state comparable to its original condition including, but not limited to, its size, shape, configuration, location, and external appearance, within three (3) years after decay or partial destruction, except where repair causes substantial adverse effects to Critical Areas or their Buffers. Replacement of a structure or development may be authorized as repair where such replacement is the common method of repair for the type of structure or development and the replacement structure or development is comparable to the original structure or development including, but not limited to, its size, shape, configuration, location, and external appearance and the replacement does not expand further into the Critical Area or Buffer. Refer to EMC Section 14.30.040.D for requirements associated with repair of Substantial Damage of non-conforming structures.
3. Reconstruction, remodeling, or maintenance of existing single-family residential structures and accessory structures that are located outside a Flood Hazard Area and active Landslide Hazard Area; provided, that a one-time only expansion of the Building Footprint does not increase by more than 25 percent and that the New Construction or related activity does not further intrude into the Critical Area or related Buffer. The exemption shall not apply to reconstruction which is proposed as a result of structural damage associated with a Critical Area.
4. Reconstruction, remodeling, or maintenance of structures, other than single-family structures and accessory structures that are located outside a Flood Hazard Area or active Landslide Hazard Area; provided, that such reconstruction, remodeling, or maintenance does not increase the floor area nor extend beyond the existing ground coverage. The exemption shall not apply to reconstruction which is proposed as a result of site or structural damage associated with a Critical Area, such as slope failure in a Landslide Hazard Area or flooding in a Flood Hazard Area.
5. Site investigative work necessary for land use Application submittals such as surveys, soil logs, percolation tests, and other related activities. Critical Area impacts shall be minimized and disturbed areas shall be immediately restored.
6. Emergency actions necessary to prevent imminent threat or danger to public health or safety, or to public or private property, or serious environmental degradation.
 - a. The Department shall review all proposed emergency actions to determine the existence of the emergency and reasonableness of the proposed actions taken; however, post-emergency actions, such as submittal of permits, completion of City review, modification or removal of the emergency repair work, or mitigation shall be required by the Department.
 - b. Erosion protection measures shall only be allowed as an emergency action when the owner can demonstrate that there is an imminent threat to an existing residential, commercial, industrial, or agricultural structure. The owner shall retain either City staff or an Engineering Geologist to conduct a site investigation and provide adequate documentation that the situation is actually an emergency. An emergency action is not warranted when the structure is located outside the active landslide area.
 - c. After the emergency, the person or agency undertaking the action shall fully fund and conduct necessary Restoration or Mitigation for any impacts to the Critical Area and Buffers resulting from the emergency

action in accordance with an approved Critical Area report and mitigation plan. The person or agency undertaking the action shall apply for review, and the alteration, Critical Area report, and mitigation shall be reviewed by the Department in accordance with the review procedures contained herein. Restoration or mitigation activities must be initiated within 90 days of the date of the emergency activity and both must be fully completed within one (1) year.

7. Installation, construction, replacement, repair, operation or alteration of natural gas, cable and telecommunication facilities, electric facilities and lines, water, sewer or storm lines, pipes, mains, equipment, or appurtenances in publicly owned right-of-way, which may be within or adjacent to any Critical Areas or Buffers, subject to full review and approval of the Department, including any Mitigation or Restoration requirements established by the Department.

8. Removal by hand of manmade litter and control of noxious weeds that are included on the state noxious weed list (Chapter 16-750 WAC) or invasive plant species as identified by the City. Control may be conducted by clipping, pulling, or digging, or by an alternative non-mechanical method upon approval of a plan by the Department.

9. Activities undertaken to comply with a United States Environmental Protection Agency superfund order, or a Washington Department of Ecology order, pursuant to the Model Toxics Control Act, including the following activities:

- a. Remediation or removal of hazardous or toxic substances;
- b. Source control; and
- c. Natural resource damage Restoration.

10. Activities within a portion of a Wetland Buffer or fish and wildlife habitat conservation area Buffer located landward of an existing, substantially developed area, such as a paved area, dike, levee, or permanent structure which eliminates or greatly reduces the impact of the proposed activities on the Wetland or fish and wildlife habitat conservation area. The Department shall review the proposal to determine the likelihood of associated impacts.

11. Passive recreation such as hunting, hiking, fishing, and wildlife viewing that does not involve the construction of trails.

12. Enhancement actions that do not involve clearing, Grading or construction activities, e.g., revegetation with Native Plants and installation of nest boxes. Enhancement activity proposals shall be reviewed by the Department.

13. Forest practices conducted in accordance with the requirements of the Forest Practice Act (Chapter 76.09 RCW) and its rules, with the exception of the conversion of forest land to a use other than commercial forestry (Class IV conversions).

14. Existing and ongoing Agricultural Activities, provided that they comply with the provisions of Chapter 14.80 EMC, Flood Hazard Areas, and implement applicable BMP contained in the latest editions of the USDA Natural Resources Conservation Service Field Official Technical Guide; or develop a farm conservation plan in coordinate with the local conservation district. The BMPs or farm plans should address potential impacts to Critical Areas from livestock, nutrient and farm chemicals, soil erosion and sediment control, and agricultural drainage infrastructure. The BMPs or farm plans should ensure that ongoing Agricultural Activities minimize their effects on water quality, Riparian ecology, salmonid populations, and wildlife habitat.

14.30.040 Nonconforming uses and structures.

A. An established use or existing structure located in a Wetland, fish and wildlife habitat conservation area, landslide or Erosion Hazard Area, Flood Hazard Area, and their associated Buffers that was lawfully permitted prior to the effective date of this title, but which is not currently in compliance with this title, may continue subject to the following:

1. Nonconforming Use Expansion. Nonconforming uses shall not be expanded or changed in any way that increases the nonconformity without a permit issued pursuant to the provisions of this title.

2. Nonconforming Structure Expansion. Existing structures shall not be expanded or altered in any manner that will increase the nonconformity without a permit issued pursuant to the provisions of this title, except as provided in EMC 14.30.030(B).

3. Discontinued Uses. Activities or uses which are discontinued for twelve (12) consecutive months shall be allowed to resume only if they are in compliance with this title.

4. Substantial Damage. Nonconforming structures, except for structures located in a Flood Hazard Area or active Landslide Hazard Area which are damaged or destroyed by fire, explosion, flood, or other casualty, may be restored or replaced if reconstruction is commenced within one year of such damage and is substantially completed within 18 months of the date such damage occurred. The reconstruction or Restoration shall not serve to expand, enlarge, or increase the nonconformity except as allowed through the provisions in EMC 14.30.030(B). Structures in a Floodway or active Landslide Hazard Area may be allowed to be restored only up to the limits of Substantial Improvement, as set forth in each chapter. (Ord. 02-200 § 2).

B. The provisions of EMC Section 18.90.110 may also apply to nonconformities not expressly described in this chapter.

14.30.050 Reasonable Use Exceptions.

A. If the application of this chapter would deny all reasonable use of the property, the applicant may apply for a Reasonable Use Exception pursuant to this subsection. The Hearing Examiner may approve alterations to a Critical Area or its Buffers to allow a reasonable use not otherwise allowed by this chapter when the following criteria are met:

1. The application of this chapter would deny all reasonable use of the property;
2. There is no other reasonable use with less impact on the Critical Area;
3. The proposed development does not pose an unreasonable threat to the public health, safety, or welfare on or off the development proposal site and is consistent with the general purposes of this title and the public interest; and
4. Any alterations permitted to the Critical Area or its Buffer shall be the minimum necessary to allow for reasonable use of the property; and any authorized alteration of a Critical Area under this subsection shall be subject to conditions established by the Department including, but not limited to, mitigation under an approved mitigation plan.

B. Application Requirements. A complete Application for a Reasonable Use Exception shall include the following nine (9) items:

1. A description of the areas of the site that contains a Critical Area, Buffers, or within setbacks required under this title;
2. A description of the amount of the site that is within setbacks required by other standards of the zoning code;
3. A description of the proposed development, including a site plan;
4. An analysis of the impact that the amount of development described in subsection (B)(3) of this section would have on the Critical Area;
5. An analysis of whether any other reasonable use with less impact on the Critical Area and associated Buffer(s) is possible;
6. A design of the proposal so that the amount of development proposed as reasonable use will have the least impact practicable on the Critical Area;

7. An analysis of the modifications needed to the standards of this title to accommodate the proposed development;

8. A description of any modifications needed to the required front, side, and rear setbacks; building height; and Buffer widths to provide for a reasonable use while providing greater protection to the Critical Area;

9. Such other information the Department determines is reasonably necessary to evaluate the issue of reasonable use as it relates to the proposed development, such as but not limited to a Wetland Analysis Report, mitigation plan, habitat evaluation study, or a Buffer Enhancement Plan.

C. Review. A Reasonable Use Exception shall be processed according to the procedures in EMC Section 18.40.080.

D. Findings and Determinations. A Reasonable Use Exception may be approved if all of the findings are made in writing and are supported by the record.

14.30.060 Current use assessment program.

A. An owner of Agricultural Land, timberland, or open space desiring current use Classification under Chapter 84.34 RCW may file for such current use Classification with the Pierce County assessor-treasurer's office.

B. The Department shall notify the assessor-treasurer's office when restrictions on development occur on a particular site.

C. The assessor-treasurer's office shall consider the Critical Areas and Buffering requirements of this title in determining the fair market value of land. Any owner of an undeveloped Buffer which has been placed in a separate tract or tracts, protective easement, public or private land trust dedication, or other similarly preserved area shall have that portion of land assessed consistent with those restrictions. (Ord. 02-200 § 2).

Chapter 14.40

WETLANDS

Sections:

- 14.40.010 Purpose.
- 14.40.020 Identification, Delineation, Mapping, and Rating.
- 14.40.030 Buffer standards—Wetlands
- 14.40.040 Wetland review procedures.
- 14.40.050 Allowed activities.
- 14.40.060 Mitigation requirements.
- 14.40.070 Appendices.

14.40.010 Purpose.

A. The purpose of this chapter is to avoid or, in appropriate circumstances, to minimize, rectify, reduce, or compensate for impacts arising from land development and other activities affecting Wetlands, and to maintain and enhance the biological and physical functions and values of Wetlands with respect to water quality maintenance, stormwater and floodwater storage and conveyance, fish and wildlife habitat, primary productivity, recreation, education, and historic and cultural preservation. When Wetland impacts occur, mitigation will be required to achieve no net loss of Wetlands in terms of acreage, function, and value. (Ord. 02-200 § 2).

B. This Chapter is intended to be consistent with the requirements of RCW Chapter 36.70A and to implement the goals and policies of the City's Comprehensive Plan for protecting Wetlands.

14.40.020 Identification, Delineation, Mapping, and Rating.

A. Designation. All areas within the city meeting the meeting the definition of Wetland in EMC Chapter 14.20 are hereby designated as Critical Areas.

B. Identification and Delineation.

1. Wetlands shall be identified and delineated by a qualified Wetland Specialist in accordance with the approved federal wetland delineation manual and applicable regional supplements.

2. A Wetland Delineation is valid for five (5) years, after which date the City shall require verification that the Wetland boundaries and prior conditions have not changed to determine whether a revision or additional assessment is needed.

C. Mapping.

1. The approximate location and extent of Wetlands are shown on maps maintained by the City.

2. These maps are useful as a guide for project applicants and property owners, but the maps do not provide a conclusive or definitive indication of a Wetland presence or its extent.

3. Wetlands may exist that do not appear on the maps and some Wetlands that appear on the maps may not meet all of the Wetland designation criteria.

D. Rating. Wetlands shall be rated according to the Washington Department of Ecology Wetland rating system, as set forth in the Washington State Wetland Rating System for Western Washington: 2014 Update (Ecology Publication #14-06-029, or as revised and approved by the Department of Ecology).

E. Illegal Modifications. Wetland rating categories shall not change due to illegal modifications made by the applicant or with the applicant's knowledge.

14.40.030 Buffer standards – Wetlands.

A. Determining Buffer widths. Buffer widths shall be measured horizontally from the perpendicular line established at the Wetland edge as shown in Table 14.40.030.1. Note that Table 1 is Reduced Wetland Buffers with minimization of impacts. See Table 3 for buffers that apply without minimization techniques.

B. The following buffer widths have been established in accordance with the best available science. They are based on the category of wetland and the habitat score as determined by a qualified wetland professional using the *Washington State Wetland Rating System for Western Washington: 2014 Update* (Ecology Publication #14-06-029, or as revised and approved by Ecology). The adjacent land use intensity is assumed to be high.

1. For wetlands that score 5 points or more for habitat function, the buffers in Table 14.30.050.1 can be used if both of the following criteria are met:
 - i. A relatively undisturbed, vegetated corridor at least 100 feet wide is protected between the wetland and any other Priority Habitats as defined by the Washington State Department of Fish and Wildlife.
 1. The latest definitions of priority habitats and their locations are available on the WDFW web site at: <http://wdfw.wa.gov/hab/phshabs.htm>)
 2. The corridor must be protected for the entire distance between the wetland and the Priority Habitat by some type of legal protection such as a conservation easement.
 3. Presence or absence of a nearby habitat must be confirmed by a qualified biologist. If no option for providing a corridor is available, Table 14.30.050.1 may be used with the required measures in Table 14.030.050.2 alone.
 - ii. The measures in Table 14.30.050.2 are implemented, where applicable, to minimize the impacts of the adjacent land uses.
2. For wetlands that score 3-4 habitat points, only the measures in Table 14.30.050.2 are required for the use of Table 14.30.050.1

Table 14.40.030.1
Buffer Standards - Wetlands

Wetland Category	Buffer Width (Wetlands scores 3-4 habitat points)	Buffer Width (Wetland scores 5 habitat points)	Buffer Width (Wetland scores 6- 7 habitat points)	Buffer Width (Wetland scores 8- 9 habitat points)
Category I: Based on total score	75 ft.	105 ft.	165 ft.	225 ft.
Category I: Bogs and Wetlands of High Conservation Value	190 ft.	190 ft.	190 ft.	225 ft.
Category I: Forested	75 ft.	105 ft.	165 ft.	225 ft.
Category II (all)	75 ft.	105 ft.	165 ft.	225 ft.
Category III (all)	60 ft.	105 ft.	165 ft.	225 ft.
Category IV (all)	40 ft.	40 ft.	40 ft.	40 ft.

C. Required Measures to Minimize Impacts to Wetlands. Measures to minimize the impacts of the land use adjacent to Wetlands shall be applied, as shown in Table 14.40.030.2.

Table 14.40.030.2
Wetland Impact Minimization Measures

Disturbance	Required Measures to Minimize Impacts
Lights	• Direct lights away from any Wetland
Noise	• Locate activity that generates noise away from any Wetland • For activities that generate relatively continuous, potentially disruptive noise, such as certain heavy industry or mining, establish an additional 10-foot heavily vegetated buffer strip immediately adjacent to the outer Buffer
Toxic runoff	• Route all new, untreated runoff away from any Wetland while ensuring the Wetland is not dewatered • Establish covenants limiting use of pesticides within 150 feet of Wetlands • Apply integrated pest management
Stormwater runoff	• Retrofit stormwater detention and treatment for roads and existing adjacent development • Prevent channelized flow from lawns that directly enters the Buffer • Use Low Impact Development techniques
Change in water regime	• Infiltrate or treat, detain, and disperse into Buffer new runoff from impervious surfaces and new lawns
Pets and human disturbance	• Use privacy fencing or plant dense vegetation to delineate Buffer edge and to discourage disturbance using vegetation appropriate for the ecoregion • Place Wetland and its Buffer in a separate tract or protect with a Conservation Easement
Dust	• Use BMPs to control dust

D. Modification of Buffer Widths. The standard Buffer widths of subsection (A) of this section may be modified by averaging or increasing.

1. Buffer Averaging. Buffer width averaging may be allowed only where the applicant demonstrates all of the following through the submittal of a Wetland Report that is prepared by a qualified professional.

- a. Buffer Encroachment is unavoidable;
- b. The Wetland contains variations in sensitivity due to existing physical characteristics;
- c. Width averaging will provide equal or greater protection of current Wetland functions and values;
- f. The total Buffer area after averaging is no less than the Buffer area prior to averaging;
- g. The width of the Buffer at any given point after averaging shall be no smaller than 75 percent of the standard Buffer;
- h. The averaging is accomplished within the project boundaries; and

- i. Measures will be taken to ensure that there is no loss of Wetland function due to the Buffer averaging.

2. Buffer Increases.

- a. The Department may require increased Buffer width(s) when any of the following are identified:

- i. A larger Buffer is necessary to maintain viable populations of existing species;
- ii. The Wetland is used by, or associated with, species listed by the federal government or the state as endangered, threatened, sensitive, or as documented priority species or habitats, or essential or outstanding potential sites such as heron rookeries or raptor nesting areas;
- iii. The adjacent land is susceptible to severe erosion and erosion control measures will not effectively prevent adverse Wetland impacts;
- iv. The adjacent land has minimal vegetative cover, or slopes greater than 20 percent. (Ord. 02-200 § 2).

b. If an applicant chooses not to apply the Wetland Impact Minimization Measures identified in Table 14.40.030.2, then the Wetland Buffers applicable to the site shall be per Table 14.40.030.3.

Table 14.40.030.3
Wetland Buffers without Minimization of Impacts

Wetland Category	Buffer Width (Wetlands scores 3-4 habitat points)	Buffer Width (Wetland scores 5 habitat points)	Buffer Width (Wetland scores 6- 7 habitat points)	Buffer Width (Wetland scores 8- 9 habitat points)
Category I: Based on total score	100 ft.	140 ft.	220 ft.	300 ft.
Category I: Bogs and Wetlands of High Conservation Value	250			300 ft.
Category I: Forested	100 ft.	140 ft.	220 ft.	300 ft.
Category II (all)	100 ft.	140 ft.	220 ft.	300 ft.
Category III (all)	80 ft.	140 ft.	220 ft.	300 ft.
Category IV (all)	50 ft.			

14.40.040 Wetland review procedures.

A. Wetland Report Requirements. If the Department's maps indicate that a proposed project may be located within 300 feet of a Wetland, the applicant shall submit a Wetland Critical Areas report prepared by a qualified Wetland Specialist. The report requirement may be waived if the Department determines that there are no potential direct or

indirect impacts on the Wetland or its Buffers that would result from the proposed development. Wetland Critical Areas reports shall comply with the requirements of this Chapter.

B. Single-Family Dwelling Wetland Review. Construction of a single-family dwelling and Regulated Activities accessory to a single-family dwelling, such as driveways, gardens, fences, walls, lawns, or on-site septic systems, may utilize an alternative Wetland review procedure, subject to the following:

1. Prior to issuance of a building permit, site development permit, or on-site sewage system permit, the applicant shall submit a single-family Wetland certification form completed by a Wetland Specialist that certifies either:
 - a. No regulated Wetlands are present within 300 feet of the project area; or
 - b. Wetlands are present within 300 feet of the project area, but the Buffer does not extend onto the project site.
2. The single-family certification form may be used only to authorize single-family dwellings and accessory structures. It may not be used for new Agricultural Activities, expansion of existing Agricultural Activities, forest practices activities, commercial projects, land divisions, or Buffer width modifications.

14.40.050 Allowed activities.

A. The three (3) types of Wetlands identified in the paragraphs 1-3 are exempt from the requirement to avoid impacts in EMC 14.10.070.B and may be altered if the impacts are fully mitigated based on the remaining mitigation sequencing actions in EMC 14.10.070.B. In order to verify the following conditions, a Wetland Critical Areas Report meeting the requirements of EMC 14.40.070, Appendix A must be submitted.

1. All isolated Category IV Wetlands less than 4,000 square feet that:
 - a. Are not associated with Riparian areas or their Buffers;
 - b. Are not part of a Wetland Mosaic;
 - c. Are not associated with shorelines of the state or their associated Buffers;
 - d. Do not score 5 or more points for habitat functions based on current version of the Washington State Wetland Rating System for Western Washington (Ecology, 2014).
 - e. Do not contain a Priority Habitat or a Priority Area for a Priority Species identified by the Washington Department of Fish and Wildlife, federally listed species or their critical habitat, or Habitats of and Species of Local Importance as identified in EMC 14.50.040(A).
2. Wetlands less than 1,000 square feet that meet the criteria specified in subsection (A)(1) of this section.
3. Utility projects within the outer 25 percent of any Wetland Buffers which have minor or short-duration impacts, as determined by the Department in accordance with the criteria below, and which do not significantly impact the function or values of Wetlands; provided, that such projects are constructed with BMPs and additional Restoration measures are provided. Minor activities shall not result in the transport of sediment or increased stormwater. Such allowed minor utility projects shall meet the following criteria:
 - a. There is no practical alternative to the proposed activity with less impact on Wetlands;
 - b. The activity involves the placement of a utility pole, street signs, anchor, or vault or other small component of a utility facility; and
 - c. The activity involves disturbance of an area less than 75 square feet.

B. The activities listed below are allowed in Wetlands and their Buffers, except where such activities would result in a loss of the functions and values of a Wetland or Wetland Buffer. A Critical Areas Report must be submitted to the Department to determine if function or value will be lost. These activities include:

1. Activities in Wetlands in areas managed according to a special area management plan or other plan adopted by the Department and specifically designed to protect Wetland resources.
2. Trimming of vegetation for purposes of providing a View Corridor will be allowed. The trimming is limited to a maximum 20-foot width and the benefit to fish and wildlife habitat may not be reduced. No

more than thirty (30) percent of the live crown of a tree may be removed. Trimming shall be limited to hand pruning of branches and vegetation and does not include felling, topping, or the removal of trees. (Ord. 02-200 § 2).

- a. Trimming and limbing of vegetation for the creation and maintenance of view corridors shall occur in accordance with the pruning standards of the International Society of Arboriculture (See articles published by the International Society of Arboriculture, Consumer Information Program, updated July, 2005)
 - b. The activity will not increase the risk of landslide or erosion.
3. Drilling for utilities or utility corridors under a Wetland, with an entrance or exit portal located completely outside of the Wetland Buffer, provided that the drilling does not interrupt the ground water connection to the Wetland or percolation of surface water down through the soil column. Specified studies by a hydrologist are necessary to determine whether the ground water connection to the Wetland or percolation of surface water down through the soil column will be disturbed.

14.40.060 Mitigation requirements.

A. Mitigation. Compensatory Mitigation is required for all unavoidable alterations to Wetlands or their Buffers, except for Buffer averaging when done in accordance with this Chapter. Compensatory Mitigation actions shall replace functions affected by the alteration and shall provide equal or greater functions compared to the impacted Wetland. All projects must first demonstrate compliance with EMC Section 14.10.070.B prior to development of Compensatory Mitigation plans.

B. Preference of Mitigation Actions. Compensatory Mitigation of Wetland areas shall occur in the following order of preference:

1. Restoration: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural or historic functions to a former or Degraded Wetland. For the purpose of tracking net gains in Wetland acres, Restoration is divided into:
 - a. Re-establishment: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural or historic functions to a former Wetland. The re-establishment must result in a gain in Wetland acres and functions. Activities could include removing fill material, plugging ditches, or breaking drain tiles.
 - b. Rehabilitation: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of repairing natural or historic functions of a Degraded Wetland. The rehabilitation must result in a gain in Wetland function but does not result in a gain in Wetland acres. Activities could involve breaching a dike to reconnect Wetlands to a floodplain or return tidal influence to a Wetland
2. Creation: The manipulation of the physical, chemical, or biological characteristics of a site to develop a Wetland on an upland or deepwater site where a Wetland did not previously exist. Creation results in a gain in Wetland acres. Activities typically involve excavation of upland soils to elevations that will produce a Wetland hydroperiod, create hydric soils, and support the growth of hydrophytic plant species.
3. Enhancement: The manipulation of the physical, chemical, or biological characteristics of a Wetland site to heighten, intensify, or improve specific function(s) or to change the growth stage or composition of the vegetation present. Enhancement is undertaken for specified purposes such as water quality improvement, flood water retention, or wildlife habitat. Enhancement results in a change in some Wetland functions and can lead to a decline in other Wetland functions, but does not result in a gain in Wetland acres. Activities typically consist of planting vegetation, controlling non-native or invasive species, modifying site elevations or the proportion of open water to influence hydroperiods, or some combination of these activities

C. Approaches to Compensatory Mitigation. Mitigation for alterations to Wetland and their Buffers shall rely on the approaches listed below.

1. Wetland Mitigation Banks. Credits from a certified Wetland mitigation bank may be used to compensate for impacts within the service area specified in the mitigation bank instrument. Use of credits from a Wetland mitigation bank certified under Chapter 173-700 WAC is allowed if:
 - a. The Department determines that it would provide appropriate compensation for the proposed impacts; and
 - b. The impact site is located in the service area of the bank.
 - c. The proposed use of credits is consistent with the terms and conditions of the certified bank instrument.
 - d. Replacement ratios for projects using bank credits is consistent with replacement ratios specified in the certified mitigation bank instrument.
2. In-Lieu Fee Mitigation. Credits from an approved in-lieu-fee program may be used when all the following apply:
 - a. The approval authority determines that it would provide environmentally appropriate compensation for the proposed impacts.
 - b. The proposed use of credits is consistent with the terms and conditions of the approved in-lieu-fee program instrument.
 - c. Project using in-lieu-fee credits shall have debits associated with the proposed impacts calculated by the applicant's qualified Wetland Specialist using the credit assessment method specified in the approved instrument for the in-lieu-fee program.
 - d. The impacts are located within the service area specified in the approved in-lieu-fee instrument.
3. Permittee-responsible mitigation. In this situation, the permittee performs the mitigation after the permit is issued and is ultimately responsible for implementation and success of the mitigation. Permittee-responsible mitigation may occur at the site of the permitted impacts or at an off-site location within the same watershed. If available, the use of Wetland mitigation banks and in-lieu-fee programs are preferable to permittee-responsible mitigation.

D. Wetland mitigation ratios. The ratios listed in Table 14.40.060 apply to permittee-responsible mitigation. The first number specifies the acreage of replacement Wetlands required, and the second number specifies the acreage of Wetlands altered or relocated.

Table 14.40.060
Wetland Mitigation Ratios

Category and Type of Wetland	Creation or Re-establishment	Rehabilitation	Enhancement
Category I: High conservation value/bog	Not considered possible	Not considered possible	Not considered possible
Category I: Mature and old growth forest	6:1	12:1	24:1

Category I: Based on functions	4:1	8:1	16:1
Category II	3:1	6:1	12:1
Category III	2:1	4:1	8:1
Category IV	1.5:1	3:1	6:1

The Director may increase the ratios under the following circumstances:

1. Uncertainty as to the probable success of the proposed Restoration or creation;
2. Significant period of time between destruction and replication of Wetland values;
3. Projected losses in functional value; or
4. The Compensatory Mitigation is off-site.

E. Wetland Buffer mitigation. To mitigate unavoidable impacts to functions and values of Wetland Buffers, a minimum Buffer ratio of 1:1 (alteration area: mitigation area) is required. This ratio assumes that creation or Restoration of a Wetland Buffer with appropriate Native Vegetation is sufficient to compensate for the Wetland Buffer functions and values affected by alteration of an existing Wetland Buffer. If Enhancement of an existing Buffer is proposed as mitigation, a higher mitigation ratio may be required. For any proposed Buffer activities, the applicant must demonstrate that the functions and values of the altered Buffer will be fully replaced by the proposed mitigation. The Department may increase the Buffer mitigation ratios under the following circumstances:

1. The replacement ratio needed to recover the lost functions and values of Buffer area is greater than 1:1 based upon the existing type of vegetative cover of either the impact site or the proposed mitigation site.
2. Uncertainty exists as to the probable success of the proposed Restoration or creation;
3. A significant period of time will elapse between impact and replication of Wetland functions; or
4. The impact was an unauthorized impact.

F. Wetland and Buffer mitigation plans. Compensatory Wetland mitigation plans shall be consistent with Wetland Mitigation in Washington State – Part 2: Developing Mitigation Plans (Ecology, 2006); and Selecting Wetland Mitigation Sites Using a Watershed Approach (Ecology, 2009), or as revised. Mitigation plans shall comply with the requirements established in EMC 14.40.070, Appendix B.

14.40.070 Appendices.

A. Wetland Report.

B. Wetland Mitigation Plan

APPENDIX A

WETLAND REPORT

A. A Wetland Critical Areas Report shall, at a minimum, include the following:

1. The general Critical Areas report requirements in EMC Chapter 14.10.080;
2. Map showing the location of all Wetlands and required Buffers within three hundred (300) feet of the proposed development;

3. An analysis of the onsite Wetland(s) include the following site- and proposal-related information:
 - a. Documentation of any fieldwork performed on the site, including, but not limited to, field Delineation data sheets for Delineations and Wetland rating forms;
 - b. Wetland acreage;
 - c. Wetland Category;
 - d. A discussion of the water sources supplying the Wetland and documentation of hydrologic regime (locations of inlet and outlet features, water depths throughout the Wetland, evidence of recharge or discharge);
 - e. A discussion of the functions of existing Wetlands, including vegetative, faunal, and hydrologic conditions; and
 - f. A description of the methodologies used to conduct the Wetland Delineations;
4. A discussion of measures, including avoidance, minimization, and mitigation, proposed to preserve existing Wetlands;
5. A detailed discussion of the direct and/or indirect potential impacts on the Wetland by the project; and
6. The Wetland mitigation plan requirements of EMC Chapter 14.40.070, Appendix B, if the activity will result in unavoidable impacts to Wetlands or their Buffers.

APPENDIX B

WETLAND MITIGATION PLAN

- A. A Wetland mitigation plan shall, at a minimum, include the general mitigation plan requirements in EMC Chapter 14.10.090 and the following information:
 1. Existing and proposed Wetland acreage;
 2. Vegetative and faunal conditions;
 3. Surface and subsurface hydrologic conditions including an analysis of existing and future hydrologic regime and proposed hydrologic regime for enhanced, created, or restored mitigation areas;
 4. Relationship within watershed and to existing waterbodies;
 5. Soils and substrate conditions, topographic elevations;
 6. Existing and proposed adjacent site conditions;
 7. Required Wetland Buffers (including any Buffer reduction or averaging and mitigation proposed to enhance Buffers);
 8. Property ownership;
 9. A discussion of ongoing management practices that will protect Wetlands after the project site has been developed, including proposed monitoring and maintenance programs;
 10. A bond estimate for the installation, site preparation, plant materials and installation, fertilizers, mulch, and the proposed monitoring and maintenance work for the required number of years, pursuant to EMC Chapter 14.10.070.E.

Chapter 14.50

CRITICAL FISH AND WILDLIFE HABITAT AREAS

Sections:

- 14.50.010 Purpose.
- 14.50.020 Fish and wildlife habitat conservation area identification and classification.
- 14.50.030 Buffer standards—Fish and wildlife habitat conservation areas.
- 14.50.040 Fish and wildlife habitat conservation area review procedures.
- 14.50.050 Allowed activities.
- 14.50.060 Alteration of Watercourses
- 14.50.070 Mitigation requirements.
- 14.50.080 Appendix

14.50.010 Purpose.

Many land use activities can impact the habitats of fish and wildlife. Special care must be taken in the management of lands that support fish and wildlife species to ensure that development occurs in a manner that is sensitive to their habitat needs. The purpose of this chapter is to identify fish and wildlife habitat conservation areas and establish habitat protection procedures and mitigation measures that are designed to result in no net loss of habitat functions and values. These areas are necessary for maintaining species in suitable habitats within their natural geographic distribution so that isolated subpopulations are not created as designated by WAC 365-190-080(5). (Ord. 02-200 § 2).

14.50.020 Fish and wildlife habitat conservation area identification and classification.

A. Designation. Fish and wildlife habitat conservation areas include:

1. Waters of the state. Waters of the state include lakes, rivers, ponds, streams, and all other surface waters and watercourses within jurisdiction of the state of Washington, as classified in WAC 222-16-030.
2. Areas with which federally designated endangered, threatened, and sensitive species have a primary association. The U.S. Fish and Wildlife Service and the National Marine Fisheries Service should be consulted for current federal listing status.
3. Areas with which state designated endangered, threatened, and sensitive species have a primary association. The Washington State Department of Fish and Wildlife should be consulted for current state listing status.
4. State priority habitats and areas associated with state priority species. The state Department of Fish and Wildlife should be consulted for current listing of priority habitats and species.
5. Habitats of and Species of Local Importance. The following fish and wildlife species and their associated habitat areas shall be regulated under this chapter:
 - a. Fish. Coho salmon (*Oncorhynchus kisutch*), pink salmon (*Oncorhynchus gorbuscha*), chum salmon (*Oncorhynchus keta*), cutthroat trout (*Oncorhynchus clarkia*), and steelhead (*Oncorhynchus mykiss*).
 - b. Birds. Great blue heron (*Ardea herodias*) and green heron (*Butorides virescens*).
 - c. Areas with which state-listed monitor or candidate fish or wildlife species or federally listed candidate fish or wildlife species have a primary association, and which if altered may reduce the likelihood that the species will survive and reproduce over the long term.
 - d. Heron rookeries.

6. Areas not included. Fish and wildlife habitat conservation areas does not include such artificial features or constructs as irrigation delivery systems, irrigation infrastructure, irrigation canals, or drainage ditches that lie within the boundaries of and are maintained by a port district or an irrigation district or company.

B. Habitat boundary survey. If the Department determines that a regulated habitat conservation area may be present within the project vicinity, the Department may require the habitat area to be delineated and/or mapped by a qualified Fisheries Biologist or Wildlife Biologist who is knowledgeable of fish and wildlife habitat within western Washington, or by the Washington Department of Fish and Wildlife. The boundary of aquatic habitats shall be the ordinary high water mark of the waterbody. The management recommendations for Washington's priority habitats and species or federal equivalent should be used as a tool for identifying and delineating wildlife habitat boundaries. The City may waive this requirement if there is adequate information available on the area proposed for development to determine the impacts of the proposed development and appropriate mitigating measures.

C. Mapping. The approximate location and extent of waters of the state and fish presence within the city are shown on maps maintained by the City. The City shall update the maps periodically as new information becomes available. The approximate location and extent of other fish and wildlife habitat conservation areas are shown on maps maintained by the Washington State Department of Fish and Wildlife and other state and federal agencies. These maps are to be used as a guide and do not provide definitive information about fish and wildlife habitat conservation area size or presence. Fish and wildlife habitat conservation areas may exist that do not appear on the maps.

D. Waters of the state classification. The City hereby adopts the water typing system specified in WAC 222-16-030, as described below:

1. Type S. All waters, within their ordinary high water mark, meeting the criteria as "shorelines of the state" and "shorelines of statewide significance" under RCW Chapter 90.58. As of the effective date of this title, there are no Type S streams within the City's jurisdiction.
2. Type F: segments of natural waters other than Type S Waters, which are within the bankfull widths of defined channels and periodically inundated area of their associated Wetlands, or within lakes, ponds, or impoundments having a surface area of 0.5 acre or greater at seasonal low water and which in any case contain fish habitat.
3. Type Np: all segments of natural waters within the bankfull width of defined channels that are perennial non-fish habitat stream. Perennial stream waters do not go dry any time of a year of normal rainfall. However, for the purpose of water typing, Type Np Waters include the intermittent dry portions of the perennial channel below the uppermost point of perennial flow.
4. Type Ns: All segments of natural waters within the bankfull width of the defined channels that are not Type S, F, or Np waters. These are seasonal, non-fish habitat streams in which surface flow is not present for at least some portion of a year of normal rainfall and are not located downstream from any stream reach that is a Type Np Water. Ns Waters must be physically connected by an above-ground channel system to Type S, F, or Np Waters.

14.50.030 Buffer standards—Fish and wildlife habitat conservation areas.

A. Determining Buffer widths. Buffers shall be required as set forth for each habitat type. The required Buffers shall be delineated, both on a site plan or plat, and on the property prior to approval of any regulated activity.

1. Aquatic habitat conservation areas.
 - a. Buffers for aquatic habitat conservation areas shall be based upon the water type Classification of the water body as specified in WAC 22-16-030. Refer to Table 14.50.030 for the water types and the associated Buffer requirements.
 - b. The required Buffer width shall be measured in all directions from the ordinary high water mark.

c. The required Buffer shall be extended to include any adjacent regulated Wetland, Landslide Hazard Area, or Erosion Hazard Area and their respective Buffers.

2. Non-aquatic habitat conservation areas. Appropriate Buffers for critical habitat areas and species not listed in Table 14.50.030 shall be determined by the Washington Department of Fish and Wildlife or by a qualified Wildlife Biologist and documented in an approved Habitat Management Plan.

**Table 14.50.030
Buffer Standards**

Water Type	Buffer Width¹
Type S	150 ft. ²
Type F	100 ft.
Type Np	60 ft.
Type Ns	35 ft.

¹ In the event that Buffers for any habitat conservation area or other Critical Area are contiguous or overlapping, the landward-most edge of all such Buffers shall apply.

² As of the effective date of this title, there are no Type S streams within the City's jurisdiction.

B. Modification to Buffer Width Requirements. The standard Buffer widths of subsection (A) of this section may be modified as follows:

1. Buffer Width Reductions. A Buffer width reduction may be proposed through submittal of a Habitat Management Plan. Buffer reductions of up to a maximum of 25 percent may be allowed when the applicant demonstrates the following circumstances:

- a. Buffer Encroachment is unavoidable.
- b. The existing Buffer is predominately un-vegetated, composed of nuisance species, or is in an otherwise highly disturbed condition.
- c. Buffer reduction with Enhancement will provide equal or greater protection of current habitat functions and values, and will not adversely affect salmon habitat.
- d. The Buffer reduction will not increase the risk of slope failure or downslope stormwater drainage impacts.
- e. The minimum width of the Buffer at any given point shall be at least seventy-five (75) percent of the standard width, or twenty-five (25) feet, whichever is greater.
- f. The project includes a Buffer Enhancement Plan as part of the mitigation required by EMC Chapter 14.50.070. The Buffer Enhancement Plan shall use Native Plant species.

2. Buffer Width Increases. The Department may require increased Buffer width(s) when any of the following are identified:

- a. A larger Buffer is necessary to maintain viable populations of existing species or protect the existing functions of the habitat area;
- b. The adjacent land is susceptible to severe erosion and erosion control measures will not effectively prevent adverse habitat impacts;
- c. The adjacent land has minimal vegetative cover or slopes greater than 20 percent; or

- d. The habitat area is in an area of high tree blow down potential. In these cases the habitat area may be expanded an additional 50 feet on the windward side.

14.50.040 Fish and wildlife habitat conservation area review procedures.

A. Habitat Management Plan. If the Department's maps, sources, or field investigations indicate that the proposed project area is located within 300 feet of a known or suspected fish or wildlife habitat conservation area, then the applicant shall submit a Habitat Management Plan prepared by a qualified Fisheries Biologist or Wildlife Biologist. The requirement to provide a habitat conservation plan for habitat conservation areas may be waived if the Department determines that there are no potential direct or indirect impacts on designated species or habitats that would result from the proposed Development Activity. Habitat Management Plans shall comply with the requirements established in EMC 14.50.080, Appendix A.

14.50.050 Allowed activities.

A. The following activities may be permitted in habitat conservation areas and/or their Buffers when all reasonable measures have been taken to avoid and mitigate adverse effects on species and habitats and a net loss of habitat functions will not occur. In order to verify the following conditions, a Habitat Management Plan meeting the requirements of EMC 14.50.080, Appendix A must be submitted.

1. Stream Erosion Control Measures. New or replacement stream erosion control measures shall be subject to the following standards:
 - a. The proposal complies with the provisions set forth in EMC Chapter 14.110.
 - b. The required Habitat Management Plan demonstrates the following:
 - i. Natural stream processes will be maintained. The project will not result in increased beach erosion or alterations to, or loss of, stream substrate within one-quarter mile of the site.
 - ii. The stream erosion control measure will not adversely impact fish or wildlife habitat conservation areas or associated Wetlands.
2. Docks and launching ramps. Construction, reconstruction, repair, and maintenance of docks and public or private launching ramps are subject to all of the following:
 - a. The dock or ramp is located and oriented and constructed in a manner that minimizes adverse effects on water quality, movement of aquatic and terrestrial life, ecological processes, spawning habitat, and Wetlands.
 - b. Docks and ramps shall meet or exceed all relevant state and federal permit requirements.
3. Roads, Trails, Bridges, and Rights-of-Way. Construction of trails, roadways, bridges, and culverts may be allowed subject to the following standards:
 - a. There is no other feasible alternative route with less impact on the environment.
 - b. The crossing minimizes interruption of downstream movement of wood, ice, and gravel and the movement of all fish and wildlife.
 - c. Stream crossings, where necessary, shall only occur as near to the perpendicular with the stream as possible and be limited to the minimum width necessary.
 - d. Road bridges and culverts are designed according to the latest versions of the Washington Department of Fish and Wildlife Water Crossing Design Guidelines (Washington Department of Fish and Wildlife) the Anadromous Salmonid Passage Facility Design guidelines (National Marine Fisheries Service).

e. Trails and associated viewing platforms shall be made of pervious materials.

4. Utility Facilities. New utility lines and facilities are permitted to cross habitat conservation areas if they comply with the following standards

a. Avoid fish and wildlife habitat conservation areas to the maximum extent possible.

b. Cross at an angle greater than 60 degrees to the centerline of the channel in streams or perpendicular to the channel centerline whenever boring under the channel is not feasible.

c. Crossings are contained within the footprint of an existing road or utility crossing where possible.

d. Avoid paralleling the stream or following a down-valley course near the channel.

e. Do not increase or decrease the natural rate of shore migration or channel migration.

f. Bore beneath the scour depth and hyporheic zone of the water body and channel migration zone (CMZ) where feasible.

5. Public Flood Protection Measures. New public flood protection measures and expansion of existing facilities may be approved, subject to the Department's review and approval of a Habitat Management Plan.

6. Instream Structures. New instream structures (e.g., such as, but not limited to, high flow bypass, sediment ponds, instream ponds, retention and detention facilities, dams, weirs, etc.) shall be allowed only as part of an approved Mitigation or Restoration project or watershed basin plan approved by the Department and upon acquisition of any required state or federal permits. The structure shall be designed to avoid modifying flows and water quality in ways that may adversely affect critical fish species. Proposals for placement of water quality, water quantity, or other instruments or structures within a stream to gather data, or as a mitigation measure, shall be exempt from the provisions of this title upon review and approval by the Department.

7. Stormwater Conveyance Facilities. Conveyance structures whose sole purpose is to convey stormwater already treated for quality, or water bypassed around water quality treatment facilities pursuant to an approved stormwater plan, may be constructed subject to the following standards:

a. No other feasible alternatives with less impact exist;

b. Mitigation for impacts is provided;

c. Stormwater conveyance facilities shall incorporate fish habitat features;

d. Vegetation shall be maintained and, if necessary, added adjacent to all open channels and ponds in order to retard erosion, filter out sediments, and shade the water.

8. On-Site Sewage Systems and Wells.

a. New on-site sewage systems and individual wells are permitted if accessory to an approved structure.

b. Repairs to failing on-site sewage systems associated with an existing structure shall be accomplished by utilizing one of the following methods that result in the least impact:

i. Connection to an available public sewer system;

ii. Replacement with a new on-site sewage system located in a portion of the site that has already been disturbed by development and is located landward as far as possible, provided the proposed sewage system is in compliance with the provisions in EMC Chapter 14.80; or

iii. Repair to the existing on-site septic system.

B. The activities listed below are allowed in habitat conservation areas and their Buffers, and do not require submission of a Habitat Management Plan, except where such activities would result in a loss of the functions and values of habitat conservation areas or Buffers.

1. Vegetation Removal, Disturbance, and Introduction. Limited vegetation removal shall be allowed subject to EMC Section 18.90.180 - Tree Preservation and the following standards in paragraphs a-b:

a. Hazard trees may be cut; provided, that:

i. The applicant submits a report from a certified arborist, licensed architect, or professional forester that documents the hazard and provides a replanting schedule for the replacement trees and receives written approval from the City authorizing the tree removal;

ii. Tree cutting shall be limited to limbing and crown thinning, unless otherwise justified by the landowner's expert. Where limbing or crown thinning is not sufficient to address the hazard, trees should be topped to remove the hazard rather than cut at or near the base of the tree. All vegetation cuttings (tree stems, branches, tops, etc.) shall be left within the habitat area or Buffer unless removal is warranted due to the potential for disease transmittal to other healthy vegetation;

iii. The landowner shall replace any trees that are felled or topped with new trees at a ratio of two replacement trees for each tree felled or topped. Tree species that are native and indigenous to the site shall be used;

iv. Hazard trees determined to pose an imminent threat or danger to public health or safety, or to public or private property, or serious environmental degradation may be removed or topped by the landowner prior to receiving written approval from the Department; provided, that within 14 days following such action, the landowner shall submit the necessary report and replanting schedule demonstrating compliance with subsections (B)(1)(a)(i) through (iii) of this section.

b. Trimming of vegetation for purposes of providing a View Corridor will be allowed. The trimming is limited to a maximum 20-foot width and the benefit to fish and wildlife habitat may not be reduced. No more than 30 percent of the live crown may be removed. Trimming shall be limited to hand pruning of branches and vegetation and does not include felling, topping, or the removal of trees.

2. Fencing. Fencing shall be placed in such a manner as to maintain wildlife movement corridors and not create any fish passage blockages. The Department shall approve the location, type, and height of any proposed fencing.

14.50.060 Alteration of Watercourses

Alteration of Watercourses. Any alteration of a watercourse shall comply with the following standards:

1. The City will notify adjacent communities and the Washington State Department of Ecology prior to any alteration or relocation of a watercourse proposed by the applicant and submit evidence of such notification to the Federal Insurance Administration.

2. The City shall require that maintenance be provided within the altered or relocated portion of said watercourse, so that the flood-carrying capacity is not diminished. Therefore, if the maintenance program calls for future cutting of planted Native Vegetation used in performing the alteration, the system shall be oversized at the time of construction to compensate for said vegetation growth or any other natural factor that may need future maintenance.

3. Alterations and relocations, including stabilization projects, shall not degrade fish habitat and shall be subject to the following provisions:

a. Structures that cross all watercourses and water bodies shall meet fish habitat requirements of the Washington Department of Fish and Wildlife.

b. Any culverts that are used on fish-bearing watercourses shall be arch/bottomless culverts or equivalent that provide comparable fish protection, and must meet fish habitat requirements of the latest edition of Washington Department of Fish and Wildlife's Design Manual for Culverts.

c. Bridges or other crossings shall allow for uninterrupted downstream movement of wood and gravel, be as close to perpendicular to the watercourse as possible, and be designed to minimize fill and to pass the Base Flood flows.

d. Watercourse alterations shall maintain natural meander patterns, channel complexity, and floodplain connectivity. Where feasible, such characteristics shall be restored as part of the watercourse alteration.

e. The applicant shall identify the channel migration zone for the watercourse at the project site and for a reasonable reach upstream and downstream of the site, and shall not undertake actions as part of the alteration that would in any way inhibit movement of the channel.

f. Existing culverts that do not meet fish habitat requirements shall be removed or replaced as part of the approved watercourse alteration project.

g. Watercourse alteration projects shall not result in a fish blockage of side channels. Known fish barriers into side channels shall be removed as part of the approved watercourse alteration project.

h. For any watercourse alteration of a Type S or F water pursuant to EMC 14.50.020.D whose channel is subject to migration, bioengineered (soft) armoring of streambanks is required to allow for woody debris recruitment, gravels for spawning, and creation of side channels. The bioengineering technique used must be designed in accordance with the latest edition of Washington Department of Fish and Wildlife's Integrated Streambank Protection Guidelines.

4. The project Engineer shall design the watercourse alteration so the activity does not increase the water surface elevation (zero-rise); decrease the capacity, storage, and conveyance of the watercourse; or cause an adverse impact to adjacent, cross-channel, or upstream or downstream properties. (Ord. 17-492 § 2 (Exh. A); Ord. 02-200 § 2).

14.50.070 Mitigation requirements.

A. Mitigation. Compensatory Mitigation is required for all unavoidable alterations to fish and wildlife habitat conservation areas or their Buffers. Mitigation of alteration to habitat areas shall achieve equivalent or greater biological functions. Mitigation shall address each functional attribute affected by the alteration to achieve functional equivalency or improvement on a per function basis. Mitigation elements to be addressed may include, but are not limited to: Restoration of previously Degraded areas and key habitat features, Restoration of Riparian vegetation communities to provide shade and large woody debris, addition of large woody debris, and installation of upland habitat features. All projects must first demonstrate compliance with EMC 14.10.070.B prior to development of Compensatory Mitigation plans.

B. Type of mitigation required. In determining the extent and type of mitigation required, the Department may consider all of the following:

1. The ecological processes that affect and influence habitat structure and function within the watershed or sub-basin;
2. The individual and cumulative effects of the action upon the functions of the Critical Area and associated watershed;
3. Observed or predicted trends regarding the gains or losses of specific habitats or species in the watershed, in light of natural and human processes;
4. The likely success of the proposed mitigation measures;
5. Effects of the mitigation actions on neighboring properties; and

6. Opportunities to implement Restoration actions formally identified by an adopted shoreline Restoration plan, watershed planning document prepared and adopted pursuant to Chapter [90.82](#) RCW, a salmonid recovery plan or project that has been identified on the Salmon Recovery Board Habitat Project List or by the Washington State Department of Fish and Wildlife as essential for fish and wildlife habitat Enhancement.

C. Location. Compensatory Mitigation shall be provided on-site or off-site in the location that will provide the greatest ecological benefit to the species or habitats affected and have the greatest likelihood of success. Mitigation shall occur as close to the impact site as possible, within the same sub-basin, and in a similar habitat type as the permitted alteration. If the applicant submits a watershed- or landscape-based analysis that demonstrates mitigation within an alternative sub-basin of the same watershed would have greater ecological benefit, then the Director may approve the demonstrated alternate mitigation.

D. Mitigation plans. When required by this chapter, the applicant shall submit a fish and wildlife habitat conservation area mitigation plan meeting the requirements of this Chapter.

14.50.080. Appendix.

APPENDIX A

HABITAT MANAGEMENT PLAN

A. A Habitat Management Plan shall, at a minimum, include the following:

1. The general Critical Areas report requirements.
2. Identification of any endangered, threatened, sensitive, or candidate species that have a primary association with habitat on the project area;
3. Map showing the location of the ordinary high water mark and locations of wildlife habitat conservation area(s) and their Buffers;
4. The vegetative, faunal, topographic, and hydrologic characteristics of the habitat conservation area;
5. A discussion of any federal, state, or local special management recommendations, including Washington Department of Fish and Wildlife habitat management recommendations, that have been developed for species or habitat located on or adjacent to the project area;
6. A detailed discussion of the direct and/or indirect potential impacts on the habitat conservation area by the project. Such discussion shall include a discussion of the ongoing management practices that will protect habitat after the project site has been developed;
7. Mitigation plan, if the activity will result in unavoidable impacts to habitat conservation areas.
Mitigation measures may include:
 - a. Prohibition or limitation of use and development activities within the habitat conservation area;
 - b. Retention of vegetation and/or re-vegetation of areas/habitats critically important to species;
 - c. Special construction techniques;
 - d. Implementation of erosion and sediment control measures;
 - e. Habitat Restoration or Enhancement, i.e., fish passage barrier removal;
 - f. Seasonal restrictions on construction activities on the subject property;
 - g. Clustering of development activities on the subject property; and/or
 - h. Any other requirements and/or recommendations from federal, state, or local special management recommendations, including the Washington State Department of Fish and Wildlife's habitat management guidelines.

Chapter 14.60

AQUIFER RECHARGE AND WELLHEAD PROTECTION AREAS

Sections:

- 14.60.010 Purpose.
- 14.60.020 Critical Aquifer Recharge Areas identification.
- 14.60.030 Critical Aquifer Recharge Areas review procedures.
- 14.60.040 Critical Aquifer Recharge Areas standards.

14.60.010 Purpose.

The purpose of this chapter is to protect Critical Aquifer Recharge Areas from degradation or depletion resulting from new or changed land use activities. Due to the exceptional susceptibility and vulnerability of groundwater underlying aquifer recharge areas to contamination and the importance of such groundwater as sources of public water supply, it is the intent of this chapter to safeguard groundwater resources and Wellhead Protection Areas by mitigating or precluding future discharges of any Contaminant from new land use activities. (Ord. 02-200 § 2).

14.60.020 Critical Aquifer Recharge Areas identification.

A. General. Critical Aquifer Recharge Areas are areas that have a critical recharging effect on groundwater used for potable water supplies and/or that demonstrate a high level of susceptibility or vulnerability to groundwater contamination from land use activities. These areas include the following:

1. Aquifer Recharge Areas, which are the boundaries of the two highest DRASTIC zones that are rated 180 and above on the DRASTIC index range, as identified in Map of Groundwater Pollution Potential, Edgewood, Washington, National Water Well Association, U.S. Environmental Protection Agency (EPA);
2. Wellhead Protection Areas, as defined in Chapter 14.20; and
3. Sole Source Aquifers, which are areas that have been designated by the EPA pursuant to the Federal Safe Water Drinking Act. As of the effective date of this title, there are no designated Sole Source Aquifers within city limits.

14.60.030 Critical Aquifer Recharge Areas review procedures.

A. General Requirements

1. The City's Critical Aquifer Recharge Areas map provides an indication of where Critical Aquifer Recharge Areas are located within the city and the map is updated as necessary.
2. Any proposed development located within protection Critical Aquifer Recharge Areas shall comply with the standards set forth in EMC Chapter 14.60.
3. Any hazardous uses shall require the submittal of a Hydrogeologic Assessment, as set forth in subsection (B) of this section.
4. The Department may waive Critical Area protective measure provisions contained in EMC Chapter 14.10, as deemed appropriate by the Director and can be shown to meet the requirements associated with Best Available Science, if required.

B. Hydrogeologic Assessment.

1. The Hydrogeologic Assessment shall be prepared, signed, and dated by a state licensed Geologist or Hydrogeologist.
2. The Hydrogeologic Assessment shall be submitted in the form of a report detailing the subsurface conditions, the design of a proposed land use action, and the facilities operation which indicates the susceptibility and potential for contamination of groundwater supplies. The Hydrogeologic Assessment shall, at

a minimum, include the general Critical Area report requirements of EMC Chapter 14.10 in addition to the following fifteen (15) items listed in paragraphs a-o:

- a. Information sources;
- b. Geologic setting – includes well logs or borings used to identify information;
- c. Background water quality;
- d. Groundwater elevations;
- e. Location and depth to perched water tables;
- f. Recharge potential of a Facility site, i.e., the permeability and transmissivity;
- g. Groundwater flow direction and gradient;
- h. Current available data on wells located within one-quarter mile of the site;
- i. Current available data on any spring within one-quarter mile of the site;
- j. Surface water location and recharge potential;
- k. Water source supply to a Facility, e.g., a high capacity well;
- l. Any sampling schedules necessary;
- m. Discussion of the effects of the proposed project on the groundwater resource;
- n. Discussion of potential mitigation measures, should it be determined that the proposed project will have an adverse impact on groundwater resources; and
- o. Any other information as required by the TPCHD, including information required under Washington Department of Ecology Publication 97-30.

C. Storage Tank Permits. In addition to the requirements set forth in this title, the following agencies also have the authority to regulate the installation, repair, replacement, or removal of any UST:

1. The Pierce County Fire Prevention Bureau regulates and authorizes permits for all USTs, pursuant to the International Fire Code (Article 79) and this chapter.
2. The Washington Department of Ecology regulates and authorizes permits for all USTs (Chapter 173-360 WAC).
3. The TPCHD regulates and authorizes permits for the removal of any UST (Pierce County Code, Chapter 8.34). (Ord. 02-200 § 2).

14.60.040 Critical Aquifer Recharge Areas standards.

A. General. All Regulated Activities that are not exempt or prohibited under the provisions of this chapter shall ensure sufficient groundwater recharge. In order to achieve sufficient groundwater recharge, the applicant shall comply with the City's adopted stormwater manual, EMC Chapter 13.05, and demonstrate that the total post-development infiltration rate for the project area will be equal to or better than the predevelopment rate.

B. Prohibited Uses. Landfills (other than inert and demolition landfills), Class I, III, and IV underground injection wells, metals mining, wood treatment facilities, pesticide manufacturing, petroleum refining facilities (including distilled petroleum facilities), the storage of large volumes of petroleum products, and other uses or activities determined by the Department to have a significant adverse impact on ground water are prohibited within Critical Aquifer Recharge Areas.

C. Exemptions. In addition to the general exemptions listed in EMC Section 14.30.030, the following uses or activities are exempt from the requirements of this chapter:

1. Sewer lines and appurtenances;
2. Biosolids and Sludge Land Application Sites; provided, that these activities comply with the requirements established in Chapters 173-200, 173-216, and 173-304 WAC; and
3. Single-family and two-family dwellings and associated accessory structures.

D. Agricultural Activities. New Agricultural Activities that do not involve hazardous substance handling or application are allowed within an aquifer recharge or Wellhead Protection Area subject to the following:

1. The applicant is required to submit a farm management plan prepared by the USDA, NRCS, Pierce County Conservation District, or Washington State University, Cooperative Extension Office, that certifies that water quality and quantity within the aquifer recharge area is maintained. The farm management plan shall at a minimum address the following:
 - a. The limits of the proposed Agricultural Activities.
 - b. The proposed scope of Agricultural Activities, including the use of any pesticides, fertilizers, or other chemicals.
 - c. The existing nitrate levels on the site and any proposed increases in nitrate levels.
2. Integrated pest management (IPM) practices for pest control and BMPs for the use of fertilizers, as described by the Washington State University, Pierce County Cooperative Extension Office, shall be utilized.
3. Nitrate levels at down-gradient property line shall not exceed 2.5 mg/L or, if the background nitrate concentration exceeds 2.5 mg/L, that the concentration will not be increased more than 0.1 mg/L.
4. Additional protective measures may be required if deemed necessary by the Department or TPCHD to protect public health or safety.

E. Nonhazardous Uses. Subdivision of land as defined in EMC Title 16, residential structures housing three or more units, and all commercial and industrial sites or activities that do not include or involve hazardous substance processing or handling in Critical Aquifer Recharge Areas are allowed subject to the following standards:

1. Stormwater quality treatment and flow control shall be provided in conformance with the City's adopted stormwater management manual.
2. Floor drains shall not be allowed to drain to the stormwater system and must be designed and installed to meet the Uniform Plumbing Code (UPC) Section 303.
3. If any roof venting carries a Contaminant, then the portion of the roof draining from this area must go through pretreatment pursuant to UPC Section 304(b).
4. All nonresidential vehicle washing must be self-contained or be discharged to a sanitary sewer system, if approved by the sewer utility, and is subject to UPC Sections 708 and 711.
5. Integrated pest management (IPM) practices for pest control and BMPs for the use of fertilizers as described by the Washington State University, Pierce County Cooperative Extension Office, shall be utilized.
6. For new or changes in Regulated Activities served by on-site sewage systems, the applicant must demonstrate to the TPCHD that nitrate levels at the down-gradient property line will not exceed 2.5 mg/L or that if the background nitrate concentration exceeds 2.5 mg/L the concentration will not be increased more than 0.1 mg/L.

7. Additional protective measures may be required if deemed necessary by the Department or TPCHD to protect public health or safety.

F. Hazardous Uses – General. Hazardous substance processing or handling, hazardous waste treatment and storage facilities, Animal Containment Areas, and solid waste facilities that require a solid waste handling permit from the TPCHD, requiring approval from the City, shall be allowed only in Critical Aquifer Recharge Areas subject to review and approval of a Hydrogeologic Assessment by the Department and review by the TPCHD. The Department has the authority to apply whatever standards deemed necessary to mitigate any negative impacts that may be associated with the proposed development and will consider comments by TPCHD.

G. Hazardous Uses – Storage Tanks. In addition to the requirement to submit a Hydrogeologic Assessment, the following standards apply to storage tanks in Critical Aquifer Recharge Areas:

1. Underground Tanks. All new underground storage facilities used or to be used for the underground storage of hazardous substances or hazardous wastes shall be designed and constructed so as to:

- a. Prevent releases due to corrosion or structural failure for the operational life of the tank;
- b. Be protected against corrosion, constructed of noncorrosive material, steel clad with a noncorrosive material, or designed to include a secondary containment system to prevent the release or threatened release of any stored substance;
- c. Use material in the construction or lining of the tank which is compatible with the substance to be stored; and
- d. The installation of any UST shall also be subject to other state and local permit requirements.

2. Aboveground Tanks.

- a. No new aboveground storage Facility or part thereof shall be fabricated, constructed, installed, used, or maintained in any manner which may allow the release of a hazardous substance to the ground, groundwater, or surface water within any Critical Aquifer Recharge Areas.
- b. A new aboveground tank that will contain a hazardous substance will require both a double-walled tank and a secondary containment system separate from the tank that will hold 110 percent of the tank's capacity. The secondary containment system or dike system must be designed and constructed to contain material stored in the tank(s). (Ord. 16-482 § 2 (Exh. C); Ord. 02-200 § 2).

Chapter 14.70

VOLCANIC HAZARD AREAS

Sections:

- 14.70.010 Purpose.
- 14.70.020 Volcanic Hazard Areas.
- 14.70.030 Volcanic Hazard Area review procedures.
- 14.70.040 Volcanic Hazard Area standards.

14.70.010 Purpose.

At over 14,411 feet high, Mount Rainier dominates the skyline of the southern Puget Sound region. This glacier-clad mountain is a dormant volcano capable of generating large floods and lahars which have historically reached the floors of the lowlands south of the City of Seattle and out to Commencement Bay in the Port of Tacoma, spewing ash from pyroclastic eruptions. The purpose of this chapter is to promote the public health, safety, and general welfare of the citizens of Edgewood by providing standards that minimize the loss of life that may occur as a result of volcanic events emanating from Mount Rainier. (Ord. 02-200 § 2).

14.70.020 Volcanic Hazard Areas.

A. General. Volcanic Hazard Areas are areas subject to pyroclastic flows, lava flows, and inundation by Debris Flows, Mudflows, or related flooding resulting from geologic and volcanic events on Mount Rainier.

B. Volcanic Hazard Area Categories. Volcanic Hazard Areas are areas that have been historically inundated by Case I, Case II, or Case III lahars or other types of Debris Flow; affected by pyroclastic flows, pyroclastic surges, lava flows, or ballistic projectiles in future eruptions; or are located in other drainages expected to be inundated by a future Case I, Case II, or Case III Debris Flow. Volcanic Hazard Areas are classified into the following categories:

1. Inundation Zone for Case I Lahars. Areas that could be affected by cohesive lahars that originate as enormous avalanches of weak chemically altered rock from the volcano. Case I lahars can occur with or without eruptive activity. The average reoccurrence rate for Case I lahars on Mount Rainier is about 500 to 1,000 years.
2. Inundation Zone for Case II Lahars. Areas that could be affected by relatively large non-cohesive lahars, which most commonly are caused by the melting of snow and glacier ice by hot rock fragments during an eruption, but which can also have a non-eruptive origin. The average time interval between Case II lahars from Mount Rainier is near the lower end of the 100- to 500-year range, making these flows analogous to the so-called "100-year flood" commonly considered in engineering practice.
3. Inundation Zone for Case III Lahars. Areas that could be affected by moderately large debris avalanches or small non-cohesive lahars, glacial outburst floods, or other types of Debris Flow, all of non-eruptive origin. The average time interval between Case III lahars at Mount Rainier is about one to 100 years.
4. Pyroclastic Flow Hazard Zone. Areas that could be affected by pyroclastic flows, pyroclastic surges, lava flows, and ballistic projectiles in future eruptions. During any single eruption, some drainages may be unaffected by any of these phenomena, while other drainages are affected by some or all phenomena. The average time interval between eruptions of Mount Rainier is about 100 to 1,000 years.

C. Travel Time Zones. The ability to evacuate people from within a Volcanic Hazard Area correlates to the distance from the source of an event, i.e., those areas closest to the event will have less time to evacuate than those areas farther away from the source of an event. The amount of time that is anticipated for a Debris Flow, lahar, flood, or avalanche to travel geographically has been classified into the following travel time zones:

1. Time Zone A. Time Zone A is an estimated one-hour travel distance from the source of the event.
2. Time Zone B. Time Zone B is an estimated one and one-half hour travel distance from the source of the event.

3. Time Zone C. Time Zone C is an estimated two-hour travel distance from the source of the event.
4. Time Zone D. Time Zone D is an estimated two hours or greater travel distance from the source of the event. (Ord. 02-200 § 2).

14.70.030 Volcanic Hazard Area review procedures.

A. The City's Critical Areas Atlas – Volcanic Hazard Area Map provides an indication of where Volcanic Hazard Areas are located within the city.

B. The Department will complete a review of the Volcanic Hazard Area maps for any development proposal to determine whether the proposed project area for a regulated activity falls within a Volcanic Hazard Area.

C. When the Department's maps or sources indicate that the proposed project area for a regulated activity is located within a Volcanic Hazard Area, the Department shall apply the standards for Regulated Activities in Volcanic Hazard Areas, as set forth in EMC Chapter 14.70.040.

14.70.040 Volcanic Hazard Area standards.

The following standards apply within the inundation zones for Case I, II, and III lahars and within the pyroclastic flow hazard zone (refer to Table 14.70.040):

- A. Bonus densities, as set forth in EMC 18.90.080, Housing incentives program, shall be prohibited.
- B. All Critical Facilities shall be prohibited, except sewer collection facilities and any other utilities that are located underground or not likely to cause harm to people or the environment if inundated by a lahar.
- C. Special Occupancy Structures, as defined in EMC Section 14.20.107, are subject to the following:
 1. Travel Time Zone A. Special Occupancy Structures located within the Travel Time Zone A area shall be limited to a maximum 100-person occupancy.
 2. Travel Time Zone B. Special Occupancy Structures located within the Travel Time Zone B area shall be limited to a maximum 500-person occupancy.
 3. Travel Time Zone C. Special Occupancy Structures located within the Travel Time Zone C area shall be limited to a maximum 1,000-person occupancy.
 4. Travel Time Zone D. Special Occupancy Structures located within the Travel Time Zone D area shall be limited to a maximum 5,000-person occupancy.

Table 14.70.040 Volcanic Hazard Area Standards

Facility/Occupancy List	Case I Lahar Inundation Zone	Case II Lahar Inundation Zone	Case III Lahar Inundation Zone	Pyroclastic Flow Hazard Zone
Bonus Densities ⁽¹⁾	Not Allowed	Not Allowed	Not Allowed	Not Allowed
Critical Facilities ⁽²⁾	Not Allowed	Not Allowed	Not Allowed	Not Allowed
Special Occupancies ⁽³⁾	In Time Travel Zone A – Limited to 100 person occupant load. In Time Travel Zone B – Limited to 500 person occupant load. In Time Travel Zone C – Limited to 1,000 person occupant load. In Time Travel Zone D – Limited to 5,000 person occupant load.			
Other Occupancies	No Limitation	No Limitation	No Limitation	No Limitation

(1) Bonus density as set forth in EMC Chapter 18.90.080, Housing incentives program.

(2) Essential facility as defined in EMC Chapter 14.20.

(3) Special Occupancy Structures as defined in EMC Chapter 14.20

(Ord. 02-200 § 2).

Chapter 14.80

FLOOD HAZARD AREAS

Sections:

- 14.80.010 Purpose.
- 14.80.020 Flood Insurance Study Adoption
- 14.80.030 Definitions.
- 14.80.040 Flood Hazard Areas.
- 14.80.050 Flood Hazard Area review procedures.
- 14.80.060 Flood Hazard Area standards.
- 14.80.070 Variances to Flood Hazard Areas
- 14.80.080 Appendices.

14.80.010 Purpose.

The purpose of this chapter is to promote the public health, safety, and general welfare of the citizens of Edgewood. The standards contained in this chapter are intended to minimize public and private losses due to flood conditions in Flood Hazard Areas and provide special criteria necessary for Regulated Activities located within Flood Hazard Areas of the city. The following statements describe the purpose of this chapter:

- A. Protect human life and health;
- B. Minimize expenditure of public money and costly flood control projects;
- C. Minimize the need for rescue and relief efforts associated with flooding;
- D. Minimize prolonged business interruptions;
- E. Minimize damage to public infrastructure, facilities and utilities;
- F. Minimize damage to critical fish and wildlife habitat areas;
- G. Minimize net loss of ecological functions of floodplains;
- H. Ensure that potential buyers are notified that property is in a Flood Hazard Area;
- I. Ensure that those who occupy Flood Hazard Areas assume responsibility for their actions; and
- J. Qualify Edgewood for participation in the National Flood Insurance Program, thereby giving the citizens of Edgewood the opportunity to purchase flood insurance with particular emphasis to those in Flood Hazard Areas.

14.80.020 Flood Insurance Study Adoption

The areas of special flood hazard identified by the Federal Insurance Administration in a scientific and engineering report entitled "The Flood Insurance Study for Pierce County, Washington and Incorporated Areas" dated March 7, 2017, with accompanying FIRMs and any map amendments or corrections are hereby adopted by reference and declared to be a part of this title. The Flood Insurance Study and FIRMs are on file at Edgewood City Hall, 2224 104th Avenue East, Edgewood, Washington, 98371. The City may add or delete land from areas of special flood hazard or revise Base Flood elevations, utilizing best-available information for flood hazard identification in accordance with federal regulations.

14.80.030 Definitions.

A. Refer to Chapter 14.20 for definitions of any word or phrase not otherwise contained herein. For this Chapter (EMC 04.80) the definitions listed below shall apply:

1. *Appeal* – a request for a review of the interpretation of any provision of this chapter, per EMC 14.10.110, or request for a Flood Hazard Area Variance per EMC 14.80.070.
2. *Area of Shallow Flooding* – areas designated as AO or AH zones on the FIRM(s). AO zones are characterized as sheet flows, having base flood depths that range from one to three feet above the natural ground, where a clearly defined channel does not exist, the path of flooding is unpredictable and indeterminate, and velocity flow may be evident. AH zones indicate similar depth ponding, shown with standard base flood elevations on the FIRM(s).
3. *Area of Special Flood Hazard* – land in the floodplain within a community subject to a one percent or greater chance of flooding in any given year. Designation on FIRM(s) always includes the letter A or V.
4. *Basement* – any area of the building having its floor sub-grade (below ground level) on all sides, for the purposes of this title.
5. *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.
6. *Critical Facilities* – See EMC 14.20 B.22. For floodplain management purposes, Essential public facilities as defined under EMC 18.20.080 and 18.100.050 are considered *Critical Facilities*.
7. *Development* – any human-induced change to improved or unimproved real estate, including but not limited to: the construction of buildings or other structures, placement of a manufactured home/mobile home, mining, dredging, clearing, filling, grading, paving, excavation, drilling operations, storage of equipment or materials located within an area of special flood hazard, or activities otherwise governed by EMC Title 16, Subdivisions.
8. *Elevated Building* – a non-basement building that has its lowest elevated floor raised above ground level by foundation walls, shear walls, posts, piers, pilings, or columns.
9. *Existing Manufactured Home Park or Subdivision* – a manufactured home park or subdivision for which the construction of facilities for servicing the lots on which the manufactured homes are to be affixed (including, at a minimum, the installation of utilities, the construction of streets, and either final site grading or the pouring of concrete pads) is completed before the effective date of the adopted floodplain management regulations.
10. *Expansion to an Existing Manufactured Home Park or Subdivision* – the preparation of additional sites by the construction of facilities for servicing the lots on which the manufactured homes are to be affixed (including the installation of utilities, the construction of streets, and either final site grading or the pouring of concrete pads).
11. *Flood or Flooding* – a general and temporary condition of partial or complete inundation of normally dry land areas from:
 - a. The overflow of inland or tidal waters; or
 - b. The unusual and rapid accumulation of runoff of surface waters from any source.
12. *Flood Insurance Study (FIS)* – the official report provided by the Federal Insurance Administration (FIA) that includes flood profiles, FIRM(s), and the water surface elevation of the Base Flood.
13. *Increased Cost of Compliance (ICC)* – a flood insurance claim payment up to \$30,000 directly to a property owner for the cost to comply with floodplain management regulations after a direct physical loss

caused by a flood. Eligibility for an ICC claim can be through a single instance of “substantial damage” or as a result of a “cumulative substantial damage.” (More information can be found in FEMA ICC Manual 301.)

14. *Manufactured Home or Mobile Home* – 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 connected to the required utilities. For floodplain management purposes, the term “manufactured home/mobile home” also includes park trailers, travel trailers, and other similar recreational vehicles placed on a site for greater than 180 consecutive days. For insurance purposes, the term “manufactured home/mobile home” does not include park trailers, travel trailers, recreational vehicles, or other similar vehicles.
15. *Manufactured Home Park or Subdivision* – a parcel (or contiguous parcels) of land divided into two or more manufactured home lots for rent or sale.
16. *New Construction* – structures for which the Start of Construction commenced on or after the following:
 - a. For the purposes of determining flood insurance rates, the effective date of an initial FIRM (i.e., August 19, 1987, or specifically for Panel 350 August 4, 1988), and includes any subsequent improvements to such structures.
 - b. For floodplain management purposes, March 7, 2017 (the effective date of this floodplain management ordinance), including any subsequent improvements to such structures.
17. *New Manufactured Home Park or Subdivision* – a manufactured home park or subdivision for which the construction of facilities for servicing the lots on which the manufactured homes are to be affixed (including, at a minimum, the installation of utilities, the construction of streets, and either final site grading or the pouring of concrete pads) is completed on or after March 7, 2017 (the effective date of this floodplain management regulation).
18. *Recreational Vehicle (RV)* – a vehicle built on a single chassis, 400 square feet or less when measured at the largest horizontal projection, designed to be self-propelled or permanently towable by a light duty truck, and designed primarily not for use as a permanent dwelling but as a temporary living quarters for recreational, camping, travel, or seasonal use.
19. *Start of Construction* – includes Substantial Improvement, and means the date the building permit was issued, provided the actual Start of Construction, repair, reconstruction, placement or other improvement was within 180 days of the permit date. The “actual start” means either the first placement of permanent construction of a structure on a site, such as the pouring of slab or footings, the installation of piles, the construction of columns, or any work beyond the stage of excavation; or the placement of a manufactured home on a foundation. Permanent construction does not include land preparation, such as clearing, grading and filling; nor does it include the installation of streets and/or walkways; nor does it include excavation for a basement, footings, piers, or foundations or the erection of temporary forms; nor does it include the installation on the property of accessory buildings, such as garages or sheds not occupied as dwelling units or not part of the main structure. For a Substantial Improvement, the “actual Start of Construction” means the first alteration of any wall, ceiling, floor, or other structural part of a building, whether or not that alteration affects the external dimensions of the building.
20. *Structure* – a walled and roofed building, including a gas or liquid storage tank that is principally above ground.
21. *Substantial Improvement* – any repair, reconstruction, or improvement of a structure, the cost of which equals or exceeds fifty (50) percent of the market value of the structure either:
 - a. before the improvement or repair is started; or
 - b. if the structure has been damaged and is being restored, before the damage occurred. For the purposes of this definition “Substantial Improvement” is considered to occur when the first

alteration of any wall, ceiling, floor, or other structural part of the building commences, whether or not that alteration affects the external dimensions of the structure.

The term “Substantial Improvement” does not, however, include either:

- a. Any project for improvement of a structure to correct pre-cited existing Violations of state or local health, sanitary, or safety code specifications which have been previously identified by the local code enforcement official and which are the minimum necessary to assure safe living conditions; or
 - b. Any alteration of a structure listed on the National Register of Historic Places or a State Inventory of Historic Places; provided, that the alteration will not preclude the structure’s continued designation as a historic structure.
22. *Variance* – a grant of relief from the requirements of this chapter that permits construction in a manner that would otherwise be prohibited, per EMC 14.80.070.
23. *Violation* – See 14.20 B.88. With regard to floodplain management, projects without an Elevation Certificate, other certifications, or other evidence of compliance required in EMC Chapter 14.80 are presumed to be in Violation until such time as said documentation is provided.
24. *Water Dependent* – a structure for commerce or industry that cannot exist in any other location and is dependent on the water by reason of the intrinsic nature of its operations.

14.80.040 Flood Hazard Areas.

Edgewood regulates the following Flood Hazard Areas:

A. Potential Flood Hazard Areas.

1. Potential Flood Hazard Areas, as depicted on the Critical Areas Atlas – Flood Hazard Area Map, include:
 - a. Detailed Study Areas.
 - i. FEMA Flood Insurance Rate Map (FIRM) and Floodway Map AE and AH zones.
 - ii. Areas within 300 feet horizontal distance from the Base Flood elevation established for the mapped AE and AH zones.
 - iii. Areas within five feet of vertical height from the Base Flood elevation established for the mapped AE and AH zones.
 - b. Unstudied Areas. FEMA Flood Insurance Rate Map (FIRM) A zones and shaded X zones, and areas within 300 feet horizontal distance from said mapped areas.
 - c. Natural Waters or Watercourse. Areas within five feet of vertical height above the ordinary high water mark of an identified natural watercourse.
 - d. Groundwater Flooding Areas. Areas within 300 feet horizontal distance from a mapped groundwater flooding area.
 - e. Potholes. Areas not identified as a mapped Flood Hazard Area as described above, but within 10 feet of vertical relief from the bottom of an identified pothole or within two feet of vertical relief of a potential surface water spillway or other type of outlet. Potholes may be identified by City topographic mapping, field survey, or site inspections.
 - f. Channel Migration Zones (CMZs). Channel migration zones shall apply only to those watercourses specifically identified by the City or listed in subsection (B)(4) of this section. In those areas where detailed CMZ studies have been completed and accepted by the Department, additional horizontal and vertical review threshold criteria (i.e., 300 feet horizontal and five feet vertical) shall not apply.

2. The Critical Areas Atlas – Flood Hazard Areas Map may not show all potential Flood Hazard Areas that may be necessary for a specific site analysis. The Department may make interpretations, where needed, as to the approximate location of the boundaries of potential Flood Hazard Areas. When there is a conflict between the elevations and the mapped potential Flood Hazard Area boundaries, the elevations shall govern.

3. Where there is insufficient information shown on the potential Flood Hazard Area maps, the Department may require the applicant to verify that the site is out of the Flood Hazard Area using the Flood Hazard Area review procedures set forth in EMC Chapter 14.80.

B. Floodway. A Floodway is an extremely hazardous area due to the depth or velocity of floodwaters, which carry debris, potential projectiles, and have erosion potential. The following areas are regulated by the City as Floodways:

1. Regulatory Floodway. Regulatory Floodway designated by Flood Hazard Area maps.

2. Deep or Fast Flowing Water Areas. Areas of deep or fast flowing water shall be regulated as a Floodway. Based on the criteria set forth in EMC Chapter 14.80, the Department shall make the determination after review and approval of applicant's analysis of whether the project site falls within the Floodway area based on deep or fast flowing waters.

3. Potholes and Shaded X Zones. That portion of a pothole and zone area that is three feet or greater in depth shall be regulated as a Floodway.

4. Channel Migration Zone (CMZ).

a. CMZs shall be regulated as a Floodway.

b. CMZs are equivalent to the Base Flood elevation limits, i.e., 100-year floodplain limits.

C. Flood Fringe. All areas subject to inundation by the Base Flood, but outside the limits of the Floodway as set forth in subsection (B) of this section. Those portions of the A, AE, AH, and shaded X zones not defined as Floodway, and that portion of a pothole and FEMA shaded X zone area that is between zero feet (Base Flood elevation) and three feet in depth shall be regulated as a Flood Fringe.

D. Other Areas of Special Flood Hazard.

1. Groundwater Flooding Areas. Groundwater flooding areas are those areas identified by Edgewood and shown on flood hazard maps and are subject to flood inundation from subsurface waters that result from a fluctuation of the groundwater table. Groundwater flooding areas shall be regulated as a Floodway or Flood Fringe pothole.

2. Natural Waters or Watercourses. Natural waters or watercourses as identified on City topographic, planimetric or orthophoto maps, WDNR Stream Classification maps, USGS Quadrangle maps, or other source maps that are not identified as a Flood Hazard Area on the FEMA maps. That portion of the natural watercourse located between the ordinary high water mark and a topographic elevation five feet above the ordinary high water mark shall be regulated as a Floodway or Flood Fringe. If the applicant chooses to accept the five-foot topographic elevation line above the ordinary high water mark as the Base Flood elevation (i.e., floodplain elevation limits), a flood study shall not be required for a natural water/watercourse.

3. Frequently Flooded Areas. See EMC Chapter 14.80.050(A)(9) as the areas defined by this section.

14.80.050 Flood Hazard Area review procedures.

A. General Requirements.

1. The City's Critical Areas Map – Flood Hazard Area Map provides an indication of where potential Flood Hazard Areas are located within the city. The actual presence or location of a Flood Hazard Area shall be determined using the procedures and criteria contained in this chapter.

2. The Department will complete a review of the Flood Hazard Area maps, and other source documents, for any development proposal to determine whether the proposed project area for a regulated activity falls within a potential Flood Hazard Area. When there is a conflict between the elevations and the mapped 100- or 500-year Floodplain or Floodway boundaries, the elevations shall govern. In the instance where Base Flood elevation data has not been provided within a mapped A zone, the Department shall obtain, review, and reasonably utilize any Base Flood elevation and Floodway data available from a federal, state, or other source to complete their review.

3. When the Department's maps or sources indicate that the proposed project area for a regulated activity is or may be located within a potential Flood Hazard Area, except for coastal flood hazard areas, the Department shall require a flood boundary verification survey as outlined in subsection (C) of this section, and may require a flood study as outlined in subsection (D) of this section, a deep or fast flowing water analysis as outlined in subsection (E) of this section, or a zero-rise analysis as outlined in subsection (F) of this section.

4. Any proposed development located within a Flood Hazard Area shall comply with the Flood Hazard Area Standards set forth in EMC Chapter 14.80.060.

5. Prior to approval of any proposed Flood Hazard Area development, all necessary permits from those governmental agencies from which prior approval is required by federal or state law, including but not limited to Section 404 of the Federal Water Pollution Control Act Amendments of 1972, 33 U.S.C. 1334, must be provided to the City by the applicant.

6. A FEMA letter of map amendment (LOMA) or letter of map revision (LOMR) shall not be submitted to FEMA until review and approval has been granted by the Department. The City shall not recognize any LOMA or LOMR as an amendment to the Department's flood hazard maps unless the Department has granted prior approval.

7. Unless otherwise stated in this chapter, the Critical Area protective measure provisions contained in EMC Section 14.10.070 shall apply.

8. The Federal Emergency Management Agency (FEMA) administers the nation's floodplain management program. FEMA has identified some of the flood prone areas in the city; however, it is generally recognized that FEMA's Flood Insurance Rate Maps (FIRMs) may not accurately reflect the degree or frequency of flooding within all areas of the city. Therefore, information available through FEMA may not meet Best Available Science criteria and cannot be used exclusively to address Frequently Flooded Areas.

9. The City has determined that the following documents and sources are the most current and accurate information concerning Frequently Flooded Areas within the city, and therefore represent Best Available Science:

- a. The City's Surface Water Management Plan, 1997, or as amended thereafter.
- b. Aerial photographs of the city, especially those taken in wintertime 1996 and 1997.
- c. The City's two-foot elevation contour mapping performed by Nies Mapping Group, Inc., 1999, or as subsequently updated.
- d. Relevant and verifiable information from the City's Capacity Analysis Technical Review Ad hoc Committee draft report, 2000.
- e. Relevant and verifiable government and citizen photographs, notes, observations, etc., regarding historic ponding/flooding levels, including but not limited to the City of Edgewood Potholes Water Level Monitoring 2006-2007 report prepared by Robinson Engineers, LLC.
- f. Relevant and verifiable information available through Pierce County.
- g. Relevant and verifiable information available through FEMA.

10. Flooding conditions within the city generally fall into three distinct hydrologic settings: (a) upland areas within enclosed depressions, (b) streams that flow off the upland areas, and (c) valley lowlands. Accordingly, the City manages Frequently Flooded Areas within these three zones, as described below:

- a. Upland Areas Within Enclosed Depressions. From the above list use the historic ponding elevation, determined by subsection (A)(9) of this section, or the FEMA 100-year Base Flood elevation, whichever is highest.
- b. Streams Which Flow Off the Upland Areas. From the above list use the historic flood elevation, determined by subsection (A)(9) of this section, or the FEMA 100-year Base Flood elevation, whichever is highest.
- c. Valley Lowlands. From the above list use the historic flood elevation determined by subsection (A)(9) of this section, or the FEMA 100-year Base Flood elevation, whichever is highest.

11. The City will provide local flood information to FEMA, and request FEMA's assistance in accurately mapping and evaluating Frequently Flooded Areas.

12. Warning and Disclaimer of Liability. The degree of flood protection required by this chapter is considered reasonable for regulatory purposes and is based on scientific and engineering considerations. Larger floods can and will occur on rare occasions. Flood heights may be increased by manmade or natural causes. This chapter does not imply that land outside Frequently Flooded Areas or uses permitted within such areas will be free from flooding or flood damages. This chapter shall not create liability on the part of City, any officer or employee thereof, or the Federal Insurance Administration, for any flood damages that result from reliance on this chapter or any administrative decision lawfully made hereunder.

B. Channel Migration Zone Study.

1. In areas where Edgewood has not conducted a detailed channel migration zone study, an applicant may submit an independent channel migration zone study to demonstrate that the channel migration zone limits for those watercourses listed in EMC Chapter 14.80 are located inside the 100-year floodplain limits.
2. The channel migration zone study shall be prepared, signed, and dated by a professional Engineer or Engineering Geologist with at least five years of experience in fluvial geomorphology, river dynamics, or geotechnical engineering.
3. The channel migration zone study shall, at a minimum, contain the information set forth in EMC Section 14.80.060, Appendix B.
4. The Department shall review the channel migration zone study and either accept the new channel migration zone limits or reject the study and require the use of the 100-year floodplain limits. Once the Department has reviewed and approved the channel migration zone study, the applicant shall be required to provide a flood boundary verification survey, as outlined in subsection (C) of this section, utilizing the newly established channel migration zone limits as the Floodway limits.

C. Flood Boundary Verification Survey.

1. A flood boundary verification survey that delineates the horizontal and vertical limits of the Base Flood elevation shall be submitted to the Department when the Department's maps or sources indicate that the proposed project area for a regulated activity is located within a potential Flood Hazard Area.
 - a. Where a Base Flood elevation has not been determined, a flood study shall be required pursuant to subsection (D) of this section.
 - b. A Base Flood elevation that has been established through a detailed flood study accepted by the Department may be used in lieu of conducting a flood study.

- c. The Base Flood elevation for a natural watercourse as set forth in EMC Chapter 14.80 shall be established at the five-foot topographic elevation line above the ordinary high water mark.
2. The requirement to submit a flood boundary verification survey may be waived at the Department's discretion, when the Department can determine, using contour elevations, Base Flood data, orthophotos, and parcel data, that the extent of the regulated activity is clearly above the Base Flood elevation.
3. The flood boundary verification survey shall be prepared, signed, and dated by a registered land surveyor.
4. The Department shall review the flood boundary verification survey to determine if the proposed development is located within a Flood Hazard Area.
5. If the proposed development lies within the Flood Hazard Area, the limits of the Floodway, as well as the Base Flood elevation, shall be shown on the flood boundary verification survey.

D. Flood Study.

1. A flood study shall be conducted when the Department's maps or sources indicate that the proposed project area for a regulated activity is, or may be located within, a potential Flood Hazard Area where Base Flood elevation data is not available through the Flood Insurance Study or other authoritative sources, or when an established Base Flood elevation is contested. A full engineering analysis to determine the Base Flood elevation shall be required by the Department. Base Flood elevations shall be determined using the detailed methods established in EMC Section 14.80.060, Appendix A. The Department may approve alternative methods.
2. The flood study shall be prepared, signed, and dated by a Professional Engineer.
3. Once the Department has reviewed and approved the flood study, the applicant shall be required to provide a flood boundary verification survey, utilizing the newly established Base Flood elevation, as outlined in subsection (C) of this section.
4. Flood studies shall not be required for coastal Flood Hazard Areas.

E. Deep or Fast Flowing Water Analysis.

1. When the Department determines that a proposed project area for a regulated activity is located within a Flood Hazard Area, a deep or fast flowing water analysis based on EMC Section 14.80.060, Appendix A, shall be required to determine the Floodway limits.
2. The Floodway limits and Flood Fringe limits identified in the deep and/or fast flowing water analysis shall be depicted on the flood boundary verification survey, as outlined in subsection (C) of this section.
3. The deep and/or fast flowing water analysis shall be prepared, signed, and dated by a professional Engineer.
4. Deep and/or fast flowing water analysis shall not be required for coastal Flood Hazard Areas.

F. Zero-Rise Analysis.

1. When the Department determines that a proposed project area for a regulated activity is located within a Flood Hazard Area, a zero-rise analysis shall be required to determine that no increase in Base Flood elevation, displacement of flood volume, or flow conveyance reduction will occur as a result of the development.
2. The zero-rise analysis shall be conducted utilizing Hydrologic Engineering Center – River Analysis System (HEC-RAS) modeling methodology for stream and channel Floodways; the Western Washington Hydrology Model, i.e., WWHM, for pothole or closed depression Floodways; or an alternative methodology approved by the City, see EMC Section 14.80.100, Appendix A). The analysis shall show that no rise greater than 0.01 foot has occurred as a result of the proposed development. The scope of the proposed development may need to be reduced or special engineering may be required, e.g., utilizing piers or pilings to achieve zero-rise.

3. The zero-rise analysis shall be prepared, signed, and dated by a Professional Engineer.
4. The zero-rise analysis shall be documented on the zero-rise analysis form, as set forth in EMC Section 14.80.100, Appendix A, and shall be attached to the Flood Hazard Area permit.
5. Zero-rise analysis shall not be required for coastal Flood Hazard Areas.
6. When structures are elevated by pier or pilings and no fill is placed in the Flood Hazard Area, the requirement to submit a zero rise analysis may be waived at the Department's discretion.

14.80.060 Flood Hazard Area Standards.

A. General.

1. All subdivision proposals shall:
 - a. be consistent with the need to minimize flood damage;
 - b. have public utilities and facilities such as sewer, gas, electrical, and water systems located and constructed to minimize flood damage;
 - c. have adequate drainage provided to reduce exposure to flood damage; and,
2. Where base flood elevation data has not been provided or is not available from another authoritative source, it shall be generated for subdivision proposals and other proposed developments which contain at least 50 lots or five acres (whichever is less).
3. New Construction done by or for the City, such as bridges, roads, flood control works, revetments, retaining walls, drainage structures, sewer or water lines, parks, or other structures necessary to promote the public's health, safety, and welfare shall be allowed in a Flood Hazard Area when:
 - a. The project is prepared, dated, and stamped by a registered Professional Engineer in the state of Washington and is designed so the project does not result in any increase in flood levels during the occurrence of the Base Flood discharge (zero-rise) and shall not obstruct the Floodway or cause an adverse impact to critical fish or wildlife habitat or adjacent, cross-channel, or upstream or downstream properties; and
 - b. The improvements utilize appropriate flood hazard protection standards.
4. Elevation Certificate. A Federal Emergency Management Agency (FEMA) Elevation Certificate shall be required for New Construction, any Addition affixed to the side of a structure, and Substantial Improvements located within Flood Hazard Areas. The most current version of the FEMA Elevation Certificate must be completed and certified by a professional land surveyor, currently licensed in the state of Washington, kept on file by the City for public inspection, recording the actual (as-built) elevation (in relation to mean sea level) of:
 - a. The Lowest Floor, including basement, of all new or substantially improved structures, whether or not the structure contains a basement;
 - b. For flood proofed nonresidential structures, where the structure was flood proofed (including flood proofing certifications).

B. Floodways. Any development, Encroachment, Clearing and Grading, New Construction, or Substantial Improvements, including structures that do not require a building permit, shall be prohibited within the Floodway, except as allowed in the following standards:

1. Agricultural Activities that do not require the installation of structures and that do not have any associated fill.

2. Park and recreational uses and facilities that do not require the installation of structures and that do not have any associated fill.

3. Individual recreational vehicles, not located in an RV park, that are licensed and ready for highway use, on wheels or jacking system, and are not permanently attached to the site (i.e., attached only by quick disconnect type utilities and security devices, with no permanently attached additions).

4. Habitat Enhancement or stream Restoration activities are permitted subject to the provisions outlined in subsection (D) of this section.

5. Rehabilitation, reconstruction, or an upper story Addition to an existing structure that does not exceed the limits for a Substantial Improvement.

6. Private bridges may be allowed to cross the Floodway; provided, that the structure meets the requirements contained in EMC Section 14.80.050 and the following:

a. The lowest structural member of a private bridge proposed to cross a channel migration zone shall be a minimum of six (6) feet above the Base Flood elevation.

b. The lowest structural member of a private bridge proposed to cross the Floodway portion of any other watercourse shall be a minimum of one foot above the Base Flood elevation.

C. Flood Fringe Areas. All activities allowed in subsection (B) of this section shall be permitted in a Flood Fringe area. Any other proposed development, Encroachment, Clearing and Grading, New Construction, or Substantial Improvements are prohibited in a Flood Fringe area, except as permitted under the following standards:

1. Structures that do not require a building permit and that do not have any associated fill are allowed, subject to Flood Hazard Area review and permitting.

2. All other Regulated Activities shall only be allowed when the proposed development is located on an existing lot of record that was created prior to the effective date of the ordinance codified in this chapter. Applicants shall demonstrate there are no other feasible alternatives that would allow the proposed development to occur completely outside the Flood Hazard Area. At a minimum, the following shall be demonstrated:

a. The development cannot be located outside the Flood Hazard Area due to topographic constraints of the parcel or its size or location in relation to the limits of the Flood Hazard Area and a building setback variance has been reviewed, analyzed, and rejected as a feasible alternative to encroachment into the Flood Hazard Area; and

b. The proposed development shall not cause an adverse impact to adjacent, cross-channel, or upstream or downstream properties.

3. Roads, Bridges, Trails, and Parking Lots.

a. Roads, bridges, driveways, trails, emergency vehicle access, and access routes and easements, where allowed, shall be constructed and armored based on the standards in subsection (C)(4) of this section and elevated a minimum of one foot above the Base Flood elevation.

b. Parking lots shall be elevated to a minimum of one-half foot below the Base Flood elevation.

4. Clearing and Grading. When development is permitted under this subsection, it shall be designed to a zero-rise standard. Any Grading associated with the permitted development shall not increase flood hazards, water velocities, or flood elevations. In addition to meeting the requirements for zero-rise, all permitted development must also meet the following requirements:

a. Compensatory Storage. New excavated storage volume shall be equivalent to the flood storage capacity eliminated by Grading within the Flood Fringe. Equivalent shall mean that the storage removed shall be

replaced by equal live storage volume between corresponding one-foot contour intervals that are hydraulically connected to the floodplain through their entire depth.

b. Flow Conveyance. New excavated conveyance areas shall be equivalent to existing conveyance within the Flood Fringe. Equivalent shall mean a mechanism for transporting water from one point to another using an open channel system.

c. Erosion Protection. Development shall be protected from flow velocities greater than two feet per second through the use of bio-engineering methods or, when bioengineering methods have been deemed insufficient to protect development, then Hard Armoring may be utilized. All erosion protection shall extend one to three feet, depending on development requirements, above the Base Flood elevation and shall be covered with topsoil and planted with Native Vegetation.

5. Critical Facilities.

a. New Construction, Additions affixed to an existing structure, and Substantial Improvement of hazardous facilities, and Special Occupancy Structures are prohibited.

b. New Construction of a Critical Facility, reconstruction of an existing Critical Facility, or any Addition to an existing Critical Facility that exceed the threshold for Substantial Improvement shall be permitted when no feasible alternative site is available outside the Flood Hazard Area. Such Regulated Activities are subject to the following:

i. Critical Facilities with a Crawl Space elevated by fill shall have the Lowest Floor and any utilities and ductwork elevated a minimum of three feet above Base Flood elevation, or to the height of the 500-year flood, whichever is higher.

ii. Critical Facilities elevated by piers or pilings shall have the Finished Floor and any utilities and ductwork elevated a minimum of three feet above the Base Flood elevation or to the height of the 500-year flood, whichever is higher and must be designed by a professional structural Engineer.

iii. Access to and from the Critical Facility shall be protected to the height utilized under Subsections (C)(5)(b)(i)-(ii) of this Section. Access routes shall be elevated to or above the same elevation to the maximum extent possible.

iv. Critical Facilities shall be armored based on the standards in subsection (C)(4) of this section.

v. Flood proofing and sealing measures must be taken to ensure that toxic or explosive substances will not be displaced or released into floodwaters.

6. Structures, except for Critical Facilities as set forth in subsection (C)(5) of this section, shall be allowed subject to the following standards:

a. New Construction, Additions affixed to an existing structure, and Substantial Improvement of any structure with a Crawl Space shall have the Lowest Floor elevated a minimum of two feet above Base Flood elevation.

b. New Construction, Additions affixed to an existing structure, and Substantial Improvement of any structure elevated by piers or pilings shall have the bottom of the lowest horizontal structural member elevated a minimum of two feet above the Base Flood elevation and must be designed by a professional structural Engineer. Electrical, heating, ventilation, plumbing, air-conditioning equipment, and other service facilities and associated ductwork shall be elevated a minimum of two feet above Base Flood elevation; however, the Department may approve a lesser minimum distance above Base Flood elevation; provided, that the systems are designed to prevent floodwater from entering or accumulating within the components. Areas below the lowest horizontal structural member shall not be enclosed and shall remain free of obstructions.

c. Mobile or manufactured homes shall be anchored to prevent flotation, collapse, or lateral movement, and shall be installed using methods and practices to minimize flood damage. Anchoring methods may include, but are not limited to, use of over-the-top or frame ties to ground anchors. This is in addition to applicable state and local anchoring requirements for resisting wind forces.

7. Agricultural Accessory Structures. The Lowest Floor in an agricultural accessory structure shall be located at the Base Flood elevation or higher; provided, that the structure be designed to automatically equalize hydrostatic flood forces on exterior walls by allowing for the entry and exit of floodwaters. Designs for meeting this requirement must either be certified by a professional Engineer in the state of Washington or must meet or exceed the following minimum criteria:

- a. A minimum of two openings having a total net area of not less than one square inch for every square foot of enclosed area subject to flooding shall be provided;
- b. The bottom of all openings shall be no higher than one foot above grade; and
- c. Openings may be equipped with screens, louvers, or other coverings or devices; provided, that they permit the automatic entry and exit of floodwaters.

8. Construction Standards.

- a. Construction of a basement is prohibited.
- b. Crawl Spaces shall be backfilled with clean Earth Material and shall meet International Building Code requirements. Finished grade within the crawlspace shall be at least two feet above the Base Flood elevation.
- c. Flood proofing in lieu of elevating the structure is prohibited.
- d. All single-family, two-family, multifamily, mobile or manufactured homes, commercial, and industrial structures shall be placed on standard concrete stemwall or footing foundations or piles, piers, or column foundations and engineered pursuant to International Building Code requirements.

9. Sewage Disposal and Potable Water Installation.

- a. New and replacement public water sources, i.e., wells and water supply lines and public sanitary sewage conveyance systems are allowed. These systems shall be designed to withstand scour resulting from flow velocity, minimize or eliminate infiltration of floodwaters into the systems, and minimize or eliminate discharge from the systems into floodwaters
- b. All replacement wells and replacement on-site sewage system (OSS) shall be designed to minimize or eliminate impairment to them or contamination from/to them during flooding, i.e., infiltration of floodwaters into or discharge out of the systems. They shall not be located in pothole or no-outlet floodplains.
- c. All new individual wells and new on-site sewage system (OSS) shall be prohibited. Conveyance systems from a structure to a well or OSS located outside of the Flood Hazard Area shall be allowed provided these systems are designed to meet the standards in subsection (C)(4) of this section.

14.80.070 Variances to Flood Hazard Areas.

A. General. Variances are reviewed pursuant to the process and criteria outlined in EMC 14.10.100, Variances to Critical Areas.

B. Additional Criteria for Flood Hazard Area Variances. In addition to the variance criteria referenced above in subsection (A) of this section, in order for the decision maker to approve a Flood Hazard Area variance, there must be written findings that the applicant has demonstrated the proposal satisfies all of the following:

- 1. Generally, the only condition under which a variance from the elevation standard may be issued is for New Construction and Substantial Improvements to be erected on a small or irregularly shaped lot contiguous to

and surrounded by lots with existing structures constructed below the Base Flood level. As the lot size increases the technical justification required for issuing the variance increases.

2. Variances shall not be issued within a designated Floodway if any increase in flood levels during the Base Flood discharge would result.
3. Variances shall only be issued upon a determination that the variance is the minimum necessary, considering the flood hazard, to afford relief.
4. Variances shall only be issued upon:
 - a. A showing of good and sufficient cause;
 - b. A determination that failure to grant the variance would result in exceptional hardship to the applicant and that the hardship was not created by the applicant;
 - c. A determination that the granting of a variance will not result in increased flood heights, additional threats to public safety, extraordinary public expense, create nuisances, cause fraud on or victimization of the public, or conflict with existing local laws or ordinances.
5. Variances as interpreted in the National Flood Insurance Program are based on the general zoning law principle that they pertain to a physical piece of property; they are not personal in nature and do not pertain to the structure, its inhabitants, economic or financial circumstances. They primarily address small lots in densely populated residential neighborhoods. As such, variances from flood elevations should be quite rare.
6. Variances may be issued for nonresidential buildings in very limited circumstances to allow a lesser degree of flood proofing than watertight or dry-flood proofing, where it can be determined that such action will have low damage potential, complies with all other variance criteria except B.1, above, and otherwise complies with EMC 14.80.060, Flood Hazard Area Standards.
7. Any applicant to whom a variance is granted shall be given written notice that the permitted structure will be built with its Lowest Floor below the Base Flood elevation and that the cost of flood insurance will be commensurate with the increased risk.

14.80.080 Appendices.

A. Floodplain/Floodway Analysis.

B. Channel Migration Zone Study.

APPENDIX A

FLOODPLAIN/FLOODWAY ANALYSIS

This Appendix describes the flood hazard analyses and studies as required by EMC Chapter 14.80 – Flood Hazard Areas. Flood hazard studies establish the Base Flood elevation and delineate floodplain and/or Floodway(s) when a proposed project contains or is adjacent to a river, stream, lake, or closed depression.

Flood hazard studies must conform to FEMA regulations described in Part 65 of 44 Code of Federal Regulations (CFR). In addition, the following information must be provided and procedures performed for flood hazard studies used under EMC Chapter 14.80 to examine development proposals or improvements within a floodplain.

Article I. Floodway Determination

The City recognizes two distinct Floodways. The FEMA Floodway describes the limit to which encroachment into the natural conveyance channel can cause one foot or less rise in water surface elevation. The deep and fast flowing (DFF) water Floodways are hazardous areas and conditions of the floodplain for both people and habitable structures. Life safety and protection to improved properties are compromised if encroached upon. Encroachment cannot occur within these areas.

A. FEMA Floodways.

1. FEMA Floodways are determined through the procedures outlined in the FEMA publication Guidelines and Specifications for Study Contractors using the one-foot maximum allowable rise criteria.
2. Transitions shall take into account obstructions to flow such as road approach grades, bridges, piers, culverts, or other restrictions. General guidelines for transitions may be found in HEC-RAS, Water Surface Profiles –

User's Manual, Appendix IV, Application of HEC-RAS Bridge Routines, published by the Hydrologic Engineering Center, Davis, California.

B. Deep and/or Fast Flowing (DFF) Floodways.

1. DFF Floodways are generally assumed to include the entire 100-year floodplain until the Department approves a detailed Floodway analysis that defines areas of DFF within the entire floodplain area based on the criteria.
2. The hydraulic model must adequately be calibrated to known or recorded stage elevations of past flood events with computed recurrence frequency intervals for the 100-year flood recurrence interval. This is to ensure model accuracy.

Article II. Flood Study Content and Required Information

Three copies of the completed floodplain/Floodway analysis study report and the modeling digital files shall be submitted. The report submittal must be stamped by a licensed professional civil Engineer and include the following information in addition to that required for the drainage plan of a proposed project:

A. Floodplain/Floodway Map.

1. A scaled survey base map stamped by a licensed professional land surveyor registered in the state of Washington. The map must accurately locate the proposed development with respect to the floodplain and Floodway, the channel of the subject stream, river, and/or pothole location, and the existing improvements within the subject study area. It must also supply all pertinent information such as the nature of the proposed project, legal description of the property on which the project would be located, fill quantity, limits and elevation, the building floor elevations, and use of compensatory storage.
2. The map must show elevation contours at a minimum of two-foot vertical intervals and shall comply with survey and map guidelines published in the FEMA publication Guidelines and Specifications for Study Contractors. The map must show the following:
 - a. Elevations and ground contours, spot elevations, and vertical datum NAVD 88 (North American Vertical Datum of 1988) (or most recent vertical datum accepted by the Department).
 - b. Elevations and dimensions of existing structures, fill, and compensatory storage areas.
 - c. Size, location, elevation and spatial arrangement of all proposed structures on the site.
 - d. Location and elevations of roadways, drainage facilities, water supply lines, and sanitary sewer facilities.
 - e. Areas of DFF must clearly be shown and plotted on the map sheet depicting the bounded area of the Floodway on both sides of the study channel through the subject site. DFF Floodway studies must reflect all transitions as referenced above as well.
 - f. The base maps must also be accompanied by all field survey notes/computations, drawings, etc., for each cross-section with water surface elevation at the time the cross-section field survey was done.

B. Study Report.

1. Soil maps, groundcover maps, and photographs.
2. A narrative report containing the purpose of the study and description of the study area, data collection, methodology for both the hydrology and hydraulics, detailed discussion on the input parameters used, modeling results, and conclusions.

3. A floodplain/Floodway analysis must include calculations and all computer analysis input and output information, supporting graphical illustrations, as well as the following additional information:

- a. Scaled cross-sections showing the current, existing conditions of the river or stream channel, the floodplain adjoining each side of the channel, the computed Floodway, the cross-sectional area to be occupied by any proposed development and all historic high water information.
- b. Profiles showing the bottom of the channel, the top of both left and right banks and computed Base Flood water surface elevations for the 10-, 25-, 50- and 100-year events.
- c. Plans and specifications of any flood protection for structures, construction areas, Clearing, dredging, channel improvements, storage of materials, water supply, and sanitary facilities within the floodplain.
- d. Complete printout of input and output data of the model that was used for the analysis. Liberal use of comments and written discussion will assist considerably in understanding the model logic and minimize misinterpretations and/or questions.
- e. A map, showing the graphical/plotted location and limits of the computed Floodway and/or floodplain.
- f. Three copies of ready-to-run digital files of both the hydrologic and hydraulic model and its input and output files used in the study. Data shall be submitted on a disk in standard ASCII format, ready to use on an IBM-compatible personal computer and in the applicable software application, e.g, HEC-RAS, HSPF – Hydrological Simulation Program – FORTRAN, SBUH, or similar application.
- g. A section on the flood flow including computer modeling or calculations.
- h. Aerial photographs of the site including pre-February 1996 and post-February 1996 photos of the site.
- i. All field survey notes/computations, maps, and drawings for each cross-section with water surface elevation at the time of the cross-section field survey.

C. Computer Modeling Information. Floodway/floodplain studies submitted to the City for review must include output summary tables and include the following (but not limited to) items:

1. Cross-section(s) identification number.
2. Range of flows being examined.
3. Computed water surface elevation at each cross-section.
4. Energy grade line at each cross-section.
5. Graphical plots of the channel cross-sections with computed water surface elevations for all model runs including calibrated model runs.
6. All model input and output printouts.
7. Graphical plots of the model output data that show the points and segments along each cross-section where deep and/or fast flowing water occurs. This shall include cross-section plots of depth and velocity in one-unit increments. The plots shall also be accompanied with a table listing the station distance (right and left bank), flow rate, area, hydraulic depth, velocity, and whether each point is a Floodway.
8. A plan sheet clearly showing the graphical representation of the bounded area of the Floodway based on DFF criteria through the entire study site and reach. Note that identified islands or pockets within the middle of the bounded Floodway area are generally considered as part of the Floodway, unless otherwise approved by the Department.
9. Discussion on the starting water surface elevation for the hydraulic model.

Article III. Determining Flood Flows

The three techniques used to determine the flows used in a flood study depend on whether gauge data is available, whether a basin plan has been adopted, or a detailed flood study has been done and approved for use by the Department. The first technique is for basins with adopted basin plan areas. The second technique is used if a gauging station exists on the stream. The third technique is used on ungauged catchments or those with an insufficient length of record. In all cases, the Engineer shall be responsible for assuring that the hydrologic methods used are technically reasonable, conservative, conform to the FEMA publication, Guidelines and Specifications for Study Contractors, and are acceptable by FEMA and the Department.

A. Flood Flows from Adopted Basin Plan Information. Flood flows may be determined using information from the City's basin plan. The hydrologic model used in the basin plan shall be updated to include the latest changes in zoning or any additional information regarding the basin which has been acquired since the adoption of the basin plan.

B. Flood Flows from Stream Gauge Data. Determining flood flows from stream gauge data uses the Log-Pearson Type III distribution method as described in the Guidelines for Determining Flood Flow Frequency, Bulletin 17B of the Hydrology Committee, United States Water Resources Council (revised October 1981).

1. This technique may be used only if data from a gauging station in the basin is available for a period of at least 10 years.
2. If the difference in the drainage area on the stream at the study site and the drainage area to a gauging station on the stream at a different location in the same basin is less than or equal to 50 percent, the flow at the study site shall be determined by transferring the calculated flow at the gauge to the study site using a drainage area ratio raised to the 0.86 power, as in the following equation:

where

- Q_{ss} = estimated flow for the given return frequency on the stream at the study site.
- Q_G = flow for the given return frequency on the stream at the gauge site.
- A_{ss} = drainage area tributary to the stream at the study site.
- A_G = drainage area tributary to the stream at the gauge site.

3. If the difference in the drainage area at the study site and the drainage area at a gauging station in the basin is more than 50 percent and a basin plan has not been prepared, a continuous model shall be used as described below to determine the flood flows at the study site.

4. In all cases where dams or reservoirs, floodplain development, or land use upstream may have altered the storage capacity or runoff characteristics of the basin so as to affect the validity of this technique, a continuous model shall be used to determine flood flows at the study site.

C. Flood Flows from a Calibrated Continuous Model. Flood flows may be determined by utilizing a continuous flow simulation model such as HSPF or other equivalent continuous flow simulation model, as approved by the City. Where flood elevation or stream gauging data are available, the model shall be calibrated to the known data. Otherwise, regional parameters may be used.

Article IV. Determining Flood Elevations, Profiles and Floodways (Hydraulic Model)

A. Reconnaissance. The applicant's project Engineer is responsible for the collection of all existing data with regard to flooding in the study area. This shall include a literature search of all published reports in the study area and adjacent communities and an information search to obtain all unpublished information on flooding in the immediate and adjacent areas from federal, state, and local units of government. This search shall include specific information on past flooding in the area, drainage structures such as bridges and culverts that affect flooding in the area,

available topographic maps, available community maps, photographs of past flood events, and general flooding problems within the community. Documented discussions with nearby property owners should also be done to obtain a witness account of the flooding extent. A field reconnaissance shall be made by the applicant's project Engineer to determine hydraulic conditions of the study area, including type and number of structures, locations of cross-sections, and other parameters including the roughness values necessary for the hydraulic analysis.

B. Base Data. Channel cross-sections used in the hydraulic analysis shall be current/existing at the time the study is performed and shall be obtained by field survey. Topographic information obtained from aerial photographs/mapping may be used in combination with surveyed channel cross-sections in the hydraulic analysis. The elevation datum of all information used in the hydraulic analysis shall be verified. All information shall be referenced directly to NAVD 1988 (and include local correlation to NGVD) unless otherwise approved by the City.

C. Methodology. Flood studies and analysis (including deep and/or fast flowing Floodways and zero-rise analysis) shall be calculated using the U.S. Army Corps of Engineers HEC-RAS computer model (or subsequent revision) unless otherwise approved by the City.

D. Adequacy of the Hydraulic Model. Edgewood considers the following (but not limited to) factors when determining the adequacy of the hydraulic model for use in the Floodway/floodplain model:

1. Cross-section of a downstream starting location and spacing.
2. Differences in energy grade line (significant differences in the energy grade line from cross-section to cross-section are an indication that cross-sections should be more closely spaced or that other inaccuracies exist in the hydraulic model).
3. Methods and results for analyzing the hydraulics of structures such as bridges and culverts.
4. Lack of flow continuity.
5. Use of a gradually varied flow model. In certain cases, rapidly varied flow techniques may need to be used in combination with a gradually varied flow model such as weir flow over a levee, flow through a spillway of a dam, or special application of bridge flow (pressure flow if bridge superstructure is shown to be submerged for the study event).
6. Manning's "n" value.
7. Calibration of hydraulic model to known or observed flow stage elevations including past flood events.
8. Special applications. In some cases, steady state one-dimensional hydraulic models may not be sufficient for preparing the floodplain/Floodway analysis. This may occur where sediment transport, two-dimensional flow, or other unique hydraulic circumstances affect the accuracy of the model. In these cases, the project Engineer must propose and obtain Department approval of alternative models for establishing the water surface elevations.
9. All reported error or warning messages by the model must be properly and adequately addressed or resolved and included in the report for review verification.

Article V. Zero-Rise Analysis (ZRA)

A. Zero-rise analysis (ZRA) is required where Encroachment within the Flood Fringe area is allowed and approved by the Department. The ZRA must show that the proposed development Encroachment in the Flood Fringe area will not create more than a 0.01-foot rise in the Base Flood elevation resulting from a comparison of existing conditions and proposed conditions. This is directly attributable to development in the floodplain but not attributable to manipulation of mathematical variables such as roughness factors, coefficients, discharge, and other hydraulic parameters.

B. In addition to those items listed in subsection (A) of this article, the following shall be included in a ZRA:

1. Floodway boundaries (based on zero-rise) are to follow the stream lines and reasonably balance the rights of property owners on either side of the Floodway. Use of the automatic equal conveyance encroachment option in the model will be considered equitable.

2. The ZRA must include a sufficient number of cross-sections in order to accurately model the subject fill and compensatory storage areas of the site. In all cases, cross-sections shall be located downstream, through the subject site and upstream of the site at a very minimum. They shall also be located where changes in channel and the fill material characteristics occur, such as slope, shape, and roughness. The sections shall also be located perpendicular to the flow path in the channel and the outside overbank areas. The Department shall review and approve the proposed number and location of cross-sections. All cross-sections and surveys shall be prepared and certified by a professional land surveyor or registered professional Engineer in the state of Washington.

3. The difference between two profiles of water surface elevation at the cross-section, e.g., difference between existing and encroached water surface. The model must report 0.01 feet or less an allowable change in the water surface elevation. This must be shown in the profile graphical plot as well.

4. The difference between profiles of the energy grade line at the cross-section. The model must report 0.01 feet or less. This is the allowable change in the energy grade line. This must be shown in the profile graphical plot as well.

C. Conveyance Capacity.

1. The ZRA must also show that the proposed development Encroachment in the Flood Fringe area will not show a measurable decrease (less than 0.01 CFS) in the conveyance capacity of the channel, resulting from a comparison of existing conditions and proposed conditions, for each of the cross-sections. This is also directly attributable to development in the Floodplain but not attributable to manipulation of mathematical variables such as roughness factors, coefficients, discharge, and other hydraulic parameters.

2. The analysis must provide calculations of the reduction in conveyance caused by the proposed development Encroachment, assuming no change in the water surface elevation, and using the roughness coefficient value(s) appropriate for the proposed development.

3. The analysis must then provide calculations for the increase in conveyance of the proposed compensatory measure, using the roughness coefficient value(s) appropriate for the proposed development.

4. Include a comparison analysis and discussion from subsections (C)(2) and (3) of this article. The comparison must adequately show that the conveyance capacity has not measurably decreased between the existing condition and proposed development condition.

Floodplain/Floodway Zero-Rise Certification

This is to certify that I am a duly qualified professional Engineer licensed to practice in the state of Washington.

This is to further certify that the attached Floodplain/Floodway zero-rise analysis conclusively shows that the proposed development of:

(Name of Development) Parcel Number

will not increase the 100-year Base Flood elevation(s) and widths nor reduce the conveyance capacity of the Floodplain, Floodway, and its associated channel to the

(Name of River, Stream, Pothole or other Watercourse)

Supporting Data

Base Flood Elevation (Pre-Development) = _____ FT (NAVD 88)

Base Flood Elevation (Post-Development) = _____ FT (NAVD 88)

Conveyance Capacity (Pre-Development) = _____ CFS

Conveyance Capacity (Post-Development) = _____ CFS

with compensatory storage)

Signature Date

Title Firm Name

Address

City

State Zip Code

APPENDIX B

CHANNEL MIGRATION ZONE STUDY REQUIREMENTS

The channel migration zone (CMZ) is the area within the lateral extent of likely stream channel movement due to stream bank destabilization and erosion, rapid stream incision, and shifts in location of stream channels. The CMZ will define areas in which, to the best information available, development should be regulated due to the dangers expected from erosion.

Article I. Determining Channel Migration Zone Limits

A. The CMZ shall be based on available historic records of channel migration, or 100 years of calculated channel migration whichever is greater, and will generally include those areas that encompass:

1. The limit of geologic controls, such as hill slope, bedrock outcrop, or abandoned Floodplain terrace;
2. Side channels, abandoned channels, and oxbows; and
3. Outside edges of progressive bank erosion at meander bends.

B. Channel migration over the 100-year time frame can be estimated and predicted from geomorphic analysis of annual bank erosion rates, historic meander belt width, and measured meander bend amplitudes, potential avulsion sites, and previous river channel locations as depicted on historic aerial photographs and maps. The 100-year time span represents the time required to grow mature trees that can provide functional large woody debris to streams.

C. The CMZ boundaries will be determined using the following specific criteria:

1. The representative average annual rate of channel migration in the affected river reach is calculated by dividing the lateral distance eroded with the corresponding elapsed time shown in sequential aerial photographs or historic maps (distance/time equals channel movement). Measurements from reaches that have had some form of bank armoring shall not be included. Historical records will need to be checked closely for this information.

2. Identify the width of the channel migration zone by multiplying the representative average annual erosion rate by 100 years.

D. Areas separated from the active channel by legally existing artificial channel constraints (levees, roads, driveways, etc.) that limit bank erosion and channel avulsion to the 100-year recurrence interval flood elevation plus three feet of freeboard shall serve as a boundary for the outer limit of the CMZ.

Article II. Channel Migration Zone Study Content and Required Information

Three copies of the completed channel migration zone study shall be submitted. The study submittal must be stamped by a licensed professional Engineer or professional Geologist with five (5) years of experience in fluvial geomorphology, river dynamics, or geotechnical engineering. The CMZ study shall include the following information in addition to that required for the drainage plan of a proposed project. The CMZ study will consist of a written technical report including:

A. Detailed methods, techniques, and assumptions used in determining the location of the CMZ.

B. A vicinity map and site with scale, north arrow, and parcel number(s) or specific site being studied.

C. A clear statement of the requested revision to Pierce County's determination of the 100-year Floodplain limits as the CMZ.

D. A clearly stated conclusion of the study results that support the requested revision. The conclusion needs to document the basis for the revision, show how the data presented refutes the 100-year Floodplain limits as the CMZ, and calculates the new results using the new information.

E. A map clearly delineating the subject property and the CMZ of the adjacent watercourse. In addition to providing a hard copy of the CMZ map, the CMZ map shall also be provided in ARC-View shapefile format. Contact the Department for mapping and aerial imaging standards. (Ord. 02-200 § 2).

Chapter 14.90

LANDSLIDE HAZARD AREAS

Sections:

- 14.90.010 Purpose.
- 14.90.020 Landslide Hazard Areas.
- 14.90.030 Landslide Hazard Area review procedures.
- 14.90.040 Landslide and Erosion Hazard Area standards.
- 14.90.050 Buffer requirements.
- 14.90.060 Appendices.

14.90.010 Purpose.

The purpose of this chapter is to:

- A. Protect human life and health.
- B. Regulate uses of land in order to avoid damage to structures and property being developed and damage to neighboring land and structures.
- C. Identify and map active Landslide Hazard Areas.
- D. Minimize the ill effects on Wetlands and critical fish and wildlife habitat that can result from landslides.
- E. Establish permit requirement and review procedures for development proposals in areas with potential landslides. (Ord. 02-200 § 2).

14.90.020 Landslide Hazard Areas.

A. Landslide Hazard Areas. Landslide Hazard Areas are areas potentially subject to mass movement due to a combination of geologic, seismic, topographic, hydrologic, or manmade factors. Landslide Hazard Areas are identified by the presence of any of the following five (5) indicators.

1. Areas of historic failures, including areas of unstable, old and recent landslides or landslide debris within a head scarp.
2. Areas with all three (3) of the following characteristics:
 - a. Slopes steeper than 15 percent with a vertical relief of 20 feet or more; and
 - b. Hillsides that intersect geologic contacts with a relatively permeable sediment overlying a relatively impermeable sediment or bedrock; and
 - c. Springs or groundwater seepage.
3. Areas exhibiting geomorphological features indicative of past slope failure within the last 10,000 years, such as hummocky ground, back-rotated benches on slopes, tension cracks, etc.
4. Any area with a slope of 40 percent or steeper and with a vertical relief of 15 or more feet.
 - a. Slopes may be exempted from the requirements of this section provided that it can be demonstrated by a qualified Geotechnical Professional that such an exemption does not result in an increased risk of landsliding or damage to the subject site, nearby properties, and existing structures. Any associated hazards to proposed structures must be suitably mitigated.
 - b. For the purposes of determining whether a slope is considered to be a Landslide Hazard Area, the horizontal and vertical distance between the Top of Slope and Toe of Slope are utilized.

5. Areas that are at risk of mass movement due to seismic events.

B. Potential Landslide Hazard Areas. Potential Landslide Hazard Areas, as depicted on the Geologically Hazardous Areas map, are those areas where the suspected risk of slope instability and landslide is sufficient to require a geological assessment to assess the potential for active landslide activity. Potential Landslide Hazard Areas are determined by using the following criteria:

1. Areas that possess one or more of the Landslide Hazard Area indicators (stratigraphy, topography, emergent groundwater seepage, etc.) as set forth in subsection (A) of this section and any adjacent area within a distance of 65 feet. These areas include, but are not necessarily limited to, those areas designated on the City's Geologically Hazardous Areas map as moderate or steep slope areas.

14.90.030 Landslide Hazard Area review procedures.

A. General Requirements.

1. The City's Geologically Hazardous Areas map provides an indication of where potential Landslide Hazard Areas are located within the city. The actual presence or location of Landslide Hazard Areas that have not been mapped, but may be present on or adjacent to a site, shall be determined using the geological assessment procedures established in this chapter.

2. The Department will complete a review of the Geologically Hazardous Areas map and other source documents for any proposed regulated activity to determine whether the site is, or may be, located within a Landslide Hazard Area or potential Landslide Hazard Area. Identification of a Landslide Hazard Area or potential Landslide Hazard Area may also occur as a result of field investigations conducted by Department staff.

3. When the Department's maps or sources indicate that the site for a proposed regulated activity is or may be located within a Landslide Hazard Area or potential Landslide Hazard Area, the Department shall require the submittal of a geological assessment as outlined in subsection (B) of this section.

4. Unless otherwise stated in this chapter, the critical protective measure provisions contained in EMC Chapter 14.10 shall apply.

B. Geological Assessment. A geological assessment is a site investigation process to evaluate the on-site geology affecting a subject property. The findings of the geological assessment shall be presented in a Landslide Hazard Geotechnical Verification or Geotechnical Report.

1. Geological assessments shall be submitted to the Department for review and approval together with a Landslide Hazard Area application and associated fee.

2. A geological assessment shall include a field investigation and may include the use of historical air photo analysis, LiDAR mapping, review of regional geologic mapping, review of public records and documentation, and interviews with adjacent property owners, etc.

3. The geological assessment shall include the following information and analysis contained in paragraphs a-d.:

a. A determination of which areas on the site or within the vicinity of the site meet the criteria for a Landslide Hazard Area as set forth herein.

b. Consider the run-out hazard of landslide debris to the proposed development that starts upslope (whether part of the subject property or on a neighboring property) and/or the impacts of landslide run-out on down slope properties.

c. The geological assessment shall include a detailed review of the field investigations, published data and references, data and conclusions from past geological assessments, or geotechnical investigations of the site, site-specific measurements, tests, investigations, or studies, as well as the methods of data analysis and calculations that support the results, conclusions, and recommendations.

- d. All of the information required per EMC Section 14.10.080.C.
4. Geological assessments shall be prepared, signed, and dated by a Geotechnical Professional. The format shall be pre-approved by the Department.
5. A Geotechnical Professional shall complete a field investigation and geological assessment to determine whether or not a Landslide Hazard Area is likely to exist within 300 feet of the site. Where access to off-site properties is not available by the Geotechnical Professional, evaluation of off-site landslide hazards must include review of regional geologic mapping and LiDAR based topographic mapping.
 - a. The geological assessment shall be submitted in the form of geotechnical verification when the Geotechnical Professional finds that no Landslide Hazard Area exists within 300 feet of the project area.
 - b. The geological assessment shall be submitted in the form of a Geotechnical Report when the Geotechnical Professional finds that a Landslide Hazard Area exists within 300 feet of the proposed project area or when a Geotechnical Professional determines that mitigation measures are necessary in order to construct or develop within a potential Landslide Hazard Area.
6. Geological assessments that do not contain the required information will be returned to the Geotechnical Professional for revision.
7. The Department shall review the geological assessment and either:
 - a. Accept the geological assessment; or
 - b. Reject the geological assessment and require revisions or additional information.
8. A geological assessment for a specific site may be valid for a period of up to five years when the proposed land use activity and surrounding site conditions are unchanged. However, if any environmental conditions associated with the site change during that five-year period, the applicant may be required to submit an amendment to the geological assessment. (Ord. 02-200 § 2).

14.90.040 Landslide and Erosion Hazard Area standards.

A. Landslide Hazard Areas. Any development, Encroachment, Clearing and Grading, building structures, impervious surfaces, or vegetation removal shall be prohibited within Landslide Hazard Areas and associated Buffers except as specified in the following standards:

1. Stormwater Conveyance. Stormwater conveyance shall be allowed when it is conveyed through a high-density polyethylene stormwater pipe with fuse-welded joints and when no other stormwater conveyance alternative is available. The pipe shall be located on the surface of the ground and be properly anchored so that it will continue to function in the event of an underlying slide.
2. Utility Lines. Utility lines will be permitted when no other conveyance alternative is available. The line shall be located above ground and properly anchored and/or designed so that it will continue to function in the event of an underlying slide.
3. Roads, Bridges, and Trails. Roads, bridges, and trails shall be allowed when all of the following conditions have been met:
 - a. Mitigation measures are provided that ensure the roadway prism and/or bridge structure will not be susceptible to damage from landslide-induced ground deformation or impact/coverage by landslide debris. Mitigation measures shall be designed for static and seismic loading conditions in accordance with the most recent version of the American Association of State Highway and Transportation Officials (AASHTO) Manual.
 - b. The road is not a sole access for a development.

c. The removal or disturbance of vegetation and Grading activities shall be prohibited during the wet season from November 1st until May 1st.

B. Landslide Hazard Management Areas. All Regulated Activities may be allowed in areas located within 300 feet of a Landslide Hazard Area subject to the following standards:

1. The Department reviews and approves a geological assessment – Geotechnical Report and determines that the potential Landslide Hazard Area is stable.
2. The proposed development is located outside of a Landslide Hazard Area and any required Buffer.
3. The proposed recommendations and mitigation measures contained within the Geotechnical Report are adequate to reduce or mitigate risks to health and safety.
4. The proposed development shall not decrease the factor of safety for landslide occurrence below the limits of 1.5 for static conditions and 1.1 for dynamic conditions. Analysis of dynamic (seismic) conditions shall be based on a minimum horizontal acceleration as established by the current version of the International Building Code.
5. The removal and disturbance of vegetation and Grading activities shall be limited to the area of the approved development and shall not be allowed during the wet season from November 1st until May 1st unless adequate provisions for wet season erosion have been addressed in the Geotechnical Report and approved by the Department.
6. Surface drainage from developed areas, including downspouts and runoff from paved or unpaved surfaces up slope, shall not be directed through a Landslide Hazard Area or its associated Buffer unless it is conveyed in conformance with the provisions in EMC 14.90.030.
7. Stormwater retention facilities, including infiltration systems utilizing perforated pipe, are prohibited unless the slope stability impacts of such systems have been analyzed and mitigated by a Geotechnical Professional and the impacts have been determined to be negligible.
8. The proposed development shall not create a need for larger Landslide Hazard Area Buffers and setbacks on neighboring properties unless approved through a notarized written agreement with the affected property owner(s).
9. The proposed development shall be sited far enough from regressing slope faces to project 120 years of useful life for the proposed structure(s) or infrastructure.
10. Any proposed lots must be completely located outside any identified Landslide Hazard Areas or their associated Buffers.
11. Landslide Hazard Areas that are directly adjacent to any Riparian areas, or Wetlands, may be subject to additional Buffer requirements and standards. See EMC Chapter 14.50, Critical Fish and Wildlife Habitat Areas and EMC Chapter 14.40, Wetlands for additional details. (Ord. 02-200 § 2).

14.90.050 Buffer requirements.

A. Determining Buffer Widths.

1. The Buffer width shall be measured on a horizontal plane from a perpendicular line established at the edge of the Landslide Hazard Area limits, both from the top and toe of the slope.
2. A Buffer of undisturbed vegetation shall be required for a Landslide Hazard Area. The required Buffer width is the greater amount of the distances described in EMC Chapter 14.90:
 - a. Fifty feet from all edges of the active Landslide Hazard Area limits;

- b. A distance of one-third the height of the slope at the top of the active Landslide Hazard Area and a distance of one-half the height of the slope at the bottom of an active Landslide Hazard Area; or

B. Modification of Buffer Widths. The Department may require a larger Buffer width than the Buffer distance, as determined in subsection (A) of this section, if any of the following are identified:

1. The adjacent land is susceptible to severe erosion and erosion control measures will not effectively prevent adverse impacts.
2. The area has a severe risk of slope failure or downslope stormwater drainage impacts. (Ord. 02-200 § 2).

14.90.060 Appendices.

A. Geological Assessment – Landslide Hazard Geotechnical Verification.

B. Geological Assessment – Landslide Hazard Geotechnical Report.

APPENDIX A

GEOLOGICAL ASSESSMENT – LANDSLIDE HAZARD GEOTECHNICAL VERIFICATION

A. A geotechnical verification shall include the following:

1. The general Critical Areas report requirements.
2. A description of the surface and subsurface geology, hydrology, soils, and vegetation at the site and a list of the Landslide Hazard Area indicators that were found on or in the vicinity of the site.
3. A summary of the results, conclusions, and recommendations resulting from the geological assessment of the landslide hazards on or in the vicinity of the site.
4. An accurate site plan drawn at a scale of one inch equals 20 feet, one inch equals 30 feet, one inch equals 50 feet (or other scale deemed appropriate by the Department) is required. The Department may require that the site plan information listed below be based on a field survey by a licensed surveyor. The site plan shall include:
 - a. The limits and location of any active Landslide Hazard Area.
 - b. The limits and location of the required landslide hazard Buffer.
 - c. The location of any existing and proposed structures, utilities, on-site septic systems, wells, and stormwater management facilities.
 - d. The full geographical limits of the proposed project area or area to be developed.
 - e. Dimension the closest distance between the identified active Landslide Hazard Area boundary and the project area.
 - f. Existing topography on the site presented in two-foot contours.
 - g. Property lines for the site.
 - h. North arrow and plan scale.

B. The Geotechnical Professional who prepared the verification document shall stamp the verification with their license stamp or seal.

C. Geotechnical verifications shall be in conformance with a format that is pre-approved by the Department.

APPENDIX B

GEOLOGICAL ASSESSMENT – LANDSLIDE HAZARD GEOTECHNICAL REPORT

A. At a minimum, a Geotechnical Report shall include the following:

1. The general Critical Areas report requirements.
2. A description of the surface and subsurface geology, hydrology, soils, and vegetation of the site and a list of the Landslide Hazard Area indicators that were found on or in the vicinity of the site.
3. A summary of the results, conclusions, and recommendations resulting from the geological assessment of the landslide hazards on or in the vicinity of the site.
4. An accurate site plan drawn at a scale of one inch equals 20 feet, one inch equals 30 feet, one inch equals 50 feet (or other scale deemed appropriate by the Department) is required. The Department may require that the site plan information listed below be based on a field survey by a licensed surveyor. The site plan shall include:
 - a. The limits and location of any Landslide Hazard Area within the site. Delineation of the Landslide Hazard Area limits shall identify any areas of historic landslide activity.
 - b. The limits and location of the required landslide hazard Buffer.
 - d. The location of any existing and proposed structures, utilities, on-site septic systems, wells, and stormwater management facilities.
 - e. The full geographical limits of the proposed project area or area to be developed.
 - f. Location and unique identifier of geotechnical borings, CPT soundings, or other surveys or explorations used to characterize subsurface conditions.
 - g. Extent of cross-section(s) used to evaluate the three-dimensional subsurface geologic and groundwater conditions at the site.
 - h. Extent of cross-section(s) used in the evaluation of slope instability.
 - i. Existing topography on the site presented in two-foot contours.
 - j. Property lines for the site.
 - k. North arrow and plan scale.
5. Subsurface characterization data must be provided. The data shall be based on both existing and new information that may include soil borings, test pits, geophysical surveys, or other appropriate subsurface exploration methods, development of site-specific soil and/or rock stratigraphy, and measurement of groundwater levels including variability resulting from seasonal changes, alterations to the site, etc.
 - a. Geotechnical borings or CPT soundings will be advanced to a depth sufficient to characterize geologic conditions within and below the existing or potential landslide mass.
 - b. Other methods used for subsurface characterization shall be assigned a unique identifier, and the basic data presented in appropriate graphical and/or tabular format.
 - c. The three-dimensional subsurface conditions at the site shall be presented using one or more cross-sections showing location and depth penetration of geotechnical borings, CPT soundings, or other subsurface characterization methods, interpretation of the geometry of major soil units, and projected location of the static groundwater surface determined from the subsurface exploration. The cross-sections shall be presented at a scale of one inch equals 20 feet, one inch equals 30 feet, one inch equals 50 feet (or other scale deemed appropriate by the Department). Each cross-section shall have a legend with a description of the various major soil units.

6. A detailed description of any prior Grading activity, soil instability, or slope failure.

7. Where deemed appropriate by the Geotechnical Professional assessments and conclusions regarding slope stability for both the existing and developed conditions shall be presented and documented. These assessments and conclusions shall include the information provided below in EMC Section 14.90.060, Appendix B. The project Geotechnical Professional must provide justification for not including a slope stability analysis if one is excluded. The City's Geotechnical Professional reserves the right to request a slope stability analysis based on site conditions. If a dispute arises between the project Geotechnical Professional and the City's Geotechnical Professional regarding the need for a slope stability analysis, then the City reserves the right to require an independent, third party review to be paid for by the applicant to resolve the dispute.

a. Determination of the potential type(s) of landslide failure mechanisms, Debris Flow, rotational slump, or translational slip that may affect the site.

b. Quantitative stability evaluation of slope conditions of the various failure mechanisms using state-of-the-practice modeling techniques. Limiting equilibrium methods of analysis shall state the stability conditions as a factor of safety. The most unstable failure geometry(ies) shall be presented in the form of a cross-section(s), with the least stable failure geometry for each failure mechanism clearly indicated. The stability evaluation shall also consider dynamic (earthquake) loading, and shall use a minimum horizontal acceleration as established by the current version of the International Building Code.

c. An analysis of slope regression rate shall be presented in those cases where stability is impacted or influenced by erosional processes (e.g., wave cutting, stream meandering, etc.) acting on the toe of the slope.

8. Mitigation recommendations using engineered measures to protect the proposed structure(s) and any adjacent structures, infrastructure, adjacent Wetlands, or critical fish and wildlife habitat from damage or destruction as a result of proposed construction activities shall be designed by a professional Engineer. Design plans and detailed geotechnical recommendations may be provided in a document separate from the Geotechnical Report. When appropriate, such recommendations/plans may include, but are not necessarily limited to:

a. Design plans and associated design calculations for engineered structures or drainage systems (e.g., structural foundation requirements, retaining wall design, etc.).

b. Recommendations and requirements pertaining to the handling of surface and subsurface runoff in the developed condition.

c. Identification of necessary geotechnical inspections to assure conformance with the report mitigation and recommendations.

d. Proposed angles of cut and fill slopes, site Grading requirements, final site topography shown as two-foot contours, and the location of any proposed structures, on-site septic systems, wells, stormwater management features, or facilities associated with the development detailed within the body of the report and shown on a site map at the same scale as that required in subsection (A)(8) of this appendix.

e. Soil compaction criteria and compaction inspection requirements.

f. An analysis that indicates how the proposal meets the standards outlined in EMC Chapter 14.90.

g. Structural foundation requirements and estimated foundation settlement shall be provided if structures are proposed.

h. Lateral earth pressures.

i. Suitability of on-site soil for use as fill.

j. Mitigation measures for building construction on each lot for short plats, large lots, or formal plats such that additional Geotechnical Professional involvement is minimized during building construction.

B. The Geotechnical Report shall be prepared by an Engineering Geologist and shall be co-written by both an Engineering Geologist and professional Engineer where both geological interpretations and engineering analyses and designs are necessary or prudent in the mitigation of the landslide hazard.

C. The Geotechnical Professional(s) who prepared the Geotechnical Report shall stamp the report with their license stamp or seal.

D. The Department may request a Geotechnical Professional to provide additional information in the Geotechnical Report based upon existing conditions, changed conditions, or unique circumstances occurring on a case-by-case basis.

E. Geotechnical Reports shall be in conformance with a format that is pre-approved by the Department. (Ord. 05-247 § 1; Ord. 02-200 § 2).

Chapter 14.100

SEISMIC (EARTHQUAKE) HAZARD AREAS

Sections:

- 14.100.010 Purpose.
- 14.100.020 Seismic Hazard Areas.
- 14.100.030 Seismic Hazard Area review procedures.
- 14.100.040 Seismic Hazard Area standards.
- 14.100.050 Buffer requirements.
- 14.100.060 Appendices.

14.100.010 Purpose.

Earthquakes have historically occurred throughout the Puget Sound region. Large earthquakes have caused loss of life and over a billion dollars in property damage. The purpose of this chapter is to protect the public health, safety, and general welfare of the citizens of Edgewood from the damaging effects of earthquakes. This chapter provides standards to ensure life safety and minimize public and private losses that may occur within a Seismic Hazard Area. (Ord. 02-200 § 2).

14.100.020 Seismic Hazard Areas.

A. General. Seismic Hazard Areas are areas subject to severe risk of damage as a result of earthquake-induced landsliding, seismic ground shaking, dynamic settlement, fault rupture, or soil liquefaction.

B. Potential Seismic Hazard Areas. Potential Seismic Hazard Areas are those areas where the suspected risk of earthquake induced landsliding, dynamic settlement, fault rupture, ground deformation caused by soil liquefaction, or flooding is sufficient to require a further Seismic Hazard Area review. These potential Seismic Hazard Areas are determined using the following criteria:

1. Earthquake Induced Landslide Hazard Areas. Areas identified as potential Landslide Hazard Areas in EMC Section 14.90.020.
2. Liquefaction or Dynamic Settlement Hazard Areas. Areas identified as high and moderate liquefaction and dynamic settlement hazard areas on the Geologically Hazardous Areas map.
3. Fault Rupture Hazard Areas.

C. Seismic Hazard Area Categories.

1. Earthquake Induced Landslide Hazard Areas. Earthquake induced Landslide Hazard Areas include slopes that can become unstable as a result of strong ground shaking, even though these areas may be stable under non-seismic conditions.
2. Liquefaction and/or Dynamic Settlement Hazard Areas.
 - a. Liquefaction hazard areas are areas underlain by unconsolidated (corrected Standard Penetration Test blow counts, $[(N_1)_{60}]$ less than 30) sandy or silt soils (Unified Soil Classification System S or M soil-types) and a shallow groundwater table (static groundwater depth less than 30 feet) capable of liquefying in response to earthquake shaking.
 - b. Dynamic settlement hazard areas are areas underlain by a significant thickness (more than 10 feet) of loose or soft soil not susceptible to liquefaction (e.g., peats or organic silts and clays, unsaturated loose sands or silts), but that could result in vertical settlement of the ground surface in response to earthquake shaking.
3. Fault Rupture Hazard Areas. Fault rupture hazard areas include:

- a. Active fault rupture hazard areas are areas where displacement (movement up, down, or laterally) of the ground surface has occurred during past earthquake(s) in the Holocene Epoch; and
- b. Areas adjacent to the active fault rupture hazard area that may be potentially subject to ground surface displacement in a future earthquake.

14.100.030 Seismic Hazard Area review procedures.

A. General Requirements.

1. The City's Geologically Hazardous Areas map provides an indication of where potential Seismic Hazard Areas are located within the city.
2. The Department will complete a review of the Critical Areas Atlas – Seismic Hazard Area Map for any regulated activity to determine whether the site for a proposed regulated activity is located within a Seismic Hazard Area.
3. When the Department's maps indicate that the site for a proposed regulated activity is located within a potential liquefaction or dynamic settlement hazard area, the Department shall require the submittal of a geological assessment as outlined in subsection (B) of this section.
4. When the Department's maps indicate that the site for a proposed regulated activity is located within a potential fault rupture hazard area, the Department shall require the submittal of a geological assessment as outlined in subsection (B) of this section. The requirement to submit a geological assessment may be waived at the Department's discretion when it is determined that the proposed project area for the regulated activity is located outside the potential fault rupture hazard area.
5. When the Department's maps indicate that the site for a proposed regulated activity is or may be located within a potential earthquake-induced Landslide Hazard Area, the Department shall conduct a review pursuant to the requirements set forth in EMC Chapter 14.90.
6. Unless otherwise stated in this chapter, the Critical Area protective measure provisions contained in EMC Chapter 14.10 shall apply.

B. Geological Assessments. A geological assessment is a site investigation process to evaluate the on-site geology affecting a subject property and define the extent and severity of potential seismic hazards.

1. A geological assessment shall be required when the Department's maps, sources, or field investigation indicate a site contains a potential liquefaction, dynamic settlement, or fault rupture hazard area. Geological assessments shall be submitted to the Department for review and approval together with a Seismic Hazard Area Application.
2. A Geotechnical Professional(s) shall complete a field investigation and geological assessment to determine whether or not the site for a proposed regulated activity is located within a liquefaction or dynamic settlement hazard area.
 - a. The geological assessment shall be submitted in the form of a geotechnical verification when the Geotechnical Professional(s) finds that no liquefaction or dynamic settlement hazard area exists within the proposed project area.
 - b. The geological assessment shall be submitted in the form of a Geotechnical Report when the Geotechnical Professional(s) finds that a liquefaction or dynamic settlement hazard area exists within the proposed project area.
3. A Geotechnical Professional shall complete a field investigation and geological assessment presented in the form of a Geotechnical Report to determine whether or not the site for a proposed regulated activity is located within a fault rupture hazard area. Any structural recommendations proposed to mitigate the fault rupture hazard that are included in the Geotechnical Report shall be prepared by an Engineer.

4. All geological assessments for seismic hazards submitted under this chapter shall include, at a minimum, the following items identified in paragraphs a-i:

- a. All of the items required per EMC Section 14.10.080.C.
- b. The parcel number(s) of the subject property.
- c. Site address, if the City has assigned one.
- d. A brief description of the project (including the proposed land use) and the area to be developed.
- e. A map showing the property lines for the site, existing two-foot contours of the existing site topography, and the location of any existing structures, utilities, wells, stormwater or septic systems, or other developments.
- f. A site plan delineating the limits of the proposed development and the location of all areas of the site subject to potential seismic hazards based on the Geologically Hazardous Areas map and, if applicable, limits of associated Buffers.
- g. A description of the surface and subsurface geology, hydrology, soils, and vegetation of the site.
- h. A detailed overview of the field investigations, published data and references, data and conclusions from past geological assessments or geotechnical investigations of the site, site-specific measurements, tests, investigations, or studies, as well as the methods of data analysis and calculations that support the determination regarding whether liquefaction and/or dynamic settlement hazards are present on the site.
- i. The results, conclusions, and recommendations resulting from the geological assessment of the liquefaction and/or dynamic settlement hazards on the subject property as prepared by a Geotechnical Professional(s).

5. Geological assessments shall be prepared, signed, stamped, and dated by the appropriate Geotechnical Professional(s) and the format shall be pre-approved by the Department.

6. Geological assessments that do not contain the minimum required information will be returned to the Geotechnical Professional(s) for revision.

7. The Department shall review the geological assessment and either:

- a. Accept the geological assessment and approve the Application; or
- b. Reject the geological assessment and require revisions or additional information.

8. A geological assessment for a specific site may be valid for a period of up to five years when the proposed land use activity and surrounding site conditions are unchanged. However, if any environmental conditions associated with the site change during that five-year period, the applicant may be required to submit an amendment to the geological assessment. (Ord. 02-200 § 2).

14.100.040 Seismic Hazard Area standards.

A. Earthquake Induced Landslide Hazard Areas. All standards set forth in EMC Chapter 14.90 shall apply to earthquake induced Landslide Hazard Areas.

B. Liquefaction or Dynamic Settlement Hazard Areas.

1. All building structures shall conform to the standards set forth in EMC Title 15, Buildings and Construction.
2. Utility Lines. Utility lines, except for gas pipelines, which are prohibited, will be permitted when no other conveyance alternative is available. The line shall be located above ground and properly anchored and/or

designed so that it will continue to function in the event of seismically induced ground deformation. Provision for automatic shut-off of utilities in a ground-rupturing event will be required.

3. Roads, Bridges, and Trails. Roads, bridges, and trails shall be allowed when mitigation measures are provided that ensure the roadway prism or bridge structure will not be susceptible to damage from seismic induced ground deformation. Mitigation measures shall be designed for static and seismic loading conditions in accordance with the most recent version of the American Association of State Highway and Transportation Officials (AASHTO) Manual and also for an estimated range of ground surface offset presented in the Geotechnical Report.

C. Fault Rupture Hazard Areas. Any development, Encroachment, Clearing and Grading, or building structures shall be prohibited within fault rupture hazard areas and associated Buffers except as specified in the following standards:

1. Utility Lines. Utility lines, except for gas pipelines, which are prohibited, will be permitted when no other conveyance alternative is available. The line shall be located above ground and properly anchored and/or designed so that it will continue to function in the event of seismically-induced ground deformation. Provision for automatic shutoff of utilities in a ground-rupturing event will be required.

2. Roads, Bridges, and Trails. Roads, bridges, and trails shall be allowed when all of the following conditions have been met:

a. Mitigation measures are provided that ensure the roadway prism and/or bridge structure will not be susceptible to damage from seismically-induced ground deformation. Mitigation measures shall be designed for static and seismic loading conditions in accordance with the most recent version of the American Association of State Highway and Transportation Officials (AASHTO) Manual and also for an estimated range of ground surface offset presented in the Geotechnical Report.

b. The road is not a sole access for a development. (Ord. 02-200 § 2).

14.100.050 Buffer requirements.

A. Determining Buffer Widths.

1. The Buffer width shall be measured on a horizontal plane from a perpendicular line established at the edge of the fault rupture hazard area limits.

2. A Buffer is an area that is adjacent to a fault rupture hazard area that may be potentially subject to ground surface displacement in a future earthquake. No development shall be permitted within a fault rupture hazard area and its associated Buffer. The required Buffer width is the greater amount of the following distances:

a. Fifty feet from all edges of a fault rupture hazard area, except for high occupancy or essential facilities, where the minimum Buffer distance shall be 100 feet; or

b. The required Buffer width is the minimum distance recommended by the Geotechnical Professional(s).

B. Modification of Buffer Widths. The Department may require a larger Buffer width than the Buffer distance, as determined in subsection (A) of this section, if the Department determines the standard or proposed Buffer is not adequate to protect the health, safety, or welfare of any proposed development. (Ord. 02-200 § 2).

14.100.060 Appendices.

A. Geological Assessments – Liquefaction or Dynamic Settlement Hazard Areas.

B. Geological Assessments – Fault Rupture Hazard Area Geotechnical Report.

APPENDIX A

GEOLOGICAL ASSESSMENTS – LIQUEFACTION OR DYNAMIC SETTLEMENT HAZARD AREAS

Article I. Geotechnical Verification

A. A geotechnical verification shall, at a minimum, include the following:

1. The general Critical Areas report requirements.
2. The geotechnical verification shall include all mandatory items listed in EMC Chapter 14.100.
3. The geological assessment must include a determination that no liquefaction or dynamic settlement hazard exists within the proposed project area.
4. The verification shall include an accurate site plan drawn at a scale of one inch equals 20 feet, one inch equals 30 feet, one inch equals 50 feet (or other scale deemed appropriate by the Department) is required. The Department may require that the site plan information be based on a field survey by a licensed surveyor. The site plan shall include:
 - a. Property lines for the site, and the location of any existing structures.
 - b. The full geographical limits of the proposed project area or conceptual project area (i.e., area to be developed) and the location of any proposed structures, on-site septic systems, wells, and stormwater management features or facilities associated with the development, if known.

B. The Geotechnical Professional(s) who prepared the geotechnical verification shall stamp the verification with their license stamp or seal.

C. Hold harmless clauses, disclaimers, and limitations are not allowed within a geotechnical verification.

Article II Geotechnical Report

A. A Geotechnical Report shall, at a minimum, include the following:

1. The general Critical Areas report requirements.
2. The document shall include all mandatory items listed in EMC Chapter 14.100. The report shall be prepared by an Engineer and shall be co-written by an Engineering Geologist where geological interpretations and conclusions critical to the assessment of liquefaction and/or dynamic settlement hazard and potential effects are necessary or prudent. The report shall specify the desired performance level of the structures and other development facilities, e.g., safety to building occupants, minimal damage to structure, post-earthquake serviceability for pre-earthquake operations, or no damage.
3. The results, conclusions, and recommendations resulting from the geological assessment of the liquefaction or dynamic settlement hazards on the subject property as prepared by the Geotechnical Professional(s).
4. The geological assessment Geotechnical Report shall include:
 - a. A statement that the proposed project area falls within a liquefaction and/or dynamic settlement hazard area.
 - b. A detailed engineering evaluation of expected ground displacements or other liquefaction or dynamic settlement effects, e.g., bearing failures, flotation of buried tanks, or similar, and proposed mitigation measures to ensure an acceptable level of risk for the proposed structure type or other development facilities, as well as the proposed land use type or occupancy category. The minimum level of acceptable risk for any proposed structure or development Facility shall ensure the life safety of any occupant. Where appropriate, a range of mitigation options should be considered depending on site conditions, the intended use of the structures, and acceptable levels of settlement.
5. The report shall include a site plan drawn to scale. The Department may require that the site plan information be based on a field survey by a licensed surveyor. The site plan shall include:
 - a. Property lines for the site and the location of any existing structures.

- b. The limits or location of any liquefaction or dynamic settlement hazard area(s).
 - c. The full geographical limits of the proposed project area or conceptual project area (i.e., area to be developed) and the location of any proposed structures, on-site septic systems, wells, and stormwater management features or facilities associated with the development, if known.
 - d. Location and unique identifier of geotechnical explorations used to characterize subsurface conditions.
6. The geotechnical study shall include field exploration sufficient to assess the potential for liquefaction or dynamic settlement hazards and options for mitigation of those hazards. Copies of the exploration logs shall be provided in the report. The geotechnical study shall include field exploration sufficient to assess the potential for liquefaction or dynamic settlement hazards and options for mitigation of those hazards. Copies of the exploration logs shall be included in the report. The project Geotechnical Professional must provide justification for the scope of the field exploration program. The City's Geotechnical Professional reserves the right to request additional exploration if deemed appropriate. If a dispute arises between the City's Geotechnical Professional and the project Geotechnical Professional regarding the scope of the field exploration, the City reserves the right to require an independent, third party review to be paid for by the applicant to resolve the dispute.
7. If beneficial to the assessment of seismic hazards for the project, the three-dimensional subsurface conditions at the site shall be presented using one or more cross-sections showing location and depth penetration of borings or CPT soundings, interpretation of the geometry of major soil units, and projected location of the static groundwater surface determined from the subsurface exploration. The cross-sections shall be presented at a scale of one inch equals 20 feet, one inch equals 30 feet, one inch equals 50 feet (or other scale deemed appropriate by the Department). Each cross-section shall have a legend with a description of the various major soil units. The City's Geotechnical Professional reserves the right to request inclusion of one or more cross sections in the Geotechnical Report. If a dispute arises between the project Geotechnical Professional and the City's Geotechnical Professional regarding this issue, then the City reserves the right to require an independent, third party review to be paid for by the applicant to resolve the dispute.
8. All assessments of liquefaction or dynamic settlement hazards and effects will be based on a design earthquake using ground motion parameters consistent and equivalent to those specified in the most current version of the International Building Code. These assessments shall use the shallowest groundwater table observed during or inferred from subsurface exploration and characterization, e.g., the measured depth of static groundwater immediately prior to abandonment of borings, or observation of iron-oxide mottling of soils samples.
9. Results of laboratory testing of samples retrieved during drilling and sampling shall be presented in order to support the values of fines contents used in subsequent analysis of liquefaction and/or dynamic settlement hazard. Where only CPT methods are used in site assessment, the correlation between fines content and CPT measurements will be discussed and documented. This documentation will require rigorous correlation of CPT and fines content measurements from similar geological deposits within the Puget Sound region.
10. The Geotechnical Report shall include a detailed assessment of the liquefaction and/or dynamic settlement hazard based on analysis of available subsurface data using state-of-the-practice methodologies. The results of the analysis shall be documented, and all results of intermediate and final calculations and results, including factors of safety, shall be included.
11. When appropriate, the Geotechnical Report shall include an assessment of the potential for large lateral spreads or flow failures, bearing failures, settlement, limited lateral displacement, and flotation of buried facilities. The methodologies used must be, at a minimum, state-of-the-practice, and the conclusions regarding the potential and severity of the possible liquefaction and/or dynamic settlement induced failure modes shall be presented.
12. Alternative mitigative measures including structural and foundation design options and/or soil improvement techniques shall be evaluated and compared for their effectiveness in reaching the level of performance specified in the report introduction. Effectiveness of soil improvement techniques shall be specified in terms of

post-treatment densification or strength improvement as measured by appropriate subsurface investigation and testing. The extent of the post-treatment verification testing shall be provided on a site map at the same scale as the map presented in subsection (A)(4) of this article. Geotechnical review of all final plans is required and the findings of the review shall be documented in writing.

B. The Geotechnical Professional(s) who prepared the Geotechnical Report shall stamp the report with their license stamp or seal.

C. Hold harmless clauses, disclaimers, and limitations are not allowed within a Geotechnical Report.

APPENDIX B

GEOLOGICAL ASSESSMENTS – FAULT RUPTURE HAZARD AREA GEOTECHNICAL REPORT

A. A Geotechnical Report shall, at a minimum, include the following:

1. The general Critical Areas report requirements contained herein.
2. The report shall be prepared by an Engineer and shall be co-written by an Engineering Geologist where geological interpretations and conclusions critical to the assessment of liquefaction and/or dynamic settlement hazard and potential effects are necessary or prudent.
3. The following topics should be considered and addressed in detail where essential to support opinions, conclusions, and recommendations in any geologic report on faults. It is not expected that all the topics or investigative methods would be necessary in a single investigation. In specific cases, it may be necessary to extend some of the investigative methods well beyond the site or property being investigated.
 - a. Purpose and scope of investigation; description of proposed development.
 - b. Geologic and tectonic setting. Include seismicity and earthquake history.
 - c. Site description and conditions, including dates of site visits and observations. Include information on geologic units, graded and filled areas, vegetation, existing structures, and other factors that may affect the choice of investigative methods and interpretation of data.
 - d. Methods of Investigation.
 - i. Review of published and unpublished literature, maps, and records concerning geologic units, faults, groundwater barriers, and other factors.
 - ii. Stereoscopic interpretation of aerial photographs, review of LiDAR based topography, and other remotely sensed images to detect fault-related topography (geomorphic features), vegetation and soil contrasts, and other lineaments of possible fault origin. The area interpreted usually should extend beyond the site boundaries.
 - iii. Surface observations, including mapping of geologic and soil units, geologic structures, geomorphic features and surfaces, springs, deformation of engineered structures due to fault creep, both on and beyond the site.
 - iv. Subsurface Investigations.
 - (A) Trenching and other excavations to permit detailed and direct observation of continuously exposed geologic units, soils, and structures; must be of adequate depth and be carefully logged (Taylor & Cluff 1973, Hatheway & Leighton 1979, McCalpin 1996b).
 - (B) Borings and test pits to permit collection of data on geologic units and groundwater at specific locations. Data points must be sufficient in number and spaced adequately to permit valid correlations and interpretations.

(C) Cone penetrometer testing (CPT) (Grant et al., 1997, Edelman et al., 1996). CPT must be done in conjunction with continuously logged borings to correlate CPT results with on-site materials. The number of borings and spacing of CPT soundings should be sufficient to adequately image site stratigraphy. The existence and location of a fault based on CPT data are interpretative.

v. Geophysical Investigations. These are indirect methods that require a knowledge of specific geologic conditions for reliable interpretations. They should seldom, if ever, be employed alone without knowledge of the geology (Chase & Chapman 1976). Geophysical methods alone never prove the absence of a fault nor do they identify the recency of activity. The types of equipment and techniques used should be described and supporting data presented (California Board of Registration for Geologists and Geophysicists, 1993).

(A) High-resolution seismic reflection (Stephenson et al., 1995, McCalpin, 1996b).

(B) Ground penetrating radar (Cai et al., 1996).

(C) Other methods include: seismic refraction, magnetic profiling, electrical resistivity, and gravity (McCalpin, 1996b).

vi. Age-dating techniques are essential for determining the ages of geologic units, soils, and surfaces that bracket the time(s) of faulting (Pierce 1986, Birkeland et al., 1991, Rutter & Catto, 1995, McCalpin, 1996a).

(A) Radiometric dating (especially ¹⁴C).

(B) Soil-profile development.

(C) Rock and mineral weathering.

(D) Landform development.

(E) Stratigraphic correlation of rocks, minerals, and fossils.

(F) Other methods – artifacts, historical records, tephrochronology, fault scarp modeling, thermoluminescence, lichenometry, paleomagnetism, dendrochronology, etc.

vii. Other methods should be included when special conditions permit or requirements for critical structures demand a more intensive investigation.

(A) Aerial reconnaissance overflights.

(B) Geodetic and strain measurements.

(C) Microseismicity monitoring.

e. Conclusions.

i. Location and existence (or absence) of hazardous faults on or adjacent to the site; ages of past rupture events.

ii. Type of faults and nature of anticipated offset, including sense and magnitude of displacement, if possible.

iii. Distribution of primary and secondary faulting (fault zone width) and fault-related deformation.

iv. Probability of, or relative potential for, future surface displacement. The likelihood of future ground rupture seldom can be stated mathematically, but may be stated in semiquantitative terms such as low, moderate, or high, or in terms of slip rates determined for specific fault segments.

v. Degree of confidence in, and limitations of data and conclusions.

f. Recommendations.

i. The recommended increase from the standard Buffer distance (50 feet) of proposed structures from fault rupture hazard areas. The recommended Buffer distance generally will depend on the quality of data and type and complexity of fault(s) encountered at the site and the proposed land use type (i.e., occupancy). In order to establish an appropriate Buffer distance from a fault located by indirect or interpretative methods (e.g., borings or cone penetrometer testing), the area between data points also should be considered underlain by a fault unless additional data are used to more precisely locate the fault. Additional measures (e.g., strengthened foundations, engineering design, and flexible utility connections) to accommodate warping and distributive deformation associated with faulting (Lazarte and others, 1994).

ii. Risk evaluation relative to the proposed development.

iii. Limitations of the investigation; need for additional studies.

g. References.

i. Literature and records cited or reviewed; citations should be complete.

ii. Aerial photographs or images interpreted – list type, data, scale, source, and index numbers.

iii. Other sources of information, including well records, personal communications, and other data sources.

h. Illustrations. The following illustrations should be provided:

i. A location map that identifies site locality, significant faults, geographic features, regional geology, seismic epicenters, and other pertinent data; 1:24,000 scale is recommended.

ii. A site development map that shows site boundaries, existing and proposed structures and limits of the proposed project area, graded areas, streets, exploratory trenches, borings geophysical traverses, locations of faults, and other data; recommended scale is 1:2,400 (one inch equals 200 feet), or larger.

iii. A geologic map that shows the distribution of geologic units (if more than one), faults and other structures, geomorphic features, aerial photo graphic lineaments, and springs; on topographic map 1:24,000 scale or larger; can be combined with subsection (B)(h)(i) or (ii) of this appendix.

iv. Geologic cross-sections, if needed, to provide three-dimensional picture.

v. Logs of exploratory trenches and borings that show details of observed features and conditions (note: these should not be generalized or diagrammatic). Trench logs should show topographic profile and geologic structure at a 1:1 horizontal to vertical scale; scale should be 1:60 (one inch equals five feet) or larger.

vi. Geophysical data and geologic interpretations.

i. Appendix. Attach any supporting data not included above, e.g., water well data, photographs, and aerial photographs.

4. The Geotechnical Professional who prepared the Geotechnical Report shall stamp the report with their license stamp or seal.

5. The Department may request a Geotechnical Professional to provide additional information in the Geotechnical Report based upon existing conditions, changed conditions, or unique circumstances occurring on a case-by-case basis.

6. Hold harmless clauses, disclaimers, and limitations are not allowed to be included, neither expressly nor implied, within a geological assessment. (Ord. 02-200 § 2).

Chapter 14.110

EROSION HAZARD AREAS

Sections:

- 14.110.010 Purpose.
- 14.110.020 Erosion Hazard Area.
- 14.110.030 Erosion Hazard Area review procedures.
- 14.110.040 Erosion Hazard Area standards.
- 14.110.050 Buffer requirements.
- 14.110.060 Appendices.

14.110.010 Purpose.

The following statements describe the purpose of this chapter:

- A. Protect human life and health;
- B. Regulate uses of land in order to avoid damage to structures and property being developed and damage to neighboring land and structures;
- C. Identify and map any Erosion Hazard Area;
- D. Minimize impacts on Wetlands and critical fish and wildlife species and their associated habitat that can result from erosion;
- E. Establish a permit requirement and review procedures for development proposals in areas with potential erosion hazards;
- F. Strike a balance between the need to maintain natural shoreline erosion/regression processes and the need to protect existing and proposed development. (Ord. 02-200 § 2).

14.110.020 Erosion Hazard Area.

A. Erosion Hazard Area Indicators. Erosion Hazard Areas are areas potentially subject to land regression or retreat due to a combination of geologic, seismic, hydrologic, or manmade factors. Erosion Hazard Areas can be identified by indicators of active land retreat as a result of Fluvial Processes.

B. Erosion Hazard Area Categories.

1. Potential Erosion Hazard Areas. Potential Erosion Hazard Areas, as depicted on the Geologically Hazardous Areas map, are those areas where the suspected risk of erosion through either loss of soil, slope instability, or land regression is sufficient to require additional review to assess the potential for active erosion activity or apply additional standards. These potential Erosion Hazard Areas are determined using the following criteria:
 - a. Shoreline Erosion Hazard Areas. Areas within 200 feet of a freshwater lake, pond, or shoreline. The distance shall be measured landward perpendicularly from the edge of the ordinary high water mark.
 - b. Riverine Erosion Hazard Areas. The rivers subject to regulation as a CMZ listed in EMC Section 14.80.030.B.4.
 - c. Soil Erosion Hazard Areas. Areas identified as having slopes of 20 percent or greater and that are classified as having severe, or very severe erosion potential by the Soil Conservation Service, United States Department of Agriculture (USDA).
2. Active Shoreline Erosion Hazard Areas. Land areas located directly adjacent to surface water bodies that, through the geological assessment process, are identified as regressing, retreating, or potentially unstable as a result of undercutting by wave action or bluff erosion. The limits of the active shoreline Erosion Hazard Area

shall extend landward to include that land area that is calculated, based on the rate of regression, to be subject to erosion processes within the next 10-year time period.

3. Riverine Erosion Hazard Areas or CMZs. Riverine Erosion Hazard Areas are located within the lateral extent of likely watercourse channel movement due to bank destabilization and erosion, rapid incision, and shifts in location of watercourse channels. Rivers and streams subject to erosion are regulated as a CMZ.

4. Soil Erosion Hazard Areas. Soil Erosion Hazard Areas are identified by the presence or absence of natural vegetative cover, soil texture condition, slope, and rainfall patterns, or man-induced changes to such characteristics that create site conditions which are vulnerable to erosion of the upper soil horizon. Soil Erosion Hazard Areas include those areas with slopes of 20 percent or greater and that are classified as having severe, or very severe erosion potential by the USDA Natural Resources Conservation Service. (Ord. 02-200 § 2).

14.110.030 Erosion Hazard Area review procedures.

A. General Requirements.

1. The City's Geologically Hazardous Areas map provides an indication of where potential Erosion Hazard Areas are located. The actual presence or location of an Erosion Hazard Area or additional potential Erosion Hazard Area that have not been mapped, but may be present on or adjacent to a site, shall be determined using the procedures and criteria established in this chapter.

2. The Department will complete a review of the Geologically Hazardous Areas map, and any other source documents for any proposed regulated activity to determine whether the site for the regulated activity is located within a potential Erosion Hazard Area.

3. When the Department's maps, sources, or field investigations indicate that the site for a proposed regulated activity is located within a potential shoreline Erosion Hazard Area, the Department shall require a geological assessment as outlined in subsection (B) of this section.

4. When the Department's maps, sources, or field investigations indicate that the proposed project area for a regulated activity is located within a potential riverine Erosion Hazard Area or CMZ, the Department shall conduct a review pursuant to EMC Chapter 14.80.

5. When the Department's maps, sources, or field investigations indicate that the proposed project area for a regulated activity is located within a potential soil Erosion Hazard Area, the Department shall require submittal of an erosion control plan pursuant to the requirements set forth in EMC Title 15.

6. Applicants requesting to develop a bulkhead along a shoreline shall be required to submit a Geotechnical Report.

B. Geological Assessment. A geological assessment is a site investigation process to evaluate the on-site geology affecting a subject property and proposed development.

1. Geological assessments shall be submitted to the Department for review and approval together with a shoreline Erosion Hazard Area Application.

2. The geological assessment shall include a field investigation and may also include review of public records and documentation, analysis of historical air photos, LiDAR mapping, published data and references, etc.

3. The geological assessment shall include the following information and analysis identified in paragraphs a-d:

a. An analysis of the shoreline erosion processes on and in the vicinity of the site including an evaluation of erosion and shoreline retreat that has occurred over the past decade and an estimated probable rate of erosion based upon the historic rate of erosion that has occurred on the site.

b. A determination of which areas on the site meet the criteria for an active shoreline Erosion Hazard Area.

c. A determination of the area on the site or in the vicinity of the site that will experience regression in the next 120 years given natural processes.

d. All of the information required per EMC Section 14.10.080.C.

4. Geological assessments shall be prepared, signed, and dated by a Geotechnical Professional and the format shall be pre-approved by the Department.

5. A Geotechnical Professional shall complete a field investigation and geological assessment to determine whether or not an active shoreline Erosion Hazard Area exists within 200 feet of the site.

a. The geological assessment shall be submitted in the form of a geotechnical letter when the Geotechnical Professional finds that no active shoreline Erosion Hazard Area exists within 200 feet of the site.

b. The geological assessment shall be submitted in the form of geotechnical verification when the Geotechnical Professional finds that an active shoreline Erosion Hazard Area exists but is located more than 200 feet away from the proposed project area.

c. The geological assessment shall be submitted in the form of a Geotechnical Report when the Geotechnical Professional finds that an active shoreline Erosion Hazard Area exists within 200 feet of the proposed project area or when a Geotechnical Professional determines that mitigation measures, such as a bulkhead, are necessary in order to construct or develop within a potential shoreline Erosion Hazard Area.

6. The Department shall review the geological assessment and either:

a. Accept the geological assessment and approve the Application; or

b. Reject the geological assessment and require revisions or additional information.

7. A geological assessment for a specific site may be valid for a period of up to five years when the proposed land use activity and surrounding site conditions are unchanged. However, if any environmental conditions associated with the site change during that five-year period, the applicant may be required to submit an amendment to the geological assessment.

C. Riverine Erosion Hazard Area (Channel Migration Zones) Review. Riverine Erosion Hazard Areas shall be reviewed pursuant to the requirements set forth in EMC Chapter 14.80.

D. Soil Erosion Hazard Area Review. Soil Erosion Hazard Areas shall be reviewed pursuant to the requirements set forth in EMC Title 15, Buildings and Construction. (Ord. 02-200 § 2).

14.110.040 Erosion Hazard Area standards.

A. Active Shoreline Erosion Hazard Areas. Any development, Encroachment, Clearing and Grading, timber harvest, building structures, impervious surfaces, and vegetation removal shall be prohibited within active shoreline Erosion Hazard Areas and associated Buffers except as specified in the following standards:

1. Shoreline Erosion Protection Measures. Shoreline erosion protection measures located within or adjacent to freshwater or marine shorelines shall be allowed subject to the following:

a. The proposed shoreline protection measure shall comply with the standards set forth in EMC Chapter 14.50 – Critical Fish and Wildlife Habitat Areas.

b. A geological assessment Geotechnical Report that indicates that the shoreline is currently experiencing active erosion, i.e., land retreat or regression.

c. The use of the shoreline erosion protection measure will not cause a significant adverse impact on adjacent properties or critical fish and wildlife species and their associated habitat (i.e., increase erosion on adjacent properties).

d. The use of Soft Armoring Techniques is the preferred method for shoreline protection.

e. Hard Armoring shoreline erosion control measures shall be approved only when a geological assessment-shoreline erosion Geotechnical Report has been completed and indicates the following:

i. The regression has been monitored on a yearly interval for a period of at least five consecutive years prior to allowing a bulkhead to be constructed. This monitoring shall be conducted by field survey measurements of a licensed surveyor. The Department may shorten or eliminate the monitoring period if there are indicators that the regression rate is rapid and an existing structure may be threatened prior to completion of the monitoring period;

ii. The use of beach nourishment alone or in combination with Soft Armoring Techniques is not adequate to protect the property from shoreline erosion processes; and

iii. The property contains an existing structure(s) that will be threatened within the next 10 years or the buildability of an undeveloped site will be threatened within the next 10 years if a Hard Armoring method of shoreline erosion protection is not provided.

f. Hard Armoring shoreline protection measures shall not be allowed when structures can be located landward of the 120-year rate of regression area.

2. Stormwater Conveyance. Surface drainage into an active shoreline Erosion Hazard Area should be avoided. If there are no other alternatives for discharge, then drainage must be collected upland of the top of the active shoreline Erosion Hazard Area and directed downhill in a high density polyethylene stormwater pipe with fuse welded joints that includes an energy dissipating device at the base of the active Landslide Hazard Area. The pipe shall be located on the surface of the ground and be properly anchored so that it will continue to function in the event of an underlying slide. The number of these pipes should be minimized along the slope frontage.

3. Utility Lines. Utility lines will be permitted when no other conveyance alternative is available. The line shall be located above ground and properly anchored and/or designed so that it will continue to function in the event of an underlying slide.

4. Roads, Bridges, and Trails. Roads, bridges, and trails shall be allowed when all of the following conditions have been met:

a. Mitigation measures are provided that ensure the roadway prism and/or bridge structure will not be susceptible to damage from active erosion.

b. The road is not a sole access for a development.

B. Shoreline Erosion Hazard Management Area. All Regulated Activities such as but not limited to building structures, impervious surfaces, vegetation removal, timber harvest, or Grading activities may be allowed in areas located within 200 feet of an active shoreline Erosion Hazard Area subject to the following standards:

1. The Department reviews and approves a geological assessment – shoreline erosion hazard Geotechnical Report and determines that the proposed project area is located outside an active shoreline hazard area and the required Buffer.

2. The proposed recommendations and mitigation measures contained within the Geotechnical Report are adequate to reduce or mitigate risks to the natural environment, health, and safety.

3. Surface drainage from the proposed project area, including downspouts, landscape irrigation systems, and runoff from paved or unpaved surfaces upland of the shoreline, shall not be directed through an active shoreline

Erosion Hazard Area or its associated Buffer unless it is conveyed in conformance with the provisions in subsection (A)(2) of this section.

4. Stormwater retention and detention systems, such as dry wells and infiltration systems utilizing buried pipe or french drains, shall not be permitted unless such systems are designed by a professional Engineer and the Geotechnical Report indicates that such a system will not affect the stability of the shoreline.

5. Proposed developments, with the exception of shoreline erosion protection measures, shall be sited far enough from regressing shorelines to ensure 120 years of useful life for any proposed structures or infrastructure.

C. Riverine Erosion Hazard Area or CMZ Review. Riverine Erosion Hazard Areas shall be reviewed pursuant to the requirements set forth in EMC Chapter 14.80.

D. Soil Erosion Hazard Area Review. Soil Erosion Hazard Areas shall be reviewed pursuant to the requirements set forth in EMC Title 15, Buildings and Construction. (Ord. 02-200 § 2).

14.110.050 Buffer requirements.

A. Determining Buffer Widths.

1. The Buffer width shall be measured on a horizontal plane from a perpendicular line established at the edge of the active shoreline Erosion Hazard Area limits.

2. An undisturbed Buffer of existing vegetation shall be required for an active shoreline Erosion Hazard Area. The required standard Buffer width is either a or b below, whichever is greater:

a. Fifty feet from all edges of the active shoreline Erosion Hazard Area limits;

b. A distance of one-third the height of the slope at the top of the slope and a distance of one-half the height at the bottom of the slope; or

3. The Buffer width may be reduced or eliminated upon the Director's approval of a Geotechnical Report that demonstrates that such a reduction would not result in an increased risk of erosion either on or off of the subject property.

B. Modification of Buffer Widths. The Department may require a larger Buffer width than the standard Buffer distance, as determined in subsection (A) of this section, if any of the following are identified through the geological assessment process:

1. The adjacent land is susceptible to severe erosion and erosion control measures will not effectively prevent adverse impacts.

2. The area has a severe risk of slope failure or downslope stormwater drainage impacts. (Ord. 02-200 § 2).

14.110.060 Appendices.

A. Geological Assessment – Shoreline Erosion Hazard Geotechnical Letter.

B. Geological Assessment – Shoreline Erosion Hazard Geotechnical Verification.

C. Geological Assessment – Shoreline Erosion Hazard Geotechnical Report.

APPENDIX A

GEOLOGICAL ASSESSMENT – SHORELINE EROSION HAZARD GEOTECHNICAL LETTER

A. A geotechnical letter shall, at a minimum, include the following:

1. The general Critical Areas report requirements.

2. A summary of the findings of the site visit, a site plan, and a summary of the findings from the review of documents listed in EMC 14.110.030.B.2. The appropriate professional preparing the geotechnical letter shall provide conclusions and recommendations as to shoreline stability for the proposed development.

B. The Geotechnical Professional who prepared the geotechnical letter shall stamp the letter with his or her seal.

C. Hold harmless clauses, disclaimers, and limitations are not allowed within a geotechnical letter.

APPENDIX B

GEOLOGICAL ASSESSMENT – SHORELINE EROSION HAZARD GEOTECHNICAL VERIFICATION

A. A geotechnical verification shall, at a minimum, include the following:

1. The general Critical Areas report requirements.

2. A summary of the results, conclusions, and recommendations resulting from the geological assessment, as set forth in EMC 14.110.030.B. The verification will also include a summary of the findings of the site visit, a site plan, and a summary of the findings from the review of the documents listed in EMC 14.110.030.B.2.

3. An accurate site plan drawn at a scale of one inch equals 20 feet, one inch equals 30 feet, one inch equals 50 feet (or other scale deemed appropriate by the Department) is required. The Department may require that the site plan information listed below be based on a field survey by a licensed surveyor. The site plan shall include:

a. The limits and location of the active shoreline Erosion Hazard Area(s).

b. The limits of the required shoreline erosion hazard Buffer.

c. The limits and location of the shoreline erosion hazard management area.

d. The limits and location of the 120-year regression area.

e. The location of any existing structures, utilities, on-site septic systems, wells, and stormwater management facilities.

f. The location of any proposed structures, utilities, on-site septic systems, wells, and stormwater management facilities.

g. The full geographical limits of the proposed project area to be developed.

h. Dimension of the closest distance between the identified active shoreline hazard area boundary and the proposed project area.

i. Dimension of the closest distance between the 120-year regression line and the proposed project area.

j. Existing contours on the site at two-foot intervals.

k. Property lines for the site.

l. North arrow and scale.

B. The Geotechnical Professional who prepared the geotechnical verification shall stamp the verification with their seal.

C. Hold harmless clauses, disclaimers, and limitations are not allowed within a geotechnical verification.

APPENDIX C

GEOLOGICAL ASSESSMENT – SHORELINE EROSION HAZARD GEOTECHNICAL REPORT

A. A Geotechnical Report shall, at a minimum, include the following:

1. The general Critical Areas report requirements.
2. A summary of the results, conclusions, and recommendations resulting from the geological assessment. The report will also include a summary of the findings of the site visit, a site plan, and a summary of the findings from the review of documents listed in EMC 14.110.030.B.2. The summary shall specifically address:
 - a. Whether it is possible given the physical constraints of the property (size, shape, building setbacks, utility requirements, etc.) to locate the proposed development outside of the 120-year area of regression based on natural shoreline processes.
 - b. If it is not possible to locate the development outside of the 120-year area of regression (based on natural processes), determine whether beach nourishment, Soft Armoring Techniques, or both can be used to slow the rate of regression such that the proposed development is no longer within the 120-year regression area.
 - c. If it is not possible to locate the development outside of the 120-year area of regression, based on the use of beach nourishment or Soft Armoring Techniques, outline the strategy, to monitor the rate of regression on the site.
 - d. Determine whether any proposed shoreline erosion protection measures will cause an increase in the rate of regression on neighboring properties.
3. An accurate site plan drawn at a scale of one inch equals 20 feet, one inch equals 30 feet, one inch equals 50 feet (or other scale deemed appropriate by the Department) is required. The Department may require that the site plan information listed below be based on a field survey by a licensed surveyor. The site plan shall include:
 - a. The limits and location of the active shoreline Erosion Hazard Area(s).
 - b. The limits of the required shoreline erosion hazard Buffer based upon the requirements.
 - c. The limits and location of the shoreline erosion hazard management area.
 - d. The limits and location of the 120-year regression area based on natural shoreline processes and, if applicable, based upon proposed shoreline protection measures.
 - e. The location of any existing structures, utilities, on-site septic systems, wells, and stormwater management facilities.
 - f. The location of any proposed structures, utilities, on-site septic systems, wells, and stormwater management facilities.
 - g. The full geographical limits of the proposed project area to be developed.
 - h. Dimension of the closest distance between the identified active shoreline hazard area boundary and the proposed project area.
 - i. Dimension of the closest distance between the 120-year regression line and the proposed project area.
 - j. Existing contours on the site at two-foot intervals.
 - k. Property lines for the site.
 - l. North arrow and scale.
4. A discussion of any proposed shoreline protection measures including design and construction drawings is required.

5. A list of references utilized in preparation of the report.

B. The Geotechnical Professional(s) who performed the geological assessment shall stamp the report with their license stamp or seal. The report must be co-authored by a licensed professional Engineer when engineering designs or interpretations are necessary to address the report requirements. The Engineer must also stamp the report with their license stamp or seal.

C. The Department may request a Geotechnical Professional to provide additional information in the Geotechnical Report based upon existing conditions, changed conditions, or unique circumstances occurring on a case-by-case basis.

D. Hold harmless clauses, disclaimers, and limitations are not allowed within a Geotechnical Report.

E. Geotechnical Reports shall be in conformance with a format that is pre-approved by the Department. (Ord. 02-200 § 2).

..

Chapter 14.120

NATURAL RESOURCE LANDS

Sections:

14.120.010	Purpose.
14.120.020	Intent.
14.120.030	Applicability.
14.120.040	Mineral Resource Lands designation.
14.120.050	Natural Resource Lands noticing requirements.
14.120.060	Current use assessment.
14.120.070	Variances and appeals.
14.120.080	Review process.
14.120.090	Title, plat, and Regulated Activities notification.
14.120.100	Permitted uses.
14.120.110	Appendices.

14.120.010 Purpose.

This chapter establishes requirements and regulations to protect Natural Resource Lands and is established pursuant to WAC 197-11-908 and RCW 36.70A.170 and 36.70A.060. The City therefore designates Agricultural Lands and Mineral Resource Lands, and all associated Buffers as being Critical Areas and designated Natural Resource Lands. By regulating development within 500 feet of Natural Resource Lands, this title seeks to implement the following goals and policies to:

- A. Inform the public of the existence, location and potential incompatibility impacts of development on, or within 500 feet of, these Critical Areas within the city.
- B. Encourage the retention of open space, development of recreational opportunities, conserve priority habitat, increase access to Natural Resource Lands and water, and develop parks.
- C. Assure the conservation of resource lands and related activities by limiting encroachment of incompatible development thereon.
- D. Promote the conservation of Mineral Resource Lands through inclusion of known deposits of minerals and materials.
- E. Assure that undeveloped mineral and material resources will not be forever lost by prior development of the land for other purposes.
- F. Allow for the necessary mineral processing to convert such minerals and materials into marketable products.
- G. Protect the environment and enhance the state's high quality of life, including air and water quality and the availability of water.
- H. Maintain and enhance the biological and physical functions and values of Wetlands. (Ord. 02-200 § 2).

14.120.020 Intent.

Resource lands are of special concern to the citizens, the City, and the state. The intent of this chapter is to conserve resource lands by establishing standards for development of sites which contain, or are within 500 feet of, resource lands to promote the public health, safety, and welfare by:

- A. Noticing of property on, or within, natural resource land areas;
- B. Mitigating unavoidable impacts by regulating development;
- C. Protecting from development impacts;

D. Protecting the public against losses from:

1. Costs of public emergency rescue and relief operations where the causes are avoidable;
2. Degradation of the natural environment and the expense associated with repair or replacement;

E. Preventing adverse impacts on water availability, water quality, Wetlands, and streams;

F. Protecting unique, fragile, and valuable elements of the environment, including fish and wildlife habitat;

G. Providing sufficient information to show that Critical Areas are adequately protected prior to approving, conditioning, or denying public or private development activity;

H. Providing the public with sufficient information and notice of potential risks associated with development in any Critical Area or Sensitive Area;

I. Implementing the goals and requirements of the Growth Management Act (RCW 36.70A.060), the City's comprehensive plan, and all updates and amendments, functional plans, and other land use policies formally adopted or accepted by the City. (Ord. 02-200 § 2).

14.120.030 Applicability.

This chapter shall apply to all properties designated as resource lands, Agricultural Lands, Mineral Resource Lands, or properties within 500 feet of designated resource lands within Edgewood. When the requirements of this title are more stringent than those of other local, state, or federal law, codes, or regulations, the requirements of this title shall apply.

A. Agricultural Lands. Lands that are not already characterized by Urban Growth and that have long-term significance for the commercial production of food or other agricultural products. Agricultural Lands are those lands meeting all of the following criteria:

1. Lands in parcels which are 10 acres or larger in size;
2. Lands which are on prime or unique soils as identified in:
 - a. United States Department of Agriculture (USDA), Soil Conservation Service, February 1979, Soil Survey of Pierce County Area, Washington; or
 - b. USDA, Soil Conservation Service, June 1981, Important Farmlands of Pierce County, Washington;
 - c. Lands which are primarily devoted to the commercial production of horticultural, viticultural, floricultural, dairy, apiary, vegetable, or animal products or of berries, grain, hay, straw, turf, seed, Christmas trees not subject to the excise tax imposed by RCW 84.33.100 through 84.33.140, or livestock, and which have Long-Term Commercial Significance for agricultural production; and
 - d. Lands which are not within 500 feet of lots of record of one acre or less on more than 50 percent of the perimeter of the parcel.

B. Mineral Resource Lands. Mineral Resource Lands shall be identified by the City using the criteria set forth in WAC 365-190-070 as now exists or as may hereafter be amended or modified.

C. Property Adjacent to Resource Lands. All plats, short plats, development permits, and building permits issued for development activities within 500 feet of lands designated as Natural Resource Lands shall contain a notice that a variety of commercial activities may occur that are not compatible with residential development for certain periods of limited duration. (Ord. 04-221 § 1; Ord. 02-200 § 2).

14.120.040 Mineral Resource Lands designation.

A. The City has classified the following areas as potential Mineral Resource Lands.

1. Parcels: 0420164023, 0420164024, 0420164016 (commonly known as Olson); and
2. Parcels: 0420162047, 0420162048 (commonly known as Josties); and
3. Parcels: 0420084072, 0420084002, 0420084005, 0420084069, 0420084068, 0420171073, 0420171057, 0420171000, 0420171059 (commonly known as Fife Sand and Gravel).

B. The City staff shall study each area and prepare a written analysis of each area.

C. The City Council shall review the staff analysis and recommendation(s) and shall, by ordinance, approve, deny, or modify the particular study area designation using the criteria in EMC Section 14.120.060. (Ord. 04-234 § 1).

14.120.050 Natural Resource Lands noticing requirements.

Pursuant to RCW 36.70A.060, the City shall require that all plats, Development Applications, or permits issued for development activities on, abutting, or within 500 feet of lands designated as Natural Resource Lands contain a notice (see Appendices A through C).

A. General. If more than one natural resource land subject to the provisions of this title intersects the subject parcel, then one notice addressing all of the natural resource areas shall be sufficient.

B. Title Notification.

1. When the City determines that activities not exempt from this title are proposed, the owner shall file a notice with the Pierce County auditor in accordance with Appendices A through C of this Chapter. The notice shall provide a public record of the presence of any Sensitive Area; the application of this title to the property; and any limitations on activity in or affecting such Sensitive Area.

2. The notice shall be notarized and recorded with the Pierce County auditor before approval of any regulated use or activity on the site.

C. Plat Notification. For all proposals requiring a plat within any Sensitive Area, the applicant shall note the face of the plat consistent with the language set forth in Appendices A through C of this Chapter.

D. Permit Notification. The Department shall require that all permits issued for Regulated Activities on or within 500 feet of Natural Resource Lands contain a notice as set forth in Appendices A through C. (Ord. 02-200 § 2).

14.120.060 Current use assessment.

A. An owner of Natural Resource Lands or open space desiring current use Classification under Chapter 84.40 RCW may file for such current use Classification.

B. An owner of undeveloped land with Critical Areas which has been placed in a separate tract or tracts, protective easement, public or private land trust dedication, or other similarly preserved area for the protection of these Critical Areas may have that portion of land reviewed for reassessment by the assessor-treasurer's office consistent with those restrictions to determine the fair market value of the land pursuant to RCW 84.40.030.

C. The owner shall notify the assessor-treasurer's office when restrictions on development occur on a particular site, and shall provide a plat map in addition to the following, or other special study documents as may be required by the Department.

14.120.070 Variances and appeals.

Procedures for variances and appeals of an administrative decision issued pursuant to this chapter are set forth in EMC 18.40. (Ord. 02-200 § 2).

14.120.080 Review process.

A. The Department shall review any permit or Application requested for any regulated activity, including, but not limited to, those set forth in EMC Chapter 14.500 on a site which includes, or is within 500 feet of, one or more resource land is located, unless otherwise provided in this title.

B. As part of all development Applications, the Department shall review the information submitted by the applicant to:

1. Confirm the nature and type of the resource land and evaluate any required title, plat, or regulated activity notification;
2. Determine whether the development proposal is consistent with this title; and
3. Determine whether any proposed alterations to the site containing resource lands are necessary.

C. The City may approve, approve with conditions, or deny any development proposal in order to comply with the requirements and carry out the goals, purposes, objectives, and requirements of this title.

D. Approval of a development proposal does not discharge the obligation of the applicant to comply with the provisions of this title. (Ord. 02-200 § 2).

14.120.090 Title, plat, and Regulated Activities notification.

A. If more than one resource land subject to the provisions of this title exists on the site, then one notice addressing all of the resource lands shall be sufficient.

B. Notification shall be approved by the Department and shall be consistent with the forms set forth in EMC 14.120.110, Appendices A through C, as applicable.

C. Title notifications shall be notarized and recorded with the Pierce County auditor prior to approval of any regulated use or activity for the site. (Ord. 02-200 § 2).

14.120.100 Permitted uses.

Uses permitted on designated resource land sites shall be the same as those permitted in the zone Classifications shown on the City zoning map. (Ord. 02-200 § 2).

14.120.110 Appendices.

A. Property Adjacent to Resource Lands.

B. Agriculture Lands Noticing.

C. Mineral Resource Lands Noticing.

APPENDIX A

PROPERTY ADJACENT TO RESOURCE LANDS

A. Title Notification.

Parcel Number: _____

Site Address: _____

NOTICE: This parcel lies within 500 feet of land designated resource lands by Edgewood. A variety of commercial and industrial activities occur in the area that may be inconvenient or cause discomfort to area residents. This may arise from the use of chemicals, or from spraying or extraction which occasionally generates dust, smoke, noise, and odor. The City has established resource uses as priority uses on productive resource lands, and residents of adjacent property should be prepared to accept such inconveniences or discomfort from normal, necessary commercial resource lands operations.

Signature of Owner

(NOTARY ACKNOWLEDGMENT)

B. Plat Notification. The owner of any site within 500 feet of land designated as resource lands on which a large lot, short subdivision, or formal subdivision is submitted, shall record a notice on the face of the plat. Such notification shall be in the form as set forth below:

PROPERTY ADJACENT TO RESOURCE LANDS PLAT NOTIFICATION. This property lies within 500 feet of land designated resource lands by Edgewood. A variety of commercial and industrial activities occur in the area that may be inconvenient or cause discomfort to area residents. This may arise from the use of chemicals, or from spraying or extraction which occasionally generates dust, smoke, noise, and odor. The City has established resource uses as priority uses on productive resource lands, and residents of adjacent property should be prepared to accept such inconveniences or discomfort from normal, necessary commercial resource lands operations.

C. Regulated Activities Notification. The Department shall require that permits issued for regulated activities, as defined in EMC Chapter 14.120, within 500 feet of lands designated as resource lands, contain a notice as set forth below.

REGULATED ACTIVITIES NOTIFICATION. This property lies within 500 feet of land designated resource lands by Edgewood. A variety of commercial and industrial activities occur in the area that may be inconvenient or cause discomfort to area residents. This may arise from the use of chemicals, or from spraying or extraction which occasionally generates dust, smoke, noise, and odor. The City has established resource uses as priority uses on productive resource lands, and residents of adjacent property should be prepared to accept such inconveniences or discomfort from normal, necessary commercial resource lands operations.

APPENDIX B

AGRICULTURAL LANDS NOTICING

A. Title Notification.

Parcel Number: _____

Site Address: _____

NOTICE: This parcel lies within 500 feet of an area identified as Agricultural Lands by Edgewood. A variety of commercial Agricultural Activities occur in the area that may be inconvenient or cause discomfort to area residents. This may arise from the use of agricultural chemicals, including herbicides, pesticides, and fertilizers; or from spraying, pruning, and harvesting which occasionally generate dust, smoke, noise, and odor. Edgewood has established agriculture as a priority use on productive Agricultural Lands, and residents of adjacent property should be prepared to accept such inconveniences or discomfort from normal, necessary farm operations.

Signature of Owner

Signature of Owner

(NOTARY ACKNOWLEDGMENT)

B. Plat Notification. The owner of any site within this designation on which a large lot, short subdivision, or formal subdivision is submitted, shall record a notice on the face of the plat. Such notification shall be in the form as set forth below.

AGRICULTURAL LANDS PLAT NOTIFICATION. This parcel lies within an area identified as Agricultural Lands by Edgewood. A variety of commercial Agricultural Activities occur in the area that may be inconvenient or cause discomfort to area residents. This may arise from the use of agricultural chemicals, including herbicides, pesticides, and fertilizers; or from spraying, pruning, and harvesting which occasionally generate dust, smoke, noise, and odor. The City has established agriculture as a priority use on productive Agricultural Lands, and residents of adjacent property should be prepared to accept such inconveniences or discomfort from normal, necessary farm operations.

C. Regulated Activities Notification. The Department shall require that all permits issued for regulated activities, as defined in EMC Chapter 14.120, within this zone Classification contain a notice as set forth below.

REGULATED ACTIVITIES NOTIFICATION. This parcel lies within 500 feet of an area identified as Agricultural Lands by Edgewood. A variety of commercial Agricultural Activities occur in the area that may be inconvenient or cause discomfort to area residents. This may arise from the use of agricultural chemicals, including herbicides, pesticides, and fertilizers; or from spraying, pruning, and harvesting which occasionally generate dust, smoke, noise, and odor. The City has established agriculture as a priority use on productive Agricultural Lands, and residents of adjacent property should be prepared to accept such inconveniences or discomfort from normal, necessary farm operations.

APPENDIX C

MINERAL RESOURCE LANDS NOTICING

A. Title Notification.

Parcel Number: _____

Site Address: _____

NOTICE: This parcel lies within 500 feet of an area of land designated mineral resource lands by the City. A variety of commercial mineral extraction activities occur in the area that may be inconvenient or cause discomfort to area residents. This may arise from the use of heavy equipment, chemicals, and spraying which may generate dust, smoke, and noise associated with the extraction of mineral resources. Edgewood has established mineral resource extraction as a priority use on productive mineral resource lands, and residents of adjacent property should be prepared to accept such inconveniences or discomfort from normal, necessary mineral resource extraction operations.

Signature of Owner

(NOTARY ACKNOWLEDGMENT)

B. Plat Notification. The owner of any site within this overlay district on which a large lot, short subdivision, or formal subdivision is submitted, shall record a notice on the face of the plat. Such notification shall be in the form as set forth below:

MINERAL RESOURCE LANDS PLAT NOTIFICATION. This property lies within 500 feet of an area of land designated mineral resource lands by the City of Edgewood. A variety of

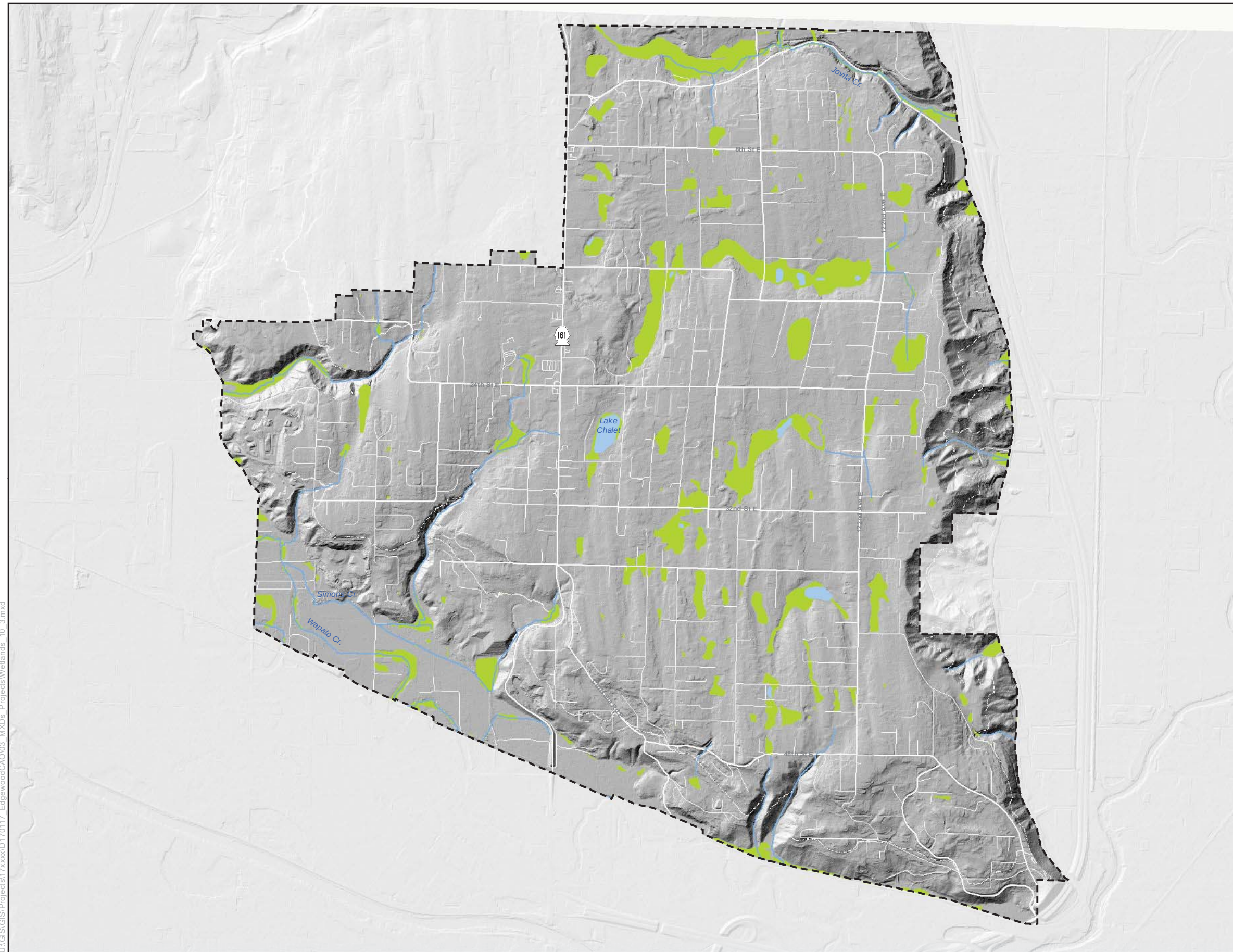
mineral resource extraction activities occur in the area that may be inconvenient or cause discomfort to area residents. This may arise from the use of heavy equipment, chemicals, and spraying which may generate dust, smoke, and noise associated with the extraction of mineral resources. Edgewood has established mineral resource extraction as a priority use on productive mineral resource lands, and residents of adjacent property should be prepared to accept such inconveniences or discomfort from normal, necessary mineral resource extraction lands.

C. Regulated Activities Notification. The Department shall require that all permits issued for regulated activities, as defined in EMC Chapter 14.120, within this designation contain a notice as set forth below:

REGULATED ACTIVITIES NOTIFICATION. This property lies within 500 feet of an area of land designated mineral resource lands by Edgewood. A variety of mineral resource extraction activities occur in the area that may be inconvenient or cause discomfort to area residents. This may arise from the use of chemicals and extraction of minerals, which occasionally generates dust, smoke, noise, and odor. The City has established mineral resource extraction as a priority use on productive mineral resource lands, and residents of adjacent property should be prepared to accept such inconveniences or discomfort from normal, necessary mineral resource extraction lands.

(Ord. 02-200 § 2).

U:\GIS\GIS\Projects\17xxx\170117_EdgewoodCAO\03_MXD\Projects\Wetlands_10_3.mxd



City of
Edgewood

ENVIRONMENTALLY CRITICAL AREAS INVENTORY

Wetlands

-  City Boundary
-  Waterbodies
-  Streams/Drainage Courses
-  Potential Wetlands

0 0.5
Miles

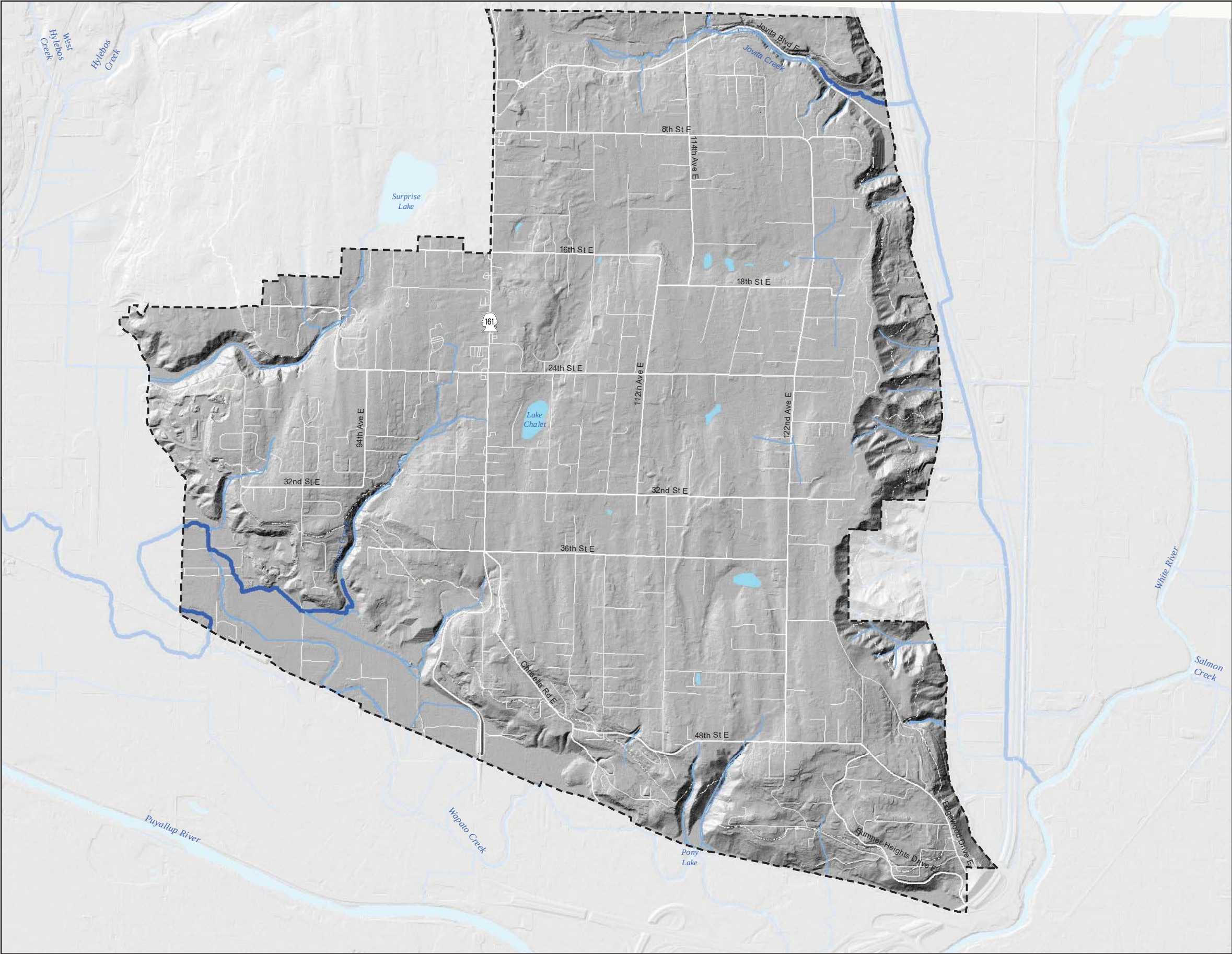


SOURCE: City of Edgewood, 2005 & 2017; Pierce County,
2010 & 2016

This figure is intended for planning purposes only.
Environmentally critical areas layers depicted in this
figure are based on available City of Edgewood,
Pierce County, and Washington State inventory
information, and do not represent surveyed boundaries.
The City makes no representation or warranty as to this
product's accuracy or location of any mapped features.
For more information, contact the City of Edgewood.



U:\GIS\GIS\Projects\17xxxx\170117_Edgewood\CAO\03_MXD\03_Projects\Streams_10_3.mxd



City of
Edgewood

ENVIRONMENTALLY CRITICAL AREAS INVENTORY

Streams

- City Boundary
- Waterbodies
- Untyped Stream/Drainage Course*
- Type F Stream (Fish Bearing)

* Untyped streams, as shown in this map, may be fish bearing. Assessment by WDFW and/or a qualified fisheries biologist may be required to determine fish presence or absence.

0 0.5
Miles



SOURCE: City of Edgewood, 2017; Pierce County, 2017; WDFW, 2017; Puget Sound LiDAR Consortium, 2008

This figure is intended for planning purposes only. Environmentally critical areas layers depicted in this figure are based on available City of Edgewood, Pierce County, and Washington State inventory information, and do not represent surveyed boundaries. The City makes no representation or warranty as to this product's accuracy or location of any mapped features. For more information, contact the City of Edgewood.





City of
Edgewood

ENVIRONMENTALLY CRITICAL AREAS INVENTORY

Frequently Flooded Areas

- City Boundary
- Waterbody
- City Identified Flood Hazard Areas
- FEMA Floodway
- City-Identified Floodway
- FEMA 100-Year Floodplain
- City-Identified 100-year Floodplain

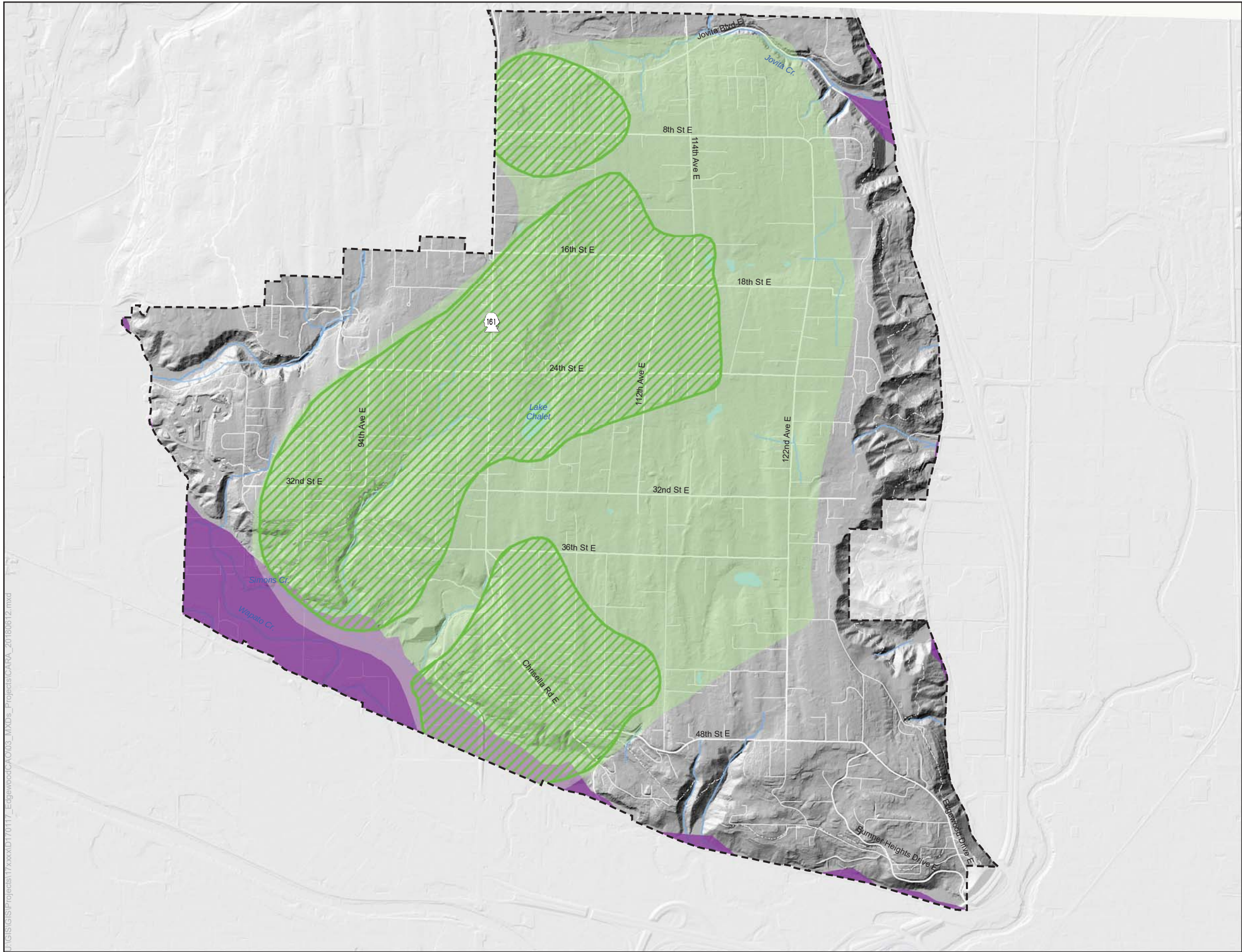
0 0.5
Miles



SOURCE: City of Edgewood, 2005 & 2017; FEMA, 1987;
Puget Sound LiDAR Consortium, 2008

This figure is intended for planning purposes only.
Environmentally critical areas layers depicted in this
figure are based on available City of Edgewood,
Pierce County, and Washington State inventory
information, and do not represent surveyed boundaries.
The City makes no representation or warranty as to this
product's accuracy or location of any mapped features.
For more information, contact the City of Edgewood.





City of
Edgewood

ENVIRONMENTALLY CRITICAL AREAS INVENTORY

Critical Aquifer Recharge Areas

- City Boundary
- Waterbodies
- Streams/Drainage Courses
- Vulnerable Aquifer Recharge Areas
- 10-year Time-of-Travel Zone
- Wellhead Zone of Contribution

0 0.5
Miles



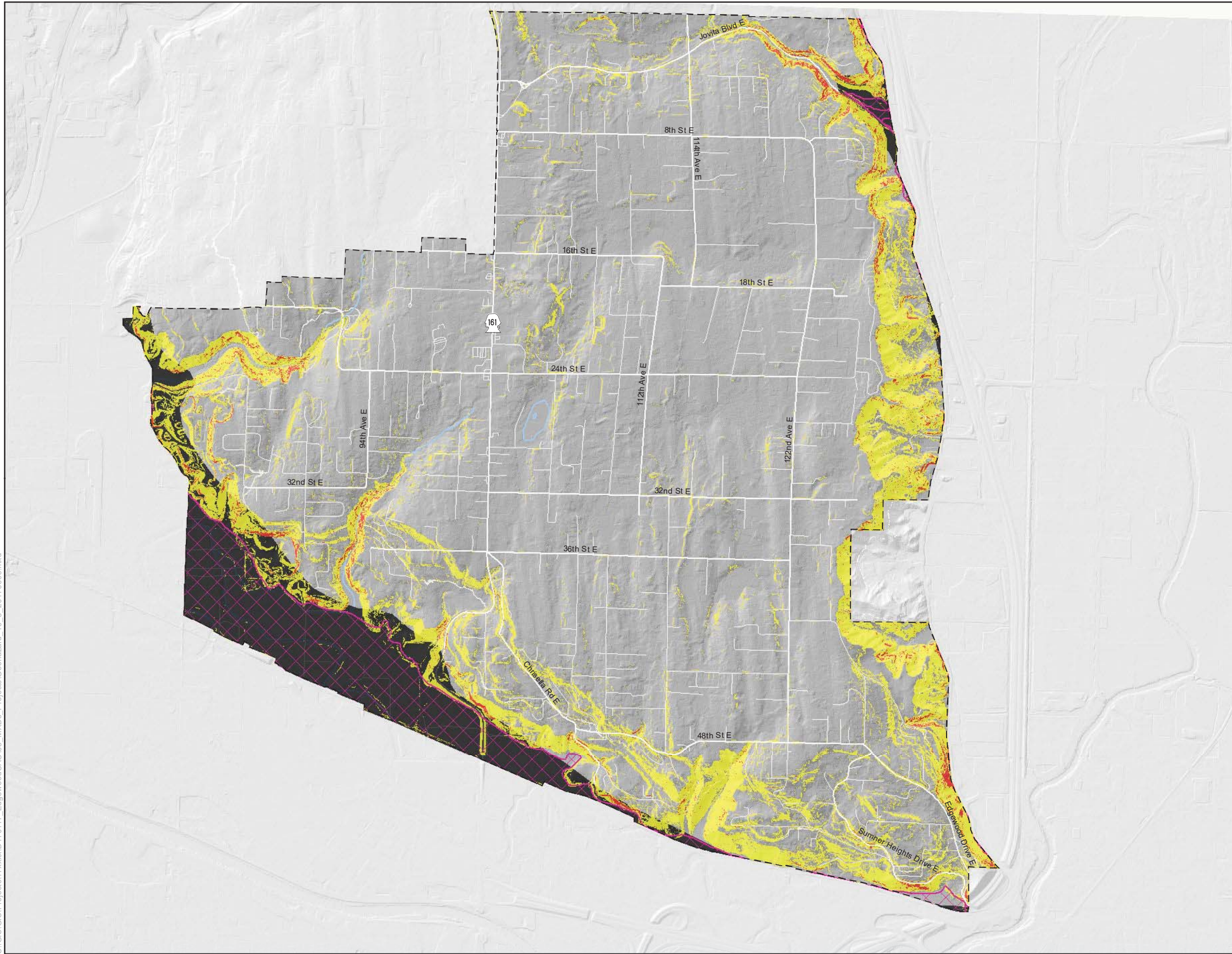
SOURCE: City of Edgewood, 2017; Pierce County, 2015 & 2017; Puget Sound LiDAR Consortium, 2008; Robinson Noble, 2005

This figure is intended for planning purposes only. Environmentally critical areas layers depicted in this figure are based on available City of Edgewood, Pierce County, and Washington State inventory information, and do not represent surveyed boundaries. The City makes no representation or warranty as to this product's accuracy or location of any mapped features. For more information, contact the City of Edgewood.



Revised: 06/12/2018

U:\GIS\GIS\Projects\17xxx\170117_Edgewood\CAO\03_MXD\Projects\Geohazard_10_3_2017\0606.mxd



City of
Edgewood

ENVIRONMENTALLY CRITICAL AREAS INVENTORY

Geologically Hazardous Areas

-  City Boundary
-  Steep Slope Indicator
-  Landslide Hazard Indicator
-  Liquefaction and Dynamic Settlement Hazard Areas
-  Volcanic Hazard

0 0.5
Miles



SOURCE: Pierce County, 2005 & 2012; WDNR, 2004;
Puget Sound LiDAR Consortium, 2008

This figure is intended for planning purposes only. Environmentally critical areas layers depicted in this figure are based on available City of Edgewood, Pierce County, and Washington State inventory information, and do not represent surveyed boundaries. The City makes no representation or warranty as to this product's accuracy or location of any mapped features. For more information, contact the City of Edgewood.



ORDINANCE NO. 17-0513

AN ORDINANCE OF THE CITY OF EDGEWOOD, WASHINGTON, RELATING TO COMPLIANCE WITH THE GROWTH MANAGEMENT ACT (GMA), CHAPTER 36.70A RCW, INCORPORATING THE CITY'S MANDATORY UPDATE OF ITS CRITICAL AREAS REGULATIONS, AS REQUIRED BY RCW 36.70A.130(7)(B); REPEALING TITLE 14 – CRITICAL AREAS OF THE EDGEWOOD MUNICIPAL CODE (EMC) AND REPLACING IT WITH A NEW TITLE 14; REPEALING EMC CHAPTER 15.10, PROVIDING FOR SEVERABILITY; AND ESTABLISHING AN EFFECTIVE DATE.

WHEREAS, the Washington Growth Management Act (GMA) requires the adoption of development regulations that designate and protect Critical Areas in accordance with RCW 36.70A.60 and RCW 37.70A.170; and

WHEREAS, as defined by the GMA in RCW 36.70A.030(5): "Critical areas" include the following areas and ecosystems: (a) Wetlands; (b) areas with a critical recharging effect on aquifers used for potable water; (c) fish and wildlife habitat conservation areas; (d) frequently flooded areas; and (e) geologically hazardous areas; and

WHEREAS, the City of Edgewood is required to review its Critical Area regulations periodically and revise them if needed to comply with the requirements of RCW 36.70A; and

WHEREAS, cities are required to include the best available science in developing policies and development regulations to protect the functions and values of critical areas; and

WHEREAS, The Department of Commerce, Growth Management Services, and the state Department of Ecology have provided helpful guidance on addressing the GMA's best available science requirements; and

WHEREAS, the language contained in EMC Chapter 15.10 – Flood Damage Prevention has been incorporated into the new Title 14 under Chapter 14.80; and

WHEREAS, the City's SEPA Responsible Official determined that this Ordinance does not have a probable significant adverse impact on the environment and issued a Determination of Nonsignificance (DNS) pursuant to WAC 197-11-340(1) on September 8, 2017; and

WHEREAS, on March 30, 2018, the City sent a copy of this ordinance to the Washington State Department of Commerce, as required by RCW 36.70A.106(1); and

WHEREAS, the Planning Commission held a Public Hearing to receive public testimony regarding the Proposed Code Amendment at their April 16, 2018 meeting; and

WHEREAS, after the public hearing, the Planning Commission submitted a formal recommendation the City Council; and

WHEREAS, the City Council considered this ordinance and the Planning Commission's recommendation during its regular City Council meeting of May 8, 2018; and

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF EDGEWOOD, WASHINGTON, DO ORDAIN AS FOLLOWS:

- Section 1.** Repealers. The current EMC Title 14 – Critical Areas is hereby repealed in its entirety.
- Section 2.** Repealers. The current EMC Chapter 15.10 – Flood Damage Prevention is hereby repealed in its entirety.
- Section 3.** Code Replacement. The new EMC Title 14 – Critical Areas, attached as Exhibit A, is hereby adopted by the City Council of the City of Edgewood and shall be codified as such.
- Section 4.** Severability. Should any section, paragraph, sentence, clause or phrase of this ordinance, or its application to any person or circumstance be declared unconstitutional or otherwise invalid for any reason, or should any portion of this ordinance be preempted by state or federal law or regulation, such decision or preemption shall not affect the validity of the remaining portions of this ordinance or its application to other persons or circumstances.
- Section 5.** Effective Date and Publication. This ordinance shall take effect and be in full force five (5) days after publication, as provided by law.

ADOPTED BY THE CITY COUNCIL ON THE __TH DAY OF _____, 2018.

Daryl Eidinger, Mayor

ATTEST/AUTHENTICATED:

Rachel Pitzel, City Clerk

APPROVED AS TO LEGAL FORM:

Carol Morris, CITY ATTORNEY

DATE OF PUBLICATION:

EFFECTIVE DATE:



City Of Edgewood Council Agenda Summary Sheet

SUBJECT: Comprehensive Surface Water Management Plan Update Remaining Schedule and Status	Agenda Item #:	2D
	For Agenda of:	July 3, 2018
	Prepared by:	Jeremy Metzler
ATTACHMENTS (list): ☒ DRAFT SWMP Update (dated April 25, 2018) ☒ Mt. View – Edgewood Water Co. Comments with Responses		
Approval of Materials:		
Mayor, Daryl Eidinger	☐	Expenditure Required: N/A
Asst. City Administrator, Dave Gray	☐	Amount Budgeted: N/A
City Attorney, Carol Morris	☐	Appropriation Required: N/A
City Clerk, Rachel Pitzel	☐	Timeline: Public Hearing – August 14, 2018 Ord. Adoption – August 28, 2018
Community Development Director, Darren Groth	☐	
Public Works, Jeremy Metzler	☒	
Fiscal Note/Consideration: The Surface Water Management Plan (SWMP) Update is fully paid for with Surface Water Utility Funds. The Capital Improvement Plan and rate analysis components of this update will recommend revisions to the City's Surface Water Rates, and there are several opportunities scheduled for public input and discussion before any such revisions are made.		
SUMMARY STATEMENT: The City's consultant, Herrera, recently released a complete draft of the comprehensive SWMP update that has been in progress since Spring 2017. The draft was provided to Mt. View – Edgewood Water Company for review and comment, and attached are said comments with City responses. The draft is posted on the City's website for public review and comment, and a public information meeting was held Thursday, June 28. We plan to review the draft with the Planning Commission on July 9 for further discussion, comment and direction. A final draft of the SWMP update will be brought to Council for consideration by August 7, including final recommendations for the Capital Improvement Plan and future Surface Water Rates. As presented to Council at the May 1, 2018 Study Session by FCS Group, existing Surface Water Rates barely cover ongoing operations and maintenance costs and do not adequately fund proposed capital improvements. Updating the SWMP plan and Surface Water Rate Ordinance is necessary to ensure a viable utility over the long-term, which manages both ongoing maintenance and capital improvement needs.		
COUNCIL COMMITTEE REVIEW AND RECOMMENDATION: N/A – Planning Commission to review July 9, 2018.		
RECOMMENDED ACTION: Discuss and provide feedback on draft for consultant consideration in capital improvement program refinement and final draft preparation, to be presented to Council for further review by August 7, 2018.		
ALTERNATIVES TO RECOMMENDED ACTION: 1) Forward to Study Session for further review		

COMPREHENSIVE SURFACE WATER MANAGEMENT PLAN – CITY OF EDGEWOOD



Prepared for
City of Edgewood
Public Works Department

Prepared by
Herrera Environmental Consultants, Inc.



Note:

Some pages in this document have been purposely skipped or blank pages inserted so that this document will copy correctly when duplexed.

COMPREHENSIVE SURFACE WATER MANAGEMENT PLAN – CITY OF EDGEWOOD

Prepared for
City of Edgewood



Public Works Department
2224 104th Avenue East
Edgewood, Washington 98372

Prepared by
Herrera Environmental Consultants, Inc.
1220 Fourth Avenue Northeast
Olympia, Washington 98506
Telephone: 360-292-1221

DRAFT
April 25, 2018

CONTENTS

Acknowledgements.....	v
1. Introduction.....	1
1.1. Purpose of this Plan	2
1.2. Regulatory Drivers	2
1.3. Goals and Policies	3
1.4. Plan Development	5
2. Study Area Characteristics	7
2.1. Drainage Basin Characteristics	7
2.2. Geology and Soils	12
2.3. Land Use and Zoning.....	12
2.4. Surface Water Resources.....	20
2.4.1. Streams	20
2.4.2. Closed Depression Basins or Potholes.....	23
2.5. Critical and Hazard Areas.....	25
2.5.1. Wetlands, Riparian Habitat, and Salmon Bearing Streams.....	25
2.5.2. Natural Hazards	29
2.5.3. Groundwater Resources	31
2.6. Expected Future Conditions.....	33
2.6.1. Climate Change.....	33
2.6.2. Population Growth and Annexations	35
2.7. Stormwater System Characteristics	36
2.7.1. Stormwater System Features.....	36
2.7.2. Stormwater System Maintenance	36
3. Identified Problems and Recommendations	39
3.1. Pothole Flooding.....	39
3.1.1. Edgewood Bowl Pothole	42
3.1.2. Lake Chalet Pothole	42
3.1.3. Pinedale Pond/114th Avenue Pothole.....	42
3.1.4. 108th Avenue Pothole.....	43
3.1.5. Surprise Lake Pothole.....	43
3.1.6. 122nd Avenue Pothole.....	43
3.2. Stream Planning and Protection	43

3.3. Other Identified Flooding Projects	44
3.4. Program Review and Updates.....	45
4. Stormwater Management Program	47
4.1. NPDES Phase II Permit Compliance	47
4.1.1. Public Education and Outreach	48
4.1.2. Public Involvement and Participation.....	49
4.1.3. Illicit Discharge Detection and Elimination (IDDE)	49
4.1.4. Controlling Runoff from New Development, Redevelopment, and Construction Sites.....	50
4.1.5. Municipal Operations and Maintenance.....	51
4.1.6. Compliance with Total Maximum Daily Loads (TMDLs).....	52
4.1.7. Monitoring and Assessment	53
4.1.8. Reporting	53
4.1.9. Preparation for the Next Permit	53
4.2. Underground Injection Control (UICs).....	55
4.3. Asset Management.....	56
4.4. Preparing for Climate Change.....	57
5. Plan Implementation.....	59
5.1. Stormwater Program Activities	59
5.2. Staffing and Responsibilities.....	65
5.3. Equipment Resources.....	65
5.4. Capital Improvement Program	66
6. References.....	71

APPENDICES

Appendix A	Technical Memorandum: City of Edgewood Stormwater Program Gap Analysis and Needs Assessment
Appendix B	Characteristics of Edgewood's Closed Depression Basins or Potholes
Appendix C	Project Summary Sheets (for projects scheduled for implementation under this plan)
Appendix D	Subbasin Inventory Data for Edgewood

TABLES

Table 2-1.	Drainage Basin Size and Impervious Surface Characteristics.....	8
Table 2-2.	Land Use Characteristics and Percent of Edgewood Zoned for each Category in 2015.....	15
Table 2-3.	Zoning Designations by Drainage Basin in Edgewood.....	17
Table 2-4.	Catchment Size, Pothole Size, and Flooded Area Comparison.....	23
Table 2-5.	Critical Areas in Edgewood Drainage Basins.....	27
Table 2-6.	Predicted Climate Change for Edgewood Area (interpreted from Mauger et al. 2015).....	34
Table 2-7.	Expected Responses to Stormwater Management Components from Predicted Climate Change Effects.....	35
Table 2-8.	Summary of Key Features of the City of Edgewood's Stormwater System.....	36
Table 3-1.	CIP Projects Identified to Address Pothole Flooding. ^a	41
Table 3-2.	CIP Projects Related to Stream Protection and Planning. ^a	43
Table 3-3.	CIP Projects Related to Localized Flooding.....	44
Table 5-1.	High Priority Program Activities and Costs.....	60
Table 5-2.	Lower Priority Programs Activities and Costs.....	62
Table 5-3.	Anticipated Future Required Program Needs and Tasks.....	64
Table 5-4.	Current (2017) and Recommended City of Edgewood SWMP Staff Support.....	65
Table 5-5.	Capital Improvement Project (CIP) List for Edgewood's Stormwater Plan.....	67

FIGURES

Figure 2-1. Subbasin Boundaries in the City of Edgewood.....	9
Figure 2-2. Geologic Units as Mapped for the City of Edgewood.....	14
Figure 2-3. 2015 Mapped Zoning Designations in the City of Edgewood.	19
Figure 2-4. Surface Water Features in the City of Edgewood.....	21
Figure 2-5. Wetlands and Salmon Bearing Streams.....	26
Figure 2-6. Mapped Flood and Landslide Hazards in the City of Edgewood.....	30
Figure 2-7. Vulnerable Aquifer Recharge Areas and Wellhead Protection Areas.	32
Figure 2-8. Mapped Stormwater System Infrastructure in the City of Edgewood.....	37
Figure 3-1. Locations of Proposed Stormwater Capital Improvement Projects.....	40
Figure 5-1. Comparison of Population Densities for Nearby Small Cities.	69
Figure 5-2. Stormwater Fee Revenue Generated from Non-Residential Customers as a Percent of Total Fee Revenue.	70

ACKNOWLEDGEMENTS

This Comprehensive Surface Water Management Plan was produced through the combined efforts, ideas, and cooperation of the following Edgewood City staff, appointed and elected officials, and consultants.

City of Edgewood

Daryl Eiding	Mayor
Dave Gray	Assistant City Administrator
Jeremy Metzler, PE	Public Works Director
Darren Groth	Community Development Director
Mark Creley	City Council
Luke Meyers	City Council
Tyron Christopherson	City Council
Rosanne Tomin	City Council
Stephanie (Shook) Hunter	City Council
John C. West	City Council
Nate Lowry	City Council

Consultants

Herrera Environmental Consultants, Inc.

Joy Michaud	Project Manager/Plan Development
Matt Fontaine	CIP Development and Prioritization
Meghan Mullen	Engineering and Plan Support
Brian Busiek	CIP Design Review
Jennifer Schmidt	Geographic Information Systems Lead
Rebecca Dugopolski	Data Gaps and Needs Assessment Analyst

FCS Group

John Ghuilarducci	Financial Analysis Project Manager
Tage Aker	Financial Analysis Support
Mathew Hobson	Financial Analysis Support

Associated Earth Sciences, Incorporated

Curtis Koger	Hydrogeologist
--------------	----------------

1. INTRODUCTION

Historically, stormwater management referred to management of underground pipes and conveyance networks to enhance draining and reduce flooding. However, urban development over the past century has adversely affected both the volume of runoff generated and the quality of that stormwater runoff. The increased volume of runoff generated can impact erosion, flooding, and stream flows, as well as reduce groundwater recharge. The increased delivery of pollutants can impact stream and groundwater quality and therefore the health of aquatic life and the condition of our drinking water. As a consequence, stormwater management at a city level has become more complex and includes many components, from maintaining the infrastructure of pipes, catch basins, and treatment devices, to programs to educate residents and businesses about reducing pollutants, to creating ways to reduce the volume of stormwater generated and the amount of pollutants it carries.

The National Pollutant Discharge Elimination System (NPDES) is the program that addresses impacts from discharge of pollutants from sources such as stormwater. In Washington State the NPDES program is administered by the State Department of Ecology (Ecology) through authorization from the United States Environmental Protection Agency (EPA). The City of Edgewood's (City) stormwater program is regulated via Ecology's Phase II Western Washington Municipal Stormwater Permit (the Permit). The Permit includes extensive requirements related to stormwater program management, system design requirements, operations and maintenance, and more. In addition to the Permit, the City has obligations associated with the Puyallup River Total Maximum Daily Load (the TMDL) that relate to the management of stormwater.

Effective stormwater management can control runoff to create a developed landscape that behaves more like pre-development conditions by retaining runoff and by providing stormwater treatment. This Comprehensive Surface Water Management Plan (CSWMP) lays out a stormwater management program that reflects the unique features of Edgewood's environment, meets the needs of current and anticipated regulatory requirements (primarily requirements of the NPDES program), and identifies Capital Improvement Program (CIP) projects that address existing problems. It also outlines the staffing, equipment and financial resources needed for the City to fully implement the plan.



Public involvement.

1.1. PURPOSE OF THIS PLAN

The purpose of this plan is to guide the City's stormwater management program in a manner that protects public and private infrastructure; provides protection for natural resources; is consistent with applicable local, state, and federal regulations; and establishes an equitable stormwater utility rate that reflects these needs. The plan:

- Establishes goals for stormwater management in the city (Section 1)
- Provides background information on the area and stormwater system (Section 2)
- Describes stormwater and surface water problems the City is experiencing and potential solutions (Section 3)
- Describes the different components of the stormwater management program and recommendations for improvement (Section 4)
- Provides a plan for implementation that identifies resource needs and focuses on efficient use of limited resources (Section 5)
- Provides a financial analysis to support the highest priority needs (Section 6)

The information provided in the different sections of this report is supported by a number of appendices:

- Appendix A provides detail on the City's existing stormwater program and provides detailed recommendations for improvement.
- Appendix B summarizes size and flooding characteristics of Edgewood's potholes.
- Appendices C and D contain project summary sheets and cost estimates for each of the CIP projects identified during this planning effort.
- Appendix D contains the subbasin inventory for the City, essentially a compilation of the GIS data derived for each of the subbasins.

1.2. REGULATORY DRIVERS

Due to the critical importance of stormwater and its relationship to the protection of natural resources there are many regulatory drivers, the following describes those that are most relevant to the development of this CSWMP:

- The primary regulatory driver for Edgewood's stormwater program is, and will continue to be, the Permit. The Permit is driven by the federal Clean Water Act. It has extensive requirements related to stormwater program management, system design requirements,

operations and maintenance, and more. Section 4 of this CSWMP details the specific Permit requirements and their impact on the City's CSWMP. (The existing Permit became effective in August 2013 and covers the years from 2013 -2019. This comprehensive plan will also be in effect for the as yet to be approved 2019 Permit. Preliminary draft language that has been released for the 2019–2023 NPDES Phase II Permit (Ecology 2017). The draft includes significant changes in terms of requirements related to watershed planning, characterization of outfalls, and expansion of source control programs.

- State surface water and groundwater quality standards require the City to manage discharges from stormwater systems in a manner that supports achieving these standards.
- There is a Total Maximum Daily Load (TMDL) for the Puyallup watershed which includes Jovita Creek; a stream for which a small part flows through Edgewood. In addition to participating in the TMDL Implementation group, the TMDL requires that Edgewood implement Illicit Discharge Detection Elimination (IDDE) activities in the Jovita Creek basin.
- The federal Endangered Species Act (ESA) protects listed species and prohibits activities that might result in a loss or "take" of a listed species. This includes activities related to the City's stormwater program.
- The Washington State Growth Management Act (GMA) requires the City to inventory and protect environmentally critical areas (such as steep slopes, wetlands, and streams) (Chapter 36.70A of the Revised Code of Washington). The GMA also requires the City to develop comprehensive plans to ensure environmentally responsible and economically sustainable development, including planning for stormwater-related capital facilities. The state regulation addressing Underground Injection Control (UIC) wells defines how wells will be assessed and constructed and requires extra protection for those determined to be a high threat to groundwater. Many stormwater facilities are defined as wells if they infiltrate directly to the ground.
- Several sections of the Edgewood Municipal Code (EMC) govern aspects of stormwater management for new development and redevelopment project sites.

1.3. GOALS AND POLICIES

The following goals and policies from the City's Comprehensive Plan are relevant to this CSWMP and the operations of the stormwater utility.

- Goal NA.II. Protect and enhance water quality.
- Goal NA.V. Minimize risks to people, property, and the environment posed by geological and flood hazard areas.

- Goal U.I. Ensure the location and design of utility facilities meets the community's needs.
- Goal U.II. Support the provision of quality utility services that are reliable, efficient, and financially and environmentally sustainable.
 - o Policy U.II.c. Support timely expansion, maintenance, and replacement of utility facilities.
 - o Policy U.II.d. Encourage the use of new technologies that will enhance the quality of utility services, and that are financially feasible and consistent with community needs.
 - o Policy U.II.e. Support improvements in utility services that support local businesses and economic development.
 - o Policy U.II.f. Encourage public education that reduces demand for utility services.
- Goal U.III. Work with regional partners to address regional utility issues.
- Goal CF.II. Provide adequate capital facilities that address past deficiencies, meet the needs of growth, and enhance the quality of life through acceptable level of service.
- Goal CF.III. Ensure that planned capital facilities are financially feasible.
- Goal CF.IV. Design and locate capital facilities with features and characteristics that support the environment, energy efficiency, aesthetics, technological innovation, cost-effectiveness, and sustainability.
- Goal CF.V. Maintain capital facilities so that they are reliable, functional, safe, sanitary, clean, attractive, and financially sustainable.
- Goal LU.III. Promote development that respects and preserves the natural environment.
 - o Policy LU.III.f. Protect the quality and quantity of water resources.
- Goal PR.V. Protect and manage natural areas for the enjoyment of current and future generations.

The following additional goals have been developed to guide the City's CSWMP. They support actions that will reduce flooding impacts, ensure stormwater is managed efficiently, and protect water resources:

- Implement, improve, and refine (adaptively manage) a surface water management program that protects the natural environment, reflects current regulations, is fiscally responsible, and that meets sustainability goals of the City.

- Build, maintain and repair the City's stormwater infrastructure in a cost-effective manner that supports attainment of the flow, water quality and financial goals of this surface water management plan.
- Ensure the regulations, policies, and guidance documents that provide the framework for the City's stormwater program (the stormwater manual, stormwater comprehensive plan, and City municipal code) are regularly updated.
- Operate the stormwater management program within the constraints of the stormwater utility budget and through active collaboration with other programs, agencies, and through leverage of other funding mechanisms.
- Comply with all applicable requirements from federal, state, and local governments related to water resource protection.
- Protect surface waters from the impacts of increased pollutant loads, flooding and erosion through fully supporting requirements of the adopted stormwater manual and by encouraging practices that reduce use of pesticides, fertilizers, and other contaminants and education to support proper disposal of wastes.
- Protect groundwater resources and supplies by regulating land use activities, requiring a higher level of stormwater treatment within wellhead protection areas, encouraging practices that promote responsible infiltration, preserve native soils and vegetation, and by encouraging use of low-impact vegetation.
- Guide regional development of the stormwater management and resource protection framework through participation in local and regional management and planning groups.
- Encourage engagement of the public in stormwater management through providing education, opportunities for involvement and stewardship, and soliciting public input to the stormwater management program.
- Focus on public education and training as first steps in addressing stormwater concerns and enforcement as needed.
- Prioritize the most beneficial and cost-effective projects and programs to ensure that available resources are used efficiently.
- Implement an equitable and logical stormwater utility rate structure.

1.4. PLAN DEVELOPMENT

The first step in development of this plan was to review the previous Surface Water Management Plans. Generally, earlier plans identified a similar series of problems including;

erosion in streams, local conveyance flooding issues, steep slopes, and flooding of closed depression basins (potholes). During this initial data and document review stage, GIS and other pertinent data was acquired and reviewed in preparation for the project kickoff workshop.

City staff from multiple departments and key members of the consultant team attended a plan development workshop. The purpose of the workshop was to gather information on general background conditions in the city, the existing stormwater system, recent and planned stormwater facilities; and to discuss how the City is addressing meeting different components of the Permit. In addition, the team developed a list of problems and needs. In preparation for the workshop a detailed questionnaire about the City's stormwater program was distributed to participants to help gather staff input and perspectives on a consistent set of questions. The findings from the questionnaire were used to facilitate the workshop.

Following the workshop, progress toward development of this plan occurred on five fronts

- Background characterization data was obtained and summarized to form the framework for the CSWMP.
- An evaluation of data gaps and needs related to complying with the Permit was carried out.
- CIP's were identified and prioritized through discussions with the City and conceptual designs were prepared.
- A more detailed study (feasibility assessment) was developed for potentially discharging treated stormwater to the ground and a grant application was prepared to support the effort.
- A summary of staffing, equipment, and budget needs to support the program and the highest priority CIPs was provided to the City to support preparation of the financial assessment. (A full financial assessment will be provided in a separate report.)

Information from these different efforts was then used to develop this CSWMP and to lay out a plan for its implementation.

2. STUDY AREA CHARACTERISTICS

Edgewood is located in Pierce County and is bordered by the cities of Puyallup, Sumner, Pacific, Fife, and Milton, and by areas of unincorporated King and Pierce Counties. The city encompasses approximately 8.5 square miles (5,540 acres). Most (80 percent) of the city is situated on the top of a steep sided plateau called the North Hill Plateau, while the remainder lies in the Puyallup River valley. The 2010 Census estimate of the city's population was 9,387. Edgewood's estimated population in 2015 was 10,734, representing a 9 percent growth over the six-year period (US Census Bureau 2016).

2.1. DRAINAGE BASIN CHARACTERISTICS

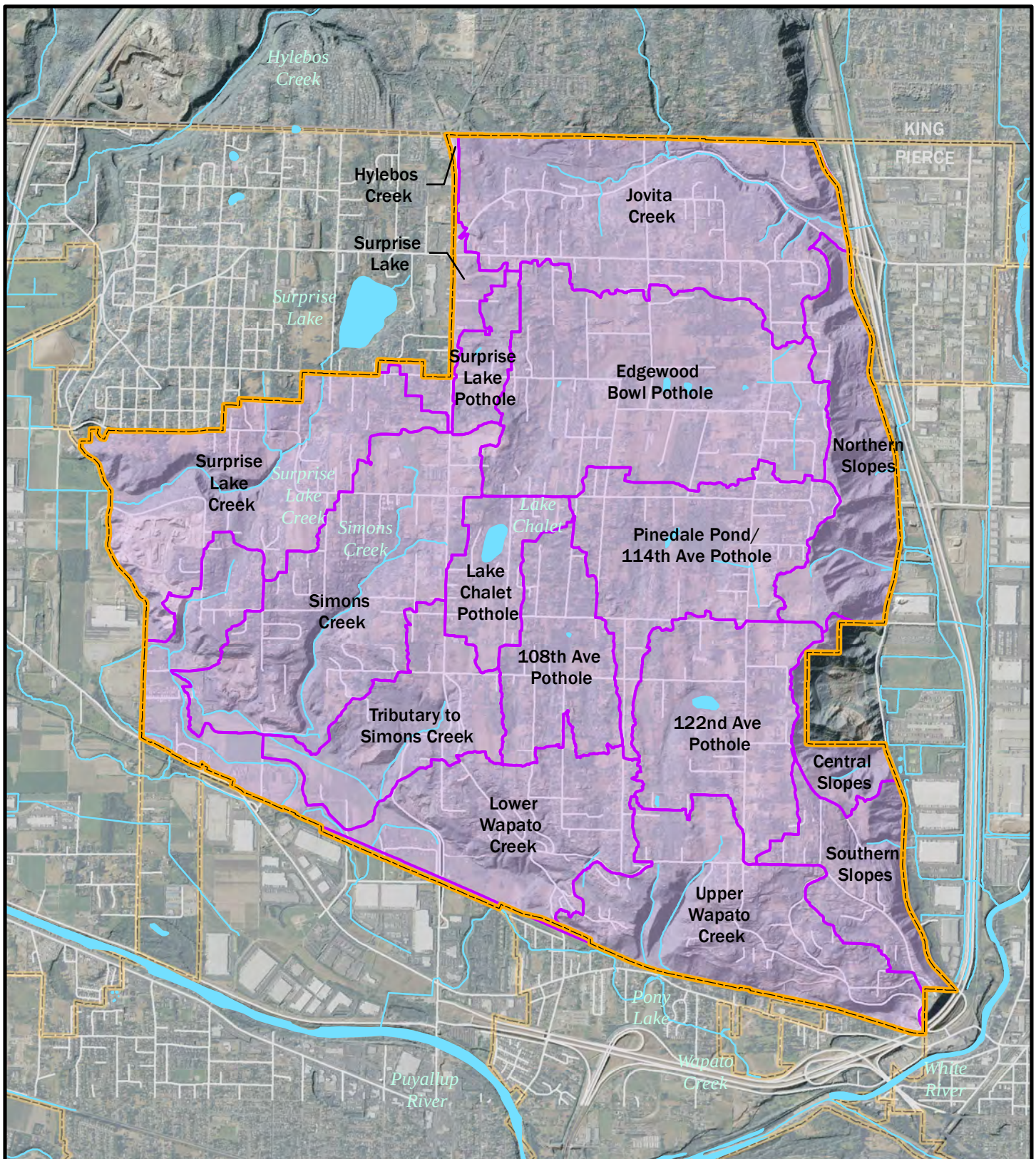
In the previous surface water management plan (Kato & Warren 1997), the city was divided into 14 subbasins delineated to the extent known by their hydrologic boundaries. Those subbasins have been revised slightly and re-sorted into 18 drainage subbasins using more recent Lidar mapping (Table 2-1 and Figure 2-1). These 18 subbasins have been divided into seven groups that reflect the either the main perennial stream basin that they are affiliated with or their similar geographic features.

Most of the project area is characterized as a plateau ranging from 300 to 500 feet in elevation with steep slopes to the west, south, and east above flat river valley floodplains around 40 to 70 feet in elevation. As described in the sections below, many of the subbasins convey water from the plateau through steep ravines to the valley bottom, which results in erosion and sedimentation concerns. Another feature of the city is that much of the plateau area is characterized by several closed depressions, known locally as potholes, which collect water during the wet season, frequently resulting in flooded roads, property, and houses during wet winters.

Table 2-1. Drainage Basin Size and Impervious Surface Characteristics.			
Basin Group/ Subbasins	Area Within the City (acres)	Impervious Surface	
		(acres)	(percent)
White River Basin			
North Slopes	274.3	23.1	8%
Central Slopes	75.2	3.7	5%
Southern Slopes	194.0	62.1	32%
Jovita Creek Basin			
Jovita Creek	622.4	121.1	19%
Puyallup River Basin			
Upper Wapato Creek	444.6	82.7	19%
Wapato Creek Basin			
Lower Wapato Creek	576.6	133.0	23%
Simons Creek Basin			
Simons Creek	529.2	130.5	25%
Tributary to Simons Creek	261.3	39.1	15%
Hylebos Creek Basin			
Surprise Lake Creek	474.7	86.3	18%
Surprise Lake	62.3	22.7	36%
Hylebos Creek	4.7	2.9	62%
Pothole Basins			
Edgewood Bowl Pothole	656.0	136.0	21%
Lake Chalet Pothole	136.0	36.5	27%
Pinedale Pond/114th Avenue Pothole	384.3	83.5	22%
108th Ave Pothole	225.9	49.2	22%
122nd Ave Pothole	347.7	60.5	17%
Surprise Lake Pothole	73.8	17.8	24%
Total	5,343.0	1,090.6	20%

White River Basin

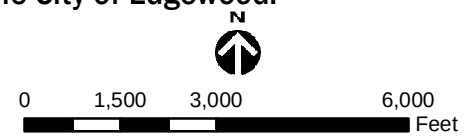
The White River basin includes three subbasins: the North, Central, and Southern Slopes, which drain from the eastern edge of the city. They are similar in size and geography. Each subbasin consists of three distinct topographical areas: a small portion of the upland plateau, the steep slopes, and the flat lowland plain. Surface flow from these subbasins is carried to the White River via culverts, overland flow, and roadside ditches. The steeply sloped areas are mostly undeveloped and covered by second- or third-growth trees and brush. The flatter areas on the plateau are more developed, but this area comprises only a small portion of the basin. The steep, sandy side slopes have formed deep ravines. As would be expected due to the steep slopes, erosion and sedimentation are problematic and may increase as development within the basin increases.



Legend

- Edgewood City limits
- County boundary
- City limits
- Subbasin
- Waterbody
- Road

Figure 2-1.
Subbasin Boundaries
in the City of Edgewood.



Source: Herrera

Jovita Creek Basin

Jovita Creek basin is located in the northeast section of the city. It is one of the largest basins within the city; however, most of the contributing area lies outside of the city. Similar to other basins in Edgewood, a portion of the basin in the uplands (elevation above 300 feet) and a narrow, steep stream corridor leading to the valley floor (elevation around 70 feet).

The drainage basin for Jovita Creek is approximately 2.9 square miles; the majority of which extends north of Edgewood into unincorporated King County, approximately one third of the drainage basin (0.9 square miles) lies within the city. There are two main tributaries to Jovita Creek. The southern tributary is located north of Edgewood, east of Meridian Avenue and flows from a large wetland complex. The other tributary encompasses a much larger drainage area including Spider Lake, Fivemile Lake, and Trout Lake. Trout Lake in King County is an important source of base flow to the stream.

Except for the commercial area along Meridian Avenue East and Eighth Street East and the agricultural area on the valley floor, only few small subdivisions have been developed within the subbasin and within city limits. The large portion of the subbasin within unincorporated King County and the city of Pacific is more heavily developed. Thus, upstream watershed use that is outside of the City's purview is a driving factor in the condition of this subbasin.

Within the city, the main stem of Jovita Creek flows in a steep-sided canyon. At the mouth of the canyon, the stream flows adjacent to Jovita Creek Boulevard before its confluence with the Milwaukee Ditch (Soatan Creek), which flows southerly to the White River. The adjacent hill slopes in the canyon are subject to frequent slides caused by runoff from the plateau above, tree falls, unstable slopes, and high flows in the creek. Jovita Boulevard East has been washed out on several occasions due to flooding and sediment discharge from Jovita Creek.

Puyallup River Basin

The Puyallup River basin is the discharge point for the Upper Wapato Creek subbasin. A portion of this subbasin is located on the plateau. There is a very steep section with multiple steep ravines draining from the plateau toward the Pony Lake area, but the topography toward the east (in the southeastern corner of the city) is more moderately sloped as it moves from the plateau to the valley floor.

Wapato Creek Basin

The Wapato Creek basin within the city of Edgewood includes only the Lower Wapato Creek subbasin because the stormwater conveyance system has directed subbasins that might naturally have been directed toward Wapato Creek to the Puyallup. This subbasin conveys runoff from the south central area of the city to Wapato Creek. Similar to the other subbasins in Edgewood, the Lower Wapato Creek subbasin includes an upland region located on the plateau area that is connected to the valley by steep slopes. The sloped area remains undeveloped and

covered by second- or third-growth trees and brush. The most development in the basin occurs downstream in the flat valley. Erosion and sedimentation are concerns as the water is conveyed through the deep ravines on the steep slopes and this may increase as development within the plateau area of the basin increases.

Simons Creek Basin

Simons Creek basin includes two subbasins: Simons Creek, and Tributaries to Simons Creek. These two subbasins are located entirely within city limits in the southwest area of the city. Like much of Edgewood, most of the contributing area to these subbasins is situated on the plateau with a narrow, steep stream corridor leading to the valley floor. The most significant drainage feature in these subbasins is Simons Creek. The residential and commercial areas along Meridian Avenue comprise most of the impervious area in the basin.

Hylebos Creek Basin

The Hylebos Creek basin includes the Surprise Lake Creek, Surprise Lake, and Hylebos Creek subbasins. These subbasins are located in the northwest corner of the city. Surprise Lake subbasin is upstream of Surprise Lake and Surprise Lake Creek is downstream of the lake, all of it flows to Hylebos Creek. Surprise Lake itself (and much of the Surprise Lake subbasin) is located outside of the city of Edgewood in the city of Milton, along with most of the Hylebos Creek basin. The Surprise Lake and Surprise Lake Creek subbasins convey water from a fairly large drainage area on the upland plateau and then through the narrow, steep corridor of Surprise Lake Creek. Except for the commercial area along Meridian Avenue East, most of the subbasin areas within Edgewood are lightly developed compared to Milton, which includes some multi-family developments; this is especially true for the area surrounding Surprise Lake. As a result, roads and commercial developments comprise a high percentage of the man-made impervious area in the basin.

Pothole Basins

Unlike the other basins in the city, the following six pothole basins are located entirely on the plateau area and are entirely within the city limits: Edgewood Bowl Pothole, Lake Chalet Pothole, Pinedale Pond/114th Avenue Pothole, 108th Avenue Pothole, 122nd Avenue Pothole, and Surprise Lake Pothole basins. These are closed-depression basins; there are no natural flow paths that connect these subbasins with nearby stream systems. These basins contain undulating hills on the plateau and wetlands or other surface water features within the potholes themselves. Development density in the pothole basins is primarily low, with some more heavily developed areas within the two western-most pothole basins: Lake Chalet and Surprise Lake Pothole. As a result, the majority of impervious surface comes from roads and single-family homes. Flooding in these subbasins already occurs with regular frequency. There is significant potential for future development throughout these basins, which is expected to result in more frequent and extensive flooding in the future.

2.2. GEOLOGY AND SOILS

The majority of the city of Edgewood located on the upland called the North Hill plateau is overlain with till that was formed as the glacier advanced during the Vashon glaciation 15,000 to 13,500 years ago. As the glacier retreated, water from the melting ice deposited over the till thick layers of sand and gravel called outwash. The outwash was left in irregular heaps and was pitted with hollows that became today's "potholes" (Kato & Warren 1997). Therefore, the upland area consists of Vashon till, which is dense, non-stratified silty sand to sandy silt with slow permeability in unweathered zones, and Vashon recessional outwash deposits, which includes well-sorted, stratified, unconsolidated coarse-grained sediment with rapid permeability. The steep valley walls bordering the plateau contain exposed outcrops deposited before the Vashon glaciation. These deposits include the Stuck drift, the Puyallup formation, and the Salmon Springs drift.

Soils are often categorized by hydrologic soil group (HSG) according to their ability to infiltrate water. Based on HSG classification most of the city would have soils amenable to infiltration. However, in the case of Edgewood and many other areas in the Puget Sound basin, it is the underlying geology not the soils that drive infiltration capacity. In much of the city there is a dense till layer that sits approximately 2 to 4 feet below the ground surface (Figure 2-2). This layer prevents water from seeping deeper into the ground. In fact, when surface soils are disturbed even this narrow soil layer can be lost or compromised leading to increased runoff and an increased potential for flooding.

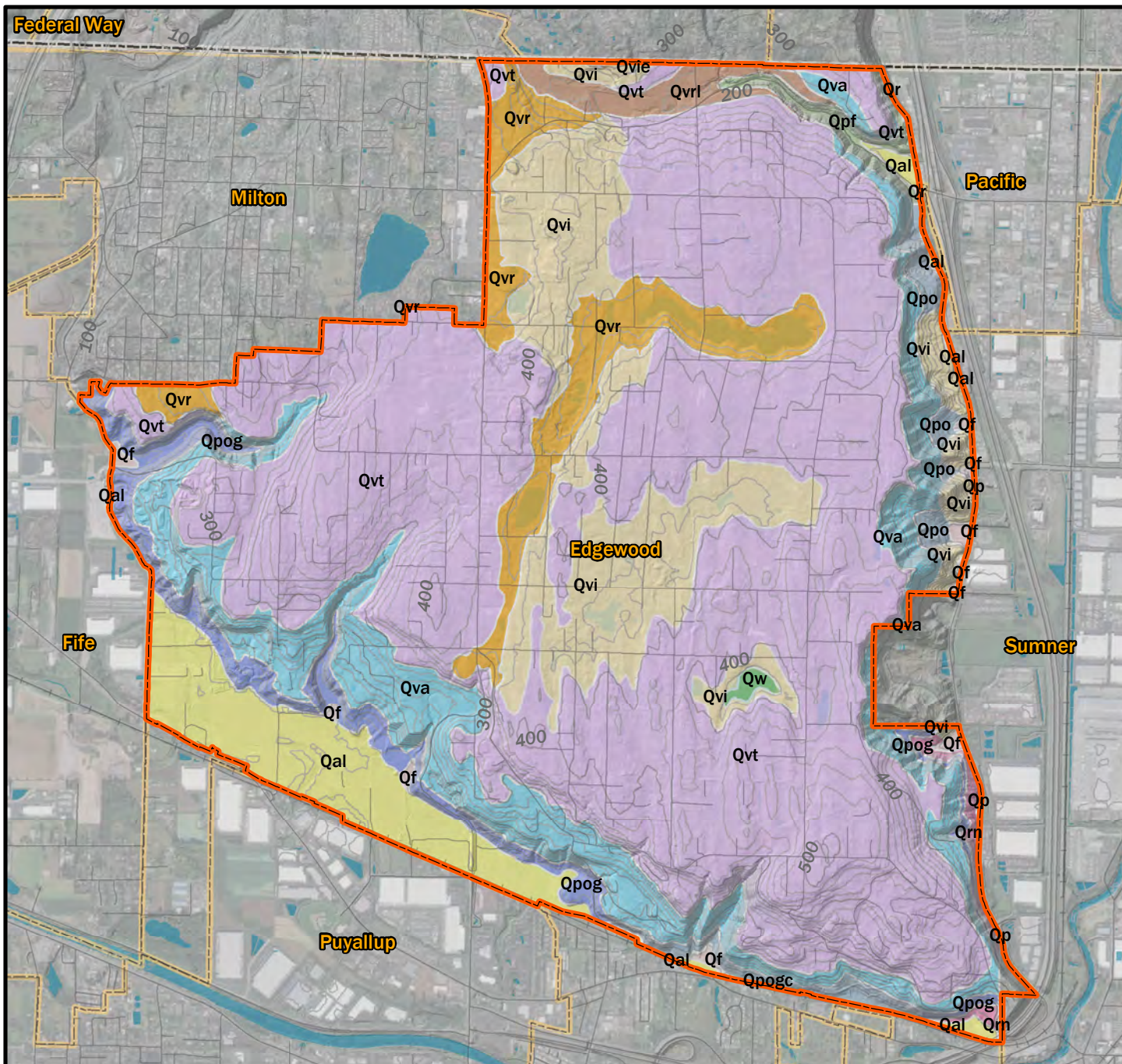
2.3. LAND USE AND ZONING

Land use is linked with the percentage of impervious surface that, in combination with soil drainage properties, determines the amount of stormwater runoff generated by a parcel. Land use also impacts the type and concentration of pollutants that might be expected to accumulate on the land surface. Existing land use has not been mapped for the City, but in the case of Edgewood, existing zoning (as of 2015) is a fair surrogate measure. The City's zoning mapping was condensed into 12 generalized categories. Table 2-2 describes generalized development and typical runoff characteristics associated with each land use/zoning category, and Table 2-3 and Figure 2-3 show the distribution of zoning categories by drainage basin. In the future it can be expected that impervious surface will increase significantly as the population expands and the city densifies. Another important change will likely be growth in the number and type of businesses that occupy commercial/industrial zones.

Overall, land use (as defined by zoning) within the city is currently largely residential, with over 75 percent of the city zoned as low and moderate single family residential development. The following are some general land use patterns:

- Residential land use is by far the dominant land use type.

- Meridian Avenue East includes the highest density developments with town center, commercial, and mixed use residential land uses.
- The flatter areas in the White River and Puyallup River valleys contain pockets of industrial, commercial, and mixed use residential land uses on the outer edges of the city.
- The coverage of impervious surface in Edgewood is closely related to land use. In general, the areas with the most impervious surface tend to coincide with the higher density residential and commercial areas such as Meridian Avenue East (Jovita Creek, Surprise Lake Creek, Surprise Lake, and Surprise Lake Pothole basins) and the White River Valley (North Slopes Subbasin) (Table 2-3).



Legend

 Edgewood city limits	 Qf - Fan deposit	 Qpogc - Pre-Olympia glacial deposit-coarse grained
 City limits	 Qvr - Vashon recessional outwash deposit	 Qr - Reversely magnetized deposit
 County boundary	 Qvrl - Vashon recessional lacustrine deposit	 Qrn - Reversely magnetized deposit non-glacial
 Waterbody	 Qvi - Vashon ice-contact deposit	
 Road	 Qvie - Vashon eskers	
 Contour (20 ft)	 Qvt - Vashon glacial till	
 Contour (100 ft)	 Qva - Vashon advance outwash	
GeoLabel	 Qpf - Pre-Fraser deposit	
 Qw - Wetland deposit	 Qpo - Pre-Olympia deposit	
 Qp - Peat	 Qpog - Pre-Olympia glacial deposit	
 Qal - Alluvium		

Figure 2-2.
Geologic Units as Mapped for the
City of Edgewood.

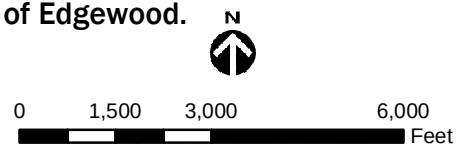
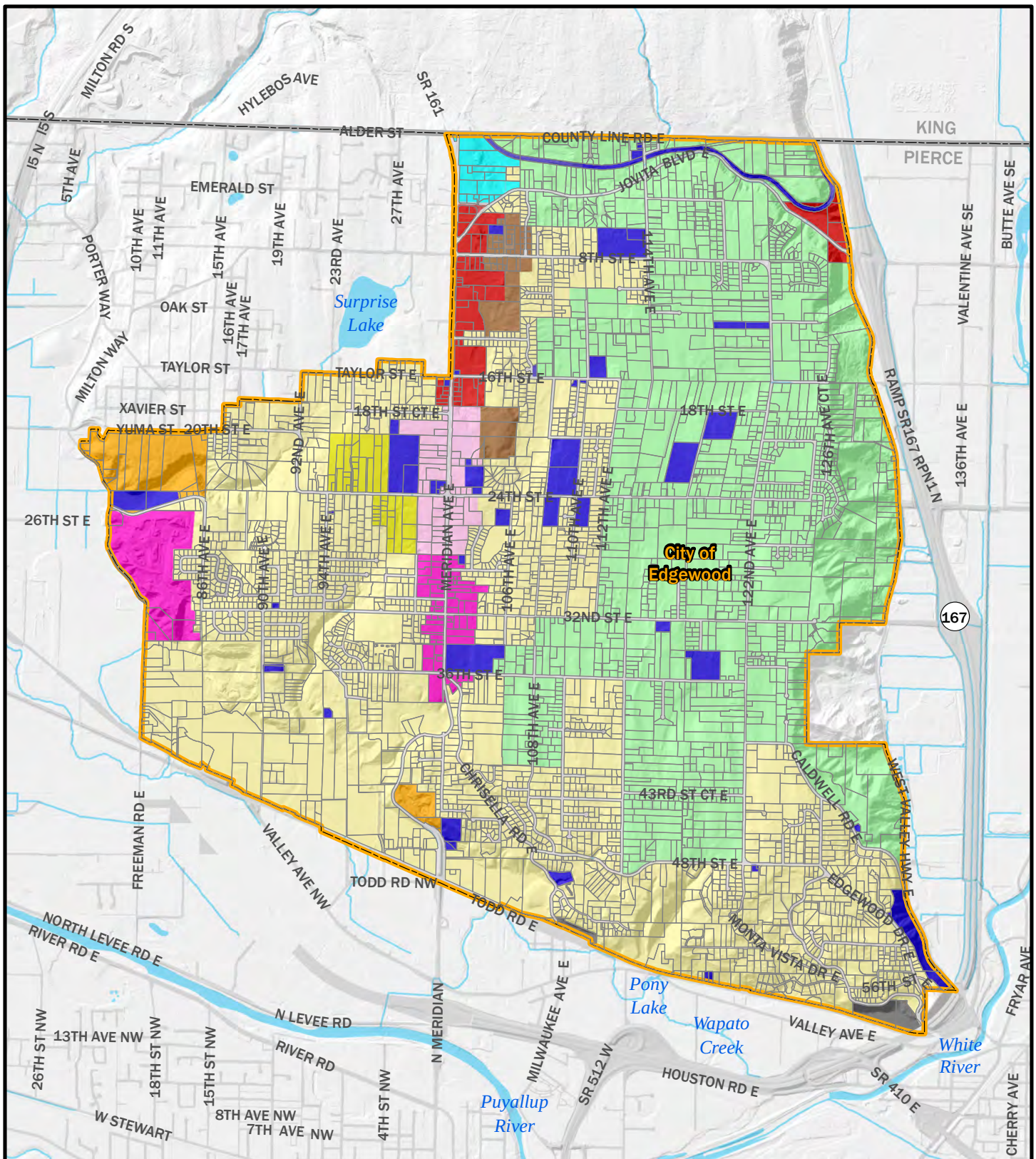


Table 2-2. Land Use Characteristics and Percent of Edgewood Zoned for each Category in 2015.

Land Use Category (zoning equivalent)	Generalized Properties	Zoning Area (percent)
Business Park	This land use accommodates a wide range of employment and commercial uses, including professional office, senior housing and apartments, light industrial and retail uses. Significant landscaping is emphasized in this zone, and impervious surface percentages are moderate.	0.6%
Commercial	Allowable use includes large format retail, auto-oriented uses, and regional scale commercial uses. Light industrial uses are also allowed. This land use provides a transition to the Town Center, and multifamily housing is allowed. Generally high percentage of impervious surface.	1.7%
Industrial	This land use provides for regional research, light manufacturing, warehousing, and other major regional employment uses. Industrial lands are limited to areas where regional transportation access is available. Generally high percentage of impervious surface.	0.3%
Mixed Residential – Low (MR-1)	Low residential density using a variety of urban housing types and designs, including small-lot detached dwellings, duplexes, and townhouses. Impervious surface percentages are low to moderate.	1.7%
Mixed Residential – Medium (MR-2)	Moderate residential density using a variety of urban housing types and designs, including small-lot detached dwellings, duplexes, and townhouses. Generally associated with a moderate percentage of impervious surface	1.1%
Mixed Use Residential	This land use includes a variety of medium density housing types and some commercial and professional office uses. This serves as a transition to areas of more intensive development. Impervious surfaces are moderate to high.	2.7%
Public	This land use provides for moderate-scale and large-scale activities relating to the purpose of state and local governmental entities and semi-public institutions providing necessary public services, including utilities and open spaces. Associated with a fairly high percentage of impervious surface, though parks and open spaces are associated with lower percentages of impervious surface.	3.8%
Public ROW^a	Includes highway ROWs. Generally associated with a high percentage of impervious surface, although planted areas within the ROW may allow for significant infiltration.	7.0%
Single Family – Low (SF-2)	This land use contains large residential lots with extensive tree coverage. The percentage of impervious surface is low.	36.6%
Single Family – Medium (SF-3)	Single family medium and high land use categories are the City's primary residential zones. The percentage of impervious surface is low to moderate.	41.7%
Single Family – High (SF-5)	Single family medium and high land use categories are the City's primary residential zones. The percentage of impervious surface is moderate.	1.2%
Town Center	The Town Center is an integral part of the City's economic development strategy emphasizing a planned mix of pedestrian-oriented commercial, business, and residential development. Impervious surface percentages are high.	1.6%

^a Visual inspection of land use areas with no land use designation indicates that these areas are part of the Public ROW and have been included in this category.

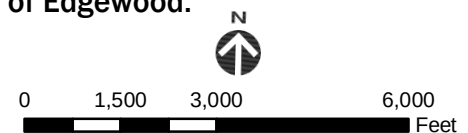
Table 2-3. Zoning Designations by Drainage Basin in Edgewood.																								
Basin Group/Subbasin	Business Park		Commercial		Industrial		Mixed Residential – Low (MR-1)		Mixed Residential – Moderate (MR-2)		Mixed Use Residential		Public		Public ROW		Single Family – Low (SF-2)		Single Family – Moderate (SF-3)		Single Family – High (SF-5)		Town Center	
	(ac)	(%)	(ac)	(%)	(ac)	(%)	(ac)	(%)	(ac)	(%)	(ac)	(%)	(ac)	(%)	(ac)	(%)	(ac)	(%)	(ac)	(%)	(ac)	(%)	(ac)	(%)
White River Basin																								
North Slopes	0.0	0%	3.4	1%	0.0	0%	0.0	0%	0.0	0%	0.0	0%	0.0	0%	7.4	3%	263.5	96%	0.0	0%	0.0	0%	0.0	0%
Central Slopes	0.0	0%	0.0	0%	0.0	0%	0.0	0%	0.0	0%	0.0	0%	0.0	0%	1.5	2%	73.7	98%	0.0	0%	0.0	0%	0.0	0%
Southern Slopes	0.0	0%	0.0	0%	0.0	0%	0.0	0%	0.0	0%	0.0	0%	17.3	9%	19.2	10%	32.5	17%	124.9	64%	0.0	0%	0.0	0%
Jovita Creek Basin																								
Jovita Creek	33.5	5%	29.7	5%	0.0	0%	0.0	0%	19.7	3%	0.0	0%	40.0	6%	45.8	7%	396.9	64%	56.8	9%	0.0	0%	0.0	0%
Puyallup River Basin																								
Upper Wapato Creek	0.0	0%	0.0	0%	17.4	4%	0.0	0%	0.0	0%	0.0	0%	1.5	0%	28.5	6%	67.1	15%	330.2	74%	0.0	0%	0.0	0%
Wapato Creek Basin																								
Lower Wapato Creek	0.0	0%	0.0	0%	0.0	0%	13.7	2%	0.0	0%	12.1	2%	9.0	2%	55.5	10%	21.4	4%	465.0	81%	0.0	0%	0.0	0%
Simons Creek Basin																								
Simons Creek	0.0	0%	0.0	0%	0.0	0%	0.0	0%	5.4	1%	13.5	3%	29.9	6%	40.1	8%	0.0	0%	335.0	63%	41.6	8%	63.8	12%
Tributary to Simons Creek	0.0	0%	0.0	0%	0.0	0%	0.0	0%	0.0	0%	22.9	9%	9.8	4%	16.4	6%	0.6	0%	211.6	81%	0.0	0%	0.0	0%
Hylebos Creek Basin																								
Surprise Lake Creek	0.0	0%	0.0	0%	0.0	0%	75.8	16%	0.0	0%	75.3	16%	13.5	3%	22.4	5%	0.0	0%	260.3	55%	21.4	5%	6.1	1%
Surprise Lake	0.0	0%	34.8	56%	0.0	0%	0.0	0%	1.0	2%	0.0	0%	0.7	1%	10.6	17%	0.0	0%	14.3	23%	0.0	0%	0.9	1%
Hylebos Creek	0.2	5%	0.0	0%	0.0	0%	0.0	0%	0.0	0%	0.0	0%	0.0	0%	4.5	95%	0.0	0%	0.0	0%	0.0	0%	0.0	0%
Pothole Basins																								
Edgewood Bowl Pothole	0.0	0%	0.0	0%	0.0	0%	0.0	0%	13.3	2%	0.0	0%	48.4	7%	0.0	39.9	6%	62%	146.8	22%	0.0	0%	0.1	0%
Lake Chalet Pothole	0.0	0%	0.0	0%	0.0	0%	0.0	0%	0.0	0%	22.4	16%	14.5	11%	0.0	10.9	8%	0%	82.4	61%	0.0	0%	5.2	4%
Pinedale Pond/114th Avenue Pothole	0.0	0%	0.0	0%	0.0	0%	0.0	0%	0.0	0%	0.0	0%	5.7	1%	0.0	32.0	8%	84%	23.6	6%	0.0	0%	0.0	0%
108th Avenue Pothole	0.0	0%	0.0	0%	0.0	0%	0.0	0%	0.0	0%	0.0	0%	0.8	0%	0.9	15.0	7%	48%	102.3	45%	0.0	0%	0.0	0%
122nd Avenue Pothole	0.0	0%	0.0	0%	0.0	0%	0.0	0%	0.0	0%	0.0	0%	10.3	3%	0.5	22.0	6%	75%	55.8	16%	0.0	0%	0.0	0%
Surprise Lake Pothole	0.0	0%	21.8	30%	0.0	0%	0.0	0%	21.0	28%	0.0	0%	0.3	0%	0.0	3.1	4%	0%	19.4	26%	0.0	0%	8.1	11%
Total	33.7	1%	89.8	2%	17.4	0%	89.5	2%	60.4	1%	146.3	3%	201.5	4%	8.2	374.7	7%	37%	2228.3	42%	63.0	1%	84.2	2%



Legend

Tax parcel	Zoning			
Edgewood city limits	SF-2	MR-1	BP	
County boundary	SF-3	MR-2	I	
Waterbody	SF-5	MUR	Public	
	C	TC	Public ROW	

Figure 2-3.
2015 Mapped Zoning Designations in the City of Edgewood.



Source: City of Edgewood

2.4. SURFACE WATER RESOURCES

The key surface water features in Edgewood include four perennial streams and six closed depression basins, referred to as potholes. With the exception of the pothole called Lake Chalet, which retains water year-round, the potholes are a series of open-water wetlands during most of the year, but become lake-like during the winter when they are filled by stormwater runoff. These water bodies, shown in Figure 2-4, are all part of the Puyallup River Watershed and flow to Commencement Bay in Puget Sound.

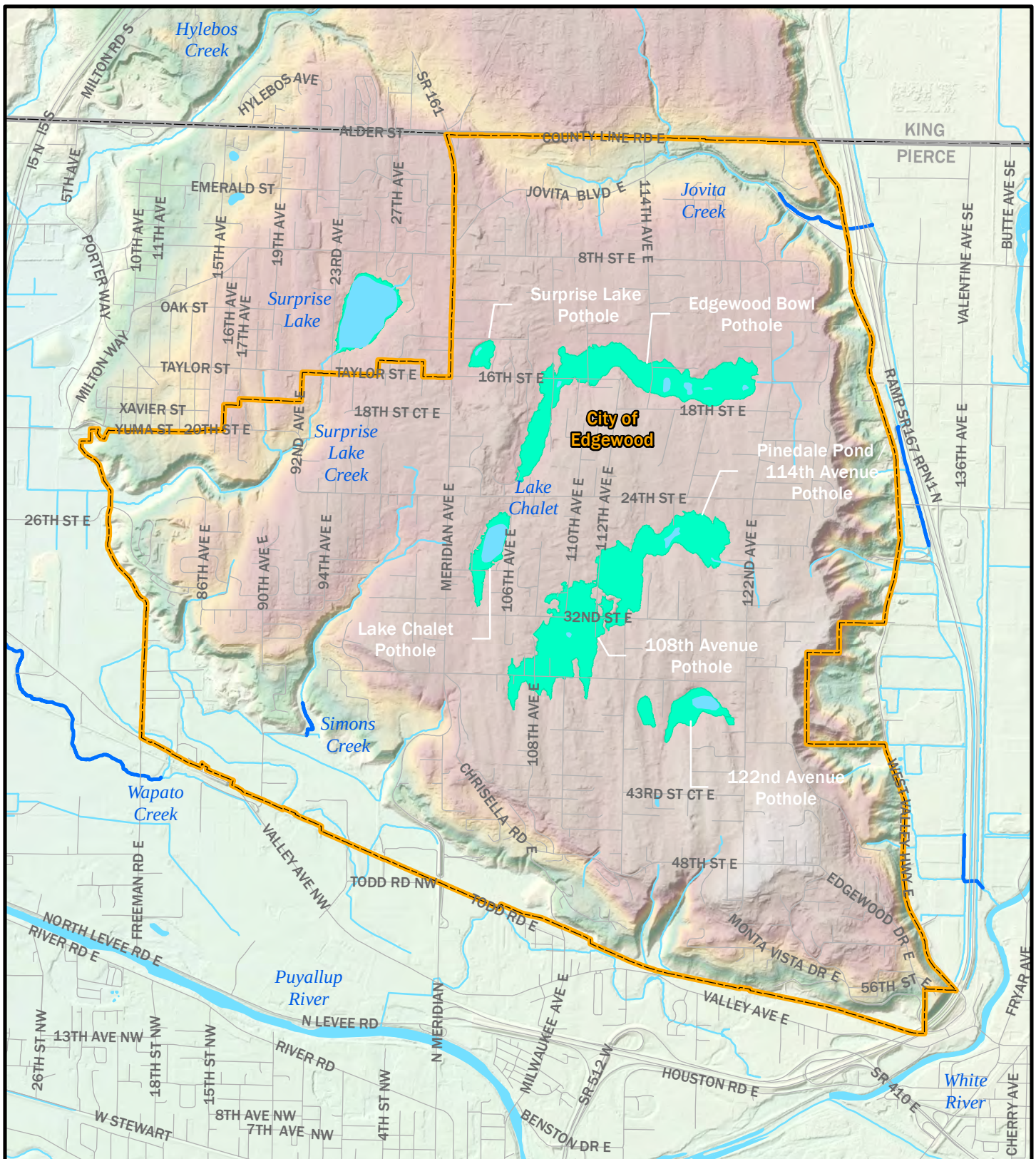
Brief information about each water body is provided below. Water quality is summarized in terms of the water body's inclusion on Washington State's most recent Water Quality Assessment (Ecology 2015). The Water Quality Assessment is a requirement of the Clean Water Act and is regulated by the US Environmental Protection Agency (EPA). Washington State Department of Ecology (Ecology) is responsible for implementing the Clean Water Act at the state level and conducts the biennial water quality assessment. In this assessment water bodies are grouped into five categories:

- Category 1: Meets tested standards for clean waters.
- Category 2: Waters of concern. (There may be some evidence of pollution but not enough to require a TMDL or clean-up plan.)
- Category 3: Insufficient data.
- Category 4: Polluted waters that do not require a clean-up plan. (Typically, this is because a plan is already in place or the impairment is related to flow rather than water quality.)
- Category 5: Polluted waters that require a TMDL, or other clean-up plan. (Traditionally referred to as the "303(d) list," Ecology 2015.)

2.4.1. Streams

Jovita Creek

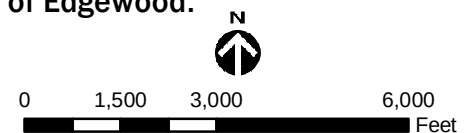
The drainage basin for Jovita Creek is approximately 2.9 square miles, the majority of which extends north of Edgewood into King County; approximately one-third of the drainage basin (0.9 square miles) lies within the city. There are two main tributaries to Jovita Creek. The southern tributary is located north of Edgewood, east of Meridian Avenue. The headwaters area consists of a large emergent wetland (Kato & Warren 1997). The other tributary flows from Trout Lake in King County and is an important source of base flow to the stream. Within the city, the main stem of Jovita Creek flows in a steep-sided canyon. At the mouth of the canyon, the stream flows adjacent to Jovita Creek Boulevard before its confluence with the White River. The adjacent hill slopes in the canyon are subject to frequent slides caused by runoff from the plateau above, tree falls, unstable slopes, and high flows in the creek. Jovita Boulevard East has been washed out on several occasions due to flooding and sediment discharge from Jovita Creek.



Legend

-  Edgewood city limits
-  County boundary
-  Untyped Stream/Drainage Course
-  Type F Stream (Fish Bearing)
-  Waterbody
-  Pothole
-  Road

Figure 2-4.
Surface Water Features in the
City of Edgewood.



Source: City of Edgewood

K:\Projects\Y2017\17-06504-000\Project\Report\07/03/18 Study Session
Page 551 of 708

Due to bacteria exceedances of state water quality standards, Jovita Creek is considered an "impaired water" and is therefore included on the Washington State 303(d) list and was included as part of the Puyallup River bacteria TMDL. Since there is a TMDL in place for the Puyallup it, and Jovita Creek, are listed as Category 4 waters, indicating that there is a pollutant of concern but that a plan is in place to address the issue. The City's responsibilities under the TMDL are to track construction activities in the Jovita Creek basin and prioritize field screening for illicit discharges in this area.

Simons Creek

Formed in a steep ravine in the southern portion of Edgewood, Simons Creek is fed by stormwater runoff. Although the headwaters are near Lake Chalet, there is currently no direct hydrologic connection between the stream and the Lake Chalet pothole. No homes or roads on the plateau are threatened by the stream, but residents on the valley floor experience frequent high sediment flows out of the ravine. After leaving the ravine, Simons Creek flattens out and flows approximately a mile before entering Wapato Creek.

Due to bacteria exceedances of state water quality standards, Simons Creek is considered an "impaired water" and is therefore included on the Washington State 303(d) list. Simon's Creek is listed as Category 5 because there is no clean-up plan or TMDL in place to address this issue. There is also a Category 2 listing due to potential for benzene pollution, and it is listed as Category 4 due to low instream flow.

Surprise Lake Creek

Surprise Lake Creek is the outflow from Surprise Lake near the western boundary of the city. Most of the lower portion of this stream flows through a steep ravine; the slope decreases just east of Freeman Road. Then the stream is culverted across private property and enters a culvert under Freeman Road before joining Hylebos Creek (Kato & Warren 1997). The steep ravine through which the stream travels is subject to frequent slides and erosion. Surprise Lake Creek is listed as Category 5 for mercury and as Category 2 for potential pH impairment.

Wapato Creek

Although a significant portion of the city conveys water toward Wapato Creek, only a small portion of the stream lies in the southwest corner of the city. The stream is located in the flat river valley bottom flowing somewhat parallel to the Puyallup River. Several drainages convey runoff west from the southern slopes of the city into the Blair Waterway and then into Commencement Bay in Puget Sound. Wapato Creek is listed as impaired (Category 5) due to both high bacteria and low dissolved oxygen and also has documented low instream flows (Category 4).

2.4.2. Closed Depression Basins or Potholes

Edgewood contains six hydrologically isolated closed depression basins or “potholes” that have no natural outflow and are therefore prone to flooding during wet weather. As the soils in the watersheds contributing to these potholes become saturated, the water moves as surface and subsurface flow to the potholes, causing water levels to rise. About 35 percent of the total city area drains to these potholes (Kato & Warren 1997). Approximately 0.28 square miles or 180 acres) becomes inundated during periods of prolonged wet weather, such as the winter of 2016–2017, impacting almost one-third of the city due to road closures and property damage. Flooding events have occurred with regular frequency in recent years, with at least three events over the past 10 years (J. Metzler, personal communication).

All of the potholes are mapped as wetlands. There are no specific water quality standards applied to wetlands, but state antidegradation criteria require that designated uses of wetlands, such as groundwater exchange and stormwater attenuation, be protected and that hydrologic conditions and wetland vegetation be maintained. Table 2-4 describes the physical characteristics of each pothole, while Appendix B includes descriptions of stormwater-related problems associated with each pothole.

Table 2-4. Catchment Size, Pothole Size, and Flooded Area Comparison.			
Pothole Name	Size of catchment (acres)	Size of Pothole (acres)^a	1997 Flooded Area (acres)^b
Edgewood Bowl Pothole	656	86	64
Lake Chalet	136	18	13
Pinedale Pond (114th Avenue) Pothole	384	59	48
108th Avenue Pothole	226	69	30
122nd Avenue Pothole	348	18	23
Surprise Lake Pothole	74	5	4.3

Note: All sizes are approximate based on elevations.

^a Size calculated from approximate pothole boundaries at flood stage provided by the City.

^b From Kato and Warren 1997

Edgewood Bowl

The largest of the potholes is locally referred to as the Edgewood Bowl. It lies in the northeast section of Edgewood (Figure 2-4) adjacent to the Jovita Creek and North Slopes (White River) subbasins. The western border is a ridge east of Meridian Avenue North; the adjacent watershed to the west is Surprise Lake. The pothole is approximately 86 acres in size with a contributing area of approximately 656 acres. There is standing water in the bottom of the pothole for most if not all of the year.

Infiltration is limited in this pothole by the underlying compacted soil layers (Figure 2-2). During years of high precipitation, waters in the individual low areas rise and form one large area of

standing water. During bad events, roads and driveways have been closed for months at a time. In 1997, the maximum flooded area was approximately 64 acres (Kato & Warren 1997).

Lake Chalet

Lake Chalet is located in a depression in west-central Edgewood. Fed by stormwater runoff, it retains water year-round. The pothole is approximately 18 acres in size with a contributing area of approximately 136 acres. During years of high precipitation, it frequently floods the adjacent low-lying areas. In 1997, the maximum flooded area was 13 acres (Kato & Warren 1997). A culvert south of the lake carries water between the lake and an adjacent depression, but there is no outlet control.

Pinedale Pond/114th Avenue Pothole

This pothole lies immediately south of the main Edgewood Bowl pothole. The pothole is approximately 59 acres in size with a contributing area of approximately 384 acres. It is hydrologically separated from the larger pothole by a minor east-west running ridge in the vicinity of 24th Street East. The southern border is generally 32nd Street East with a short extension to 36th Street East. It exhibits the same characteristics and performance as the larger pothole. In 1997, the maximum flooded area for this pothole was approximately 48 acres.

108th Avenue Pothole

This pothole lies between the 122nd Avenue, Lake Chalet, and Pinedale Pond/114th Avenue Potholes. The pothole is approximately 69 acres in size with a contributing area of approximately 226 acres. A small area of this pothole remains wet year-round. The flat surrounding topography leads to large inundated areas: in 1997, the maximum flooded area was 30 acres.

Surprise Lake Pothole

Surprise Lake Pothole is the smallest of the Edgewood Potholes and is located west of the Edgewood Bowl Pothole near Meridian Avenue and 16th Street East. The pothole is approximately 5 acres in size with a contributing area of approximately 74 acres. There is no standing water in this basin under dry weather conditions. Localized flooding can occur during heavy rainfall periods. The maximum flooded area in 1997 was 4 acres.

122nd Avenue Pothole

This smaller and steeper-sided pothole lies south of the Pinedale Pond/114th Avenue pothole. The pothole is approximately 18 acres in size with a contributing area of approximately 348 acres. Its boundaries are defined generally by 32nd Street East to the north and 43rd Street Court East to the south. It is adjacent to the steep slopes on the eastern and southern edges of the city. It has wetland plants and areas of standing water, is fed by stormwater runoff, and its

only avenues of drainage are limited infiltration and evaporation. In 1997, the maximum flooded area was 23 acres.

2.5. CRITICAL AND HAZARD AREAS

Critical areas are designated to protect natural resources and prevent harm to the community from natural hazards. The term “natural resources” typically refers to streams, wetlands, fish and wildlife habitat, wetlands, critical aquifer recharge areas (CARAs), and wellhead protection areas (WHPAs). Generally speaking, natural hazards refer to geologically hazardous areas (e.g., steep slopes) and areas at risk for flooding. Critical areas are regulated at the state and county level. Edgewood’s critical areas ordinance (CAO) (No. 17-492) was amended and adopted in 2018. The following sections describe the natural resources (groundwater, wetlands, and habitat) protected by the CAO and the natural hazard areas that have been defined to protect the public from harm.

2.5.1. Wetlands, Riparian Habitat, and Salmon Bearing Streams

Wetland, riparian habitat, and salmon bearing streams are all considered critical habitat and the City’s Critical Areas Ordinance (CAO) and municipal code (EMC 14.30. and EMC 14.40.) are the primary mechanisms used for protecting these areas.

Mapped wetlands in the city are shown on Figure 2-5. Approximately 6.5 percent of the city is mapped as wetland, including areas along the stream corridors, floodplains in the valley, and within potholes on the plateau. Table 2-5 identifies the area of wetlands for each basin. The Edgewood Bowl and 108th Avenue Pothole basins have the largest percentage of wetland of all basins within the city.

Protection of riparian habitat is of high importance in Edgewood because many of the area’s streams provide critical habitat for salmon spawning and rearing. The Washington Department of Fish and Wildlife (WDFW) fish passage website (<<http://apps.wdfw.wa.gov/fishpassage/>>) documents the presence of salmonids and barriers to fish passage. Figure 2-5 shows the stream reaches used by salmon, and barriers such as dams, weirs, and undersized culverts.

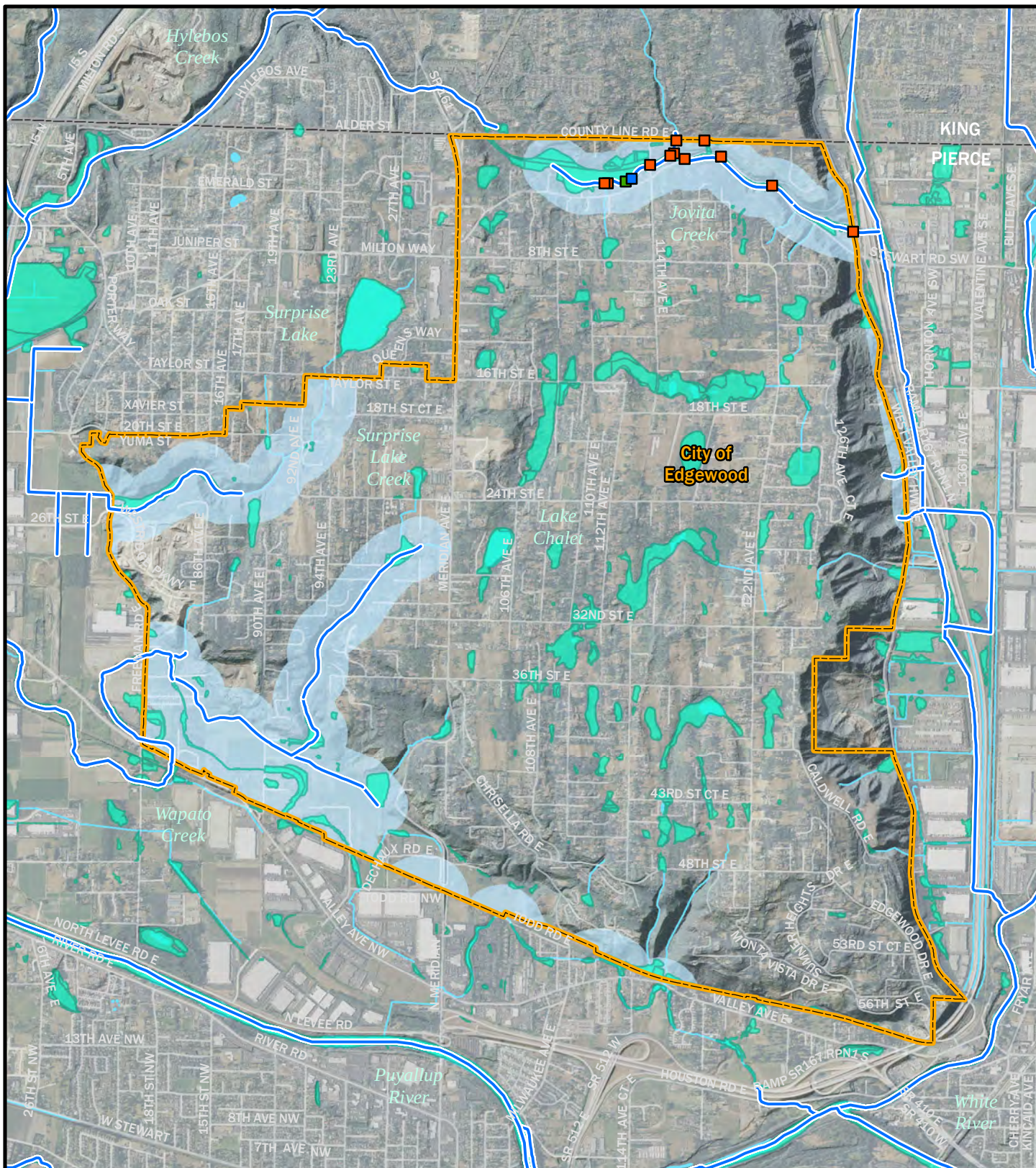
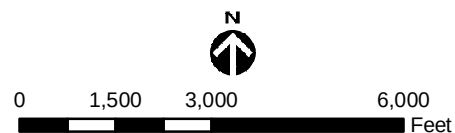


Figure 2-5.
Wetlands and Salmon Bearing Streams.



USDA, Aerial (2015)

Source: Washington Department of Fish and Wildlife

K:\Projects\Y2017\17-06504-000\Project\Report\07-03-18 Study Session 1.mxd

Page 556 of 708

Table 2-5. Critical Areas in Edgewood Drainage Basins.																
Basin Group/Subbasin	Wetland		Stream Corridor		WHPAs		Vulnerable ARAs		Steep Slopes (> 20%)		Steep Slopes (>40%)		FEMA 100 year Floodplain		Flood Hazard Area	
	(ac)	(%)	(ac)	(%)	(ac)	(%)	(ac)	(%)	(ac)	(%)	(ac)	(%)	(ac)	(%)	(ac)	(%)
White River Basin																
North Slopes	7.5	3%	29.8	11%	0.0	0%	3.7	1%	138.2	50%	9.9	3%	0.0	0%	0.0	0%
Central Slopes	2.7	4%	0.0	0%	0.0	0%	1.0	1%	46.1	61%	2.3	3%	0.0	0%	0.0	0%
Southern Slopes	1.2	1%	0.0	0%	0.0	0%	0.5	0%	53.7	28%	6.0	5%	0.0	0%	0.0	0%
Jovita Creek Basin																
Jovita Creek	59.0	9%	224.3	36%	99.6	16%	7.4	1%	60.1	10%	9.7	2%	12.6	2%	12.6	2%
Puyallup River Basin																
Upper Wapato Creek	16.9	4%	27.3	6%	0.0	0%	13.2	3%	107.3	24%	4.0	1%	0.0	0%	1.4	0%
Wapato Creek Basin																
Lower Wapato Creek	23.1	4%	177.4	31%	315.3	55%	181.1	31%	68.6	12%	4.2	1%	55.7	10%	75.8	13%
Simons Creek Basin																
Simons Creek	13.7	3%	233.6	44%	488.3	92%	37.7	7%	52.4	10%	6.6	1%	24.3	5%	24.3	5%
Tributary to Simons Creek	10.6	4%	78.1	30%	98.1	38%	56.6	22%	21.6	8%	1.0	0%	14.5	6%	18.1	7%
Hylebos Creek Basin																
Surprise Lake Creek	15.8	3%	216.9	46%	47.6	10%	2.2	0%	89.0	19%	8.6	0%	13.5	3%	13.5	3%
Surprise Lake	3.0	5%	0.0	0%	25.0	40%	0.0	0%	0.5	1%	0.0	0%	0.0	0%	0.0	0%
Hylebos Creek	0.0	0%	0.0	0%	0.3	7%	0.0	0%	0.6	13%	0.0	0%	0.0	0%	0.0	0%
Pothole Basins																
Edgewood Bowl Pothole	88.9	14%	0.0	0%	315.0	48%	0.0	0%	5.4	1%	0.0	0%	0.0	0%	70.5	11%
Lake Chalet Pothole	11.1	8%	0.0	0%	79.8	59%	0.0	0%	0.8	1%	0.0	0%	0.0	0%	19.8	15%
Pinedale Pond/114th Avenue Pothole	30.0	8%	0.0	0%	58.5	15%	0.0	0%	2.0	1%	0.0	0%	0.0	0%	45.8	12%
108th Avenue Pothole	30.8	14%	0.0	0%	46.7	21%	0.0	0%	0.6	0%	0.0	0%	0.0	0%	31.3	14%
122nd Avenue Pothole	25.5	7%	0.0	0%	0.0	0%	0.0	0%	1.7	0%	0.0	0%	0.0	0%	32.6	9%
Surprise Lake Pothole	5.7	8%	0.0	0%	47.1	64%	0.0	0%	1.1	1%	0.0	18%	0.0	0%	4.3	6%
Total	345.6	6%	987.4	18%	1,621.4	30%	303.5	6%	649.6	12%	52.3	1%	120.7	2%	350.1	7%

Within Edgewood, there are four streams with documented fish presence:

- Surprise Lake Creek and Jovita Creek support Fall Chinook and Pink Salmon;
- The unnamed tributaries in the Central Slopes subbasin support Pink Salmon, Fall Chinook, Fall Chum, and Winter Steelhead;
- Simon's Creek supports Coho and Fall Chum; and
- Wapato Creek supports Coho, Fall Chinook, and Fall Chum.

There are 13 inventoried fish passage barriers in the city, all associated with Jovita Creek.

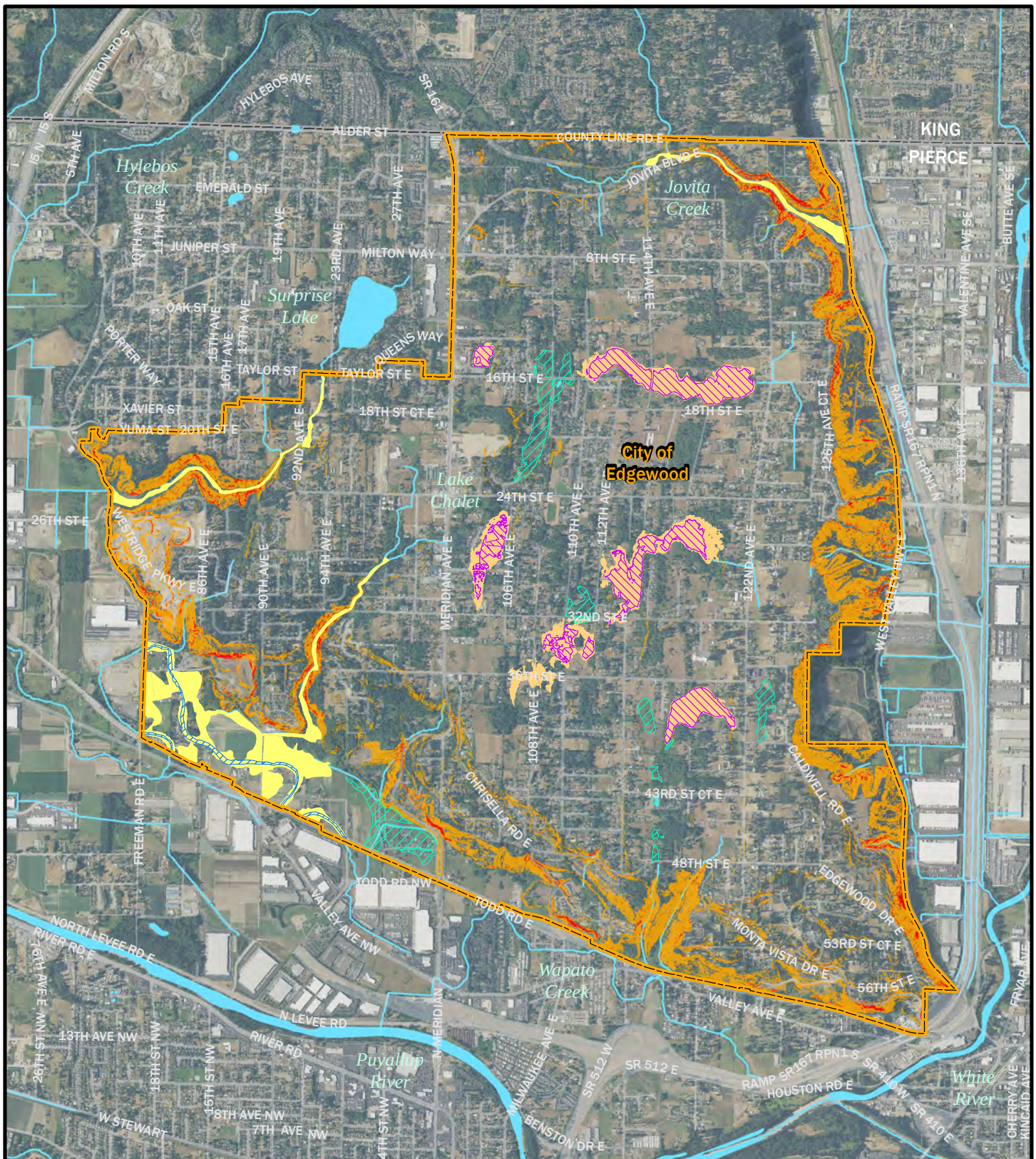
2.5.2. Natural Hazards

Natural hazards are defined in the CAO and designated pursuant to Chapter 14 EMC. The most pertinent natural hazards affecting stormwater planning and development are flood and landslide hazard areas.

Landslide Hazards and Steep Slopes

Landslide hazard areas are defined as areas potentially subject to land regression or retreat due to a combination of geologic, seismic, and/or hydrologic or manmade factors, such as vegetation loss, soil type, slope instability, and hydrology. Steep slopes, defined as areas between 20 and 40 percent slope and greater than 40 percent slope, were also calculated and mapped for the City (Figure 2-6).

Steep slopes are mapped along much of the eastern and southern edges of the city and are associated with the stream and drainage corridors that convey water from the plateau area to the valley bottom (Table 2-5 and Figure 2-6). In total, approximately 23 percent of the city is classified as having steep slopes greater than 20 percent and 1 percent of the city is classified as having steep slopes greater than 40 percent (Table 2-5). There are three basins where steep slopes (greater than 20 percent) comprise more than 50 percent of the area: Central Slopes, North Slopes, and Southern Slopes. Stormwater infiltration based BMPs can exacerbate landslide hazards, thus this data needs to be considered during stormwater project development.

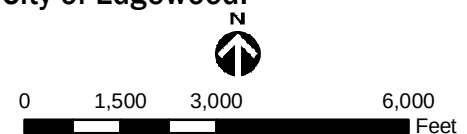


Legend

- | | |
|-------------------------------------|-------------------------|
| Edgewood city limits | Steep slopes (20 - 40%) |
| County boundary | Steep slopes (>40%) |
| City-identified flood hazard areas | Waterbody |
| FEMA floodway | |
| City-identified floodway | |
| FEMA 100-year floodplain | |
| City-identified 100-year floodplain | |

Source: City of Edgewood

Figure 2-6.
Mapped Flood and Landslide Hazards in the City of Edgewood.



USDA, Aerial (2015)

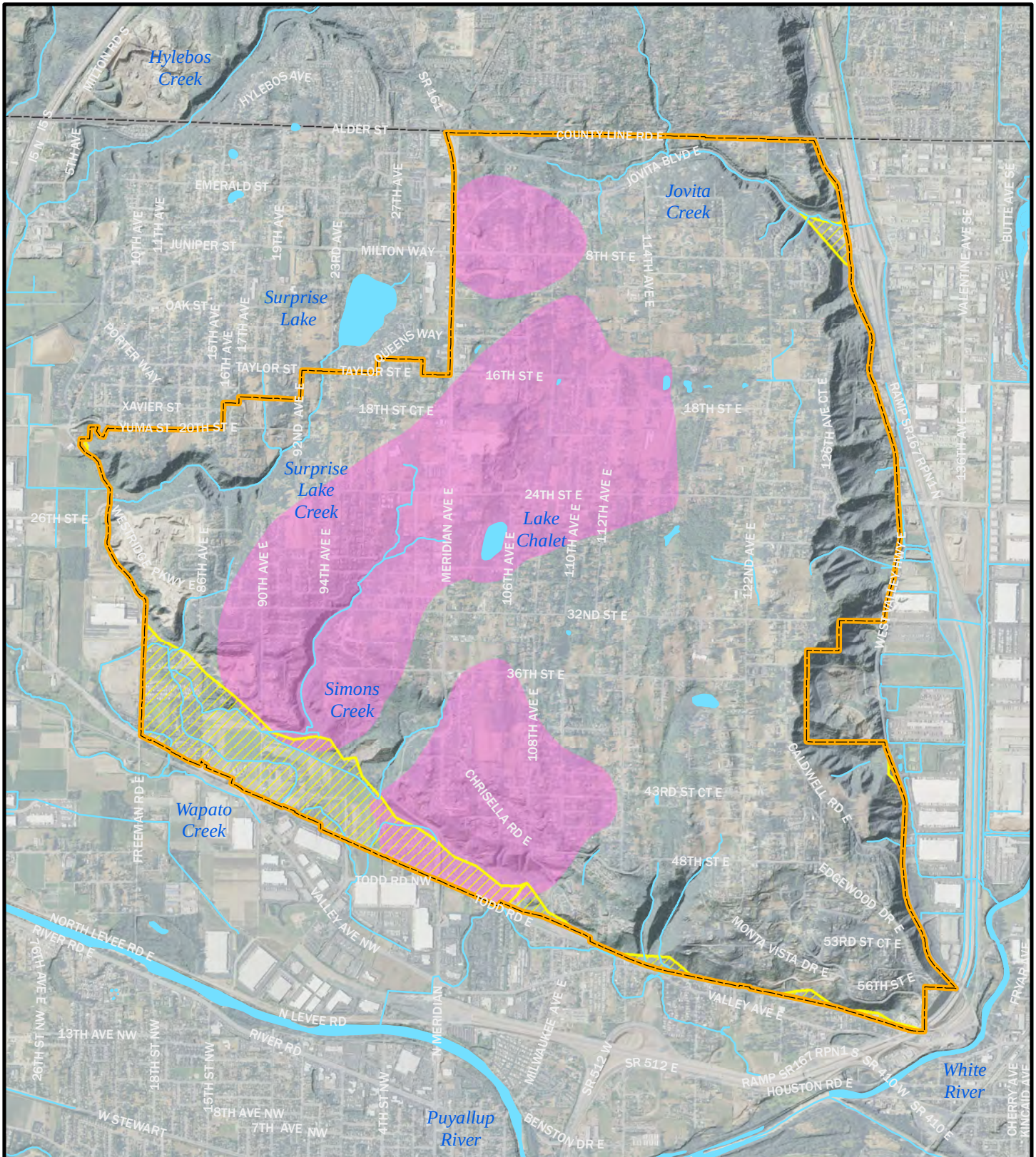
Flood Hazards

The Federal Emergency Management Agency (FEMA) designates flood zones (floodways and floodplains) based on predicted flood recurrence intervals. The 100-year floodplains as designated by FEMA are mapped on Figure 2-6. This includes areas that may be flooded by rivers during high flow conditions. Riverine flooding is a significant concern in the Jovita Creek, Simons Creek, and Surprise Lake Creek basins, where streams discharge from steep slopes to flow across relatively flat valleys, but this includes only 2 percent of the city. FEMA floodplain mapping does not account for the flood hazards related to the pothole basins. These are flooded much more frequently than the 100-year frequency used by FEMA and have a different, local designation as flood hazards. About 6.6 percent of the city is classified as a flood hazard, as shown in Figure 2-6 and Table 2-5. As described previously, flooded areas associated with the potholes can impact up to 30 percent of the city due to road closures.

2.5.3. Groundwater Resources

Groundwater resources are an important consideration for stormwater planning efforts, because many stormwater management strategies that rely upon infiltration have the potential to influence groundwater quality. Groundwater quality is considered very good in Edgewood, and groundwater is the source for drinking water in the area. The local water purveyor, Mountain View-Edgewood Water Company, has won awards for the quality of their drinking water. Groundwater resources are protected in the form of Vulnerable Aquifer Recharge Areas (VARAs) through the CAO, and wellhead protection areas (WHPAs) regulated through the Washington Department of Health (WDOH). VARAs are defined as areas with a critical aquifer recharging effect on aquifers used for potable water. As shown in Table 2-5, only 6 percent of the city is within a VARA. These are concentrated in the valley along Wapato Creek in the southwest area of the city with a smaller area in the floodplain of Jovita Creek.

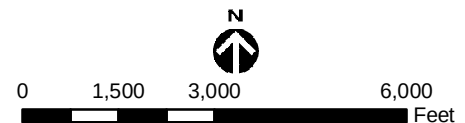
WHPAs are defined as a surface and subsurface land area regulated to prevent contamination of a well or well-field supplying a public water system. Approximately 30 percent of the city is within a designated WHPA for the Mountain View Edgewood Water Company. Designated WHPAs and VARAs within the city are shown on Figure 2-7.



Legend

-  Edgewood city limits
-  County boundary
-  Vulnerable aquifer recharge area
-  Wellhead protection area
-  Waterbody
-  Stream

Figure 2-7.
Vulnerable Aquifer Recharge Areas
and Wellhead Protection Areas.



Source: City of Edgewood

2.6. EXPECTED FUTURE CONDITIONS

2.6.1. Climate Change

Predicted Climate Changes

Significant research on climate change predictions has been conducted by the Climate Impacts Group (CIG) at the University of Washington. This research projects the local effects of global climate change using 20 global climate models and two greenhouse gas emissions scenarios. Local climate impacts are identified by downscaling model results and supplementing data with regional climate models.

Some general, stormwater-related predictions for the Puget Sound area for the next 50 years include (Mauger et al., 2015):

- There are no statistically significant trends toward wetter or drier conditions.
- Future occurrences of heavy rainfall are projected to be more frequent and more intense and will exacerbate flooding in many areas.
- Seasonal, year-to-year, and decade-to-decade variations will remain an important feature of local climates.
- There is a projected increase in landslide risk, erosion, and sediment transport during wetter months.
- For rain dominant watersheds, projected streamflow changes are less dramatic than those watersheds closer to the snowline.

Table 2-6, summarizes CIG's most recent climate change predictions for the watershed that contains the Edgewood area (Mauger et al. 2015). As shown, predictions indicate that average winter and summer temperatures will increase, winter precipitation and runoff will increase, and summer precipitation and runoff will decrease. Peak flows were not predicted for the streams within Edgewood; however, the general prediction for most of the Puget Sound basin is an increase in the magnitude and frequency of these flows.

Table 2-6. Predicted Climate Change for Edgewood Area (interpreted from Mauger et al. 2015).			
Climate Component	Historical	Lower Emission Rate Scenario	Higher Emission Rate Scenario
Average Winter Temperature	38 to 43 (degrees F)	+2 to +3 (change degrees)	+ 4 to +5 (change degrees)
Average Summer Temperature	60 to 64 (degrees F)	+3.9 to +5.6 (change degrees)	+5.6 to +7.2 (change degrees)
Winter Precipitation	34 to 45 (inches)	+7 to +8.5% (percent change)	+8.5% to +10% (percent change)
Summer Precipitation	8 to 12 (inches)	-8 to -6% (percent change)	Unknown ^a
Maximum 24-Hour Precipitation	1.6 to 2.3 (inches)	+10 to +15% (percent change)	+15 to +20% (percent change)
Summer Water Deficit	4 to 9 (inches)	+1 to +2 (change inches)	+1 to +2 (change inches)
Winter Runoff	18 to 24 (inches)	0 to +20%	0 to +20%
Summer Runoff	0 to 8 (inches)	-10% to 0%	-10% to 0%

^a Unknown: The projected changes are based on 10 different global climate models. If there was less than 80 percent agreement between the models on the direction of change, then the results are reported as unknown.

These predicted climate changes would alter stream flows, flood risk, water quality, and habitat as shown in Table 2-7. Increased winter precipitation will increase flood risk, including risk of surface water flooding in potholes and stormwater conveyance. It could also increase the risk of groundwater induced flooding. The summertime increases in air temperature will result in an increase in the number of growing degree days in addition to overall increases in evaporation and transpiration, thus resulting in the increase in summer water deficits. This in turn means both a reduction in the amount of water that is available to recharge groundwater during the summer months as well as increased removal from groundwater supplies. Many wetlands located in the upland potholes serve as habitat for waterfowl and may be threatened by increased dry periods in the summer. Cold water fish using streams leading from the plateau may be threatened by increased temperatures and reduced dissolved oxygen and flow.

Table 2-7. Expected Responses to Stormwater Management Components from Predicted Climate Change Effects.	
Stormwater Management Component	Predicted Response to Climate Change
Stream Flows	Increased winter flows Decreased summer flows Likely Increased magnitude and frequency of peak events
Groundwater Supply	Decreased recharge during summer months Increased use during summer months
Flood Risk	Increased flood risk from rivers, streams, and stormwater conveyance system Possible increase in groundwater induced flooding Increased flood risk from channel migration
Water Quality	Increased average and summer water temperature Increased erosion and suspended materials Lower dissolved oxygen Increased algal blooms
Habitat	Wetland conversion from perennial to seasonal Possible loss of streamside vegetation Decrease in cooler/oxygenated water habitats

2.6.2. Population Growth and Annexations

Population growth and new annexations can result in a further strain for stormwater management programs. While both population growth and annexations would bring additional revenue to the stormwater utility, increased populations result in more impervious area and therefore more runoff and more pollutant sources. Annexations result in an expansion of the service area and likely a new set of existing drainage system problems and resource constraints.

The 2010 Census estimate of the city's population was 9,387. Edgewood's estimated population in 2015 was 10,734, representing a 9 percent growth over the six-year period (US Census Bureau 2016). According to the City of Edgewood's 2015 Comprehensive Plan, the population is expected to grow to 13,700 by 2035 (Edgewood 2015). There are no current plans for annexations, and a large part of the city is bounded by other cities, so this is not generally a concern for stormwater planning in Edgewood.

2.7. STORMWATER SYSTEM CHARACTERISTICS

2.7.1. Stormwater System Features

The City's Stormwater Utility manages a large and complex storm drainage system that consists of underground pipes, open ditch conveyance, stormwater treatment features and more as summarized in Table 2-8. Ultimately, most conveyance network directs stormwater from the North Hill plateau to the Puyallup River valley, while wetlands and ponds within closed depressions infiltrate to groundwater. A map of the City's stormwater system is provided in Figure 2-8.

Table 2-8. Summary of Key Features of the City of Edgewood's Stormwater System.	
Item	Quantity^{a,b}
Catch Basins	523
Manholes	19
Control Structures	56
Vaults	10
Drywells	54
Detention Ponds ^c	4
City Storm System Pipes	22 miles
City Storm System Channels	28 miles

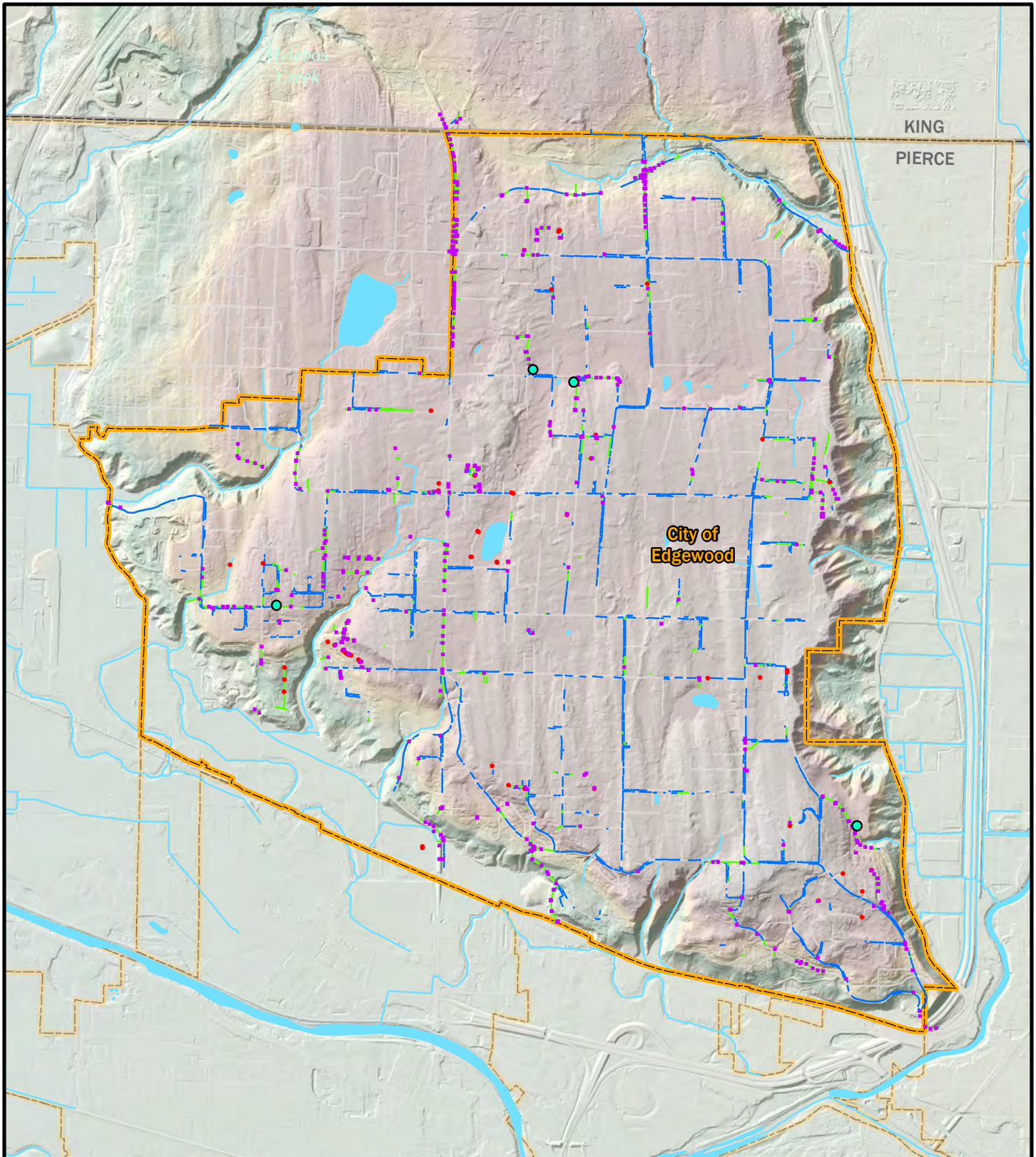
^a Based on City of Edgewood GIS data provided in 2017.

^b Feature count includes only City-owned features. Stormwater features with "Null" values for ownership are excluded from feature summary.

^c The City's mapped data does not include stormwater ponds, although mapped pipes and channels discharge to public ponds. These pipes were identified and checked using aerial photos to identify unmapped ponds and ponds fed by multiple pipes.

2.7.2. Stormwater System Maintenance

A majority of Edgewood's municipal maintenance and inspection activities that are required by the Permit are performed by Pierce County Public Works crews through an interlocal agreement (ILA) between the City and Pierce County Public Works and Utilities Department. As part of this agreement, the City specifies a list of work to be completed each year, including street sweeping, Vector services, and small engineering projects. The County also provides services to the City on an on-call basis, though these requests may be denied under special circumstances such as extreme weather events.

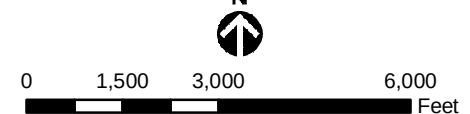


Legend

- | | |
|--|--|
|  Edgewood city limits |  Public pipe |
|  County boundary |  Channel |
|  City limits |  Catch basin |
|  Roads |  Dry well |
|  Waterbody |  Public stormwater pond |

Source: City of Edgewood

Figure 2-8.
Mapped Stormwater System Infrastructure
in the City of Edgewood.



USDA, Aerial (2015)

3. IDENTIFIED PROBLEMS AND RECOMMENDATIONS

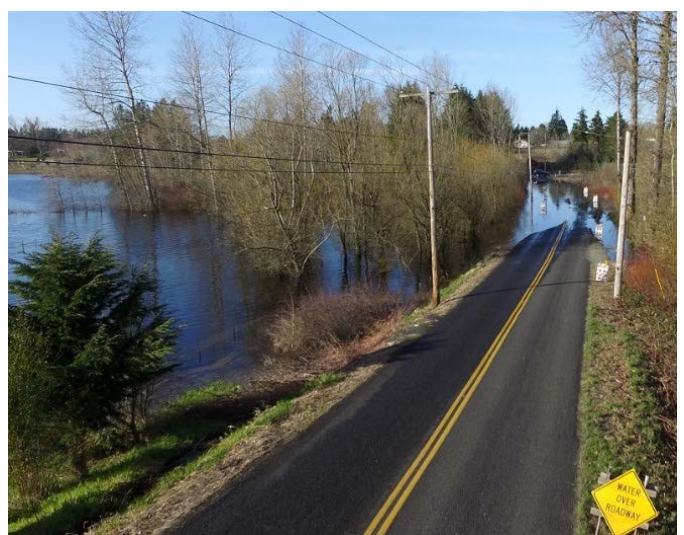
Review of previous stormwater plans and information obtained during a workshop with City staff was used to develop an initial list of problems to be evaluated during work on this plan. These problems were evaluated using desktop methods and limited field evaluation to assess site-specific opportunities and constraints. To address the problems, 12 capital improvement program (CIP) project solutions are included in this plan (Figure 3-1).

- Eight conceptual solutions were developed for priority problems; many of these are refinements or advancements of preliminary concepts.
- Four already well-developed projects were carried forward with minimal updates to the design other than updating the project cost to account for construction cost inflation.

The projects fall into three categories; Pothole Flooding, Stream Planning and Protection, and Other Localized Flooding, as organized below. Project summary sheets, conceptual figures, and cost estimates are included in Appendix C for those seven projects slated to be completed under the implementation schedule for this plan.

3.1. POTHOLE FLOODING

Edgewood's six potholes receive stormwater runoff from surrounding neighborhoods and frequently flood during the winter months. This flooding is extensive and impacts a large portion of the city; during the winter of 2017 it impacted over 30 percent of the city and caused complete closure of multiple roadways for 32 consecutive days. A detailed alternatives assessment for addressing this stormwater problem was performed as part of developing the City's 1997 surface water management plan, but no clear solution was identified to address the problem.



Flooding of the Edgewood Bowl Pothole causes road closures.

Pothole flooding remains the most significant stormwater-related issue in Edgewood, and given anticipated future development and projected wetter winter climate (See Section 2.5), the problem will likely increase in severity unless flood reduction strategies are implemented.

A brief description of the specific flooding problems associated with each pothole is provided below. For five of the six potholes, a flood reduction study needs to be completed to quantify the volume of water that needs to be controlled and the solution or combination of solutions that would be required to address the problem. The sixth pothole, Lake Chalet, has a well-developed solution already identified for flood reduction. That solution includes routing water through new and existing pipes to Simon's Creek, which was the natural overflow route for this pothole prior to modern development. Table 3-1 lists all the CIP project solutions proposed to address pothole flooding. The list includes:

- Initial monitoring to evaluate and assess the total volume and quality of water in each pothole
- Infiltration feasibility assessment considering use of underground injection control wells (UIC wells)
- If appropriate, a pilot project to evaluate options for filtering, treating, and infiltrating pothole water.

Table 3-1. CIP Projects Identified to Address Pothole Flooding.^a		
Project Title	Summary	Cost
Pothole Flood Reduction Plans	Develop and evaluate alternatives to address flooding in each pothole.	\$850,000 (\$170,000 per pothole)
Lake Chalet Pothole Flood Reduction Project	Convey water out of the pothole to reduce water surface elevation during flooding events.	\$400,000 to \$2,000,000 (Cost range reflects differences of using pumped flow, gravity flow, or horizontal directionally drilled siphon alternatives.)
Citywide Pothole Water Level and Water Quality Monitoring	Monitor water levels and quality in each of the city's potholes. The results will enable determination of the amount of water that must be controlled in each pothole as well as water quality and treatment needs.	\$200,000
Edgewood Bowl Pothole Pilot Project Feasibility Assessment	Assess the feasibility of using stormwater treatment and infiltration through an underground injection control (UIC) wellfield to reduce flooding in the Edgewood Bowl Pothole.	\$460,000
Infiltration Pilot Project Design and Construction	Design and construct a pilot project to demonstrate the effectiveness of using stormwater treatment and infiltration through an underground injection control (UIC) wellfield to reduce flooding in the Edgewood Bowl Pothole.	\$1,900,000 (Implementation is dependent upon results of Edgewood Bowl Pilot Project Feasibility Assessment)

^a See Appendix C for project summary sheets, figures, and cost estimates related to these CIP projects.

Following the work listed above, flood reduction studies would then be undertaken to develop detailed plans for each applicable pothole. These plans will develop a preferred strategy for each pothole, which may include regional infiltration facilities, land acquisition, and upland stormwater management. Completing the infiltration feasibility assessment and pilot project before development of individual flood reduction plans will allow consideration of regional infiltration facilities as a proven flood reduction option, if it is determined that they provide appropriate safeguards for existing drinking water supplies, are cost effective, and are supported by stakeholders.

The potholes have been assigned a priority based on the frequency and severity of flooding impacts. They are organized by priority in the following subsections, although in general all of the pothole flooding, irrespective of location, is considered a high priority by the City.

3.1.1. Edgewood Bowl Pothole

Edgewood Bowl Pothole is the highest priority pothole because it is the largest in terms of contributing area and flooded area. In 1997, 10 individual flooding problems were associated with Edgewood Bowl Pothole, including three areas of road closures (110th Avenue East, 16th Street East, and 114th Avenue East) and private property damage such as flooded crawl spaces, septic systems, drywells, and driveway erosion. In addition to property damage and safety issues caused by the flooding, wetlands associated with the pothole may be impacted by the water level fluctuation. The feasibility assessment and pilot projects listed in Table 3-1 are currently planned to occur in the Edgewood Bowl Pothole because it is the City's highest priority.

3.1.2. Lake Chalet Pothole

Flooding associated with the Lake Chalet Pothole affects many septic systems in the frequently flooded region near the pothole, and there are two drinking water wells near the pothole. In addition to these water quality concerns, 29th Street East is frequently closed due to flooding and two adjacent private properties are impacted. Projects in the Lake Chalet Pothole include water quality monitoring and a project to convey water from Lake Chalet to Simon's Creek to control flooding (Table 3-1). A flood reduction study is not currently planned for this pothole; however, if the currently proposed conveyance project is found to be infeasible, a flood reduction study will be needed.

3.1.3. Pinedale Pond/114th Avenue Pothole

There are several flooding problems associated with this pothole: seasonal flooding is experienced on eleven private properties and three roadways are on the flood fringe (117th Avenue East, 112th Avenue East, and 32nd Street East). Flooding of this pothole also affects associated wetland areas.

3.1.4. 108th Avenue Pothole

The 108th Avenue Pothole is located close to the Pinedale Pond/114th Avenue Pothole with similar challenges and a lack of water quality data for ponded areas and wetlands. There are five flooding problems associated with this pothole: two private properties and three roadways (108th Avenue East, 32nd Street East, and 36th Street East).

3.1.5. Surprise Lake Pothole

Surprise Lake Pothole is the smallest of the Edgewood Potholes. There is flood risk for two houses and one septic system, which is a water quality concern.

3.1.6. 122nd Avenue Pothole

The 122nd Avenue Pothole has steeper slopes surrounding it that limit the area affected when the water level rises. Although the 1997 plan identified private homes, driveways, and buildings flooded along 122nd Avenue East, only one private driveway has been impacted by the rising water levels recent years.

3.2. STREAM PLANNING AND PROTECTION

Two projects have been identified to restore and protect local streams that will require planning and assessment before specific solutions can be identified, these are listed in Table 3-2. The Jovita Creek project will require extensive coordination with other local jurisdictions before a protection and restoration plan can be developed. The Mortenson Farm site has been identified as a possible mitigation site by the Washington State Department of Transportation to mitigate for the impacts from future construction of the SR 167 Extension project. Therefore, this will also require coordination but may likely be partially funded by the Washington State Department of Transportation.



Mortenson Farm wetland restoration site.

Table 3-2. CIP Projects Related to Stream Protection and Planning.^a

Project Title	Summary	Cost
Jovita Creek Regional Improvement Feasibility Study	Develop a plan for the Jovita Creek basin that will define actions to address flooding, slope stability, erosion, water quality, and habitat health.	\$500,000
Mortenson Farm Regional Stormwater Improvements	Restore wetlands to enhance habitat and water quality of Surprise Lake Creek and improve the health of the Hylebos Creek watershed.	\$1,250,000

^a See Appendix C for project summary sheet, figure, and cost estimate related to this CIP project.



Stormwater runoff on the side of Jovita Boulevard in Edgewood transports pollutants and can damage the roadway.

3.3. OTHER IDENTIFIED FLOODING PROJECTS

There are localized, nuisance flooding problems that are caused by such things as undersized culverts, erosion from steep slopes, deteriorating infrastructure, lack of maintenance of stormwater facilities, and/or changes to land use or the drainage network on adjacent or nearby property. Table 3-3 lists CIP projects that address identified, localized flooding problems. (Section 4.4 addresses a long-term program for addressing these issues and integrating them into the list of site specific CIP projects when appropriate.)

Table 3-3. CIP Projects Related to Localized Flooding.

Project Title	Summary	Cost
Edgewood Drive East Drainage Improvements ^a	This project will improve conveyance to reduce roadway and property flooding during large storm events.	\$860,000
City Drainage Infrastructure Program/Spot Improvements	Ongoing annual program to identify and address small localized drainage problems.	\$100,000 (annual cost)
108th Avenue East/ 36th Street East Road Flooding	Evaluate alternatives and implement a project to prevent roadway flooding.	\$1,000,000
25th St. E. Drainage Improvements ^b	Stabilize and repair slide damage to prevent slides, shoulder erosion, and roadway flooding in the future.	\$200,000
Jovita Boulevard Rehabilitation	Reconstruct existing roadway to protect slopes, prevent erosion, and preserve storm drainage conveyance.	\$500,000

^a See Appendix C for project summary sheet, figure, and cost estimate related to this CIP project.

^b This roadway segment is now closed to traffic, and the City is re-evaluating the design solution for this site.

3.4. PROGRAM REVIEW AND UPDATES

Stormwater program priorities and needs are continually changing. The following provides a list of steps that should be scheduled to occur routinely to ensure efficiency of the City's overall stormwater program.

Recommendations

- Develop and maintain a list of known drainage problems and encourage field staff to contribute to the list on a quarterly basis, especially after storm events when they may have noted problems in the field.
- Annually review CIP projects planned by other departments to make more efficient use of limited resources by combining projects from multiple departments.
- Consider flow control and water quality retrofits through modification of existing facilities or LID development practices as part of projects programmed through other departments.
- Add flow control and water quality retrofit CIP projects or neighborhood drainage improvement CIP projects to the site-specific problems list.
- Revise this Comprehensive Stormwater Plan at least every 5 years, to ensure that it provides for effective long-term stormwater project planning, system maintenance, response to mandates, and program funding.
- Ensure the City's stormwater manual is regularly updated and ensure all City and private projects conform with the City's adopted stormwater requirements.

4. STORMWATER MANAGEMENT PROGRAM

This section includes a summary of stormwater management program needs. It includes those programmatic needs that are driven by regulations (i.e., the NPDES Phase II Permit [Permit] and State UIC guidelines) and the City's goals and policies that pertain to the stormwater program as listed in Section 1.3. A detailed Gap Analysis and Needs Assessment related to Permit compliance was completed as a part of development of this plan and is included as Appendix A.

4.1. NPDES PHASE II PERMIT COMPLIANCE

The most significant regulatory requirement facing the City's SWMP is the NPDES Phase II Permit (Ecology 2013), which addresses a variety of issues associated with stormwater runoff and requires the City to develop several distinct stormwater management program components. The City's current Stormwater Management Program (SWMP) is designed to achieve compliance with the Permit, to minimize the adverse impacts of stormwater on the natural and built environments (i.e., preventing flooding, reducing flow rates, and improving water quality), and meet the goals and policies outlined above.

As one of the first tasks in development of this plan, the City's SWMP activities and documentation were reviewed (based on information provided in 2016) to identify gaps in the existing SWMP. The primary focus of this effort was to evaluate the program against requirements of the Permit; however, other program needs have also been included if they were identified as goals in the Citywide Edgewood Comprehensive Plan, by City staff, and by the consultant team based on experience in other jurisdictions. The Gap Analysis and Needs Assessment (Gap Analysis) in Appendix A provides a detailed review of the City's activities as they pertain to the Permit and provides recommendations on filling the gaps in stormwater program coverage along with estimated costs for doing so. This section is intended as an overview of the findings and includes all recommendations from the Gap Analysis.

The current Permit specifies requirements for the following stormwater program components:

- Public education and outreach
- Public involvement and participation
- Illicit discharge detection and elimination (IDDE)
- Controlling runoff from new development, redevelopment, and construction sites

- Municipal operations and maintenance
- Compliance with Total Maximum Daily Load (TMDL) Requirements
- Monitoring and Assessment
- Reporting Requirements

Recommendations associated with each of these components are provided in the following sections. Chapter 5 provides an estimate of the additional staff and equipment resources that will be required to implement the entire program.

4.1.1. Public Education and Outreach

This SWMP program component provides education and outreach to the general public and businesses. The gap analysis and needs assessment identified a number of areas where the City should expand their education and outreach program.

Recommendations

Required by Current Regulations

- Conduct a survey to evaluate the effectiveness of the City's targeted education program. The City has identified engineers, developers, and contractors as their target audience and chosen "technical standards for stormwater site development" and "LID techniques" as subject areas to promote stormwater education and has developed an educational handout to support the program. The remaining need is to evaluate the program's effectiveness and then to revise the handout based on survey findings.
- Identify and implement a stewardship program such as tree planting events, rain barrel distribution, catch basin marking, or coordination with other stewardship programs such as the Pierce Conservation District's Stream Teams.

Recommended Program Improvements

- Continue hosting community workshops for stormwater issues.
- Identify regional partners and educational programs and include links to these on the City website (Examples are provided in Appendix A.)



Edgewood's fish-friendly carwash program is part of the Public Education and Outreach component.

- Implement the following activities as identified in the 2017 SWMP:
 - o Work with Puyallup School District to support stormwater education opportunities
 - o Work with the Pierce County Parks' Conservation Futures grant program to preserve sensitive areas
- Finalize educational handouts for paving contractors

4.1.2. Public Involvement and Participation

The City's program ensures that there is ample opportunity for the public to understand and comment on issues related to stormwater management in the city. No gaps or improvement needs were identified for this program component.

4.1.3. Illicit Discharge Detection and Elimination (IDDE)

The City meets the IDDE requirements of the Permit, primarily through inspections conducted by Pierce County staff through an Interlocal Agreement (ILA). In accordance with the ILA, Pierce County staff inspect and clean catch basins, which could detect illicit discharges, and conduct response (elimination) work if requested to support IDDE needs of the Permit. The program also includes mapping and inventorying the stormwater system, development of an ordinance to prohibit illicit discharges, and a tracked training program for staff to identify and detect illicit discharges.

A number of permit requirements have not yet been met for this Permit component. The most significant gap in program coverage is related to the requirement to map the tributary areas associated with outfalls and discharge points of 24 inches or more in diameter, which is required by February 2, 2018. The City has initially identified five outfalls and begun the mapping of the tributary areas, but based on a desktop analysis of the stormwater system, it is likely that a number of other points in the system should be classified as outfalls or discharge points. The Permit defines "outfalls" as points (ends of pipes or ditches) where stormwater leaves the City's system and enters a surface water and "discharge points" as points where discharge leaves the system through facilities or BMPs designed to infiltrate (See the Permit for complete definitions).

Recommendations:

Required by Current Regulations

- Map the tributary areas associated with known outfalls and discharge points of 24 inches or more in diameter.
- Continue the outfall inventory to include all locations where pipes and ditches discharge to potholes, wetlands, ponds, or streams and map the tributary area for all outfalls with a diameter of 24 inches or greater.

- Continue discharge point inventory to include all locations where pipes and ditches discharge to BMPs or facilities designed to infiltrate and map the tributary area for all outfalls and discharge points with a diameter of 24 inches or greater as well as all geographic areas that do not discharge stormwater to surface waters.
- Establish an ongoing IDDE training program for appropriate City staff and a tracking form to document staff training.
- Adopt the IC/ID Field Screening and Source Tracing Guidance Manual and a documented tracking system for field activities.

Recommended Program Improvements

- Request that Pierce County update their catch basin inspection form to allow tracking of non-oil discharges.
- Improve publicity associated with reporting spills; display the spill hotline number prominently on the City's website and advertise it in City news outlets.
- Provide additional IDDE educational resources and references on the City's website. (Appendix A lists some example informative links.)
- Purchase basic equipment to assist with field screening including, mirror and pole, dye testing supplies, sand bags, smoke testing equipment, ammonia test strips, pH probe (with temperature probe), surfactant test kit, and potassium meter.

4.1.4. Controlling Runoff from New Development, Redevelopment, and Construction Sites

This permit component addresses runoff from new development, redevelopment, and construction site projects. It lays out requirements for a permitting and review, development of a plan for long terms operations and maintenance and inspection of stormwater facilities, and requires staff training. It also requires incorporation of LID principles and BMPs in development-related codes, rules, and regulations. The City currently requires Stormwater Maintenance Agreements for new development that spell out these inspection, maintenance, and reporting requirements.

One of the requirements of this component of the Permit is for the City to conduct annual inspections of privately-owned stormwater facilities. This requires first creating an inventory of those facilities, insuring access agreements are in place with landowners, and implementation of the inspection and tracking program. This is the most critical gap for this component of the program.

In conjunction with pothole flood reduction plans described in Section 3, the City should evaluate how requirements for new development and redevelopment can be modified to

support flood reduction in the potholes. Options include imposing regulations that restrict increases in impervious surface in areas tributary to the potholes, developing more stringent requirements for flow control in closed depression basins, and developing a funding strategy (e.g., fee-in-lieu system) that would enable redevelopment projects to fund regional flow control facilities, such as large infiltration facilities.

Recommendations

Required by Current Regulations

- Develop an inventory of privately owned facilities and implement a plan for inspections as well as procedures for record keeping and enforcement tracking.
- Update the Surface Water Compliance Application forms to ensure consistency with the 2015 Pierce County Stormwater Management and Site Development Manual (PCM).

Recommended Program Improvements

- Consider posting the SWPPP short form on the City's website
- Consider developing additional checklists and/or BMP sizing guidance.
- Consider adding additional training opportunities for plan reviewers and site inspectors and track related training.
- Conduct a Stormwater BMP Feasibility Assessment and provide maps for use by plan reviewers, developers and engineers.
- Develop a protocol for addressing private property-driven flooding issues. The protocol should include outreach to adjacent property owners and education on responsibilities and follow up activities. Consider identifying the drainage problems on property tax assessments or use other mechanisms to alert potential property owners during property transactions.

4.1.5. Municipal Operations and Maintenance

The City's municipal operations and maintenance program reduces stormwater impacts with regular activities such as catch basin cleaning and facility inspections. The program also includes detailed stormwater control plans for some facilities, staff training, and record management. The City's ILA with Pierce County assigns Pierce County with responsibilities for routine inspections, catch basin cleaning, and street sweeping, although during emergencies, City staff perform inspections and some maintenance tasks.

The City has adopted and implemented the PCM, which identifies maintenance standards and inspection requirements for stormwater facilities and meets other minimum requirements of Ecology's Stormwater Management Manual for Western Washington (Ecology 2012).

Recommendations

Recommended Program Improvements

- Request that Pierce County provide an annual list of maintenance activities completed by Pierce County crews through the ILA
- Request training records for the Pierce County crews responsible for City O&M activities.
- Develop a template and populate a training tracking log from City and County records.
- Finalize SOPs related to maintenance and operations to document the City's specific practices, policies and procedures. (The City has adopted Pierce County SOPs with some modifications, but these need to be finalized.)



Roadside ditches that are part of the City's surface water conveyance infrastructure require regular maintenance.

4.1.6. Compliance with Total Maximum Daily Loads (TMDLs)

The Puyallup Watershed Water Quality Improvement Project (Ecology 2017) (aka Puyallup River TMDL Plan) lays out a plan for addressing fecal coliform (FC) bacteria issues in the Puyallup River. The City of Edgewood must comply with TMDL requirements to designate areas discharging via the City's stormwater system to Jovita Creek (a tributary to the Puyallup) as high priority areas for IDDE field screening. Because IDDE field screening is conducted by Pierce County through the ILA, the City needs to designate Jovita Creek Watershed as high priority for routine field screening and communicate that designation to the county.

Recommendations

Required by Current Regulations

- Designate Jovita Creek Watershed as high priority for routine field screening and communicate that designation to Pierce County.

4.1.7. Monitoring and Assessment

The City contributes to the regional stormwater monitoring program in compliance with the Permit requirements. Because the City has also recently conducted some local stormwater monitoring, the City should report these projects and any results to Ecology.

Recommendations

Required by Current Regulations

- The City recently conducted a Hydrologic Surface Water Analysis for the 108th Avenue East neighborhood, and is preparing for further monitoring and potential improvements. A project description and results summary should be provided to Ecology in the next annual report.

Addresses Anticipated Regulations

- A surface water and groundwater monitoring program for the Edgewood potholes has been recommended (Section 3); if implemented the results should be included in the following years annual report.

4.1.8. Reporting

The City submits annual reports to Ecology and has developed a summary of internal coordination mechanisms, public access to records, and 5-year record storage. There were no gaps identified for this permit section.

4.1.9. Preparation for the Next Permit

The draft 2019–2023 NPDES Phase II Permit contains at least three components that the City should be aware of and start preparing for during the time that this Plan will be in place: a subbasin inventory, a source control program, and watershed planning. It is expected that much of what might be required for the subbasin inventory has been developed as part of this plan. (Appendix D provides all of the basin inventory data that is provided in different parts of this plan in one complete table.)

Source Control Program for Existing Development

The 2019–2023 NPDES Phase II Permit is expected to require the development and implementation of a proactive, preventative, inspection-based source control program for existing development. The preliminary draft permit includes the following:

- Develop a source control inventory
- Develop an ordinance and enforcement policy

- Develop and implement and on-going training program
- Implement a business inspection program.

Recommendations

Addresses Anticipated Regulations

- Create the source control business inventory template and begin populating the inventory focusing on new businesses and adding existing businesses as opportunity allows.
- Review existing source control requirements in EMC 13.25 after the new Permit is issued and revise if necessary to meet Permit requirements.
- Begin to develop inspection, enforcement, and training programs for this new Permit requirement.
- Implement a business inspection program by the deadline in the future Permit.

Long-Term Watershed Planning

Although the specifics are still being crafted, the Permit will include a need to conduct long term planning to protect receiving waters. The steps are likely to include:

- Creating an inventory of basins
- Prioritizing the basins using existing characterization information
- Identifying priority catchments within basins for planning
- Identifying approaches to protecting and restoring the catchment.

The basins as defined in this plan should be considered to represent the inventory of basins and much of the characterization data provided in this plan should suffice for an initial characterization. Since the City has already prioritized basins for planning as reflected in the CIP list, the key steps described in the draft guidance should be considered as already met.

Recommendations

- None at this time.

4.2. UNDERGROUND INJECTION CONTROL (UICs)

Underground Injection Controls (UIC wells) are part of the storm drainage system in the city that is not regulated through the Permit. Instead, UIC wells are regulated by Ecology as described in Ecology Publication 05-10-067 titled *Guidance Manual for UIC Wells that Manage Stormwater* (Ecology 2006). UIC wells must either be rule-authorized or covered by a state waste discharge permit to operate. To be rule-authorized, a registration form must be submitted with the Department of Ecology and wells must meet the non-endangerment standard, which means that they cannot endanger groundwater.

The City's storm drain system includes multiple UIC wells, including 54 drywells (see Table 2-8) and numerous infiltration pipes, and none of the UIC wells appear to be registered with Ecology. The City is required to register its UIC wells with Ecology and to accomplish this, needs to inventory the UIC wells and determine the type of facility and the year of construction. UIC wells constructed before February 3, 2006, are considered "existing" UIC wells, and a well assessment must be completed to determine if any of the existing wells are a high threat to groundwater. Wells constructed after February 3, 2006, are considered "new" UIC wells, and do not require a well assessment. The existing UIC wells that are a high threat to groundwater must be retrofitted to protect groundwater quality.



Groundwater is the main source of drinking water for City and area residents, so it is important to keep it free of stormwater contaminants.

The City should conduct the UIC well assessment using GIS analysis to evaluate land use around the wells (indicates potential for pollution), soil type, depth to groundwater (indicates likelihood of soil treatment potential), and location relative to groundwater protection areas.

Recommendations

Required by Current Regulations

- Conduct a complete inventory of all publicly-owned and operated UIC wells and register them with Ecology.
- Using the UIC guidance, determine which existing UIC wells pose a high threat to groundwater and then complete a well assessment to identify those high threat wells.
- Retrofit public wells that are a high threat to groundwater (no timeline for this is set by Ecology).
- Design and construct all new UIC wells according to the specifications in the UIC guidance (ongoing).

Recommended Program Improvements

- Construct opportunistic retrofits of all public UIC wells that pose a threat to groundwater by installing upstream water quality treatment facilities or other site-specific retrofits.
- Develop a targeted outreach program for private UIC well owners in areas found to pose a high threat to groundwater.

4.3. ASSET MANAGEMENT

Edgewood is served by a traditional conveyance network of catch basins, buried conveyance pipes, and open ditches. Much of this infrastructure is more than 80 years old, and therefore repair and replacement of the infrastructure is an important long-term need. Development of an asset management system will help address this need and enable the City to execute proactive repair, rehabilitation, and replacement strategies, rather than more costly, reactive emergency response to system failures. Asset management can be used to identify parts of the conveyance system that are prone to failure or that align with proposed projects in other departments, enabling the City to make more efficient and effective use of limited resources by combining projects from multiple departments.

The City should include a budget line item to cover regular repair and replacements separately from other CIP projects to avoid delaying CIP implementation when critical system repair needs arise. In the longer term, the City should consider long term asset management when purchasing infrastructure management software or equipment, such as CCTV inspection equipment, that could be shared between departments.

The following list lays out the recommendations related to establishing an asset management program. Although these are important they are not included as priority items in the Implementation Plan (Section 5) because the City has other important needs to focus on during the next 5 to 6 years.

Recommendations for Future Program

- Establish a program for collecting CCTV data on the buried conveyance network to evaluate condition and establish repair priorities.
- Select or develop an asset management platform to integrate software and database forms for evaluating and tracking repair and maintenance activities.
- Develop an asset management program to justify the systematic rehabilitation and replacement of infrastructure based on conditions assessment and criticality analysis
- Include a permanent fund for a repair and replacement of existing stormwater infrastructure in the annual budget.

4.4. PREPARING FOR CLIMATE CHANGE

As described previously, potential hydrologic changes associated with climate change increase the importance of stormwater management practices that control flows, promote infiltration, and preserve and enhance water quality. The potential for increased winter precipitation is likely to exacerbate conveyance and pothole flooding problems that Edgewood is already facing. Further, enhancing groundwater recharge and protecting water quality will become increasingly important as population grows, groundwater demands increase, and water resources become scarcer.

Recommendations

The following activities, some of which were identified in previous sections of this Plan, will help to prepare for and to mitigate climate change impacts:

- Implement pothole flood reduction studies and projects.
- Continue to promote dispersed infiltration (LID techniques) to control 100 percent of stormwater runoff on all sites, where it is feasible.
- Model the stormwater system to determine what areas are at, or near, flow capacity and thus prone to increased flood risk.
- Modify conveyance sizing requirements for new and redevelopment to account for larger peak flow events.
- Retrofit existing stormwater facilities to improve (or add) treatment performance and construct new facilities more conservatively.

5. PLAN IMPLEMENTATION

The following subsections describe stormwater program improvements and projects that are needed to fully achieve the City's surface water management goals and policies. The first three subsections define the stormwater program activities that need to be implemented and the staffing and equipment that are required to implement the activities. The final subsection defines capital improvement project (CIP) needs and a proposed timeline for project implementation.

5.1. STORMWATER PROGRAM ACTIVITIES

Tables 5-1, 5-2, and 5-3 list high priority, lower priority, and future anticipated stormwater program activities, respectively, for the City of Edgewood. High priority activities (Table 5-1) should be completed within 1 year of CSWMP adoption. In most cases they are considered a high priority because they are required by the existing Permit or other regulation. It is assumed that most of the high priority needs would be carried out (or continue to be carried out) by existing staff; in these cases, "0" hours have been allotted for additional staff time. Some tasks, particularly one-time activities or those that require specialized expertise, may more efficiently be performed by an external source such as a consultant; cost estimates have been provided for these activities. In some cases, there are start-up activities associated with a program need, these are identified as one-time costs whether they are slated for completion by staff or external sources. Additional information related to the assumptions for each activity can be found in Appendix A. It is important to understand that an important assumption around staffing is that the Stormwater Program Manager is dedicated to stormwater program activities half of the time. In a small city this can be difficult to achieve; thus, staffing needs are based on optimistic assumptions.

To fully implement these high priority needs would require approximately 0.25 FTEs on a full time permanent basis and another 0.30 FTEs on a temporary basis. External costs are estimated at \$71,000. The majority of this (\$50,000) is associated with the effort to retrofit existing UICs in high-threat areas. It has been estimated that it would cost approximately \$50,000 per well; this reflects an annual somewhat long-term cost for completing one well each year. The high-threat UIC well assessment will need to be completed before determining the duration of this annual need. One additional consideration for planning the UIC well retrofits is that completing the retrofits in batches (i.e., more than one well retrofit per project) could increase efficiency and reduce the cost per well.

Lower priority needs are addressed in Table 5-2. These activities are important to the overall functioning of the City's stormwater program and to make progress towards achieving the stormwater utility goals in Section 1.3, but they can be implemented more gradually. These

equate to an additional staffing need of approximately 0.20 FTE as well as external costs of \$50,000 one-time and \$10,000 annually. External costs are primarily associated with creating tools that would aid developers in complying with stormwater regulations and improve efficiency of the development review process. The financial analysis being prepared in support of this Plan will not include the staffing or financial resources required to implement these activities because the anticipated rate impact would not be acceptable at this time; however, this cost information should be considered during future financial analysis.

Anticipated future program needs are addressed in Table 5-3. Each of the activities has been defined based on draft language for the next Permit. Although the City is not currently required to implement these activities immediately, some are relatively easy tasks to perform; and they all make progress towards achieving the stormwater utility goals and positioning the utility for compliance with the next permit cycle which will begin in 2019 (before the next CSWMP update). Full implementation of these tasks would require some new staffing resources and \$8,000 in one-time funding; these costs have not been included in the financial analysis for this Plan.

Table 5-1. High Priority Program Activities and Costs.					
Program Area	Activity^a	One-time Additional Staffing Need (hours)^b	Annual Additional Staffing Need (hours)^b	One-time External Cost	Annual External Cost
Public Education and Outreach	Measure the understanding and adoption of targeted behaviors	0	80	\$10,000	\$0
	Develop a plan and schedule for creating or engaging in stewardship opportunities	0	80	\$0	\$0
Illicit Discharge Detection and Elimination	Update outfall and discharge point inventory and map the tributary areas associated with each.	0	0	\$0	\$20,000 ^c
	Establish an ongoing IDDE training program for appropriate City staff and a tracking form to document staff training.	0	0	\$0	\$0
	Adopt the IC/ID Field Screening and Source Tracing Guidance Manual and a documented tracking system for field activities.	0	0	\$0	\$0
	Purchase basic equipment to assist with field screening.	0	0	\$5,000	\$1,000

Table 5-1 (continued). High Priority Program Activities and Costs.					
Program Area	Activity^a	One-time Additional Staffing Need (hours)^b	Annual Additional Staffing Need (hours)^b	One-time External Cost	Annual External Cost
Controlling Runoff from New Development, Redevelopment, and Construction Sites	Develop an inventory of privately owned facilities and implement a plan for inspections as well as procedures for record keeping and enforcement tracking.	320	160	\$0	\$0
	Update the Surface Water Compliance Application forms to ensure consistency with the 2015 Pierce County Stormwater Management and Site Development Manual (PCM).	0	0	\$0	\$0
Municipal Operations and Maintenance (O&M)	Request an annual list of maintenance activities completed by Pierce County crews through the ILA.	0	0	\$0	\$0
	Request training records for the Pierce County crews responsible for City O&M activities.	0	0	\$0	\$0
	Develop a template and populate a training tracking log from City and County records.	0	0	\$0	\$0
	Finalize SOPs related to maintenance and operations to document the City's specific practices, policies and procedures.	0	80	\$0	\$0
Compliance with Total Maximum Daily Loads (TMDLs)	Prioritize Jovita Creek Watershed for routine field screening and track activities in this watershed.	0	0	\$0	\$0
Monitoring and Assessment	Provide summary of Hydrologic Surface Water Analysis for the 108th Avenue East neighborhood to Ecology in the next annual report.	0	0	\$0	\$0
Underground Injection Control (UICs)	Conduct an inventory of all publicly-owned and operated UIC wells and register them with Ecology.	40	0	\$0	\$0
	Determine which UIC wells pose a high threat to groundwater and complete a well assessment for them.	160	0	\$0	\$0

Table 5-1 (continued). High Priority Program Activities and Costs.					
Program Area	Activity^a	One-time Additional Staffing Need (hours)^b	Annual Additional Staffing Need (hours)^b	One-time External Cost	Annual External Cost
	Retrofit wells that are a high threat to groundwater. (No timeline for this is set by Ecology.)	0	0	\$0	\$50,000
	Design and construct all new UIC wells according to the specifications in the UIC guidance (ongoing).	0	0	\$0	\$0
TOTAL		520 hours 0.29 FTE^d	400 hours 0.23 FTE^d	\$15,000	\$71,000

^a Appendix A includes additional assumptions related to these activities.

^b Zero (0) hours indicates the task would be performed by existing staff.

^c This cost has been refined since development of the Gap Analysis and Needs Assessment was completed.

^d FTE calculation is based on an assumption of an average of 1,768 working hours per year.

Table 5-2. Lower Priority Programs Activities and Costs.					
Program Area	Activity^a	One-time Additional Staffing Need (hours)	Annual Additional Staffing Need (hours)	One-time External Cost	Annual External Cost
Public Education and Outreach	Continue hosting community workshops for stormwater issues.	0	120	\$0	\$0
	Identify regional partners and educational programs and include links to these on the City website (Examples are provided in Appendix A).	0	20	\$0	\$0
	Implement the following activities as identified in the 2017 SWMP: Work with Puyallup School District to support stormwater education opportunities Work with the Pierce County Parks' Conservation Futures grant program to preserve sensitive areas.	0	100	\$0	\$0
	Finalize educational handouts for paving contractors.	0	40	\$0	\$0

Table 5-2 (continued). Lower Priority Programs Activities and Costs.					
Program Area	Activity^a	One-time Additional Staffing Need (hours)	Annual Additional Staffing Need (hours)	One-time External Cost	Annual External Cost
Illicit Discharge Detection and Elimination	Request that Pierce County update their catch basin inspection form to allow tracking of non-oil discharges.	0	0	\$0	\$0
	Improve publicity associated with reporting spills; display the spill hotline number prominently on the City's website and advertise it in City news outlets.	0	0	\$0	\$0
	Provide additional IDDE educational resources and references on the City's website. (Appendix A lists some example informative links.)	0	0	\$0	\$0
Controlling Runoff from New Development, Redevelopment, and Construction Sites	Post the SWPPP short form on the City's website.	0	0	\$0	\$0
	Develop additional checklists and/or BMP sizing guidance in support of stormwater manual implementation.	0	0	\$25,000	\$0
	Create additional training opportunities for plan reviewers and site inspectors and track related training.	0	0	\$0	\$0
	Conduct GIS-based Stormwater BMP Feasibility Assessment and provide maps for use by plan reviewers, developers and engineers.	0	0	\$25,000	\$0
	Develop a protocol for addressing private property-driven flooding issues.	0	0	\$0	\$0
UICs	Develop a targeted outreach program for private UIC well owners in areas found to pose a high threat to groundwater.	0	40	\$0	\$10,000
TOTAL		0 hours	320 hours 0.18 FTE^b	\$50,000	\$10,000

^a Appendix A includes additional assumptions related to these activities.

^b FTE calculation is based on an assumption of an average of 1,768 working hours per year.

Table 5-3. Anticipated Future Required Program Needs and Tasks.					
Program Area	Activity^a	One-time Additional Staffing Need (Hours)	Annual Additional Staffing Need (Hours)	One-time External Cost	Annual External Cost
Monitoring and Assessment	A surface water and groundwater monitoring program for the Edgewood potholes has been recommended (Section 3); if implemented the results should be included in the following years' annual report.	0	0	\$0	\$0
Source Control Program for Existing Development	Create the source control business inventory template and begin populating the inventory focusing on new businesses and adding existing businesses as opportunity allows.	40	0	\$0	\$0
	Review existing source control requirements in EMC 13.25 after the new Permit is issued and revise if necessary to meet Permit requirements.	0	0	\$0	\$0
	Begin to develop inspection, enforcement, and training programs for this new Permit requirement.	120	0	\$8,000	\$0
	Implement a business inspection program by the deadline in the future Permit.	0	120	\$0	\$0
Long Term Watershed Planning	Use the basins delineated in this Plan to represent the inventory and characterization requirements and the CIP list to reflect prioritization.	0	0	\$0	\$0
TOTAL		160 hours 0.09 FTE^b	120 hours 0.07 FTE^b	\$8,000	\$0

^a Appendix A includes additional assumptions related to these activities.

^b FTE calculation is based on an assumption of an average of 1,768 working hours per year.

There were also long-term needs and tasks that were identified that are not current or anticipated permit requirements or regulations but that should eventually be included as part of a comprehensive stormwater management program. These were identified under the subheadings of Asset Management and Preparing for Climate Change. No staffing or budget estimates have been prepared to address these and they are purposely not included as part of this Implementation Plan because the City is not expected to have the resources to carry these out within the implementation period for this Plan.

5.2. STAFFING AND RESPONSIBILITIES

Table 5-4 lists staff that are currently funded by stormwater utility fees and identifies where additional staff are needed to fully support the stormwater program. Currently, the stormwater utility funds 2.9 FTEs; an additional 0.29 FTEs are needed on a permanent basis and 0.39 FTEs on a one-time basis. Responsibilities for implementing the stormwater management program are primarily carried out by Public Works department with support from the Planning and Land Use, Administration, and Building departments.

Table 5-4. Current (2017) and Recommended City of Edgewood SWMP Staff Support.			
Role/Department	Full Time Equivalent (FTE) Staff		
	Utility Funded Staff (FTE)^a	One-Time Additional Staffing Need (FTE)^b	Annual Additional Staffing Need (FTE)^b
Administration			
Assistant City Administrator	0.05		
City Clerk	0.02		
Communications Coordinator	0.05		
Accounting Manager	0.05		
Building			
Permit Coordinator	0.03		
Public Works			
Public Works Director	0.70		
Roads Superintendent	0.50		
Engineering Technician	0.50	0.39	0.29
Maintenance	0.40		
Planning and Land Use			
Community Development Director	0.30		
Administrative Support	0.30		
Total	2.90^a	0.39	0.29

^a Due to staffing changes during the course of this plan, there are differences between the staffing assignments shown in Appendix A and those on this table.

^b FTE calculation is based on 1,768 working hours per year.

5.3. EQUIPMENT RESOURCES

The major equipment currently used for the SWMP includes a skid steer and small dump truck, as well as basic equipment for emergency stormwater facility access: flashlight, catch basin hooks, and turbidimeter. While Pierce County is still primarily responsible for inspections and maintenance, the following equipment is recommended for City staff to assist with field

screening and source tracing with a one-time cost of \$5,000 and a \$1,000 annual replacement cost:

- Mirror and pole
- Dye testing supplies
- Sand bags
- Smoke testing equipment
- Ammonia test strips
- pH probe (with temperature probe)
- Surfactant test kit
- Potassium meter

5.4. CAPITAL IMPROVEMENT PROGRAM

Table 5-5 lists the CIPs identified in Section 3 with a timeline for their implementation. While there are no low priority projects on the list, the City recognizes that not all of these projects can be funded without a significant increase in stormwater utility fees. Those projects that are **bolded** are those that are considered a high priority for more immediate action.

For example, while all of the pothole flood reduction plans address existing flooding, the Lake Chalet project is considered essential because this is also an area experiencing more development pressure and where more structures are already in jeopardy during flood events. The feasibility study for Edgewood Bowl pothole and the subsequent pilot project are also considered a high priority and an immediate need because the findings will be critical for identifying the suite of tools that may be available for use in developing plans for addressing pothole flooding. The two listed roadway drainage projects are also considered critical because they have been on the City's CIP list for a long time and they are significant problems.

There are also two large projects that would be unlikely to move forward without substantive support from other agencies and/or grants. The Jovita Creek basin (and therefore the area affected by the Jovita Creek Regional Improvement Feasibility Study) lies primarily within unincorporated King County. While this stream is important to the City and they would be a major stakeholder in any study, they would not likely provide the main funding unless it was through a grant. Similarly, the Mortenson Farm Regional Stormwater Improvement Project is still conceptual and is most likely to be driven by mitigation needs related to the SR 167 highway corridor improvements, rather than representing a high priority need for the City.

Table 5-5. Capital Improvement Project (CIP) List for Edgewood’s Stormwater Plan.										
No.	Project Name	Grant Contingent	Critical?	Total	2018	2019	2020	2021	2022	2023
SW-1	City Drainage Infrastructure Program/Spot Improvements	No	Critical	\$600,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000
	Flood Reduction Plans and Projects for Edgewood Potholes	No	Not Critical	–	–	–	–	–	–	–
	Pothole Water Level and Water Quality Monitoring	No	Not Critical	–	–	–	–	–	–	–
	Edgewood Pothole Pilot Project Feasibility Assessment^a	No	Critical	460,000	70,000	310,000	80,000	–	–	–
	Infiltration Pilot Project Design and Construction	No	Not Critical	1,900,000	–	–	100,000	750,000	1,050,000	–
	Flood Reduction Plan for Edgewood Pothole	No	Not Critical	170,000	–	–	–	170,000	–	–
	Flood Reduction Plan for Pinedale Pothole	No	Not Critical	170,000	–	–	–	–	170,000	–
	Flood Reduction Plan for 108th Avenue Pothole	No	Not Critical	170,000	–	–	–	–	170,000	–
	Flood Reduction Plan for Surprise Lake Pothole	No	Not Critical	170,000	–	–	–	–	–	170,000
	Flood Reduction Plan for 122nd Avenue Pothole	No	Not Critical	170,000	–	–	–	85,000	85,000	–
	Edgewood Drive East Drainage Improvements	No	Critical	860,000	–	–	–	–	–	860,000
SW-3	Jovita Creek Regional Improvement Feasibility Study	Yes	Not Critical	500,000	–	–	–	175,000	175,000	150,000
	Lake Chalet Pothole Flood Reduction Project	No	Critical	1,800,000	–	500,000	1,300,000	–	–	–
SW-2	Mortenson Farm Regional Stormwater Improvements	Yes	Not Critical	1,250,000	–	50,000	700,000	500,000	–	–
SW-5	108th Ave E./36th St. E. Road Flooding	No	Critical	1,000,000	–	–	–	50,000	800,000	150,000
SW-6	Surface Water Management Plan Update (including stormwater comprehensive plan update)	No	Critical	200,000	75,000	25,000	25,000	25,000	25,000	25,000
SW–7	25th St. E. Drainage Improvements ^e	No	Not Critical	200,000	–	–	–	–	–	200,000
SW-11	Jovita Boulevard Rehabilitation	No	Not Critical	500,000	–	–	–	50,000	300,000	150,000
Total Annual Expenditures (2017 Dollars)				\$10,120,000	\$245,000	\$985,000	\$2,305,000	\$1,905,000	\$2,875,000	\$1,805,000

^a Includes cost of Pothole Water Level and Water Quality Monitoring CIP.

^b Allied costs include costs for City project administration and management, design engineering, geotechnical, and permitting.

^c Total cost of \$3,210,000 for monitoring, feasibility assessment, pilot project design and construction, and five flood reduction plans.

^d Allied costs assumed to be 40 percent for this project.

^e This roadway segment is now closed to traffic, and the City is re-evaluating the design solution for this site.

Implementation of just the high priority projects represents a significant investment of an average of approximately \$1.7 million per year over the next 6 years. The City has successfully obtained grant funding for the Feasibility Study for the Edgewood Pothole Pilot Study and will continue to look for financial assistance through grant and loan programs for appropriate projects, but ultimately implementation of just the critical needs is well beyond the current budget of the stormwater utility.

There are unique features about the City's demographics and geography that together create special challenges for stormwater management. First, Edgewood has a comparatively low population density. Figure 5-1 shows population densities for some nearby small cities in Puget Sound. All of the cities have a higher population density than Edgewood; three have more than 2.5 times more people per square mile. Since most of the costs associated with operating a stormwater program are the same no matter the size or population of the city, fewer people in Edgewood simply equates to a higher cost per person. Another related factor is that there are comparatively few commercial businesses. Typically, commercial businesses pay a larger share of stormwater fees because they contribute more to stormwater problems. Figure 5-2 provides a comparison of the amount of revenue generated to stormwater utilities from non-residential properties (primarily commercial properties) in some nearby small cities. As shown, non-residential customers account for only 36 percent of Edgewood's revenue whereas in other local cities they account for 52 percent to 72 percent. These two factors of low population and fewer commercial accounts together play a significant role in affecting cost per parcel.

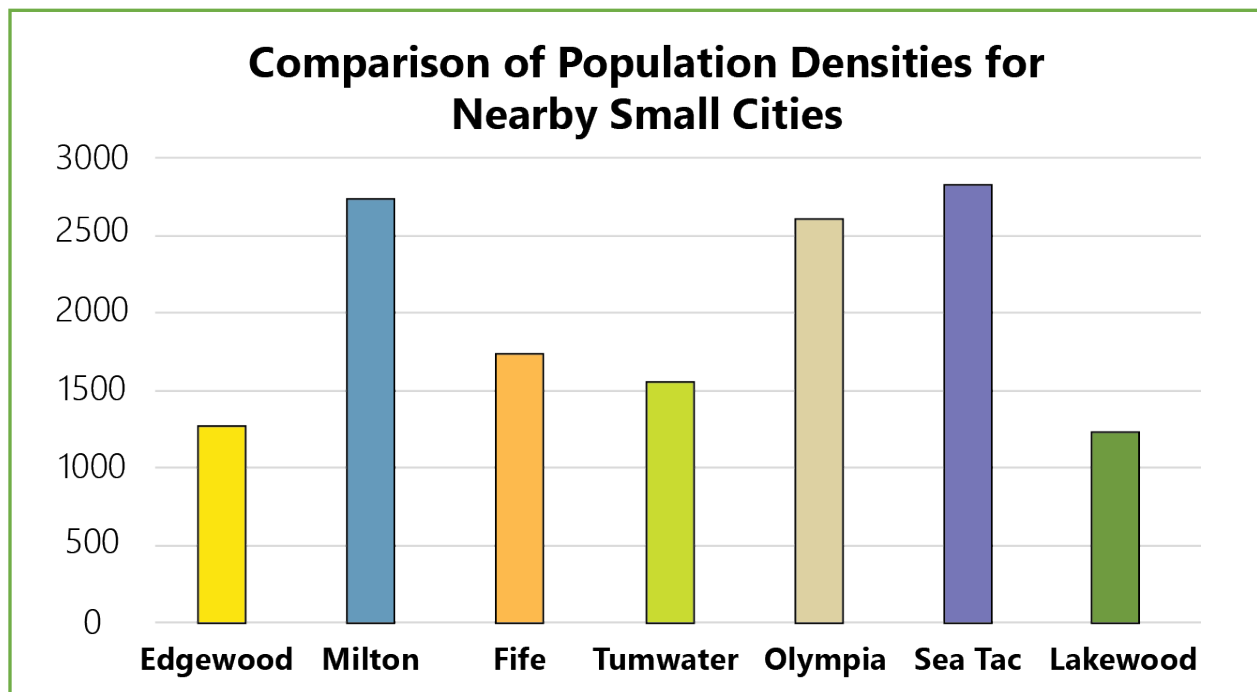


Figure 5-1. Comparison of Population Densities for Nearby Small Cities.

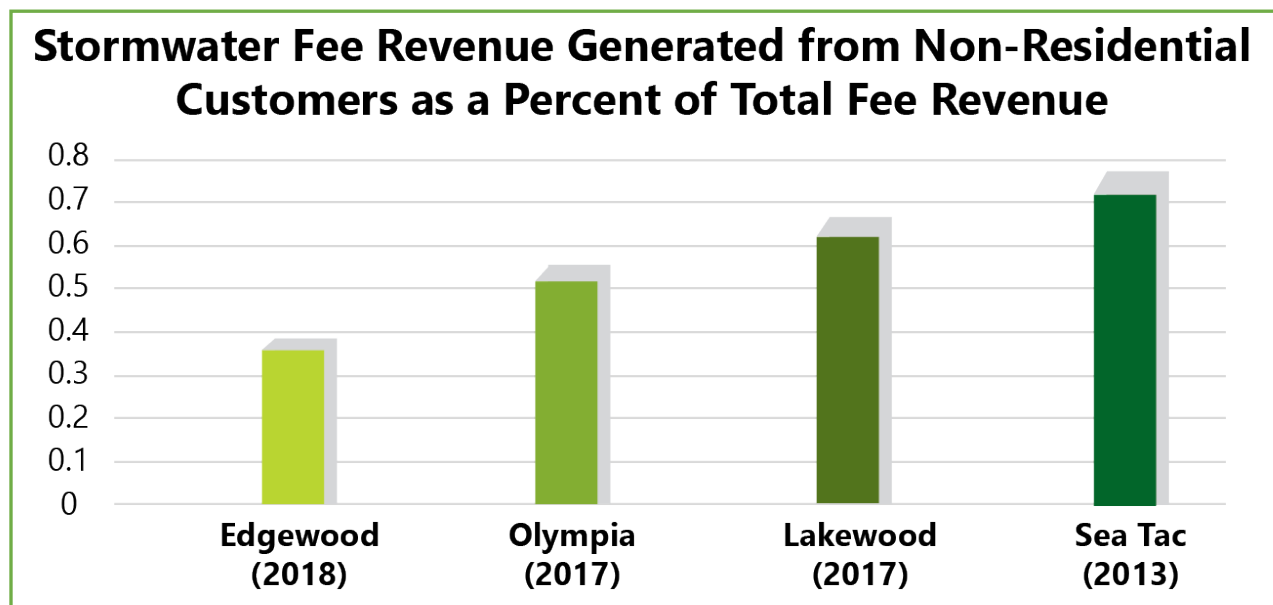


Figure 5-2. Stormwater Fee Revenue Generated from Non-Residential Customers as a Percent of Total Fee Revenue.

Edgewood’s unique geology also causes problems and related costs that other communities do not experience. Thus, in addition to typical storm drainage problems such as the Edgewood Drive improvements included in Table 5-5, there are a series of needs that other cities do not have. The city’s location on the plateau and its geology means that there are six potholes with difficult to solve flooding problems. Studies and plans for addressing these problems (including the Lake Chalet pothole project) account for over \$5 million of the high priority project costs over the next 5 to 6 years Table 5-5). In addition, the steep ravines that drain water from the plateau to the valley floor cause extensive erosion, drainage, and roadway problems, which also contribute to capital project costs. A financial analysis and rate study is currently underway to evaluate stormwater utility finances in support of this Plan.

6. REFERENCES

Ecology. 2015. The 303(d) List of Impaired and Threatened Waterbodies 2012 List. Washington State Department of Ecology, Water Quality Program. Accessed January 5, 2016 <<http://www.ecy.wa.gov/programs/wq/303d/currentassessmt.html>>.

Ecology. 2012. Stormwater Management Manual for Western Washington. Washington State Department of Ecology, Olympia, Washington. August.

Edgewood. 2015. City of Edgewood Comprehensive Plan. City of Edgewood Planning Commission. Edgewood, Washington.

Kato & Warren. 1997. City of Edgewood Surface Water Management Plan. Prepared by Kato & Warren, Inc.

Mauger, G.S., J.H. Casola, H.A. Morgan, R.L. Strauch, B. Jones, B. Curry, T.M. Busch-Isaksen, L. Whitely-Binder, M.B. Krosby, and A.K. Snover. 2015. State of Knowledge: Climate Change in Puget Sound. Report prepared for the Puget Sound Partnership and the National Oceanic and Atmospheric Administration Climate Impacts Group. University of Washington, Seattle. doi:10.7915/CIG93777D.

US Census Bureau. 2016. <<https://www.census.gov/data/datasets/2016/demo/popest/total-cities-and-towns.html>>.

APPENDIX A

Technical Memorandum: City of Edgewood Stormwater Program Gap Analysis and Needs Assessment

Date: August 24, 2017
To: Jeremy Metzler, PE, City of Edgewood
From: Rebecca Dugopolski, PE; Meghan Mullen; and Joy Michaud, Herrera Environmental Consultants
Subject: City of Edgewood Stormwater Program Gap Analysis and Needs Assessment

BACKGROUND

The City of Edgewood (City) currently implements its Stormwater Management Program (SWMP) to achieve regulatory compliance and to minimize the adverse impacts of stormwater on the natural and built environments (i.e., managing peak flow volumes to avoid flooding and providing water quality treatment to mitigate impacts on receiving waters). Implementation of the SWMP is primarily the responsibility of the Public Works Department, with support provided by the Operations and Maintenance division of Public Works, Community Development Department, and Parks and Recreation Department.

The current SWMP activities are described in the 2017 SWMP and 2016 annual report that was submitted to the Washington State Department of Ecology (Ecology) in March 2017. The SWMP includes information on planned SWMP activities to meet the requirements of Ecology's National Pollutant Discharge Elimination System Western Washington Phase II Municipal Stormwater Permit (NPDES Phase II Permit), which is the most significant regulatory requirement driving the City's stormwater program. The NPDES Phase II Permit, requires that the City prepare annual reports to document activities taken to meet the associated requirements.

In preparation of this report, the City's SWMP activities and documentation were reviewed to identify gaps in the SWMP. The primary focus of this effort was to evaluate the program against requirements of the NPDES Phase II Permit; however, other program needs have also been included if they were identified by City staff. Appendix A contains a detailed matrix of the City's activities, provides recommendations for meeting identified data gaps, and includes funding and staffing estimates associated with the recommendations. The purpose of this memorandum is to provide an overview of the gap analysis process and briefly summarize the recommendations from Appendix A. The recommendations will be used by City staff to direct further SWMP activities and to help guide the City's Stormwater Management Plan update.

METHODS OF ANALYSIS

Potential gaps and areas for improvement were identified through a review of available documents, a questionnaire sent to City staff, a project kickoff meeting with City staff, and follow-up discussions.

Document Review

Document review included pertinent documents identified and/or provided by the City, including City codes and policies, maps and GIS data, SWMP documents, public education materials, and operations and maintenance (O&M) information. These were reviewed to provide a foundation for characterizing the existing SWMP.

Questionnaire and Kickoff Meeting

To examine the components of the City's SWMP in more detail and to identify gaps and potential issues, City staff members representing various aspects of the City's stormwater program attended a project kickoff meeting with Herrera staff on May 12, 2017.

A Gap Analysis questionnaire was distributed to participants in advance of the meeting to gather staff input and perspective on key stormwater issues. Questionnaire responses were used to shape and facilitate the meeting discussion, focusing on NPDES Phase II Permit requirements, staffing needs, and other issues of concern to City staff.

NPDES PHASE II PERMIT REQUIREMENTS

The most significant regulatory requirement facing the City's SWMP is Ecology's NPDES Phase II Permit, which addresses a variety of issues associated with stormwater runoff and requires the City to develop several distinct SWMP components. The current NPDES Phase II Permit (issued by Ecology on August 1, 2012; effective on August 1, 2013) specifies requirements for the following:

- Public education and outreach
- Public involvement and participation
- Illicit discharge detection and elimination (IDDE)
- Controlling runoff from new development, redevelopment, and construction sites
- Municipal operations and maintenance (O&M)
- Compliance with Total Maximum Daily Load (TMDL) Requirements

- Monitoring and Assessment
- Reporting Requirements

Recommendations associated with each of these components are provided in Appendix A along with additional resources (e.g., staffing and equipment) required to implement these recommendations.

CONCLUSIONS

The City's SWMP meets a majority of the NPDES Phase II Permit requirements; however, there are two primary areas where additional resources are needed: Public Education and Outreach and Controlling Runoff from New Development, Redevelopment, and Construction Sites. Two additional areas (IDDE and Municipal O&M) could also use a slight increase in funding or staff support to meet existing NPDES Phase II Permit requirements. Based on the recommendations provided in Appendix A, one-time funding needs have been estimated at \$50,000; and ongoing funding needs have been estimated at \$1,000. One-time funding needs have been identified to support requirements of the City's IDDE program and to support Controlling Runoff from New Development, Redevelopment, and Construction Sites. Ongoing funding would support the replacement of equipment used for illicit discharge field screening and source tracing as part of the City's IDDE program.

Additional City staff support needed has been estimated at 840 hours (or 0.48 Full Time Equivalents [FTE]). This additional staff support is needed to support requirements of the City's Public Education and Outreach program, to Controlling Runoff from New Development, Redevelopment, and Construction Sites, and to support Municipal O&M.

Table 1. Summary of Funding and Staffing Recommendations.				
Permit Section	Funding		Staff Support	
	One-time	Ongoing	Hours	FTE
Public Education and Outreach	\$10,000	\$0	440	0.25
Public Involvement and Participation	\$0	\$0	0	0
IDDE	\$15,000	\$1,000	0	0
Controlling Runoff from New Development, Redevelopment, and Construction Sites	\$25,000	\$0	320	0.18
Municipal O&M	\$0	\$0	80	0.05
Compliance with TMDL Requirements	\$0	\$0	0	0
Monitoring and Assessment	\$0	\$0	0	0
Reporting	\$0	\$0	0	0
Total	\$50,000	\$1,000	840	0.48

APPENDIX A

City of Edgewood Stormwater Management Program Activities and Recommendations

Table A-1. City of Edgewood Stormwater Management Program Activities and Recommendations.				
Permit Section	Current Activities	Recommendations	Additional Support Needed (staff/funding)	Support Assumptions
Public Education and Outreach				
S5.C.1.a – Education and outreach program “To build general awareness, Permittees shall select from the following target audiences and subject areas: (a) General public (including school age children), and businesses (including home-based and mobile businesses): - General impacts of stormwater on surface waters. - Impacts from impervious surfaces. - Impacts of illicit discharges and how to report them. - Low impact development (LID) principles and LID BMPs. - Opportunities to become involved in stewardship activities.”	Based on the City’s website: - Brochures and resources on the City website under the heading “What can you do to help protect the environment?” www.cityofedgewood.org/government/public_works/surface_water_management.php “Ten Ways You Can Improve the Quality of Stormwater Runoff” Handout: “Fish-Friendly Car Wash” handouts: - Handout that describes the negative impacts of traditional car wash practices - Handout with contact information and a description of the car wash kit that can be used for fundraising car washes - Handout with instructions on how to set up the car wash kit - Natural Yard Care handouts: “Soil and Mulch” Handout: describes soil components, how to amend soils, and how to mulch (Step 1 of the Natural Yard Care program). “Planning and Planting a Sustainable Landscape” Handout: describes how to plan landscaping and select appropriate plants (Step 2 of the Natural Yard Care program). “Watering Wisely” Handout: describes timing, amounts, and techniques for watering and irrigation (Step 3 of the Natural Yard Care program). “Think Twice Before Using Pesticides” Handout: describes alternative approaches to pesticide use for pest management (Step 4 of the Natural Yard Care program). “Natural Lawn Care” Handout: describes maintenance practices including mowing, fertilizing, watering, de-thatching and aerating, and controlling pests and weeds (Step 5 of the Natural Yard Care program). - Link to the Ecology website page for Washington Waters and related programs. - Link to the Ecology website for Saving Puget Sound and related programs. Based on the 2017 Stormwater Management Program (SWMP): - Publish articles in City’s quarterly Edgewood Magazine that are related to stormwater. - Provide copies of the <i>Rain Garden Handbook for Western Washington</i> at City Hall. - City has hosted community workshops addressing LID BMPs, conservation, etc., in the past.	- Move forward with planned activities in the 2017 SWMP: - Work with Puyallup School District on stormwater education opportunities - Work with the Pierce County Parks’ Conservation Futures grant program to preserve sensitive areas - Finalize educational handout for paving contractors. - Update broken website links: - The “water-saving tips” page - Recycling and Disposal of Household Hazardous Waste page from Pierce County - Identify regional partners and regional public education campaigns that the City could participate in or post resources from: - Puget Sound Starts Here www.pugetsoundstartshere.org/ - Don’t Drip and Drive https://fixcarleaks.org/ - Natural Yard Care: www.co.pierce.wa.us/1816/Natural-Yard-Care - Source control resources (see IDDE recommendations under S5.C.3)	160 hours (0.09 FTE)	Assumes 160 hours needed to update the website, coordinate with other partners and programs, and to develop and update some basic educational handouts (ongoing).
		Host additional community workshops.	120 hours (0.07 FTE)	Assumes 120 hours needed to update the workshop materials, schedule, advertise, and implement at least one workshop annually (ongoing).
(b) Engineers, contractors, developers and land use planners: - Technical standards for stormwater site and erosion control plans. - LID principles and LID BMPs. - Stormwater treatment and flow control BMPs/facilities.”	Refer to handouts listed under New Development, Redevelopment, and Construction Sites (see S5.C.4).	Refer to S5.C.4.	NA	NA

Table A-1 (continued). City of Edgewood Stormwater Management Program Activities and Recommendations.				
Permit Section	Current Activities	Recommendations	Additional Support Needed (staff/funding)	Support Assumptions
Public Education and Outreach (continued)				
S5.C.1.b – Stewardship opportunities “Each Permittee shall create stewardship opportunities and/or partner with existing organizations to encourage residents to participate in activities such as stream teams, storm drain marking, volunteer monitoring, riparian plantings and education activities.”	No specific stewardship opportunities have been identified.	- Develop a plan and a schedule for complying with this permit requirement. - Move forward with planned activities in the 2017 SWMP: - Coordinate with Pierce Conservation District Stream Teams for the Puyallup River watershed. - Consider implementing a tree planting community event. - Consider distributing free trees or rain barrels at a community event. - Consider a tree coupon program similar to the City of Tacoma: www.cityoftacoma.org/cms/one.aspx?objectId=66710. - Consider implementing a catch basin marking program with local scouts or other community groups.	80 hours (0.05 FTE)	Assumes 80 hours of outreach needed per year (ongoing).
S5.C.1.c – Measure the understanding and adoption of targeted behaviors “Each Permittee shall measure the understanding and adoption of the targeted behaviors for at least one target audience in at least one subject area. No later than February 2, 2016, Permittees shall use the resulting measurements to direct education and outreach resources most effectively, as well as to evaluate changes in adoption of the targeted behaviors. Permittees may meet this requirement individually or as a member of a regional group.”	Based on the 2016 Annual Report: - City has identified target audience: engineers, contractors, and developers. - City has identified subject areas: - Technical standards for stormwater site development - LID techniques - Developed “Storm drainage minimum design requirements for small projects” handout.	- Submit a G20 Non-Compliance Notification letter to Ecology with a plan and schedule for complying with the evaluation component of this permit requirement. - Develop and conduct a survey for the target audience to follow up on effectiveness of this form. - Develop a short report or memorandum summarizing the results of the survey. - Update handout based on survey feedback.	80 hours (0.05 FTE) \$10,000 (one-time)	Assumes 80 hours needed initially to write the G20 letter, develop the survey approach, and work with an external consultant/contractor to implement the survey. Ongoing costs would be to update the survey and to implement changes in the public education program. External support budget assumes 100 hours at a rate of \$100/hour.
Public Education and Outreach Subtotal			440 hours (0.25 FTE) and \$10,000 (one-time)	
Public Involvement and Participation				
S5.C.2.a – Create opportunities for public participation “Permittees shall provide ongoing opportunities for public involvement and participation through advisory councils, public hearings, watershed committees, participation in developing rate-structures or other similar activities. Each Permittee shall comply with applicable state and local public notice requirements when developing elements of the SWMP.” The minimum performance measures are: “Permittees shall create opportunities for the public to participate in the decision-making processes involving the development, implementation and update of the Permittee’s SWMP.”	Based on 2016 Annual Report: - The City provides public notice for review and update of all codes, comprehensive plans, and capital improvement programs. The first stop in the review process for any proposed change is the City’s Planning Commission, where there are both formal and informal public review opportunities. - Recommendations of the Planning Commission are forwarded to the City Council for final review and action, which includes another public notice and hearing opportunity. - Larger programs and projects, such as comprehensive plan updates, typically include more involved public participation, such as workshops and town halls. Based on Questionnaire: - The Citizen Action Request (CAR) form is available at the counter and on the website. The system allows for complaints to be filed, investigated and resolved by members of City Staff.	No gaps identified.	NA	NA

Table A-1 (continued). City of Edgewood Stormwater Management Program Activities and Recommendations.																																			
Permit Section	Current Activities		Recommendations	Additional Support Needed (staff/funding)	Support Assumptions																														
Public Involvement and Participation (continued)																																			
S5.C.2.b – Post the SWMP Plan and annual report on City’s website “Each Permittee shall post on their website their SWMP Plan and the annual report required under S9.A no later than May 31 each year. All other submittals shall be available to the public upon request. ”	Current SWMP, annual report, and attachments are posted on the City’s website: www.cityofedgewood.org/government/public_works/surface_water_management.php .		No gaps identified.	NA	NA																														
Public Involvement and Participation Subtotal				NA																															
Illicit Discharge Detection and Elimination (IDDE)																																			
S5.C.3.a – Ongoing mapping requirements “Mapping of the MS4 shall continue on an ongoing basis. MS4 maps shall be periodically updated. Update maps if necessary to meet the requirements of this section no later than February 2, 2018. At a minimum, maps shall include the following information: i. Known MS4 outfalls and known MS4 discharge points. ii. Receiving waters, other than ground water. iii. Stormwater treatment and flow control BMPs/facilities owned or operated by the Permittee. iv. Tributary conveyances to all known outfalls and discharge points with a 24 inch nominal diameter or larger, or an equivalent cross-sectional area for non-pipe systems. The following attributes shall be mapped: - Tributary conveyance type, material, and size where known. - Associated drainage areas. - Land use. v. All connections to the MS4 authorized or allowed by the Permittee after February 16, 2007. vi. Connections between the MS4 owned or operated by the Permittee and other municipalities or public entities. vii. Geographic areas served by the Permittee’s MS4 that do not discharge stormwater to surface waters.”	Based on the 2017 SWMP: - MS4 base map available through Pierce County’s CountyView GIS platform developed in 2009 and updated each year: www.co.pierce.wa.us/2281/GIS-Applications. - Pierce County has mapped streams and wetlands as receiving waters. - Pierce County has mapped stormwater treatment and flow control structures including catch basins, control structures, dry wells, manholes, and vaults. - Pipes and channels mapped by Pierce County include material, type, size, and a description of discharge points. Possible outfalls based on this data are summarized in the table below: <table><tr><th>Conveyance Structure</th><th>Ponds</th><th>Streams</th><th>Potholes</th><th>Ravines</th><th>Wetlands</th></tr><tr><td>All Pipes</td><td>71</td><td>86</td><td>55</td><td>17</td><td>18</td></tr><tr><td>Pipes over 24-inch diameter</td><td>0</td><td>17</td><td>0</td><td>0</td><td>0</td></tr><tr><td>All Channels</td><td>18</td><td>9</td><td>34</td><td>8</td><td>19</td></tr><tr><td>Channels over 24 inches deep</td><td>1</td><td>0</td><td>1</td><td>1</td><td>6</td></tr></table> Based on the May 12, 2017, kickoff meeting: - The City has identified five known outfalls: - At 114th north of Jovita (24-inch diameter) - At the pond south of 24th on Meridian (Simon’s Creek) (12-inch diameter) - Edgewood Drive (southeast corner into Sumner) (12-inch diameter, discharges into a ravine) - At the corner of 32nd Street East and 94th Avenue East (Simon’s Creek) (12-inch diameter) - At the crossing of the Surprise Lake discharge channel at 92nd Avenue East (south of 20th) (48-inch diameter) Based on the City’s website: - The City has mapped land use designations: www.cityofedgewood.org/government/planning_and_land_use/index.php		Conveyance Structure	Ponds	Streams	Potholes	Ravines	Wetlands	All Pipes	71	86	55	17	18	Pipes over 24-inch diameter	0	17	0	0	0	All Channels	18	9	34	8	19	Channels over 24 inches deep	1	0	1	1	6	- Update outfall inventory to include discharges to pothole/closed depression areas that should be classified as outfalls. - Map the tributary area for the known outfalls of 24-inch diameter or greater.	\$10,000 (one-time)	Assumes contract (or intern) support is needed (100 hours at \$100/hour).
Conveyance Structure	Ponds	Streams	Potholes	Ravines	Wetlands																														
All Pipes	71	86	55	17	18																														
Pipes over 24-inch diameter	0	17	0	0	0																														
All Channels	18	9	34	8	19																														
Channels over 24 inches deep	1	0	1	1	6																														

Table A-1 (continued). City of Edgewood Stormwater Management Program Activities and Recommendations.				
Permit Section	Current Activities	Recommendations	Additional Support Needed (staff/funding)	Support Assumptions
IDDE (continued)				
S5.C.3.b – Illicit discharge ordinance “Each Permittee shall implement an ordinance or other regulatory mechanism to effectively prohibit non-stormwater, illicit discharges into the Permittee’s MS4 to the maximum extent allowable under state and federal law.”	Based on 2016 Annual Report: EMC 13.25 – Illicit Stormwater Discharges updated by Ordinance 16-482 on November 8, 2016.	No gaps identified.	NA	NA
S5.C.3.c – Ongoing program implementation to identify and detect illicit discharges The program shall include the following components: i. Procedures for conducting investigations of the Permittee’s MS4, including field screening and methods for identifying potential sources.	Based on 5/12/17 kickoff meeting: - The City has an interlocal agreement (ILA) with Pierce County to perform catch basin inspections and cleaning. - There are boxes on the Pierce County inspection form to check for oil presence, condition, and comments. Based on 2016 Annual Report: 40 percent of MS4 coverage area screened in 2016.	- Provide recommendations to Pierce County staff on information that the City would like to track for compliance with this permit requirement. - Consider modifying “oil presence” field to apply to other illicit discharges or adding another field for non-oil discharges.	NA	Complete with current staffing.
ii. A publicly listed and publicized hotline or other telephone number for public reporting of spills and other illicit discharges.	Based on 2016 Annual Report: - City Hall contact information: 253-952-3299. 4 calls received in 2016.	- Spill hotline is the same as the City Hall general information line and is not well publicized. - Place hotline more prominently on the City’s website or create a hotline specific to reporting spills.	NA	Complete with current staffing.
iii. An ongoing training program for all municipal field staff, who, as part of their normal job responsibilities, might come into contact with or otherwise observe an illicit discharge and/or illicit connection to the MS4, on the identification of an illicit discharge and/or connection, and on the proper procedures for reporting and responding to the illicit discharge and/or connection. Follow-up training shall be provided as needed.	No established training program for IDDE.	- Require applicable City staff to watch Illicit Connection and Illicit Discharge (IC/ID) Field Screening and Source Tracing Guidance Manual videos: www.wastormwatercenter.org/illicit-connection-illicit-discharge. - Attend in-person IC/ID field screening training in late 2018.	NA	Complete with current staffing.
iv. Permittees shall inform public employees, businesses, and the general public of hazards associated with illicit discharges and improper disposal of waste.	- General information provided on website (see S5.C.3.a). - Property/business owners are educated upon discovery of potential hazards/illicit discharges.	Consider providing the following resources on the City’s website: - Dump Smart Program (carpet cleaners, painters, and pressure washers): www.wastormwatercenter.org/dump-smart - Ecology pollution prevention by business type website: www.ecy.wa.gov/programs/hwtr/p2/ta.html - Ecology hazardous substances website: www.ecy.wa.gov/hsieo/index.html - City of Seattle resources (restaurants): www.seattle.gov/util/ForBusinesses/GreenYourBusiness/ToolsResourcesGuides/index.htm - Clark County dumpster maintenance brochure: www.clark.wa.gov/sites/default/files/dept/files/environmental-services/Stormwater/what-you-can-do/Dumpster%20maintenance%20web%206_2_16.pdf	NA	Complete with current staffing or proposed Public Education and Outreach staff under S5.C.1 above.

Table A-1 (continued). City of Edgewood Stormwater Management Program Activities and Recommendations.				
Permit Section	Current Activities	Recommendations	Additional Support Needed (staff/funding)	Support Assumptions
IDDE (continued)				
S5.C.3.d – Ongoing program implementation to address illicit discharges “Each Permittee shall implement an ongoing program designed to address illicit discharges, including spills and illicit connections, into the Permittee’s MS4. The program shall include: i. Procedures for characterizing the nature of, and potential public or environmental threat posed by, any illicit discharges found by or reported to the Permittee. Procedures shall address the evaluation of whether the discharge must be immediately contained and steps to be taken for containment of the discharge. ii. Procedures for tracing the source of an illicit discharge; including visual inspections, and when necessary, opening manholes, using mobile cameras, collecting and analyzing water samples, and/or other detailed inspection procedures. iii. Procedures for eliminating the discharge; including notification of appropriate authorities; notification of the property owner; technical assistance; follow-up inspections; and use of the compliance strategy developed pursuant to S5.C.3.b.v, including escalating enforcement and legal actions if the discharge is not eliminated.	Based on May 12, 2017, kickoff meeting: • City staff investigate calls about IDDE issues. • Current equipment includes: flashlight, catch basin hooks, turbidimeter. • Pierce County can assist with IDDE response if requested as part of the ILA.	• Adopt and/or modify the IC/ID Field Screening and Source Tracing Guidance Manual. • Purchase basic equipment to assist with field screening and source tracing: - o Mirror and pole - o Dye testing supplies - o Sand bags - o Smoke testing equipment - o Ammonia test strips - o pH probe (with temperature probe) - o Surfactant test kit - o Potassium meter	\$5,000 (one-time) \$1,000 (annual replacement/restocking cost)	Adopting and/or modifying the IC/ID Field Screening and Source Tracing Guidance Manual will be completed with current staffing.
S5.C.3.e – Ongoing staff training program “Permittees shall train staff who are responsible for identification, investigation, termination, cleanup, and reporting of illicit discharges, including spills, and illicit connections, to conduct these activities. Follow-up training shall be provided as needed to address changes in procedures, techniques, requirements or staffing. Permittees shall document and maintain records of the training provided and the staff trained.”	No established training program for IDDE.	• Require applicable City staff to watch IC/ID Field Screening and Source Tracing Guidance Manual videos: www.wastormwatercenter.org/illicit-connection-illicit-discharge. • Attend in-person IC/ID field screening training in late 2018. • Develop a spreadsheet or simple tracking form to document staff training.	NA	Complete with current staffing.
S5.C.3.f – Track and maintain records “Recordkeeping: Permittees shall track and maintain records of the activities conducted to meet the requirements of this section.”	Based on Questionnaire responses: • The City tracks all complaints, including spills, with the Citizen Action Request (CAR) program which includes an online reporting option: http://cityofedgewood.org/government/city_clerk/citizen_action_form.php.	No gaps identified.	NA	NA
IDDE Subtotal			\$15,000 (one-time) and \$1,000 (ongoing)	

Table A-1 (continued). City of Edgewood Stormwater Management Program Activities and Recommendations.				
Permit Section	Current Activities	Recommendations	Additional Support Needed (staff/funding)	Support Assumptions
Controlling Runoff from New Development, Redevelopment, and Construction Sites				
S5.C.4.a – Ordinance to address runoff from development, redevelopment, and construction sites “Implement an ordinance or other enforceable mechanism that addresses runoff from new development, redevelopment, and construction site projects ...”	Based on 2017 SWMP: - Policy requires that stormwater facilities are owned and maintained by HOAs, property owners, or another private party. The developer is required to execute and record an <i>Agreement to Maintain Stormwater Facilities and Implement a Pollution Source Control Plan</i>: - O&M Plan and facility inspection requirements. - Requires annual inspection and reporting by responsible party which is an education and outreach opportunity for city staff. - Contains an O&M facility plan. - EMC Chapter 13.05 (Stormwater Manual – Site Development Regulations) updated by Ordinance 16-482 on November 8, 2016. - The City has adopted the 2015 Pierce County Stormwater Management and Site Development Manual (PCM).	No gaps identified.	NA	NA
S5.C.4.b – Permitting process with site plan review, inspection, and enforcement i. Review of all stormwater site plans for proposed development activities.	Based on 2016 Annual Report: 119 stormwater site plans were reviewed. Based on Questionnaire: - Each plan is carefully reviewed for conformance with the adopted manual, including review and verification of calculations, existing conditions, and potential impacts to adjacent areas/property. - The City has developed the following handouts for project proponents: - Surface Water Compliance Application www.cityofedgewood.org/document_center/Surface_Water_Compliance_Application1.pdf - Surface Water Compliance Application Information Sheet www.cityofedgewood.org/document_center/Surface_Water_Information_Sheet.pdf - Storm Drainage Minimum Design Requirements for Small Projects www.cityofedgewood.org/document_center/SD%20Minimum%20Requirements%20(2016-12-01).pdf	- Update Surface Water Compliance Application and Surface Water Compliance Application Information Sheet for consistency with the 2015 PCM. - Post SWPPP short form on City’s website. - Consider developing additional checklist(s) and/or BMP sizing guidance.	\$25,000 (one-time)	Minor edits to existing handouts and posting the SWPPP short form can be completed with current staffing. Development of up to 5 new checklists assumes an external support budget of 150 hours at a rate of \$100/hour. Development of simplified BMP sizing guidance assumes an external support budget of 100 hours at a rate of \$100/hour.
S5.C.4.b – Permitting process with site plan review, inspection, and enforcement ii. Inspect, prior to clearing and construction, all permitted development sites that have a high potential for sediment transport as determined through plan review based on definitions and requirements in Appendix 7 Determining Construction Site Sediment Damage Potential ... iii Inspect all permitted development sites during construction to verify proper installation and maintenance of required erosion and sediment controls. Enforce as necessary based on the inspection. iv. Inspect all permitted development sites upon completion of construction and prior to final approval or occupancy to ensure proper installation of permanent stormwater facilities ...”	Based on 2016 Annual Report: 30 construction sites inspected prior to construction. 73 construction sites inspected during construction. 1 enforceable action taken. Based on the 2017 SWMP: - Staff inspect all permitted development sites prior to clearing and construction activity. - Staff verify installation and maintenance of temporary erosion and sediment control (TESC) and stormwater BMPs. - Enforcement actions are based on inspection results and Citizen Action Requests. Based on 5/12/17 kickoff meeting with City Staff: - New Engineering tech performs in-house inspection program.	No gaps identified.	NA	NA

Table A-1 (continued). City of Edgewood Stormwater Management Program Activities and Recommendations.				
Permit Section	Current Activities	Recommendations	Additional Support Needed (staff/funding)	Support Assumptions
Controlling Runoff from New Development, Redevelopment, and Construction Sites (continued)				
S5.C.4.c – Long term operations and maintenance of stormwater treatment and flow control BMPs/facilities i. Implementation of an ordinance or other enforceable mechanism that clearly identifies the party responsible for maintenance, requires inspection of facilities ... and establishes enforcement procedures.	Based on the 2017 SWMP: EMC Chapter 13.05 (Stormwater Manual – Site Development Regulations) updated by Ordinance 16-482 on November 8, 2016.	No gaps identified.	NA	NA
ii. Each Permittee shall establish maintenance standards that are as protective or more protective of facility function than those specified in Chapter 4 of Volume V of the Stormwater Management Manual for Western Washington. For facilities which do not have maintenance standards, the Permittee shall develop a maintenance standard.	- Policy requires that stormwater facilities are owned and maintained by HOAs, property owners, or another private party. The developer is required to execute and record an <i>Agreement to Maintain Stormwater Facilities and Implement a Pollution Source Control Plan</i>: - O&M Plan and facility inspection requirements. - Requires annual inspection and reporting by responsible party which is an education and outreach opportunity for city staff. - The City has adopted the 2015 PCM which includes maintenance standards.	No gaps identified.	NA	NA
iii. Annual inspections of all stormwater treatment and flow control BMPs/facilities that discharge to the MS4 and were permitted by the Permittee according to S5.C.4.b ... iv. Inspections of all permanent stormwater treatment and flow control BMPs/facilities and catch basins in new residential developments every six months until 90 percent of the lots are constructed ... vii. The program shall include a procedure for keeping records of inspections and enforcement actions by staff, including inspection reports, warning letters, notices of violations, and other enforcement records ..."	The City is performing construction inspections (per S5.C.4.c.iv), but is not performing ongoing annual inspections of private stormwater treatment and flow control BMPs/facilities (per S5.C.4.c.iii).	- Finalize private facility database. - Develop a list of private facilities that are required to be inspected. - Finalize access easements with landowners to perform private facility inspections. - Submit a G20 Non-Compliance Notification letter to Ecology with a plan and a schedule for complying with the private facility inspection requirement.	320 hours (0.18 FTE)	Initial and ongoing effort to keep private facility database, access easements, and mapping up to date is estimated as 160 hours per year. Conducting annual private stormwater facility inspections is estimated as 160 hours per year.
S5.C.4.d – Notice of Intent copies "The program shall make available as applicable copies of the "Notice of Intent for Construction Activity" and copies of the "Notice of Intent for Industrial Activity" to representatives of proposed new development and redevelopment."	Based on 2016 Annual Report: Copies are provided.	No gaps identified.	NA	NA

Table A-1 (continued). City of Edgewood Stormwater Management Program Activities and Recommendations.				
Permit Section	Current Activities	Recommendations	Additional Support Needed (staff/funding)	Support Assumptions
Controlling Runoff from New Development, Redevelopment, and Construction Sites (continued)				
S5.C.4.e – Ongoing staff training program to control stormwater runoff “Each Permittee shall ensure that all staff whose primary job duties are implementing the program to control stormwater runoff from new development, redevelopment, and construction sites, including permitting, plan review, construction site inspections, and enforcement, are trained to conduct these activities. Follow-up training shall be provided as needed to address changes in procedures, techniques or staffing. Permittees shall document and maintain records of the training provided and the staff trained.”	Based on 2016 Annual Report: - Two City staff are Construction Erosion and Sediment Control Lead (CESCL) certified. - Staff currently receive on-the-job training.	- Identify additional off-site trainings related to permitting, plan review, construction site inspections, and enforcement such as: - Statewide LID Training Program: www.wastormwatercenter.org/lidswtrainingprogram - Ecology SWMMWW Training: www.ecy.wa.gov/programs/wq/stormwater/manual/2014SWMMWWinteractive/2014%20SWMMWW.htm#Resources/DocsForDownload/TrainingVideos/August2016Training/August2016Training.html - PCM Training - Develop template and populate training tracking log with City training records.	NA	Complete with current staffing.
S5.C.4.f – LID code related requirements “i. Permittees shall review, revise and make effective their local development-related codes, rules, standards, or other enforceable documents to incorporate and require LID principles and LID BMPs ... ii. The summary shall include existing requirements for LID principles and LID BMPs in development-related codes ...”	Based on the 2017 SWMP: - Revised local development code, rules, and standards to incorporate LID principles so it is the preferred commonly used approach to site development. Based on 2016 Annual Report: - City of Edgewood – LID Review and Revision Summary submitted with 2016 Annual Report. - EMC 13.05 (Stormwater Manual – Site Development Regulations) updated by Ordinance 16-482 on November 8, 2016.	No gaps identified.	NA	NA
S5.C.4.g – Watershed-scale stormwater planning	The City is not a participant.	Not applicable to the City because it is not located in any of the proposed Phase I basins.	NA	NA
Controlling Runoff from New Development, Redevelopment, and Construction Sites Subtotal			320 hours (0.18 FTE) and \$25,000 (one time)	
Municipal Operations and Maintenance (O&M)				
S5.C.5.a – Implement SWMMWW O&M standards or equivalent “Each Permittee shall implement maintenance standards that are as protective, or more protective, of facility function than those specified in Chapter 4 of Volume V of the Stormwater Management Manual for Western Washington ...”	The City has adopted the 2015 Pierce County Stormwater Management and Site Development Manual (PCM).	No gaps identified.	NA	NA
S5.C.5.b – Annual inspection of stormwater treatment and flow control facilities/BMPs “Annual inspection of all municipally owned or operated permanent stormwater treatment and flow control BMPs/facilities, and taking appropriate maintenance actions in accordance with the adopted maintenance standards.”	Based on questionnaire responses: - Annual inspection frequency of city-owned facilities. Based on 2016 Annual Report: - There are 10 municipally owned facilities, all of which were inspected and maintained last year.	No gaps identified.	NA	NA

Table A-1 (continued). City of Edgewood Stormwater Management Program Activities and Recommendations.				
Permit Section	Current Activities	Recommendations	Additional Support Needed (staff/funding)	Support Assumptions
Municipal O&M (continued)				
S5.C.5.c – Spot checks of potentially damaged stormwater treatment and flow control facilities/BMPs “Spot checks of potentially damaged permanent stormwater treatment and flow control BMPs/facilities after major storm events (24 hour storm event with a 10 year or greater recurrence interval).”	Based on questionnaire responses: - Both Pierce County staff and City staff are responsible for spot checks. - City staff are mostly responsible for spot checks during storm events. - Spot checks are performed annually at a minimum. - Spot checks are performed before forecasted significant storm events. - Spot checks are performed after major storm events.	No gaps identified.	NA	NA
S5.C.5.d – Inspection of catch basins and inlets “... inspection of all catch basins and inlets owned or operated by the Permittee at least once no later than August 1, 2017, and every two years thereafter ...”	Based on 2016 Annual Report: 1725 CBs, 767 inspected in 2016, 175 cleaned in 2016. Based on questionnaire responses: - Based on the ILA, Pierce County staff perform a majority of the catch basin inspections and clean as needed based on inspection results. - City staff perform inspections on demand as flooding and other problems arise.	No gaps identified.	NA	NA
S5.C.5.f – Practices, policies, and procedures to reduce stormwater impacts “Implement practices, policies and procedures to reduce stormwater impacts associated with runoff from all lands owned or maintained by the Permittee, and road maintenance activities under the functional control of the Permittee ... The following activities shall be addressed: - Pipe cleaning - Cleaning of culverts that convey stormwater in ditch systems - Ditch maintenance - Street cleaning - Road repair and resurfacing, including pavement grinding - Snow and ice control - Utility installation - Pavement striping maintenance - Maintaining roadside areas, including vegetation management - Dust control - Application of fertilizers, pesticides, and herbicides according to the instructions for their use, including reducing nutrients and pesticides using alternatives that minimize environmental impacts - Sediment and erosion control - Landscape maintenance and vegetation disposal - Trash and pet waste management - Building exterior cleaning and maintenance”	Based on questionnaire responses: - Pierce County has a maintenance contract to perform regular street sweeping. - The City owns a skid steer and small dump truck for performing small maintenance tasks without County involvement. Based on 5/12/17 kickoff meeting: - City has adopted Pierce County SOPs with some modifications.	Finalize SOPs documenting City practices, policies, and procedures.	80 hours (0.05 FTE)	Initial and ongoing effort to finalize SOPs with internal staff, review annually, incorporate necessary updates, and track regional programs that may trigger updates.

Table A-1 (continued). City of Edgewood Stormwater Management Program Activities and Recommendations.				
Permit Section	Current Activities	Recommendations	Additional Support Needed (staff/funding)	Support Assumptions
Municipal O&M (continued)				
S5.C.5.g – Ongoing training program to protect water quality “Implement an ongoing training program for employees of the Permittee whose primary construction, operations or maintenance job functions may impact stormwater quality. The training program shall address the importance of protecting water quality, operation and maintenance standards, inspection procedures, selecting appropriate BMPs, ways to perform their job activities to prevent or minimize impacts to water quality, and procedures for reporting water quality concerns. Follow-up training shall be provided as needed to address changes in procedures, techniques, requirements, or staffing. Permittees shall document and maintain records of training provided and the staff trained.”	Based on the 2017 SWMP: - Two City staff are CESCL certified. Based on Pierce County’s 2017 SWMP: - Pierce County Maintenance crews receive quarterly Stormwater Pollution Prevention Plan (SWPPP) and BMP trainings from the County’s NPDES Stormwater Permit Training Coordinator. - Road Operations provides ongoing CESCL hands-on refreshers and quarterly safety meetings that cover Regional Roads Maintenance Endangered Species Act (ESA) Program Guidelines topics and other stormwater pollution prevention BMP issues, including SWPPP related issues.	- Request training records from Pierce County from County crews that perform City’s O&M activities. - Develop template and populate training tracking log with City and County training records.	NA	Complete with current staffing.
S5.C.5.h – SWMPPP implementation “Implement a Stormwater Pollution Prevention Plan (SWPPP) for all heavy equipment maintenance or storage yards, and material storage facilities owned or operated by the Permittee in areas subject to this Permit ...”	Based on questionnaire responses: The City does not currently have any City facilities that require a SWPPP.	No gaps identified.	NA	NA
S5.C.5.i – Maintain records of inspections and maintenance “Maintain records of inspections and maintenance or repair activities conducted by the Permittee.”	Based on questionnaire responses: - Pierce County tracks inspections through GIS database and project/activity billing and invoices. - City staff track inspections through hardcopy report forms.	No gaps identified.	NA	NA
Municipal O&M Subtotal			80 hours (0.05 FTE)	
Compliance with Total Maximum Daily Load (TMDL) Requirements				
Implement TMDL requirements.	Based on the 2017 SWMP: - The City is part of the Puyallup TMDL for fecal coliform bacteria listed in Appendix 2 of the NPDES Permit. - The City is required to track construction activities in the basin and prioritize field screening for illicit discharges. Several permitted construction activities occurred in 2016; however, no illicit discharges were detected from these construction sites. The City also did not detect any illicit discharges during routine field screening.	No gaps identified.	NA	NA
Comply with applicable TMDLs not in the permit.	Does not apply.	No gaps identified.	NA	NA
Comply with permit modifications and TMDL implementation plans.	Does not apply.	No gaps identified.	NA	NA
Compliance with TMDL Requirements Subtotal			NA	

Table A-1 (continued). City of Edgewood Stormwater Management Program Activities and Recommendations.				
Permit Section	Current Activities	Recommendations	Additional Support Needed (staff/funding)	Support Assumptions
Monitoring and Assessment				
Description of stormwater monitoring or stormwater-related investigations.	Based on the 2017 SWMP: Hydrologic Surface Water Analysis commissioned for 108th Avenue East neighborhood (not yet complete).	Provide a description of the study (and a summary of the results when available) in the annual report to Ecology.	NA	Complete with current staffing.
Regional Stormwater Monitoring Program participation.	Based on the 2017 SWMP: The City contributes to a collective fund to implement RSMP.	No gaps identified.	NA	NA
Monitoring and Assessment Subtotal			NA	
Reporting				
Submit annual report.	The City submits annual reports as required by Ecology.	No gaps identified.	NA	NA
Maintain records for 5 years.	Records related to the permit will be kept for at least 5 years as required by the Permit.	No gaps identified.	NA	NA
Make records available to the public.	The City makes records available to the public upon request.	No gaps identified.	NA	NA
Internal coordination mechanisms summary.	Internal coordination mechanisms summary was submitted with the 2014 Annual Report: www.cityofedgewood.org/Edgewood_Policy_internal_coordination.pdf .	No gaps identified.	NA	NA
Reporting Subtotal			NA	
			Total	
			\$50,000 (one-time)	
			\$1,000 (ongoing)	
			840 hours (0.48 FTE) (ongoing)	

APPENDIX B

Characteristics of Edgewood's Closed Depression Basins or Potholes

Table B-1. Characteristics of Edgewood's Closed Depression Basins or Potholes.							
Pothole Name	Size of Catchment (acres)	Storage Volume During Flood (acre-feet)	Flooding Impacts on Private Property ^a	Roadways Impacted ^a	Related 1997 CIP IDs ^a	1997 Flooding Extents ^a	Comments
Edgewood Bowl Pothole	648	355 (based on an elevation of 334 feet)	House crawlspace flooding, house septic system flooding, driveway eroded	110th Avenue E, 114th Avenue E, closed due to flooding	EB-1 through EB-10	64-acre flooded area	The Edgewood Pothole has the largest contributing area and is therefore the greatest priority in terms of developing flood reduction plans. The City owns an undeveloped property in this basin near 110th Avenue and 16th Street that is located far from existing wells. There are some wetlands on site that need to be delineated and surveyed, and the site is approximately 4 acres in area.
Lake Chalet	135	32 (based on an elevation of 358 feet)	Two private properties flooding	29th Street E, 103rd Avenue Court E, flooding	LC-1 through LC-3	13-acre flooded area	Most area around the pothole is not ideal for a UIC wellfield because there are two drinking water source wells near the shore. Additionally, there are many septic systems in close proximity, so water quality concerns are high; but LID could be used to address water quality concerns. The closest stormwater main is 6 feet too high for gravity flow flood relief from the lake. One possible solution may be an inverted siphon to this elevated pipe.
Pinedale Pond (114th Avenue) Pothole	384	227 (based on an elevation of 382 feet)	House flooded, two private properties flooded, driveway flooded	32nd Street E (at peak flood), 24th Street, and 117th Avenue	114-1 through 114-5	48 acres	The City is pursuing a Conservation Futures grant for property acquisition along the pothole that would include wetland restoration, passive recreation opportunities, and stormwater management.
108th Avenue Pothole	224	174 (based on an elevation of 382 feet)	Two houses flooded	108th Avenue, 32nd Street, 36th Street flooding	108-1 through 108-5	30 acres	There is no City-owned property in this basin yet, although a potential acquisition opportunity has been identified near the intersection of 110th Avenue and 32nd Street (location of a home that experiences persistent flooding).
122nd Avenue Pothole	329	160 (based on an elevation of 382 feet)	Meadow Vista tracts flooded, driveway to a home on 122nd Avenue E has flooded, water levels approaching lower homes nearby	No public road impacts	122-1 through 122-2	23 acres	The nearby elementary school site presents a potential infiltration opportunity site.
Surprise Lake Pothole	49	32 (based on an elevation of 334 feet)	One house flooded, one septic system flooded	No public road impacts	SLP-1, SLP-2	4.3 acres	There is a commercial property owner who is amenable to investigative work.

^a Source: 1997 Plan and communications with City staff.

APPENDIX C

Project Summary Sheets (for projects scheduled for implementation under this plan)



City of Edgewood Stormwater Capital Improvement Program Project Summary Sheet

Name: Pothole Flood Reduction Plans

2017 Project Number: NA
2009 Project Number: 32
1997 Project Number: NA
Priority: High
Estimated Cost: \$850,000

PROBLEM DESCRIPTION

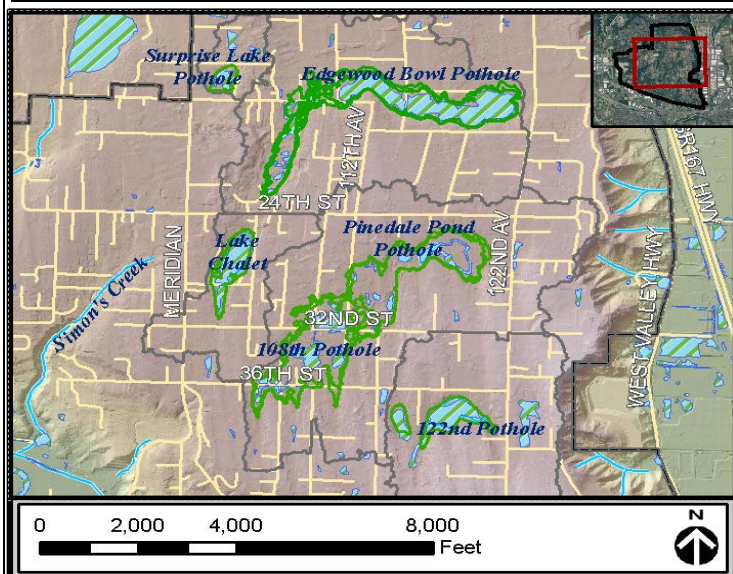
More information is needed to select the best solution to flooding problems in the Edgewood potholes. Pothole specific flood reduction plans need to be developed for five potholes: Edgewood Bowl, Pinedale Pond, 108th Street E, Surprise Lake, and 122nd Avenue E. Each of these potholes has individual characteristics that will need to be understood before developing a flood control plan, (eg., flood elevation, available storage volume, stormwater conveyance network, basin characteristics). Water level monitoring done via a separate CIP project as well as the findings from the pilot infiltration project for the Edgewood Bowl pothole will inform these projects.

PROPOSED SOLUTION

Basin characteristics, hydrologic data, and other information from the water level and water quality monitoring project will be used to develop a continuous hydrologic and hydraulic model of the existing conditions in each pothole and then used to develop and evaluate different solution alternatives, starting with the Edgewood Bowl pothole. An initial report will be developed describing the pothole characteristics, modeling results and the alternatives. At least one meeting will be held with the public to discuss results, alternatives considered and recommendations. The solutions will be compared, and the best alternative will be selected. The models will also be used as the basis for a flood study to update FEMA maps of the potholes and potentially result in a letter of map revision (LOMR) for each pothole. The total cost assumes development of five individual flood reduction plans at approximately \$170,000 each.

COST ESTIMATE ASSUMPTIONS

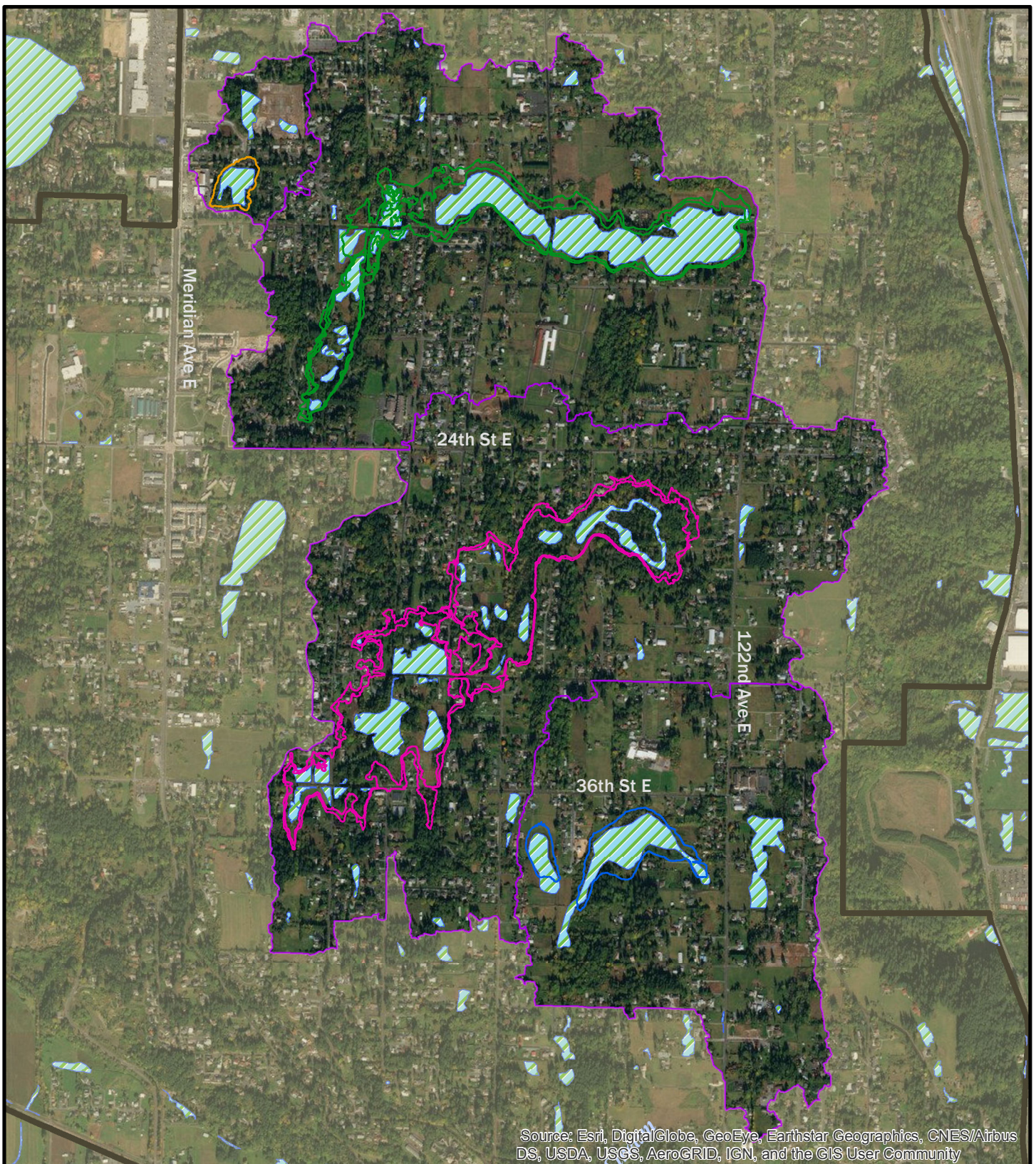
Cost estimate assumptions are based on consultant experience with similar projects and includes public involvement, existing conditions assessment, modeling, development and prioritization of alternatives, a FEMA letter of map revision and development of a plan.



Pothole locations

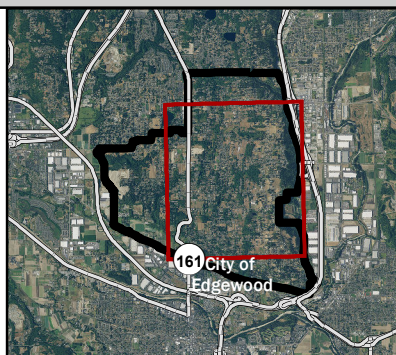


Edgewood Bowl pothole flooding

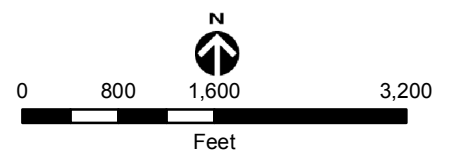


Legend

- Pinedale Pond and 108th St potholes
- Surprise Lake pothole
- 122nd Ave E pothole
- Edgewood Bowl pothole
- Pothole catchment areas
- ▨ Wetlands
- Edgewood City Limits



Pothole Flood Reduction Plans



Cost Estimate for Pothole Flood Reduction Plans.	
Tasks	Estimated Cost
Task 1 – Project Management	\$18,000
Task 2 Public and Stakeholder Outreach	\$10,000
Task 3 – Hydrologic and Hydraulic Analysis of Existing Conditions	\$20,000
Task 4 – Existing Conditions Assessment and Modeling Report	\$20,000
Task 5 – Alternatives Development, Cost Estimating, and Analysis	\$30,000
Task 6 – Prioritization of Alternatives	\$10,000
Task 7 - FEMA Letter of Map Revision	\$10,000
Task 8 – Refinement of Preferred Alternative and Documentation	\$34,000
City Administration and Management (10%)	\$18,000
Total Cost ^a	\$170,000

^a Cost rounded to two significant figures.



City of Edgewood Stormwater Capital Improvement Program

Project Summary Sheet

Name: Edgewood Drive East Drainage Improvements

2017 Project Number: NA

2009 Project Number: 23

1997 Project Number: SE-2

Priority: High

Estimated Cost: \$860,000

PROBLEM DESCRIPTION

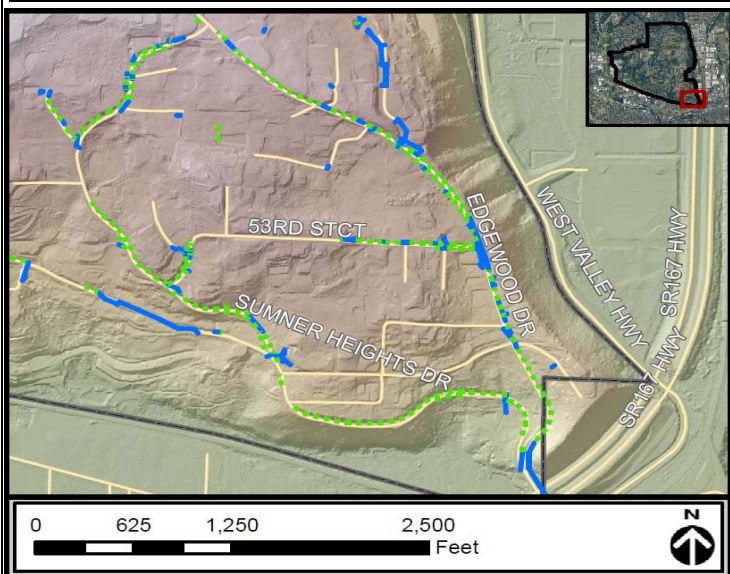
Edgewood Drive is a narrow roadway with substandard alignment complicated by its partial location on a bench and within a ravine. Inadequate roadway drainage has led to runoff flowing down the hill and off the roadway onto properties located on the west side of the road. Existing ditches are undersized and existing piped conveyance overtops in large storm events resulting in water on the roadway and property flooding. Ice also develops on the roadway during the winter months due to the poor drainage resulting in unsafe driving conditions.

PROPOSED SOLUTION

Construct conveyance improvements to alleviate drainage problems as an interim repair until complete road reconstruction can be completed. Improvements include ditch restoration, inclusion of flow restrictors in the conveyance, installation and replacement of driveway and intersection culverts, and installation of a thickened edge and catch basins opposite the open ditch. Existing conveyance in the receiving system must be evaluated for adequate capacity and energy dissipation.

COST ESTIMATE ASSUMPTIONS

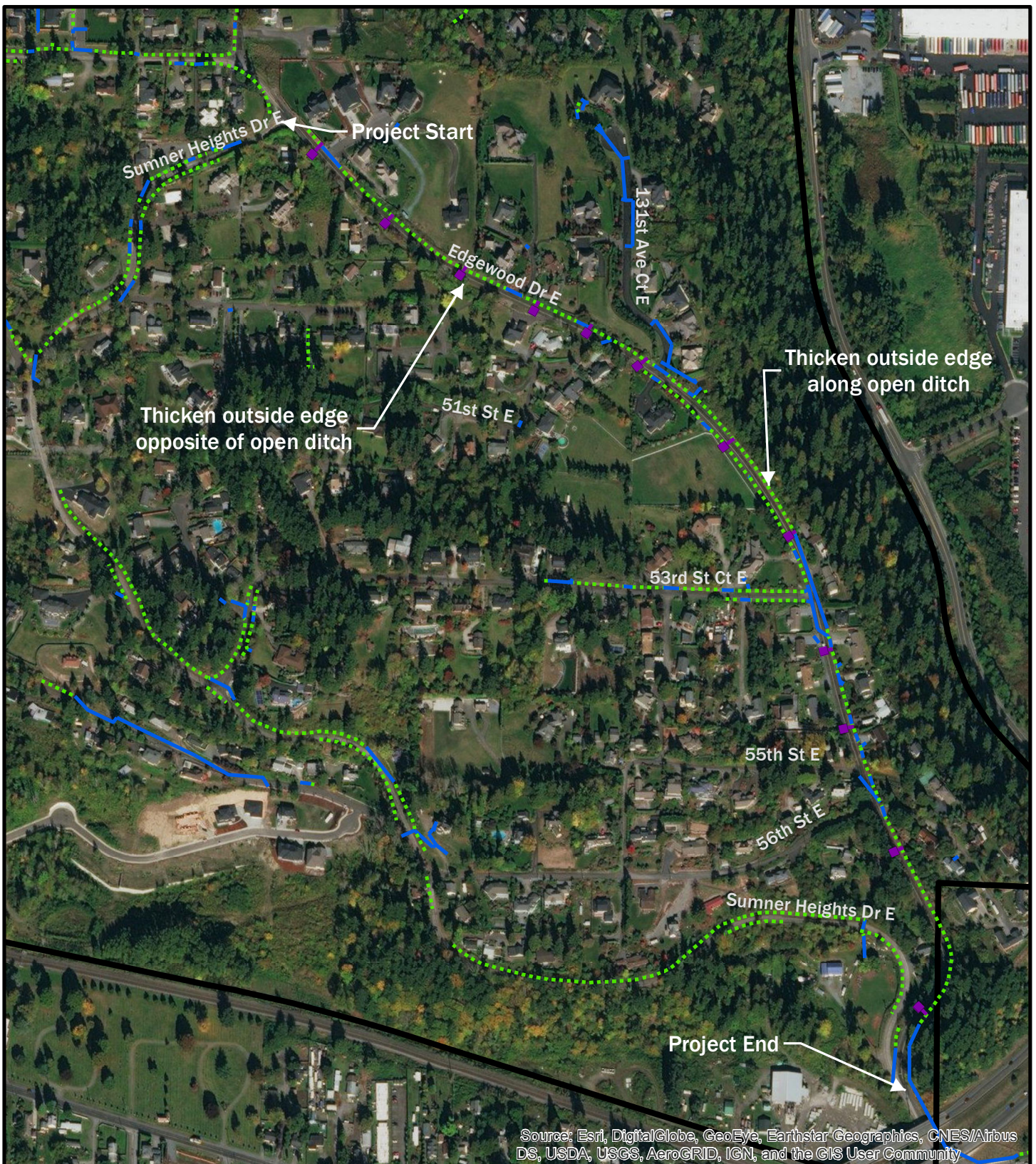
The total project cost was calculated by escalating the 2009 CIP cost to account for inflation. The 2009 estimate includes installation of 15 catch basins, 1,380 LF of 8 to 12-inch diameter storm sewer, and 2,000 LF of thickened edge along the roadway. Additional costs include 2,000 LF of ditch restoration, adjusting existing catch basins, repairing the road, city administration and engineering, and a 30 percent project contingency.



Project location map



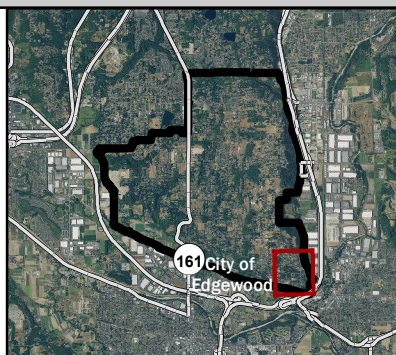
Edgewood Drive at 53rd Street E



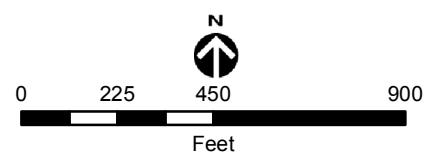
Legend

- Proposed culverts and catch basins *
- Existing channels
- Existing pipes
- Edgewood city limits

* Concept developed in 2009 plan



Edgewood Drive Drainage Improvements





City of Edgewood Stormwater Capital Improvement Program

Project Summary Sheet

Name: Jovita Creek Regional Improvement Feasibility Study

2017 Project Number: SW-3

2009 Project Number: 6, 27, 28

1997 Project Number: JC-3, JC-4

Priority: High

Estimated Cost: \$500,000

PROBLEM DESCRIPTION

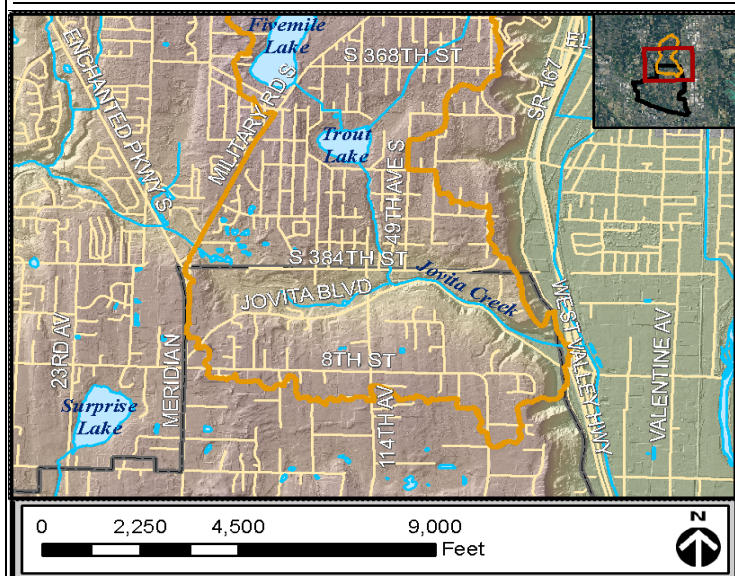
Where it flows through Edgewood, Jovita Creek is a narrow, steep stream corridor that leads to the valley floor with ravine side slopes that range from 10% to 70%. Increased urbanization and impervious area throughout the basin have led to increased flow rates in the creek compared to natural conditions, triggering landslides and severe erosion in the stream bed. Problems identified in the stream corridor include: road closures, debris clogged culverts, stream down cutting, marginal slope stability of the over steepened canyon walls, erosion caused by stormwater outfalls, and inadequate stream capacity. These problems require a regional approach because the basin spans four jurisdictions: King County, Pacific, Milton, and Edgewood.

PROPOSED SOLUTION

The purpose of this project is to develop a plan for the Jovita Creek basin that will prioritize short and long term actions to improve the overall health of the basin. The plan will include evaluation of flooding, slope stability, erosion, water quality, and fish and wildlife habitat problems in the basin under existing and future conditions and will address TMDL requirements. The plan will define and prioritize solutions and include planning level cost estimates for capital projects. The plan will also include maintenance and operations activities, and programmatic measures including education and outreach to correct, mitigate, or avoid these problems. This may require survey of key drainage system components, use of GIS tools, flow monitoring, water quality sampling, or hydrologic and hydraulic modeling. Potential water quality impacts and environmental regulations will also need to be factored into the analyses.

COST ESTIMATE ASSUMPTIONS

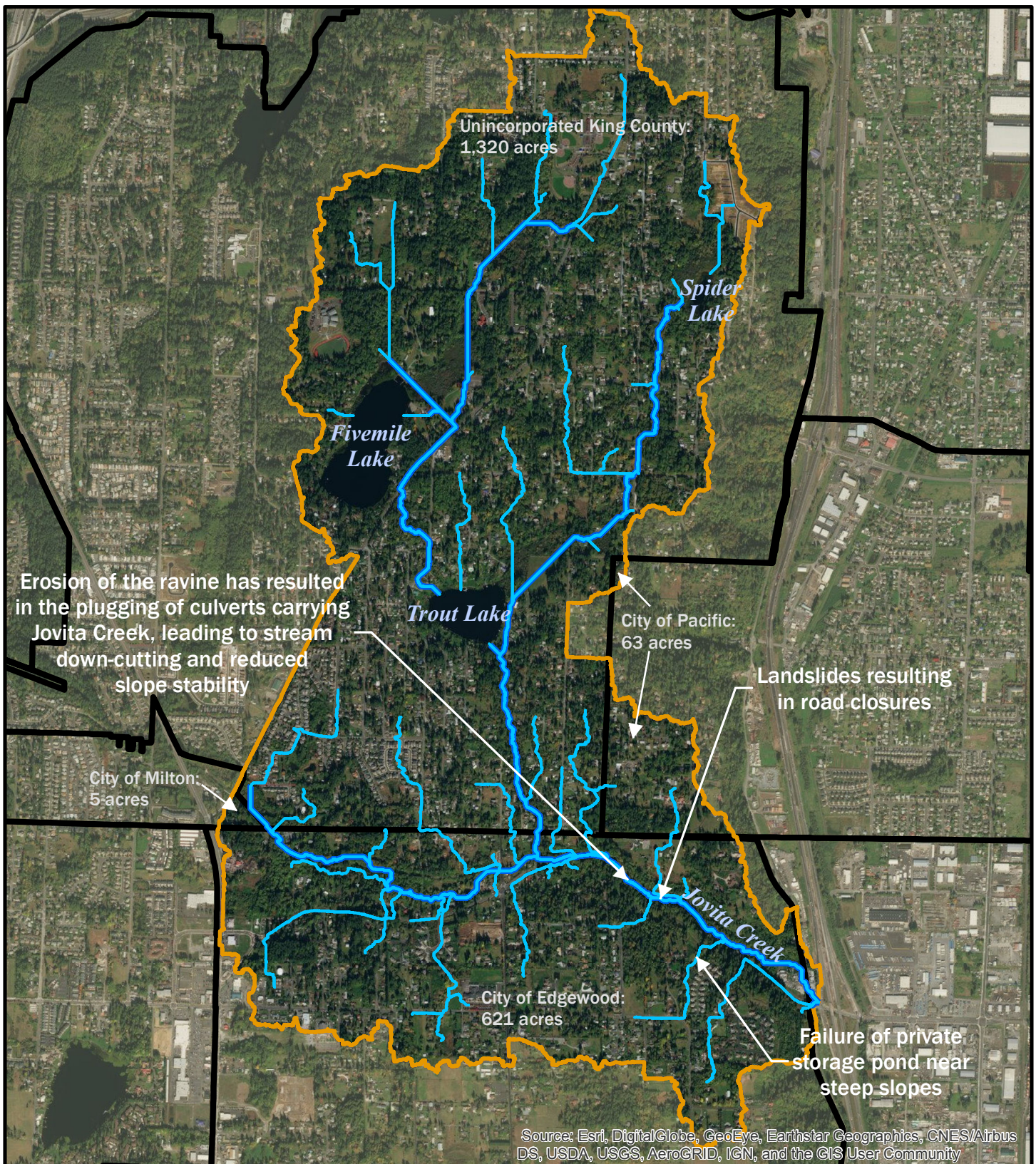
The cost estimate is based on consultant experience with similar interjurisdictional projects and includes public involvement, field assessment, modeling, development and prioritization of alternatives, and development of a plan.



Project location map

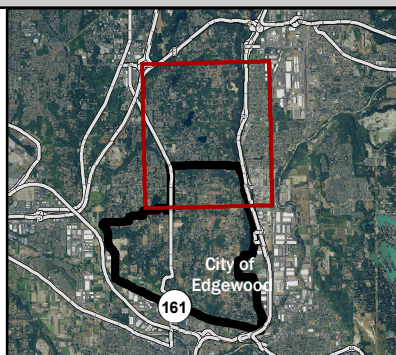


Stormwater along Jovita Boulevard

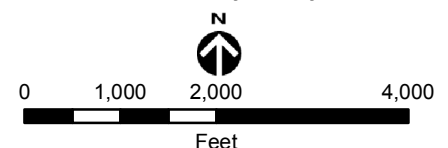


Legend

- Jovita Creek and tributary channels
- Jovita Creek watershed
- City and county boundaries



Jovita Creek Regional Improvement Feasibility Study



Cost Estimate for Jovita Creek Regional Feasibility Study.	
Tasks	Estimated Cost
Task 1 – Project Management and Coordination	\$75,000
Task 2 – Public and Stakeholder Outreach	\$25,000
Task 3 – Field Survey/Opportunity Assessment	\$25,000
Task 4 – Modeling of Existing and Future Conditions	\$65,000
Task 4 – Existing Conditions Assessment and Modeling Report	\$40,000
Task 5 – Scenario Development, Cost Estimating, and Analysis	\$60,000
Task 6 – Prioritization of Alternatives	\$40,000
Task 8 – Development of CIPs	\$45,000
Task 9 – Development of Regional Plan	\$50,000
City Administration and Management	\$75,000
Total Cost ^a	\$500,000

^a Cost rounded to two significant figures.



City of Edgewood Stormwater Capital Improvement Program Project Summary Sheet

Name: Lake Chalet Pothole Flood Reduction Project

2017 Project Number: NA

2009 Project Number: NA

1997 Project Number: LC-1 - LC-3

Priority: High

Estimated Cost: \$400,000 - \$2,000,000

PROBLEM DESCRIPTION

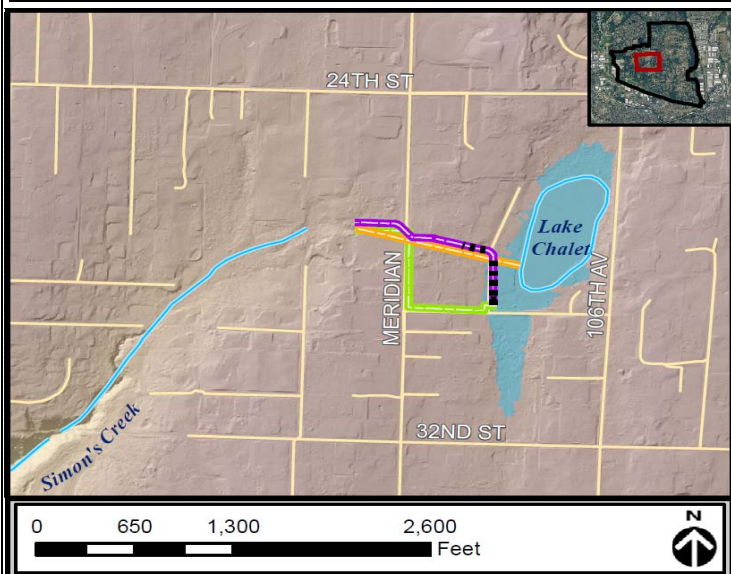
Historically, Lake Chalet overflowed to Simon's Creek; however, development has blocked that overflow pathway. As a result, even minor rainfall events lead to flooding of public streets and private property adjacent to Lake Chalet, including flooding of 29th Street E. The proximity to drinking water wells presents a challenge for infiltration for flood reduction at this pothole.

PROPOSED SOLUTION

Three options to convey water from Lake Chalet to nearby Simon's Creek have been considered. The least expensive option, from a capital cost standpoint, is to pump water west from Lake Chalet to the intersection of 29th Street E and Meridian Avenue E, and then use gravity flow north along Meridian to a discharge point in the Simon's Creek ravine. This option would require long term pump station operations and maintenance, which is not accounted for in the capital project cost estimates. The second option, gravity flow along the same alignment, is more expensive to construct than the first option, but requires less long term operations and maintenance. The most expensive, but potentially least disruptive option, is a siphon through a horizontal directional drilled (HDD) tunnel, which may also require the least long term O&M.

COST ESTIMATE ASSUMPTIONS

The pump and gravity flow option assumes 1 duplex pump station, electrical work, 600 LF of 4" force main, and connection to the existing storm sewer pipe. The gravity flow option assumes 1,800 LF of 18" storm sewer pipe. The siphon option assumes 1,200 LF of directional boring and associated 18" HDPE Pipe. All projects include an inlet structure and pavement, utility, and vegetation protection and restoration. The estimates do not account for the cost of easements, land acquisition, or mitigation in Simon's Creek. The estimates also do not include allied costs (design, permitting, City project management, ect.). A more detailed alternatives assessment may be necessary to select the preferred option.



Prospect location showing proposed pipe alignment



Flooding at Lake Chalet pothole

Engineering Construction Cost Estimate for "Conceptual Design and Order of Magnitude"

Project Name: Lake Chalet - Gravity Sewer Option
 Project Number: 17-06504-000
 Client: City of Edgewood



QA Review

Completed/Updated By: Kyle Johnson
 Last Updated On: 7/30/2017
 Approved By: Matt Fontaine
 Approved On: 8/9/2017
 Revised By: Meghan Mullen
 Revised On: 8/28/2017
 Reviewed/Approved On: Matt Fontaine
 Reviewed/Approved On: 8/28/2017

Item No.	Spec Section	Item Description	Qty	Unit	Unit Cost	Total Cost
	Div 1	General Requirements				
1		Mobilization	1	L.S.	8%	\$ 51,821
2		Erosion/Water Pollution Control	1	L.S.	2%	\$ 12,955
3		Utility Protection and Relocation	1	L.S.	10%	\$ 64,776
4		Project Temporary Traffic Control	1	L.S.	5%	\$ 32,388
	Div 2	Earthwork				
5		Remove A/C	778	S.Y.	\$ 20	\$ 15,556
6		Sewer line excavation	4,306	C.Y.	\$ 35	\$ 150,694
7		Sewer line backfill	3,657	C.Y.	\$ 35	\$ 128,009
	Div 3	Aggregate Production and Acceptance				
8		Pipe Bedding	1,500	L.F.	\$ 18	\$ 27,000
9		3/4" Minus Crushed Gravel	173	Ton	\$ 47	\$ 8,123
10		2 1/2" " Minus Crushed Rock	346	Ton	\$ 34	\$ 11,753
	Div 5	Surface Treatments and Pavements				
11		3" Asphalt	134	Ton	\$ 175	\$ 23,428
12		Grass restoration	24,000	S.F.	\$ 3	\$ 72,000
13		Trees	10	Each	\$ 500	\$ 5,000
	Div 7	Drainage Structures, Storm Sewers, Sanitary Sewers, Water Mains, and Conduits				
14		Manholes	4	Each	\$ 13,700	\$ 54,800
15		Inlet structure	1	Each	\$30,000	\$ 30,000
16		Outlet structure	1	Each	\$30,000	\$ 30,000
17		18" Gravity Sewer Pipe (PVC)	1,500	L.F.	\$ 21.00	\$ 31,500
	Div 8	Miscellaneous Construction				
18		Dewatering	10	Day	\$ 1,805	\$ 18,050
19		Trench safety	23,250	S.F.	\$ 1.80	\$ 41,850
		Construction Subtotal				\$ 809,705
		Contingency	50%			\$ 404,852
		Subtotal (with +50% Contingency)				\$ 1,214,557
		Tax	9.4%			\$ 114,168
		Total (with Contingency and Tax)				\$ 1,300,000

Engineering Construction Cost Estimate for "Conceptual Design and Order of Magnitude"

Project Name: Lake Chalet - Pump Station to Gravity Sewer Option
 Project Number: 17-06504-000
 Client: City of Edgewood



QA Review

Completed/Updated By: Kyle Johnson
 Last Updated On: 7/30/2017
 Reviewed By: Kevin Houck
 Reviewed On: 7/30/2017
 Approved By: Matt Fontaine
 Approved On: 8/9/2017
 Revised By: Meghan Mullen
 Revised On: 8/28/2017
 Reviewed/Approved On: Matt Fontaine
 Reviewed/Approved On: 8/28/2017

Item No.	Spec Section	Item Description	Qty	Unit	Unit Cost	Total Cost
	Div 1	General Requirements				
1		Mobilization	1	L.S.	8%	\$ 15,063
2		Erosion/Water Pollution Control	1	L.S.	2%	\$ 3,766
3		Utility Protection and Relocation	1	L.S.	5%	\$ 9,414
4		Project Temporary Traffic Control	1	L.S.	2%	\$ 3,766
	Div 2	Earthwork				
5		Remove A/C	178	S.Y.	\$ 20	\$ 3,556
6		Sewer line excavation (force main)	333	C.Y.	\$ 35	\$ 11,667
7		Sewer line backfill (force main)	256	C.Y.	\$ 35	\$ 8,944
	Div 3	Aggregate Production and Acceptance				
8		Pipe Bedding	600	L.F.	\$ 8	\$ 4,800
9		3/4" Minus Crushed Gravel	40	Ton	\$ 47	\$ 1,857
10		2 1/2" " Minus Crushed Rock	79	Ton	\$ 34	\$ 2,686
	Div 5	Surface Treatments and Pavements				
11		3" Asphalt	31	Ton	\$ 175	\$ 5,355
12		Grass restoration	4,800	S.F.	\$ 3	\$ 14,400
	Div 7	Drainage Structures, Storm Sewers, Sanitary Sewers, Water Mains, and Conduits				
14		Manholes	1	Each	\$ 11,000	\$ 11,000
15		Inlet structure	1	Each	\$ 30,000	\$ 30,000
16		Outlet structure	1	Each	\$ 10,000	\$ 10,000
16		12' diameter wet well	1	Each	\$ 35,000	\$ 35,000
17		Pumps (duplex), valving, control panel	1	Each	\$ 18,000	\$ 18,000
18		4" HDPE forcemain	600	L.F.	\$ 3	\$ 1,620
	Div 8	Miscellaneous Construction				
20		Dewatering	3	Day	\$ 1,805	\$ 5,415
21		Trench safety	3,000	S.F.	\$ 1	\$ 3,990
22		Electrical Service	1	L.S.	\$ 20,000	\$ 20,000
		Construction Subtotal				\$ 220,299
		Contingency	50%			\$ 110,150
		Subtotal (with +50% Contingency)				\$ 330,449
		Tax	9.4%			\$ 31,062
		Total (with Contingency and Tax)				\$ 400,000

Engineering Construction Cost Estimate for "Conceptual Design and Order of Magnitude"

Project Name: Lake Chalet - Siphon HDD Option
 Project Number: 17-06504-000
 Client: City of Edgewood



QA Review

Completed/Updated By: Kyle Johnson
 Last Updated On: 7/30/2017
 Approved By: Matt Fontaine
 Approved On.: 8/9/2017

Item No.	Spec Section	Item Description	Qty	Unit	Unit Cost	Total Cost
	Div 1	General Requirements				
1		Mobilization	1	L.S.	8%	\$ 79,401
2		Erosion/Water Pollution Control	1	L.S.	2%	\$ 19,850
3		Utility Protection and Relocation	1	L.S.	10%	\$ 99,251
4		Project Temporary Traffic Control	2	L.S.	5%	\$ 49,626
	Div 2	Earthwork				
5		Entry and exit points	60	C.Y.	\$ 35	\$ 2,100
	Div 3	Aggregate Production and Acceptance				
6		3/4" Minus Crushed Gravel	30	Ton	\$ 47	\$ 1,410
	Div 5	Surface Treatments and Pavements				
7		Grass restoration	24,000	S.F.	\$ 3	\$ 72,000
8		Trees	10	Each	\$ 500	\$ 5,000
	Div 7	Drainage Structures, Storm Sewers, Sanitary Sewers, Water Mains, and Conduits				
9		Inlet structure	1	Each	\$ 30,000	\$ 30,000
10		Outlet structure	1	Each	\$ 30,000	\$ 30,000
11		Siphon Directional Bore	1	L.S.	\$ 760,000	\$ 760,000
12		18" HDPE Pipe	1,200	L.F.	\$ 35	\$ 42,000
13		18" Fusing and Handling	1	L.S.	\$ 50,000	\$ 50,000
		Construction Subtotal				\$ 1,240,638
		Contingency	50%			\$ 620,319
		Subtotal (with +50% Contingency)				\$ 1,860,956
		Tax	9.4%			\$ 174,930
		Total (with Contingency and Tax)				\$ 2,000,000



City of Edgewood Stormwater Capital Improvement Program

Project Summary Sheet

Name: Pothole Water Level and Water Quality Monitoring

2017 Project Number: NA

2009 Project Number: NA

1997 Project Number: NA

Priority: High

Estimated Cost: \$200,000

PROBLEM DESCRIPTION

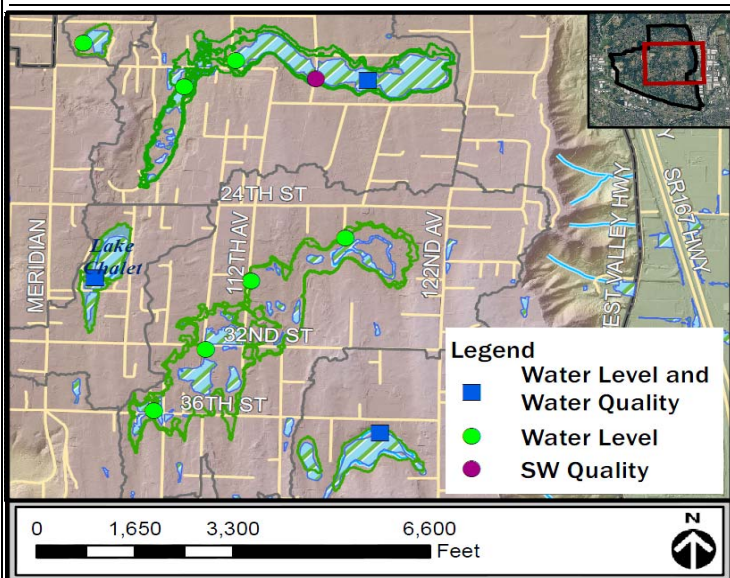
Data is needed to document how the water elevation of each pothole changes in response to different storm events and to monitor water quality. This data is needed to understand the volume of water that needs to be controlled as well as treatment needs to optimize the solutions to flooding problems in each pothole. Geotechnical and groundwater level data will also be collected at one candidate infiltration site (with multiple test wells) to evaluate subsurface conditions.

PROPOSED SOLUTION

The results of this effort will be used to evaluate the volume of water that must be controlled in each of the 6 potholes as well as water quality treatment needs. Water level data will be used in combination with precipitation data from the City's newly established rain gauge located at City Hall to develop rating curves to monitor response and recovery times after storms. In addition to water level monitoring, water quality information will be collected relating to color, nutrients, bacteria, copper and zinc. The geotechnical analysis will be used to evaluate infiltration feasibility at the candidate site and to determine which aquifer the nearby Water District well is located in.

COST ESTIMATE ASSUMPTIONS

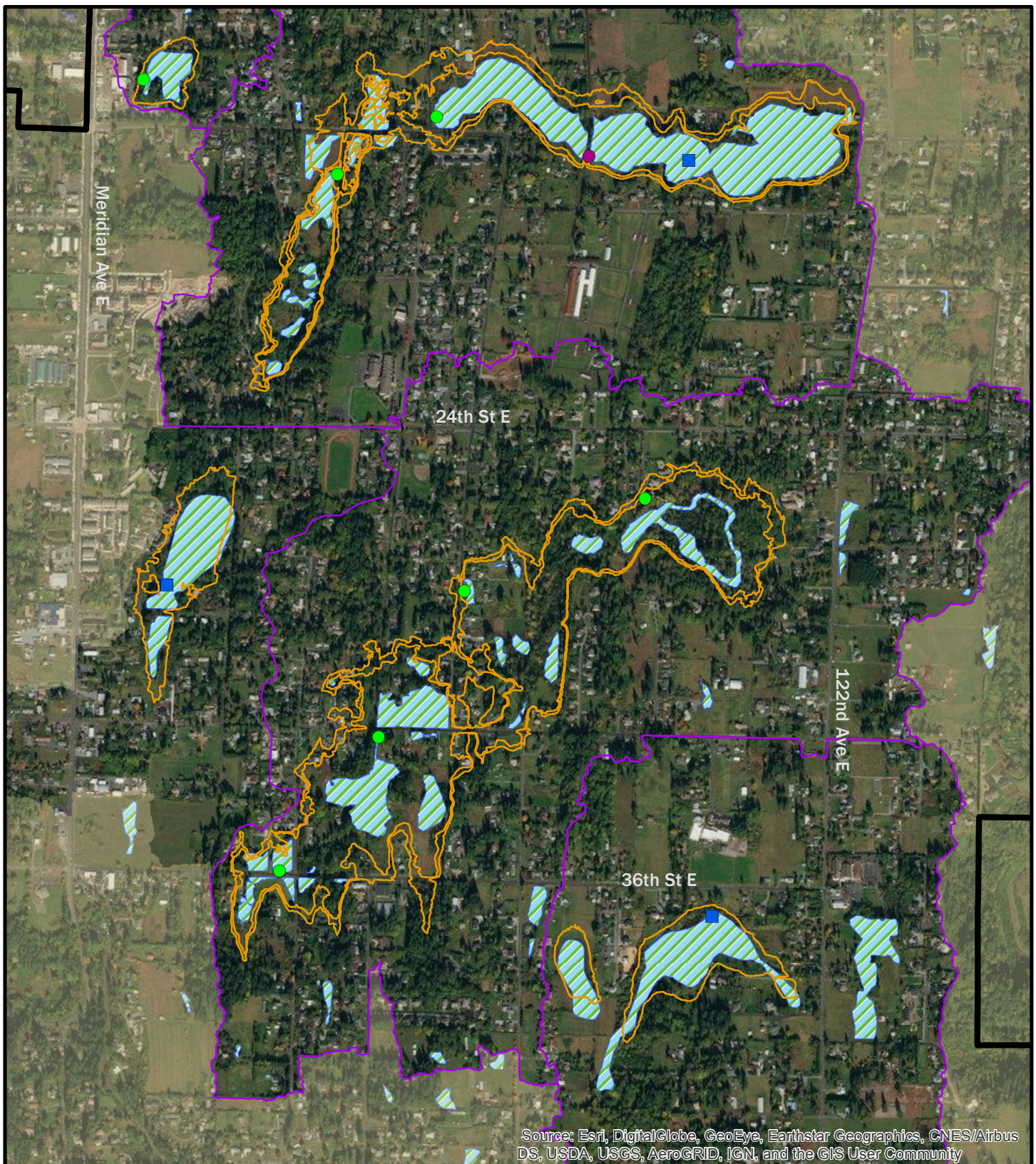
The cost estimate includes purchase and installation of automated pressure transducers and staff gauges for continuous water level monitoring in each of the 6 main potholes and 3 subpotholes, cost for laboratory analysis of water samples, development of a rating curve for each pothole, and costs for field visits to calibrate equipment and collect data and samples. This project also includes groundwater level monitoring, 4 borings (3 to 100 ft, 1 up to 300 ft), and an infiltration facility feasibility assessment. Water quality samples will be collected once per month for 4 months from each of the potholes. Three storm event samples will also be collected from the six potholes as well as from a site within the stormwater conveyance system.



Approximate monitoring locations



Edgewood Bowl Pothole flooding



Legend

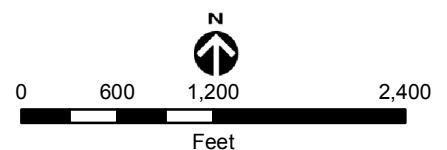
-  Edgewood city limits
-  Pothole flood elevations
-  Pothole catchment areas
-  Wetlands

Monitoring Locations*

-  Water level and water quality
-  Stormwater quality * Subject to change depending on access and field investigation
-  Water level



Pothole Water Level and Water Quality Monitoring



07/03/18 Study Session

Page 630 of 708

HERRERA ENVIRONMENTAL CONSULTANTS

City of Edgewood Pothole Water Level and Water Quality Monitoring
Herrera Project No. 17-06504-000

Water Level and Water Quality Monitoring Number of Tasks: 5			Task 1.0 Project Management		Task 2.0 Underground Injection Control Feasibility Analysis		Task 3.0 Water Level Monitoring		Task 4.0 Water Quality Monitoring		Task 5.0 Reporting		TOTAL	
COST SUMMARY														
Labor			\$7,585		\$2,442		\$24,153		\$5,844		\$17,911		\$57,935	
Travel and per diem			\$0		\$0		\$514		\$32		\$0		\$546	
Other direct costs (ODCs)			\$0		\$0		\$7,386		\$0		\$0		\$7,386	
Subconsultants			\$0		\$115,500		\$5,250		\$0		\$0		\$120,750	
Analytical laboratory			\$0		\$0		\$0		\$11,340		\$0		\$11,340	
GRAND TOTAL			\$7,585		\$117,942		\$37,302		\$17,216		\$17,911		\$197,957	
COST ITEMIZATION														
Labor (2017 rates)														
Personnel			Rate/Hour		Hours Cost		Hours Cost		Hours Cost		Hours Cost		Hours Cost	
Principal			\$224.35		28 \$6,282		8 \$1,795		12 \$2,692		3 \$673		8 \$1,795	
Sr. Engineer			\$161.73		4 \$647						17 \$2,749		21 \$3,396	
Scientist			\$129.28		\$0		\$0		166 \$21,460		40 \$5,171		96 \$12,411	
Engineer			\$95.63		\$0		\$0		\$0		10 \$956		10 \$956	
Administrative Coordinator			\$108.63		12 \$1,304		\$0		\$0		\$0		12 \$1,304	
SUBTOTAL LABOR (Burdened Labor)			40 \$7,585		12 \$2,442		178 \$24,153		43 \$5,844		131 \$17,911		404 \$57,935	
TRAVEL AND PER DIEM COSTS			Unit Cost		Units Cost		Units Cost		Units Cost		Units Cost		Units Cost	
Auto Use			Mile \$0.535		0 \$0.00		0 \$0.00		960 \$513.60		60 \$32.10		0 \$0.00	
SUBTOTAL TRAVEL AND PER DIEM					\$0		\$0		\$514		\$32		\$0	
OTHER DIRECT COSTS (ODCs)			Unit Cost		Units Cost		Units Cost		Units Cost		Units Cost		Units Cost	
Field Equipment and Supplies														
Computer, laptop			Day \$50		0 \$0.00		0 \$0.00		12 \$600.00		0 \$0.00		0 \$0.00	
In-Situ RuggedTroll 100's (0-30 feet)			Each \$420		0 \$0.00		0 \$0.00		10 \$4,200.00		0 \$0.00		0 \$0.00	
In-Situ RuggedBaroTroll			Each \$420		0 \$0.00		0 \$0.00		1 \$420.00		0 \$0.00		0 \$0.00	
Docking Station			Each \$225		0 \$0.00		0 \$0.00		1 \$225.00		0 \$0.00		0 \$0.00	
2-inch well dock (stainless steel ring)			Each \$21		0 \$0.00		0 \$0.00		10 \$210.00		0 \$0.00		0 \$0.00	
Screened sch 40 (0.0100) 10-foot PVC			Each \$24		0 \$0.00		0 \$0.00		6 \$144.00		0 \$0.00		0 \$0.00	
2-inch caps (well ends)			Each \$7		0 \$0.00		0 \$0.00		6 \$42.00		0 \$0.00		0 \$0.00	
Sand (50 lbs)			Each \$15		0 \$0.00		0 \$0.00		3 \$45.00		0 \$0.00		0 \$0.00	
Well locking cap (2-inch gripNlock)			Each \$20		0 \$0.00		0 \$0.00		10 \$200.00		0 \$0.00		0 \$0.00	
Green Vinyl-coated cable			Each \$100		0 \$0.00		0 \$0.00		1 \$100.00		0 \$0.00		0 \$0.00	
Ferrules			Each \$2		0 \$0.00		0 \$0.00		20 \$40.00		0 \$0.00		0 \$0.00	
Combination Lock			Each \$16		0 \$0.00		0 \$0.00		10 \$160.00		0 \$0.00		0 \$0.00	
Staff Gauge			Each \$100		0 \$0.00		0 \$0.00		10 \$1,000.00		0 \$0.00		0 \$0.00	
SUBTOTAL ODCs					\$0		\$0		\$7,386		\$0		\$0	
SUBCONSULTANT COSTS			Unit Cost		Units Cost		Units Cost		Units Cost		Units Cost		Units Cost	
Survey			\$5,000		0 \$0.00		0 \$0		1 \$5,000		0 \$0.00		0 \$0.00	
Driller			\$60,000				1 \$60,000						1 \$60,000	
AESI			\$50,000		0 \$0.00		1 \$50,000		0 \$0.00		0 \$0.00		0 \$0.00	
Fee on Subconsultants @ x%			5%		\$0		\$5,500		\$250		\$0		\$5,750	
SUBTOTAL SUBCONSULTANT					\$0		\$115,500		\$5,250		\$0		\$120,750	
ANALYTICAL LABORATORY COSTS			Unit Cost		Units Cost		Units Cost		Units Cost		Units Cost		Units Cost	
ARI Laboratory			\$270		0 \$0.00		0 \$0.00		0 \$0.00		42 \$11,340.00		0 \$0.00	
SUBTOTAL LABORATORY					\$0		\$0		\$0		\$11,340		\$0	



City of Edgewood Stormwater Capital Improvement Program

Project Summary Sheet

Name: Infiltration Pilot Project Design and Construction

2017 Project Number: NA

2009 Project Number: NA

1997 Project Number: EB-1 - EB-6

Priority: High

Estimated Cost: \$1,900,000

PROBLEM DESCRIPTION

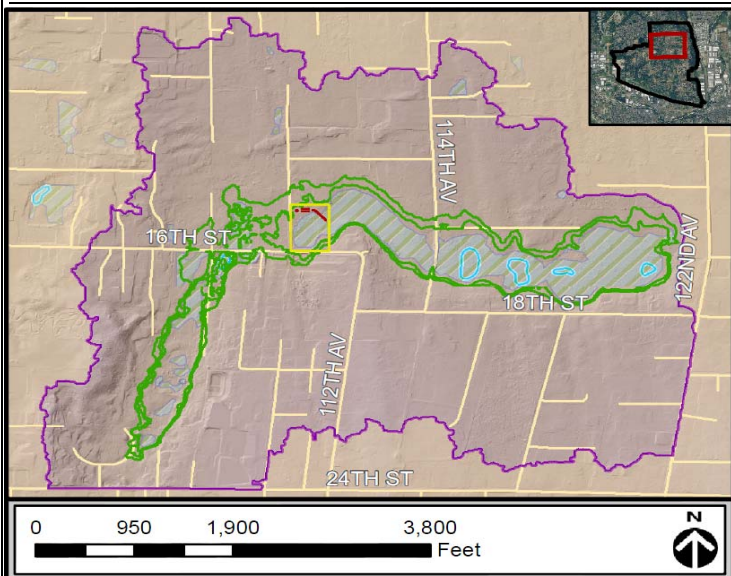
The City has six closed depression basins or potholes that flood during wet winters. One potential solution to the flooding from these potholes is to convey the stormwater to the uppermost aquifer through use of underground injection control (UIC) wells. Although this is an increasingly common solution, there continue to be concerns with the potential for impact to groundwater quality and therefore the local drinking water supply. The purpose of this project is to design and construct a stormwater treatment facility and associated UIC wellfield and to conduct testing to evaluate facility performance. This pilot study will be conducted on the Edgewood Bowl pothole and will also include an assessment of the volume of water managed with the system and the impact of the system on pothole water elevations.

PROPOSED SOLUTION

A conveyance system will be constructed to convey water from the Edgewood Bowl pothole to a flow control structure that will direct water to one of two media filters containing specialized treatment media. Treated water will be discharged to the upper aquifer through a UIC wellfield.

COST ESTIMATE ASSUMPTIONS

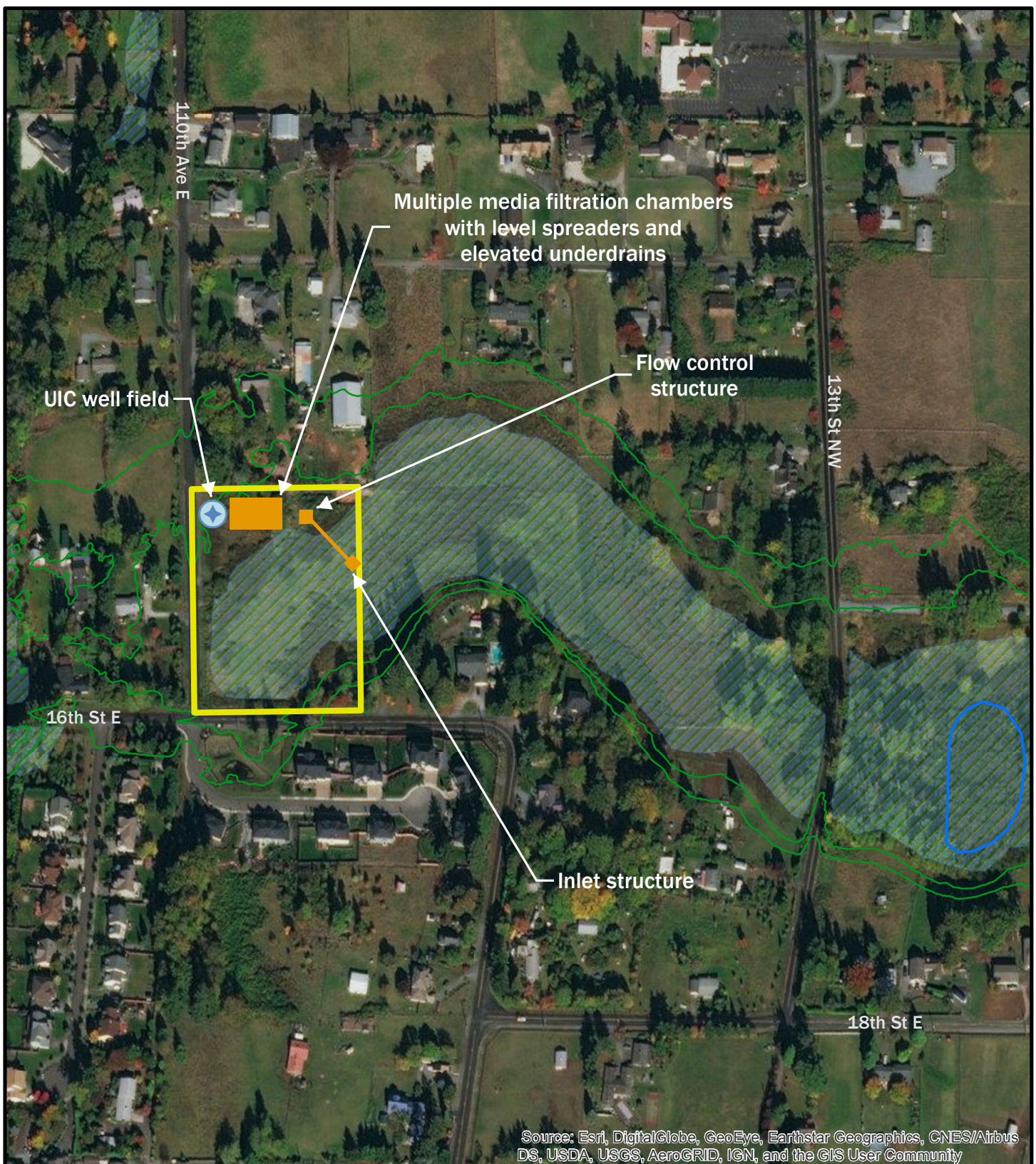
Cost estimates are based on using the 4 acre City-owned parcel at 16th Street E and 110th Avenue E. The cost includes construction of the conveyance system that includes piping and control structures, a treatment facility system that includes 2 media filters, a well field of 5 UIC wells, excavation, mitigation, and administration. Allowances and a contingency are included to allow for wetland mitigation or additional costs for inlet structures, pump stations, or alternate property purchases. Costs for city project management, design, geotechnical evaluation, permitting, and construction management are also included. The cost estimate does not include the cost for a long term water quality monitoring program to assess treatment performance, and hydrologic monitoring to track the volume of water treated and the effect on pothole water levels. It is assumed that monitoring would be conducted under a separate project.



Proposed pilot project location



Walker Pond flooding within Edgewood Bowl pothole

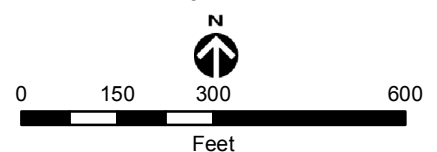


Legend

- Water bodies
- Pilot project structure
- City-owned parcel (4.0 acres)
- Edgewood Bowl Pothole flood elev.
- Wetlands
- Edgewood city limits



Edgewood Bowl Pothole UIC Pilot Project Concept



Engineering Construction Cost Estimate for "Conceptual Design and Order of Magnitude"

Project Name: Infiltration Pilot Project Design and Construction
 Project Number: 17-06504-000
 Client: City of Edgewood



QA Review

Completed/Updated By: M. Mullen & M. Fontaine
 Last Updated On: 10/23/2017
 Approved By: B. Busiek
 Approved On: 10/24/2017

Item No.	Spec Section	Item Description	Qty	Unit	Unit Cost	Total Cost
	Div 1	General Requirements				
1		Mobilization	1	L.S.	8%	\$ 81,880
2		Erosion/Water Pollution Control	1	L.S.	5%	\$ 47,384
3		Utility Protection and Relocation	1	L.S.	1%	\$ 9,477
4		Project Temporary Traffic Control	1	L.S.	2%	\$ 18,954
	Div 2	Earthwork				
5		Structure Excavation Class B	830	C.Y.	\$ 35	\$ 29,037
6		Storm Sewer Backfill	657	C.Y.	\$ 15	\$ 9,852
7		Pond excavation	4,200	C.Y.	\$ 10	\$ 42,000
	Div 3	Aggregate Production and Acceptance				
8		Pipe Bedding	800	L.F.	\$ 15	\$ 12,000
	Div 7	Drainage Structures, Storm Sewers, Sanitary Sewers, Water Mains, and Conduits				
9		Inlet structure	1	Each	\$ 30,000	\$ 30,000
10		Control structure	1	Each	\$ 50,000	\$ 50,000
11		6" Underdrain Pipe	1,300	L.F.	\$ 15	\$ 19,500
12		12" Storm Sewer Pipe (PVC)	800	L.F.	\$ 20	\$ 16,000
13		UIC Wells	5	Each	\$ 30,000	\$ 150,000
14		Trench safety	5,600	S.F.	\$ 1	\$ 7,448
	Div 8	Miscellaneous Construction				
15		Dewatering	20	Day	\$ 1,805	\$ 36,100
16		Electrical Service	1	L.S.	\$ 10,000	\$ 10,000
17		Allowance for Inlet Structure Extension / Automation	1	L.S.	\$ 50,000	\$ 50,000
18		Allowance for Wetland Restoration	1	L.S.	\$ 100,000	\$ 100,000
19		Impermeable Liner 40 Mil LLDPE	4,200	S.Y.	\$ 16	\$ 67,200
20		Level spreader	480	L.F.	\$ 206	\$ 98,842
21		Filter media	1,600	C.Y.	\$ 137	\$ 219,707
		Construction Subtotal				\$ 1,105,380
		Tax	9.4%			\$ 103,906
		Contingency	30%			\$ 331,614
		Construction Total (with tax and Contingency; 2 sig figs)				\$ 1,500,000
		Allied Costs				
		City Project Administration / Management	5%			\$ 80,000
		Design Engineering	10%			\$ 150,000
		Geotechnical	3%			\$ 50,000
		Permitting	3%			\$ 50,000
		Construction Management	5%			\$ 80,000
		Project Total (Includes Allied Costs, Contingency, and Tax; 2 sig figs)				\$ 1,900,000



City of Edgewood Stormwater Capital Improvement Program

Project Summary Sheet

Name: Edgewood Pothole Pilot Project
Feasibility Assessment

2017 Project Number: NA
2009 Project Number: NA
1997 Project Number: NA

Priority: High
Estimated Cost: \$460,000

PROBLEM DESCRIPTION

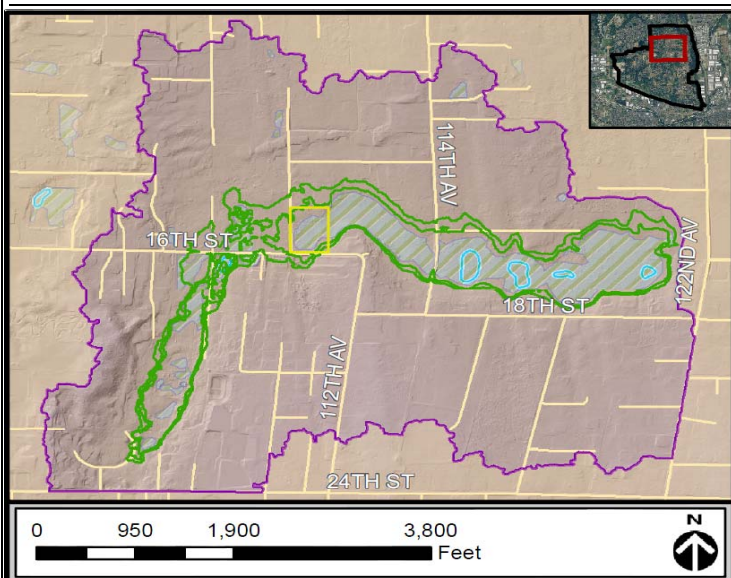
The City of Edgewood has six closed depression basins that receive stormwater runoff from surrounding neighborhoods and frequently flood during the winter months. A detailed alternatives assessment for addressing this stormwater problem was performed as part of developing the City's current surface water management plan in 1997, including options such as: excavating the flood fringe areas within the basins to provide additional storage, and direct conveyance of stormwater into nearby streams. These alternatives would have resulted in significant impacts to adjacent wetlands and nearby streams, by altering sensitive wetland hydroperiods or by directing flood flows into adjacent municipalities, further compounding regional flood control issues.

PROPOSED SOLUTION

Infiltrating stormwater using a UIC wellfield is one proposed alternative to reduce flooding. This feasibility assessment will evaluate; 1) whether an advanced stormwater treatment and UIC wellfield can adequately treat stormwater and ensure protection of the drinking water supply, and 2) the volume of water that can be controlled and therefore the flood reduction capacity of the system. A conceptual design for the system will be developed based on monitoring and modeling data. The monitoring data (collected under a different CIP project) will be used to develop an existing conditions hydrologic and hydraulic model of the pothole. The model will be used to size a UIC well field and advanced bioretention treatment facility as part of a preliminary design. Feasibility assessment will be prepared. Throughout the project, public and advisory group meetings will be held to inform the public and stakeholders about project progress and findings.

COST ESTIMATE ASSUMPTIONS

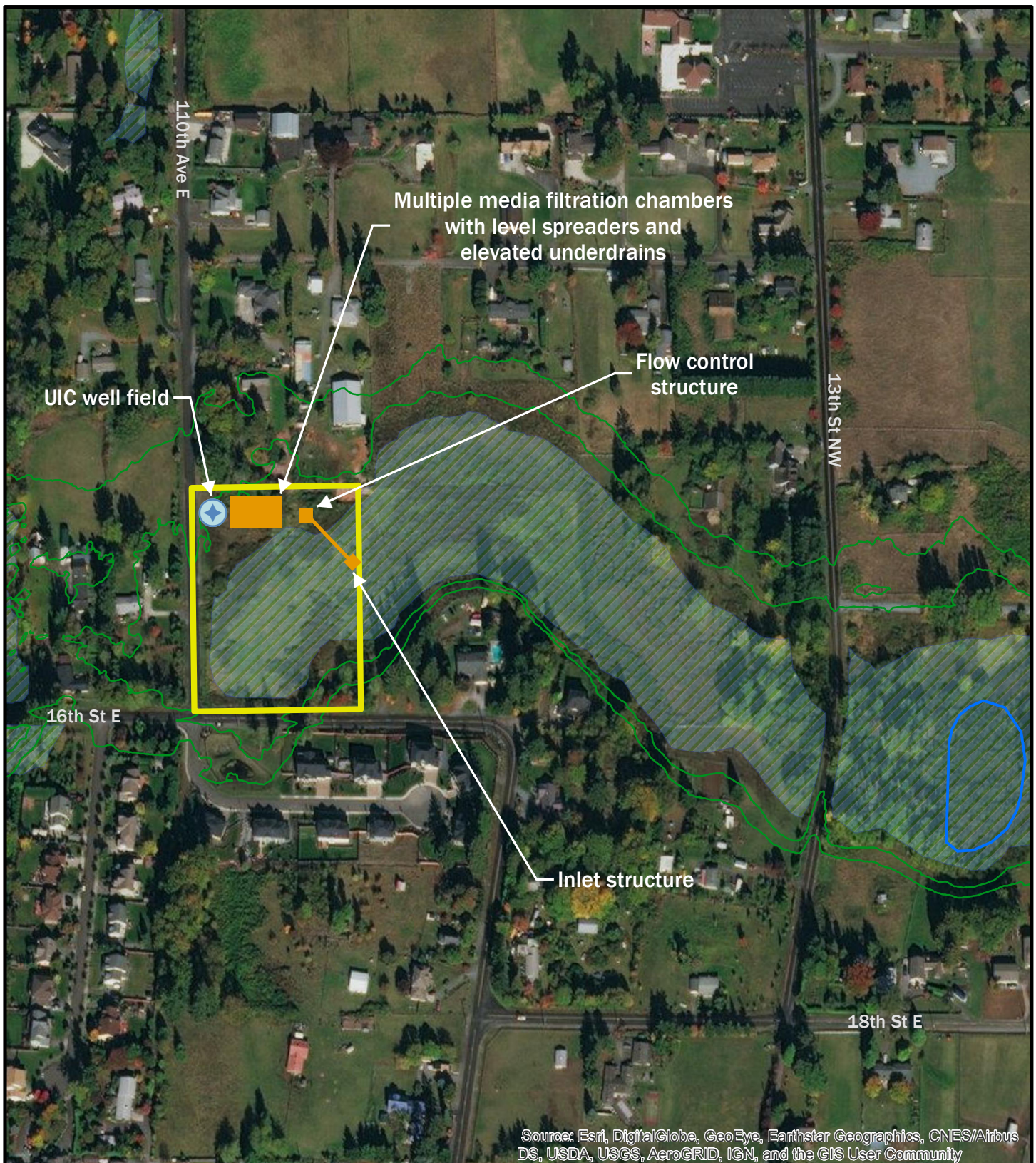
The cost estimates for community engagement, modeling, and feasibility analysis activities are based upon a thorough understanding of the proposed project. This understanding is based, in part, on recent and ongoing similar work on stormwater treatment facility and UIC design, modeling, and community engagement projects in Western Washington, as well as ongoing research related to treatment media. The cost estimate for monitoring is based on the Pothole Water Level and Water Quality Monitoring CIP.



Edgewood Bowl Pothole and potential pilot project location



Walker Pond flooding within Edgewood Bowl pothole

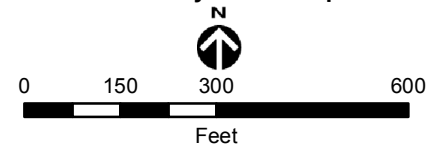


Legend

- Water bodies
- Pilot project structure
- City-owned parcel (4.0 acres)
- Edgewood Bowl Pothole flood elev.
- Wetlands
- Edgewood city limits



Edgewood Bowl Pothole UIC Pilot Project Concept



Cost Estimate for Edgewood Bowl Pothole Pilot Project Feasibility Assessment	
Tasks	Estimated Cost
Task 1 – Project Management	\$50,000
Task 2 – Community Engagement	\$50,000
Task 3 – Baseline Characterization Monitoring ^a	\$200,000
Task 4 – Hydrologic and Hydraulic Modeling	\$75,000
Task 5 – Feasibility Assessment and Conceptual Design	\$80,000
Total Cost	\$460,000

^a See detailed monitoring scope and budget in the Pothole Water Level and Water Quality Monitoring CIP Project.

Itemized Costs By Task	
Tasks	Estimated Cost
Task 1 - Project Management	Subtask Cost
Records Maintenance	\$5,000
Requests for Reimbursement	\$6,000
Quarterly Progress Reports	\$4,000
Project Oversight and Coordination	\$30,000
Project Outcome Summary Report	\$5,000
Task 1 Total	\$50,000
Task 2 - Community Engagement	
Advisory Group Meeting 1	\$6,000
Advisory Group Meeting 2	\$6,000
Advisory Group Meeting 3	\$6,000
Advisory Group Meeting 4	\$6,000
Public Meeting 1	\$8,000
Public Meeting 2	\$9,000
Public Meeting 3	\$9,000
Task 2 Total	\$50,000
Task 3 - Baseline Conditions Monitoring	
See Baseline Conditions Monitoring Scope and Budget Upload Document	\$200,000
Task 4 - Hydrologic and Hydraulic Modeling	
Draft Modeling QAPP	\$8,000
Final Modeling QAPP	\$2,000
Develop Existing Conditions Model	\$10,000
Calibrate Existing Conditions Model	\$20,000
Model Facility Performance	\$20,000
Draft Modeling Results Technical Memorandum	\$10,000
Final Modeling Results Technical Memorandum	\$5,000
Task 4 Total	\$75,000
Task 5 - Feasibility Assessment and Conceptual Design and Cost Estimating	
Feasibility Assessment	\$20,000
Draft Feasibility Assessment Technical Memorandum	\$10,000
Final Feasibility Assessment Technical Memorandum	\$5,000
Facility Sizing and Configuration	\$20,000
Cost Estimating	\$5,000
Draft Predesign Report and Cost Estimate	\$15,000
Final Predesign Report and Cost Estimate	\$5,000
Task 5 Total	\$80,000

APPENDIX D

Subbasin Inventory Data for Edgewood

Subbasin Inventory Data for Edgewood																			
Basin Group		White River Basin			Jovita Creek Basin	Puyallup River Basin	Wapato Creek Basin	Simons Creek Basin		Hylebos Creek Basin			Pothole Basins						TOTAL
Subbasin		Northern Slopes	Central Slopes	Southern Slopes				Simons Creek	Tributary to Simons Creek	Surprise Lake Creek	Surprise Lake	Hylebos Creek	Edgewood Bowl Pothole	Lake Chalet Pothole	Pinedale Pond/ 114th Ave Pothole	108th Ave Pothole	122nd Ave Pothole	Surprise Lake Pothole	
Area within the city		274.3	75.2	194.0	622.4	444.6	576.6	529.2	261.3	474.7	62.3	4.7	656.0	136.0	384.3	225.9	347.7	73.8	5343.0
Impervious Area		23.1	3.7	62.1	121.1	82.7	133.0	130.5	39.1	86.3	22.7	2.9	136.0	36.5	83.5	49.2	60.5	17.8	1,090.6
Zoning	BP	0.0	0.0	0.0	33.5	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	33.70
	C	3.4	0.0	0.0	29.7	0.0	0.0	0.0	0.0	0.0	34.8	0.0	0.0	0.0	0.0	0.0	0.0	21.8	89.8
	I	0.0	0.0	0.0	0.0	17.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	17.4
	MR-1	0.0	0.0	0.0	0.0	0.0	13.7	0.0	0.0	75.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	89.5
	MR-2	0.0	0.0	0.0	19.7	0.0	0.0	5.4	0.0	0.0	1.0	0.0	13.3	0.0	0.0	0.0	0.0	21.0	60.4
	MUR	0.0	0.0	0.0	0.0	0.0	12.1	13.5	22.9	75.3	0.0	0.0	0.0	22.4	0.0	0.0	0.0	0.0	146.3
	Public	0.0	0.0	17.3	40.0	1.5	9.0	29.9	9.8	13.5	0.7	0.0	48.4	14.5	5.7	0.8	10.3	0.3	201.5
	Public ROW	6.8	3.5	12.6	49.3	28.5	63.2	39.8	17.2	22.2	11.9	3.5	77.5	16.7	56.3	21.6	37.0	5.7	480.2
	SF-2	263.5	73.7	32.5	396.9	67.1	21.4	0.0	0.6	0.0	0.0	0.0	407.5	0.6	323.0	107.9	259.7	0.0	1,954.4
	SF-3	0.0	0.0	124.9	56.8	330.2	465.0	335.0	211.6	260.3	14.3	0.0	146.8	82.4	23.6	102.3	55.8	19.4	2,228.3
	SF-5	0.0	0.0	0.0	0.0	0.0	0.0	41.6	0.0	21.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	63.0
	TC	0.0	0.0	0.0	0.0	0.0	0.0	63.8	0.0	6.1	0.9	0.0	0.1	5.2	0.0	0.0	0.0	8.1	84.2
Vulnerable ARA		3.7	1.0	0.5	7.4	13.2	181.1	37.7	56.6	2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	303.5
WHPA		0.0	0.0	0.0	99.6	0.0	315.3	488.3	98.1	47.6	25.0	0.3	315.0	79.8	58.5	46.7	0.0	47.1	1,621.4
Flood Hazard Areas	City identified flood hazard areas	0.0	0.0	0.0	0.0	1.4	20.1	0.0	3.6	0.0	0.0	0.0	23.7	0.0	0.0	6.1	12.9	0.0	67.7
	FEMA floodway	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	37.3	6.8	25.4	6.1	17.1	3.3	96.0
	City identified floodway	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	37.3	6.8	25.4	6.1	17.1	3.3	96.0
	FEMA 100-year floodplain	0.0	0.0	0.0	12.6	0.0	55.7	24.3	14.5	13.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	120.7
	City identified 100-year floodplain	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	46.8	19.8	45.8	25.7	19.7	4.3	162.1
	Combined flood hazard	0.0	0.0	0.0	12.6	1.4	75.8	24.3	18.1	13.5	0.0	0.0	70.5	19.8	45.8	31.3	32.6	4.3	350.1
Steep slopes (>20%)		138.2	46.1	53.7	60.1	107.3	68.6	52.4	21.6	89.0	0.5	0.6	5.4	0.8	2.0	0.6	1.7	1.1	649.6
Steep slopes (>40%)		9.9	2.3	6.0	9.7	4.0	4.2	6.6	1.0	8.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	52.3
Stream Corridor		29.8	0.0	0.0	224.3	27.3	177.4	233.6	78.1	216.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	987.4
Wetland area		7.5	2.7	1.2	59.0	16.9	23.1	13.7	10.6	15.8	3.0	0.0	88.9	11.1	30.0	30.8	25.5	5.7	345.6

Received by City June 12, 2018

City Responses dated June 19, 2018

PAGE	COMMENT
6	Having been asked to participate in the consultant selection, it seems that MTVE staff could have been asked to give input to the development workshop or at least respond to the questionnaire.

Noted – The completed questionnaire is being provided to you for your records, as submitted to Herrera in April 2017. Please let us know if you see anything in addition that should be considered in the SWMP Update.

11	The section on Pothole Basins reads that there is no natural flow to nearby streams. However, the first paragraph of section 2.4 on page 20 clearly reads that they are part of the Puyallup River Watershed and flow to Commencement Bay. These two statements seem contradictory.
----	---

Thank you – To address this, the statement on Page 20 will be revised to read, “...are all *within* the Puyallup River Watershed, *which is tributary* to Commencement Bay in Puget Sound.”

19, Figure 2-3	The most recent iteration of the zoning designations should be included.
----------------	--

Thank you – We will update the map to show the zoning in effect at adoption of the plan.

31	As agreed for the Critical Areas Ordinance, the VARAs must include the Zone of Contribution as outlined in MTVE’s Wellhead Protection Plan.
----	---

Thank you – This section will be revised and updated accordingly prior to adoption.

Figure 2-7	The vulnerable aquifer recharge area must include the Zone of Contribution, as above.
------------	---

Thank you – This will be updated prior to adoption, and attached is the updated draft mapping from our critical areas consultant for your records.

34	There is no documented summer water deficit. We monitor the drawdown in our wells regularly and do not see a decrease in water level.
----	---

Thank you – to clarify, the statement will be revised to read, “...overall increases in evaporation and transpiration, thus *increasing the potential for future* summer water deficits.”

35, Table 2-7, Groundwater Supply	We monitor the drawdown in our wells regularly and do not see a decrease in water level.
-----------------------------------	--

Noted – This table is not a summary of current observations, rather the “expected responses” due to “predicted climate change effects”.

36	The second sentence of section 2.7.1 does not seem to make sense. “...while and wetlands and ponds within...”?
----	--

Thank you – We will revise this sentence to read, “While some of this system drains to wetlands and ponds within closed depressions which infiltrate to groundwater, most of the conveyance network directs stormwater from the plateau to the Puyallup River valley.”

39 MTVE has offered to participate financially in raising roads in some areas as we would like to move our water mains out of flood areas.

Noted – We will work with our consultant to see where this note could be included with the narrative.

41, Table 3-1 Before planning to pump or drain water from the Lake Chalet Pothole, the basin should be modeled to show the 5, 10, and 20 year impact on MTVE's wells around the lake.

Noted – We will work with our consultant during the design phase of this project to establish an appropriate maximum water surface elevation to protect adjacent property, then model the surface water hydrology under mitigated and unmitigated scenarios to determine the expected change in retained water volume. We will then work with MTVE's consultant to evaluate the impact of said volume change on the wells.

44, Table 3-3 The third project in the table is extremely vague. We would like to know what alternatives are being evaluated.

The description here is intentionally vague, as we have yet to evaluate the alternatives. We will engage MTVE when we get to that project.

53 We would like to see the Hydrologic Surface Water Analysis for the 108th Avenue E neighborhood. Is this available on your website?

This report analyzes surface water runoff in the neighborhood just south of 8th St E, attempting to address localized flooding concerns through conveyance improvements. No further action will be taken in this regard until downstream improvements can be made, including but not limited to a flood control solution at the Edgewood Bowl.

55 MTVE would like to be involved in the UIC well inventory.

Noted – We'll let you know when we identify resources to perform the inventory. This is not currently planned, and will not likely be planned until after adoption of the SWMP Update.

71 It is disappointing that our WHPP is again left out of the resources used in this report. MTVE spent many manhours and has a substantial financial investment in it. Page 1 of Herrera's response to my letter of September 20 reads that our WHPP will be included in this report.

Thank you – This appears to be an oversight, as I am certain the WHPP was used in developing this update. We will correct this with our consultant.

B-1 The comments on the Edgewood Bowl Pothole are incorrect. If the WHPP had been consulted it would have shown that not only is the Edgewood Bowl within the Zone of Contribution, it is very close to the 5 and 10 year Time of Travel areas.

We will revise the comment by striking "that is located far from existing wells."

Lake Chalet Pothole Flood Reduction Project Summary

The impact on aquifer recharge for the 5, 10, and 20 year recharge rates should be determined before undertaking this project.

Thank you – see "41, Table 3-1" response above.

Pothole Water Level and Water Quality Monitoring Project Summary

This reads that 4 borings are to be done. Where and why would this drilling be done?

Our intent is to investigate groundwater levels in areas where MTVE does not currently have wells. Any explorations will be closely planned and coordinated with MTVE in advance. We will work with our consultant to update this Project Summary Sheet accordingly.

Infiltration Pilot Project Design and Construction Project Summary

This project proposes to discharge water to the “upper aquifer” by UIC and pumps. Where is the data showing this aquifer? We believe it to be our recharge area in the 5 and 10 year Time of Travel. This will jeopardize our water source.

Thank you for your comments – This project summary describes work that may occur following a successful feasibility assessment (next project summary sheet in the SWMP Update). We will work with our consultant to clarify this critical sequencing issue and re-order the projects in the document.



City Of Edgewood Council Agenda Summary Sheet

SUBJECT: Goat Pasture Lease Agreement		Agenda Item #:		2E
		For Agenda of:		JULY 3, 2018
		Prepared by:		Dave Gray
ATTACHMENTS (list): ☒ Pasture Lease with Exhibit A				
Approval of Materials:				
Mayor, Daryl Eidinger	☒	Expenditure Required:	<u>\$300</u>	
Asst. City Administrator, Dave Gray	☒	Amount Budgeted:	<u>\$300</u>	
City Attorney, Carol Morris	☒	Appropriation Required:	<u>\$0</u>	
City Clerk, Rachel Pitzel	☐	Timeline: This is a three (3) year pasture lease.		
Community Development Director, Darren Groth	☐			
Public Works, Jeremy Metzler	☐			
Fiscal Note/Consideration: The rental income is \$1 per year while the goat maintenance fee to the City is \$300 per year. The cost of periodic maintenance per year for the pasture would be in excess of \$300 per year.				
SUMMARY STATEMENT: Mr. Pile and his goats have been maintaining the area for a number of years. The addition of a fee for the maintenance paid by the City, is ostensibly to offset the cost of insurance the City has been advised by its carrier, WCIA, the lessee should carry. The \$300 per year payment is measurably less than the cost the City would incur to provide maintenance it enjoys from the benefit of the animals in the pasture. The animals add to the rural character of the Nelson Farm & Nature Park area and provide enjoyment to the community.				
COUNCIL COMMITTEE REVIEW AND RECOMMENDATION: N/A				
RECOMMENDED ACTION: MOTION to authorized the Mayor to execute the Nelson Farm Pasture Lease. ALTERNATIVES TO RECOMMENDED ACTION: 1) Do not adopt 2) Forward to Study Session for further review				

RESOLUTION NO. 18-XXXX

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF EDGEWOOD, PIERCE COUNTY, WASHINGTON AUTHORIZING THE MAYOR TO EXECUTE A PASTURE LEASE WITH GREG PILE FOR MUTUAL BENEFIT OF PASTURE USE AND VEGETATION MAINTENANCE.

WHEREAS, the City Council has been in favor of the mutual relationship between the City and Mr. Greg Pile, wherein his goats pasture at the Nelson Farm while keeping the vegetation under control; and

WHEREAS, the City Council understands the benefits to the community for the enjoyment the animals bring to the rural nature of the Nelson Farm and that Mr. Pile's costs for insurance to meet the City's insurance requirements have increased considerably over time; and

WHEREAS, the City believes the cost of providing City personnel or contract labor to provide pasture maintenance would be in excess of the fee provided Mr. Pile to provide goat maintenance and meet the increased cost of insurance as required by the City.

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF EDGEWOOD, WASHINGTON, DOES RESOLVE AS FOLLOWS:

Section 1. The Mayor is hereby authorized to execute a multi-year pasture lease, attached hereto and incorporated herein.

PASSED BY THE CITY COUNCIL OF THE CITY OF EDGEWOOD, WASHINGTON, AT A REGULAR MEETING THEREOF, THIS 10th DAY OF JULY, 2018.

Daryl Eidinger, Mayor

ATTEST:

Rachel Pitzel, City Clerk

REAL PROPERTY LEASE AGREEMENT

This Lease is made and entered into by and between the CITY OF EDGEWOOD, An optional code, municipal corporation organized and existing under the laws of the State of Washington, herein referred to as Lessor or the City, and the GREG PILE, whose address is 12608 48th St. E., Edgewood, WA 98372, herein referred to as Lessee. This lease supersedes the March 27, 2015 Pasturing and Vegetation Management Agreement which expired on March 27, 2016 and the March 27, 2016 First Addendum to Pasturing and Vegetation Management, that expired on March 27, 2017.

WHEREAS, the City owns the real property commonly known as the Nelson Farm, 11912 - 18th Street East in Edgewood (Pierce County Assessor's Parcel No. 0420112082) (hereinafter the "Property"); and

WHEREAS, the Property is improved with a farmhouse and water has been piped onto the Property; and

WHEREAS, the Property is currently, and has historically been, at least partially overgrown with native and non-native grasses and other vegetation; and

WHEREAS, Lessee owns a small flock of Hampshire and Dorset sheep, the natural habits of which have been proven effective in controlling vegetation; and

WHEREAS, the Lessee desires to lease a portion of the Property for the purpose of allowing the sheep to graze, which would control the vegetation to the benefit of the City; and

NOW, THEREFORE, in consideration of the mutual benefits accruing to both parties, the Lessor and Lessee agree as follows:

Section 1 - PREMISES

For and in consideration of the mutual covenants hereinafter contained, Lessor does hereby agree to lease the following real property to the Lessee:

That portion of Exhibit A denoted as fenced and marked with an “X” at 11912 18th Street East,

Section 2 - TERM AND TERMINATION

The Lessee is currently in possession of the Property. The term of the lease shall be for three (3) years commencing on July 24, 2018 and ending on June 30, 2021, if not sooner terminated in the manner provided in Section 5 or 8.

Either party may terminate this lease, with or without cause, upon 30 days written notice to the other party.

Section 3 - RENT

- A. The rent shall be One Dollar (\$1.00) per year payable in full without deduction or offset, to the Clerk of the City of Edgewood on or before June 30 of each year during this lease. Real property taxes and assessments shall be the responsibility of the City. All other taxes, including leasehold taxes shall be paid by the Lessee.
- B. The City shall pay the lessee \$300 per year to help offset the cost of housing the animals on-site on the Property, in exchange for the animals keeping the vegetation at a level that does not require additional City maintenance costs.

Section 4 - CONDITIONS OF USE

- A. It is understood and agreed between the parties that the Lessee shall not use or occupy any portion of the Property other than the Premises described in Section 1, without the Lessor’s written permission, which may be withheld for any reason by the City.
- B. The purpose of this Lease is for the temporary pasturing of the Lessee’s Hampshire and Dorset sheep, together with one or more miniature donkeys or alpacas, to provide predator deterrence (each an “Animal” and collectively referred to as the “Animals”).
- C. It is specifically agreed and understood that the Lessee shall not call on the Lessor to make any improvements or repairs to the Premises. Lessee agrees to maintain the above-described real property and the Premises during the term of this Lease and shall be responsible for the maintenance and upkeep of said real property and Premises at all times, including but not limited to the pasture area and portions of the existing barn for animal shelter and storage of supplies. The Lessee agrees to inspect the fences not less than once per year; furnish labor and materials for repair of fences, supervise supply of water to Animals, return stray Animals to Premises, Call veterinarian in case of emergency, pay veterinary expenses, furnish feed to Animals.
- D. The Lessee shall be and remain exclusively responsible for the transportation, care, feeding watering, monitoring, supervision, control and removal of the Animals, and the

Lessor shall have no responsibility or liability whatsoever regarding the same. The Lessee shall ensure that the Animals are treated and maintained in a humane and safe manner at all times. It is expressly understood that the Lessee's performance of the activities authorized in this Lease are undertaken at the Lessee's sole risk, and that the Lessee assumes the responsibility and risk of all loss injury, illness, and/or death of the Animals.

E. No more than eight (20) Animals may be pastured on the Premises at any time.

F.

F. The Lessee shall not install any improvements at all on the Premises, temporary or permanent, unless allowed by this Lease. The Lessee is specifically prohibited from subjecting the Premises or the Lessor's assets to any liens or claims of lien. Lessee shall keep the Premises free from any liens created by or through Lessee. If a lien is filed against the Premises by any person claiming by, through or under the Lessee, then Lessee shall, within ten (10) days after the Lessor's demand, at Lessee's expense, either remove the lien or furnish to the Lessee a bond issued by a surety, approved in form by the City Attorney, and in an amount satisfactory to the Lessor, indemnifying the Lessor and the Premises against all liabilities, costs and expenses, including attorney's fees, which the Lessor could reasonably incur as a result of such lien.

G The Lessee accepts the condition of the Premises in its present condition on the terms described in this Lease. The Lessee accepts the Premises "AS IS" and with all faults, and the City makes no warranty of any kind, express or implied, as to the condition of the Premises. As the Lessee is the current occupant of the Premises, it is fully familiar with the physical condition of the Premises and accepts the Premises in its current condition as satisfactory to the Lessee's needs.

Section 5 - ABANDONMENT OF PREMISES

Lessee shall not vacate or abandon the Premises during the term hereof except upon thirty (30) days written notice sent by certified mail to Lessor. Upon expiration or termination of this Lease, the Lessee shall promptly remove the Animals from the Premises and restore the Premises to its original condition prior to the Lessee's entry thereon, except for normal wear and tear reasonably associated with the Lessee's use.

Section 6 - INDEMNIFICATION; INSURANCE.

A. Lessee shall defend, indemnify and hold harmless the City, its officers, officials, employees and volunteers from and against any and all claims, suits, actions or liabilities, including costs, reasonable attorneys' fees and expenses, for injury or death of any person, or for loss or damage to property, which arises out of Lessee's use of the Premises or from the conduct of Lessee's operations, or from any activity, work or thing done, permitted or suffered by Lessee in or about the Premises, except only injury or damage as shall have

been occasioned by the sole negligence of the City. The provisions of this Section shall survive the termination or expiration of the Lease.

- B. The Lessee shall procure and maintain, for the duration of this Lease, insurance against claims for injuries to persons or damage to property which may arise from or in connection with the Lessee's operation and use of the leased Premises. Lessee's maintenance of insurance as required by this Lease shall not be construed to limit the liability of the Lessee to the coverage provided by such insurance or otherwise to limit the City's recourse to any remedy available at law or equity.

Lessee shall obtain insurance of the types described below:

1. Commercial General Liability insurance which shall be written on Insurance Services Office (ISO) occurrence form CG 00 01 and shall cover premises and contractual liability. The City shall be named as an insured on Lessee's Commercial General Liability insurance policy using ISO Additional Insured-Managers or Lessors of Premises Form CG 20 11 or a substitute endorsement providing equivalent coverage. Commercial General Liability insurance shall be written with limits no less than \$1,000,000 each occurrence, \$2,000,000 general aggregate.

2. Property insurance shall be written on an all risk basis. The property insurance shall be written covering the full value of Lessee's property and improvements with no coinsurance provisions.

The Lessee's Commercial General Liability insurance policy or policies are to contain, or be endorsed to contain that they shall be primary insurance as respects the City. Any insurance, self-insurance or insurance pool coverage maintained by the City shall be excess of the Lessee's insurance and shall not contribute with it.

Insurance is to be placed with insurers with a current A.M. Best rating of not less than A:VII.

Lessee shall furnish the City with original certificates and a copy of the amendatory endorsements, including but not necessarily limited to the additional insured endorsement, evidencing the insurance requirements of the Lessee.

Lessee and the City hereby release and discharge each other from all claims, losses and liabilities arising from or caused by any hazard covered by property insurance on or in connection with the Premises. This release shall apply only to the extent that such claim, loss or liability is covered by insurance.

City shall purchase and maintain during the term of the Lease all-risk property insurance covering the Building for its full replacement value without any coinsurance provisions.

The Lessee shall provide the City with written notice of any policy cancellation, within two business days of their receipt of such notice.

Failure on the part of the Lessee to maintain the insurance as required shall constitute a material breach of the Lease, upon which the City may, after giving five business days' notice to the Lessee to correct the breach, terminate the Lease or at its discretion, procure or renew such insurance and pay any and all premiums in connection therewith, with any sums so expended to be repaid to the City on demand. The language in this Section 6(A) relating to indemnification shall survive the expiration or termination of this Agreement.

Section 7 - ASSIGNMENT

Lessee shall not assign or transfer this lease or any interest therein, without the prior written consent of Lessor. Any such assignment without Lessor's consent shall be void, and shall at the option of the Lessor, constitute cause for termination of this Lease.

Section 8 - DEFAULT

In the event the Lessee shall fail to keep and perform any of the covenants and agreements herein contained including the payment of rent, Lessor may terminate this lease by giving written notice to Lessee. Lessee shall not be deemed to be in default of the covenants and agreements hereunder unless Lessor shall first give to Lessee five (5) days written notice of such default and Lessee fails to cure such default(s) within five (5) days after receipt of written notice. In the event of any such lease termination, Lessor, in addition to the other rights and remedies it may have, shall have the immediate right of re-entry and may remove all Animals from the Premises.

Section 9 - WAIVER

Lessor's waiver of one or more covenants or conditions by either party shall not be construed as a waiver of a subsequent breach of the same or other covenants or conditions.

Section 10 - PARTIES BOUND

The covenants and conditions herein contained shall, subject to the provisions as to assignment and transfer, apply to and bind the heirs, successors, executors, administrators, and assigns of all the parties hereto.

Section 11 – NOTICE

Any notice required to be given to the parties under this Lease shall be in writing and effective either when delivered in person or via overnight mail to the other party, or three (3) days after being sent by registered or certified mail to the other party, at the addresses set forth below:

City of Edgewood
Attn: City Clerk
2224 104th Ave. E. Edgewood, WA 98371
253-952-3299 - rachel@cityofedgewood.org

Greg Pile
12608 48th St. E., Edgewood, WA 98372
(253) 820-0623 - gpile@comcast.net

Section 12 -- LESSOR'S RESERVATION

Lessor, as well as agents and employees of the Lessor, reserve the right to enter the Premises at any reasonable time for purposes of: (a) consultation with the Lessee; (b) making repairs, improvements and inspections; and (c) after termination of the Lease is given, of performing seasonal work, none of which is to interfere with the Lessee in carrying out regular operations.

Section 13 - ENTIRE AGREEMENT

This lease sets forth the entire agreement between the parties and it shall not be modified in any manner except by an instrument in writing executed by the duly authorized representative of the parties.

Section 14 - JURISDICTION, VENUE AND ATTORNEY FEES

Any action for claims arising out of or relating to this Lease shall be governed by the laws of the State of Washington. Venue shall be in Pierce County Superior Court. In any suit or action instituted to enforce any right or obligation granted in this Agreement, the substantially prevailing party shall be entitled to recover its costs, disbursements, and reasonable attorney's fees from the other party.

IN WITNESS WHEREOF, the parties hereto have signed and sealed this lease the 26th day of June 2018.

LESSOR:

LESSEE:

City of Edgewood

By:

It's: __ Mayor _____

By: _____
GREG PILE

EXHIBIT A

CITY OF EDGEWOOD

NELSON FARM GOAT GRAZING AREA (FENCED) MARKED WITH AN "X".



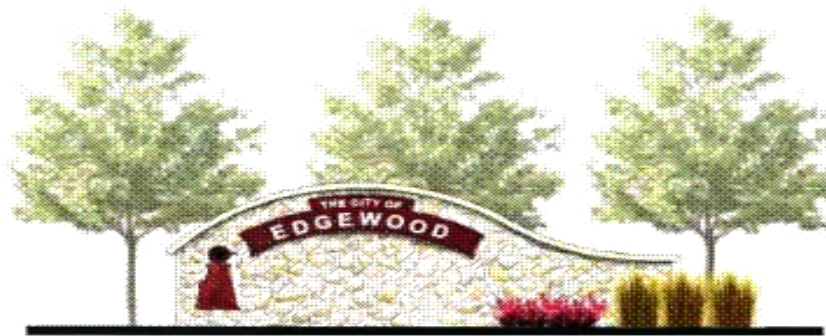


City Of Edgewood Council Agenda Summary Sheet

SUBJECT: 2017 Annual Financial Report		Agenda Item #:		2F
		For Agenda of:		07/3/2018
		Prepared by:		Dave Gray
ATTACHMENTS (list): ☒ 2017 Annual Financial Report				
Approval of Materials:				
Mayor, Daryl Eidinger	☒	Expenditure Required:	<u>\$0</u>	
Asst. City Administrator, Dave Gray	☒	Amount Budgeted:	<u>\$0</u>	
City Attorney, Carol Morris	☐	Appropriation Required:	<u>\$0</u>	
City Clerk, Rachel Pitzel	☒	Timeline:		
Community Development Director, Darren Groth	☐			
Public Works, Jeremy Metzler	☐			
Fiscal Note/Consideration: The 2017 Annual Report Identifies 2017 as a year the City experienced revenues above those budgeted and expenditures below those budgeted with a net increase to ending fund balances.				
SUMMARY STATEMENT: The City has exceeded its Strategic Budget Goals for the Year 2017.				
COUNCIL COMMITTEE REVIEW AND RECOMMENDATION: N/A				
RECOMMENDED ACTION: MOTION to authorize the Mayor to cause the 2017 Year End Annual Financial Report to be posted to the City Web site and otherwise be made available to the public as an unaudited representation of the City's overall financial position.				
ALTERNATIVES TO RECOMMENDED ACTION: 1) Do not adopt 2) Forward to Study Session for further review				

Unaudited Financial Statements

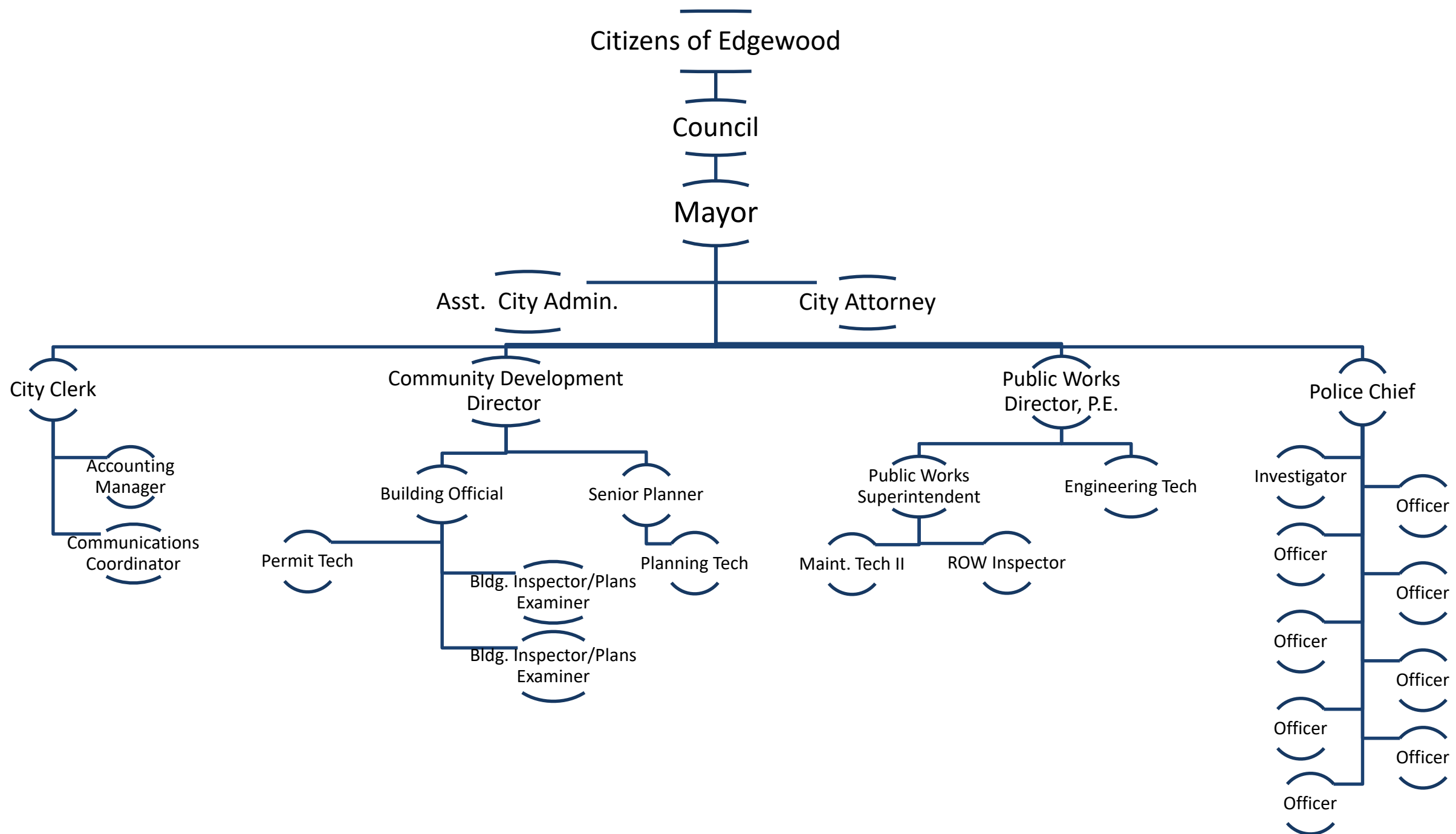
City of Edgewood 2017 ANNUAL REPORT



**City of Edgewood
2224 104th Avenue East
Edgewood WA 98372
www.cityofedgewood.org**

City of Edgewood, Washington
2017 Annual Report
Table of Contents

2017 Organization Chart.....	1
2018 City Officials	2
State Auditor’s Office Annual Report Certification.....	3
Statement C-4: Fund Resources and Uses Arising from Cash Transactions.....	4
Statement C-5: Fiduciary Fund Resources and Uses Arising from Cash Transactions	9
Notes to Financial Statement.....	10
Schedule 01: December 31, 2017 Trial Balance.....	21
Schedule 07: Disbursement Activity.....	40
Schedule 09: Liabilities.....	41
Schedule 11: Cash Activity.....	42
Schedule 15: State/Local Financial Assistance.....	44
Schedule 17: Limitations of Public Works Performed by Employees.....	45
Schedule 19: Labor Relations Consultant.....	46
December 31, 2017 Ending Balances-Debt Map	47



City of Edgewood Organizational Chart

City of Edgewood, Washington
2018 City Officials

Elected City Councilmembers:

Mayor Daryl Eidinger	December 31, 2019
Deputy Mayor, Tyron Christopherson.....	December 31, 2021
Councilmember Luke Meyers.....	December 31, 2019
Councilmember Nate Lowry.....	December 31, 2019
Councilmember Stephanie Shook.....	December 31, 2021
Councilmember John West.....	December 31, 2021
Councilmember Mark Creley.....	December 31, 2019
Councilmember Rosanne Tomin.....	December 31, 2021

Appointed Staff:

Police Chief (Contracted).....	Micah Lundborg
City Clerk.....	Rachel Pitzel
City Attorney (Contracted).....	Carol Morris

ANNUAL REPORT CERTIFICATION

City of Edgewood
(Official Name of Government)

1111
MCAG No.

Submitted pursuant to RCW 43.09.230 to the Washington State Auditor's Office

For the Fiscal Year Ended 12/31/2017

GOVERNMENT INFORMATION:

Official Mailing Address	<u>2224 104th Ave E</u>
	<u>Edgewood, WA 98372</u>
Official Website Address	<u>www.cityofedgewood.org</u>
Official E-mail Address	<u>dave@cityofedgewood.org</u>
Official Phone Number	<u>253-952-3299</u>

AUDIT CONTACT or PREPARER INFORMATION and CERTIFICATION:

Audit Contact or Preparer Name and Title	<u>Dave Gray Assistant City Administrator</u>
Contact Phone Number	<u>253-952-3299</u>
Contact E-mail Address	<u>dave@cityofedgewood.org</u>

I certify 30th day of May, 2018, that annual report information is complete, accurate and in conformity with the Budgeting, Accounting and Reporting Systems Manual, to the best of my knowledge and belief, having reviewed this information and taken all appropriate steps in order to provide such certification. I acknowledge and understand our responsibility for the design and implementation of controls to ensure accurate financial reporting, comply with applicable laws and safeguard public resources, including controls to prevent and detect fraud. Finally, I acknowledge and understand our responsibility for immediately submitting corrected annual report information if any errors or an omission in such information is subsequently identified.

Signatures

Dave Gray (dave@cityofedgewood.org)

City of Edgewood
Fund Resources and Uses Arising from Cash Transactions
For the Year Ended December 31, 2017

		Total for All Funds (Memo Only)	001 Current Expense Fund	101 Street Fund	110 Park Impact Fee
Beginning Cash and Investments					
30810	Reserved	6,769,198	1,002,519	258,165	851,654
30880	Unreserved	1,363,468	1,363,468	(0)	(0)
388 / 588	Prior Period Adjustments, Net	-	-	-	-
Revenues					
310	Taxes	3,835,779	2,896,534	193,466	-
320	Licenses and Permits	923,635	848,116	75,519	-
330	Intergovernmental Revenues	972,087	277,323	221,067	-
340	Charges for Goods and Services	2,795,865	950,187	2,302	477,260
350	Fines and Penalties	49,365	152	-	-
360	Miscellaneous Revenues	2,871,570	44,069	243	421
Total Revenues:		11,448,301	5,016,381	492,597	477,681
Expenditures					
510	General Government	936,625	936,625	-	-
520	Public Safety	1,934,204	1,934,204	-	-
530	Utilities	1,226,655	-	-	-
540	Transportation	724,687	-	724,687	-
550	Natural and Economic Environment	1,014,625	1,014,625	-	-
560	Social Services	-	-	-	-
570	Culture and Recreation	143,932	143,932	-	-
Total Expenditures:		5,980,728	4,029,386	724,687	-
Excess (Deficiency) Revenues over Expenditures:		5,467,573	986,995	(232,090)	477,681
Other Increases in Fund Resources					
391-393, 596	Debt Proceeds	-	-	-	-
397	Transfers-In	779,036	-	220,000	-
385	Special or Extraordinary Items	-	-	-	-
386 / 389	Custodial Activities	-	-	-	-
381, 395, 398	Other Resources	400,000	400,000	-	-
Total Other Increases in Fund Resources:		1,179,036	400,000	220,000	-
Other Decreases in Fund Resources					
594-595	Capital Expenditures	124,966	9,421	-	-
591-593, 599	Debt Service	4,945,589	-	-	-
597	Transfers-Out	779,036	136,063	-	-
585	Special or Extraordinary Items	-	-	-	-
586 / 589	Custodial Activities	4,110	-	-	-
581	Other Uses	400,000	-	-	-
Total Other Decreases in Fund Resources:		6,253,701	145,484	-	-
Increase (Decrease) in Cash and Investments:		392,908	1,241,511	(12,090)	477,681
Ending Cash and Investments					
5081000	Reserved	-	-	-	-
5088000	Unreserved	8,525,574	3,607,498	246,074	1,329,334
Total Ending Cash and Investments		8,525,574	3,607,498	246,074	1,329,334

The accompanying notes are an integral part of this statement.

City of Edgewood
Fund Resources and Uses Arising from Cash Transactions
For the Year Ended December 31, 2017

		111 Traffic Impact Fee	130 Municipal Capital Reserver REET1	132 Municipal Capital Reserver REET	201 Debt Service
Beginning Cash and Investments					
30810	Reserved	564,443	100,280	145,536	10,723
30880	Unreserved	0	0	0	0
388 / 588	Prior Period Adjustments, Net	-	-	-	-
Revenues					
310	Taxes	-	372,890	372,890	-
320	Licenses and Permits	-	-	-	-
330	Intergovernmental Revenues	-	-	-	-
340	Charges for Goods and Services	647,635	-	-	-
350	Fines and Penalties	-	-	-	-
360	Miscellaneous Revenues	-	68	221	-
Total Revenues:		647,635	372,958	373,111	-
Expenditures					
510	General Government	-	-	-	-
520	Public Safety	-	-	-	-
530	Utilities	-	-	-	-
540	Transportation	-	-	-	-
550	Natural and Economic Environment	-	-	-	-
560	Social Services	-	-	-	-
570	Culture and Recreation	-	-	-	-
Total Expenditures:		-	-	-	-
Excess (Deficiency) Revenues over Expenditures:		647,635	372,958	373,111	-
Other Increases in Fund Resources					
391-393, 596	Debt Proceeds	-	-	-	-
397	Transfers-In	-	-	-	401,920
385	Special or Extraordinary Items	-	-	-	-
386 / 389	Custodial Activities	-	-	-	-
381, 395, 398	Other Resources	-	-	-	-
Total Other Increases in Fund Resources:		-	-	-	401,920
Other Decreases in Fund Resources					
594-595	Capital Expenditures	-	-	-	-
591-593, 599	Debt Service	-	-	-	383,404
597	Transfers-Out	-	268,690	244,000	-
585	Special or Extraordinary Items	-	-	-	-
586 / 589	Custodial Activities	-	-	-	-
581	Other Uses	-	-	-	-
Total Other Decreases in Fund Resources:		-	268,690	244,000	383,404
Increase (Decrease) in Cash and Investments:		647,635	104,268	129,111	18,516
Ending Cash and Investments					
5081000	Reserved	-	-	-	-
5088000	Unreserved	1,212,078	204,549	274,647	29,239
Total Ending Cash and Investments		1,212,078	204,549	274,647	29,239

City of Edgewood
Fund Resources and Uses Arising from Cash Transactions
For the Year Ended December 31, 2017

		310 Capital Parks Fund	340 Capital Roads Fund	341 Capital Roads - Meridian Ave Ph	350 Capital TIB Fund
Beginning Cash and Investments					
30810	Reserved	141,680	9,294	250,000	1,811
30880	Unreserved	0	(0)	-	(0)
388 / 588	Prior Period Adjustments, Net	-	-	-	-
Revenues					
310	Taxes	-	-	-	-
320	Licenses and Permits	-	-	-	-
330	Intergovernmental Revenues	-	437,736	-	-
340	Charges for Goods and Services	-	-	-	-
350	Fines and Penalties	-	-	-	-
360	Miscellaneous Revenues	319	-	-	-
Total Revenues:		319	437,736	-	-
Expenditures					
510	General Government	-	-	-	-
520	Public Safety	-	-	-	-
530	Utilities	-	-	-	-
540	Transportation	-	-	-	-
550	Natural and Economic Environment	-	-	-	-
560	Social Services	-	-	-	-
570	Culture and Recreation	-	-	-	-
Total Expenditures:		-	-	-	-
Excess (Deficiency) Revenues over Expenditures:		319	437,736	-	-
Other Increases in Fund Resources					
391-393, 596	Debt Proceeds	-	-	-	-
397	Transfers-In	15,000	24,000	-	-
385	Special or Extraordinary Items	-	-	-	-
386 / 389	Custodial Activities	-	-	-	-
381, 395, 398	Other Resources	-	-	-	-
Total Other Increases in Fund Resources:		15,000	24,000	-	-
Other Decreases in Fund Resources					
594-595	Capital Expenditures	47,292	25,711	-	-
591-593, 599	Debt Service	-	14,374	-	-
597	Transfers-Out	-	-	-	-
585	Special or Extraordinary Items	-	-	-	-
586 / 589	Custodial Activities	-	-	-	-
581	Other Uses	-	400,000	-	-
Total Other Decreases in Fund Resources:		47,292	440,085	-	-
Increase (Decrease) in Cash and Investments:		(31,973)	21,651	-	-
Ending Cash and Investments					
5081000	Reserved	-	-	-	-
5088000	Unreserved	109,708	30,945	250,000	1,811
Total Ending Cash and Investments		109,708	30,945	250,000	1,811

City of Edgewood
Fund Resources and Uses Arising from Cash Transactions
For the Year Ended December 31, 2017

		401 Sewer Utility Fund	410 Surface Water Utility Fund	411 Temporary Sewer LID	412 LID Bond Reserve Fund
Beginning Cash and Investments					
30810	Reserved	32,503	696,251	2,415,049	236,232
30880	Unreserved	(0)	0	(0)	-
388 / 588	Prior Period Adjustments, Net	-	-	-	-
Revenues					
310	Taxes	-	-	-	-
320	Licenses and Permits	-	-	-	-
330	Intergovernmental Revenues	-	35,961	-	-
340	Charges for Goods and Services	32,091	686,389	-	-
350	Fines and Penalties	-	-	49,213	-
360	Miscellaneous Revenues	-	1,486	2,806,271	-
Total Revenues:		32,091	723,836	2,855,484	-
Expenditures					
510	General Government	-	-	-	-
520	Public Safety	-	-	-	-
530	Utilities	-	1,220,097	6,557	-
540	Transportation	-	-	-	-
550	Natural and Economic Environment	-	-	-	-
560	Social Services	-	-	-	-
570	Culture and Recreation	-	-	-	-
Total Expenditures:		-	1,220,097	6,557	-
Excess (Deficiency) Revenues over Expenditures:		32,091	(496,261)	2,848,927	-
Other Increases in Fund Resources					
391-393, 596	Debt Proceeds	-	-	-	-
397	Transfers-In	-	-	-	118,116
385	Special or Extraordinary Items	-	-	-	-
386 / 389	Custodial Activities	-	-	-	-
381, 395, 398	Other Resources	-	-	-	-
Total Other Increases in Fund Resources:		-	-	-	118,116
Other Decreases in Fund Resources					
594-595	Capital Expenditures	-	42,543	-	-
591-593, 599	Debt Service	-	-	4,536,760	-
597	Transfers-Out	123	12,044	118,116	-
585	Special or Extraordinary Items	-	-	-	-
586 / 589	Custodial Activities	4,110	-	-	-
581	Other Uses	-	-	-	-
Total Other Decreases in Fund Resources:		4,233	54,587	4,654,876	-
Increase (Decrease) in Cash and Investments:		27,858	(550,848)	(1,805,949)	118,116
Ending Cash and Investments					
5081000	Reserved	-	-	-	-
5088000	Unreserved	60,361	145,403	609,100	354,348
Total Ending Cash and Investments		60,361	145,403	609,100	354,348

City of Edgewood
Fund Resources and Uses Arising from Cash Transactions
For the Year Ended December 31, 2017

		501 Equipment Replacement Fund
Beginning Cash and Investments		
30810	Reserved	53,058
30880	Unreserved	0
388 / 588	Prior Period Adjustments, Net	-
Revenues		
310	Taxes	-
320	Licenses and Permits	-
330	Intergovernmental Revenues	-
340	Charges for Goods and Services	-
350	Fines and Penalties	-
360	Miscellaneous Revenues	18,471
Total Revenues:		18,471
Expenditures		
510	General Government	-
520	Public Safety	-
530	Utilities	-
540	Transportation	-
550	Natural and Economic Environment	-
560	Social Services	-
570	Culture and Recreation	-
Total Expenditures:		-
Excess (Deficiency) Revenues over Expenditures:		18,471
Other Increases in Fund Resources		
391-393, 596	Debt Proceeds	-
397	Transfers-In	-
385	Special or Extraordinary Items	-
386 / 389	Custodial Activities	-
381, 395, 398	Other Resources	-
Total Other Increases in Fund Resources:		-
Other Decreases in Fund Resources		
594-595	Capital Expenditures	-
591-593, 599	Debt Service	11,051
597	Transfers-Out	-
585	Special or Extraordinary Items	-
586 / 589	Custodial Activities	-
581	Other Uses	-
Total Other Decreases in Fund Resources:		11,051
Increase (Decrease) in Cash and Investments:		7,420
Ending Cash and Investments		
5081000	Reserved	-
5088000	Unreserved	60,478
Total Ending Cash and Investments		60,478

City of Edgewood
Fiduciary Fund Resources and Uses Arising from Cash Transactions
For the Year Ended December 31, 2017

		Total for All Funds (Memo Only)	Agency
308	Beginning Cash and Investments	163,010	163,010
388 & 588	Prior Period Adjustment, Net	-	-
310-390	Additions	213,324	213,324
510-590	Deductions	208,668	208,668
	Net Increase (Decrease) in Cash and Investments:	4,656	4,656
508	Ending Cash and Investments	167,666	167,666

The accompanying notes are an integral part of this statement.

Notes to the Financial Statements For year ended December 31, 2017

Note 1 Summary of Significant Accounting Policies

The City of Edgewood was incorporated on February 28, 1996 and operates under the laws of the state of Washington applicable to a code city. The City is a general purpose government and provides law enforcement, community planning, street improvements, storm water maintenance and general administrative services, in addition, the City owns a sewer system that is operated and maintained through an Interlocal Agreement. The City uses single-entry, cash basis accounting which is a departure from generally accepted accounting principles (GAAP).

The City of Edgewood reports financial activity in accordance with the *Cash Basis Budgeting, Accounting and Reporting System* (BARS) Manual prescribed by the State Auditor's Office under the authority of Washington State law, Chapter 43.09 RCW. This manual prescribes a financial reporting framework that differs from generally accepted accounting principles (GAAP) in the following manner:

- Financial transactions are recognized on a cash basis of accounting as described below.
- Component units are required to be disclosed, but are not included in the financial statements.
- Government-wide statements, as defined in GAAP, are not presented.
- All funds are presented, rather than a focus on major funds.
- The *Schedule of Liabilities* is required to be presented with the financial statements as supplementary information.
- Supplementary information required by GAAP is not presented.
- Ending balances are not presented using the classifications defined in GAAP.

A. Fund Accounting

The accounts of the City are organized on the basis of funds, each of which is considered a separate accounting entity. Each fund is accounted for with a separate set of single-entry accounts that comprises its cash, investments, revenues and expenditures, as appropriate. The City's resources are allocated to and accounted for in individual funds depending on their intended purpose. One managerial fund 005 Strategic Reserves is listed separately in the adoption of the budget. For 2017, the 005 Strategic Reserve fund is listed separately for financial presentation as reserved in the General Fund.

The following are the fund types used by the City:

GOVERNMENTAL FUND TYPES:

General (Current Expense) Funds

These funds are the primary operating funds of the City. They account for all financial resources except those required or elected to be accounted for in another fund.

Special Revenue Funds

These funds account for specific revenue sources that are restricted or committed to expenditures for specified purposes of the City.

Debt Service Funds

These funds account for the financial resources that are restricted, committed, or assigned to expenditures for principal, interest and related costs on general long-term debt.

Capital Projects Funds

These funds account for financial resources which are restricted, committed, or assigned for the acquisition or construction of capital facilities or other capital assets.

PROPRIETARY FUND TYPES:

Enterprise Funds

These funds account for operations that provide goods or services to the general public and are supported primarily through user charges.

Internal Service Funds

These funds account for operations that provide goods or services to other departments or funds of the City on a cost reimbursement basis.

FIDUCIARY FUND TYPES:

Fiduciary funds account for assets held by the government in a trustee capacity or as an agent on behalf of others. In 2016, the City Council adopted Ordinance 16-0480 absorbing the Edgewood Transportation Benefit District (Fund 630) into the Street Fund (Fund 101) under the authority granted by Senate Bill 5987. For 2017 receipts and expenditures related to TBD revenue are accounted for as restricted in the Street Fund. In 2017 the City continues to account for assigned funds for pass through State and Local revenue collections and funds held on behalf of others as surety or deposits in Funds 640 (Assignment) \$166,930; 642 (Retention) \$ 0.00 and 650 (Agency) \$735.

B. Basis of Accounting and Measurement Focus

Financial statements are prepared using the cash basis of accounting and measurement focus. Revenues are recognized when cash is received and expenditures are recognized when paid, including those properly chargeable against the report year(s) budget appropriations as required by state law.

In accordance with state law the City also recognizes expenditures paid during twenty days after the close of the fiscal year for claims incurred during the previous period.

Purchases of capital assets are expensed during the year of acquisition. There is no capitalization of capital assets, nor allocation of depreciation expense. Inventory is expensed when purchased.

City wide expenditures for labor, benefits, goods and services are initially charged to Central Services and then allocated to all funds and cost centers within funds (general fund) to reflect their share of said costs. This system allows management and accounting the ability to examine and balance labor, benefit, and large service provider expenditures in total while capturing the fully absorbed cost of each activity in the proper fund/cost center. Allocations are based upon personnel deployment. Cost of a direct nature are charged to their fund/cost center directly (election, consulting, etc.)

The basis of accounting described above represents a comprehensive basis of accounting other than accounting principles generally accepted in the United States of America.

C. Budgets

The City adopts annual appropriated budgets for all funds. These budgets are appropriated at the fund level. The budget constitutes the legal authority for expenditures at that level. Annual appropriations for these funds lapse at the fiscal year end.

Annual appropriated budgets are adopted on the same basis of accounting as used for financial reporting.

The appropriated and actual expenditures for the legally adopted budgets were as follow:

Fund/Department	Final Appropriated Amounts	Actual Expenditures	Variance
001 General Fund	\$6,009,910	\$4,174,870	\$1,835,040
005 Strategic Reserve Fund	\$1,002,003	\$0	\$1,002,003
101 Street Fund	\$730,026	\$724,687	\$5,339
110 Park Impact Fee Fund	\$900,046	\$0	\$900,046
111 Traffic Impact Fee Fund	\$694,377	\$0	\$694,377
130 REET 1 Fund	\$283,396	\$268,690	\$14,706
132 REET 2 Fund	\$328,960	\$244,000	\$84,960
201 Debt Service Fund	\$401,920	\$383,404	\$18,516
310 Capital Park Fund	\$147,277	\$47,292	\$99,985
340 Capital Roads Fund	\$451,868	\$440,085	\$11,783
350 Capital TIB Fund	\$1,811	\$0	\$1,811
401 Sewer Fund	\$41,758	\$4,233	\$37,525
410 Surface Water Fund	\$1,682,806	\$1,274,684	\$408,122
411 Temporary LID Fund	\$5,415,891	\$4,661,433	\$1,108,806
412 LID Reserve Fund	\$354,348	0	354,348
501 Equipment Replacement Fund	\$50,442	\$11,051	\$39,391

Budgeted amounts are authorized to be transferred between departments within any fund/object classes within departments; however, any revisions that alter the total expenditures of a fund, or that affect specific authorized employee positions (job descriptions) or salary ranges (annual salary schedule) must be approved by the City's legislative body.

The City budgets a Strategic Reserve Fund 005 for purposes of cash flow and unexpected emergencies. For reporting purposes, Fund 005 is reported as part of Fund 001 General Fund

(current expense fund) as a reserved cash balance due to internal legislative restrictions for its use.

D. Cash and Investments

See Note 2, Deposits and Investments.

E. Capital Assets

Capital assets are assets with an initial individual cost of more than \$1,000 and an estimated useful life in excess of one year. The capital assets and inventory of the City are recorded as expenditures when purchased.

F. Compensated Absences

Vacation leave may be accumulated up to 240 hours and is payable upon separation or retirement. Payments are recognized as expenditures when paid. Compensatory time can be accrued up to 40 hours. It is accrued at the rate of 1.5 hours per hour worked. It is paid only upon separation.

Sick leave may be accumulated indefinitely. Upon separation or retirement employees do not receive payment for unused sick leave.

G. Long-Term Debt See Note 5, Debt Service Requirements.

H. Other Financing Sources or Uses

The City's *Other Financing Sources or Uses* consist of operating transfers-in and operating transfers-out and Interfund loans where appropriate and approved through resolution of the City Council.

I. Risk Management

The city of Edgewood is a member of the Washington Cities Insurance Authority (WCIA). Utilizing Chapter 48.62 RCW (self-insurance regulation) and Chapter 39.34 RCW (Interlocal Cooperation Act), nine cities originally formed WCIA on January 1, 1981. WCIA was created for the purpose of providing a pooling mechanism for jointly purchasing insurance, jointly self-insuring, and / or jointly contracting for risk management services. WCIA has a total of 161 members.

New members initially contract for a three-year term, and thereafter automatically renew on an annual basis. A one-year withdrawal notice is required before membership can be terminated. Termination does not relieve a former member from its unresolved loss history incurred during membership.

Liability coverage is written on an occurrence basis, without deductibles. Coverage includes general, automobile, police, errors or omissions, stop gap, employment practices and employee benefits liability. Limits are \$4 million per occurrence in the self-insured layer, and \$21 million in limits above the self-insured layer is provided by reinsurance. Total limits are \$25 million per occurrence subject to aggregates and sublimits. The Board of Directors determines the limits and terms of coverage annually.

Insurance for property, automobile physical damage, fidelity, inland marine, and boiler and machinery coverage are purchased on a group basis. Various deductibles apply by type of coverage. Property coverage is self-funded from the members' deductible to \$750,000, for all perils other than flood and earthquake, and insured above that to \$300 million per occurrence subject to aggregates and sublimits. Automobile physical damage coverage is self-funded from the members' deductible to \$250,000 and insured above that to \$100 million per occurrence subject to aggregates and sublimits.

In-house services include risk management consultation, loss control field services, and claims and litigation administration. WCIA contracts for certain claims investigations, consultants for personnel and land use issues, insurance brokerage, actuarial, and lobbyist services.

WCIA is fully funded by its members, who make annual assessments on a prospectively rated basis, as determined by an outside, independent actuary. The assessment covers loss, loss adjustment, reinsurance and other administrative expenses. As outlined in the interlocal, WCIA retains the right to additionally assess the membership for any funding shortfall.

An investment committee, using investment brokers, produces additional revenue by investment of WCIA's assets in financial instruments which comply with all State guidelines.

A Board of Directors governs WCIA, which is comprised of one designated representative from each member. The Board elects an Executive Committee and appoints a Treasurer to provide general policy direction for the organization. The WCIA Executive Director reports to the Executive Committee and is responsible for conducting the day to day operations of WCIA.

J. Health and Welfare

The City of Edgewood is a member of the Association of Washington Cities Employee Benefit Trust Health Care Program (AWC Trust HCP). Chapter 48.62 RCW provides that two or more local government entities may, by Interlocal agreement under Chapter 39.34 RCW, form together or join a pool or organization for the joint purchasing of insurance, and/or joint self-insurance, to the same extent that they may individually purchase insurance, or self-insure.

An agreement to form a pooling arrangement was made pursuant to the provisions of Chapter 39.34 RCW, the Interlocal Cooperation Act. The AWC Trust HCP was formed on January 1, 2014 when participating cities, towns, and non-city entities of the AWC Employee Benefit Trust in the State of Washington joined together by signing an Interlocal Governmental Agreement to jointly self-insure certain health benefit plans and programs for participating employees, their covered dependents and other beneficiaries through a designated account within the Trust.

As of December 31, 2017, 261 cities/towns/non-city entities participate in the AWC Trust HCP.

The AWC Trust HCP allows members to establish a program of joint insurance and provides health and welfare services to all participating members. The AWC Trust HCP pools claims without regard to individual member experience. The pool is actuarially rated each year with the assumption of projected claims run-out for all current members. The AWC Trust HCP includes

medical, dental and vision insurance through the following carriers: Kaiser Foundation Health Plan of Washington, Kaiser Foundation Health Plan of Washington Options, Inc., Regence BlueShield, Asuris Northwest Health, Delta Dental of Washington, and Vision Service Plan. Eligible members are cities and towns within the state of Washington. Non-City Entities (public agency, public corporation, intergovernmental agency, or political subdivision within the state of Washington) are eligible to apply for coverage into the AWC Trust HCP, submitting application to the Board of Trustees for review as required in the Trust Agreement.

Participating employers pay monthly premiums to the AWC Trust HCP. The AWC Trust HCP is responsible for payment of all covered claims. In 2017, the AWC Trust HCP purchased stop loss insurance for Regence/Asuris plans at an Individual Stop Loss (ISL) of \$1.5 million through Life Map, and Kaiser ISL at \$1 million with Companion Life through ASG Risk Management. The aggregate policy is for 200% of expected medical claims.

Participating employers contract to remain in the AWC HCP for a minimum of three years. Participating employers with over 250 employees must provide written notice of termination of all coverage a minimum of 12 months in advance of the termination date, and participating employers with under 250 employees must provide written notice of termination of all coverage a minimum of 6 months in advance of termination date. When all coverage is being terminated, termination will only occur on December 31. Participating employers terminating a group or line of coverage must notify the HCP a minimum of 60 days prior to termination. A participating employer's termination will not obligate that member to past debts, or further contributions to the HCP. Similarly, the terminating member forfeits all rights and interest to the HCP Account.

The operations of the Health Care Program are managed by the Board of Trustees or its delegates. The Board of Trustees is comprised of four regionally elected officials from Trust member cities or towns, the Employee Benefit Advisory Committee Chair and Vice Chair, and two appointed individuals from the AWC Board of Directors, who are from Trust member cities or towns.

The Trustees or its appointed delegates review and analyze Health Care Program related matters and make operational decisions regarding premium contributions, reserves, plan options and benefits in compliance with Chapter 48.62 RCW. The Board of Trustees has decision authority consistent with the Trust Agreement, Health Care Program policies, Chapter 48.62 RCW and Chapter 200-110-WAC.

The accounting records of the Trust HCP are maintained in accordance with methods prescribed by the State Auditor's office under the authority of Chapter 43.09 RCW. The Trust HCP also follows applicable accounting standards established by the Governmental Accounting Standards Board ("GASB"). Year-end financial reporting is done on an accrual basis and submitted to the Office of the State Auditor as required by Chapter 200-110 WAC. The audit report for the AWC Trust HCP is available from the Washington State Auditor's office

K. Reserved Portion of Ending Cash and Investments (Fund Balance)

Beginning and Ending Cash and Investments is reported as reserved when it is subject to restrictions on use imposed by external parties, or due to internal commitments established by the City Council. When expenditures that meet restrictions are incurred, the City intends to use reserved resources first before using unreserved amounts.

Reservations of Ending Cash and Investments consist of:

- Strategic Reserve Fund (\$1,009,636) Funds collected represent an internal commitment for emergency purposes. These funds may be rescinded by an ordinance of the City Council. For reporting purposes, this reserved amount is combined with Fund 001 General Fund.
- Street Fund (\$246,075) Funds collected represent payment in-lieu of construction and gas taxes used for road improvements.
- Park Impact Fee (\$1,329,335) Funds are used for park acquisition and improvements outlined in the City's Capital Improvement Plan. They are restricted for increasing capacity and must be expended on a legislated timeline.
- Traffic Impact Fee (\$1,212,078) Funds collected pay for projects identified in the City's Capital Improvement Plan. They are restricted for increasing capacity and must be expended on a legislated timeline.
- REET1 (\$204,549) and REET2 (\$274,647) The Growth Management Act (GMA) restricts projects funded from REET1 and REET2 to those capital projects outlined in the City's Capital Improvement Plan.
- Debt Service Fund (\$29,240) are used to retire scheduled debt and make annual interest payments.
- Capital Parks Fund (\$109,708) is used for capital parks projects, primarily funded by grant dollars and Park Impact Fees, as identified in the City's Capital Improvement Plan.
- Capital Roads (\$280,945) and Capital TIB (\$1,811) Funds are used for capital roads projects, primarily funded by grant dollars and Traffic Impact Fees, as identified in the City's Capital Improvement Plan.
- Sewer (\$60,361 and Surface Water (\$145,403) Funds are used to support the operations and maintenance of the respective utility.
- Temporary LID Fund (\$609,100) Funds from special assessment payments for securing the payment of the principal of and interest on local improvement debt. The LID Reserve Fund (\$354,348) contains a reserve created from the Temporary LID Fund to achieve a one-year debt payment to USDA over a ten-year period, as a loan covenant. The City's current LID debt is \$10,652,530.
- Equipment Replacement Fund (\$60,478) Funds collected represent an internal commitment for replacing or purchasing capital equipment set aside from General Fund Sources. Use of the funds may be restricted by Council Ordinance.

Note 2 – Deposits and Investments

It is the City of Edgewood's policy to invest all temporary cash surpluses. The interest on these investments is prorated to the various funds of the City.

All deposits and certificates of deposit are covered by the Federal Deposit Insurance Corporation or the Washington Public Deposit Protection Commission. All investments are insured, registered, or held by the City or its agent in the government's name.

Investments are presented as collected balances. Bonds are stated at original coupon purchase. Net gains or losses are booked upon redemption. Current US Securities are managed through US Bank Safekeeping.

Investments by type at December 31, 2017 are as follows:

<u>Type of Investment</u>	① City's Own Investments	② Investments held by City as an agent for other local Governments, individuals or private organizations.	③ Total
L.G.I.P.	\$2,098,884	\$0.00	\$2,098,884
U.S. Government Securities	<u>\$ 998,353</u>	<u>\$0.00</u>	<u>\$ 998,353</u>
Total	<u>\$3,097,237</u>	<u>\$0.00</u>	<u>\$3,097,237</u>

Note 3 Property Tax

The county treasurer acts as an agent to collect property tax levied in the county for all taxing authorities. Collections are distributed around the 10th of each month.

Property tax revenues are recognized when cash is received by the City. Delinquent taxes are considered fully collectible because a lien affixes to the property after tax is levied.

The City's regular levy for the year 2017 was \$1.0853 per \$1,000 on an assessed valuation of \$1,556,466,106 for a total regular levy of \$1,689,243.

Note 4 Interfund Loans

The following table displays Interfund loan activity during 2017:

Borrowing Fund	Lending Fund	Balance 1/1/2017	New Loans	Repayments	Balance 12/31/2017
Fund 340	Fund 001	\$400,000	\$0	\$400,000	\$0

Effective March 31, 2017, the outstanding Interfund Loan to Capital Roads was repaid in full to the General Fund. It was a short term loan to cover a WSDOT Grant Reimbursement for a 2016 expenditure.

Note 5 – Debt Service Requirements

The accompanying Schedule of Long-Term Liabilities (09) provides more details of the outstanding debt and liabilities of the City and summarizes the City's debt transactions for year ended December 31, 2017.

The debt service requirements for general obligation bonds, revenue bonds, special assessment bonds, and loans including both principal and interest, are as follows:

	General Obligation Bonds	Revenue Bonds	Other Debt	Total Debt
2018	314,241		1,045,919	\$1,360,160
2019	320,071		1,045,739	\$1,365,809
2020	325,639		1,045,559	\$1,371,198
2021	335,636		1,045,379	\$1,381,015
2022	340,253		1,045,199	\$1,385,452
2023 – 2027	1,448,462		4,857,130	\$6,305,593
2028 – 2031			1,088,919	\$1,088,919
Totals	<u>\$3,084,301</u>	<u>\$0</u>	<u>\$11,173,844</u>	<u>\$14,258,145</u>

Other Debt represents annual principal and interest payments to the Public Works Trust Fund Loan and the LID (see Note 7A for information on the LID). In 2017 the City received substantial LID assessment payoff cash payments. The USDA RD loan number 2 was retired and \$1,000,000 paid down on loan number 5.

The City owns three parcels in the LID whose current portion owed is \$663,434. The 14 remaining annual assessment installments are \$45,324 each and the assessment will be paid in 2031. Yearly interest is due on the declining balance owed. For 2017, the interest paid was \$28,894.

Note 6 Pension Plans

Substantially all of the City's full-time and qualifying part-time employees participate in the Public Employees Retirement System (PERS) administered by the Washington State Department of Retirement Systems, under cost-sharing multiple-employer public employee defined benefit and defined contribution retirement plans. Actuarial information is on a system-wide basis and is not considered pertinent to the City's financial statements. Contributions to the systems by both employee and employer are based upon gross wages covered by plan benefits.

Historical trend or other information regarding each plan is presented in the Washington State Department of Retirement Systems annual financial report. A copy of this report may be obtained by

writing to:

Department of Retirement Systems
Communications Unit
PO Box 48380
Olympia, WA 985048380

At June 30, 2017 (the measurement date of the plans), the City of Edgewood proportionate share of the collective net pension liabilities, as reported on the Schedule 09, was as follows:

PLAN	Allocation %	Liability (Asset)
PERS 1	.001778%	\$ 84,367
PERS 1(UAAL)	.006395%	\$303,448
PERS 2/3	.008226%	\$284,187

The City adjusts the PEFI worksheet for the lag in reporting City withheld pension payments vs. those reported as received by DRS. In 2017 this amount was a reduction of \$1,627.

Note 7 - Other Disclosures

- A. Local Improvement District No. 1:** As of December 31 all law suits with LID assessed property owners as plaintiffs have been settled in favor of the City of Edgewood. The remaining petition to the State Supreme Court to hear a claim of civil rights infraction was dismissed on March 7, 2017. As of December 31, 2017, the City has not had an application for, nor collected any City Conveyance Development Charges (late comer's fees) for sewer extensions within the Core 1 area, which would be assessed for public entity or private/developer funded projects. As of May 30, 2018 the City has executed a default on Assessment No. 055, PC Parcel 0420102059 through the Pierce County District Court of one LID assessment in the sum of \$21,886.80. This includes legal and court costs.

Lakehaven Water & Sewer Distrcit filed suit in April 2018 against the City claiming an exemption to a March 2018 imposition of a Utility Tax. The City estimates that should Lakehaven prevail, the City would lose approximately \$4,000 in Utility Tax Revenue, and not be reimbursed for legal fees to contest the suit. The City has a high confidence the suit will be dismissed and the imposition of the tax will prevail. The City does not consider the cost or loss of revenue to be material to its operation going forward.

- B. Personnel Changes:** The City has experienced exponential growth in building activity throughout 2017. Addition to the inspection and planning personnel complement have brought the total FTE count to 16. The City intends to continue to hire for the increased work load.
- C. Construction Commitments:** The City had no active construction projects as of December 31, 2017.

- D.** Mt. View Edgewood Water Company Franchise Agreement: The City of Edgewood has renewed a long term Franchise Agreement with Mt. View Edgewood Water Company, which was noted in the 2016 notes as in negotiation.

City of Edgewood

Schedule 01

For the year ended December 31, 2017

MCAG	Fund #	Fund Name	BARS Account	BARS Name	Amount
1111	001	Current Expense Fund	3081000	Reserved Cash and Investments - Beginning	\$1,002,519
1111	001	Current Expense Fund	3088000	Unreserved Cash and Investments - Beginning	\$1,363,468
1111	001	Current Expense Fund	3111000	Property Tax	\$1,577,737
1111	001	Current Expense Fund	3113000	Sale of Tax Title Property	\$3,082
1111	001	Current Expense Fund	3131100	Local Retail Sales and Use Tax	\$1,045,838
1111	001	Current Expense Fund	3131710	Zoo, Aquarium and Wildlife Facilities Sales and Use Tax	\$98,236
1111	001	Current Expense Fund	3137100	Criminal Justice Sales and Use Tax	\$171,545
1111	001	Current Expense Fund	3172000	Leasehold Excise Tax	\$95
1111	001	Current Expense Fund	3216000	Professional and Occupations	\$6,330
1111	001	Current Expense Fund	3216000	Professional and Occupations	\$915
1111	001	Current Expense Fund	3219100	Franchise Fees and Royalties	\$187,534
1111	001	Current Expense Fund	3219900	Other Business Licenses and Permits	\$37,689
1111	001	Current Expense Fund	3221000	Buildings, Structures and Equipment	\$492,622
1111	001	Current Expense Fund	3221000	Buildings, Structures and Equipment	\$56,802
1111	001	Current Expense Fund	3221000	Buildings, Structures and Equipment	\$64,653
1111	001	Current Expense Fund	3221000	Buildings, Structures and Equipment	\$1,571
1111	001	Current Expense Fund	3360098	City-County Assistance	\$116,997
1111	001	Current Expense Fund	3360621	Criminal Justice - Violent Crimes/Population	\$2,752
1111	001	Current Expense Fund	3360625	Criminal Justice - Contracted Services	\$16,992
1111	001	Current Expense Fund	3360626	Criminal Justice - Special Programs	\$9,990

MCAG	Fund #	Fund Name	BARS Account	BARS Name	Amount
1111	001	Current Expense Fund	3360651	DUI and Other Criminal Justice Assistance	\$1,475
1111	001	Current Expense Fund	3360694	Liquor/Beer Excise Tax	\$46,924
1111	001	Current Expense Fund	3360695	Liquor Control Board Profits	\$82,191
1111	001	Current Expense Fund	3418100	Data/Word Processing, Printing, Duplicating and IT Services	\$234
1111	001	Current Expense Fund	3418100	Data/Word Processing, Printing, Duplicating and IT Services	\$16,800
1111	001	Current Expense Fund	3458100	Zoning and Subdivision Services	\$4,305
1111	001	Current Expense Fund	3458100	Zoning and Subdivision Services	\$7,900
1111	001	Current Expense Fund	3458100	Zoning and Subdivision Services	\$5,651
1111	001	Current Expense Fund	3458100	Zoning and Subdivision Services	\$36,880
1111	001	Current Expense Fund	3458100	Zoning and Subdivision Services	\$10,710
1111	001	Current Expense Fund	3458100	Zoning and Subdivision Services	\$4,700
1111	001	Current Expense Fund	3458100	Zoning and Subdivision Services	\$1,435
1111	001	Current Expense Fund	3458300	Plan Checking Services	\$454,193
1111	001	Current Expense Fund	3458300	Plan Checking Services	\$6,957
1111	001	Current Expense Fund	3458300	Plan Checking Services	\$710
1111	001	Current Expense Fund	3458300	Plan Checking Services	\$19,631
1111	001	Current Expense Fund	3458300	Plan Checking Services	\$22,512
1111	001	Current Expense Fund	3458300	Plan Checking Services	\$33,501
1111	001	Current Expense Fund	3458500	Growth Management Act (GMA) Impact Fees	\$32,065
1111	001	Current Expense Fund	3458900	Other Planning and Development Services	\$48,696
1111	001	Current Expense Fund	3458900	Other Planning and Development Services	\$10,485
1111	001	Current Expense Fund	3458900	Other Planning and Development Services	\$65,598
1111	001	Current Expense Fund	3458900	Other Planning and Development Services	\$1,260

MCAG	Fund #	Fund Name	BARS Account	BARS Name	Amount
1111	001	Current Expense Fund	3458900	Other Planning and Development Services	\$200
1111	001	Current Expense Fund	3458900	Other Planning and Development Services	\$37,925
1111	001	Current Expense Fund	3458900	Other Planning and Development Services	\$15,490
1111	001	Current Expense Fund	3458900	Other Planning and Development Services	\$11,020
1111	001	Current Expense Fund	3458900	Other Planning and Development Services	\$250
1111	001	Current Expense Fund	3458900	Other Planning and Development Services	\$4,625
1111	001	Current Expense Fund	3458900	Other Planning and Development Services	\$54,870
1111	001	Current Expense Fund	3458900	Other Planning and Development Services	\$27,618
1111	001	Current Expense Fund	3458900	Other Planning and Development Services	\$742
1111	001	Current Expense Fund	3458900	Other Planning and Development Services	\$985
1111	001	Current Expense Fund	3458900	Other Planning and Development Services	\$3,905
1111	001	Current Expense Fund	3458900	Other Planning and Development Services	\$4,135
1111	001	Current Expense Fund	3458900	Other Planning and Development Services	\$1,280
1111	001	Current Expense Fund	3458900	Other Planning and Development Services	\$630
1111	001	Current Expense Fund	3458900	Other Planning and Development Services	\$90
1111	001	Current Expense Fund	3473000	Activity Fees	\$2,200
1111	001	Current Expense Fund	3565000	Investigative Fund Assessments	\$152
1111	001	Current Expense Fund	3611100	Investment Earnings	\$358
1111	001	Current Expense Fund	3611100	Investment Earnings	\$7,593
1111	001	Current Expense Fund	3611100	Investment Earnings	\$5,738
1111	001	Current Expense Fund	3614000	Other Interest	\$858
1111	001	Current Expense Fund	3614000	Other Interest	\$780
1111	001	Current Expense Fund	3691000	Sale of Surplus	\$200
1111	001	Current Expense Fund	3699100	Miscellaneous Other	\$160
1111	001	Current Expense Fund	3699100	Miscellaneous Other	\$28,180

MCAG	Fund #	Fund Name	BARS Account	BARS Name	Amount
1111	001	Current Expense Fund	3699100	Miscellaneous Other	\$202
1111	001	Current Expense Fund	3811000	Interfund Loans Received	\$400,000
1111	101	Street Fund	3081000	Reserved Cash and Investments - Beginning	\$258,165
1111	101	Street Fund	3088000	Unreserved Cash and Investments - Beginning	\$0
1111	101	Street Fund	3176000	Transportation Benefit District Vehicle Fees	\$193,466
1111	101	Street Fund	3224000	Street and Curb Permits	\$75,519
1111	101	Street Fund	3360071	Multimodal Transportation - Cities	\$10,235
1111	101	Street Fund	3360087	Motor Vehicle Fuel Tax - City Streets	\$24,752
1111	101	Street Fund	3360087	Motor Vehicle Fuel Tax - City Streets	\$186,080
1111	101	Street Fund	3441000	Roads/Streets Maintenance/Repair/Construction Services	\$1,861
1111	101	Street Fund	3441000	Roads/Streets Maintenance/Repair/Construction Services	\$441
1111	101	Street Fund	3611100	Investment Earnings	\$243
1111	101	Street Fund	3970000	Transfers-In	\$220,000
1111	110	Park Impact Fee	3081000	Reserved Cash and Investments - Beginning	\$851,654
1111	110	Park Impact Fee	3088000	Unreserved Cash and Investments - Beginning	\$0
1111	110	Park Impact Fee	3458500	Growth Management Act (GMA) Impact Fees	\$477,260
1111	110	Park Impact Fee	3611100	Investment Earnings	\$421
1111	111	Traffic Impact Fee	3081000	Reserved Cash and Investments - Beginning	\$564,443
1111	111	Traffic Impact Fee	3088000	Unreserved Cash and Investments - Beginning	\$0
1111	111	Traffic Impact Fee	3458500	Growth Management Act (GMA) Impact Fees	\$647,635
1111	130	Municipal Capital Reserver REET1	3081000	Reserved Cash and Investments - Beginning	\$100,280
1111	130	Municipal Capital Reserver REET1	3088000	Unreserved Cash and Investments - Beginning	\$0

MCAG	Fund #	Fund Name	BARS Account	BARS Name	Amount
1111	130	Municipal Capital Reserver REET1	3183400	REET 1 - First Quarter Percent	\$372,890
1111	130	Municipal Capital Reserver REET1	3611100	Investment Earnings	\$68
1111	132	Municipal Capital Reserver REET 2	3081000	Reserved Cash and Investments - Beginning	\$145,536
1111	132	Municipal Capital Reserver REET 2	3088000	Unreserved Cash and Investments - Beginning	\$0
1111	132	Municipal Capital Reserver REET 2	3183400	REET 1 - First Quarter Percent	\$372,890
1111	132	Municipal Capital Reserver REET 2	3611100	Investment Earnings	\$221
1111	201	Debt Service	3081000	Reserved Cash and Investments - Beginning	\$10,723
1111	201	Debt Service	3088000	Unreserved Cash and Investments - Beginning	\$0
1111	201	Debt Service	3970000	Transfers-In	\$136,063
1111	201	Debt Service	3970000	Transfers-In	\$123
1111	201	Debt Service	3970000	Transfers-In	\$12,044
1111	201	Debt Service	3970000	Transfers-In	\$253,690
1111	310	Capital Parks Fund	3081000	Reserved Cash and Investments - Beginning	\$141,680
1111	310	Capital Parks Fund	3088000	Unreserved Cash and Investments - Beginning	\$0
1111	310	Capital Parks Fund	3611100	Investment Earnings	\$319
1111	310	Capital Parks Fund	3970000	Transfers-In	\$15,000
1111	340	Capital Roads Fund	3081000	Reserved Cash and Investments - Beginning	\$9,294
1111	340	Capital Roads Fund	3088000	Unreserved Cash and Investments - Beginning	\$0
1111	340	Capital Roads Fund	3340360	State Grant from Department of Transportation	\$415,857
1111	340	Capital Roads Fund	3340380	State Grant from Transportation Improvement Board (TIB)	\$21,879
1111	340	Capital Roads Fund	3970000	Transfers-In	\$24,000
1111	341	Capital Roads - Meridian Ave Ph II	3081000	Reserved Cash and Investments - Beginning	\$250,000
1111	350	Capital TIB Fund	3081000	Reserved Cash and Investments - Beginning	\$1,811

MCAG	Fund #	Fund Name	BARS Account	BARS Name	Amount
1111	350	Capital TIB Fund	3088000	Unreserved Cash and Investments - Beginning	\$0
1111	401	Sewer Utility Fund	3081000	Reserved Cash and Investments - Beginning	\$32,503
1111	401	Sewer Utility Fund	3088000	Unreserved Cash and Investments - Beginning	\$0
1111	401	Sewer Utility Fund	3435000	Sewer/Reclaimed Water Sales and Services	\$32,091
1111	410	Surface Water Utility Fund	3081000	Reserved Cash and Investments - Beginning	\$696,251
1111	410	Surface Water Utility Fund	3088000	Unreserved Cash and Investments - Beginning	\$0
1111	410	Surface Water Utility Fund	3340310	State Grant from Department of Ecology	\$25,000
1111	410	Surface Water Utility Fund	3370000	Local Grants, Entitlements and Other Payments	\$10,961
1111	410	Surface Water Utility Fund	3431000	Storm Drainage Sales and Services	\$661,219
1111	410	Surface Water Utility Fund	3458900	Other Planning and Development Services	\$25,170
1111	410	Surface Water Utility Fund	3611100	Investment Earnings	\$1,486
1111	411	Temporary Sewer LID	3081000	Reserved Cash and Investments - Beginning	\$2,415,049
1111	411	Temporary Sewer LID	3088000	Unreserved Cash and Investments - Beginning	\$0
1111	411	Temporary Sewer LID	3590000	Non-Court Fines and Penalties	\$49,213
1111	411	Temporary Sewer LID	3611100	Investment Earnings	\$10,533
1111	411	Temporary Sewer LID	3614000	Other Interest	\$485,098
1111	411	Temporary Sewer LID	3681000	Special Assessments - Capital	\$2,310,639
1111	412	LID Bond Reserve Fund	3081000	Reserved Cash and Investments - Beginning	\$236,232
1111	412	LID Bond Reserve Fund	3970000	Transfers-In	\$118,116
1111	501	Equipment Replacement Fund	3081000	Reserved Cash and Investments - Beginning	\$53,058
1111	501	Equipment Replacement Fund	3088000	Unreserved Cash and Investments - Beginning	\$0
1111	501	Equipment Replacement Fund	3611100	Investment Earnings	\$598

MCAG	Fund #	Fund Name	BARS Account	BARS Name	Amount
1111	501	Equipment Replacement Fund	3620000	Rents and Leases	\$17,873
1111	630	Transportation Benefit District	3088000	Unreserved Cash and Investments - Beginning	\$0
1111	640	Assignment of Funds-Deposits in Lieu of Bond	3081000	Reserved Cash and Investments - Beginning	\$116,442
1111	640	Assignment of Funds-Deposits in Lieu of Bond	3088000	Unreserved Cash and Investments - Beginning	\$0
1111	640	Assignment of Funds-Deposits in Lieu of Bond	3891000	Refundable Deposits	\$178,895
1111	642	Retention	3081000	Reserved Cash and Investments - Beginning	\$45,868
1111	642	Retention	3088000	Unreserved Cash and Investments - Beginning	\$0
1111	642	Retention	3892000	Retainage Deposits	\$213
1111	650	Agency Funds-Transitory	3081000	Reserved Cash and Investments - Beginning	\$700
1111	650	Agency Funds-Transitory	3088000	Unreserved Cash and Investments - Beginning	\$0
1111	650	Agency Funds-Transitory	3891000	Refundable Deposits	\$41
1111	650	Agency Funds-Transitory	3893000	Agency Type Collections	\$1,206
1111	650	Agency Funds-Transitory	3893000	Agency Type Collections	\$3,185
1111	650	Agency Funds-Transitory	3893000	Agency Type Collections	\$29,785
1111	001	Current Expense Fund	5088000	Unreserved Cash and Investments - Ending	\$3,607,498
1111	001	Current Expense Fund	5970000	Transfers-Out	\$136,063
1111	001	Current Expense Fund	5116010	Legislative Activities	\$51,267
1111	001	Current Expense Fund	5116020	Legislative Activities	\$21,030
1111	001	Current Expense Fund	5116030	Legislative Activities	\$1,136
1111	001	Current Expense Fund	5116030	Legislative Activities	\$77
1111	001	Current Expense Fund	5116030	Legislative Activities	\$285
1111	001	Current Expense Fund	5116040	Legislative Activities	\$27,655
1111	001	Current Expense Fund	5116040	Legislative Activities	\$101
1111	001	Current Expense Fund	5116040	Legislative Activities	\$50
1111	001	Current Expense Fund	5116040	Legislative Activities	\$27
1111	001	Current Expense Fund	5131010	Executive Office	\$121,901
1111	001	Current Expense Fund	5131020	Executive Office	\$50,005
1111	001	Current Expense Fund	5131030	Executive Office	\$2,702

MCAG	Fund #	Fund Name	BARS Account	BARS Name	Amount
1111	001	Current Expense Fund	5131040	Executive Office	\$65,756
1111	001	Current Expense Fund	5131040	Executive Office	\$50
1111	001	Current Expense Fund	5131040	Executive Office	\$330
1111	001	Current Expense Fund	5131040	Executive Office	\$314
1111	001	Current Expense Fund	5131040	Executive Office	\$771
1111	001	Current Expense Fund	5131040	Executive Office	\$400
1111	001	Current Expense Fund	5113040	Official Publication Services	\$5,309
1111	001	Current Expense Fund	5113040	Official Publication Services	\$22,750
1111	001	Current Expense Fund	5142010	Financial Services	\$161,775
1111	001	Current Expense Fund	5142020	Financial Services	\$66,362
1111	001	Current Expense Fund	5142030	Financial Services	\$3,585
1111	001	Current Expense Fund	5142040	Financial Services	\$87,265
1111	001	Current Expense Fund	5142040	Financial Services	\$802
1111	001	Current Expense Fund	5142040	Financial Services	\$1,437
1111	001	Current Expense Fund	5142040	Financial Services	\$384
1111	001	Current Expense Fund	5142040	Financial Services	\$85
1111	001	Current Expense Fund	5142040	Financial Services	\$476
1111	001	Current Expense Fund	5142040	Financial Services	\$125
1111	001	Current Expense Fund	5142340	Financial Services	\$3,003
1111	001	Current Expense Fund	5143040	Recording Services	\$6,841
1111	001	Current Expense Fund	5143040	Recording Services	\$350
1111	001	Current Expense Fund	5143040	Recording Services	\$99
1111	001	Current Expense Fund	5143040	Recording Services	\$128
1111	001	Current Expense Fund	5143040	Recording Services	\$379
1111	001	Current Expense Fund	5144050	Election Services	\$5,715
1111	001	Current Expense Fund	5149050	Voters Registration Services	\$15,504
1111	001	Current Expense Fund	5181040	Personnel Services	\$185
1111	001	Current Expense Fund	5188040	Information Technology Services	\$24,295
1111	001	Current Expense Fund	5188040	Information Technology Services	\$2,100
1111	001	Current Expense Fund	5188040	Information Technology Services	\$44,998

MCAG	Fund #	Fund Name	BARS Account	BARS Name	Amount
1111	001	Current Expense Fund	5941460	Capital Expenditures/Expenses - Financial, Recording, and Election Services	\$9,421
1111	001	Current Expense Fund	5154140	External Legal Services - Advice	\$104,749
1111	001	Current Expense Fund	5154140	External Legal Services - Advice	\$18,281
1111	001	Current Expense Fund	5125050	Municipal Court	\$13,500
1111	001	Current Expense Fund	5181020	Personnel Services	(\$936)
1111	001	Current Expense Fund	5181020	Personnel Services	\$2,061
1111	001	Current Expense Fund	5182010	Property Management Services	\$1,139,262
1111	001	Current Expense Fund	5182020	Property Management Services	\$16,530
1111	001	Current Expense Fund	5182020	Property Management Services	\$63,406
1111	001	Current Expense Fund	5182020	Property Management Services	\$112,458
1111	001	Current Expense Fund	5182020	Property Management Services	\$9,012
1111	001	Current Expense Fund	5182020	Property Management Services	\$8,340
1111	001	Current Expense Fund	5182020	Property Management Services	\$258,505
1111	001	Current Expense Fund	5182030	Property Management Services	\$13,803
1111	001	Current Expense Fund	5182030	Property Management Services	\$401
1111	001	Current Expense Fund	5182030	Property Management Services	\$1,078
1111	001	Current Expense Fund	5182040	Property Management Services	\$2,966
1111	001	Current Expense Fund	5182040	Property Management Services	\$1,498
1111	001	Current Expense Fund	5182040	Property Management Services	\$4,732
1111	001	Current Expense Fund	5182040	Property Management Services	\$1,113
1111	001	Current Expense Fund	5182040	Property Management Services	\$853
1111	001	Current Expense Fund	5182040	Property Management Services	\$3,251

MCAG	Fund #	Fund Name	BARS Account	BARS Name	Amount
1111	001	Current Expense Fund	5182040	Property Management Services	\$52,720
1111	001	Current Expense Fund	5182040	Property Management Services	\$2,581
1111	001	Current Expense Fund	5182040	Property Management Services	\$28,894
1111	001	Current Expense Fund	5182040	Property Management Services	\$45,324
1111	001	Current Expense Fund	5182040	Property Management Services	\$628
1111	001	Current Expense Fund	5182040	Property Management Services	\$20,728
1111	001	Current Expense Fund	5183020	Maintenance/Security/Insurance/Janitorial Services	\$0
1111	001	Current Expense Fund	5183030	Maintenance/Security/Insurance/Janitorial Services	\$2,325
1111	001	Current Expense Fund	5183030	Maintenance/Security/Insurance/Janitorial Services	\$6,486
1111	001	Current Expense Fund	5183030	Maintenance/Security/Insurance/Janitorial Services	\$1,155
1111	001	Current Expense Fund	5183040	Maintenance/Security/Insurance/Janitorial Services	\$15,906
1111	001	Current Expense Fund	5183040	Maintenance/Security/Insurance/Janitorial Services	\$943
1111	001	Current Expense Fund	5183040	Maintenance/Security/Insurance/Janitorial Services	\$17,884
1111	001	Current Expense Fund	5183040	Maintenance/Security/Insurance/Janitorial Services	\$2,000
1111	001	Current Expense Fund	5183040	Maintenance/Security/Insurance/Janitorial Services	\$6,874
1111	001	Current Expense Fund	5183040	Maintenance/Security/Insurance/Janitorial Services	\$174
1111	001	Current Expense Fund	5183040	Maintenance/Security/Insurance/Janitorial Services	\$594

MCAG	Fund #	Fund Name	BARS Account	BARS Name	Amount
1111	001	Current Expense Fund	5183040	Maintenance/Security/Insurance/Janitorial Services	\$3,806
1111	001	Current Expense Fund	5183040	Maintenance/Security/Insurance/Janitorial Services	\$884
1111	001	Current Expense Fund	5183040	Maintenance/Security/Insurance/Janitorial Services	\$106,067
1111	001	Current Expense Fund	5183040	Maintenance/Security/Insurance/Janitorial Services	\$4,228
1111	001	Current Expense Fund	5183040	Maintenance/Security/Insurance/Janitorial Services	\$7,979
1111	001	Current Expense Fund	5183050	Maintenance/Security/Insurance/Janitorial Services	\$189
1111	001	Current Expense Fund	5188530	Information Technology Services	\$10,789
1111	001	Current Expense Fund	5188540	Information Technology Services	\$879
1111	001	Current Expense Fund	5189010	Other Centralized Services	(\$1,024,703)
1111	001	Current Expense Fund	5189020	Other Centralized Services	(\$428,547)
1111	001	Current Expense Fund	5189030	Other Centralized Services	(\$23,152)
1111	001	Current Expense Fund	5189040	Other Centralized Services	(\$563,538)
1111	001	Current Expense Fund	5189040	Other Centralized Services	\$46,477
1111	001	Current Expense Fund	5189040	Other Centralized Services	\$6,734
1111	001	Current Expense Fund	5189040	Other Centralized Services	\$3,763
1111	001	Current Expense Fund	5189040	Other Centralized Services	\$6,382
1111	001	Current Expense Fund	5189040	Other Centralized Services	\$500
1111	001	Current Expense Fund	5256050	Disaster Preparedness	\$8,275
1111	001	Current Expense Fund	5543050	Animal Control	\$43,961
1111	001	Current Expense Fund	5211040	Administration	\$150

MCAG	Fund #	Fund Name	BARS Account	BARS Name	Amount
1111	001	Current Expense Fund	5211050	Administration	\$2,585
1111	001	Current Expense Fund	5212020	Police Operations	\$16
1111	001	Current Expense Fund	5212030	Police Operations	\$771
1111	001	Current Expense Fund	5212030	Police Operations	\$42
1111	001	Current Expense Fund	5212040	Police Operations	\$150
1111	001	Current Expense Fund	5212040	Police Operations	\$557
1111	001	Current Expense Fund	5212040	Police Operations	\$145
1111	001	Current Expense Fund	5212050	Police Operations	\$1,859,250
1111	001	Current Expense Fund	5212050	Police Operations	\$41,137
1111	001	Current Expense Fund	5214040	Training	\$150
1111	001	Current Expense Fund	5215040	Facilities	\$4,095
1111	001	Current Expense Fund	5236050	Care and Custody of Prisoners	\$16,880
1111	001	Current Expense Fund	5585010	Building Permits and Plan Reviews	\$222,156
1111	001	Current Expense Fund	5585020	Building Permits and Plan Reviews	\$91,131
1111	001	Current Expense Fund	5585030	Building Permits and Plan Reviews	\$4,923
1111	001	Current Expense Fund	5585030	Building Permits and Plan Reviews	\$1,412
1111	001	Current Expense Fund	5585030	Building Permits and Plan Reviews	\$460
1111	001	Current Expense Fund	5585030	Building Permits and Plan Reviews	\$630
1111	001	Current Expense Fund	5585040	Building Permits and Plan Reviews	\$119,836
1111	001	Current Expense Fund	5585040	Building Permits and Plan Reviews	\$13,871
1111	001	Current Expense Fund	5585040	Building Permits and Plan Reviews	\$2,304
1111	001	Current Expense Fund	5585040	Building Permits and Plan Reviews	\$351
1111	001	Current Expense Fund	5585040	Building Permits and Plan Reviews	\$295
1111	001	Current Expense Fund	5585040	Building Permits and Plan Reviews	\$290
1111	001	Current Expense Fund	5585040	Building Permits and Plan Reviews	\$850
1111	001	Current Expense Fund	5586010	Planning	\$127,597

MCAG	Fund #	Fund Name	BARS Account	BARS Name	Amount
1111	001	Current Expense Fund	5586020	Planning	\$52,342
1111	001	Current Expense Fund	5586030	Planning	\$2,828
1111	001	Current Expense Fund	5586030	Planning	\$375
1111	001	Current Expense Fund	5586030	Planning	\$505
1111	001	Current Expense Fund	5586030	Planning	\$420
1111	001	Current Expense Fund	5586040	Planning	\$68,829
1111	001	Current Expense Fund	5586040	Planning	\$79,923
1111	001	Current Expense Fund	5586040	Planning	\$110,184
1111	001	Current Expense Fund	5586040	Planning	\$17,744
1111	001	Current Expense Fund	5586040	Planning	\$49,893
1111	001	Current Expense Fund	5586040	Planning	\$56
1111	001	Current Expense Fund	5586040	Planning	\$48
1111	001	Current Expense Fund	5586040	Planning	\$194
1111	001	Current Expense Fund	5586040	Planning	\$115
1111	001	Current Expense Fund	5586040	Planning	\$1,028
1111	001	Current Expense Fund	5586050	Planning	\$75
1111	001	Current Expense Fund	5768010	General Parks	\$61,520
1111	001	Current Expense Fund	5768020	General Parks	\$25,236
1111	001	Current Expense Fund	5768030	General Parks	\$1,363
1111	001	Current Expense Fund	5768030	General Parks	\$1,168
1111	001	Current Expense Fund	5768030	General Parks	\$77
1111	001	Current Expense Fund	5768030	General Parks	\$236
1111	001	Current Expense Fund	5768030	General Parks	\$150
1111	001	Current Expense Fund	5768030	General Parks	\$42
1111	001	Current Expense Fund	5768030	General Parks	\$355
1111	001	Current Expense Fund	5768030	General Parks	\$2,462
1111	001	Current Expense Fund	5768030	General Parks	\$3,787
1111	001	Current Expense Fund	5768040	General Parks	\$33,185
1111	001	Current Expense Fund	5768040	General Parks	\$3,065
1111	001	Current Expense Fund	5768040	General Parks	\$484
1111	001	Current Expense Fund	5768040	General Parks	\$199
1111	001	Current Expense Fund	5768040	General Parks	\$4,416
1111	001	Current Expense Fund	5768040	General Parks	\$41
1111	001	Current Expense Fund	5768040	General Parks	\$3,071

MCAG	Fund #	Fund Name	BARS Account	BARS Name	Amount
1111	001	Current Expense Fund	5768040	General Parks	\$15
1111	001	Current Expense Fund	5768040	General Parks	\$1,853
1111	001	Current Expense Fund	5768050	General Parks	\$1,206
1111	101	Street Fund	5088000	Unreserved Cash and Investments - Ending	\$246,074
1111	101	Street Fund	5423030	Roadway	\$7,664
1111	101	Street Fund	5423030	Roadway	\$78
1111	101	Street Fund	5423030	Roadway	\$849
1111	101	Street Fund	5423040	Roadway	\$287,290
1111	101	Street Fund	5423840	Roadway	\$7,510
1111	101	Street Fund	5424040	Drainage	\$4,674
1111	101	Street Fund	5426430	Traffic Control Devices	\$6,646
1111	101	Street Fund	5426440	Traffic Control Devices	\$71,284
1111	101	Street Fund	5426440	Traffic Control Devices	\$29,535
1111	101	Street Fund	5426640	Snow and Ice Control	(\$1,040)
1111	101	Street Fund	5427040	Roadside	\$134,813
1111	101	Street Fund	5427040	Roadside	\$16,700
1111	101	Street Fund	5429010	Maintenance Administration and Overhead	\$70,002
1111	101	Street Fund	5429020	Maintenance Administration and Overhead	\$36,920
1111	101	Street Fund	5429030	Maintenance Administration and Overhead	\$1,995
1111	101	Street Fund	5429030	Maintenance Administration and Overhead	\$122
1111	101	Street Fund	5429040	Maintenance Administration and Overhead	\$48,549
1111	101	Street Fund	5429040	Maintenance Administration and Overhead	\$199
1111	101	Street Fund	5429040	Maintenance Administration and Overhead	\$897
1111	110	Park Impact Fee	5088000	Unreserved Cash and Investments - Ending	\$1,329,334

MCAG	Fund #	Fund Name	BARS Account	BARS Name	Amount
1111	111	Traffic Impact Fee	5088000	Unreserved Cash and Investments - Ending	\$1,212,078
1111	130	Municipal Capital Reserver REET1	5088000	Unreserved Cash and Investments - Ending	\$204,549
1111	130	Municipal Capital Reserver REET1	5970000	Transfers-Out	\$268,690
1111	132	Municipal Capital Reserver REET 2	5088000	Unreserved Cash and Investments - Ending	\$274,647
1111	132	Municipal Capital Reserver REET 2	5970000	Transfers-Out	\$220,000
1111	132	Municipal Capital Reserver REET 2	5970000	Transfers-Out	\$24,000
1111	201	Debt Service	5088000	Unreserved Cash and Investments - Ending	\$29,239
1111	201	Debt Service	5911870	Debt Repayment - Centralized/General Services	\$303,609
1111	201	Debt Service	5921880	Interest and Other Debt Service Cost - Centralized/General Services	\$79,795
1111	310	Capital Parks Fund	5088000	Unreserved Cash and Investments - Ending	\$109,708
1111	310	Capital Parks Fund	5947640	Capital Expenditures/Expenses - Park Facilities	\$10,302
1111	310	Capital Parks Fund	5947660	Capital Expenditures/Expenses - Park Facilities	\$856
1111	310	Capital Parks Fund	5947660	Capital Expenditures/Expenses - Park Facilities	\$35,979
1111	310	Capital Parks Fund	5947660	Capital Expenditures/Expenses - Park Facilities	\$155
1111	340	Capital Roads Fund	5088000	Unreserved Cash and Investments - Ending	\$30,945
1111	340	Capital Roads Fund	5812000	Interfund Loan Repayments	\$400,000
1111	340	Capital Roads Fund	5913570	Debt Repayment - Sewer/Reclaimed Water Utilities	\$13,187
1111	340	Capital Roads Fund	5919570	Debt Repayment - Roads/Streets and Other Infrastructure	\$495

MCAG	Fund #	Fund Name	BARS Account	BARS Name	Amount
1111	340	Capital Roads Fund	5919570	Debt Repayment - Roads/Streets and Other Infrastructure	\$693
1111	340	Capital Roads Fund	5951060	Capital Expenditures/Expenses - Engineering	\$4,996
1111	340	Capital Roads Fund	5953060	Capital Expenditures/Expenses - Roadway	\$10,000
1111	340	Capital Roads Fund	5958040	Capital Expenditures/Expenses - Ancillary Operations	\$6,465
1111	340	Capital Roads Fund	5958060	Capital Expenditures/Expenses - Ancillary Operations	\$4,250
1111	341	Capital Roads - Meridian Ave Ph II	5088000	Unreserved Cash and Investments - Ending	\$250,000
1111	350	Capital TIB Fund	5088000	Unreserved Cash and Investments - Ending	\$1,811
1111	401	Sewer Utility Fund	5088000	Unreserved Cash and Investments - Ending	\$60,361
1111	401	Sewer Utility Fund	5899000	Other Custodial Activities	\$4,110
1111	401	Sewer Utility Fund	5970000	Transfers-Out	\$123
1111	410	Surface Water Utility Fund	5088000	Unreserved Cash and Investments - Ending	\$145,403
1111	410	Surface Water Utility Fund	5310010	Storm Drainage Utilities	\$208,485
1111	410	Surface Water Utility Fund	5310020	Storm Drainage Utilities	\$85,523
1111	410	Surface Water Utility Fund	5310030	Storm Drainage Utilities	\$4,620
1111	410	Surface Water Utility Fund	5310040	Storm Drainage Utilities	\$112,462
1111	410	Surface Water Utility Fund	5313830	Storm Drainage Utilities	\$1,982
1111	410	Surface Water Utility Fund	5313830	Storm Drainage Utilities	\$5,166
1111	410	Surface Water Utility Fund	5313830	Storm Drainage Utilities	\$92
1111	410	Surface Water Utility Fund	5313830	Storm Drainage Utilities	\$1,741
1111	410	Surface Water Utility Fund	5313840	Storm Drainage Utilities	\$9,824

MCAG	Fund #	Fund Name	BARS Account	BARS Name	Amount
1111	410	Surface Water Utility Fund	5313840	Storm Drainage Utilities	\$140,628
1111	410	Surface Water Utility Fund	5313840	Storm Drainage Utilities	\$6,102
1111	410	Surface Water Utility Fund	5313840	Storm Drainage Utilities	\$2,427
1111	410	Surface Water Utility Fund	5313840	Storm Drainage Utilities	\$53,753
1111	410	Surface Water Utility Fund	5313840	Storm Drainage Utilities	\$19,051
1111	410	Surface Water Utility Fund	5313840	Storm Drainage Utilities	\$111,553
1111	410	Surface Water Utility Fund	5313840	Storm Drainage Utilities	\$43,103
1111	410	Surface Water Utility Fund	5313840	Storm Drainage Utilities	\$395,096
1111	410	Surface Water Utility Fund	5313840	Storm Drainage Utilities	\$166
1111	410	Surface Water Utility Fund	5313840	Storm Drainage Utilities	\$380
1111	410	Surface Water Utility Fund	5313840	Storm Drainage Utilities	\$116
1111	410	Surface Water Utility Fund	5313840	Storm Drainage Utilities	\$2,254
1111	410	Surface Water Utility Fund	5313840	Storm Drainage Utilities	\$478
1111	410	Surface Water Utility Fund	5313840	Storm Drainage Utilities	\$370
1111	410	Surface Water Utility Fund	5313840	Storm Drainage Utilities	\$6,779
1111	410	Surface Water Utility Fund	5313840	Storm Drainage Utilities	\$825
1111	410	Surface Water Utility Fund	5313850	Storm Drainage Utilities	\$7,122
1111	410	Surface Water Utility Fund	5943160	Capital Expenditures/Expenses - Storm Drainage Utilities	\$1,100
1111	410	Surface Water Utility Fund	5943160	Capital Expenditures/Expenses - Storm Drainage Utilities	\$3,250
1111	410	Surface Water Utility Fund	5943160	Capital Expenditures/Expenses - Storm Drainage Utilities	\$9,136

MCAG	Fund #	Fund Name	BARS Account	BARS Name	Amount
1111	410	Surface Water Utility Fund	5943160	Capital Expenditures/Expenses - Storm Drainage Utilities	\$29,057
1111	410	Surface Water Utility Fund	5970000	Transfers-Out	\$12,044
1111	411	Temporary Sewer LID	5088000	Unreserved Cash and Investments - Ending	\$609,100
1111	411	Temporary Sewer LID	5351040	Sewer/Reclaimed Water Utilities	\$6,557
1111	411	Temporary Sewer LID	5913570	Debt Repayment - Sewer/Reclaimed Water Utilities	\$2,445,123
1111	411	Temporary Sewer LID	5913570	Debt Repayment - Sewer/Reclaimed Water Utilities	\$1,514,020
1111	411	Temporary Sewer LID	5913570	Debt Repayment - Sewer/Reclaimed Water Utilities	\$29,412
1111	411	Temporary Sewer LID	5923580	Interest and Other Debt Service Cost - Sewer/Reclaimed Water Utilities	\$1,765
1111	411	Temporary Sewer LID	5923580	Interest and Other Debt Service Cost - Sewer/Reclaimed Water Utilities	\$546,440
1111	411	Temporary Sewer LID	5970000	Transfers-Out	\$118,116
1111	412	LID Bond Reserve Fund	5088000	Unreserved Cash and Investments - Ending	\$354,348
1111	501	Equipment Replacement Fund	5088000	Unreserved Cash and Investments - Ending	\$60,478
1111	501	Equipment Replacement Fund	5915970	Debt Repayment - Property Development	\$5,223
1111	501	Equipment Replacement Fund	5915970	Debt Repayment - Property Development	\$5,828
1111	630	Transportation Benefit District	5088000	Unreserved Cash and Investments - Ending	\$0
1111	640	Assignment of Funds-Deposits in Lieu of Bond	5088000	Unreserved Cash and Investments - Ending	\$166,930
1111	640	Assignment of Funds-Deposits in Lieu of Bond	5891000	Refund of Deposits	\$128,407
1111	642	Retention	5891000	Refund of Deposits	\$46,080
1111	650	Agency Funds-Transitory	5088000	Unreserved Cash and Investments - Ending	\$736

MCAG	Fund #	Fund Name	BARS Account	BARS Name	Amount
1111	650	Agency Funds-Transitory	5891000	Refund of Deposits	\$1,179
1111	650	Agency Funds-Transitory	5891000	Refund of Deposits	\$3,449
1111	650	Agency Funds-Transitory	5891000	Refund of Deposits	\$29,500
1111	650	Agency Funds-Transitory	5891000	Refund of Deposits	\$53

SCHEDULE OF DISBURSEMENT ACTIVITY**For the Year Ending December 31, 2017**

Fund No.	Fund Title	Beginning Outstanding Items 01/01/2017	Issued During the Year	Redeemed During the Year	Canceled During the Year	Ending Outstanding Items 12/31/2017	Prior Year Open Period Items	Current Year Open Period Items	Disbursements 12/31/2017
001	Current Expense Fund	\$12,735	\$4,749,431	\$4,740,867	\$0	\$21,300	\$259,712	\$125,707	\$4,615,426
101	Street Fund	\$392	\$601,967	\$601,381	\$0	\$978	\$74,647	\$40,665	\$567,985
201	Debt Service	\$0	\$102,904	\$102,904	\$0	\$0	\$0	\$280,500	\$383,404
310	Capital Parks Fund	\$0	\$47,292	\$47,292	\$0	\$0	\$0	\$0	\$47,292
340	Capital Roads Fund	\$10,054	\$466,834	\$476,888	\$0	\$0	\$427,442	\$0	\$39,392
401	Sewer Utility Fund	\$0	\$4,110	\$4,110	\$0	\$0	\$0	\$0	\$4,110
410	Surface Water Utility Fund	\$3,546	\$828,969	\$832,437	\$0	\$79	\$118,125	\$140,706	\$851,550
411	Temporary Sewer LID	\$409	\$4,545,169	\$4,545,578	\$0	\$0	\$1,853	\$0	\$4,543,317
501	Equipment Replacement Fund	\$0	\$11,225	\$11,225	\$0	\$0	\$174	\$0	\$11,051
640	Assignment of Funds-Deposits in Lieu of	\$0	\$136,918	\$101,860	\$0	\$35,058	\$8,511	\$0	\$128,407
642	Retention	\$0	\$26,227	\$26,227	\$0	\$0	(\$19,641)	\$0	\$45,868
650	Agency Funds-Transitory	\$0	\$32,587	\$32,587	\$0	\$0	\$8,362	\$9,957	\$34,181
TOTAL		\$27,136	\$11,553,632	\$11,523,355	\$0	\$57,414	\$879,184	\$597,535	\$11,271,983

**City of Edgewood
Schedule of Liabilities
For the Year Ended December 31, 2017**

ID. No.	Description	Due Date	Beginning Balance	Additions	Reductions	Ending Balance
General Obligation Debt/Liabilities						
263.96	2017 Compensated Absences	12/31/2017	31,907	1,782	-	33,689
263.98	Department of Retirement	12/31/2015	718,277	-	43,021	675,256
251.11	2007 G.O. Bond	12/1/2026	3,280,000	-	195,699	3,084,301
263.81	2013 PWTF Loan (PC12-951-080)	6/1/2031	197,804	-	13,187	184,617
251.11	2014 G.O Bond (USDA RD)	11/24/2036	2,445,123	-	2,445,123	-
Total General Obligation Debt/Liabilities:			6,673,111	1,782	2,697,030	3,977,864
Revenue and Other (non G.O.) Debt/Liabilities						
259.12	2017 Compensated Absences		8,225	5,123	-	13,348
263.82	2008 PWTF Loan (PR08-951-083)	6/1/2028	352,940	-	29,411	323,529
Total Revenue and Other (non G.O.) Debt/Liabilities:			361,165	5,123	29,411	336,877
Assessment Debt/Liabilities (with commitments)						
253.11	2014 Sewer Assement	11/24/2033	4,770,313	-	1,215,266	3,555,047
253.11	2014 Sewer Assement	11/24/2033	7,410,195	-	312,712	7,097,483
Total Assessment Debt/Liabilities (with commitments):			12,180,508	-	1,527,978	10,652,530
Total Liabilities:			19,214,784	6,905	4,254,418	14,967,271

City of Edgewood

SCHEDULE OF CASH ACTIVITY

For the Year Ended December 31, 2017

Fund Number	Fund Title	Beginning Cash and Investments	Receipts	Transfers-In	Other Revenue	Netted Transactions
001	Current Expense Fund	\$2,365,987.36	\$5,023,752.88	\$0.00	\$400,692.71	\$8,064.41
101	Street Fund	\$258,164.63	\$493,359.82	\$220,000.00	\$0.00	\$762.70
110	Park Impact Fee	\$851,653.54	\$477,680.84	\$0.00	\$0.00	\$0.00
111	Traffic Impact Fee	\$564,443.39	\$647,635.00	\$0.00	\$0.00	\$0.00
130	Municipal Capital Reserver REET1	\$100,280.09	\$372,958.43	\$0.00	\$0.00	\$0.00
132	Municipal Capital Reserver REET 2	\$145,536.19	\$373,110.94	\$0.00	\$0.00	\$0.00
201	Debt Service	\$10,723.32	\$0.00	\$401,920.00	\$0.00	\$0.00
310	Capital Parks Fund	\$141,680.40	\$318.82	\$15,000.00	\$0.00	\$0.00
340	Capital Roads Fund	\$9,293.67	\$437,736.05	\$24,000.00	\$0.00	\$0.00
341	Capital Roads - Meridian Ave Ph II	\$250,000.00	\$0.00	\$0.00	\$0.00	\$0.00
350	Capital TIB Fund	\$1,810.59	\$0.00	\$0.00	\$0.00	\$0.00
401	Sewer Utility Fund	\$32,502.86	\$32,091.39	\$0.00	\$0.00	\$0.00
410	Surface Water Utility Fund	\$696,251.01	\$723,836.36	\$0.00	\$0.00	\$0.00
411	Temporary Sewer LID	\$2,415,048.87	\$2,855,483.63	\$0.00	\$0.00	\$0.00
412	LID Bond Reserve Fund	\$236,232.00	\$0.00	\$118,116.00	\$0.00	\$0.00
501	Equipment Replacement Fund	\$53,058.25	\$18,470.96	\$0.00	\$0.00	\$0.00
630	Transportation Benefit District	\$0.02	\$0.00	\$0.00	\$0.00	\$0.00
640	Assignment of Funds-Deposits in Lieu of	\$116,442.15	\$178,895.21	\$0.00	\$0.00	\$0.00
641	Fiduciary Deposits Fund	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
642	Retention	\$45,867.75	\$0.00	\$0.00	\$0.00	(\$212.50)
650	Agency Funds-Transitory	\$699.70	\$34,216.72	\$0.00	\$0.00	\$0.00
TOTAL		\$8,295,675.79	\$11,669,547.05	\$779,036.00	\$400,692.71	\$8,614.61

Total Increase (4+5+6-7)	Disbursements	Transfers-Out	Other Expenditures	Total Decrease (9+10+11-7)	Ending Cash & Investments (3+8- 12)
\$5,416,381.18	\$4,615,426.18	\$136,063.00	(\$568,554.43)	\$4,174,870.34	\$3,607,498.20
\$712,597.12	\$567,985.12	\$0.00	\$157,464.88	\$724,687.30	\$246,074.45
\$477,680.84	\$0.00	\$0.00	\$0.00	\$0.00	\$1,329,334.38
\$647,635.00	\$0.00	\$0.00	\$0.00	\$0.00	\$1,212,078.39
\$372,958.43	\$0.00	\$268,690.00	\$0.00	\$268,690.00	\$204,548.52
\$373,110.94	\$0.00	\$244,000.00	\$0.00	\$244,000.00	\$274,647.13
\$401,920.00	\$383,403.85	\$0.00	\$0.00	\$383,403.85	\$29,239.47
\$15,318.82	\$47,291.60	\$0.00	\$0.00	\$47,291.60	\$109,707.62
\$461,736.05	\$39,392.29	\$0.00	\$400,692.71	\$440,085.00	\$30,944.72
\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$250,000.00
\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$1,810.59
\$32,091.39	\$4,110.14	\$123.00	\$0.00	\$4,233.14	\$60,361.11
\$723,836.36	\$851,550.41	\$12,044.00	\$411,089.55	\$1,274,683.96	\$145,403.41
\$2,855,483.63	\$4,543,316.77	\$118,116.00	\$0.00	\$4,661,432.77	\$609,099.73
\$118,116.00	\$0.00	\$0.00	\$0.00	\$0.00	\$354,348.00
\$18,470.96	\$11,051.18	\$0.00	\$0.00	\$11,051.18	\$60,478.03
\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.02
\$178,895.21	\$128,407.03	\$0.00	\$0.00	\$128,407.03	\$166,930.33
\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
\$212.50	\$45,867.75	\$0.00	\$0.00	\$46,080.25	\$0.00
\$34,216.72	\$34,180.65	\$0.00	\$0.00	\$34,180.65	\$735.77
\$12,840,661.15	\$11,271,982.97	\$779,036.00	\$400,692.71	\$12,443,097.07	\$8,693,239.87

City of Edgewood
SCHEDULE OF STATE FINANCIAL ASSISTANCE (unaudited)
For Fiscal Year ended December 31, 2017

Grantor	Program Title	Identificaton Number	Amount
State Grant from Department of Ecology			
	Stormwater Capacity Grant	WQSWCAP-1517-EDGECD-00099	25,000
			Sub-total: 25,000
State Grant from Transportation Improvement Board (TIB)			
	2017 Emergency Pavement Repair Project	3-P-201(002)-1	21,879
			Sub-total: 21,879
			Grand total: 46,879

MCAG 1111

Schedule 17

City of Edgewood

LIMITATION ON PUBLIC WORKS PROJECTS PERFORMED BY PUBLIC EMPLOYEES

For the Year Ended December 31, 2017

Total current public work construction budget as amended (annual or biennial as applicable)	910000
---	--------

Allowable portion of total public works (10 percent of line 1)	91000
--	-------

Less: Amount (if any) in excess of permitted amount from prior budget period.	0
---	---

Total allowable public works (line 2 minus line 3)	91000
--	-------

Total public works projects performed by public employees during the current year (include work performed by a county)	0
--	---

If this is the second year of a biennial budget, total public works projects performed by public employees during the first year of biennium	0
--	---

Restricted under (over) allowable (line 4 minus line 5 minus line 6)	91000
--	-------

NOTE: If the restricted amount is over allowable, this amount must be carried forward to the next budget period report.

**Labor Relations Consultant(S)
For the Year Ended December 31, 2017**

Has your government engaged labor relations consultants? ___ Yes X No

If yes, please provide the following information for each consultant:

Name of firm:
Name of consultant:
Business address:
Amount paid to consultant during fiscal year:
Terms and conditions, as applicable, including: Rates (e.g., hourly, etc.) Maximum compensation allowed Duration of services Services provided

LOCAL GOVERNMENT RISK-ASSUMPTION
For the Year Ended December 31, 20__

1. no Does the entity self-insure for any class of risk, including liability, property, health and welfare, unemployment compensation, workers' compensation? (yes/no)

If NO, STOP, you do not need to complete the rest of this Schedule.

If YES, continue below.

- a. Which class of risk does the entity self-insure? Check all that apply.
- i. Liability
 - ii. Property
 - iii. Health and Welfare (medical, vision, dental, prescription)
 - iv. Unemployment Compensation
 - v. Workers' Compensation
 - vi. Other - please describe: _____
- b. Does the entity self-insure as an individual program? (yes/no)
- i. If answered YES, does the entity allow another separate legal entity into its self-insurance program(s)? (yes/no) For example, employees of a different organization participate in a health and welfare program of a city.

If so, list the entity or entities: _____
- c. Does the entity self-insure as a joint program? (yes/no)
- If answered YES, list the other member(s): _____

2. ____ Does the entity administer its own claims? (yes/no)
3. ____ Does the entity contract with a third party administrator for claims administration? (yes/no)
4. ____ Did the entity receive a claims audit in the last three years, regardless of who administered the claims? (yes/no)
5. ____ Were the program's revenues sufficient to cover the program's expenses? (yes/no)
6. ____ Did the program use an actuary to determine its liabilities? (yes/no)

EXAMPLE

Description of Risk Type	Number of claims received during the period	Number of claims paid during the period	Total amount of claims paid during the period
Liability (automobile)	354	279	\$104,366

Description of Risk Type	Number of claims received during the period	Number of claims paid during the period	Total amount of claims paid during the period

City of Edgewood Debt Map r01/2018

As Of Date: 12/31/2017

Total Debt \$ 14,179,633.00 (including LID Assessment Debt)

General Obligation

2007 City Hall GO Bond (1)

*

\$5,565,000

Bank of New York

4% Interest Rate

12/1/2026

Current: \$3,005,000

Revenue Obligation

2009 LOAN (Sewer Design) (4)

\$1,000,000

Public Works Trust Fund

PR08-951-083

0.5% Interest Rate

6/1/2028

Current: \$323,528

Assessment Obligation

2014 LID (Sewer) LIBond (5)

\$5,150,000

USDA RD

4% Interest Rate

12/1/2033

Current: \$3,555,047

2011 LOAN (Jovita Realign) (3)

\$500,000

Public Works Trust Fund

PC12-951-080

0.25% Interest Rate

6/1/2031

Current: \$184,617

2014 LID (Sewer) LIBond (6)

\$8,000,000

USDA RD

4% Interest Rate

12/1/2033

Current: \$7,097,483

*** 2016 Debt Restructure Note:** in 2016 the City secured a fixed rate 10 year bank loan for refinancing the remaining City Hall GO Bond Debt (1) at a lower interest rate. The repurchase trigger for the debt assumption is June of 2018.

The City of Edgewood bond rating is currently rated by S&P as AA+



City Of Edgewood Council Agenda Summary Sheet

SUBJECT: 2018 Budget, Amendment No. 3		Agenda Item #:	2G
		For Agenda of:	July 3, 2018
		Prepared by:	Dave Gray
ATTACHMENTS (list): ☒ Exhibits A,B, and C			
Approval of Materials:			
Mayor, Daryl Eidinger	☒	Expenditure Required:	\$217,676.00
Asst. City Administrator, Dave Gray	☒	Amount Budgeted:	\$0
City Attorney, Carol Morris	☐	Appropriation Required:	\$217,676.00
City Clerk, Rachel Pitzel	☐	Timeline: N/A	
Community Development Director, Darren Groth	☐		
Public Works, Jeremy Metzler	☐		
Fiscal Note/Consideration: Exhibit A: 2018 Budget Amendment No 3 increases the labor cost by \$4,982 for raising the pay of the Building Official. This raise is based upon information used by the Salary Commission to determine competitive wages for staff for the 2019 budget preparation, and is being instituted mid-year due to adding a new Plans Examiner/Building Inspector position at the same salary schedule, also evident in the Salary Comparison. The increase in the 2018 Budget for the first floor kitchen and parking lot expansion, as contemplated by the lease with the Fire District, will be funded by General Fund Existing Fund Balance. The budget request is for \$210,000 to cover a yet to be determined actual cost for the construction of the parking lot and kitchen, which current staff estimate is about \$167,382.04. This estimate is extremely rough and may be revised by Gray & Osborne, the City's on-call engineers, when they assume management of the project. Exhibit B & C: The Surface Water Fund Budget increase is to transfer \$47,723.02 that was unspent in the 2017 Budget and an additional \$2,694 which is over the 2018 budget of \$15,000 for a total additional ask of \$17,694 for completion of the Surface Water Management Plan update. Total cost of the Plan will be \$200,044.			
SUMMARY STATEMENT: Budget Amendment No. 3 to Ordinance No. 17-0516, addresses an increase to pay for the Building Official salary; cost of completing kitchen, and parking lot improvements, mostly recovered by the East Pierce Fire & Rescue lease; and, the need to move 2017 budgeted monies to the 2018 budget for the completion of the Surface Water Management Plan- being produced by staff & Herrera Environmental Consultants.			
COUNCIL COMMITTEE REVIEW AND RECOMMENDATION: This Budget Amendment was reviewed and discussed by Council in the June 19th Study Session and recommended for placement on the June 26, RCM Consent Agenda for Council consideration and action, at this meeting it was determined Council needed further clarification.			
RECOMMENDED ACTION: ALTERNATIVES TO RECOMMENDED ACTION: 1) Forward to Study Session for further review 2) Take to next RCM for action			

City of Edgewood
Surface Water Management Plan
Contract Cost Recap

EXHIBIT B

Herrera Environmental Consultants

	Awarded	Spent	Contract Need Remaining	Budgeted	Budget t Amendment Needed	
2017 Contract Executed	\$182,350.00	\$134,626.98	\$47,723.02	\$182,350.00	\$47,723.02	
2018 Contract Need (to be executed)	\$17,694.00	\$0.00	\$17,694.00	\$15,000.00	\$2,694.00	
Total Contract Award Needed to Complete	\$200,044.00		\$65,417.02	\$197,350.00	\$50,417.02	\$15,000.00 crosscheck

This worksheet ignores any \$ spent but not under contract in 2018

EXHIBIT C

6/26/2018

FISCAL YEAR FUND IMPACT STATEMENT

June 2018

Fund Name/Department	Fund Number	Original Budget	Original Line Item	Description of Request	Line Item Added	Line Item Deleted	Amended Budget	Fund Balance Impact
General Fund Expenditures: Building Dept	001-058	\$799,779.86	\$359,467.38	Increase Building Official Wage	\$4,982.00	\$0.00	\$364,449.38	\$4,982.00
General Fund Tenant Improvement	001-019	\$484,882.86	\$0.00	Parking Lot & Kitchen EPFR Lease	\$210,000.00	\$0.00	\$694,882.86	\$210,000.00
Surface Water Fund-Public Works	401	\$945,145.49	\$0.00	Herrera 2017 SWP work to 2018	\$47,723.02	\$0.00	\$992,868.51	\$0.00
Surface Water Fund-Public Works	401	\$945,145.49	\$0.00	Herrera 2018 Budget Addition	\$2,694.00	\$0.00	\$995,562.51	\$2,694.00
Total Fund Balance Impact to the 2018 Budget								\$217,676.00

EXHIBIT A

2018

CITY OF EDGEWOOD

SALARY RANGE PLAN**2018 Budget Amendment No. 3 - ORDINANCE NO. 18-0524**

Adjusting the Building Official Step 5 up \$500 per Month due to Compression & Salary Survey Results

FULL TIME CLASSIFICATIONS:

		2018 Current Monthly Wage Range				
	Job Title	Step 1	Step 2	Step 3	Step 4	Step 5
FT-17-01	Administrative Assistant	\$3,503	\$3,762	\$4,020	\$4,278	\$4,536
FT-17-02	Communications Coordinator/Deputy Clerk	\$3,957	\$4,257	\$4,556	\$4,856	\$5,155
FT-17-02	Permit Coordinator	\$3,957	\$4,257	\$4,556	\$4,856	\$5,155
FT-17-02	Public Works Maintenance Tech	\$3,957	\$4,257	\$4,556	\$4,856	\$5,155
FT-17-02	Accounting Tech	\$3,957	\$4,257	\$4,556	\$4,856	\$5,155
FT-17-03	Public Works Maintenance Tech II	\$4,039	\$4,301	\$4,563	\$4,824	\$5,197
FT-17-05	Planning Technician	\$4,265	\$4,563	\$4,862	\$5,160	\$5,459
FT-17-05	ROW Inspector	\$4,265	\$4,563	\$4,862	\$5,160	\$5,459
FT-17-06	Combination Inspector	\$4,701	\$4,976	\$5,251	\$5,526	\$6,266
FT-17-07	Engineering Tech	\$4,735	\$5,031	\$5,326	\$5,622	\$5,918
FT-17-08	Associate Planner	\$4,844	\$5,234	\$5,623	\$6,013	\$6,403
FT-17-08	Code Enforcement	\$4,844	\$5,234	\$5,623	\$6,013	\$6,403
FT-17-08	Accounting Manager	\$4,844	\$5,234	\$5,623	\$6,013	\$6,403
FT-17-08	Building Inspector/Plans Examiner	\$5,404	\$5,863	\$6,322	\$6,781	\$7,376
FT-17-09	Building Official	\$5,404	\$5,863	\$6,322	\$6,781	\$7,876
FT-17-10	City Clerk/ HR Director	\$5,487	\$5,913	\$6,338	\$6,764	\$7,190
FT-17-11	Senior Planner	\$5,704	\$6,052	\$6,400	\$6,747	\$7,095
FT-17-12	Senior Engineer	\$6,499	\$6,857	\$7,216	\$7,575	\$7,933
FT-17-13	Public Works Superintendent	\$7,279	\$7,711	\$8,143	\$8,576	\$9,008
FT-17-14	Public Works Director, PE	\$7,737	\$8,121	\$8,505	\$8,889	\$9,273
FT-17-14	Community Development Director	\$7,737	\$8,121	\$8,505	\$8,889	\$9,273
FT-17-14	Finance Director	\$7,737	\$8,121	\$8,505	\$8,889	\$9,273
FT-17-15	Assistant City Administrator	\$8,170	\$8,598	\$9,025	\$9,454	\$9,881

All Hourly Compensation Rates are based upon the Monthly Rate Divided by 173.33 Hours.