

APPENDIX 2: CRITICAL AREAS REGULATIONS

1.01 PURPOSE

- A. It is not the intent of this Appendix to deny a reasonable use of public or private property, but to assure that land development occurs in a manner that will protect critical areas. This Appendix establishes regulations pertaining to the development and protection of critical areas, as required under the SMA within the shoreline jurisdiction. “Critical areas” are wetland areas, critical aquifer recharge areas, frequently flooded areas, geologically hazardous areas, and fish and wildlife habitat conservation areas.
- B. The purpose of the Appendix is to protect the environmentally sensitive resources within the shoreline jurisdiction of the city by establishing minimum standards for development of properties that contain or border environmentally sensitive features and thus protect the public health, safety, and welfare concerning critical areas. These standards serve to preclude land uses and developments which are incompatible with critical areas by:
 - 1. Protecting the public from personal injury, loss of life, or property damage due to flooding, erosion, landslides, seismic events, or soil subsidence;
 - 2. Protecting against publicly financed expenditures to address improper use or improper management of critical areas;
 - 3. Preventing degradation of the natural environment;
 - 4. Protecting unique, fragile, and valuable elements of the environment;
 - 5. Including BAS in developing policies and development regulations to protect the functions and values of critical areas;
 - 6. Giving special consideration to conservation or protection measures necessary to preserve or enhance anadromous fisheries;
 - 7. Alerting property owners, potential buyers or lessees, and others to the existence of and the development limitations of critical areas; and
 - 8. Providing city officials with sufficient information to protect critical areas when approving, conditioning, or denying public or private development proposals.

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1.02 DEFINITIONS

- A. “Aquifer recharge area” means an area with a critical recharging effect on an aquifer that is vulnerable to contamination and is used as a sole source of potable water supply. Aquifer recharge areas are those areas designated pursuant to:
 - 1. The Federal Safe Drinking Water Act;
 - 2. Chapters 90.44, 90.48, and 90.54 RCW; and
 - 3. Chapters 173-100 and 173-200 WAC.
- B. "Channel migration zone" means the area along a river or stream within which the channel can reasonably be expected to migrate over time as a result of normally occurring processes. It encompasses that area of current and historic lateral stream channel movement that is subject to erosion, bank destabilization, rapid stream incision, and/or channel shifting, as well as adjacent areas that are susceptible to channel erosion.
- C. “Fish and wildlife habitat conservation area” means land managed for maintaining species in suitable habitats within their natural geographic distribution so that isolated subpopulations are not created. This does not mean maintaining all individuals of all species at all times, but it does mean cooperative and coordinated land use planning is critically important among counties and cities in a region. In some cases, intergovernmental cooperation and coordination may show that it is sufficient to assure that a species will usually be found in certain regions across the state. Fish and wildlife habitat conservation areas include areas with which endangered, threatened, and sensitive species have a primary association; waters of the state; state natural area preserves and natural conservation areas; and streams and rivers planted with game fish by a governmental agency.
- D. “Geologically hazardous areas” means areas that, because of the susceptibility to erosion, sliding, earthquake, or other geological events, are not generally suited to locating commercial, residential, or industrial development consistent with public health or safety concerns. Geologically hazardous areas are characterized by slopes greater than fifteen percent and known erosion, landslides, settling, rock slide, debris flow and/or seismic hazards as defined by the U.S. Department of Agriculture Soil Conservation Service.

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- E. “High intensity uses” means residential uses greater than one dwelling unit per acre and all other permitted or conditional uses in the single-family and general residential districts; all uses within the general commercial, industrial, and heavy commercial/light industrial districts; and all uses within overlay districts.
- F. “Low intensity uses” means harvest of forest lands that does not result in a conversion; unpaved bicycling and foot trails; and utility corridors without an access/maintenance road.
- G. “Moderate intensity uses” means residential uses that are one dwelling unit per acre or less in the single-family, general residential, and natural resource production districts; paved bicycling and foot trails; logging roads; and utility corridors with an access/maintenance road.
- H. “Qualified professional” means a person who prepares a technical assessment with expertise appropriate to the relevant critical area. Expertise shall consist of professional credentials and/or certification, any advanced degrees earned in the pertinent scientific discipline from a recognized university, the number of years of experience in the pertinent scientific discipline, recognized leadership in the discipline of interest, formal training in the specific area of expertise, and field and/or laboratory experience with evidence of the ability to produce peer-reviewed publications or other professional literature. Geologists preparing technical assessments shall meet the requirements of a licensed geologist under Chapter 18.220 RCW.
- I. “Relatively undisturbed” is a general term used to describe areas that are almost completely free of human impacts and activities. Relatively undisturbed areas can include uplands, other wetlands, lakes or other bodies of water. It means that the area is free of regular disturbances such as:
- Tilling and cropping
 - Residential and urban development
 - Grazing
 - Paved roads or frequently used gravel roads
 - Mowing
 - Pets
 - Boating and fishing

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1. Areas dominated by aggressive species are not considered disturbed unless you also have other evidence that disturbances are still present. The aggressive species could be a result of some past disturbance that is no longer present.
 2. Logged areas that have been undisturbed for at least 5 years can qualify as relatively undisturbed. This includes hybrid poplar plantations that are more than 5 years old.
 3. Areas that are accessed daily by dogs, either from residential areas or from people walking them, should be treated as disturbed. Dogs and other pets cause stress among the animals using a wetland.
 4. A rarely used path or gravel road can be considered relatively undisturbed if it is used less than once or twice a week. Daily usage of a road or area is considered disturbed.
 5. Lakes, ponds, and other bodies of open water can be considered relatively undisturbed if they are not regularly used for boating or for other water-related activities. Daily usage of the lake by boats would be considered disturbed. A lake can be considered undisturbed if it is used only once or twice a week by non-motorized craft.
- J. “Species of concern” in Washington include those species listed as state endangered, state threatened, state sensitive, or state candidate, as well as species listed or proposed for listing by the U.S. Fish and Wildlife Service or the National Marine Fisheries Service. See WAC 232-12-297 for further definition.
- K. “Type F water” means segments of natural waters other than Type S waters, which are within the bankfull widths of defined channels and periodically inundated areas of their associated wetlands, or within lakes, ponds, or impoundments having a surface area of one-half acre or greater at seasonal low water and which in any case contain fish habitat. See WAC 222-16-030.
- L. “Type Np water” means all segments of natural waters within the bankfull width of defined channels that are perennial nonfish habitat streams. Perennial streams are flowing waters that do not go dry any time of a year of normal rainfall and include the intermittent dry portions of the perennial channel below the uppermost point of perennial flow. See WAC 222-16-030.
- M. “Type Ns water” means 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, nonfish habitat streams in which surface flow is not present for at least some portion of a year

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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 aboveground channel system to Type S, F, or Np waters. See WAC 222-16-030.

- N. “Type S water” means all waters within their bankfull width as inventoried as shorelines of the state under Chapter 90.58 RCW and the rules promulgated pursuant to Chapter 90.58 RCW including periodically inundated areas of their associated wetlands. See WAC 222-16-030.
- O. “Vegetated corridor” means an area of undisturbed vegetation. A vegetated corridor may have a stream or channel in it.

1.03 GENERAL PROVISIONS

1.03.01 COMPLIANCE WITH CRITICAL AREAS PROTECTION

All public and private land uses where critical areas are present in the City of Hoquiam’s shoreline jurisdiction shall comply with the requirements of this Appendix as a condition to any project permit application granted under the SMP.

1.03.02 TECHNICAL ASSESSMENTS

- A. Applications for a shoreline exemption, shoreline substantial development, shoreline variance, or shoreline conditional use permit shall indicate whether any critical area is located on or within three hundred feet of the site. The Shoreline Administrator or designated representative shall visit the site and, in conjunction with a review of the comprehensive land use plan, information provided by the applicant, and any other suitable information, make a determination as to whether or not sufficient information is available to evaluate the proposal. If it is determined that the information presented is not sufficient, the Shoreline Administrator shall notify the applicant to provide additional assessments before the issuance of a determination of completeness as provided under SMP Chapter 7: Administration.
- B. It shall be the responsibility of the applicant to provide the city with appropriate technical assessments and reports prepared by a qualified professional, if necessary, to fulfill the requirements of shoreline exemption, a shoreline substantial development, shoreline variance, or shoreline conditional use permit under SMP Chapter 7: Administration or any other city, state or federal laws. The applicant shall pay all

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expenses associated with the preparation of any technical assessment required by the city. Technical assessments shall use BAS in accordance with RCW 36.70A.172.

1.03.03 MITIGATION

Development activities affecting the function and value of a critical area may require mitigation. Before the city may approve such development activity, the applicant shall demonstrate through a technical assessment the inability to avoid impacts to the critical area and that the action minimizes those impacts to the greatest extent practicable. The technical assessment shall evaluate the development activity as to whether it is possible to:

- A. Avoid the impact altogether by not taking a certain action or parts of an action;
- B. Minimize 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. Rectify the impact by repairing, rehabilitating, or restoring the affected environment;
- D. Reduce or eliminate the impact over time by preservation and maintenance operations during the life of the action;
- E. Compensate for the impact by replacing, enhancing, or providing substitute resources or environments; and/or
- F. Monitor the impact and take appropriate corrective measures.

1.03.04 SURETIES FOR MITIGATION IMPROVEMENTS

- A. The city may require the applicant to submit a surety for the construction, maintenance, and/or monitoring of any mitigation measures required under this chapter for a period not to exceed five years from the date of substantial completion of work. The city may release the surety earlier than assigned if a technical assessment prepared by a qualified professional affirms that the mitigation measure is functioning in accordance with its design.
- B. The value of a construction surety shall be not less than 125 percent of the contract cost for the mitigation improvement as estimated by the city engineer. The value of a maintenance surety shall be not less than 15 percent of the total value of the mitigation improvement as estimated by the city engineer. The surety shall meet the approval of the city attorney.

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1.03.05 *RESPONSIBILITIES FOR IMPROVEMENTS*

The property owner, or his or her successors, shall be responsible for the monitoring and maintenance of any mitigation measure required under this Appendix.

1.03.06 *MONITORING*

The city may require annual monitoring reports from the property owner or his/her designated representative pertaining to the performance of any improvements required under this Appendix.

1.04 *WETLANDS*

1.04.01 *WETLAND DESIGNATION AND PROTECTION*

- A. The city shall regulate development activities to protect the function of all wetlands, including their ability to:
 - 1. Provide flood and storm water control;
 - 2. Recharge the aquifer;
 - 3. Improve surface and ground water quality by trapping sediments, removing nutrients, and providing chemical detoxification;
 - 4. Stabilize the streambeds; and
 - 5. Provide habitat for species of concern.
- B. The city adopts by reference the following maps and best available science resources for designating wetlands in the city of Hoquiam:
 - 1. Designating Wetlands.
 - a. National Wetlands Inventory Maps, U.S. Fish and Wildlife Service;
 - b. Soil Survey of Grays Harbor County Area, Pacific County, and Wahkiakum County, Washington, USDA, 1986; and
 - c. 1987 U.S. Army Corps of Engineers Delineation Manual and Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0) U.S. Army Corps of Engineers May 2010.
 - 2. Rating Wetlands.

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- a. Washington State Wetland Rating System For Western Washington 2014 Update October 2014 - Effective January 2015 Publication no. 14-06-029.
3. Mitigating Wetlands.
 - a. Wetland Mitigation in Washington State, Parts 1 and 2, 2006, Publication Nos. 06-06-011a and 06-06-011b.
4. Wetland Buffers and General Guidance.
 - a. Wetlands in Washington State, Volumes 1 and 2, 2005, Publication Nos. 05-06-006 and 05-06-008; and
 - b. Calculating Credits and Debits for Compensatory Mitigation in Wetlands of Western Washington, Final Report, March 2012. Washington State Department of Ecology publication #10-06-11.
5. If the location, designation, or classification of a wetland shown on any map adopted by reference under the HCC is in conflict with the determination of any field investigation, the latter shall prevail.
- C. The city prohibits nonexempt development activities in wetlands and required buffers unless no reasonable alternative exists for locating the project elsewhere.

1.04.02 BUFFERS REQUIRED

- A. Wetland buffer zones shall be required for all regulated activities adjacent to regulated wetlands. Any wetland created, restored or enhanced as compensation for approved wetland alterations shall also include the standard buffer required for the category of the created, restored, or enhanced wetland.
- B. The total point score from the wetland rating form shall determine the width of required buffers. Buffer widths are measured perpendicularly from the wetland boundary as determined through a field survey. Buffer widths shall not include those areas functionally and effectively disconnected from the wetland, such as by a road or other structures. When a buffer lacks adequate vegetation, the city may increase the standard buffer, require buffer planting or enhancement, and/or deny a proposal for buffer reduction or buffer averaging.
- C. Buffer Dimensions.
 1. Buffer Widths to Protect Category IV Wetlands. In accordance with SMP Appendix 2: Table 1-1:

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SMP Appendix 2: Table 1-1: Buffer Widths for Category IV Wetlands

Category IV Wetland Characteristic (9 – 15 Points for all Functions)	Buffer Width by Impact of Proposed Land Use	Other Measures Recommended for Protection
All Category IV wetlands	Low: 25 feet Moderate: 40 feet High: 50 feet	None

2. Buffer Widths to Protect Category III Wetlands. In accordance with SMP Appendix 2:
Table 1-2:

SMP Appendix 2: Table 1-2: Buffer Widths for Category III Wetlands

Category III Wetland Characteristic (16 – 19 Points for all Functions)	Buffer Width by Impact of Proposed Land Use	Other Measures Recommended for Protection
Moderate level of function for habitat (Habitat score of 5 – 7 points)	Low: 75 feet Moderate: 110 feet High: 150 feet	None
Not meeting above characteristics	Low: 40 feet Moderate: 60 feet High: 80 feet	None

3. Buffer Widths to Protect Category II Wetlands. In accordance with SMP Appendix 2:
Table 1-3:

SMP Appendix 2: Table 1-3: Buffer Widths for Category II Wetlands

Category II Wetland Characteristic (20 – 22 Points for all Functions)	Buffer Width by Impact of Proposed Land Use	Other Measures Recommended for Protection
High level of function for habitat (Habitat score of 8 – 9 points)	Low: 150 feet Moderate: 225 feet High: 300 feet	Maintain connection to other habitat areas
Moderate level of function for habitat (Habitat score of 5 – 7 points)	Low: 75 feet Moderate: 110 feet High: 150 feet	None
High level of function for water quality improvement and low for habitat (Water quality score of 8 – 9 points; Habitat score of 3 – 4 points)	Low: 50 feet Moderate: 75 feet High: 100 feet	No additional surface discharges of untreated runoff
Estuarine	Low: 75 feet Moderate: 110 feet High: 150 feet	None
Not meeting above characteristics	Low: 50 feet Moderate: 75 feet High: 100 feet	None

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4. Buffer Widths to Protect Category I Wetlands. In accordance with SMP Appendix 2:
Table 1-4:

SMP Appendix 2: Table 1-4: Buffer Widths for Category I Wetlands

Category I Wetland Characteristic (23 – 27 Points for all Functions)	Buffer Width by Impact of Proposed Land Use	Other Measures Recommended for Protection
Natural heritage wetlands	Low: 125 feet Moderate: 190 feet High: 250 feet	No additional surface discharges to wetland or its tributaries; No septic systems within 300 feet of wetland; Restore degraded parts of buffer
Bogs	Low: 125 feet Moderate: 190 feet High: 250 feet	No additional surface discharges to wetland or its tributaries; Restore degraded parts of buffer
Forested	Buffer to be based on score for habitat functions or water quality functions	If forested wetland scores high for habitat, need to maintain connections to other habitat areas; Restore degraded parts of buffer
Estuarine	Low: 100 feet Moderate: 150 feet High: 200 feet	None
Wetlands in coastal lagoons	Low: 100 feet Moderate: 150 feet High: 200 feet	None
High level of function for habitat (Habitat score of 8 – 9 points)	Low: 150 feet Moderate: 225 feet High: 300 feet	Maintain connection to other habitat areas; Restore degraded parts of buffer
Moderate level of function for habitat (Habitat score of 5 – 7 points)	Low: 75 feet Moderate: 110 feet High: 150 feet	None
High level of function for water quality improvement and low for habitat (Water quality score of 8 – 9 points; Habitat score of 3 – 4 points)	Low: 50 feet Moderate: 75 feet High: 100 feet	No additional surface discharges of untreated runoff

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Category I Wetland Characteristic (23 – 27 Points for all Functions)	Buffer Width by Impact of Proposed Land Use	Other Measures Recommended for Protection
Not meeting above characteristics	Low: 50 feet Moderate: 75 feet High: 100 feet	None

1.04.03 REDUCTION OF BUFFER WIDTHS

A. The Shoreline Administrator may reduce buffer widths for wetlands adjacent to high intensity land uses to widths for moderate intensity uses under the following conditions:

1. Wetlands that score moderate or high for habitat (5 – 9 points for the habitat functions) and meet the following criteria:
 - a. A relatively undisturbed, vegetated corridor at least 100 feet wide is protected between the wetland and any other priority habitats as defined by the WDFW. Priority habitats in western Washington include:
 - 1) Wetlands;
 - 2) Riparian zones;
 - 3) Cliffs;
 - 4) Old-growth forests;
 - 5) Estuary/estuary-like;
 - 6) Marine/estuarine shorelines;
 - 7) Eelgrass meadows; and
 - 8) Talus slopes.
 - b. Application of measures to minimize the impacts of different land uses on wetlands as suggested in SMP Appendix 2: Table 1-5.
 - c. The developer protects the corridor for the entire distance between the wetland and the priority habitat by some type of legal protection, such as a conservation easement.
2. Wetlands that score 3 – 4 points for habitat functions: application of measures to minimize the impacts of different land uses on wetlands as suggested in SMP Appendix 2: Table 1-5.

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3. SMP Appendix 2: Table 1-5 contains suggested measures to minimize impacts from proposed changes in land use that have high impacts:

SMP Appendix 2: Table 1-5: Examples of Mitigation Measures to Reduce Buffer Widths

Examples of Disturbance	Examples of Mitigation Measures
Lights	<ul style="list-style-type: none">• Direct lights away from wetland
Noise	<ul style="list-style-type: none">• Locate activity that generates noise away from wetland
Toxic runoff	<ul style="list-style-type: none">• Route all new, untreated runoff away from wetland while ensuring wetland is not dewatered• Establish covenants limiting pesticide use within 150 feet of wetland• Apply integrated pest management
Storm water runoff	<ul style="list-style-type: none">• Retrofit storm water detention and treatment for roads and existing adjacent development• Prevent channelized flow from lawns that directly enters the buffer
Change in water regime	<ul style="list-style-type: none">• Infiltrate or treat, detain, and disperse into buffer new runoff from impervious surfaces and new lawns
Pets and human disturbance	<ul style="list-style-type: none">• Use privacy fencing; 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

1.04.04 WETLAND BUFFER AVERAGING

The city may allow the averaging of buffer widths if this will improve the protection of wetland functions. Buffer averaging to improve wetland protection may occur when all of the following conditions are present:

- A. The wetland has significant differences in characteristics that affect its habitat functions, such as a wetland with a forested component adjacent to a degraded emergent component or a “dual-rated” wetland with a Category I area adjacent to a lower rated area;
- B. The buffer is increased adjacent to the higher functioning area of habitat or more sensitive portion of the wetland and decreased adjacent to the lower functioning or less sensitive portion;
- C. The total area of the buffer after averaging is equal to the area required without averaging;

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D. The buffer at its narrowest point is never less than three-quarters of the required width.

1.04.05 WETLAND MITIGATION

- A. If an application for development activities makes it necessary to alter or eliminate a wetland, the applicant shall compensate the loss or alteration by one or more of the following actions:
1. Restoring wetland acreage and functions to an area where those functions formerly occurred.
 2. Creating new wetland area and functions in an area where they did not previously occur.
 3. Enhancing functions at an existing wetland.
 4. Preserving an existing high quality wetland to protect it from future loss or degradation.
- B. Altered wetlands shall require mitigation to ensure the same level of wetland function that existed at the time of the permit application. SMP Appendix 2: Table 1-6 sets mitigation ratios for the type of action taken:

SMP Appendix 2: Table 1-6: Wetland Mitigation Ratios

Category and Type of Wetland Impacts	Reestablishment or Creation	Rehabilitation Only	Reestablishment or Creation (R/C) and Rehabilitation (RH)	Reestablishment or Creation (R/C) and Enhancement (E)	Enhancement Only
All Category IV	1.5:1	3:1	1:1 R/C and 1:1 RH	1:1 R/C and 2:1 E	6:1
All Category III	2:1	4:1	1:1 R/C and 2:1 RH	1:1 R/C and 4:1 E	8:1
Category II Estuarine	Case-by-case	4:1 Rehabilitation of an estuarine wetland	Case-by-case	Case-by-case	Case-by-case
All other Category II	3:1	6:1	1:1 R/C and 4:1 RH	1:1 R/C and 8:1 E	12:1
Category I Forested	6:1	12:1	1:1 R/C and 10:1 RH	1:1 R/C and 20:1 E	24:1

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Category and Type of Wetland Impacts	Reestablishment or Creation	Rehabilitation Only	Reestablishment or Creation (R/C) and Rehabilitation (RH)	Reestablishment or Creation (R/C) and Enhancement (E)	Enhancement Only
Category I Estuarine	Case-by-case	6:1 Rehabilitation of an estuarine wetland	Case-by-case	Case-by-case	Case-by-case
All other Category I	4:1	8:1	1:1 R/C and 6:1 RH	1:1 R/C and 12:1 E	16:1

1.04.06 WETLAND TECHNICAL REPORTS

A qualified wetlands professional shall prepare any technical assessment required by the city. The assessment shall follow the format described in Appendix H of the Ecology publication “Wetland Mitigation in Washington State, Part 2: Developing Mitigation Plans,” 2006, Publication No. 06-06- 011b. In addition, the report will include the following analysis:

- A. A written assessment and accompanying maps of the wetlands and buffers within 300 feet of the project area, including the following information at a minimum:
 1. Wetland delineation and required buffers;
 2. Existing wetland acreage;
 3. Wetland category;
 4. Vegetative, faunal, and hydrologic characteristics;
 5. Soil and substrate conditions;
 6. Topographic elevations, at two-foot contours; and
 7. 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, evidence of water depths throughout the year – drift lines, algal layers, moss lines, and sediment deposits).
- B. A discussion of measures, including avoidance, minimization, and mitigation, proposed to preserve existing wetlands and restore any wetlands that were degraded prior to the current proposed land use activity.

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- C. A habitat and native vegetation conservation strategy that addresses methods to protect and enhance on-site habitat and wetland functions.
- D. Functional evaluation for the wetland and adjacent buffer using a local or state agency staff-recognized method and including the reference of the method and all data sheets.
- E. Proposed mitigation, if needed, including a written assessment and accompanying maps of the mitigation area, including the following information at a minimum:
 - 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 water bodies;
 - 5. Soil and substrate conditions, topographic elevations;
 - 6. Existing and proposed adjacent site conditions;
 - 7. Required wetland buffers (including any buffer reduction and mitigation proposed to increase the plant densities, remove weedy vegetation, and replant the buffers);
 - 8. Property ownership; and
 - 9. Associated wetlands and related wetlands that may be greater than 300 feet from the subject project.
- F. A scale map of the development proposal site and adjacent area. A discussion of ongoing management practices that will protect wetlands after the project site has been developed, including proposed monitoring and maintenance programs.
- G. A bond estimate for the installation (including site preparation, plant materials and installation, fertilizers, mulch, stakes) and the proposed monitoring and maintenance work for the required number of years.
- H. Title notification. All activity in critical area protection areas shall be accompanied by a title.

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1.05 CRITICAL AQUIFER RECHARGE AREAS

Critical aquifer recharge areas (CARA) are those areas with a critical recharging effect on aquifers used for potable water as defined by WAC 365-190-030(2). CARAs have prevailing geologic conditions associated with infiltration rates that create a high potential for contamination of ground water resources or contribute significantly to the replenishment of ground water. These areas include the following:

- A. Wellhead Protection Areas. Wellhead protection areas may be defined by the boundaries of the ten year time of ground water travel or boundaries established using alternate criteria approved by the WDOH in those settings where ground water time of travel is not a reasonable delineation criterion, in accordance with WAC 246- 290-135.
- B. Sole Source Aquifers. Sole source aquifers are areas that have been designated by the EPA pursuant to the Federal Safe Water Drinking Act.
- C. Susceptible Ground Water Management Areas. Susceptible ground water management areas are areas that have been designated as moderately or highly vulnerable or susceptible in an adopted ground water management program developed pursuant to WAC 173-100.
- D. Special Protection Areas. Special protection areas are those areas defined by WAC 173-200-090.
- E. Moderately or Highly Vulnerable Aquifer Recharge Areas. Aquifer recharge areas that are moderately or highly vulnerable to degradation or depletion because of hydrogeologic characteristics are those areas delineated by a hydrogeologic study prepared in accordance with Ecology guidelines.
- F. Moderately or Highly Susceptible Aquifer Recharge Areas. Aquifer recharge areas moderately or highly susceptible to degradation or depletion because of hydrogeologic characteristics are those areas meeting the criteria established by Ecology.

As of the date of adoption of this Appendix, there are no hydrogeologic studies completed specifically for determining where aquifer recharge points are within the city. The city will enact appropriate provisions for critical aquifer recharge areas should any such areas be identified and designated in the future.

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1.06 GEOLOGICALLY HAZARDOUS AREAS

1.06.01 GEOLOGICALLY HAZARDOUS AREAS DESIGNATION

- A. The city shall regulate development activities in geologically hazardous areas to protect the public's health, safety, and welfare. Development activities in geologically hazardous areas shall:
 - 1. Minimize erosion and movement of sediment;
 - 2. Preserve or replace vegetation in erosion hazard areas;
 - 3. Prevent increased surface water discharge to adjacent properties;
 - 4. Prevent decreased slope stability on adjacent properties; and
 - 5. Design or mitigate projects in geologically hazardous areas to eliminate unsafe conditions to onsite and off-site property owners.
- B. The city adopts by reference the following maps and best available science resources for geologically hazardous areas:
 - 1. Soil Survey of Grays Harbor County Area, Pacific County, and Wahkiakum County, Washington, USDA, 1986;
 - 2. Geologic Map of the South Half of the Shelton and South Half of the Copalis Beach Quadrangles, Washington, Washington Division of Geology and Earth Resources, 1987;
 - 3. Tsunami hazard map of the southern Washington coast - Modeled tsunami inundation from a Cascadia subduction zone earthquake, by T. J. Walsh, C. G. Caruthers, A. C. Heinitz, E. P. Myers III, A. M. Baptista, G. B. Erdakos, and R. A. Kamphaus. 2000. 12 p. text, 1 pl., scale 1:100,000; and
 - 4. Tsunamis on the Pacific coast of Washington State and adjacent areas. A selected, annotated bibliography and Shoreline Directory, compiled by C. J. Manson and Lee Walkling. 40 p.
 - 5. If the location, designation, or classification of a geologically hazardous area shown on any map adopted by reference under the HCC is in conflict with the determination of any field investigation, the latter shall prevail.
- C. Designated geologically hazardous areas are areas susceptible to erosion, sliding, earthquake, or other geological events. They pose a threat to the health and safety of

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citizens when incompatible commercial, residential, or industrial development occurs in areas of significant hazard. Geologically hazardous areas with significant hazard include:

1. Areas that are susceptible to one or more of the following types of hazards shall be classified as a geologically hazardous area:
 - a. Erosion hazard;
 - b. Landslide hazard;
 - c. Seismic hazard; or
 - d. Areas subject to other geological events such as tsunamis, coal mine hazards, and volcanic hazards including: mass wasting, debris flows, rockfalls, and differential settlement.
2. Erosion hazard areas identified by the USDA Soil Conservation Service as having a “severe” rill and inter-rill erosion hazard and areas subject to impacts from lateral erosion related to moving water such as river channel migration and shoreline retreat.
3. Landslide hazard areas potentially subject to landslides based on a combination of geologic, topographic, and hydrologic factors. They include any areas susceptible because of any combination of bedrock, soil, slope (gradient), slope aspect, structure, hydrology, or other factors. Example of these may include, but are not limited to, the following:
 - a. Areas of historic failures, such as:
 - 1) Those areas delineated by the USDA Soil Conservation Service as having a “severe” limitation for building site development;
 - 2) Areas designated as quaternary slumps, earthflows, mudflows, lahars, or landslides on maps published by the USGS or WDNR Division of Geology and Earth Resources;
 - b. Areas with all three of the following characteristics:
 - 1) Slopes steeper than fifteen percent; and
 - 2) Hillsides intersecting geologic contacts with a relatively permeable sediment overlying a relatively impermeable sediment or bedrock; and
 - 3) Springs or ground water seepage;

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- c. Areas that have shown movement during the Holocene Epoch (from ten thousand years ago to the present) or which are underlain or covered by mass wastage debris of that epoch;
 - d. Slopes that are parallel or subparallel to planes of weakness (such as bedding planes, joint systems, and fault planes) in subsurface materials;
 - e. Slopes having gradients steeper than eighty percent subject to rockfall during seismic shaking;
 - f. Areas potentially unstable as a result of rapid stream incision, stream bank erosion, and undercutting by wave action;
 - g. Areas that show evidence of, or are at risk from, snow avalanches;
 - h. Areas located in a canyon or on an active alluvial fan, presently or potentially subject to inundation by debris flows or catastrophic flooding;
 - i. Any area with a slope of 40 percent or steeper and with a vertical relief of ten or more feet except areas composed of consolidated rock. A slope is delineated by establishing its toe and top and measured by averaging the inclination over at least ten feet of vertical relief.
4. Seismic hazard areas subject to severe risk of damage because of earthquake-induced ground shaking, slope failure, settlement, soil liquefaction, or surface faulting. One indicator of potential for future earthquake damage is a record of earthquake damage in the past. Ground shaking is the primary cause of earthquake damage in Washington. The strength of ground shaking is primarily affected by:
- a. The magnitude of an earthquake;
 - b. The distance from the source of an earthquake;
 - c. The type and thickness of geologic materials at the surface; and
 - d. The type of subsurface geologic structure. Settlement and soil liquefaction conditions occur in areas underlain by cohesionless soils of low density, typically in association with a shallow ground water table.
5. Coastal areas susceptible to tsunami hazards from flooding and inundation as the result of excessive wave action derived from seismic or other geologic events. Tsunami hazard areas include those areas mapped within the Tsunami Hazard Map of the Southern Washington Coast by WDNR.

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1.06.02 *TECHNICAL REPORTS*

The city may require a technical assessment prepared by a qualified professional for development activities proposed in a geologically hazardous area. The report shall:

- A. Determine the exact boundaries of all geologically hazardous areas affecting the site and the impact of the proposed development on the standards set forth under SMP Appendix 2: Section 1.06.01; and
- B. Recommend mitigation measures or, if mitigation is not possible, recommendations for adequate buffers from the hazard or hazards to protect public health, safety, and welfare.

1.06.03 *MITIGATION IN GEOLOGICALLY HAZARDOUS AREAS*

Engineering, design, or modified construction or mining practices can reduce or mitigate some geological hazards so that risks to health and safety are acceptable. However, when technology cannot reduce risks to acceptable levels, building in geologically hazardous areas is prohibited.

1.07 FISH AND WILDLIFE HABITAT CONSERVATION AREAS

1.07.01 *FISH AND WILDLIFE CONSERVATION AREAS DESIGNATION*

- A. Designated fish and wildlife habitat conservation areas include:
 - 1. Areas with which endangered, threatened, and sensitive species have a primary association;
 - 2. Habitats and species of local importance;
 - 3. Commercial and recreational shellfish areas;
 - 4. Kelp and eelgrass beds; herring and smelt spawning areas;
 - 5. Naturally occurring ponds under 20 acres and their submerged aquatic beds that provide fish or wildlife habitat;
 - 6. Waters of the state and their associated riparian areas; and
 - 7. State natural area preserves and natural resource conservation areas.
- B. The city adopts by reference the following maps and best available science resources for fish and wildlife habitat conservation areas:

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1. Designation and Protection.

- a. “Priority Habitat and Species Maps,” Washington State Department of Fish and Wildlife;
- b. “Salmon and Steelhead Habitat Limiting Factors, Water Resource Inventory Areas 22 and 23,” by Carol Smith Ph.D. and Mark Wenger;
- c. “The Chehalis Basin Salmon Habitat Restoration and Preservation Work Plan for WRIAs 22 and 23,” Chehalis Basin Partnership; and
- d. “Management Recommendations for Washington’s Priority Species, Volumes I through V,” Washington State Department of Fish and Wildlife.

1.07.02 *STANDARDS FOR PROTECTION OF FISH AND WILDLIFE HABITAT CONSERVATION*

- A. Development activities occurring on lands and waters containing documented habitats for plant and animal species in fish and wildlife habitat conservation areas shall result in no net loss of existing function.
- B. Development activities allowed in fish and wildlife habitat conservation areas shall be consistent with the species located there and shall be regulated additionally by restrictions defined in applicable federal, state and local regulations regarding the species.
- C. Habitat conservation areas may overlap with other identified critical areas. Likely areas of overlap include critical drainage corridors, geologically hazardous areas and wetlands. When habitat areas overlap with other critical areas, all the performance standards established for the overlaying critical area(s) shall apply. If multiple critical areas overlap in an area, the most restrictive conditions shall apply.

1.07.03 *TECHNICAL REPORTS - HABITAT MANAGEMENT PLAN*

- A. The city shall require a technical assessment prepared by a qualified professional for any nonexempt development activities proposed in or adjacent to a habitat conservation area.
- B. Applications for development activities shall provide a technical assessment consisting of a habitat management plan recommending appropriate protections based on the WDFW species and habitat recommendations.
- C. The technical assessment shall at a minimum provide:

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1. Detailed description of vegetation on and adjacent to the project area and its associated buffer;
2. Identification of any species of local importance, priority species, or endangered, threatened, sensitive, or candidate species that have a primary association with habitat on or adjacent to the project area, and assessment of potential project impacts to the use of the site by the species;
3. A discussion of any federal, state, or local special management recommendations, including WDFW habitat management recommendations, that have been developed for species or habitats located on or adjacent to the project area;
4. A detailed discussion of the direct and indirect potential impacts on habitat by the project, including potential impacts to water quality;
5. A discussion of measures, including avoidance, minimization, and mitigation, proposed to preserve existing habitats and restore any habitat that was degraded before the current proposed land use activity; and
6. A discussion of ongoing management practices that will protect habitat after the project completion, including proposed monitoring and maintenance programs.

1.07.04 REQUIREMENTS FOR DEVELOPMENTS ALONG SHORELINES

- A. Development activities occurring along shorelines in or adjacent to habitat conservation areas shall achieve no net loss of habitat function.
- B. The city requires buffer corridors along shorelines to retain areas of native vegetation and to allow for habitat connectivity. Development activities for Type S water shall meet the buffer standards provided in SMP Section 5.04.02.
- C. Development along all other shorelines within the city not included in SMP Appendix 2: Section 1.07.04(B) above shall provide the following buffers by water type:
 1. Type F water greater than ten feet wide: 150 feet;
 2. Type F water ten feet or less in width: 100 feet;
 3. Type Np water: 75 feet;
 4. Type Ns water: 50 feet.

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1.08 FREQUENTLY FLOODED AREAS

1.08.01 FREQUENTLY FLOODED AREAS DESIGNATION AND PROTECTION

Frequently flooded areas are those same areas regulated by SMP Section 4.05 – Flood Hazard Management, the floodplain district, and HCC Chapter 11.16: Protection of frequently flooded areas is as provided in HCC Chapter 11.16.