

Chapter 9

CRITICAL AREAS

9.1 INTRODUCTION

Wetlands, critical aquifer recharge areas, geologically hazardous areas, frequently flooded areas and fish and wildlife habitat conservation areas are defined as critical areas by the State of Washington. Chapter 9 attempts to identify and map the known critical areas within and around the Town boundaries of Eatonville. This chapter also contains goals and policies on how development should be regulated adjacent to and within the critical areas.

9.2 RELATIONSHIP TO REGULATIONS

How land is to be developed within and around critical areas is specified in the development regulations. The critical areas development regulations must be consistent with the Comprehensive Plan and be designed to implement the goals and policies set forth in this chapter. Critical areas development regulations must be reviewed every seven years and updated to reflect changes in State laws and regulations. Further, the critical areas development regulations must be based on scientific standards and must contain language that makes use of the best available science.

9.3 WETLANDS

Wetlands are transitional areas between upland and aquatic environments where water is present long enough to form distinct soils and where specialized “water loving” plants can grow. Wetlands include marshy areas along major water bodies such as lakes, inland swamps, and seasonal watercourses. Wetlands are typified by water table that usually is at or near the surface, and there may be standing water all or part of the year. Soils that are present in wetlands are known as “hydric soils”. Certain plant species, including trees, shrubs, grasses, and grass-like plants have adapted to the low oxygen content of wetland soils. These plants are known as “hydrophytes”.

Another distinguishing characteristic of wetlands, in addition to soils and plants, is known as hydrology. Wetland hydrology refers to wetness of the wetland – how often is the soil saturated or flooded with water and how long does it last?

9.3.1 Functions and Values. In their natural state, wetlands perform functions which are impossible or difficult and costly to replace. Wetlands provide erosion or sediment control – the extensive root systems of wetland vegetation stabilize streambanks, floodplains, and shorelines. Wetlands improve water quality by decreasing the velocity of water flow, resulting in the physical interception and filtering of waterborne sediments, excess nutrients, heavy metals, and other pollutants. Wetlands also provide food and shelter, essential breeding, spawning, nesting and wintering habitats for fish and wildlife, including migratory birds, anadromous fish, and other commercially and recreationally valuable species.

9.3.2 Classification. Wetlands in Washington State are classified as Category I, II, III or IV wetlands. The criteria for establishing wetlands categories are based on current Washington State Department of Ecology “Washington State Wetlands Rating System for Western Washington”.

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

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

Category III Wetlands. Category III wetlands are those regulated wetlands which have important resource value based on vegetative diversity.

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.

9.3.3 Identification and Mapping. Wetlands in Eatonville have been identified by the U.S. Fish and Wildlife Service and appear in map format on the National Wetland Inventory Maps. Pierce County has also identified and mapped wetlands, in addition to those wetlands identified in the National Wetland Inventory Maps. Further, the Town of Eatonville, in the course of regulating development, from time to time has required that the developer provide the Town with a wetland delineation and assessment report. Once delineated and mapped, those wetland maps are kept on file at the

Town Hall and used in subsequent development reviews. Known wetland in and around Eatonville are shown in Figure 9-1.

9.3.4 Wetland Buffers. Wetlands need to be buffered to protect them from neighboring development. The higher the value and function of the wetland, the wider the buffer. In Eatonville, wetlands are buffered, ranging from 150 feet for Class I wetlands to 100 feet for Class II wetlands, to 50 feet for Class III wetlands and to 25 feet for Class IV wetlands. Buffer widths may be modified in certain situations. Non-intrusive development may be permitted in wetland buffer zones, such as walking trails, etc.

9.3.5 Development Regulations. Development in the wetlands environment is regulated by the Town of Eatonville. The wetlands section of the Critical Areas Ordinance specifies what type of development can take place in the wetlands environment and under what conditions. The applicant may be required to provide a wetlands delineation with assessment report prepared by a professional wetlands biologist. Wetlands can be filled by first getting a permit from the U.S. Corps of Engineers. Any impact on the wetlands caused by new development must be mitigated. The regulations must allow “reasonable” use and limited set of exceptions.

9.3.6 Best Available Science. The Growth Management Act requires cities and counties to “include the best available science” when drafting development regulations – RCW 36.70A.172. The Growth Management Act does not require communities to go out and conduct new scientific studies, but to include the best science that is available. To locate locally appropriate science, the Town of Eatonville will rely on Washington State Community Trade and Economic Development Department’s “Citations of Recommended Sources of Best Available Science for Designating and Protecting Critical Areas”.

9.3.7 Goals and Policies. The Town of Eatonville has goals and policies, if implemented, will lead to zero net loss of values and functions of wetlands. The goals and policies are listed below:

Goal CA-1

Provide for the long-term protection and “no net loss” of values and functions of wetlands.

Figure 1
Wetlands

Policies

1. Identify and map all wetland areas, including both private and public lands where regulated wetlands exist in the Town of Eatonville and the Urban Growth Area.
2. Protect the natural ability of wetlands to improve the quality of storm water runoff by holding and gradually releasing stormwater,
3. Protect the natural ability of wetlands to function as producers of plant matter, provide habitat for fish and wildlife, provide recreational opportunities and provide historical and cultural values.
4. Provide educational opportunities that increase public understanding of the values and functions of wetlands and measures which Town residents can take to maintain wetlands on their properties.
5. When impacts on wetlands can not be avoided, development of wetlands may occur where impacted wetlands are replaced at a ratio exceeding the impacted wetlands and taking into consideration the values and functions of impacted wetlands.
6. Review and when necessary amend the Town of Eatonville Wetland Management Regulations to provide wetland protection.
7. Regulate development to protect the functions and values associated with wetland areas.
8. Avoid impacts and mitigate wetland impacts consistent with federal and state laws.
9. Revise the development regulations to address the need to protect wetland areas and functions from impacts associated with development.

9.4 CRITICAL AQUIFER RECHARGE AREAS

As precipitation reaches earth it enters into lakes, streams, rivers, oceans, wetlands, seeps into the soil to be taken up by plant roots, or seeps into the ground and becomes groundwater. As groundwater moves through the ground it may discharge to surface water features, such as lakes, streams, or rivers, which will in turn recharge the groundwater. The water that remains in the ground will make up the aquifer.

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Aquifers discharge water naturally through springs and seeps, streams, lakes, wetlands, and undersea springs. Man-made wells create additional discharge points which influence groundwater flow patterns. This flow, or movement, is generally very slow.

As aquifers discharge they in turn are recharged. Recharge occurs primarily as a result of the infiltration of rainfall and secondly by the movement of water from adjacent aquifers or water bodies. The rate and quantity of water entering the ground depends on several factors. Natural factors include the amount of precipitation, soil type conditions, vegetation, and topography. Man-made factors include impervious surfaces associated with development, the channeling of runoff, changes in soil condition such as compaction, and removal of vegetation. Aquifers can also be affected by contamination. A hazardous waste spill can have severe adverse impacts on an aquifer, possibly making the water unusable for years.

The water supply for the Town of Eatonville comes from Mashell River and from wells. The wells are located in close proximity to the Mashell River and the wells draw water from the same aquifer. The well-field is located in the southeast part of Eatonville, north of the Mashell River. Pierce County has identified the area to be an aquifer recharge area. Pierce County identified the aquifer recharge areas around the Town of Eatonville are shown in Figure 9-2.

9.4.1 Classification. Critical aquifers in Eatonville are classified as Class 1 and Class 2 aquifers. Class 1 aquifer is a source for public water supplies as Class 2 aquifer is not. Extra care should be taken to protect the water quality in Class 1 aquifers. Eatonville's Development Code identifies land use activities that are prohibited in Class 1 and Class 2 aquifers unless mitigating measures are applied.

9.4.2 Goals and Policies. The following goal and policies, if implemented, will result in the protection of aquifer recharge areas.

Goal CA – 2

Prioritize and protect aquifer recharge areas to ensure that water quality and quantity are maintained or improved.

Policies

1. Identify and map aquifer recharge areas.

Figure 9-2
Aquifer Recharge Areas

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2. Take active measures to ensure adequate recharge of aquifers utilized by the Town of Eatonville residents for domestic water supplies, and to protect the quality of water in those aquifers.
3. Develop performance standards and regulate land uses for activities which can adversely impact water quality or quantity in aquifers, consistent with state and federal laws and regulations.
4. Require that new development meets the performance standards and that existing facilities be retrofitted, where feasible, to meet the standards.
5. Pursue both natural and engineered solutions to maintain aquifer recharge quality. Natural solutions (e.g., maintaining undisturbed vegetation) are preferred.
6. Provide for aquifer recharge through the use of stormwater management technologies which best protect water quality.

9.5 GEOLOGICALLY HAZARDOUS AREAS

Geologically hazardous areas include areas susceptible to erosion, sliding, earthquake, or other geological events. They pose a threat to the health and safety of citizens when incompatible commercial, residential, or industrial development is sited in areas of significant hazard. Geologically hazardous areas also have an important function in maintaining habitat integrity. Mass wasting events, such as landslides and debris flows, contribute needed sediment and wood for building complex instream habitats, estuarine marshes, and beaches important for fisheries, wildlife, and recreation. At the same time, mass wasting events can harm habitat and lead to the need for stream restoration.

Some geological hazards can be reduced or mitigated by engineering, design, or modified construction or mining practices so that risks to health and safety are acceptable. When technology cannot reduce risks to acceptable levels, building in geologically hazardous areas is best avoided. Areas that are susceptible to one or more of the following types of hazards should be classified as a geologically hazardous area:

- Erosion hazard (including river and streambank erosion areas and channel migration areas).
- Landslide hazard.
- Seismic hazard.
- Areas subject to other geological events such as coal mine hazards and volcanic hazards including: mass wasting, debris flows, rock falls, and differential settlement.

Geologically hazardous areas in and around the Town of Eatonville are shown in Figure 9-3. Since most geologically hazardous events occur in steep slope areas, Figure 9-3 shows slopes in excess of 15 to 30 percent, 30 to 45 percent and slopes in excess of 45 percent. The development regulations go into great detail about the conditions of permitting development to occur on slopes in excess of 15 percent, considering the identified specific geologic hazard.

9.5.1 Erosion Hazard Areas. Geologically hazardous erosion, such as those areas with high probability of streambank erosion as well as channel migration areas, should be designated as critical area. Erosion hazard areas may also include those areas identified by the U.S. Department of Agriculture Natural Resources Conservation Service as having a "severe" rill (a rill is a long narrow trench or valley) and inter-rill erosion hazard.

9.5.2 Landslide Hazard Areas. Landslide hazard areas are potentially subject to landslides based on a combination of geologic, topographic, and hydrologic factors. Landslide hazard areas include any areas susceptible because of any combination of bedrock, soil, slope (gradient), slope aspect, structure, hydrology, or other factors. Examples of these areas may include, but are not limited to the following:

- Areas of historic failures, such as those areas delineated by the U.S. Department of Agriculture Natural Resources Conservation Service as having a "severe" limitation for building site development; or areas designated as quaternary slumps, earth flows, mudflows, lahars, or landslides on maps published by the U.S. Geological Surveyor Washington State Department of Natural Resources Division of Geology and Earth Resources.
- Areas with all three of the following characteristics:
 - Slopes steeper than 15 percent.
 - Hillsides intersecting geologic contacts with a relatively permeable sediment overlying a relatively impermeable sediment or bedrock.
 - Springs or ground water seepage.
- Areas that have shown movement during the Holocene epoch (from 10,000 years ago to the present) or which are underlain or covered by mass wastage debris of that epoch.
- Slopes that are parallel or sub parallel to planes of weakness (such as bedding planes, joint systems, and fault planes) in subsurface materials.

Figure 9-3
Geologically Hazardous Areas

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- Slopes having gradients steeper than 80 percent are subject to rock fall during seismic shaking.
- Areas potentially unstable as a result of rapid stream incision, and/or stream bank erosion.
- Areas located in a canyon or on an active alluvial fan, presently or potentially subject to inundation by debris flows or catastrophic flooding.
- 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.

9.5.4 Seismic Hazard Areas. Seismic hazard areas include areas subject to severe risk of damage as a result 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. In Washington, ground shaking is the primary cause of earthquake damage and the strength of ground shaking is primarily affected by:

- The magnitude of an earthquake.
- The distance from the source of an earthquake.
- The type of thickness of geologic materials at the surface.
- The type of subsurface geologic structure.

Settlement and soil liquefaction conditions occur in areas underlain by cohesionless soil of low density, typically in association with a shallow ground water table.

9.5.5 Goals and Policies. The following goal and policies, if implemented, will result in the protection of geologically hazardous areas.

Goal CA – 3

Avoid the endangerment of lives, property, and resources in geologically hazardous areas.

Policies

1. Identify and map all geologically hazardous areas.
2. Establish land use practices in geologically hazardous areas so that development does not cause or exacerbate natural processes which endanger lives, property, and resources of the citizens of the Town of Eatonville.
3. Ensure that property owners in geologically hazardous areas are educated and notified about the presence of hazardous areas and the threat which they pose.
4. Geologically hazardous area should be utilized as open space whenever possible.
5. Where the effects of geologic hazards can be mitigated, require appropriate standards for site development and for the design of structures in areas of geologic hazards.
6. Require geotechnical studies and mitigation for development activities in erosion, landslide, and seismic hazard areas, with the amount of information required based on the severity of the hazard or hazards at the development site.
7. Protect life and property from seismic hazards.
8. Minimize cut and fill modifications of topography or hydrological features and functions.
9. Allow clearing, grading, or other land alterations of property only for approved development proposals.
10. Minimize land erosion through best management practices.
11. Prohibit development of steep or unstable slopes.

9.6 FREQUENTLY FLOODED AREAS

The 100-year flood plain is the area that has a one percent probability of inundation in any given year. Within the flood plain lies the floodway, which has higher velocity flow and substantially greater hazard. The area within the flood plain and outside the floodway is called the flood fringe. A flood fringe is generally associated with standing water rather than rapidly flowing water. To avoid the devastating and costly damage which,

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historically, results from flooding, the utilization of the floodway and flood fringe must be in accordance with the Town of Eatonville adopted development ordinances.

The areas subject to flooding in and around the Town of Eatonville have been identified and mapped and are shown in Figure 9-4. The areas subject to flooding include the 100-year flood plain identified and mapped by the Federal Emergency Management Agency, commonly known as FEMA. The National Flood Insurance Program utilizes the FEMA flood plain designation maps in its administration of the insurance program.

Any development in the floodway should be prohibited unless the development consists of such facilities as stream bank stabilization, dams, diversion facilities, stormwater facilities, and bridges. Development in the flood fringe should be limited to low intensity uses. Sewer lines within the flood fringe must be designed and constructed in a way to keep floodwater from entering the sewer system. Septic systems will not be allowed to be constructed in the flood fringe. The following goal and policies, if implemented, will result in the protection of properties and development in the flood fringe areas.

Goal CA - 4

Establish land use practices in frequently flooded areas so that development does not cause or exacerbate natural processes which endanger the lives, property, and resources of the citizens of the Town of Eatonville

Policies

1. Encourage low intensity land use activities, including recreational land uses in floodplain areas.
2. Direct critical facility development away from areas subject to frequent flooding where the effects of hazards cannot be mitigated.
3. Where the effects of hazards can be mitigated, require appropriate standards for site development and for the design of structures in areas subject to flood hazard.
4. Maintain the Town of Eatonville's eligibility in participating in the National Flood Insurance Program.

Figure 9-4
Frequently Flooded Areas

9.7 FISH AND WILDLIFE HABITAT CONSERVATION AREAS

9.7.1 Fish Habitat Areas. The designated Fish Habitat Conservation Areas in the vicinity of the Town of Eatonville are the Mashell and Little Mashell Rivers and Ohop Creek. The designated Fish Habitat Conservation Areas are shown in Figure 9-5. These water bodies have been identified by the Washington State Fish and Wildlife Department as containing Chinook, Coho, Steelhead and Chum Salmon. Chinook salmon is a federally listed species under the Endangered Species Act (ESA).

9.7.2 Wildlife Habitat Areas. Wildlife habitat can be described as the geographic area containing the necessary combination of food, water and protective cover for the survival and propagation of a species of animals. Habitats differ between species, but are closely related to the plant communities. A single plant community such as a wetland, for example, may provide all the necessary habitat requirements for certain small mammals or amphibians. Larger mammals may require more than one plant community to complete their habitat, such as forest cover and wetland for food and water. Wildlife conservation habitat areas, in the vicinity of the Town of Eatonville, have been identified by the Washington State Department of Fish and Wildlife and are shown in Figure 9-5.

9.7.3 Goals and Policies. The following goal and policies, if implemented, will result in the protection of fish and wildlife conservation habitat areas.

Goal CA – 5

Provide for the maintenance and protection of habitat areas for fish and wildlife.

Policies

1. Identify and map all areas, including both private and public lands, where critical fish and wildlife habitat areas exist in and around the Town of Eatonville.
2. Require that buffers of undisturbed vegetation be retained for all new development activities along water bodies that have been identified to carry endangered or threatened species of fish.

Figure 9-5
Fish and Wildlife Habitat Areas

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3. For Mashell River, Small Mashell River, and Ohop Creek, establish buffer widths based on individual characteristics of the water body. Examples of these characteristics include Washington State Department of Natural Resources stream typing classification, impact on other water bodies, and scientific information.
4. Evaluate existing regulations and policies to determine whether they adequately protect critical fish and wildlife habitat areas. Where necessary, amend existing regulations and policies or develop new strategies to protect critical habitat areas while maintaining consistency with all goals of the Comprehensive Plan.
5. Require that new development proposals on or near critical habitat areas be assessed to determine impacts on fish and wildlife. If impacts are likely, require the preparation of habitat management plans which mitigate these impacts.
6. Encourage subdivision dedication of critical fish and wildlife habitat areas as open space.
7. Evaluate the Town of Eatonville development regulations to determine their effectiveness in providing for critical fish and wildlife habitat areas and corridors.