

Chapter 2

NATURAL ENVIRONMENT ELEMENT

INTRODUCTION

This element replaces the natural environment section of the city's 1979 comprehensive plan and the 2003 amended comprehensive plan (Ordinance #750-B), and replaces the critical area policies adopted by the city in 1992 and incorporates the 2009 Critical Area Ordinance (Ordinance #849-B). Its purpose is to guide future development in a manner that provides protection of community residents and businesses from geohazards, including seismic and volcanic events, and landslides, as well as flooding as regulated by using FEMA and



Ecology guidance. In addition, the natural environment element provides direction for protection of the community's environmental resources and features, such as potable water sources including the protection of critical aquifer recharge areas (CARAs) and wellhead protection areas, scenic wooded hillsides, surface water systems, wetlands as defined under GMA definition (RCW 36.70A.030(21), and fish and wildlife habitat including anadromous fisheries. To designate and protect critical areas including geohazard areas, frequently flooded areas, critical aquifer recharge areas, wetlands and fish and wildlife habitat areas; the use of the best available science (BAS) to protect the functions and values of critical areas, and giving "special consideration" to conservation or protection measures necessary to preserve or enhance anadromous fisheries. ([RCW 36.70A.172, WAC 365-190-180, and WAC 365-195-900 through 925, BAS added in 1995]. It serves as the policy basis for the city's environmental regulations required by GMA (RCW36.70A.060).

The natural environment element is closely related to the land use element. Before informed land use decisions can be made, an understanding of the carrying capacity of the land based on an examination of local environmental characteristics is necessary. In addition, the community's identity may also be shaped by the manner in which the built and natural environments are integrated.

The City of Chehalis has entered into interlocal agreements and plans that have encouraged positive working relationships with neighboring jurisdictions in regards to the natural environment. The City is committed to work consistently with Lewis County with countywide planning polices. These agreements, plans and regulations act as tools for growth management. Some of these plans include:

- **The Lewis County Comprehensive Plan.** The Lewis County Comprehensive Plan was adopted in April, 2002. Amended in 2007, 2009 and updated in 2017.

- The formation of the **Chehalis River Basin Watershed Management Partnership & Designation of Lead Agency**. This intergovernmental agreement was adopted on August 31, 1998.
- The **Chehalis Basin Watershed Plan**. The Plan was adopted in May 2004
- **Lewis County and City of Chehalis UGA Interlocal Agreement**. The agreement expired in 2016 and a new agreement is currently being negotiated.
- **The Lewis County Shoreline Management Plan**. This plan has been updated as of May 2016.
- **Airport Master Plan/Chehalis-Centralia**. The Airport Master Plan was approved in 2001 and has been approved by the FAA through 2027.
- **Parks and Recreation Plan**. The Parks and Recreation Plan is currently out of date.
- **Transportation Plan**. The Transportation Plan (Element)

PHYSICAL SETTING

AIR QUALITY

The prevailing wind direction in Chehalis is south or southwesterly during the wet season, and northwesterly during the summer. The strongest winds are generally southeasterly to southwesterly, and are associated with more intense winter systems.

According to 1993 information gathered by the Southwest Air Pollution Control Agency (SWAPCA) the main sources of air pollutants in the region are automobiles, wood stoves, outdoor burning, road dust and industrial emissions. Regionally, particulate matter sources are: industry 30.6%; outdoor burning 26.5%; vehicles 25.7%; wood stoves 16.3%; and non-road mobile 0.9%. Regional sources for nitrogen oxide production are: industry 56.9%; vehicles 34.7%; outdoor burning 2.5%; wood stoves .07%; and non-road mobile 5.2%. Suspended particulate matter and nitrogen dioxide are considered to be the principal sources of air pollution, contributing to conditions such as smog, lung irritation and acid rain, among many others.

Between storms in late fall and winter, Chehalis and much of the rest of southwest Washington is often blanketed with a relatively stable air mass that can inhibit the natural cleansing of suspended pollutants. Air quality thus tends to be worse in the winter, when slow-moving air masses can trap air pollutants near the surface.

GROUNDWATER RESOURCES AND WATER QUALITY

CRITICAL AQUIFER RECHARGE AREAS

The purpose of this element is to regulate development and the use of land in critical aquifer recharge area (CARA) in order to ensure long-term protection of the water supply resources that exist under the city's jurisdiction; and to comply with the Washington State Growth Management Act.

Critical aquifer recharge areas are "areas with a critical recharging effect on aquifers used for potable water". These areas can fall within the city's jurisdiction where the prevailing geologic conditions

allow infiltration rates that create a high potential for contamination of groundwater resources or contribute to the replenishment of groundwater. Critical aquifer recharge areas are rated as having high, moderate, or low susceptibility to contamination based on soil permeability, geologic matrix, infiltration, and depth to water as determined by the criteria established by the state Department of Ecology.

The approximate location and extent of critical aquifer recharge area and municipal wellhead protection areas are shown on the Aquifer Protection Overlay. This overlay is to identify and classify vulnerable aquifer recharge areas within the City's jurisdiction. Protection of the aquifer within the critical aquifer recharge area is to be accomplished by controlling the use and handling of hazardous substances. Restrictions on development may be placed in order to protect public health and safety by preserving the existing and future groundwater supply for the City and urban growth area pursuant to the performance standards of 17.26.040 (H).

Subsurface characteristics in the Chehalis area contain aquifers that are typically small, shallow and unconfined. As a result of these isolated aquifers, the majority of the city's domestic water supply comes from surface water sources, primarily the North Fork of the Newaukum River. The source capacity for the North Fork is 1,944 gallons per minute (gpm). The city also may draw up to 3,500 gpm from the Chehalis River, based upon current pump and transmission line capacity. The city's permitted withdrawal capacity from the Chehalis River is 6,730 gpm. Due to periodic levels of high turbidity, the city constructed a filtration plant in 1960 to correct the problem. Domestic water quality for the city complies with the state's Safe Drinking Water Act.

A map of the Critical Aquifer Recharge Areas is available on our website: www.ci.chehalis.wa.us

WELLHEAD PROTECTION AREAS

The City of Chehalis has no identified aquifer protection areas within the city limits, but there are several wells in the Chehalis Urban Growth Area (UGA). Development in several areas of the UGA could contaminate the aquifers south of the city if not properly protected. This element purports to regulate the development in wellhead protection areas, in order to ensure long-term protection of the water supply resources that exist under the city's jurisdiction; and to comply with the Washington State Growth Management Act.

As part of a routine public water supply application in 1993, a well on north Hamilton Road near LaBree Road was tested for volatile organic compounds. The sampling showed elevated levels of contaminants that may present a risk of cancer in human populations. Contaminants within the aquifer have been found as far as Rice Road. As a result, wells in the area may no longer be used for drinking water, and most local residents are using bottled water. The contamination is generally regarded as untreatable. Possible corrective measures have been considered, including the exploration of financing mechanisms that would permit the extension of public water service to the area. The DOE has set up 13 monitoring wells around the Centralia landfill (a superfund site) located about 1,000 feet east of the Chehalis River at the Lewis County/Centralia Transfer Station (immediately west of the Southwest Washington Fairgrounds). Groundwater is sampled at the landfill quarterly. Two monitoring wells completed in a shallow portion of the aquifer, west and south of the landfill, showed elevated concentrations of ammonia, chloride, total dissolved solids, iron, manganese and total organic carbon (DOE, 1993). The chloride concentration has steadily

increased since December 1990, and it appears that a potential exists for contaminants from the landfill to affect water quality in Salzer Creek and the Chehalis River. Elevated levels of nitrates have also shown up on samples taken for septic tank applications. Lewis County is currently tabulating and mapping the sites showing nitrate concentration to determine the extent of the contamination (Lewis County, 1994). Although the landfill and the monitoring wells are located outside of the study area, the potential for these contaminants to migrate to groundwater within the study area should be evaluated.

A map of Wellhead Protection areas in the Chehalis area is available on our website:
www.ci.chehalis.wa.us

SURFACE WATER RESOURCES AND WATER QUALITY

SURFACE WATER

Surface water conditions have historically been a key element in the city's development. Aside from issues related to water supply and quality, flooding has been a frequent and sometimes urgent concern. This element will provide an understanding of the Upper Chehalis Watershed Resource Inventory Area 23 (WRIA 23) which includes the City of Chehalis and its urban Growth area (UGA). This includes a discussion of surface water resources and water quality, while an examination of flooding issues will follow.

For the cooperative management of WRIA 23 the City of Chehalis entered into an intergovernmental agreement entitled the formation of the Chehalis River Basin Watershed Management Partnership & Designation of Lead Agency on August 31, 1998. Lewis County became the lead agency.

The framework for water resource management in Water Resource Inventory Areas (WRIA) 22 and 23 was articulated in Phase Four of the Chehalis Basin Watershed Plan that was adopted in May 2004. Implementation work began in October 2005 and the Chehalis Basin Partnership Watershed Management Plan 2007-2008 Detailed Implementation Plan was approved in June 2007. The implementation plan included: developing a water data management system, increasing compliance efforts toward illegal water users, and adding incentives for water conservation and reclamation.

The Chehalis River Basin is the second largest in the state, covering an area of 2,114 square miles. Centralia and Chehalis lie in the center of the upper portion of the basin. The larger tributary to the Chehalis River within the study area is the Newaukum River. Other smaller tributaries include Dillenbaugh Creek, Coal Creek and Salzer Creek. Although the majority of these tributaries lie outside the Chehalis city limits, a small section of Salzer Creek flows through the northern city boundary. In addition, Coal Creek enters the city at Coal Creek Road and runs northerly until it meets Salzer Creek. A portion of Dillenbaugh Creek and the Newaukum River are inside the city limits parallel to I-5 and just south of Stan Hedwall Park, respectively. Finally, a section of the Chehalis River forms part of the western boundary of the city. The Chehalis River itself runs approximately 123 miles. The Chehalis River Basin is not glacially fed, and is not reliant on snow pack.

Water quality problems have been identified in the Chehalis River Basin for at least 30 years. A 1992 study conducted by the Department of Ecology (DOE) shows problems with low dissolved oxygen during low flow periods, and elevated bacteria counts and turbidity during high flows. As a result of this study, DOE has imposed significantly more restrictive requirements on Chehalis in areas that discharge to the most critical reach of the river. The city is in the process of planning to address needed wastewater treatment improvements.

The Newaukum River watershed flows northwesterly along the Newaukum Prairie until its confluence with the Chehalis River near the Chehalis Western Railroad. The Newaukum drainage area is comprised of 438 square miles, flowing through mostly agricultural and forested land. The area is found outside the study area except for a small meandering stretch south of Stan Hedwall Park. The Newaukum River also comprises the southernmost boundary of the study area. According to DOE, no water quality data is currently available for this watershed. Chehalis draws water primarily from the North Fork of the Newaukum for domestic uses. The city also has a secondary water supply source on the Chehalis River, at the confluence of the Newaukum. The city provides water treatment that meets state and federal drinking water requirements.

Dillenbaugh Creek runs for 8.4 miles, with a drainage area of 17.6 square miles. The creek is a small tributary of the Chehalis River running northwesterly, roughly parallel to I-5. Land uses along the Dillenbaugh are primarily rural and agricultural, with some industrial development.

Berwick Creek is Dillenbaugh's major tributary, with a stream length of 7.6 miles. It drains through rural and residential areas. Its confluence is east of I-5 near Maurin Road. Berwick Creek represents about a third of the total Dillenbaugh Creek drainage. Another, smaller tributary of the Dillenbaugh is referred to as the 'Dilly Twig.' The stream flows through the northwest end of the industrial park adjacent to Bishop Road. The stream's length and origin is unknown.

In November 1986, heavy flooding caused wood-preserving chemicals to leak from underground storage tanks and open sumps at the American Crossarm and Conduit (ACC) facility located along the Dillenbaugh Creek. The facility covered approximately 14 acres and consisted of a treatment building, surface impoundment, kilns, mill and landfill. From the 1930s until 1983, the ACC facility was used to treat wood crossarms and conduits with creosote and/or pentachlorophenol. The facility shut down in 1983 due to noncompliance with waste handling requirements. The extent of contamination has been documented and the facility is formally classified as an active superfund site managed by the EPA.

In 1987 the DOE southwest regional office surveyed specific portions of the Dillenbaugh Creek drainage during both high and low flow conditions. Water quality was found to be impacted by illegal discharges, failing septic systems and poor animal management practices. The Lewis County Conservation District is conducting a water quality-monitoring plan to assess water quality of the Dillenbaugh Creek watershed, determine specific remediation approaches, and establish best management practices. The study, funded by a Centennial Clean Water Grant awarded by DOE, resulted in the publication of a management plan in 1995. The plan has resulted in the implementation of specific actions to improve water quality. Monitoring is ongoing.

Coal Creek is a small tributary of Salzer Creek, flowing west and northwest for approximately 20.5 miles. Coal Creek enters into the study boundary where it crosses Coal Creek Road, east of Taylor Avenue. An eight-acre superfund site is located along Coal Creek one mile northeast of Chehalis. In the early 1900s the site was primarily owned by public utilities. It is currently owned by the Lewis County Public Utility District. The utility companies used the site for manufacturing, repairing and recycling, and permitted their lessors to scrap electrical equipment, including transformers containing PCBs. Dioxins, heavy metals and a building containing asbestos were also found to be present. Cleanup efforts for the site began in 1993, and were completed in 1994. Ground water monitoring will continue through 1998. Deed and other restrictions will prohibit development of the site for at least fifty years.

Salzer Creek runs northwest along the Salzer Valley, turns south and west until it meets the Chehalis River west of I-5. The Salzer Creek watershed consists of approximately 17.3 square miles of mostly agricultural and forested lands. The majority of the creek is located outside the city, although a portion of it is inside the city just south of the Southwest Washington Fairgrounds. In 1986 DOE conducted a survey of Salzer Creek to identify point and non-point pollution sources in the drainage area. Problems were discovered with very low dissolved oxygen and high fecal coliform levels. Inadequate farm animal management practices were identified as the predominant cause of these problems. Leachates from the Centralia landfill (a superfund site) and stormwater runoff from the Southwest Washington Fairgrounds were also identified as a pollution problem by DOE in 1993.

Airport Lake. A portion of Airport Lake is located within the Chehalis city limits. According to the National Wetland Inventory Map, the majority of the lake is classified as palustrine emergent and palustrine unconsolidated bottom. The Airport Lake basin is used as a receptor for storm water runoff during high flow periods. If water elevations in the lake are high enough, floodwater is pumped from the lake into the Chehalis River to the north.

STORMWATER MANAGEMENT

The City should protect, preserve and restore, where feasible, these areas in order to have them function in the most beneficial manner possible in an urban environment. In order to most efficiently manage these resources, they should be viewed as a whole and not as separate dislocated areas. Chehalis has adopted the State's Department of Ecology's Stormwater manual for Western Washington. All new development, new construction, additions to existing buildings, substantial alteration or substantial repair to existing buildings, and any earth-disturbing activity shall require on-site storm water management facilities consistent with the development engineering standards, and an approved method of conveyance to any public storm water conveyance system, including wetlands. [Ord. 819B § 13, 2007; Ord. 720B § 1, 2002.]

In 1972 Congress, enacted the first comprehensive national clean water legislation. The Clean Water Act is the primary federal law that protects our nation's waters, including lakes, rivers, aquifers and coastal areas.

The Clean Water Act's primary objective is to restore and maintain the integrity of the nation's waters. This objective translates into two fundamental goals:

- (1) To eliminate the discharge of pollutants into the water's of the nation
- (2) To ensure water quality levels that are fishable and clean enough for swimming.

The Clean Water Act provides an all-inclusive framework of standards, technical tools and financial assistance to address the many causes of pollution and poor water quality, including municipal and industrial wastewater discharges, polluted runoff from urban and rural areas, and habitat destruction. The Clean Water Act:

- Requires major industries to meet performance standards to ensure pollution control.
- Charges states, cities and tribes with setting specific water quality criteria appropriate for their waters and developing pollution control programs to meet them.
- Provides funding to states and communities to help them meet their clean water needs and protect valuable wetlands and other aquatic habitats through a permitting process that ensures development and other activities are conducted in an environmentally safe manner. (From Clean Water Act Summary, EPA)

The City is required by the Clean Water Act as a Phase II City to meet the National Pollutant Discharge Elimination System (NPDES) stormwater standards. The standards require an Environmental stormwater program that includes public education, outreach and participation, illicit discharge detection and elimination, construction site stormwater runoff control, post-construction stormwater management, and pollution prevention for municipal operations. The overall objective is to manage surface water in a manner that will protect or improve the quality of water, which sustains human activities, wildlife, and aquatic life.

WETLANDS

The intent of this element is to protect wetlands and their buffers. Wetlands shall be identified in accordance with the requirements of RCW 36.70A.175 and 90.58.380. Unless otherwise provided for in this chapter, all areas within the City meeting the criteria in the Washington State Wetland Identification and Delineation Manual, (Ecology Publication 96-94) regardless of any formal identification are hereby designated critical areas and are subject to the provisions of this element.



The approximate location and extent of known or suspected wetlands are shown on the City's critical area maps. Other, unmapped wetlands may exist within the City. These maps are to be used as a guide and do not provide a definitive critical area designation.

Wetlands shall be rated based on categories that reflect the functions and values of each wetland. Wetland categories shall be based on the criteria provided in the Washington State Wetland Rating System for Western Washington, revised August 2004 (Ecology Publication #04-06-025). These categories are generally defined as follows:

1. Category I Wetlands. Category I wetlands are those wetlands of exceptional value in terms of protecting water quality, storing flood and storm water, and/or providing habitat for wildlife as indicated by a rating system score of 70 points or

more. These are wetland communities of infrequent occurrence that often provide documented habitat for critical, threatened or endangered species, and/or have other attributes that are very difficult or impossible to replace if altered.

2. Category II Wetlands. Category II wetlands have significant value based on their function as indicated by a rating system score of between 51 and 69 points. They do not meet the criteria for Category I rating but occur infrequently and have qualities that are difficult to replace if altered.
3. Category III Wetlands. Category III wetlands have important resource value as indicated by a rating system score of between 30 and 50 points.
4. Category IV Wetlands. Category IV wetlands are wetlands of limited resource value as indicated by a rating system score of less than 30 points. They typically have vegetation of similar age and class, lack special habitat features, and/or are isolated or disconnected from other aquatic systems or high quality upland habitats.

The approximate location of known wetlands has been inventoried and mapped by the US Department of the Interior. Because Chehalis is located in a wide, flat valley with minimal slope variation, the community is surrounded by several small to mid-size wetlands. Wetlands support regular large concentrations of wintering migratory waterfowl and fish.

The majority of these wetlands are located along the shorelines of the Chehalis River and Dillenbaugh Creek to the west, the Newaukum River to the west and south, and along the I-5 and Burlington Railroad corridors running north and south through Chehalis. Classification of most area wetlands are palustrine emergent, palustrine forested and palustrine scrub shrub. Almost all the mapped wetlands are either seasonally or temporarily flooded. In a few locations along the Chehalis and Newaukum Rivers and Dillenbaugh Creek there are isolated riverine upper perennial and palustrine emergent wetlands that are permanently and semi-permanently flooded wetlands.

A map of the National Wetland Index in the Chehalis area is on our website: www.ci.chehalis.wa.us

FREQUENTLY FLOODED AREAS

These flood losses are caused by climatic conditions and the cumulative effect of natural and manmade obstructions in areas of special flood hazards that increase flood heights and velocities, and may damage uses in other areas. Uses that are inadequately flood-proofed, elevated or otherwise protected from flood damage also contribute to the flood loss. [Ord. 720B § 1, 2002.]

The areas of special flood hazard identified by the Federal Insurance Administration in a scientific and engineering report entitled “The Flood Insurance Study for Chehalis,” dated July 17, 2006, (Appendix Chapter W), with associated flood insurance rate maps (FIRMs), is hereby adopted by reference and declared to be a part of this element. The FIRMs are on file at the Community Development Department, 1321 S. Market Boulevard. Best available information shall also be used to determine the flood hazard zone based on elevation data, topographic information and flood-of-record data. [Ord. 836B § 4, 2008; Ord. 810B § 6, 2006; Ord. 806B § 3, 2006; Ord. 720B § 1, 2002.]

This chapter shall apply to all areas subject to a base flood and/or designated as an area of special flood hazard within the jurisdiction of the city. All development shall hereafter proceed in compliance with the terms of this element and other applicable regulations. [Ord. 720B § 1, 2002.]

It is the purpose of this element to promote the public health, safety and general welfare, and to minimize public and private losses due to flood conditions in specific areas by provisions that are consistent with FEMA and Ecology guidance. The provisions are designed to:

- 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 and generally undertaken at the expense of the general public;
- D. Minimize prolonged business interruptions;
- E. Minimize damage to public facilities and utilities such as water and gas mains, electric, telephone and sewer lines, streets and bridges located in areas of special flood hazard;
- F. Help maintain a stable tax base by providing for the sound use and development of areas of special flood hazard so as to minimize future flood-blight areas;
- G. Ensure that potential buyers are notified that property is in an area of special flood hazard; and
- H. Ensure that those who occupy the areas of special flood hazard assume responsibility for their actions. [Ord. 720B § 1, 2002.]

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

- A. Restricting or prohibiting uses which are dangerous to health, safety and property due to water or erosion hazards, or which result in damaging increases in erosion or in flood heights or velocities;
- B. Requiring that uses vulnerable to floods, including facilities that serve such uses, be protected against flood damage at the time of initial construction;
- C. Controlling the alteration of natural floodplains, stream channels and natural protective barriers, which help accommodate or channel floodwaters;
- D. Controlling filling, grading, dredging, and other development which may increase flood damage; and
- E. Preventing or regulating the construction of flood barriers which will unnaturally divert floodwaters or which may increase flood hazards in other areas. [Ord. 720B § 1, 2002.]

FISH AND WILDLIFE HABITAT AREAS



The intent of this element is to provide a means of conserving Fish and wildlife habitat through land management 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. [WAC 365-190-080 (5)]

The designation of fish and wildlife habitat conservation areas are based on the following criteria:

- A. Fish and wildlife habitat conservation areas are those areas identified as being of critical importance to the maintenance of certain fish, wildlife, and/or plant species. These areas are typically identified either by known point locations of specific species (such as a nest or den) or by habitat areas or both. All areas within the City meeting these criteria are designated critical areas and are subject to the provisions of this chapter.
- B. For purposes of this element, fish and wildlife habitat conservation areas shall include all of the following:
 - 1. The Washington State Department of Fish and Wildlife Priority Habitats and Species Recommendations for Species and Habitats, for:
 - a. Endangered species listed at WAC 232-12-014
 - b. Threatened species listed at WAC 232-12-001
 - c. Sensitive species listed at WAC 232-12-011;
 - 2. Bald Eagle habitat pursuant to WAC 232-12-292
 - 3. Endangered or threatened species listed in accordance with the federal Endangered Species Act together with the areas with which they have a primary association.
 - 4. State natural area preserves and natural resource conservation areas including
 - a. Department of Natural Resources (DNR) designated Natural Areas Preserves (NAP) and Natural Resource Conservation Areas (NECA);
 - b. Washington Department of Fish and Wildlife (WDFW) designated Wildlife Recreation Areas (WRA);
 - 5. Waters of the state as defined in RCW 77.55.011, and RCW 90.56.010 including shorelines of the state as defined in RCW 90.58.010;
 - 6. Naturally occurring ponds under twenty acres and their submerged aquatic beds that provide fish or wildlife habitat;
 - 7. Lakes, ponds, streams, and rivers planted with game fish by a governmental or tribal entity.

FISHERIES HABITAT

The Chehalis River basin contains approximately 3,353 miles of stream habitat, providing a complex and diverse ecosystem with spawning and rearing areas that support several economically valuable species of anadromous fish. The US Fish and Wildlife Service (USFWS) has been mandated by the Chehalis River Basin Fishery Resources Study and Restoration Act (Public Law 101-452) to 'undertake a comprehensive study of the fishery resources and habitats for the Chehalis River Basin of Washington State, develop goals, recommend long and short term actions to maximize the restoration and conservation of those fishery resources, and report the findings to Congress.' The primary species considered under the Act include salmon, steelhead, and cutthroat trout. Each of these species is now receiving greater attention from state and federal agencies as potentially endangered or threatened species. Early findings show that declining fish population is due to pulp mill effluents, increased temperatures and/or low dissolved oxygen, dams and diversions, forest practices, agricultural practices, urbanization and industrialization, gravel mining, sedimentation, and commercial fishing (USFWS 1993).

More specific to the study area, Chinook salmon attempt to rest in the Chehalis River between Centralia and Chehalis before gradually moving upstream to spawn in early fall. As a result of a variety of interrelated conditions, the ideal river temperature is routinely exceeded from June to September, and low dissolved oxygen readings were recorded in late summer. The combination of high temperatures and low oxygen form a block to fish migration and prevent juvenile salmon and trout from using otherwise suitable rearing areas in the main stem of the Chehalis.

A map of the shoreline environment in the Chehalis area is shown as Figure NE-7.

A map of stream buffers in the Chehalis area is shown as Figure NE-8.

WILDLIFE HABITAT AREAS

The presence of wooded areas and open water suggest suitable habitat a variety of species that require such habitat. Because the majority of locally occurring wetlands are associated with flood-prone areas within riparian areas, these wetlands may also serve as open space corridors useful to wildlife for forage or migration.

Riparian areas in Chehalis are a large part of the natural landscape. Riparian habitats provide most of the food, protection, spawning, breeding, and rearing for a wide variety of wildlife species. Trees and other plants provide shade, which helps keep water temperatures cool while stabilizing banks, and supplying food and shelter. Shoreline trees can fall into streams, creating small dams and pools that offer fish-rearing habitat. Tall grasses and branches can provide protected breeding and rearing grounds for migratory and resident waterfowl.

The Priority Habitats and Species program, provided by the Washington State Department of Wildlife (DFW), has mapped specific sites within the study area where some priority species are currently nesting. Priority habitats are known to occur along the Chehalis and Newaukum Rivers and Dillenbaugh Creek.

CONSERVANCY – NATURAL RESOURCES

Generally, conservancy lands may protect, preserve, and conserve lands that have environmental features of critical area significance (floodplains and landslide hazard), ecological importance (shorelines, wetlands and watersheds), forestland (old growth, woodland cover, and prime productive), farmland (heritage and prime productive), wildlife habitat (threatened and endangered species), and open space to Chehalis.

To the extent possible and practical, resource conservancy lands may link preserved open spaces (even though these lands may not be publicly accessible) to greenways and open space networks. These linked areas will visually define and separate developing urban areas from each other in accordance with the objectives of the Washington State Growth Management Act (GMA).

To the extent practical, some resource conservancy lands may provide nature and interpretive trails, exhibits, and interpretive facilities to increase public awareness and appreciation for significant and visually interesting environmental, wildlife, forest, and farm features. Some supporting services may also be developed including limited trailheads, parking lots, and restrooms.

Resource conservancy activities may be located on independent properties or include portions of other sites provided for resource activities, trail corridors, or other public facilities. Conservancies

may also be developed on other publicly owned lands subject to public use agreements or easements; or on lands acquired for other public purposes including storm water management, groundwater recharge, and wastewater treatment.

Vision

Resource conservancies may be realized through:

- acquisition of development rights and/or title of resource lands - that would otherwise be developed for other rural or urban land uses; and
- provision for public access and interpretive use - that would not be possible if the lands remained in private ownership without such provisions.

GEOHAZARD AREAS

The following areas are designated as “geologically hazardous areas”:

A. Landslide Hazard Areas - Landslide hazard areas include areas susceptible to landslides because of any combination of bedrock, soil, slope (gradient), slope aspect, structure, hydrology, or other physical factors. Landslide hazard areas shall include areas susceptible to landslides because of any combination of bedrock, soil, slope (gradient), slope aspect, structure, hydrology, or other physical factors. Potential



landslide hazard areas exhibit one or more of the following characteristics:

1. Sensitive Sloped Areas: Slopes exceeding 30 percent with a vertical relief of ten (10) or more feet except areas composed of competent rock and properly engineered slopes designed and approved by a geotechnical engineer licensed in the State of Washington and experienced with the site;
2. Areas designated by the Soil Conservation Service as having “severe” limitation for building site development;
3. Areas that have shown evidence of historic failure or instability, including but not limited to back-rotated benches on slopes; areas with structures that exhibit structural damage such as settling and racking of building foundations; and areas that have toppling, leaning, or bowed trees caused by ground surface movement;
4. Slopes greater than fifteen percent that have a relatively permeable geologic unit overlying a relatively impermeable unit and having springs or groundwater seepage;
5. Areas potentially unstable as a result of rapid stream incision, stream bank erosion, and undercutting by wave action include slopes exceeding 10 feet in height adjacent to streams, and lakes with more than a 30 percent gradient;; and
6. Areas located in a canyon or active alluvial fan, presently or potentially subject to inundation by debris flows or catastrophic flooding.
7. Areas that are at risk of mass wasting due to seismic forces.

B. Erosion Hazard Areas - Erosion hazard areas are those areas of Chehalis containing soils that may experience severe to very severe erosion hazard including those soils groups designated in the Soil Conservation Service “Soil Survey of Lewis County, Washington as “highly erodible land” and “potentially highly erodible land.”

C. Seismic Hazard Areas: Areas subject to severe risk of damage as a result of earthquake-induced ground shaking, slope failure, soil liquefaction or surface faulting including:

1. Areas subject to surface faulting during a seismic event;
2. Areas with underlying deposits indicative of a risk of liquefaction during a seismic event;
3. Areas subject to slope failure during a seismic event;
4. Areas that are at risk of mass wasting due to seismic forces.

Seismic hazards shall be as identified in Washington State Department of Natural Resources seismic hazard maps for Western Washington and other geologic resources. The US Geological Survey established seismic risk zones to rate the expected level of ground shaking if an earthquake were to occur. The zones range from 1 (least amount of shaking) through 4 (most amount of shaking). The seismic zone for all of Washington is 3 (DNR 1994).

The purpose of this element is to protect the health and safety of citizens in a geohazard environment. Geohazards pose a threat to the health and safety of citizens when incompatible commercial, residential, or industrial development is sited in areas of significant hazard. 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 pursuant to WAC. A discussion of the geology, topography and soils is important in identifying the geohazards that may be associated with the City of Chehalis natural environment.

GEOLOGY

The geology underlying the study area consists of:

- Non-glacial alluvium and alpine glacial deposits that were deposited in the Chehalis River valley within the last 200,000 years;
- Late Eocene and Oligocene sandstones and siltstones, deposited some 24 to 50 million years ago, that make up the steeper slopes east of the city; and
- Miocene siltstone (5 to 24 million years old) and ancient landslide deposits that underlie the gentler topography southeast of the city. The sands, gravels and silts of the Chehalis valley were deposited by the Chehalis River, and also by melting alpine glaciers that occupied the Cowlitz River valley. These deposits cover the valley floor, up to the approximate elevation of Market Boulevard.

The sandstones and siltstones east of the city consist of two formations:

- the Skookumchuck formation, which is primarily sandstone with some coal deposits. This formation occurs only to the north of the mint factory; and
- the Lincoln Creek formation, which constitutes the rest of these slopes, is primarily sandstone.

East of 20th Street, the Wilkes formation combines with some ancient landslide deposits to make up the slopes above the valley floor. This formation is a weak, semi-consolidated siltstone formed from sediments from a large lake that occupied the area during the Miocene Epoch.

There are also two inactive faults in the study area, each trending east and west. The Salzer Creek Fault runs beneath the north end of the city, while the Chehalis Fault lies just south of Main Street. Aside from the 1983 eruption of Mount St. Helens, the most recent seismic event impacting the area occurred in 1949, when an earthquake occurred 30 miles deep near the Nisqually Delta. The US Army Corps of Engineers determined that the greatest damage from this event was found in the Chehalis/Centralia area. There is evidence that areas near the Chehalis River and I-5 experienced liquefaction. Several buildings in Chehalis underwent subsidence several days following the earthquake.

TOPOGRAPHY

The Chehalis valley is characterized by a broad, well-developed flood plain and low terraces surrounded by upland valleys of low to moderate relief. These terraces typically feature broad, rounded ridges. The Chehalis, Coal and Salzer river valley floors are flat, and range from 180-220 feet in elevation above sea level. The slopes in these valleys begin abruptly and rise to a plateau of approximately 500 feet in elevation. Topography in the study area is most abrupt adjacent to the northeast boundary and directly east of downtown, rising at a grade in excess of 40 percent.

SOILS

In the downtown Chehalis area soils are generally in the Salkum-Prather-Lacamas series, and have been largely disturbed. Typically, bottomlands contain deep layers of Lacamas silt loam soils that generally drain very poorly. Permeability and runoff of this soil is very slow, while the available water capacity is moderately high. This soil type is generally regarded as well-suited for urban development. The main limitation in disturbing the soil for any purpose is muddiness caused by seasonal soil wetness.

Soils to the east of the city are primarily of the Melbourne-Buckpeak-Centralia series. The Melbourne soil type is a very deep, well-drained soil found on benches, hillsides, and broad ridgetops. Permeability of this soil is slow, while runoff is high with a moderate hazard for erosion. Uses currently include timber production, wildlife habitat, watershed management, and some limited residential home site development. The main limitation for the disturbance of this soil type is muddiness caused by seasonal soil wetness.

Soils found west of the city are in the Reed-Chehalis series. Reed soils are very deep, poorly drained soils found on floodplains. In many areas, drainage has been altered by tilling. Permeability and runoff of this soil is slow, while available water capacity is high. This soil is subject to frequent, brief flooding periods in winter and early spring. Most areas of this soil are used for hay production and pasture lands. A few areas can be used for field crops, wildlife habitat and home sites, but the main limitation is the hazard of flooding.

To the south of the city in the Newaukum Prairie, a mixture of soil types can be found. These very deep soils are generally poor to moderately well-drained, located on broad plains and terraces. Permeability and runoff is slow, while available water capacity is high. In some areas, erosion hazard is slight. Water can be perched above the clay subsoil in winter and early spring. These soil types can support wildlife habitat, managed watersheds, hay, pastures, croplands, and some areas can be used for home sites and urban development.

NATURAL RESOURCES

FOREST RESOURCES

Neither the DNR nor the US Forest Service has forestland holdings inside Chehalis or within the UGA. There is no forestland of long-term commercial value within the city or the UGA.

Mineral Resources

Coal mining was an integral part of the area's industrial and economic history, particularly throughout the Skookumchuck geologic foundation. At least 58 mines have been known to operate in Lewis County since 1870. Two mines were located within the study area (section 29, 14-2W), but each was abandoned by 1952. Also in that area, a clay mine and brickyard operated during the 1950s mining weathered siltstone from the Skookumchuck formation for processing into brick and drain tiles. There are currently no active areas of mineral extraction within the study area. However, the Centralia Mining Company, located two miles northeast on Big Hanaford Road, has been active since 1971. The surface mine, or strip-mine, produces approximately five million tons of coal a year. The majority of this coal is used by PP&L.

There are known abandoned 'borrow pits' located in Chehalis. These pits were created for road construction in the 1950s. Reclamation has not occurred on these sites, and the pits have since turned into established wetlands.

AGRICULTURAL LAND

Several acres along the I-5 corridor, and within the city limits, are used for agricultural purposes. A significant portion of the acreage within the UGA is also used for agriculture; including pasture, grass harvest, and Christmas tree production.

Current land use trends suggest that conversion from agricultural to residential or industrial uses within the city and the UGA will continue. Because the vast majority of these agricultural lands fall within the floodway, and several inventoried wetlands have been documented, more intensive development may be severely restricted.

There is no agricultural land of long-term commercial significance within the city or the UGA.

GOALS AND POLICIES

GMA Goals

Purpose

The purpose of this sub-element is to clarify the relationship between the natural environment and the built environment and to secure a balanced approach to future development. Sensitive areas such wetlands, open spaces, and fish and wildlife habitat contain much of the natural wealth valued by County residents. Other sensitive areas, such as land prone to flooding and geologically hazardous areas are important because of the risk to lives and property posed by

developing in them.

GMA Requirements

The GMA contains the following goals that directly relate to the Natural Environment.

(3) Reduce Sprawl – Reduce the inappropriate conversion of undeveloped land into sprawling, low density development.

(8) Natural Resource Industries – Maintain and enhance natural resource based industries, including productive timber, agricultural, and mining industries. Encourage the conservation of productive forestlands and productive agricultural lands, and discourage incompatible uses.

(9) Open Space and Recreation – Encourage the retention of open space and development of recreational opportunities, conserve fish and wildlife habitat, increase access to natural resource lands, and discourage incompatible land uses.

(10) Environment – Protect the environment and enhance the state's high quality of life, including air and water quality, and availability of water.

Lewis County recognizes five key goals for open space in the current plan that promotes the overall county objectives in GMA. Open space may be derived from dedication and designation, such as parks or public areas; or may result from physical features incompatible with development, such as flood hazard areas and steep slopes; or may result from use patterns such as timber management or agricultural production. The five key open space areas in Lewis County are:

Park and recreation facilities, including national parks, national forests, and wilderness areas, state parks, city and county parks, power company recreational areas, and private parks and recreational areas.

- Resource lands, including designated timber lands and agricultural lands
- Hazard and critical areas, including steep slopes over 40%, flood hazard areas, and wetlands.
- Lands which shape the county urban centers, including steep slopes, river flood hazard areas, and resource lands.
- Lands which provide visual and physical corridors to protect the rural character of the county and provide physical habitat and corridors for wildlife, including steep slopes, designated farm lands, and flood hazard areas in urban and rural settings.

Countywide Planning Policies

Lewis County's planning policies were designed to complement and expand upon the goals set forth in GMA. The City of Chehalis' Comprehensive Plan Natural Environment Element also addresses these main themes and is consistent with the County's planning policies. The following excerpt from the Lewis County Comprehensive Plan (Approved Plan: June 1, 1999 Amended Nov 5, 2007, Aug 10, 2009) is an overview of the GMA purpose, requirements, goals and policies that relate to the Natural Environment element.

Park and Recreation Goals

The county park and recreation plan, adopted in 1995, provides the key guidelines for county park and recreational development. The plan is supplemented by the activities of the county park and recreation department. Key recreational goals of the county are: Maintain and enhance existing parks, including joint ventures and "adopt-a-park" projects with the power utilities, small towns, and service clubs.

- Support state activities, including two new state parks near Packwood and Dodge Road.
- Support improvement of power company recreational proposals along Riffe and Mayfield Lakes as identified in Exhibit "R" to FEMA relicensing proposals that identify recreational opportunities and obligations of the power companies in the dam relicensing process.
- Promote public/private partnerships and opportunities for rural recreational activities.
- Support senior center activities, both existing and in new areas.
- Promote and support public and private efforts for trails, teen centers, activity fields, swimming opportunities, and firearm ranges.
- Acquire public lands for access to lakes and rivers.
- Identify revenue sources.

Open Space Goals

The County recognizes the importance of open space corridors linking regions of the county and providing physical and visual relief to the built environment. In Lewis County the character of rural Lewis County is derived from its association with large acreage of lands in both the eastern and western portions of the county that are either; park, wilderness, or resource lands. Connecting these large blocks of land are corridors which flow to and through the rural and urban areas, defining and separating the developed lands, defining the cities, and providing access and habitat for wildlife. The corridors follow the stream and river valleys and are comprised of steep slopes, agricultural resource land, and flood hazard areas. Unlike park and recreation areas, open space lands may be either public or private ownership and are often not generally available to public access. Privately owned lands in flood hazard areas (over 40,000 acres), and lands currently managed by Tacoma City Light under conservation easements (over 15,000 acres) are part of this later category.

Historic and Cultural Sites

Lewis County is the historic home of both the Cowlitz and Chehalis Indian Tribes and many of their important sites remain in Lewis County.

Prior to statehood, Lewis County was the center of much of the early west coast trading activity both with the British and the French, as well as early U.S. settlers. The county also has sites of historic and cultural importance. The state and federal governments have programs designed to identify and recognize historic and culturally significant sites in Lewis County. The county recognizes and supports that activity, particularly as it affects the rural areas of the county.

Too often, the identification or designation of a historic or culturally significant site is hampered by the fear that the owner of the site will be prejudiced in the use of the property by bringing such sites to public attention. The county should identify development incentives to encourage the identification and protection of listed historic and culturally significant sites.

Natural Environment Goals, Objectives and Policies

NE GOAL Preserve the natural and scenic beauty of Lewis County, and minimize the impact of development on the County's environmental resources.

Objective NE 1 Encourage development in areas with few environmental hazards in order to minimize both the loss of natural resources due to urbanization and the loss of capital investment and life due to natural disasters.

Policy NE 1.1 The 1998 Lewis County Critical Areas Ordinance (Ordinance No. 1150) is included as an appendix to this plan.

Policy NE 1.2 The 1998 Lewis County Shoreline Master Program is included as an appendix to this plan.

Policy NE 1.3 The 1992 Lewis County Solid Waste Management Plan is included as an appendix to this plan.

Policy NE 1.4 New development should be located in areas which have minimal environmental constraints (e.g., soils, steep slopes, bedrock, water table, flood prone areas).

Policy NE 1.5 Residential development should be discouraged and/or mitigated within the 100year flood plain and prohibited in the floodway or that area which includes the center of the channel of a creek, stream or river and that area which carries the majority of water during a flood.

Policy NE 1.6 Increased storm water runoff from new development will not adversely impact other properties.

Policy NE 1.7 Lewis County should be granted drainage easements for all major drainage ways.

Objective

NE 2 Improve the level of air quality in Lewis County.

Policy NE 2.1 Encourage activities that produce air pollutants and odors to comply with adopted air quality standards for the county.

Policy NE 2.2 Encourage the use of alternative cleaner burning fuels.

Policy NE 2.3 Establish educational programs concerning the impacts of wood burning on the air quality of Lewis County and the need to limit use during periods of temperature inversions.

Objective NE 3 Improve and maintain the quality and quantity of water in Lewis County.

Policy NE 3.1 Encourage water management for improved water conservation, storage, and delivery of potable water in Lewis County, as well as for improved flood control.

Policy NE 3.2 Encourage intensive livestock operations to locate in areas with less productive soils and low potential for ground and surface water contamination.

Policy NE 3.3 Developments near surface waters should be encouraged to minimize their impact on water supplies through increased setbacks, buffering and other mitigation techniques.

Policy NE 3.4 Protect the aquifer recharge areas to help ensure a long term, high quality supply of water for Lewis County residents.

Policy NE 3.5 Encourage development in areas with few soil limitations for septic tank filter fields to help prevent the contamination of groundwater supplies

Policy NE 3.6 Promote Best Management Practices for avoiding potential groundwater pollution sources including onsite wastewater treatment by providing for proof of non-impact by real estate developers.

Objective NE 4 Maintain the quality of the county's environmentally sensitive critical

areas.

Policy NE 4.1 Preserve hazardous areas (subject to geologic and flood hazards) as open space wherever possible.

Policy NE 4.2 Encourage the preservation of natural buffers along the county's rivers, lakes and streams.

Policy NE 4.3 Encourage the preservation of wetlands, open lands, and habitat areas for the benefit of the county's indigenous fish and wildlife and quality of life of county residents.

Policy NE 4.4 Promote responsible, multiple uses of the land that minimize impacts to outdoor recreation, fish and wildlife habitats, and watersheds.

Policy NE 4.5 Recreationalists shall be encouraged to safeguard plant and animal habitat. They shall be encouraged to pack out their trash and leave the area as clean as they find it.

OBJECTIVE NE 5 Life and property should be protected from flood hazards, and the flood storage and transmission capacity of rivers and streams should be retained.

Policy NE 5.1 The county should give priority to such land uses as forestry, agriculture, public recreation, or water dependent uses in area subject to flooding to minimize the hazards to life and property. Other developments in the flood plain should be of low priority and constructed to avoid damage from floods, including compensating design features.

NE 5.2 The County should maintain storage and transmission capacity of floodplains by prohibiting filling of wetlands and discouraging filling elsewhere in the floodplain. Where filling is permitted the carrying capacity and storage of the streams shall be protected.

Policy NE 5.3 The county should prohibit encroachment in floodways except for the purpose of stabilizing channels against erosion in order to protect agricultural lands, public roads and bridges, existing public or private structures to achieve habitat enhancement.

OBJECTIVE NE 6 Stormwater management should be maintained as a major long-term utility service responsibility of local government.

Policy 6.1 Land use activities and septic tank effluent should not result in polluted stormwater runoff that results in degraded surface or ground water.

Policy 6.2 Existing and new development should minimize increases in total runoff quantity, maximizes onsite infiltration, should not increase peak stormwater runoff, and should avoid altering natural drainage systems to prevent flooding and water quality degradation.

City Goals and Policies

The goals and policies stated herein are the result of significant public discussion. They reflect the desire of the citizens of Chehalis to maintain a high quality natural environment, and to make future policy decisions in a manner that is consistent with local, county and state goals.

Environmental Stewardship

NE.01.00 To encourage maintenance of the natural qualities of the city by providing for development in a manner that recognizes environmentally sensitive areas, and is aesthetically and environmentally compatible with surrounding land uses.

Policies

NE.01.01 Make and carry out SEPA decisions in a reasonable and fair manner.

NE.01.02 Require an environmental assessment before acting on any request for development within a designated critical or resource area. If adverse impacts cannot be substantially mitigated, the proposed development should not be permitted.

NE.01.03 Encourage the use of Planned Unit Development and other appropriate regulatory approaches in areas containing unique natural features, or in areas determined by generally available information or by site studies to contain areas sensitive to development.

NE.01.04 Ensure the protection of the functions and values of the natural environment under all projected growth scenarios.

NE.01.05 Work with local, state, regional and federal agencies to consider the cumulative impacts of proposed and future land use development on environmental issues.

Goal

NE.02.00 To protect and manage environmentally sensitive areas with regulations and guidelines based on the best available science.

Policy

NE.02.01 Base regulations on the threat to the built environment, best available science, habitat value, and sensitivity of the resource.

Goal

NE.03.00 To promote local action that will ensure clean air and water for Chehalis residents, protect residents and the built environment from the damage and danger of landslide and flooding, and protect natural vegetation and wildlife habitat, while also promoting reasonable urban development.

Policies

NE.03.01 Ensure the compatibility of proposed land uses with existing topography, geology, soil suitability, surface water, ground water, frequently flooded areas, wetlands, climate, vegetation and wildlife.

NE.03.02 Work with regional, state and federal agencies that can provide funding, expertise, and other assistance in the conservation or protection of natural resources.

Goal

NE.04.00 Preserve those natural areas that have unique historical, cultural, or educational features.

Policy

NE.04.01 Utilize SEPA to address archaeological sensitive areas.

Air Quality

Goal

NE.05.00 To work with regional, state and federal agencies in maintaining high standards for air quality.

Policies

NE.05.01 Utilize the most effective and accepted pollution control for potential adverse impacts to air quality through SEPA.

NE.05.02 Minimize creation of emissions or discharges that impair air quality by encouraging transportation demand management and the use of multi-occupancy transportation.

Water and Natural Drainage

Ground Water

Goal

NE.06.00 To protect groundwater quality and quantity in Critical Aquifer Recharge Areas (CARAs) and in Well-head Protection areas.

Policies

NE.06.01 Regulate land uses and activities within the critical aquifer and designated wellhead protection areas to prevent degradation of groundwater quality

NE.06.02 Discourage the construction and use of private wells and on-site sewage disposal systems in the City and urban growth areas where public water and sewer is reasonably available.

NE.06.03 Encourage the use of community or public water in non-sewered areas of the urban growth area where residential density is in excess of one unit per acre.

NE.06.04 Promote the use of integrated pest management and the reduction of pesticide and fertilizer use by residents, businesses, and governmental agencies in the critical aquifer and wellhead protection areas.

Surface Water

Goal

NE.07.00 To promote the preservation and improvement of water quality for human and wildlife use and consumption in lakes, wetlands, rivers and streams.

Policies

NE.07.01 Provide for the protection and management of surface water consistent with the Clean Water Act, based on best available science and cumulative impact assessments of existing and planned land and resource use in the Upper Chehalis watershed (WRIA 23).

NE.07.02 Retain ponds, wetlands, rivers, lakes, and streams with their associated buffers and riparian areas substantially in their natural condition.

NE.07.03 Protect surface waters from impacts that degrade water quality and biological health. These impacts include, but are not limited to, elevation of stream water temperature, low summer flows, stream channel damage, and sedimentation

NE.07.04 Protect and maintain the natural functions of wetlands by maintaining an undisturbed or restored native vegetation buffer around the wetland and by discouraging filling, draining and clearing wetlands and their associated buffers.

NE.07.05 Accommodate essential road and utility crossings where there is not another reasonable alternative.

- NE.07.06 Work with property owners and interested parties to develop an integrated aquatic management plan for Airport Lake.
- NE.07.07 Control shoreline development to prevent or minimize shoreline erosion, prevent pollution discharges into the water, protect shoreline aesthetics and habitat as consistent with the Shoreline Master Program and other local, state and federal regulations and policies.
- NE.07.08 Encourage the use of bioengineered shoreline stabilization as an alternative to bulk-heading or other forms of shoreline armoring to protect existing structures from erosion.

Stormwater Management

Goal

- NE.08.00 Encourage citizens to practice water conservation and to reuse treated wastewater for appropriate uses whenever possible.

Policy

- NE.08.01 Maintain storm drainage facility and design criteria to facilitate water quality protection.
- NE.08.02 Encourage stormwater runoff management by utilizing natural drainage ways, by upgrading the city's storm drainage system, and by requiring Best Management Practices in the design, construction and maintenance of stormwater facilities.
- NE.08.03 Preserve existing vegetation as much as possible to prevent additional storm water runoff or soil erosion from new development, and to protect wildlife habitat.
- NE.08.04 Require re-vegetation in appropriate circumstances.

Wetlands

Goal

- NE.09.00 To protect wetlands and their buffers.

Policies

- NE.09.01 Establish regulations identifying wetlands and their buffers.
- NE.09.02 Work with adjacent jurisdictions and Washington State Department of Transportation to establish a wetland mitigation bank to provide an alternative to individual stream and wetland mitigation projects associated with essential public projects.
- NE.09.03 Encourage enhancement of degraded wetlands over creation of new ones.
- NE.09.04 To promote appropriate uses of wetlands and flood-prone properties
- NE.09.05 Provide regulatory and tax incentives to preserve wetland areas that maintain high biological productivity and diversity.
- NE.09.06 Maintain an appropriate vegetated wetland buffer for developments near stream corridors or wetlands, consistent with the ability to protect the resource. Natural vegetation should be maintained and, when appropriate, enhanced within the buffer. The buffer width should be determined by the city, depending on the degree of sensitivity of the site.
- NE.09.07 Encourage the establishment and maintenance of wildlife corridors and habitat areas in wetlands.

Frequently Flooded Areas

Goal

NE.10.00 To minimize the human and financial costs to the citizens and Chehalis property from flood hazards.

Policies

NE.10.01 Maintain regulations requiring property owners to protect any development in a flood hazard area.

NE.10.02 Continue to participate in National Flood Insurance Program (NFIP).

NE.10.03 Continue to participate in Community Rating System (CRS) Program.

NE.10.04 Require flood proofing for subsidized housing development where appropriate.

NE.10.05 Support the establishment of flood control projects which provide a reasonable cost/benefit ratio

Goal

NE.11.00 To promote appropriate uses of flood-prone properties.

Policies

NE.11.01 Encourage the establishment and maintenance of wildlife corridors and habitat areas in associated flood-prone areas.

NE.11.02 Provide regulatory incentives that reward the concentration of development on upland and non-flood zone portions of development sites.

NE.11.03 Develop parks and recreation facilities in floodplains when practicable and appropriate.

NE.11.04 Protect and conserve, where possible, estuaries, wetlands, and other shoreline environments which have historically provided natural containment areas for flood waters and also provide an associated function such as habitat.

NE.11.05 Permit development in flood-prone areas only when such development is in compliance with local, state and federal regulations.

Goal

NE.12.00 To maintain an awareness of regional issues and new technologies related to flood control management.

NE.12.01 Work with the city of Centralia, Lewis County, and other jurisdictions which are affected by flooding from the Chehalis and Newaukum Rivers, and also with other special purpose public and/or private agencies to explore and develop methods of flood control.

NE.12.02 Develop a database which documents the frequency, duration and uniqueness of local flood events.

NE.12.03 Develop a database which provides an inventory of vacant land within the flood plain.

NE.12.04 Review the effectiveness of flood control efforts in other jurisdictions in Southwestern Washington.

Fish and Wildlife Habitat

Goal

NE.13.00 To protect, conserve, and enhance the ecological functions of important fish and wildlife in riparian areas.

Policies

NE.13.01 Use the Washington State Department of Fish and Wildlife Priority Habitat and Species Program Guidelines and other relevant scientific reports to guide managing, protecting, and acquiring fish, wildlife and plant habitat areas within the City and its Urban growth Area.

- NE.13.02 Manage aquatic and riparian habitats to preserve and enhance their natural function of providing fish and wildlife habitat in concert with Best Available Science through the Critical Areas Ordinance, the Shoreline Master Program and environmental review.
- NE.13.03 Preserve and enhance native vegetation in riparian and wetland habitats.
- NE.13.04 Encourage the use of native plants in residential, commercial, and industrial landscapes.
- NE.13.05 Encourage the eradication of invasive non-native plant species
- NE.13.06 Cooperate with adjoining jurisdictions to develop complementary regulations pertaining to streams, fish, wildlife, plant habitats, and other Critical Areas that span jurisdictional boundaries.
- NE.13.07 Work cooperatively with adjacent jurisdictions, property owners and developers to preserve natural open spaces, especially those that provide linkages to migration corridors and riparian areas.
- NE.13.08 Provide special consideration to conservation and protection measures necessary to preserve or enhance anadromous fisheries.

Geologic hazard areas

Goals

- NE.14.00 To minimize the loss of life and property from landslides and seismic, volcanic, or other naturally occurring events, and minimize or eliminate land use impacts on geologically hazardous areas.

Policies

- NE.14.01 Prohibit development on unstable land and steep slopes hazard areas to ensure public safety. This includes slopes in excess of 40% and those areas delineated by the United States Department of Agriculture Soil Conservation Service as having "severe" limitations for building site development.
- NE.14.02 Designate and provide for the protection and management of geologic hazard areas based on best available science and cumulative impact assessments of existing and planned land and resource uses within and near geologic hazard areas.
- NE.14.03 Critical facilities such as but not limited to emergency response, hospitals, nursing homes and hazardous materials storage may not be allowed in geologically hazardous areas.
- NE.14.04 Cooperate with Lewis County to implement the Hazard Mitigation Plan

Soils

Goals

- NE.15.00 To promote the conservation and protection of soils as a natural resource.
- NE.15.01 Require development approvals or permits prior to the initiation of any significant land clearing, filling or grading activities pursuant to SEPA.
- NE.15.02 Establish regulations to ensure that land surface modifications (clearing, filling and grading) will not induce changes in surface or subsurface drainage that would adversely impact the affected drainage basin.
- NE.15.03 Establish Special Use permits review for all proposed commercial extraction of minerals, gravel and sand, quarrying and other similar resources.

NE.15.04 Promote soil stability and the use of natural drainage systems by retaining native vegetation.