CHAPTER 2: ENVIRONMENTAL ELEMENT

I. REQUIRED ELEMENTS

GMA PLANNING GOALS (RCW 36.70A.020)

While the Washington State Growth Management Act (GMA) does not require an Environmental Element to be part of the Comprehensive Plan, the State planning goals do require protection of the environment and enhancement of the State's high quality of life, including air and water quality. In addition, GMA requires the protection of critical areas, which include wetlands, aquifer recharge areas, fish and wildlife habitat areas, frequently flooded areas, and geologically hazardous areas. Centralia is required to plan under the GMA, it is required to use Best Available Science (BAS) in developing policies and regulations and to implement critical area regulations for this element. The framework of this environmental element is guided by the principles of GMA.

Each of the fourteen GMA planning goals was considered in the development of the City's Comprehensive Plan and this element of the Plan. Of those, the following goals were found to have the greatest and/or most direct influence on environmental matters and on the Environmental Element:

GMA Goal 2. **Reduce Sprawl:** Reduce the inappropriate conversion of undeveloped land into sprawling, low-density development.

GMA Goal 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 water, and develop parks.

GMA Goal 10. **Environment:** Protect the environment and enhance the State's high quality of life, including air and water quality, and the availability of water.

COUNTYWIDE PLANNING POLICIES

In 1991, the GMA was amended requiring each county legislative body planning under the act to adopt countywide planning policies, in cooperation with the cities in the county. This common framework provides for consistency amongst the comprehensive plans. The policies address issues that uniformly affect the county as a whole including the siting of public facilities of a countywide or statewide nature, transportation facilities, affordable housing, economic development and employment, and the environment. The requirements of the countywide planning policies were considered along with many other factors to determine the best course of action for the City of Centralia. The Lewis Countywide Planning Policies is included in Appendix C.

The Lewis County Planned Growth Committee adopted the updated planning policies in December 2006 relating to land use in the following categories: urban growth; reducing sprawl; economic development; property rights; permits; open space and recreation; public facilities and services; environment, and historic preservation.

The City of Centralia's Comprehensive Plan Environmental Element also addresses these main themes and is consistent with the County's planning policies.

BEST AVAILABLE SCIENCE

The Growth Management Act, RCW 36.70A.172, requires cities to consider Best Available Science (BAS) in developing policies and development regulations to protect the functions and values of critical areas. The BAS requirement will help ensure that reliable scientific information is considered when cities adopt policies and regulations related to the protection of critical areas. Science can play a central role in:

- Delineating the functions of critical areas and determining their value,
- Recommending strategies to protect their functions and values, and
- Identifying the risks associated with alternative approaches to their protection.

To be considered "best available science", valid scientific processes must be consistent with criteria set out in WAC 365-195-900 through WAC 365-195-925. Characteristics of a valid

scientific process (BAS) include: peer review, documented methodology that is clearly stated and able to be replicated, logical conclusions and reasonable inferences, quantitative analysis, information that is placed in proper context and information supported with references.

II. RELATIONSHIP TO OTHER PLANS

The environmental element provides a policy framework for the protection and improvement of Centralia's natural environment. It is the intent of this element to set goals and policies that guide land use and development practices that are compatible with the environment throughout the City and its Urban Growth Area.

The major natural features in Centralia are the two rivers running through the City, the Chehalis and the Skookumchuck rivers. These rivers impart both character and risk to the community and are the primary features addressed in this section. In addition to addressing the issues surrounding these rivers, this element also addresses open space, water resources, earth resources, geologic hazards, critical areas, fish and wildlife habitat.

Centralia works to maintain a balance between environmental regulations, recreation, public safety, and economic development. This balance is reflected in the following plans and regulations:

- **Lewis County Comprehensive Plan.** The Lewis County Comprehensive Plan was adopted in April, 2002.
- **Port of Centralia Comprehensive Plan.** The current Port Comprehensive Plan was adopted in November 1990 and revised in November 1994, September 1996, March 2003, and in September 2006.
- **City of Centralia Water Plan.** The Water Plan was adopted in December 2005
- **Surface/Storm Water Management Plan.** The Storm Water Management Plan should be adopted in winter of 2007 or spring of 2008.
- **General Sewer Plan and Wastewater Treatment Plant Facilities Plan.** The Plan was approved and adopted in the Spring of 2000.
- **City Light and the Yelm Project Comprehensive Plan.** The City Light Plan was approved in December 2002.
- **Airport Master Plan/Chehalis-Centralia.** The Airport Master Plan was approved Fall 2001.
- **Parks and Recreation Plan.** The Parks and Recreation Plan (Element)
- **Transportation Plan.** The Transportation Plan (Element)
- **Centralia School District Capital Facilities Plan.** The Capital Facilities Plan for the Centralia School District should be approved in the summer/fall of 2007.
- **Solid Waste Management Plan.** The Plan was approved by the County Commissioners in April 2000.

III. INTRODUCTION

The high quality of life in Centralia is affected by the health of its natural environment. Similarly, Centralia's built environment directly and indirectly affects the natural environment. Therefore, land use plans and major land use decisions should be made with the fullest possible understanding of the natural environment.

Although the built environment inevitably affects the natural environment, the City can implement policies that allow for development while minimizing the level of direct impacts to the natural environment that are commonly associated with development activities.

The Environmental Element provides a policy framework for the protection and improvement of Centralia's natural environment. Policies and regulations guide land development, with particular attention given to development in critical areas such as wetlands, aquifer recharge areas, fish and wildlife conservation areas, geologically hazardous areas, and floodplains. The intention of these environmental policies is to achieve land use and development practices that are compatible with the features and functions of the natural environment. The result should be development practices that protect rather than destroy significant natural features and processes of the land in Centralia.

The Environmental Element is interconnected with the various aspects of other Comprehensive Plan elements. No one goal, objective, or policy is pursued to the exclusion of others. Centralia strives to balance the goal of protecting the natural environment with the public needs including: urban growth, housing, economic development and recreation opportunities. These goals can achieve protection of the environment through a variety of means; including regulation of property, incentives, and public programs.

The goal of this element is to minimize loss of habitat functions and to maintain, protect, and enhance the functions of fish and wildlife habitat, water quantity and quality, wetlands, and other water bodies; and to integrate the natural environment with the built environment.

Existing Conditions

The City of Centralia and its Urban Growth Area have a rich diversity of terrain and natural features. The City is surrounded by Ham Hill, Seminary Hill, Cooks Hill, Davis Hill, and Widgeon Hill. The hills surround the City while the Chehalis River and the Skookumchuck River: are dominant features in the lowlands. The diverse landscape contains features such as steep slopes and floodplains that make development challenging and contain habitats that contribute to the biological diversity for which Western Washington is famous.

The Chehalis River and its tributary streams eventually flow to the Pacific Ocean. The streams and rivers support anadromous and resident fish. The riparian corridors support a variety of other birds and wildlife.

The northern portions of the City contain high quality glacial deposits and alluvial river gravels. It is here that the City's aquifers and gravel mines are located. Historic coal mines are located in the Urban Growth Area and northeast of the City's jurisdiction.

Many of our wetlands are associated with the stream corridors or are remnants of the glacial past. They drain poorly because of clay or cemented till left from the Ice Ages. Their organic soils don't support roads or buildings well, but they are fertile wildlife habitats. Wetlands have many environmental benefits including water purification, flood protection, groundwater recharge, and streamflow maintenance.

The following goals and policies at the end of this element are intended to establish land use and development practices that are compatible with preservation, restoration and improvement of the natural environment.

Environmental Stewardship

One of the most demanding roles of a city is that of a steward of the City's environment. The authority to regulate land use and the responsibility to implement federal and state statutes is unique and places a great accountability on the City. Therefore, the City must attempt, at all times, to ensure that its environment is managed wisely. Through a system of regulations and incentives, the City encourages the preservation, restoration, and enhancement of the natural environment. This strategy is the foundation of the City's approach to environmental stewardship.

The goal of creating and maintaining a sustainable urban environment can be accomplished not only by reducing or eliminating adverse impacts, but by improving conditions that have become degraded.

The City encourages all residents and businesses to explore ways to contribute to protecting the environment. The concept of "environment" is as diverse as the members of the community, and the opportunities to protect and enhance the environment are equally diverse. Specifically, the City seeks to protect critical areas and ecosystems.

The City of Centralia seeks to be a role-model of environmental responsibility in the community. Specifically, the City promotes the efficient use of natural resources. For example, the City encourages the use of double-sided copies for reports, agendas and minutes which reduces paper. The City also recycles paper and aluminum cans used in their offices.

IV. ENVIRONMENTALLY SENSITIVE CRITICAL AREAS

The quality of the environment that surrounds us is essential to maintaining a quality of life for the residents of Centralia. It is crucial to find new and innovative ways to preserve as

much of the remaining natural environment as possible as development occurs. Creative design, with sensitivity to the environment, will help reduce flooding, pollution and erosion, create habitat for plants and animals, and preserve the natural aesthetic values that often are lost in the urbanscape.

Through land use regulations and building codes, Centralia implements and enforces appropriate legal and regulatory requirements. The City is also a model that can illustrate by example. The City can show through its daily operations how to cost-effectively protect the environment. The City can promote knowledge and awareness of the choices and decisions that impact the environment.

The Washington Code RCW 36.70A.030 (5) identifies five areas and ecosystems which are collectively called "critical areas." The "critical areas" include: (a) Wetlands; (b) areas with a critical recharging effect on aquifers used for potable water; (c) fish and wildlife habitat conservation areas; (d) frequently flooded areas; and (e) geologically hazardous areas. In addition to addressing these five areas, this chapter will address the issue of air quality.

A. Wetlands

In the past, wetlands were viewed as undesirable mosquito-breeding swamps. Filling them in was considered progress. Today, wetlands have been determined to be critical transitional areas between aquatic and upland habitats. They include the presence of water, unique hydric soils and hydrophytic vegetation (plants adapted to growing in very wet conditions). As such, they are vitally important. Natural wetlands help clean and improve the water quality of surface water. They create detention areas for water overflow, keeping the land from flooding. They also provide habitat for many animal and plant species. Wetlands can be identified by reviewing a National Wetlands Inventory map or having a wetland study conducted. The City currently uses National Wetland Inventory Map (see figure #5), and evaluates individual properties for wetland potential as part of the development review process. When a potential wetland area is found, a study is conducted to determine the appropriateness of wetland designation. Wetlands are identified and delineated using the standards of the Washington State Department of Ecology Wetland Delineation Manual. RCW 36.70A.175 & 90.58.380.

"Wetland" or "wetlands" means areas that are inundated or saturated by surface water or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas. Wetlands do not include those artificial wetlands intentionally created from nonwetland sites, including, but not limited to, irrigation and drainage ditches, grass-lined swales, canals, detention facilities, wastewater treatment facilities, farm ponds, and landscape amenities, or those wetlands created after July 1, 1990, that were unintentionally created as a result of the construction of a road, street, or highway. Wetlands may include those artificial wetlands

intentionally created from nonwetland areas created to mitigate conversion of wetlands. RCW 36.70A.30(21).

One of the best opportunities for preserving wetlands is during the process of subdividing land. As wetlands are identified projects can be designed around the wetland through clustering of new development on smaller lots, transferring density to another part of a site, or offering density bonuses for innovative conservation applications. The City will continue to promote various ways to preserve wetlands as well as the economic value and development potential of the land.

B. Areas with a Critical Recharging Effect on Aquifers Used for Potable Water

Surface Waters

Human activity in and near water bodies affects the quality of the water. Sources of water pollution that the City can influence and potentially regulate include storm water from non-point sources, animal waste, rooftops, parking lots, streets, chemicals and sediment from landscaping and lawns, construction and industrial site run-off, and smaller discharges into storm drains, including their use for improper disposal of used oil and chemicals.

Rivers, Creek, and Water Bodies

The Chehalis River Basin is the second largest drainage basin in the state and covers 2,114 square miles. The City of Centralia lies in the middle of the basin. The Chehalis River and its tributaries that affect Centralia are as follows (see figure #3):

- Chehalis River. The River covers over 100 river miles and covers a drainage area of around 123 square miles. River banks in this area are commonly lined with deciduous trees and/or brush.
- Skookumchuck River. The River headwater begins in the foothills of the Cascade Range and meanders southwesterly along Waunch Prairie until its confluence with the Chehalis River between Hayes and Plummer lakes in Centralia. The River covers 38 river miles and covers a drainage area of 180 square miles.
- Salzer Creek. Salzer Creek runs northwest along the Salzer Valley, then turns south and west until it meets the Chehalis River west of Interstate 5. The Salzer Creek drainage basin consists of approximately 17 miles, mostly through agricultural and forested lands. A majority of the Creek is located outside of Centralia.
- Hanaford Creek. This creek is a major tributary of the Skookumchuck River.
- Scammon Creek. Is a short tributary to the Chehalis River and enters the main stem on the south bank at river mile 65. Its flow in the dry season is very low to dry.
- China Creek. This creek is mostly a manmade ditch that flows through the City and discharges to the Chehalis River at river mile 67; it is primarily a conduit of urban stormwater during the wet and dry seasons.

- Coffee Creek. Coffee Creek is a long tributary to the Skookumchuck River that originates in Thurston County and enters the river between Interstate 5 and Pearl Street. A portion of Coffee Creek has been channelized within a drainage control ditch that extends from West Roanoake Avenue to the Skookumchuck River.
- Hayes (17.4 ac), Plummer 20.1 ac) , and Fort Borst (6.8 ac) lakes. These lakes are former borrow pits that were created as a result of the construction of Interstate 5 in the 1950s.
- Reynolds lakes. There are three small lakes (2.66 ac, 5.68 ac, 1.97 ac) just south of Reynolds road which are the result of gravel excavations. Coffee Creek runs north of the largest of these lakes and adjoins the furthest west lake.
- Agnew Mill ponds. There are two small bodies of water which were once holding ponds for nearby logging activities. China Creek runs through these lakes.

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.

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 a

stormwater program which 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.

Groundwater and Aquifer Recharge Areas

Ground water is the water present underground in the tiny spaces in between rocks and soil. Underground areas where ground water accumulates in large amounts are called aquifers. Aquifers can store and supply water to wells and springs. Most ground water moves slowly, usually no more than a few feet a day. Ground water in aquifers will eventually discharge to or be replenished by springs, rivers, wells, precipitation, lakes, wetlands, and the oceans as part of the water cycle.

In Centralia, groundwater is the major source of our public water supply. Subsurface characteristics in the Centralia area consist of one large aquifer, caused by glacial outwash from the north along Waunch and Ford's Prairies (see figure #4). This large glacial outwash aquifer, which is classified as a critical aquifer, supplies all of the City's domestic water use. The City in the process of developing requirements to protect its water supply through limiting the use of septic systems within the City limits.

The City's objective is to provide for the identification and protection of sensitive aquifer recharge areas, protect groundwater quality and conserve groundwater resources. There are essentially four aquifers in the Centralia area; the Skookumchuck, the Chehalis, Waunch Prairie and Ford's Prairie. Though the City does have water rights to the Chehalis, Newaukum and Skookumchuck Rivers, the use of these surface waters is restricted by contamination, turbidity and limited availability.

This plan provides for regulation of businesses storing, transporting, making, or using hazardous substances so that they pose no more than a negligible risk to groundwater resources used as a public water source or in wellhead protection areas. The City recognizes the importance of preserving wetland areas and limiting flooding in preserving the quality of the groundwater supply. The specific policies and regulations which advance these efforts are more fully addressed in the City of Centralia Water Plan (2005) and the Surface/Storm Water Management Plan.

C. Fish and Wildlife Habitat Conservation Areas

This section provides guidelines for preserving habitats on both public and private lands. Linking public and private natural areas can provide food, shelter, and migration corridors for a healthy and sustainable population of salmon, songbirds, and other species compatible with the urban environment. Urban landscapes are valuable supplements to natural areas for a variety of wildlife. The loss of natural wildlife habitat to urban development can be

partially offset by landscaping that includes native plants that provide food and shelter for wildlife.

Wildlife diversity is often an indicator of the environmental health of the area. Protecting wildlife requires the protection of habitat and the creation and protection of wildlife corridors between habitat areas. As in most urban areas the wildlife habitat is not pristine being adjacent to a built environment. With the decrease of certain types of habitats through urbanization extensive wildlife corridors no longer exist creating a loss of biodiversity by generating areas too small for many species, which leads to interbreeding and disappearance of plants and animals.

The Washington State Department of Fish and Wildlife (WDFW) publishes lists of priority habitat species (PHS) and species of concern (SOC). The PHS list includes habitats and species that need special consideration for conservation. Priority Species include all State Endangered, Threatened, Sensitive and Candidate species that are listed in the Washington Administrative Codes. Additionally, the PHS list includes vulnerable species that are susceptible to decline and those species that are of recreational, commercial or tribal importance. Priority Habitat includes habitats that harbor diverse or unique animal species or unique vegetation.

Centralia recognizes the importance of balancing the needs for development and infrastructure with the need to preserve habitat for fish and animals. The City is committed to complying with all state and federally mandated regulations regarding the preservation of habitat including, but not limited to, regulations of the Department of Fish and Wildlife and the Endangered Species Act.

D. Frequently Flooded Areas

Flooding can cause damage to both the natural and built environments. The City's objective is to provide the highest degree of flood protection at the least cost to its citizens. All new developments within the floodplain in the City are required to meet the FEMA guidelines for floodplain development.

The FEMA mapped 100-year flood plain identifies land that has a 1% chance of flooding each year (see figure #2). While it is impractical to completely eliminate development in these areas, the City encourages lower-density developments within the 100-year flood plain. Limited use of impervious surfaces is also favored in these areas. Pervious surfaces can better absorb extra water runoff. The City participates in the National Flood Insurance Program which includes adoption and enforcement of an ordinance which regulates development within the 100-year floodplain.

E. Geologically Hazardous Areas

The City seeks to designate and manage geologic hazardous areas to avoid loss of life and structural damage. This can be achieved by guiding development away from geologic hazard areas and by regulating uses and activities that occur within or near such areas. In particular, the City discourages the development of critical facilities in geologically hazardous areas. Geologic hazardous areas include land that is unstable and is subject to landslides, erosion, floods, and earthquakes.

Topography

The Chehalis Valley is characterized by a broad floodplain and low terraces surrounded by upland valleys of low to moderate relief that have broad, rounded ridges. Waunch and Ford's Prairies and Zenkner and Hanaford Valleys to the north are flat and range from 210 to 230 feet in elevation. East of Centralia is a plateau of approximately 500 feet. To the north and northwest are valleys and prairies that are separated by finger ridges, with slopes that rise from 210-230 feet to elevations of over 500 feet. Lincoln creek starts just west of the old Monarch mine and runs east until it reaches Coffee creek.

Geology

Geologic characteristics of the Chehalis River Valley area are primarily nonglacial alluvium soils consisting of silt, loam, sand and gravel deposits. To the east and northeast of Centralia are the Cascade foothills, which are made up of marine sedimentary rock consisting primarily of sand and silt stone. The primary geologic formation in this area is the Skookumchuck formation, which developed during the late Eocene and Oligocene Epochs, or 27 million to 40 million years ago.

To the west of the City are small, discontinuous areas of the formation. Adjacent to these areas is a large segment of near-shore sedimentary rock consisting of sandstone, siltstone, shale, claystone and coal interbedded with lava flows.

Soils

The primary soils in the downtown Centralia area are in the Spanaway soil series. Spanaway gravelly, sandy loam is composed of very deep, somewhat excessively drained soils and found on glacial outwash terraces and plains. Permeability of this soil is moderately rapid to a depth of 18-inches and very rapid below this depth. Runoff is slow, and the hazard of water erosion is slight. The very rapid permeability of the soil limits proper filtration and absorption of contaminants, such as those resulting from septic tank fields, pesticides, and automobiles.

Soils in the north and west of the City are primarily Newberg fine sandy loam and Chehalis silty clay. The Newberg soil is very deep and well drained on river flood plains and low terraces. Permeability is moderately rapid and runoff is slow. This soil is subject to occasional brief periods of flooding in winter and early spring. Chehalis silty clay is very

deep, well-drained, and found on low stream and river terraces. Permeability of this soil is moderate, and runoff is slow. This soil is also subject to flooding in winter and early spring.

Soils found in the south end of the City are mostly Indianola loam sand and Nisqually loamy sand. The Indianola soil is very deep and somewhat excessively drained, and located on terraces and broad plains. Permeability is moderately rapid in the surface layer and rapid below. Runoff is very slow. The rapid permeability of the soil restricts adequate filtration and absorption of contaminants cause by septic tanks, pesticides, and automobiles. The Nisqually soil type is also very deep, somewhat excessively drained and located on terraces or broad plains. Characteristics of this soil type are the same as the Indianola soil.

To the east, in the Cascade foothills, Buckpeak silt loams are found. This is a very deep, well-drained soil located on hillsides and ridgetops. Permeability of Buckpeak soil is moderate while runoff is medium and the hazard of water erosion is moderate.

To the southeast and northeast, along Salzer Valley and China Creek, there are Reed silty clay loams. This very deep, poorly drained soil is found on floodplains. Drainage has been altered by tiling, and permeability and runoff is slow, resulting in frequent, seasonal flooding.

Landslide Hazard Areas

Landslides are a result of slope instability and loading which causes the slope to fail. The conditions that lead to landslides are usually predictable. Most damage in urban areas occurs on land that has shown past landsliding or recent instability. Planning to reduce landslide hazards involves the identification of hazardous slopes and an assessment of future hazards. Development in areas of high landslide hazard potential should be avoided. A geotechnical analysis can determine the adequate steps needed to determine buildable and non-buildable areas mapping the hazardous slopes.

The City requires developments on slopes over 30% to be identified and a geotechnical report to be completed prior to development(see figure #1). Slopes over 40% will be identified as non-buildable.

Centralia's UGA area of Davis Hill is characterized by several abandoned coal mines. These mines can pose both environmental and safety concerns. Other concerns include the steep slopes which are common in the Davis Hill and Cooks Hill areas, as well as portions of Widgeon Hill.

Erosion Hazard Areas

Erosion occurs with the transport of soil by wind, water and other natural agents. Erosion hazard areas are generally identified as particular soil types that are likely to experience severe to very severe erosion hazards. These areas are generally associated with susceptible soil types, exposure to wind and water or steep slopes. Development of these areas can cause extreme erosion problems which result in clogging streams, flooding nearby properties, and

destroying the natural habitat of aquatic plants and animals. Sediment in streams also charges growth of algae that reduces water clarity and available oxygen.

The City ensures the minimization of erosion during development through implementation of development regulations during plan review and the SEPA process, and through inspection of construction sites.

Seismic Hazard Areas

Earthquakes occur with great frequency in Western Washington. The United States is divided into seismic hazard zones based upon historic documents. These zones range from 1 to 4, with 4 representing the highest risk. Centralia is located in a seismic hazard zone of three (3). Earthquake effects include ground shaking, ground failure (compaction and settling, liquefaction, lateral spreading, and landslides). Interactions between bedrock and overlying soil can amplify motion.

At any one spot, shaking intensity reflects earthquake source, distance from the event, geometric focusing or defocusing, local soil conditions and, if indoors, the building response. Every building, bridge, tower, dam, dock, etc. has a particular structural response to shaking. One building may be more resistant to certain frequencies than others. Liquefaction hazard areas usually coincide with soft or loose saturated soils having a shallow ground water table. These areas are located mostly in river valleys and floodplains.

Considering earthquake hazards in land-use decisions can often reduce future earthquake damage. The use of appropriate engineering and construction design reduces the hazard, as well as involving communities in earthquake preparedness programs. The consequences of building in areas exposed to earthquake hazards should be a consideration in land use decision-making. Property owners in hazardous areas may be at greater risk of injury and loss during an earthquake.

The City requires that all developments meet the standards of the International Building Code (IBC) with respect to seismic standards.

F. Air Quality

One of the basic elements of a sustainable urban environment is clean air. Many federal, state, regional, and local agencies enact and enforce legislation intended to protect air quality. Good air quality in Centralia, and in much of Western Washington, is fundamentally tied to controlling emissions from all sources, including: internal combustion engines, industrial operations, indoor and outdoor burning, and wind-borne particulates.

In Western Washington, vehicle emissions are the primary source of air pollution. Local and regional components must be integrated in a comprehensive strategy designed to improve air quality through transportation system improvements, vehicle emissions reductions, and demand management strategies.

The City seeks long-term strategies to address air quality problems, not only on the local level, but in the context of the entire Western Washington with coordination and direction from the Southwest Clean Air Agency (SWCAA).

V. ENVIRONMENTAL GOALS AND POLICIES

Environmental Stewardship

Goal EN 1 To protect citizens from potential dangers or public costs by limiting development in environmentally inappropriate locations.

Policies

EN 1.1 Direct development to those areas best suited for it.

EN 1.2 Developments should be limited in areas with geologic instability, frequent flooding, high plant and animal habitat values or steep slopes.

Goal EN 2 To protect environmentally sensitive areas such as steep slopes, wetlands, and geologically hazardous areas, which are not suitable for intensive uses.

Goal EN 3 To protect and manage environmentally sensitive areas with regulations and guidelines based on best available science.

Policies

EN 3.1 Enforce regulations that minimize damage due to landslide, seismic hazard, erosion or flooding.

EN 3.2 Base regulations on the threat to the built environment, best available science, habitat value, and sensitivity of the resource.

Goal EN 4 To preserve those natural areas having unique historical, cultural, or educational features.

Geologic Hazard Areas

Goal EN 5 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

EN 5.1 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.

EN 5.2 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.

EN 5.3 Promote soil stability and the use of natural drainage systems by retaining native vegetation.

EN 5.4 Cooperate with Lewis County to implement the Hazard Mitigation Plan.

Groundwater and Aquifer Recharge Areas

Goal EN 6 To protect surface water and groundwater quality and quantity.

Policies

EN 6.1 Regulate land uses and activities within the critical aquifer and designated wellhead protection areas to prevent degradation of groundwater quality.

EN 6.2 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.

EN 6.3 Encourage the use of community or public water in unsewered areas of the urban growth area where residential density is in excess of one unit per acre.

EN 6.4 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 EN 7 To protect and improve the water quality and biological health of lakes, wetlands, rivers, and streams.

Policies

EN 7.1 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 Chehalis watershed.

EN 7.2 Retain ponds, wetlands, rivers, lakes, and streams with their associated buffers and riparian areas substantially in their natural condition.

EN 7.3 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.

EN 7.4 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.

EN 7.5 Accommodate essential road and utility crossings where there is not another reasonable alternative.

EN 7.6 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.

EN 7.7 Encourage enhancement of degraded wetlands over creation of new wetlands.

EN 7.8 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.

EN 7.9 Work with property owners and interested parties to develop an integrated aquatic management plan for Plummer Lake and Hayes Lake.

EN 7.10 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.

Frequently Flooded Areas

Goal EN 8 To minimize public and private losses from flooding.

Policies

EN 8.1 Limit development in the floodplain to activities that will not impact the 100-year flood level with greater than a one-foot rise.

EN 8.2 Encourage low-intensity land uses for in-fill or new development in the 100-year floodplain.

EN 8.3 Prohibit development and placement of fill in floodways.

EN 8.4 Establish linear open-space and trail systems along the Chehalis and Skookumchuck Rivers to preserve natural open space.

EN 8.5 Enforce regulations that protect the general public against avoidable losses from flooding.

EN 8.6 Maximize the use of public money when developing flood control projects.

EN 8.7 Minimize the need for rescue and relief efforts associated with flooding and generally undertaken at the expense of the general public.

EN 8.8 Minimize prolonged business interruption.

EN 8.9 Follow and ensure conformance to the FEMA guidelines and the City's floodplain ordinance with all developments within the floodplain.

Important Fish, Wildlife, and Plant Habitats

Goal EN 9 To protect, conserve, and enhance the ecological functions of important fish, wildlife, and plant habitats.

Policies

EN 9.1 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.

EN 9.2 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.

EN 9.3 Preserve and enhance native vegetation in riparian and wetland habitats.

EN 9.4 Encourage the use of native plants in residential, commercial, and industrial landscapes.

EN 9.5 Encourage the eradication of invasive non-native plant species.

EN 9.6 Cooperate with adjoining jurisdictions to develop complementary regulations pertaining to streams, fish, wildlife, plant habitats, and other Critical Areas that span jurisdictional boundaries.

EN 9.7 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.

EN9.8 Provide special consideration to conservation and protection measures necessary to preserve or enhance anadromous fisheries.

Air Quality

Goal EN 10 To protect and improve local and regional air quality.

Policies

EN 10.1 Recognize and cooperate with local, state and federal air pollution control agencies, which set standards and regulate activities that emit air pollutants. These activities should be required to use the most effective and accepted pollution control technology.

EN 10.2 Encourage transportation demand management and the use of modes of travel other than the single occupancy vehicle to reduce energy consumption and air and water pollution.

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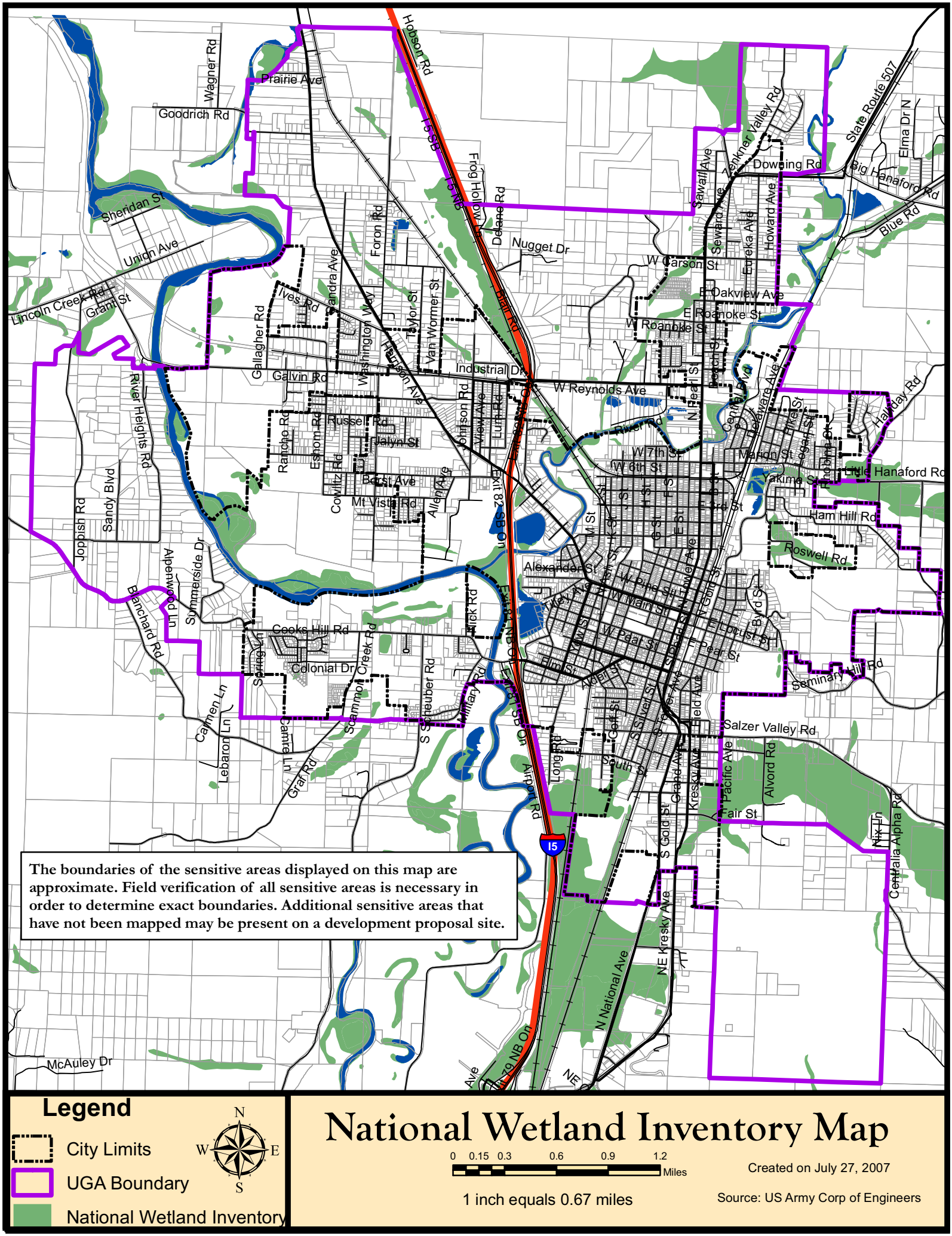

The boundaries of the sensitive areas displayed on this map are approximate. Field verification of all sensitive areas is necessary in order to determine exact boundaries. Additional sensitive areas that have not been mapped may be present on a development proposal site.

Legend

- City Limits
- UGA Boundary
- National Wetland Inventory

N
W E
S

National Wetland Inventory Map

0 0.15 0.3 0.6 0.9 1.2 Miles

1 inch equals 0.67 miles

Created on July 27, 2007

Source: US Army Corp of Engineers

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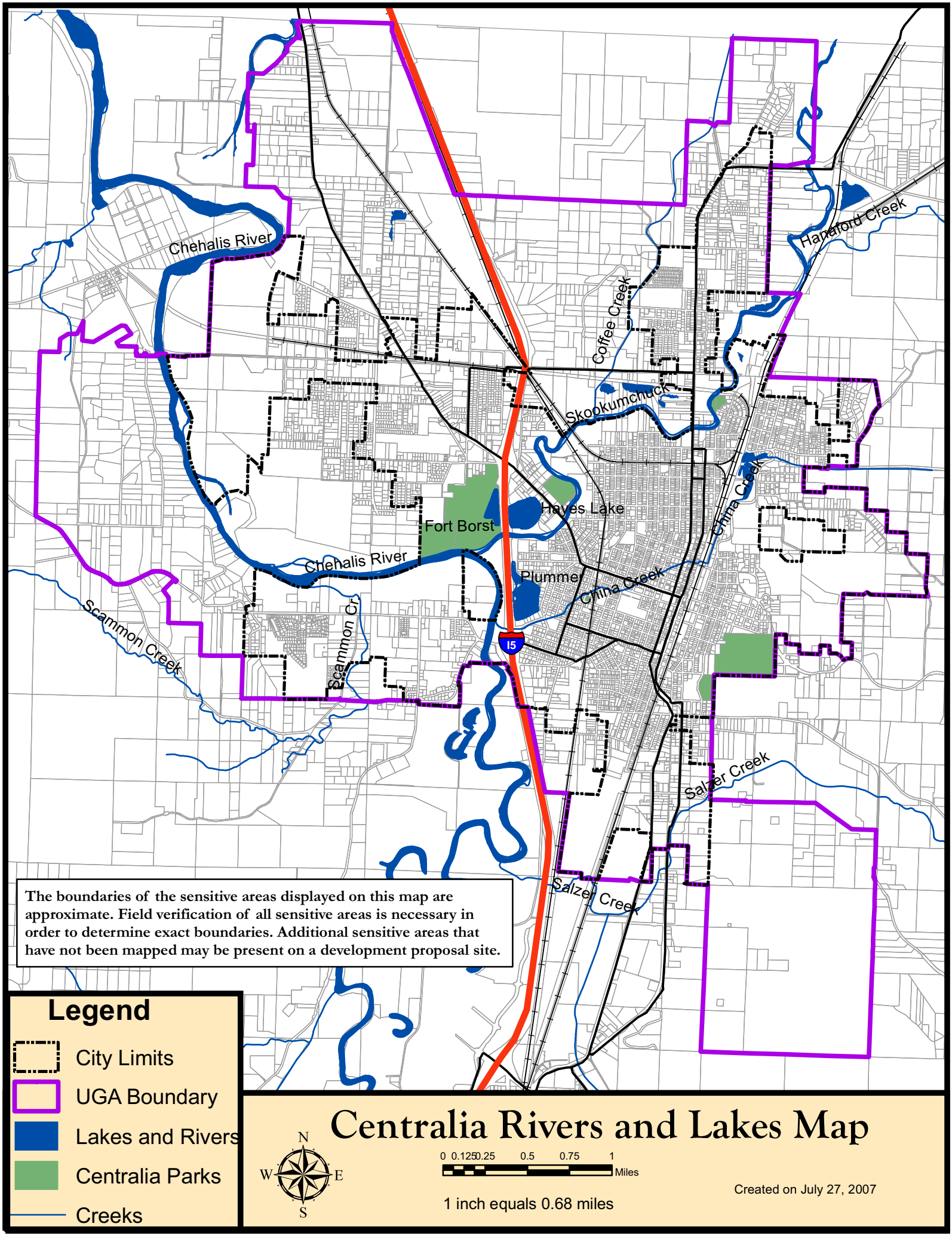
Chehalis River
Hanaford Creek
Coffee Creek
Skookumchuck
China Creek
Hayes Lake
Fort Borst
Chehalis River
Plummer
China Creek
Scammon Creek
Scammon Cr.
I5
Salzer Creek
Salzer Creek
The boundaries of the sensitive areas displayed on this map are approximate. Field verification of all sensitive areas is necessary in order to determine exact boundaries. Additional sensitive areas that have not been mapped may be present on a development proposal site.
Legend
City Limits
UGA Boundary
Lakes and Rivers
Centralia Parks
Creeks
N
W
E
S
0 0.125 0.25 0.5 0.75 1
Miles
1 inch equals 0.68 miles
Centralia Rivers and Lakes Map
Created on July 27, 2007

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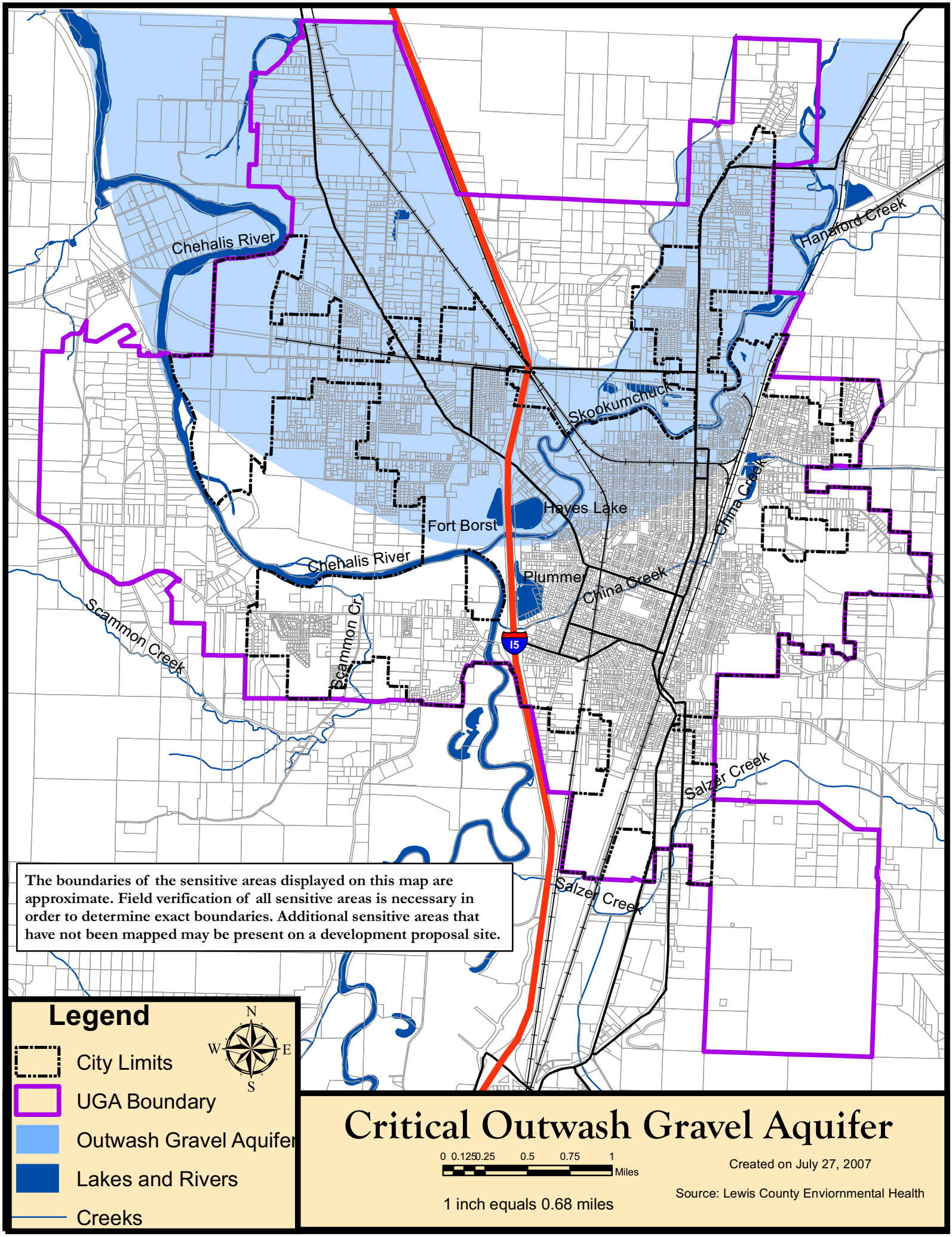
Chehalis River
Hanaford Creek
Skookumchuck
Hayes Lake
Fort Borst
China Creek
Chehalis River
Plummer
China Creek
Scammon Creek
Scammon Cr.
I5
Salzer Creek
Salzer Creek
The boundaries of the sensitive areas displayed on this map are approximate. Field verification of all sensitive areas is necessary in order to determine exact boundaries. Additional sensitive areas that have not been mapped may be present on a development proposal site.
Legend
N
W
E
S
City Limits
UGA Boundary
Outwash Gravel Aquifer
Lakes and Rivers
Creeks
Critical Outwash Gravel Aquifer
0 0.125 0.25 0.5 0.75 1
Miles
1 inch equals 0.68 miles
Created on July 27, 2007
Source: Lewis County Enviornmental Health

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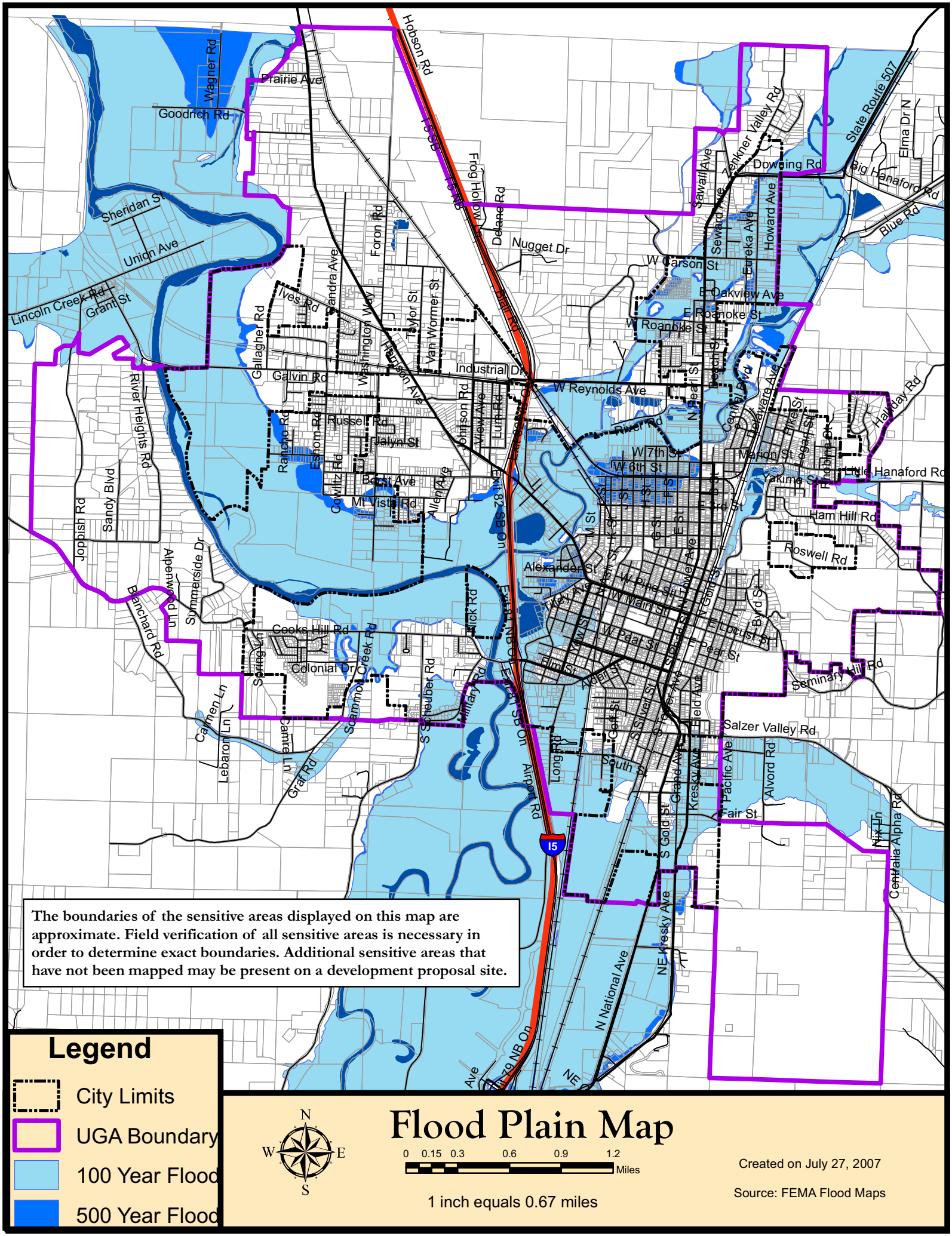

The boundaries of the sensitive areas displayed on this map are approximate. Field verification of all sensitive areas is necessary in order to determine exact boundaries. Additional sensitive areas that have not been mapped may be present on a development proposal site.

Legend

- City Limits
- UGA Boundary
- 100 Year Flood
- 500 Year Flood

N
W E
S

Flood Plain Map

0 0.15 0.3 0.6 0.9 1.2 Miles

1 inch equals 0.67 miles

Created on July 27, 2007

Source: FEMA Flood Maps

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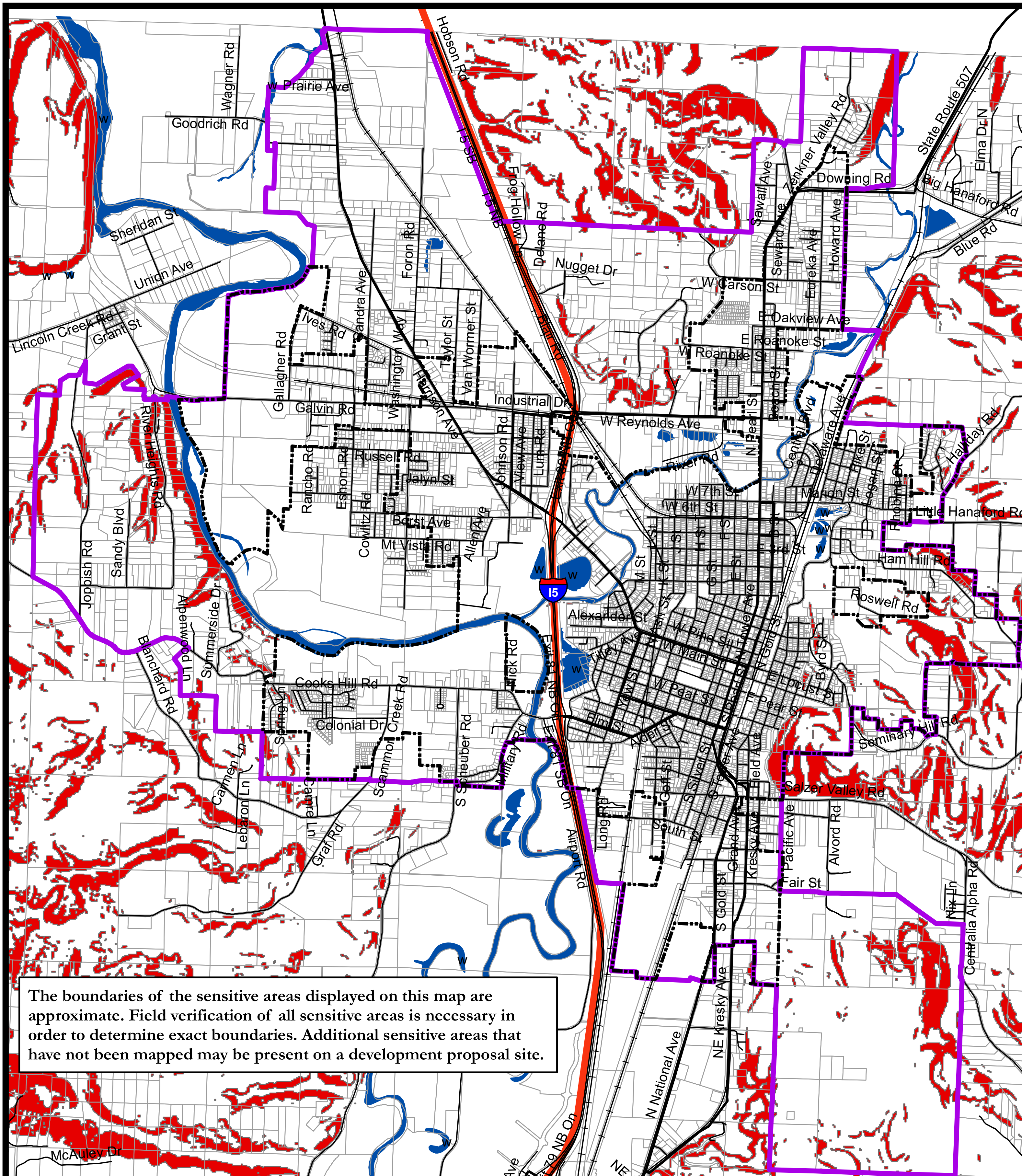

The boundaries of the sensitive areas displayed on this map are approximate. Field verification of all sensitive areas is necessary in order to determine exact boundaries. Additional sensitive areas that have not been mapped may be present on a development proposal site.

Centralia Steep Slopes Map

Legend

- City Limits
- UGA Boundary
- Slopes > 30%

N E S W

0 0.15 0.3 0.6 0.9 1.2 Miles

1 inch equals 0.67 miles

Created on July 27, 2007

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