

# **Chapter 4: Environment and Natural Resources**





## CHAPTER 4: ENVIRONMENT AND NATURAL RESOURCES

### A VISION FOR THE ENVIRONMENT AND NATURAL RESOURCES

*The city of Lake Stevens will provide effective and ongoing investment to ensure water quality and continued environmental stewardship for current and future generations by protecting fish and wildlife habitat, critical areas and open space corridors; conserving land, air, water and energy resources; and integrating the shoreline management of Lake Stevens into land use decisions.*

### INTRODUCTION

This chapter contains a basic description of the city of Lake Stevens' natural environment, its current condition, and recommendations for its protection and enhancement. This chapter also discusses policies and regulations currently in effect to protect the local environment, including but not limited to critical areas regulations, best available science, shoreline management, tree retention and stormwater management. As part of the integrated SEPA/GMA approach to this update, this section also discusses how critical areas protection factors into the other elements of the Comprehensive Plan. Finally, this section provides a discussion related to reducing the impacts of climate change by encouraging sustainable development.

Significant habitat and green spaces remain within the city. Most recent housing developments have been required to dedicate Native Growth Protection Areas (NGPA) and other buffers around critical areas to assist in preserving their quality. The city also has tree retention regulations and innovative subdivision design regulations to protect these areas. The city also maintains a Shoreline Master Program that requires land use and environmental protections along the vast shoreline areas (Lake Stevens and portions of Catherine Creek and Little Pilchuck Creek and associated wetlands) within the city of Lake Stevens. Critical areas within shoreline jurisdiction are regulated under the Shoreline Master Program critical areas regulations.

The city adopted an updated Critical Areas Ordinance in 2008 that contains provisions for "Best Available Science" (BAS). BAS is a requirement of the GMA, and the city is using the



Best Available Science Document prepared for the city by URS Consultants that reflects the unique environmental conditions in Lake Stevens.

### **PLANNING CONTEXT**

#### State Planning

Under the Growth Management Act (GMA), jurisdictions must adopt policies to protect and enhance the environment and the quality of life. This includes protecting the quality of air and water and availability of water. This goal includes all actions made within urban and rural areas and affects all land use decisions made by the city, specifically those related to the preservation of critical areas and shoreline. The GMA also sets requirements to ensure the maintenance and enhancement of natural resource-based industries, such as fishing, forestry and agriculture. This requirement primarily affects regional and rural areas, but the city supports the position that natural resource industries should be maintained throughout Snohomish County through active stewardship and protection of resources.

#### Regional Planning

In addition to the GMA goals for environmental protection, enhancement and quality of life, Vision 2040 supports the protection and preservation of open spaces, natural resources, critical areas and endangered species through the implementation of regional and interdisciplinary strategies among local jurisdictions. It emphasizes establishing best management practices to preserve long-term integrity and productivity of resource lands, including maintaining currently designated resources lands and ensuring compatibility with development on adjacent non-resource lands, as well protecting habitats and open spaces for ecological functions. Vision 2040 also encourages the private, public, and nonprofit sectors to incorporate environmental and social responsibility into their practices, highlighting the need for a clean and pollution free environment for all residents regardless of social or economic status. Finally, Vision 2040 sets goals for reducing climate change by promoting efficient land uses and transportation systems, and reducing energy consumption through conservation or efficiency. As noted above, the city does not have active resource-based uses within its city limits, but does consider the effects of land use actions on open space and critical areas within the city limits through its development regulations. The city also coordinates with other jurisdictions and special interest groups on environmental issues, facilities planning and transportation planning.

#### Countywide Planning

The Countywide Planning Policies (CPPs) for Snohomish County established a countywide framework for developing both county and city comprehensive plans. The role of the CPPs is to coordinate comprehensive plans of jurisdictions in the same county for issues affecting common borders. RCW 36.70A.100 requires that city and county comprehensive



## Chapter 4 – Environmental and Natural Resources

plans are consistent with each other, while also respecting the autonomy of cities to exercise their land use powers. The city will act as a steward of the natural environment by protecting natural systems, conserving habitat, improving air quality, reducing greenhouse gas emissions and addressing climate change impacts. This environmental stewardship is balanced with a care for the economic and social needs of the community through the integration of PSRC and Commerce goals into policies designed to protect, enhance and restore the environment.

### Lake Stevens Planning

The city's Environment and Natural Resources Element considers the themes expressed in state, regional, and countywide plans. Specifically, the Environment and Natural Resources Element creates a balance between active environmental stewardship and the goals of addressing economic growth and providing a positive and vibrant development atmosphere. This balance has been achieved pursuant to a consolidation and update of the Goals and Policies section to ensure that the city is adequately protecting critical areas, implementing current NPDES regulations, protecting wildlife habitat, administering the Shoreline Master Program consistently and providing residents of all social and economic statuses a healthy environment with minimal exposure to pollution.

### **DESCRIPTION OF PLANNING AREA AND NATURAL RESOURCES**

The city of Lake Stevens UGA occupies a Pleistocene glacial terrace, rising east from the floodplain of the Snohomish River in the foothills of the Cascades. Plateaus, steep ravines, wetlands, stream corridors, three drainage basins and Lake Stevens characterize the physical environment of the city. The city is located on a relatively level plateau, with minor variations in topography along the lakefront and other drainage basins. The city's central lake is the most prominent environmental feature in the community and is sensitive to the effects of urban development.

The Soils Survey conducted by the U.S. Soil Conservation Service includes detailed soils maps (Figure 4.2). Generally the resident soils in the area are suitable for urban development. Site-specific soils studies indicate many areas have relatively shallow soils above hardpan. While this may be helpful to provide a solid foundation for buildings, it limits infiltration of urban runoff.

The Lake Stevens UGA encompasses three major drainage basins: the Lake Stevens Drainage Basin, the Sunnyside Drainage Basin and the Pilchuck Drainage Basin. All waters within the UGA eventually drain into Puget Sound, draining either directly into Ebey Slough or through the Pilchuck and Snohomish Rivers. The Lake Stevens Basin includes several streams: Kokanee (Mitchell) Creek, Stevens Creek, Lundeen Creek and the Lake Outflow Channel. Catherine Creek and the Little Pilchuck are the primary streams flowing into the



## Chapter 4 – Environmental and Natural Resources

Pilchuck system. Lands on the western side of Lake Stevens drain toward the Sunnyside system.

Surface Water – Lake Stevens, encompassing approximately 1,040 acres, is the most dominant physical feature within the city and its UGA. The lake provides an obvious social, recreational and aesthetic focal point for the community. It shapes the local microclimate and it is an important regional habitat for several fish, mammal, reptile, amphibian, and bird species. The Lake and portions of Catherine Creek and the Little Pilchuck are subject to the Shoreline Management Act (SMA) and considered flood hazard zones.

Ground Water - the Snohomish County Public Utilities District No. 1 (PUD) provides drinking water to the UGA mostly from Spada Lake, however, the PUD operates a public well within the city to augment the water supply. A few residents use wells as their main source of drinking water. The aquifer for these wells is found in the northeastern corner of the city, generally under the industrially zoned area. The depth of the aquifer is approximately 35-120 feet deep and most uses should not affect the water quality. The water quality is good if not overdrawn (whereupon iron may become a problem) and for most of the year does not require chlorination.

### Fauna

Although much natural habitat has been lost to urbanization, the Lake Stevens area supports a variety of species of fish (salmon, trout, bass, catfish, perch, etc.), birds (waterfowl, songbirds, raptors and others), amphibians, reptiles, and insects and other invertebrates.

The state and federal governments list numerous species in the region as endangered, threatened or a candidate species including most notably different salmon species

### Flora

The area supports deciduous and coniferous trees (Douglas fir, spruce, hemlock, cedar, alder, cottonwood, and maple) as well as native shrubs, herbs, grasses, and wetland plants.

Most of the habitats are disjointed and greatly impacted by urbanization, logging and agricultural activities. The city currently has a Tree Retention regulation that requires replacement trees lost to urban development at a 3:1 ratio. It also has regulations for critical areas and encourages innovative subdivision design (e.g., planned residential developments, cluster subdivisions, etc.) to protect environmental resources.

There are no areas within the city designated for resource extraction or cultivation.



### Climate and Weather

Summers in Lake Stevens are mild and warm (average daytime temperature in the 70's) and winters are comparatively mild (average daytime temperature in the mid-40's). The frost-free period for the city generally begins in April and ends near the first of October. Precipitation is in the form of rain and snow, averaging 39 inches annually (average low of 1.1 inches in August to an average high of 5.9 inches during the winter months of November through December). Relative humidity is high due to the water influences. The prevailing wind is westerly or northwesterly most of the year.

### Air Quality

The city of Lake Stevens coordinates with the Puget Sound Clean Air Agency (PSCAA) to ensure compliance with the Environmental Protection Agency's (EPA) Clean Air Act. The city requires PSCAA review of all demolition permit applications in an effort to reduce levels of fine particulates and air toxins from construction site activity. The city also coordinates commercial building permit applications that propose emissions with PSCAA as a fellow project reviewer and (when applicable) as a SEPA lead. This public agency coordination moves the city towards its goal of improving air quality and playing an active role in reducing the impacts of climate change in the Puget Sound region.

### Sustainability and Climate Change

Climate change is a global challenge, and the impacts of greenhouse gases affect every community. Many U.S. cities have adopted climate change policies in response to often inadequate federal-level action ([Bushman, Peterman and Wolfram: 2007](#)). The city of Lake Stevens is committed to addressing the central Puget Sound region's contribution to climate change by, at a minimum, complying with state initiative and directives regarding climate change and the reduction of greenhouse gases. The city will, in addition to consistent implementation of the Shoreline Master Program, the Critical Area's code in Chapter 14 LSMC and inter-agency partnership, enact goals and policies that encourage a reduction in the use of pesticides and chemical fertilizers to improve both water and air quality. The city will take an active stewardship role in identifying and addressing the impacts of climate change by promoting the use of innovative, sustainable, and environmentally sensitive development practices, including design, materials, construction, and ongoing maintenance

### Aquifer Recharge

Aquifer recharge is the movement of water from the ground surface (the unsaturated zone) to the saturated zone, and is vital for both effective water resource management and the continued functioning of the hydrologic cycle ([Nimmo et. al.: 2005](#)). Many land use actions have potential to affect both the quantity and quality of groundwater, including the



application of fertilizers and pesticides, the addition of impervious surfaces, and demand for water from new residential and commercial development. A few residents in Lake Stevens draw water from wells whose aquifers are located in the northeastern corner of the city, and the quality is generally good if not overdrawn. The city will continue to prioritize the protection of aquifer recharge areas pursuant to application of impervious surface limitations for development, the requirement for stormwater systems that meet Department of Ecology standards, and robust protection of wetlands and other critical areas that provide invaluable functions in groundwater storage and recharge.

### **CRITICAL AREAS**

In the city of Lake Stevens critical areas, as defined by the Growth Management Act (GMA: RCW 36.70A), include wetlands, fish and wildlife habitat conservation areas (including streams), frequently flooded areas and geologically hazardous areas. The GMA requires the city to adopt policies and implement development regulations to protect the functions and values of all identified critical areas. The city administers these regulations through Chapter 14.88 of the Lake Stevens Municipal Code (LSMC) and is charged with the responsibility to designate, classify and protect critical areas within the community.

#### Fish & Wildlife Conservation Areas (streams and other water bodies)

Lake Stevens is the most visible and treasured water body within the city of Lake Stevens. The lake encompasses 1,040 acres and provides not only recreational enjoyment, but serves as an important regional habitat for several fish, mammal, reptile, amphibian and bird species. Stitch Lake is located in the southern part of the city and encompasses approximately 9 acres. Lake Stevens and Stitch Lake and their shoreline-associated wetlands are subject to the Shoreline Management Act (SMA) and considered flood hazard zones. The Lake Stevens drainage basin encompasses a number of streams and creeks, including the Kokanee (Mitchell) Creek, Stevens Creek, Lundeen Creek, Catherine Creek, and the Little Pilchuck. These areas are home to priority habitats and species including Chinook, Coho Salmon, Bull Trout, Steelhead, the Northern Spotted Owl, and Marbled Murrelet.

#### Flood Hazard Areas

According to the Flood Insurance Rate Maps (FIRM) published by the Federal Emergency Management Agency (FEMA), areas prone to floods from a 100-year storm are limited to properties mostly fronting Catherine Creek and the lake. These areas are designated as Zone A flood hazard areas. Flooding in the downtown area has been observed when area wetlands, streams and ditches have more water than they can hold.



### Geologically Hazardous Areas

The geologically-recent retreat of glaciers from the Snohomish County landscape has left many steep hillsides that are susceptible to naturally occurring landslides, earthquakes, erosion, and other geological events. Steep slopes are present within the community adjacent to the western boundary of Lake Stevens, and within the northwestern portion of the city. Proposed developments within 200 feet of any area that is designated as geologically hazardous are subject to the requirement for a geological assessment that analyzes the potential impacts of said development on or off site.

### Wetlands

Wetlands are fragile ecosystems which assist in the reduction of erosion, flooding and ground and surface water pollution. Wetlands also provide an important habitat for wildlife, plants, and fisheries. Wetlands also provide invaluable functions in aquifer recharge and groundwater storage. Numerous wetlands have been identified in Lake Stevens and the UGA – some on a very general basis from aerial mapping. Others have been precisely mapped where development has occurred over the past few years. Generally, as properties develop the wetlands are more accurately delineated and mapped. The city's local regulations must comply with both federal and state standards to encourage development that avoids or mitigates wetland impact, and discourages the alteration of land that results in significant degradation of wetlands.

### Transfer of Development Rights

The city of Lake Stevens has conceptualized a Transfer of Development Rights (TDR) program to encourage density in key locations and limit development in environmentally critical areas. This program is expressed through the allowance of cluster subdivisions pursuant to Chapter 14.48 LSMC, allowing developers to take advantage of smaller lot sizes and retaining the environmentally sensitive portion of the subject parcel as a protected tract with no further development rights. LSMC 14.88.920 contains provisions for designating critical areas as sending and receiving districts.

## **SHORELINE MASTER PROGRAM**

The city of Lake Stevens manages the shoreline environment through implementation of the Shoreline Master Program. The Washington State Shoreline Management Act (SMA), passed in 1971, provides guidance and prescribes the requirements for locally-adopted Shoreline Master Programs. The SMA establishes a broad policy giving preferences to uses that:



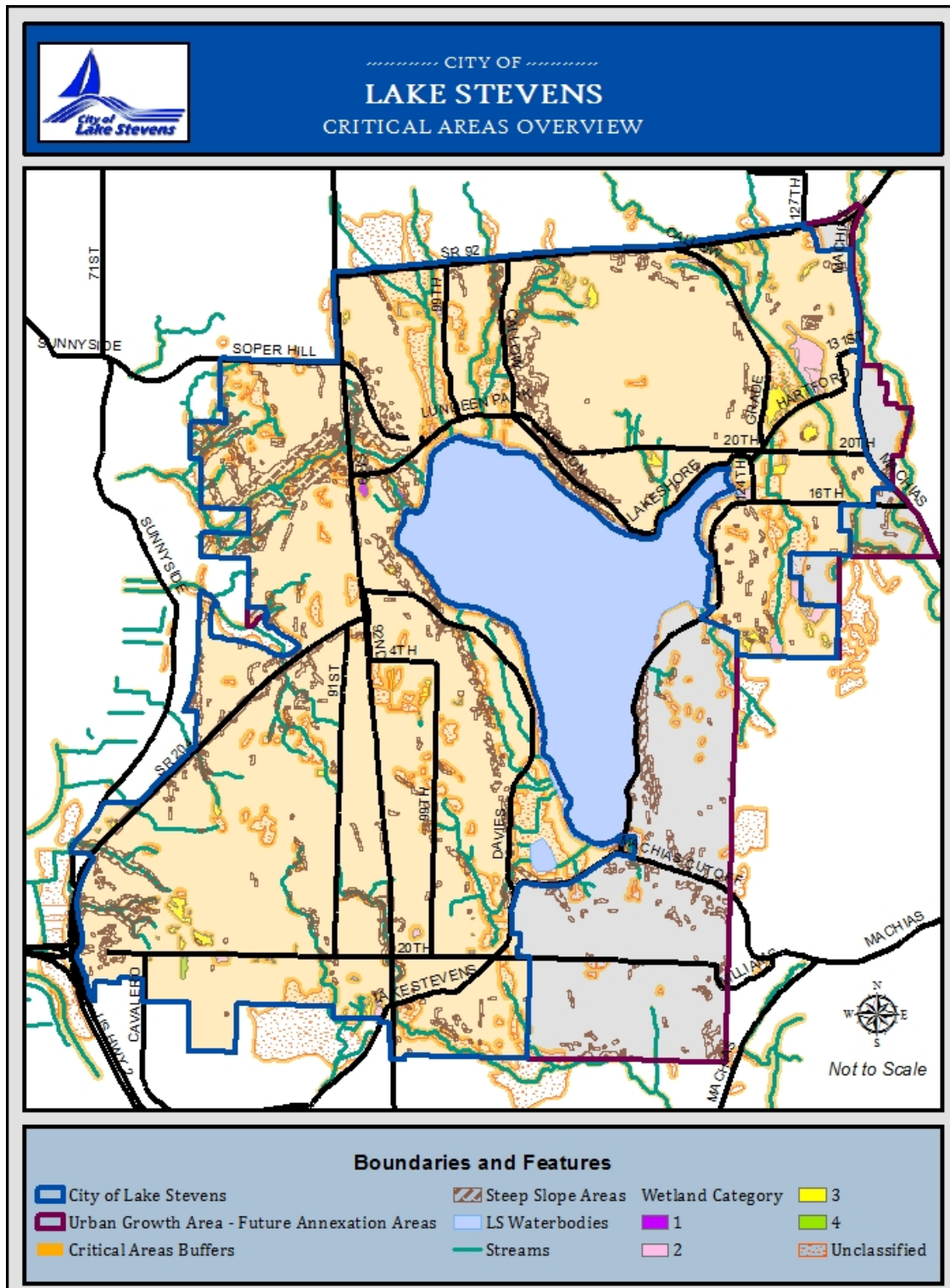


Figure 4.1 Critical Areas Overview



## **Chapter 4 – Environmental and Natural Resources**

- Protect shoreline natural resources, including water quality, vegetation and fish and wildlife habitat;
- Depend on the proximity to the shoreline (i.e., “water-dependent uses); and
- Preserve and enhance public access or increased recreational opportunities for the public along shorelines.

The SMA establishes a balance of authority between local and state government. Under the SMA, Lake Stevens adopted a Shoreline Master Program that is based on state guidelines but tailored to the specific needs of the community. The program represents a comprehensive vision of how shoreline areas will be used and developed over time.

The city of Lake Stevens’ identity is strongly influenced and defined by its setting around the lake. The lake provides varied recreational opportunities for residents and visitors. Therefore, the utilization, protection, restoration and preservation of the shoreline must be considered for all development within shoreline areas.

The city and Snohomish County share jurisdiction of Lake Stevens with the city regulating within city boundaries, and the County within the southeast portion of the lake that is still within the Urban Growth Area. The city adopted Snohomish County’s Shoreline Master Program in 1974. Over the almost four decades since the original adoption of a Shoreline Master Program, the lake-front environment has substantially changed with additional single-family homes and subdivided lots, additional docks and bulkheads and the loss of habitat along the shoreline. Impervious surfaces have increased both within the shoreline area and in adjacent watersheds, thus increasing surface water flows and impacting water quality and habitat for fish and other animals.

To address these changes, comply with the mandates of the Shoreline Management Act and enable the city to plan for emerging issues, the city initiated an extensive update of its Shoreline Master Program in 2009 with final adoption in 2014. The Program will preserve the public’s opportunity to enjoy the physical and aesthetic qualities of Lake Stevens, Catherine Creek and Little Pilchuck Creek while protecting the functions of the shorelines so that at a minimum, the city achieves a “no net loss” of ecological functions as required for shorelines of the State.



## **GOALS AND POLICIES**

**GOAL 4.1: SUSTAIN ENVIRONMENTAL QUALITY THROUGH THE PRESERVATION AND CONSERVATION OF THE NATURAL ENVIRONMENT AND RESOURCES, AND REQUIRE DEVELOPMENT TO BE SENSITIVE TO SITE CHARACTERISTICS AND PROTECT NATURAL AND CULTURAL RESOURCES.**

### Policies

- 4.1.1 The city will continue to prioritize the protection of wetlands, streams and creeks, lakes and ponds, aquifer recharge areas, geologically hazardous areas (e.g., steep slopes and erosion areas), significant trees, fish and wildlife habitat areas and corridors, cultural resources, and frequently flooded areas through land use policies, regulations and decisions based on best available information and in coordination with state and regional priorities.
- 4.1.2 Promote the retention of significant trees during development.
- 4.1.3 Preserve existing vegetation as much as possible due to its vital role in maintaining wildlife habitat and preventing additional storm water runoff or soil erosion from new developments.
- 4.1.4 Protect salmonid streams and natural drainage ways from adverse impacts of land development in order to maintain the stream flow regime necessary for continued life cycle activities, avoid unnatural bank or bed erosion and increased turbidity.
- 4.1.5 Allow density transfers as part of subdivisions on properties with critical areas from the critical areas to the non-sensitive portions of the site.
- 4.1.6 Promote and encourage sustainable development through efficient land use, green building design, flexibility of design (Low Impact Development, cluster development) and water conservation.
- 4.1.7 Require all phases of conversion of forest lands to comply with the GMA, an issued Forest Practice Permit and be consistent with adopted critical areas regulations.
- 4.1.8 Adopt the 2012 DOE Stormwater Manual to comply with new stormwater NPDES regulations.
- 4.1.9 Use best management practices to ensure protection of water resources during and after construction, including bank stabilization techniques, site design,



## Chapter 4 – Environmental and Natural Resources

construction timing and practices, use of bio-engineering and current erosion and drainage control methods.

- 4.1.10 Protect native plant communities by encouraging management and control of non-native invasive plants, including aquatic plants. Environmentally sound methods of vegetation control should be used to control noxious weeds.
- 4.1.11 Encourage and support local community programs to enhance natural resources.
- 4.1.12 Minimize land clearing, soil disturbance, and non-point runoff affecting water quality, erosion and sedimentation.
- 4.1.13 Promote retention of stormwater and encourage regional stormwater treatment solutions to maintain hydrological functions and water quality within ecosystems and watersheds.
- 4.1.14 Minimize adverse stormwater impacts generated by the removal of vegetation and alteration of landforms.
- 4.1.15 Encourage and support the retention of natural open spaces or land uses which maintain hydrologic function and are at low risk to property damage from floodwaters within frequently flooded areas.

**GOAL 4.2: IMPLEMENT THE STATE SHORELINES MANAGEMENT ACT ALONG SHORELINES OF STATEWIDE SIGNIFICANCE IN THE CURRENT OR ULTIMATE CITY LIMITS OF LAKE STEVENS. PROTECT AND ENHANCE SHORELINE VISUAL AND PHYSICAL ACCESS CONSISTENT WITH PUBLIC TRUST DOCTRINE PRINCIPLES.**

### Policies

- 4.2.1 New development within the shorelines jurisdiction shall meet the procedural, building and development land use requirements as consistent with the adopted Shoreline Master Program.
- 4.2.2 Promote development of convenient recreational opportunities, activities and public access to public shorelines as consistent with the adopted Shoreline Master Program.
- 4.2.3 Extend appropriate shorelines designations to areas within shorelines jurisdictions as they annex into the city.



## Chapter 4 – Environmental and Natural Resources

- 4.2.5 Educate property owners within shorelines jurisdictions on the proper maintenance of docks and decks, grass and gardens and driveways or cars to reduce the types of pollutants potentially reaching the lake or creeks as consistent with the adopted Shoreline Master Program
- 4.2.6 Recognize that the vast majority of shoreline property is in private ownership, and encourage the creation of easements to allow public access through donation or purchase, particularly in areas adjacent to publicly owned shorelines.
- 4.2.7 Acquire land for permanent public access to the water, and protect open space as consistent with the adopted Shoreline Master Program.
- 4.2.8 Consider the compatibility of proposed upland uses with those allowed in each adjacent shoreline environment as consider in RCW 90.58.340.
- 4.2.9 Consider potential shorelines impacts from cumulative development actions of upland properties.
- 4.2.10 Provide for adequate access, utilities and public services to meet current and future needs for uses along the shoreline as consistent with the adopted Shoreline Master Program.

**GOAL 4.3: PROTECT THE NATURAL ENVIRONMENT, SURFACE WATER AND GROUND WATER AND AQUIFER RECHARGE AREAS, CONSERVE ALL CRITICAL AREAS INCLUDING WETLANDS, SHORELINES, CREEKS/STREAMS, GEOLOGICAL HAZARD AREAS AND WILDLIFE HABITATS BY LOCATING DEVELOPMENT WITHIN GEOGRAPHPICALLY SUITABLE AND GEOLOGICALLY STABLE AREAS, AND COORDINATE LOCAL DEVELOPMENT REGULATIONS WITH STATE AND FEDERAL POLICIES.**

### Policies

- 4.3.1 Review critical areas regulations which reflect the Best Available Science (BAS) pursuant to the GMA. These regulations must protect the functions and values of these areas and not unduly reduce property rights by requiring greater protection measures which offer diminishing beneficial returns.
- 4.3.2 Ensure compatibility of land uses with topography, geology, soil suitability, surface water, ground water, frequently flooded areas, wetlands, climate and vegetation and wildlife.
- 4.3.3 Identify and protect wildlife corridors both inside and outside the UGA through critical areas avoidance, protection and mitigation.



## Chapter 4 – Environmental and Natural Resources

- 4.3.4 Permit development, fill, or encroachments in floodways, frequently flooded areas, highly erodible areas and other critical areas using Best Management Practices (BMP's) and Best Available Science (BAS).
- 4.3.5 Support wetlands protection through non-regulatory approaches such as the adopt-a-wetland conservation program and low impact development.
- 4.3.6 Work with the Land Trust and other similar organizations to protect wetlands and other critical areas.
- 4.3.7 Support the restoration of degraded shorelines and other critical areas to help minimize erosion, sedimentation and flooding.
- 4.3.8 Protect natural drainage systems and courses associated with floodways, floodplains, or other areas subject to flooding.

**GOAL 4.8: WORK WITH PUBLIC AGENCIES AND PRIVATE PARTNERS TO DEVELOP STRATEGIES TO PREPARE FOR AND MITIGATE POTENTIAL IMPACTS OF CLIMATE CHANGE, BOTH ON CITY GOVERNMENT OPERATIONS AND THE GENERAL LAKE STEVENS COMMUNITY.**

### Policies

- 4.8.1 Develop adaptive mitigation strategies that can be used by both the public and private sectors to help mitigate the potential impacts of new and ongoing development and operations.
- 4.8.2 Review comprehensive, strategic and specific plans to determine if city policies are appropriately targeted to prepare for and mitigate potential impacts of climate change.
- 4.9.2 Make energy efficiency a priority through retrofitting city facilities.
- 4.9.4 Conserve fossil fuels and support federal and state policies and legislation that will lead to the reduction of greenhouse gas emissions.
- 4.9.5 Develop adaptive land use and development policies that result in reduced greenhouse gas emissions for new development and redevelopment.
- 4.9.4 Monitor and evaluate opportunities to utilize state tools and resources to stay compliant with state environmental and energy strategies.