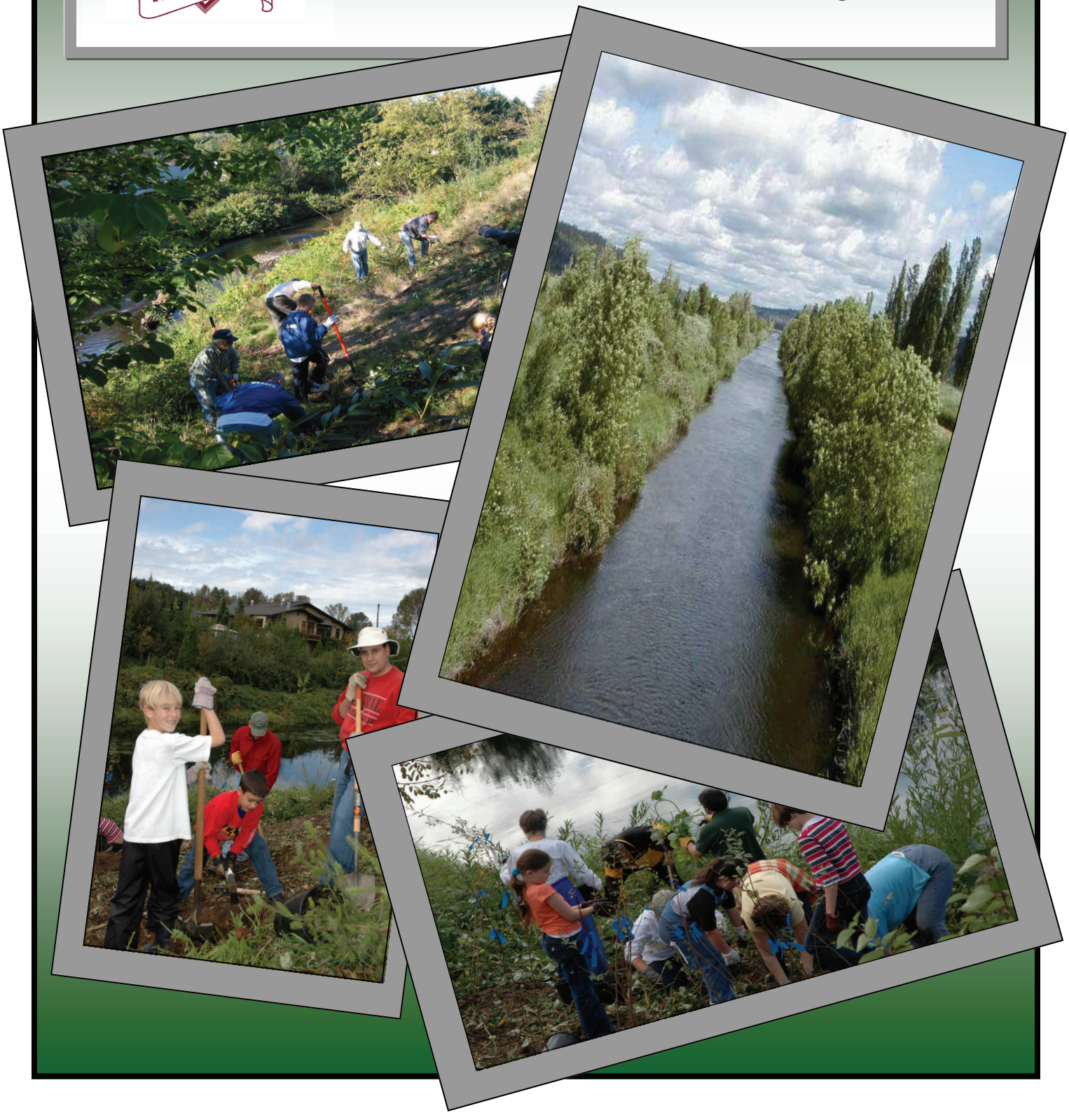
City of Woodinville
Planning Commission Recommended DRAFT
2008 Shoreline Master Program



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ACKNOWLEDGMENTS

The City of Woodinville is pleased to present the Shoreline Master Program, adopted August, 2008 for the protection, enhancement, and public enjoyment of the Sammamish River and Little Bear Creek. This revised Program is specific to Woodinville's unique shoreline and reflects the goals and aspirations of its citizens. The revised program also reflects recent changes in applicable legislation. The City acknowledges the contributions and hard work of the following persons:

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CHAPTER 1 – INTRODUCTION

1.1 Purpose and Responsibility

Washington's Shoreline Management Act (SMA) (Chapter 90.58 RCW, the Shoreline Management Act of 1971) was passed by the State Legislature in 1971 and adopted by the public in a referendum. The Act was created in response to a growing concern among residents of the state that serious and permanent damage was being done to shorelines by unplanned and uncoordinated development. The goal of the Act was "to prevent the inherent harm in an uncoordinated and piecemeal development of the state's shorelines." While protecting shoreline resources by regulating development, the Act is also intended to provide for appropriate shoreline growth by encouraging land uses that enhance and conserve shoreline functions and values.

The SMA established a cooperative program of shoreline management between local government and the state. Local governments have the primary responsibility for initiating the planning and administration of the local Shoreline Master Program (SMP). The Department of Ecology is responsible for supporting and assisting local governments and insuring compliance with the SMA and its provisions, primarily WAC Sections 173-26 – *State Master Program Approval/Amendment Procedures and Master Program Guidelines* and 173-27- *Shoreline Management Permit and Enforcement Procedures*.

The SMP is a comprehensive use plan for local shoreline areas that includes desired goals and policies consistent with SMA policy (RCW 90.58.020); maps, diagrams and charts or other descriptive material and text; use and development regulations; and administrative procedures for the shoreline permitting process. The Ecology SMP guidelines (WAC 173-26) establish general goals and policies, and standards and criteria for regulations. The SMP is based on State guidelines, but tailored to the specific conditions and needs of individual communities. The SMP is also meant to be a comprehensive vision of how the shoreline area will be used and developed over time.

The City of Woodinville first adopted an SMP in 1993 and updated it in 1997. On January 17, 2004, Ecology adopted new SMP guidelines (WAC 173-26), which required revision of several provisions contained in the 1997 City of Woodinville SMP.

According to Substitute Senate Bill (SSB) 6012, passed by the 2003 Washington State Legislature, cities within King County were required to amend their local SMPs consistent with Ecology's revised guidelines. The required update process also provided the City with an opportunity to incorporate the changes in the City's physical shoreline conditions and integrate current technical and scientific information into the SMP.

1.2 Shoreline Jurisdiction

Concepts and terms related to the City's shoreline jurisdiction are specific to those described in RCW 90.58.030, WAC 173-26-020, WAC 173-27-030, and WAC 173-22-030. Definitions and significant terms related to the Shoreline Management Act and the City's SMP are included in Chapter 8 of this document.

Under the SMA, the shoreline jurisdiction includes all water areas of the state, the lands underlying them, and areas that are 200 feet landward of the ordinary high water mark **(**OHWM**)** of waters that have been designated as "shorelines of statewide significance" or "shorelines of the state." These designations were established in 1971, and are described in RCW 90.58.030. Generally, "shorelines of statewide significance" include portions of Puget Sound and other marine waterbodies, rivers west of the Cascade Range that have a mean annual flow of 1,000 cubic feet per second (cfs) or greater, rivers east of the Cascade Range that have a mean annual flow of 200 cfs or greater, and freshwater lakes with a surface area of 1,000 acres or more. "Shorelines of the state" are generally described as all marine shorelines and shorelines of all other streams or rivers having a mean annual flow of 20 cfs or greater and lakes with a surface area greater than 20 acres.

The shoreline jurisdiction within the city limits of the City of Woodinville includes approximately 2.5 miles of the Sammamish River and 1.8 miles of Little Bear Creek. There are no "shorelines of the statewide significance" in the City. Under the SMA, the shoreline area to be regulated under the City's SMP must include shorelands, defined as the upland area within 200 feet of the OHWM or floodway, whichever is greater. The City's SMP jurisdiction also includes any associated wetlands (RCW 90.58.030). The approximate shoreline jurisdiction of the City of Woodinville is shown in Figure 1-1. The exact location of shoreline jurisdiction must be determined in the field, site by site, at the time of permitting for a particular project. All proposed uses and development occurring within shoreline jurisdiction must conform to Chapter 90.58 RCW, the Shoreline Management Act, and this SMP.

1.3 Compliance in Woodinville

The SMA set forth in some detail three tasks to be fulfilled by local governments:

1. Administration of a shoreline permit system for proposed substantial development on shorelands of designated water bodies;
2. Compilation of a comprehensive inventory that includes a survey of natural characteristics, present land uses, and patterns of property ownership; and
3. Development of a master program to provide an objective guide for regulating the use of shorelines.

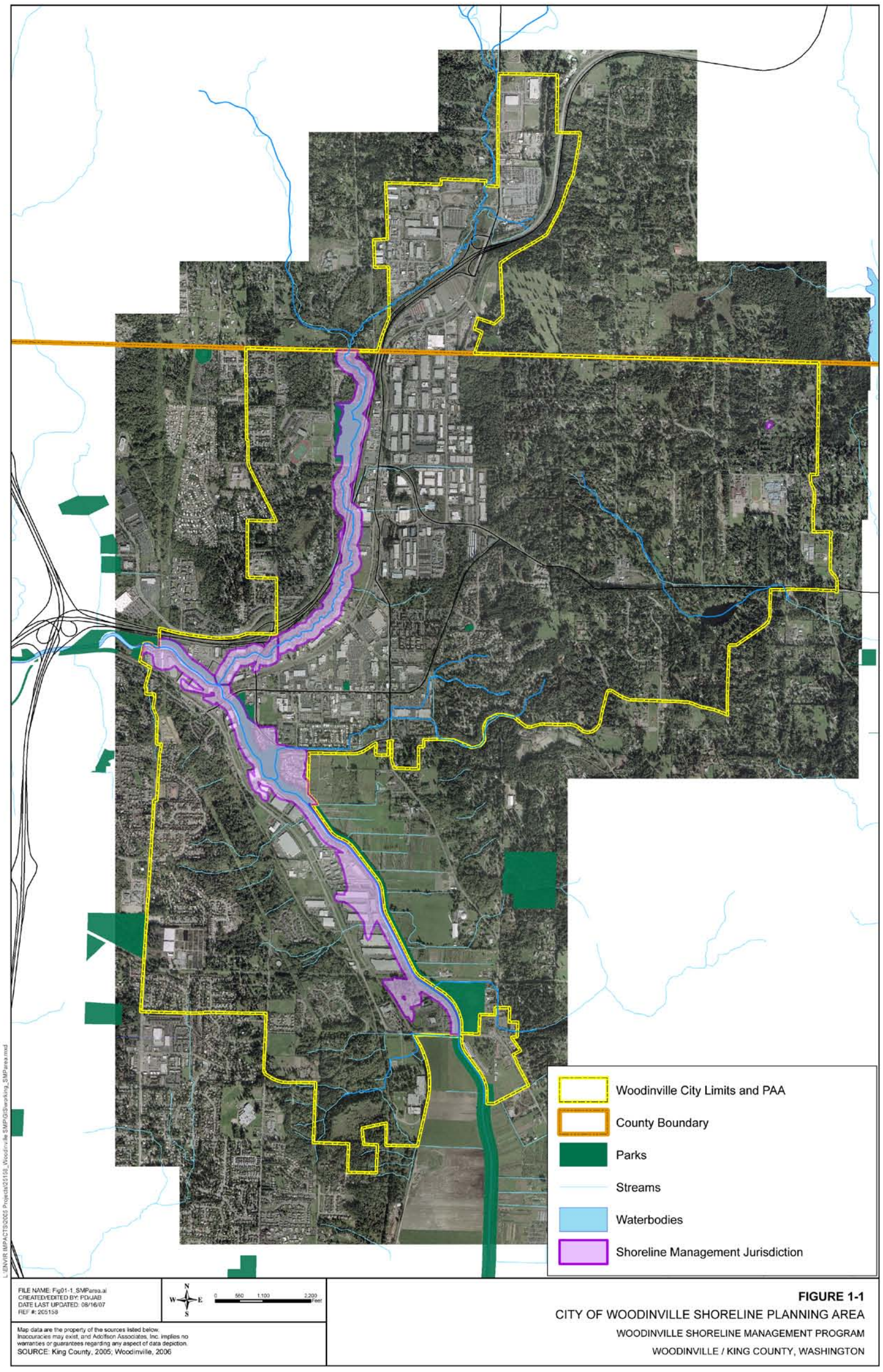

FIGURE 1-1
CITY OF WOODINVILLE SHORELINE PLANNING AREA
WOODINVILLE SHORELINE MANAGEMENT PROGRAM
WOODINVILLE / KING COUNTY, WASHINGTON

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The Woodinville SMP refers to the City's Comprehensive Plan, Zoning Code and other development plans and ordinances for which this SMP has relevance. The Comprehensive Plan includes a Shorelines element with goals and policies for shoreline management. The new goals and policies adopted for this SMP update will be incorporated into the Comprehensive Plan. This updated SMP will be adopted as Title 24 of the Woodinville Municipal Code.

In 1993, the City established a permit system in compliance with the first requirement of the SMA. Under this system, a permit must be obtained from the City for any proposed substantial development within the Woodinville shoreline jurisdiction. "Development" is defined in Chapter 8, consistent with RCW 90.58.030(3)(d). "Substantial development" is defined in Chapter 8, consistent with RCW 90.58.030(3)(e). Substantial development means any development of which the fair market value exceeds five thousand seven hundred eighteen dollars ($5,718), or any development that would interfere with the normal public use of the water or shorelines. The definition of substantial development addresses how increases to the $5,718 threshold will be determined by changes in the consumer price index.

In compliance with the second requirement of the Act, in October 2006, the City completed a comprehensive inventory of natural characteristics, functions and values of resources, existing land use, and ownership patterns along the City's shorelines (Appendix A).

The third requirement of the Act was met by this update of the SMP in 2008. It extends the shoreline jurisdiction of Little Bear Creek to the City's northern boundary in response to recent information that redefines the extent of the 20 cfs flow. The update also reflects recent changes in state requirements and community preference. The SMP serves as a guide for regulating and planning the use of the City's shorelines.

1.4 Public Outreach

The SMP update utilized a variety of public outreach activities. The City organized a Citizen's Advisory Panel (CAP), which provided review and input during all stages of SMP development.

The CAP met a total of eleven times to discuss and comment on the shoreline update. The Planning Commission was updated over the course of two years with a total of ten meetings. An open house and public hearing occurred in October of 2007. The City Council reviewed the SMP update and is scheduled to adopt the Shoreline Master Program in August 2008.

1.5 Document Organization

The SMP establishes long-term planning goals and policies, specific development standards and use regulations, and permitting and administrative procedures. As such, the SMP is a stand-alone document that is linked to other city planning documents and to the Woodinville Municipal Code. The organization of the SMP and the purpose for each chapter is explained below.

- Chapter 1. Introduction: provides background and overview.
- Chapter 2. Shoreline Inventory and Characterization Summary: provides a summary of key findings from the inventory and characterization report, which is included in its entirety as Appendix A.

- Chapter 3. Master Program Goals and Policies: provides general and specific SMP goals and policies for shoreline use elements. These goals and policies are also incorporated into Chapter 12 of the City's Comprehensive Plan.
- Chapter 4. Restoration Planning: establishes long-term restoration goals, provides an overview of regional watershed restoration plans and programs, and discusses specific restoration opportunities in Woodinville.
- Chapter 5. Shoreline Environment Designations: establishes management policies for specific areas within the shoreline jurisdiction. The management policies will be included in Chapter 12 of the Woodinville Comprehensive Plan. Specific development standards and use regulations for each shoreline environment are included in Chapter 6 of the SMP.
- Chapter 6. Development Standards and Use Regulations: establishes specific standards (e.g., setbacks, height limits, etc.) and use regulations (e.g., allowance of piers and docks, marinas, recreational development, etc.) for each shoreline environment. The standards and use regulations are linked to the City's Zoning Code (WMC Title 21).
- Chapter 7. Administrative Procedures: provides procedures and process for permit applications associated with shoreline development. As land use review procedures, this chapter is linked to the City's Zoning Code (WMC Title 21).
- Chapter 8. Definitions: provides definitions for terms used throughout the SMP.

CHAPTER 2 – SHORELINE INVENTORY AND CHARACTERIZATION – SUMMARY OF FINDINGS

2.1 Background and Purpose

Cities and counties updating their SMP are required to prepare an inventory and characterization of the shoreline resources in their jurisdiction. As part of the City's SMP update, an inventory and characterization report and map folio was prepared in 2006. The complete report is incorporated as Appendix A of this SMP.

The purpose of the study was to conduct a baseline inventory of conditions in the shoreline jurisdiction of the City of Woodinville. The inventory and characterization provides a basis for updating the City's SMP to comply with the SMA, Revised Code of Washington (RCW) 90.58 and its implementing guidelines, Washington Administrative Code (WAC) 173-26.

The characterization identifies existing conditions, evaluates functions and values of resources in the shoreline jurisdiction, and explores opportunities for conservation and restoration of ecological functions. The findings are intended to provide a framework for updates to the City's shoreline environment designations, and shoreline management goals, policies, and development regulations. Key findings of the inventory and characterization are summarized below.

2.2 Physical and Biological Conditions

Historically, the Sammamish River corridor consisted of complex wetland systems, with numerous braided channels and a heavily forested floodplain. The river corridor has been significantly altered by construction of the Hiram Chittenden Locks in 1917; draining of wetlands; diking and straightening of the river for flood control; and the 1960s U.S. Army Corps of Engineers flood control project that dredged and deepened the river. A reduced river gradient has altered flow patterns, and channelization and straightening reduced the river's length by approximately half. Although there is no formal levee system along the river, the excavated material from dredging was deposited along the channel creating *de facto* levees or berms. All riparian vegetation was subsequently removed along the channelized river and continues to be maintained by the Corps as a grass-lined channel. Modifications to the Sammamish River system have resulted in reduced levels of ecosystem functioning including hydrology, water quality, riparian habitat, and in-stream habitat.

Little Bear Creek has been impacted by the processes of urbanization resulting in the degradation of channel and habitat conditions. Urbanization has reduced riparian buffers and habitat. Approximately 98 percent of the reach from the mouth to 132nd Avenue NE is armored, reducing potential stream connections to riparian wetlands. As a result, this reach of Little Bear Creek offers little off-channel habitat for salmonids. In addition, several improperly constructed road crossings and culverts present barriers to upstream salmonid migration.

2.3 Habitat and Species

The shorelines within the City of Woodinville provide important habitat for a number of fish and wildlife species. Most notably, Chinook salmon have been documented in the entire length of

the Sammamish River within the city limits. Chinook salmon are also known to occur in Little Bear Creek. Chinook are listed as threatened under the federal Endangered Species Act. Coho salmon are also known to occur within the City's shoreline jurisdiction, both in the Sammamish River and Little Bear Creek. Therefore, fish passage, especially for federally listed species, is an important function of the shorelines within the City.

2.4 Land Use and Public Access

Land use along the Sammamish River is predominantly industrial, particularly on the west bank of the river. The east bank includes multi-family uses and a mix of parks, open space, and multi-family housing. The Sammamish River Trail, owned by King County, follows the west bank of the Sammamish River near the City.

Land use within the City's Little Bear Creek shoreline jurisdiction is predominantly commercial and general business; however, there are several park and open space areas located near the confluence with the Sammamish River. There is also a residential area and parkland on the northwestern shore.

There are significant opportunities for public access to the shorelines of the Sammamish River and Little Bear Creek. Shoreline access (both physical and visual) is available for most of the 10-mile length of the Sammamish River Trail through the City. Other parks with shoreline access include Woodin Creek Park, Wilmot Park, Little Bear Creek Rotary Park, Little Bear Creek Lineal Park Property and a small residential pocket park in the Wedge Neighborhood.

2.5 Future Demand and Potential Use Conflicts

There are no plans or needs for water-dependent shoreline use in the City of Woodinville because of the limited navigation on the Sammamish River and Little Bear Creek. The existing pattern of industrial, commercial, and residential development in the shoreline is well-established and encouraged by the Comprehensive Plan and zoning regulations. There are few undeveloped parcels in the shoreline; therefore, future development will mainly involve redevelopment of existing parcels.

The City's park system, along with King County's Sammamish River Trail, provides opportunities for public access to the shoreline. The City proposes to develop a linear park along Little Bear Creek that would provide additional physical and visual access to Little Bear Creek. It is anticipated that these existing and proposed parks will provide adequate access to the shoreline to meet public demand. The public parks provide shoreline access near residential areas and the town center where the highest demand for access is generated.

The existing and planned uses in the shoreline jurisdiction are consistent with the SMA. One area of potential conflict between the goals of the SMA and other policies and programs is shoreline restoration and the Corps of Engineers Sammamish River Flood Control Project. The flood control project limits the potential for riparian vegetation restoration and for setting back the levees or reestablishing channel meanders.

2.6 Conclusions

The Sammamish River and Little Bear Creek shorelines in the City of Woodinville are characteristic of urbanized development elsewhere in the region. The Sammamish River Trail and various parks along the shoreline provide public access to the Sammamish River and Little Bear Creek and recreational opportunities. In this regard, goals of the SMA related to public use and enjoyment of the State's shorelines have been met well in the City. However, the natural structure and functions occurring at the shoreline have been significantly altered through urbanization and shoreline modifications.

The Sammamish River flood control project has significantly altered river flow and hydrology. Development on a watershed scale has affected the shoreline by increasing impervious area in uplands, resulting in increased peak flow velocities and volumes and impaired water quality. Detailed discussion of altered or degraded shoreline ecological functions in Woodinville is contained in Appendix A, Shoreline Inventory and Characterization.

2.7 Opportunities

The City of Woodinville has two main opportunities for habitat enhancement and restoration of shoreline ecological functions:

1. Enhance existing habitats. This action will improve the functioning of the existing aquatic, riverine wetland, and riparian habitats that currently exist along the Sammamish River and Little Bear Creek.

2. Coordinate with on-going watershed planning for the Sammamish River watershed. This action will allow the City to participate in watershed scale projects that will benefit ecosystem functions of the Sammamish River including reducing water temperature. Future watershed actions may include coordination with the Corps of Engineers to set back berms and improve floodplain connections.

Site-specific projects, such as riparian plantings and restoring mouths of tributaries, would likely have a marginal effect on restoring ecosystem-wide processes, but would still be important and valuable efforts toward habitat enhancement and restoration of impaired ecological functions. Detailed site-specific habitat enhancement and restoration opportunities are discussed in Chapter 4 – Restoration Planning. The description of each opportunity includes discussion of how degraded shoreline ecological functions would be improved.

CHAPTER 3 – MASTER PROGRAM GOALS AND POLICIES

3.1 General Goals and Policies for Master Program Elements

3.1.1 Introduction

The goals and policies presented in this chapter are categorized according to Master Program elements as mandated by the SMA. The first eight elements are identified in the SMA as generic classes of activities for which goals and policies shall be developed and systematically applied to different shoreline uses in these classes, when deemed appropriate by the local jurisdiction. The other elements are encouraged or allowed by the SMA when also identified as appropriate by the local jurisdiction.

The general goal and policy statements found within each element of the Master Program are intended to provide the policy basis for administration of the City of Woodinville Shoreline Master Program. Each Master Program element and its purpose are described below:

1. Shoreline Use Element for considering:

    a. The proposed general distribution and general location and extent of the use on shorelines and adjacent land areas, including, but not limited to, housing, business, industry, transportation, agriculture, natural resources, recreation, education, public buildings and grounds, and other categories of public and private uses of the land. [RCW 98.58.100(2)(e)]

    b. The pattern of distribution and location requirements of water uses including, but not limited to, aquaculture, recreation, and transportation. [WAC 173-26-191(1)(b)]

2. Economic Development Element for the location and design of industries, transportation facilities, port facilities, tourist facilities, commerce and other developments that are particularly dependent on their location on or use of the shorelines of the state. [RCW 90.58.100(2)(a)]

3. Public Access Element making provision for public access to publicly owned areas. [RCW 90.58.100(2)(b)]

4. Circulation Element consisting of the general location and extent of existing and proposed major thoroughfares, transportation routes, terminals, and other public utilities and facilities, all correlated with the shoreline use element. [RCW 98.58.100(2)(d)]

5. Recreation Element for the preservation and enlargement of recreational opportunities including but not limited to parks, beaches, and recreational areas. [RCW 98.58.100(2)(c)]

6. Conservation Element for the preservation of natural resources, including but not limited to scenic vistas, aesthetics, critical areas' functions and values, and vital estuarine areas for fisheries and wildlife protection. [RCW 98.58.100(2)(f)]

7. Historical/Cultural/Scientific/and Educational Element for the protection and restoration of buildings, sites, and areas having historic, archaeological, cultural, scientific, or educational values. [RCW 98.58.100(2)(g)]

8. Flood Control Element for giving consideration to the state-wide interest in the prevention and minimization of flood damages. [RCW 90.58.100(2)(h)]

9. Restoration Element for providing for returning areas to a natural useful condition which are blighted by abandoned and dilapidated structures [WAC 173-26-201(2)(f)] or other environmental deterioration caused by human or natural actions. Such restoration shall be intended as a part of an individual project application which will redevelop the area.

10. Process Element for maintenance of the Master Program and administration of the permit process.

3.1.2 Shoreline Use Element

An element that deals with the distribution, location and extent of: (1) the use of shorelines and adjacent areas for housing, commerce, transportation, public buildings, utilities, education and natural resources; (2) the use of the water for recreation and transportation; and (3) the use of the water, shoreline and uplands for other categories of land and water uses and activities not specified in this SMP.

Development proposals requiring a shoreline permit, including shoreline uses or activities not specified in the Master Program, must be found to be consistent with the general goals and policies as adopted in the Woodinville Comprehensive Plan - Shoreline element, and in the Shoreline Master Program by the Shoreline Administrator.

Land use allocations within the different environmental designations along the shorelines of the state within Woodinville's jurisdiction shall be applied in the order of priority listed below in Policy SU-1.1, in accordance with the criteria listed in WAC 173-26-211, and considering existing development and the Woodinville Comprehensive Plan land use designation. Shoreline of state-wide significance shall also be governed by the use preferences listed in prioritized order in Policy SU-1.3.

GOAL

Goal SU-1: To provide a management system which will plan for and foster all reasonable and appropriate uses [RCW 90.58.020] and provide guidance to property owners for appropriate uses and their locations.

POLICIES

SU-1.1 When assigning environment designations, determining permitted uses within the different designations and use categories, and reviewing individual applications, uses shall be preferred which are consistent with control of pollution and prevention of damage to the natural environment, or are unique to or dependent upon use of the state's shoreline. Alterations of the natural condition of the shorelines of the state, in those limited instances when authorized, shall be given priority for:

1. Development that will provide an opportunity for substantial numbers of the people to enjoy the shorelines of the state. [RCW 90.58.020]

2. Shoreline recreational uses including but not limited to parks, marinas, piers, and other improvements facilitating public access to the shorelines of the state.

3. Shoreline and fish restoration activities including scientific research.

4. Industrial and commercial developments that are particularly dependent on their location on or use of the shorelines of the state, or which provide significant public access opportunities.

5. Single family residences and their appurtenant structures.

SU-1.2 When assigning environmental designations, determining permitted uses within the different designations and use categories, and reviewing individual applications, the City shall consider the carrying capacity of lands involving an intensification of land use.

SU-1.3 The City of Woodinville shall, with regard to shorelines of state-wide significance within the City's jurisdiction, give preference (in the following order of preference) to uses that:

1. Recognize and protect the state-wide interest over local interest.

2. Preserve the natural character of the shoreline.

3. Result in long-term over short-term public benefit.

4. Protect the resources and ecology of the shoreline.

5. Increase public access to publicly owned areas of the shorelines.

6. Increase recreational opportunities for the public in the shorelines. [RCW 90.58.020]

SU-1.4 Development regulations as contained elsewhere in this Master Program and the Woodinville Municipal Code, including, but not limited to, zoning regulations and building standards shall be applied to all existing and future uses, when a permit for development activity is submitted within the SMP jurisdiction to:

1. Ensure visual access to waterways.

2. Promote interesting development.

3. Prevent encroachment over water.

4. Ensure the implementation of the above policy in permitting uses along shorelines of state-wide significance.

5. Protect the natural resources, including natural vegetation, of the Master Program's jurisdiction.

SU-1.5 Ensure that all uses on the shoreline will protect and improve water quality by proper design of drainage, sewer connections, and other measures made necessary by particular uses and locations.

SU-1.6 Ensure that development regulations adequately protect the aesthetic and natural characteristics of the water and shoreline.

GOAL

Goal SU-2: To plan for and encourage the location of similar or compatible uses in suitable areas already dedicated to such use.

POLICIES

SU-2.1 Encourage maintenance and expansion of existing concentrations of compatible uses through establishment of criteria of suitability for shoreline locations within the City's development regulations and this Master Program.

GOAL

Goal SU-3: Where appropriate and permitted by law, to establish an open space corridor (an urban separator of a minimum of 100 feet) along the Sammamish River through reservation of easements [RCW 84.34], acquisition of property by the City or other public entity, transfer of development rights, location within otherwise established buffer areas, or other mechanism.

POLICIES

SU-3.1 Coordinate the City's Shoreline Master Program and Parks, Recreation, and Open Space Element of the Woodinville Comprehensive Plan when acquiring park lands.

SU-3.2 Coordinate the City's Shoreline Master Program and the Woodinville Comprehensive Plan with King County.

3.1.3 Economic Development Element

This is an element for the location and design of transportation, port, tourist and commercial facilities, and other developments dependent upon shoreline locations.

GOAL

Goal SED-1: To encourage a multiple-use concept for land used for economic activity to maintain the tax base while providing public access to the shoreline, respecting the natural environment, and preserving or enhancing the quality of life in the community.

POLICIES

SED-1.1 Ensure consistency with the Woodinville Comprehensive Plan's land use designations and urban design criteria so that public purposes can be served while compatible with securing a return on private investment.

SED-1.2 Upland uses designated by the Woodinville Comprehensive Plan on adjacent lands outside of immediate SMP jurisdiction (in accordance with RCW 90.58.340) shall be consistent with the purpose and intent of this Master Program as they affect the shoreline.

SED-1.3 Develop a means of identifying the additional economic benefit gained by shoreline location.

GOAL

Goal SED-2: To provide for and encourage economic activity and development of water-dependent uses and/or water-related uses in appropriate shoreline locations, which create the most positive impact on the environment and take into consideration the capacities of the area's natural resources, public services, and public facilities.

POLICIES

SED-2.1 Give priority to land uses that give preference to economic activities that either leave natural shoreline features such as trees, grasses, and wildlife habitat unmodified, or that modify them in a way that enhances human awareness and appreciation of the river's or creek's natural functions and beauty.

SED-2.2 Ensure that industrial and commercial structures and site developments are in harmony with general design criteria to be established for the riverfront and river valley landscape in this Master Program, the Woodinville Comprehensive Plan, and development regulations.

SED-2.3 Encourage non-water-dependent uses to locate inland, leaving shorelines natural, open, or dedicated to water-dependent uses.

GOAL

Goal SED-3: To concentrate intensive economic development dependent on shoreline locations at suitable locations already used for like economic pursuits.

POLICIES

SED-3.1 Water-dependent and water-related economic activities will be given preference in areas where limited commercial and industrial development space along shorelines is in demand for a number of competing uses.

SED-3.2 Promote industrial or commercial development contiguous to existing business areas relating to the shoreline to avoid scattering such development into new areas.

3.1.4 Public Access Element

An element making provision for public access to publicly owned shorelines and assessing the need for providing public access to shoreline areas.

GOAL

Goal PA-1: To provide for an adequate amount of public access, both physical and visual, to the shorelines as part of a total system, consistent with the Woodinville Comprehensive Plan's Parks, Recreation, and Open Space element, and the needs of other shoreline uses.

POLICIES

PA-1.1 The City shall develop and implement an integrated plan for public shoreline access. This plan shall identify ways for the City to provide effective public access.

PA-1.2 Private development on the shoreline shall provide as much visual and physical access as possible in line with the reasonable needs for privacy.

PA-1.3 Continue acquisition of land or easements for the public along the shoreline in concert with the Woodinville Comprehensive Plan and recreation programs to preserve a visual corridor, increase parklands, and expand trail linkages.

PA-1.4 Encourage footbridges in areas where both sides of the shoreline are related due to economic activities or recreational uses, subject to the permission of all jurisdictional agencies (including, but not limited to the U.S. Army Corps of Engineers, the state Department of Natural Resources, the Department of Ecology, the Department of Fish and Wildlife, and King County).

PA-1.5 Utilize as many existing public rights-of-way and easements as possible to expand the network of public access to shoreline amenities.

PA-1.6 Where possible, publicly owned street ends that abut the shoreline should be reclaimed and converted to public access points.

PA-1.7 Allow controlled public access to water resources for passive recreation, while still protecting the resource.

GOAL

Goal PA-2: To ensure that the creation of public access will not endanger life or property, or have adverse effects on fragile natural features.

POLICIES

PA-2.1 Discourage public access that damages the shoreline's natural features on either private or public property.

PA-2.2 Discourage public access that would endanger life or public or private safety.

3.1.5 Circulation Element

This is an element for assessing the location and extent of existing and proposed major thoroughfares, transportation routes, terminals and other public facilities, and correlating those facilities with the shoreline use elements.

GOAL

Goal CIR-1: To plan and develop a balanced, efficient, and visually aesthetic circulation network which is most compatible with the shoreline environment.

POLICIES

CIR-1.1 Circulation facilities are to be designed to meet the following criteria:

1. Functionally acceptable, including safety.
2. Visually aesthetic amenities for the citizens of Woodinville.
3. Minimal disruption in access to users on other circulation networks.
4. The least possible impact to existing ecological systems along the shorelines within the jurisdiction of this Master Program.
5. Complementary to the economic and recreational usage of shorelines as set forth in this Master Program and the Woodinville Comprehensive Plan.
6. Buffered with landscaping to reduce impacts.
7. Encouraged to locate in existing rights-of-way.

CIR-1.2 Parking areas shall be designed for minimal interference with the 100-year floodplain's hydrologic function, and the shoreline's aesthetic potential, and to minimize degradation of water quality.

CIR-1.3 Where possible, circulation facilities should be located outside of buffer and conservancy areas.

CIR-1.4 Whenever feasible, major highways, freeways, and railways should be located away from shorelands [WAC 173-26-241(3)(k)] and allowed only when related to and necessary for the support of permitted shoreline activities.

CIR-1.5 Roads located in shoreland areas should be designed and maintained to prevent erosion and to permit the natural movement of groundwater.

CIR-1.6 Since land-use and transportation facilities are highly interrelated, the plans for each should be coordinated. The designation of potential high-use areas in the Woodinville Shoreline Master Program should be done after the environmental impact of the transportation facilities needed to serve those areas has been assessed.

GOAL

Goal CIR -2: To encourage relocation or improvement of circulation elements that are functionally or aesthetically disruptive to the shoreline, public waterfront access, and other shoreline uses.

POLICIES

CIR-2.1 Locate land circulation systems, which are not shoreline dependent, as far from the land-water interface as feasible to reduce interference with either natural shoreline resources or other appropriate shoreline uses to avoid creating new barriers between adjacent uplands and the shoreline.

CIR-2.2 Road locations should be planned to fit the topography so that minimum alterations of natural conditions will be necessary.

CIR-2.3 Extensive loops or spurs of old highways with high aesthetic quality should be kept in service as pleasure bypass routes, especially where main highways paralleling the old highway must carry large traffic volumes at high speeds. When existing transportation corridors abandon their original function, they should be reused for water-dependent use or public access and maintained in public ownership.

GOAL

Goal CIR-3: To coordinate circulation plans for pedestrian, bicycle, and equestrian access routes connected to the shorelines so that there is minimum conflict between the different users.

POLICIES

CIR -3.1 Access by various modes will be controlled by either reducing speeds of vehicles or designing separate ways for fast and slow moving traffic, consistent with the City of Woodinville Comprehensive Plan Transportation Element and Parks, Recreation and Open Space Element. Where compatible, multiple-use corridors are encouraged.

CIR-3.2 Trail and bicycle paths should be encouraged along shorelines where they are compatible with the natural character, resources, and ecology of the shoreline.

3.1.6 Recreation Element

This is an element for the preservation and expansion of recreational opportunities through programs of acquisition/developments, and various means of less-than-fee acquisition. Recreational uses are permitted outright in the shoreline area in all zoning classifications both by the Zoning Code and this SMP.

GOAL

Goal REC-1: To provide for and increase the amount of shorelines dedicated to passive and active public recreation where the use is consistent with the ability of the site to support such use.

POLICIES

REC-1.1 In providing space for public recreation along Woodinville's shoreline, give primary emphasis to providing for the local recreation needs of Woodinville citizens for swimming, bicycling, horseback riding, fishing, picnicking, and other activities benefiting from shoreline access while recognizing Woodinville's location along existing or planned regional trail systems.

REC-1.2 Encourage the counties and state to provide additional shoreline property for public recreation and uses that complement City-owned recreation areas in both a visual and functional way.

REC-1.3 Develop recreational activity areas that complement the passive natural habitats located along the shoreline and give relief from the more intensive commercial/industrial uses.

REC-1.4 Coordinate provision of recreational space and uses to be consistent with the Woodinville Comprehensive Plan.

REC-1.5 Ensure that recreation areas meet the demands of population growth consistent with the carrying capacity of the land and water resources.

REC-1.6 Give priority to developments that provide recreational uses and other improvements facilitating public access to shorelines.

REC-1.7 The supply of active or passive recreation facilities shall be compatible with the environmental designations [WAC 173-26-241(3)(i)] and should relate to local population characteristics, density, and special activity demands. Provision of active recreation and/or park facilities shall be based on the City-wide parks and recreation level-of-service standards adopted by the City of Woodinville's Comprehensive Plan, Parks and Recreation Element or Parks, Recreation, and Open Space Plan.

REC-1.8 The City of Woodinville shall consult with state and local health agency guidelines in preparing use regulations for this Master Program and in siting new recreation and open space areas.

REC-1.9 The use of shoreline street ends, utility rights-of-way, and other publicly owned lands for public access and development of recreational opportunities should be encouraged. See Section 6.23 (Transportation Facilities).

GOAL

Goal REC-2: To protect, for public use and enjoyment, areas containing special shoreline recreation qualities that cannot be easily duplicated.

POLICIES

REC-2.1 Identify along the existing shoreline any unique features (views, topography, vegetation, wildlife, etc.) and assign public acquisition priorities to each.

REC-2.2 Utilize the high-water table and alluvial soil characteristics along Woodinville's shorelines to guide the landscaping of public recreation land; use grasses, shrubs, and trees that thrive in that environment; require minimum maintenance expense; and provide cover, shading, and habitat along the shoreline.

REC-2.3 Utilize the Sammamish River's characteristics to guide the design of new pubic parks: e.g., (a) develop groves of trees appropriate to the soil and moisture characteristics of the former floodplain, (b) develop swimming areas that utilize the river's currents and stream-bank characteristics to maximum advantage, (c) develop footpaths that provide viewing access to the habitat without excessive intrusion into those habitats, and (d) ensure that shoreline parks are located in places where they make optimum use of water for recreation purposes.

REC-2.4 Make use of street ends and other public property for recreational development and access.

3.1.7 Archeological and Historic Resources Element

This is an element for the protection and restoration of buildings, sites, and areas having historic, cultural, educational or scientific values, including unknown archaeological resources that may be located in the shoreline area.

GOAL

Goal AH-1: To protect and restore those aspects, buildings, sites, and areas of shoreline having historic, cultural, scientific, or educational values or significance. [RCW 90.58.100(2)(g)]

AH-1.1 The use regulations of this Master Program shall contain development regulations as necessary to encourage a compatible surrounding environment to ensure planning for the preservation of significant archaeological resources, especially Native American sites in river and stream corridors.

AH-1.2 Protect structures culturally or historically significant to the City of Woodinville.

AH-1.3 Educational opportunities should be provided for the public appreciation of shoreline processes and features.

AH-1.4 Restrict access to scientifically significant areas where appropriate for the protection of the resource.

AH-1.5 Require interpretational signage in areas of historic, cultural, or scientific significance, provided it would not endanger the resource.

POLICIES

3.1.8 Flood Hazard Management Element

Flood hazard management projects are those actions taken with the primary purpose of preventing or mitigating damage due to flooding. Flood hazard management projects or programs may employ any of several physical or regulatory controls including dikes, dams, lakes, engineered floodways, bioengineering, planning, and zoning (land use management). These provisions also apply to repair and maintenance of flood hazard management systems if the systems are enlarged or otherwise modified.

GOAL

Goal FHM-1: To manage flood waters along the Sammamish River and Little Bear Creek in a manner which reflects and balances City goals and policies for water quality, fish and wildlife habitat, flood hazard management, recreation, aesthetics, and other beneficial uses of the waterways and their shorelines.

POLICIES

FHM-1.1 Manage flood prone areas and storm and flood waters of the City through the City's Comprehensive Stormwater Management Plan and frequently flooded area regulations in a manner consistent with the Shoreline Management Act and this Master Program.

FHM-1.2 Work with other cities, King and Snohomish Counties, and state agencies to deal effectively with regional flooding issues.

FHM-1.3 Control stormwater runoff in a manner which utilizes natural detention, retention, and recharge techniques to the maximum extent possible.

FHM-1-4 Prohibit any development within the floodplain that would individually or cumulatively increase the base flood elevation and pursue the discontinuation of such uses which now exist in the floodplain as these uses lose their economic life.

3.1.9 Conservation Element

An element for the preservation of the natural shoreline resources, considering such characteristics as scenic vistas, parkways, water quality, vegetation, beaches and other valuable natural or aesthetic features. An element to promote and encourage restoration of shoreline functions and ecological processes that have been impaired as a result of past development activities.

GOAL

Goal CON-1: To preserve nonrenewable resources and enhance and/or restore natural resources that make Woodinville shorelines uniquely attractive and valuable to a large ecosystem.

POLICIES

CON-1.1 Protect, preserve, rehabilitate, and, where possible, enhance water and habitat quality in the Sammamish River and Little Bear Creek.

CON-1.2 Work with other jurisdictional agencies in the region and with the private sector to deal effectively with regional natural environment issues and the maintenance and enhancement of both the Sammamish River and Little Bear Creek as fish habitat.

CON-1.3 Restore the vegetative cover most appropriate to the Woodinville shoreline for its aesthetic and biological value, selecting plant material that provides feed and cover for birds, fish, and other wildlife as well as an attractive setting for human leisure enjoyment.

CON-1.4 The City should ensure that development of private upland property maintains sufficient volumes of surface and subsurface drainage into the biological wetland areas associated with the shorelines, to sustain existing vegetation and wildlife habitat. The content and velocity of this drainage should be controlled by design, as required by engineering standards adopted and administered by the City's Department of Public Services, so that stream habitat and properties along the shoreline below will not be adversely affected.

CON-1.5 Protect features along the shoreline that provide ecological or recreational benefits.

CON-1.6 Uses or activities that substantially degrade natural resources should not be allowed.

CON-1.7 Assess the environmental impacts and mitigation of any new development prior to issuance of permits.

GOAL

Goal CON-2: To protect the scenic and aesthetic qualities of shorelines to the fullest extent practical. [RCW 90.58.100(2)(f)]

POLICIES

CON-2.1 Concentrate development on shorelines of least visual or natural value.

CON-2.2 Require the undergrounding of existing or new utility lines when physically feasible during development or redevelopment of shoreline areas.

3.1.10 Restoration Element

An element to promote and encourage restoration of shoreline functions and ecological processes that have been impaired as a result of past development activities.

GOAL

Goal RES-1. Restore shoreline habitats that support listed endangered and threatened species, as well as other anadromous fisheries.

POLICIES

RES-1.1 Work with the public and any other interested parties to investigate and identify any environmentally sensitive areas within the shoreline jurisdiction which deserve public reclamation, restoration, or preservation and inclusion within the City's open space system.

RES-1.2 Prioritize those properties identified in accordance with RES-1.1 above as to their value to the City and their vulnerability to degradation or loss. Emphasis should be given to those areas which provide fish and wildlife habitat, facilitate the development of uninterrupted natural passageways for wildlife, provide for continuous urban separators between jurisdictions and within the community, or enhance public access to the waterfront.

RES-1.3 Use this restoration framework to integrate compensatory mitigation projects into the broader restoration vision for the City.

RES-1.4 Encourage voluntary restoration projects in degraded shoreline environments.

RES-1.5 Use the City's critical area buffer enhancement program to help restore stream conditions with new development as well as redevelopment.

RES-1.6 Encourage the use of Low Impact Development (LID) techniques for development and redevelopment projects.

RES-1.7 Evaluate opportunities for City acquisition of land or easements along the Sammamish River and Little Bear Creek.

RES-1.8 Evaluate existing City land use plans and regulations to identify opportunities to encourage protection and restoration of shorelines.

RES-1-9 Evaluate opportunities to provide more public access along Little Bear Creek.

RES-1.10 Provide monitoring and adaptive management of restoration projects implemented within the City. Utilize the adaptive management principles developed as part of the WRIA 8 Conservation Plan.

GOAL

GOAL RES-2. Develop regional solutions with others to resolve the challenge of protecting shoreline ecological functions while also protecting shoreline developments.

POLICIES

RES-2.1 Identify opportunities in the Sammamish River and Little Bear Creek watersheds where the City can support WRIA 8 restoration projects.

RES-2.2 Identify specific restoration opportunities within the City where the City can take the lead with support from other regional entities.

RES-2.3 Cooperate with King County and WRIA 8 to identify opportunities to work with the US Army Corps of Engineers to modify operation of the Sammamish River Flood Control Project to improve opportunities for shoreline restoration.

RES-2.4 Cooperate with the WRIA 8 public education program to develop education materials that promote stream-friendly practices as a component of long-term shoreline management.

GOAL

Goal RES-3: To restore those shoreline areas that are now blighted by abandoned and dilapidated structures or otherwise non-water related uses and encourage the restoration of those shoreline areas to either water-dependent or water-related uses.

POLICIES

RES-3.1 Develop zoning or other incentives which will make it economically attractive for private capital investment to upgrade shoreline development.

RES-3.2 Utilize the City's own capital improvement program to develop the basic network of public amenities in shoreline areas which might in turn attract and improve the quality of related private development.

RES-3.3 Work with the public and any other interested parties to investigate and identify any environmentally sensitive areas within the shorelines jurisdiction which deserve public reclamation, restoration, or preservation and inclusion within the City's open space system.

GOAL

Goal RES-4: To upgrade and beautify the shoreline to a level commensurate with its public value.

POLICIES

RES-4.1 Provide regulations for shoreline restoration and beautification which will restore to suitable condition those areas damaged by people's misuse.

GOAL

Goal RES-5: provide monitoring and adaptive management of restoration projects implemented within the City. Utilize the adaptive management principles developed as part of the Washington Salmon Recovery Funding Board Effectiveness Monitoring Program.

POLICIES

RES 5.1 Determine whether fish passage projects are effective in restoring upstream passage to targeted species of salmon and trout.

RES 5.2 Determine if projects that place artificial in stream structures (AIS) into streams are effective in improving stream morphology and increasing local fish abundance in the treated area at the stream reach level.

RES 5.3 Determine whether riparian plantings are effective in restoring riparian vegetation, stream bank stability and reducing sedimentation.

RES 5.4 Determine whether projects that remove or set back dikes, riprap, roads, or landfills are effective at the reach scale in restoring stream morphology and eliminating channel constraints in the treated area.

RES 5.5 Determine whether projects that restore connectivity to channels that have previously been disconnected from the stream are effective at the reach scale in improving stream morphology and increasing fish abundance in the impacted area. This would include side channels, meander bends, old oxbows, and wetlands.

RES 5.6 Determine if projects that place spawning gravel into streams are effective in improving salmon spawning and increasing local adult fish abundance in the impacted area at the stream reach level.

RES 5.7 Determine whether habitat protection parcels as a whole and individually are effective in maintaining and/or improving salmon habitat and fish and invertebrate species assemblages within the parcel boundaries.

RES 5.8 Determine whether water quality and quantity perimeters are being met in accordance with federal and state water quality standards such as flows, dissolved oxygen, temperature, and pollutants such as temperature, fecal coliform, heavy metals, etc.

GOAL

Goal RES-6: Measure the effectiveness of the Shoreline Master Program.

POLICIES

RES 6.1 Annually the City shall monitor, measure, and report on the effectiveness of the Shoreline Master Program.

RES 6.2 Use reported monitoring results to determine future capital improvement projects for fish and wildlife projects.

3.1.11 Process Element

An element to address revision of the Master Program and efficient implementation.

GOAL

Goal P-1: To provide adequate funding and a process to periodically update the inventory, goals, policies, and use regulations of this Master Program to respond to changing attitudes and conditions and to maintain consistency with the Woodinville Comprehensive Plan.

POLICIES

P-1.1 Provide for periodic review and report by staff to the Woodinville Planning Commission and City Council to assess the performance and the need for change in the Master Program, especially with regard to natural resources and critical area protection.

P-1.2 Citizen participation shall be encouraged in the implementation of this Master Program.

GOAL

Goal P-2: To provide a system for shoreline permit processing that is fast and decisive and eliminates unnecessary duplication of effort and jurisdiction, yet ensures complete coordination and review.

POLICIES

P-2.1 Property rights of landowners shall be protected from arbitrary and discriminatory actions.

P-2.2 Develop administrative procedures which will help the applicant, the City, and other interested parties reach a quick and accurate assessment of a proposed development.

P-2.3 Work toward a 1-stop permit system both within the City government and between appropriate Federal, state, and local agencies.

P-2-4 Review of referred related permits (e.g., U.S. Army Corps of Engineer Permits) shall be considered using the criteria set forth herein.

P-2.5 Reconcile conflicting public policy goals by considering the overall needs of the community including public access, infrastructure requirements, utility corridor alignments and facilities, and natural resource protection.

GOAL

Goal P-3: To emphasize long-range shoreline planning and coordination and consistency with the Woodinville Comprehensive Plan.

POLICIES

P-3.1 Implement shoreline improvements annually through the City's Capital Facilities Element and Capital Improvement Program processes.

P-3.2 Provide annual review for consistency with Woodinville's Comprehensive Plan and for achievement of long-term planning goals. See Policy P-1.1 for process.

CHAPTER 4 – RESTORATION PLAN – SUMMARY OF FINDINGS

4.1 Introduction

The 2003 SMP guidelines specify that local governments must include a "real and meaningful" strategy to address restoration of shorelines. The guidelines also specify how the policies in the SMP promote "restoration" of impaired shoreline ecological functions, where such functions are found to have been impaired based on the inventory and characterization of shoreline ecological functions and ecosystem processes. Local governments are further encouraged to contribute to restoration by planning for and supporting restoration through the SMP and other regulatory and non-regulatory programs.

To meet the requirements of the SMP guidelines, the City of Woodinville developed a Shoreline Restoration Plan. The Plan is included as Appendix B of this Shoreline Management Program. The Restoration plan:

- Identifies primary goals for ecological restoration of the Sammamish River and Little Bear Creek ecosystems;
- Identifies how restoration of ecological function can be accomplished;
- Suggests pathways for how the SMP process may be utilized to accomplish the restoration of impaired shoreline functions associated with the Sammamish River and Little Bear Creek ecosystems; and
- Prioritizes restoration projects so that the highest value restoration actions may be accomplished first.

4.2 Restoration Planning

Shoreline restoration planning begins with the identification of "degraded areas" or areas with "impaired ecological functions." The City's *Shoreline Inventory and Characterization* examined reach and ecosystem-wide processes that maintain shoreline ecological functions; identified impaired ecological functions; and identified programmatic and site-specific opportunities for restoration and/or enhancement. Key findings of the inventory and characterization are summarized in Chapter 2. The complete report is included as Appendix A.

4.3 Restoration Goals and Policies

The guidelines provide that local SMPs shall include "goals, policies and actions for restoration of impaired shoreline ecological functions." Under the guidelines, restoration planning has a purpose distinct from development regulations and mitigation standards. "The guidelines expressly focus restoration requirements on the use of master program policies, as opposed to development regulations" (Ecology, 2004). "Master program provisions should be designed to achieve overall improvements in shoreline ecological functions over time, when compared to the status upon adoption of the master program" (WAC 173-26-201(2)(f)).

The 1997 Woodinville Shoreline Master Program (SMP) contained specific goals and policies related to restoration of shoreline habitat and ecological functions. These goals and policies were expanded in the updated SMP and are included in Section 3.1.10. The new goals and policies specifically address restoration of shoreline ecological functions that have been impaired as a result of past development activities.

4.4 Existing Plans and Programs

The City of Woodinville has been involved in a number of restoration efforts in recent years. These include participation in regional planning efforts and specific shoreline restoration projects in the City.

4.4.1 Regional Work

The City was actively involved in the efforts of Lake Washington/Cedar/ Sammamish Watershed (WRIA 8) forums to restore the watershed. The WRIA 8 Salmon Conservation Plan (WRIA 8, 2005) establishes goals, objectives, and programmatic and site specific actions to address restoration of habitat critical to salmon species in the Cedar River/ Lake Washington watershed. The plan includes several restoration projects specific to the City of Woodinville. These projects are included in the Restoration Opportunities identified in the Restoration Plan.

4.4.2 City Progress to Date

The City has identified and implemented several restoration projects with a focus on shoreline plantings and wetland restoration projects along the Sammamish River and Little Bear Creek. Fish passage improvements have been made on Little Bear Creek and a habitat assessment has been prepared for the creek. Most of the planting projects were undertaken as part of the Sammamish ReLeaf project, funded by the King County Conservation District.

4.5 Restoration Opportunities

Both programmatic and site-specific opportunities for shoreline restoration or enhancement exist in Woodinville. Opportunities have been identified by regional plans such as the Sammamish River Action Plan, the WRIA 8 Near Term Action Agenda, the WRIA 8 Salmon Conservation Plan, and the City's *Shoreline Inventory and Characterization* (Appendix A).

4.5.1 Programmatic Opportunities

The restoration plan identifies programmatic restoration opportunities in the City of Woodinville for the Sammamish River and Little Bear Creek. These opportunities could be pursued to focus resources on impaired areas and provide a net improvement in ecosystem functioning. Programmatic opportunities that are relevant to both shorelines include:

- Continue off-site stormwater improvements; runoff should be treated and detained prior to release to streams.
- Continue riparian and wetland restoration plantings.

- Target local wetland restoration and mitigation to provide storage, detention, and water quality functions.
- Include public outreach and education promoting stream-friendly practices as a component of long-term shoreline management. Utilize existing resources such as City staff and the Sammamish River Stewards to provide education on shorelines at special events and use the City web site and Woodinville Weekly to provide restoration briefings.

Programmatic opportunities specific to the Sammamish River include:

- Protect groundwater sources to the river.
- Support efforts to set back berms to reestablish connectivity to former floodplains and associated wetlands.
- Restore and reconnect wetlands adjacent to tributary streams of the Sammamish River. Continue to restore wetlands within the berms.
- Protect tributaries to the river that provide off-channel habitat.
- Where feasible under Corps of Engineers regulations, restore riparian habitats, particularly conifers, through shoreline plantings.
- Minimize future tree removal within the berms.
- Coordinate with King County to develop best management practices with existing agricultural property owners to reduce runoff and pollutant loading.
- Coordinate with the WRIA 8 plans to reduce river temperature. These plans include riparian plantings to shade the river and protect tributaries, which provide cooler water to the River.
- Coordinate with the Washington Department of Ecology and WRIA 8 to evaluate water rights and water withdrawals from the Sammamish River.

Programmatic opportunities specific to Little Bear Creek include:

- Where feasible, consider removal of bank armoring (riprap/concrete) and replacement with soft armoring and bioengineering measures (i.e., riparian plantings).
- Implement programs to remove and improve culverts.
- Continue to work with Ecology to develop and implement a Total Maximum Daily Load (TMDL) to identify and address point and non-point source pollution problems.
- Coordinate with Snohomish County to develop Best Management Practices (BMP) with existing property owners to reduce runoff and pollutant loading.
- Coordinate with Washington Department of Transportation to improve water quality of runoff from SR 522.

4.5.2 Site-Specific Opportunities

A number of site-specific restoration opportunities have been identified for the Sammamish River and Little Bear Creek. For the Sammamish River these include:

- Restore the riparian area adjacent to and downstream from the Little Bear Creek confluence.

- Create and enhance pools in the Sammamish River to provide cool water refuges for migrating adult salmon in the entire Sammamish River system. In the Woodinville area, the mouths of the tributary streams, Woodin and Derby Creeks, provide opportunities for pool creation.

- Enhance tributary confluences of Woodin, Little Bear, and Derby Creeks. Enhancements could include correction of fish passage barriers, riparian restoration and placement of large woody debris.

- Restore riparian areas along the full length of the river corridor in Woodinville. The City has been actively involved in the Sammamish River Re-Leaf Program, an annual planting event along the river. Continuation of the Re-Leaf Program will increase riparian vegetation and provide shaded refuge areas for migrating salmon.

For Little Bear Creek, site-specific restoration opportunities include:

- Fish passage barrier removal at 132nd Avenue NE, 134th Avenue NE, and NE 195th Street.

- Develop a linear park along the west bank of Little Bear Creek. This will provide opportunities for riparian restoration and provide public access to the Creek.

- Restore the banks of Little Bear Creek and the associated wetland system at Rotary Park (17 acres).

- Prepare a plan for habitat restoration of all of Little Bear Creek.

4.6 Funding and Partnership Opportunities

Funding opportunities for restoration projects include federal, state, and private grants and legislative funds administered by state agencies. For potential projects in Woodinville, the greatest likelihood to obtain funding would result from continued participation in the WRIA 8 Steering Committee and/or strategic partnering with King County and state and federal agencies. Potential funding sources include the Salmon Recovery Funding Board (SRFB), King County Conservation District, and the Community Salmon Fund.

4.7 Mechanisms and Strategies for Effectiveness

The SMP guidelines for restoration planning state that local programs should "…appropriately review the effectiveness of the projects and programs in meeting the overall restoration goals" (WAC 173-26-201(2)(f)). Based on its experience with on-going restoration projects, the City recognizes the importance of monitoring and maintaining restoration sites. The City's monitoring goals include the following core objectives:

- Monitor post-restoration conditions;
- Utilize adaptive management practices in case of project failure; and
- Use monitoring and maintenance results to guide future restoration activities.

The City will coordinate with monitoring and adaptive management programs developed by the Salmon Recovery Funding Board (Appendix B-1) and being developed by the WRIA 8 Salmon Recovery Council.

4.8 Conclusions

This restoration plan presents an overall framework to allow the City of Woodinville to pursue the restoration of the ecosystem functioning of the Sammamish River and Little Bear Creek. The restoration plan addresses key alterations to ecosystem functioning that were identified in the City's Shoreline Inventory and Characterization. Based on these alterations, the City has identified two key restoration actions for the aquatic ecosystems within Woodinville:

1. Enhance existing habitats. This action will improve the functioning of the existing aquatic, riverine wetland, and riparian habitats that currently exist along the Sammamish River and Little Bear Creek.

2. Coordinate with on-going watershed planning for the Sammamish River watershed. This action will allow the City to participate in watershed scale projects that will benefit ecosystem functions of the Sammamish River including reducing water temperature. Future watershed actions may include coordination with the Corps of Engineers to set back the berms and improve floodplain connections.

CHAPTER 5 – SHORELINE ENVIRONMENT DESIGNATIONS

5.1 Introduction

Woodinville's most significant shorelines comprise a riverine system centered on the Sammamish River, which flows north and west through the City, and Little Bear Creek a major tributary, which flows southwest through the western portion of downtown. Existing uses along both shorelines are generally residential, public, private recreation or dedicated open space, or commercial/industrial in nature. Significant business parks have developed along the western shoreline of the Sammamish River in the last decade and are not expected to redevelop during the 20-year planning horizon of the City's adopted Comprehensive Plan.

Given the nature of riverine systems in general and the physical characteristics of Woodinville's shorelines and waterways (see the inventory and characterization in Appendix A), commercial or industrial uses that are strictly water-dependent or water-related are not expected to make up a significant portion of the land uses along Woodinville's shorelines.

5.2 Description of Environments

The Shoreline Management Act requires:

> *Shoreline and shorelands of the state shall be appropriately classified and these classifications shall be revised when circumstances warrant regardless of whether the change in circumstances occurs through man-made causes or natural causes. (RCW 90.58.020)*

The State of Washington Administrative Code [WAC 173-26-211] recommends a system that classifies shorelines into six distinct environments (High Intensity, Shoreline Residential, Urban Conservancy, Rural Conservancy, Natural and Aquatic) that provides the framework for implementing shoreline policies and regulatory measures. The system is designed to provide a uniform basis for applying policies and use regulations within distinctively different shoreline areas. Further, the system is designed to encourage uses in each environment which enhance the character of that environment to permit local governments to place reasonable standards and restrictions on development so that such development does not disrupt or destroy the character of the environment.

The Woodinville Shoreline Master Program designates four environments – Aquatic, Conservancy, Shoreline Residential, and Urban Conservancy – using the State code guidance [WAC 173-26-211] as these are applicable to the characteristics of the shoreline management areas within the City's jurisdiction. These environments are defined below, and shown in Figure 5-1: Shoreline Environment Designations. The exact location of shoreline jurisdiction must be determined in the field, site by site, at the time of permitting for a particular project. The environment designations for specific areas along the City's shorelines were based on the following three criteria [WAC 173-26-211 (2)(a)]:

1. Existing development patterns,

2. Biophysical capabilities and limitations of the shorelines considered for development, and;

3. The goals and aspirations of the Woodinville citizenry.

All areas within the shoreline jurisdiction that are not mapped and/or designated are automatically assigned parallel designations of Conservancy and Urban Conservancy until the shoreline can be re-designated through a master program amendment.

5.2.1 **Aquatic Environment**

5.2.1.1 Purpose

The purpose of the Aquatic Environment is to protect, restore, and manage the unique characteristics and resources of the areas waterward of the ordinary high water mark.

5.2.1.2 Designation Criteria

Assign an Aquatic Environment designation to lands waterward of the ordinary high water mark.

5.2.1.3 Management Policies

The following policies apply to all Aquatic Environment areas:

1. Allow new over-water structures only for water-dependent uses, public access, scientific research, or ecological restoration.

2. The size of new over-water structures should be limited to the minimum necessary to support the structure's intended use.

3. In order to reduce the impacts of shoreline development and increase effective use of water resources, multiple use of over-water facilities should be encouraged.

4. All developments and uses on navigable waters or their beds should be located and designed to minimize interference with surface navigation, to consider impacts to public views, and to allow for the safe, unobstructed passage of fish and wildlife, particularly those species dependent on migration.

5. Uses that adversely impact the ecological functions of critical freshwater habitats should not be allowed except where necessary to achieve the objectives of RCW 90.58.020, and then only when their impacts are mitigated according to the sequence described in WAC 173-26-201(2)(e) as necessary to assure no net loss of ecological functions.

6. Shoreline uses and modifications should be designed and managed to prevent degradation of water quality and alteration of natural hydrographic conditions.

5.2.2 **Conservancy Environment**

5.2.2.1 Purpose

In the context of Woodinville's Shoreline Master Program, the purpose of the Conservancy Environment designation is to protect and restore ecological functions, while making the areas available for limited human use, when appropriate and non-destructive of critical areas. The chief constraints on human uses of land within the Conservancy Environment are that they be non-intensive and non-destructive. Allowed uses should meet the Shoreline Management Act guideline (WAC 173-26-211(2)(a)) of being non-consumptive of the physical and biological resources of the area. The Conservancy Environment is intended to balance the existing development in the City's shoreline areas and to be consistent with the City's Critical Area regulations.

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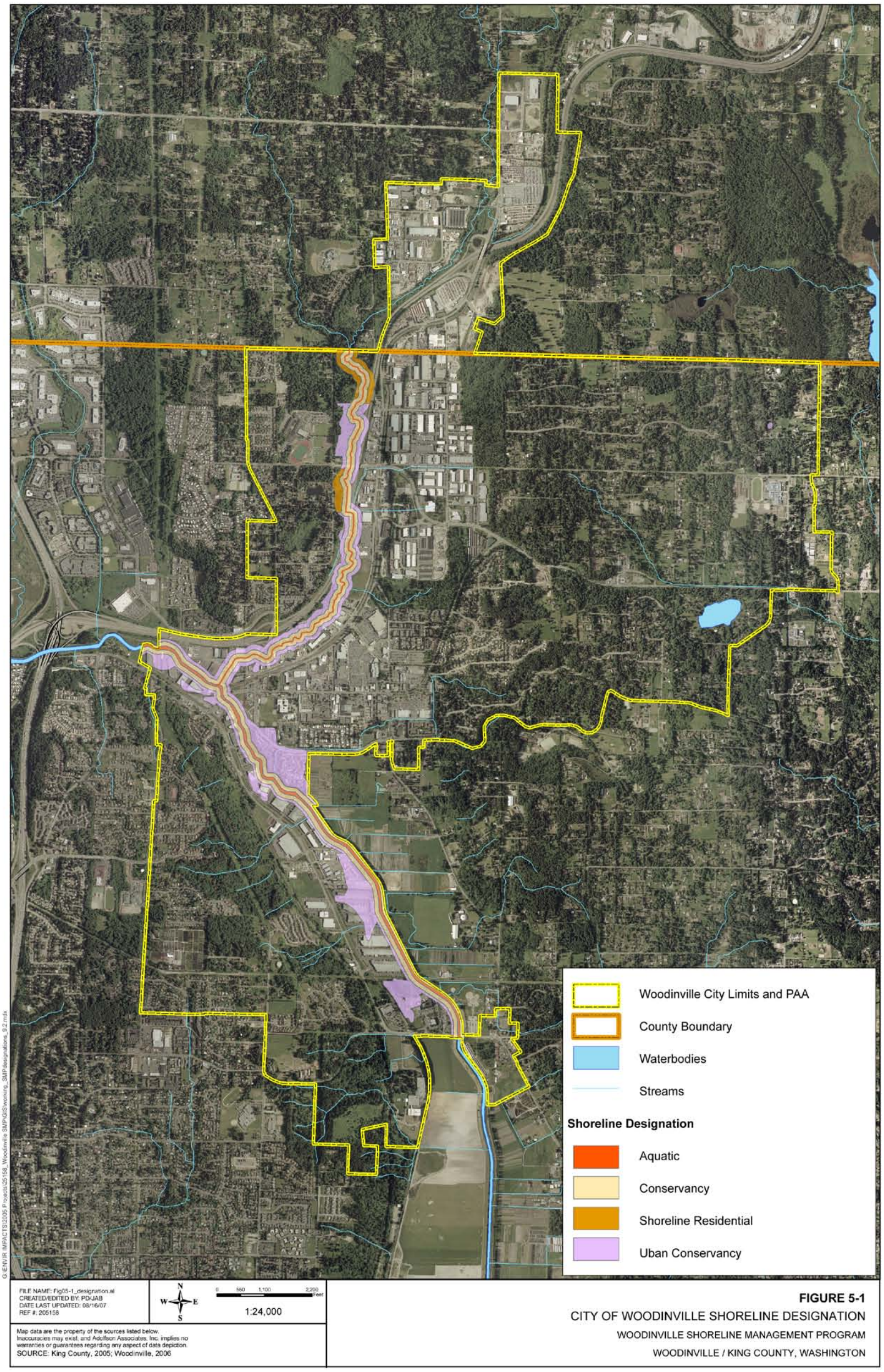

FIGURE 5-1
CITY OF WOODINVILLE SHORELINE DESIGNATION
WOODINVILLE SHORELINE MANAGEMENT PROGRAM
WOODINVILLE / KING COUNTY, WASHINGTON

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5.2.2.2 Designation Criteria

Assign a Conservancy Environment designation to areas that extend 100 feet landward of the ordinary high water mark.

5.2.2.3 Management Policies

The following policies apply to all Conservancy Environment areas:

1. Critical areas in the Conservancy Environment shall be altered only as a last resort and only when overriding State-wide interests or protection or enhancement of the natural resources require the alteration.

2. Uses within the Conservancy Environment should be compatible with uses and activities in adjacent environments.

3. Preservation of resources in a Conservancy Environment shall have priority over public access recreation and development objectives whenever a conflict exists.

4. Construction of structural shoreline stabilization and flood control works should be minimized in the Conservancy Environment.

5.2.3 **Shoreline Residential Environment**

5.2.3.1 Purpose

The purpose of the Shoreline Residential designation is to accommodate residential development and appurtenant structures that are consistent with the Shoreline Management Act. An additional purpose is to provide appropriate public access and recreational uses.

5.2.3.2 Designation Criteria

Assign a Shoreline Residential designation to shoreline areas inside incorporated municipalities and urban growth areas as defined in RCW 36.70A.110, if they are predominantly single-family or multifamily residential development or are planned for residential development.

5.2.3.3 Management Policies

The following policies apply to all Shoreline Residential Environment areas:

1. Standards for density or minimum frontage width, setbacks, lot coverage limitations, buffers, shoreline stabilization, vegetation conservation, limitations, buffers, shoreline stabilization, vegetation conservation, critical area protection, and water quality shall be set to maintain no net loss of shoreline ecological functions. Proposed projects should be reviewed for consistency with the no net loss policy, taking into account 1) the environmental limitations and sensitivity of the shoreline area, 2) proposed

mitigation for anticipated impacts, 3) the level of infrastructure and services available, and 4) other comprehensive planning considerations.

2. Multifamily and multi-lot residential and recreational developments should provide public access and joint use for community recreational facilities where appropriate.

3. Access, utilities, and public services should be available and adequate to serve existing needs and/or planned future development.

5.2.4 Urban Conservancy Environment

5.2.4.1 Purpose

The purpose of the Urban Conservancy designation is to protect and restore ecological functions of open space, floodplain and other sensitive lands where they exist in urban and developed settings, while allowing a variety of compatible uses as established by the Comprehensive Plan.

5.2.4.2 Designation Criteria

The Urban Conservancy environment designation is appropriate for those areas planned for development that is compatible with maintaining or restoring of the ecological functions of the area, and that are not generally suitable for intensive water-dependent uses.

5.2.4.3 Management Policies

The following policies apply to all Urban Conservancy Environment areas:

1. Uses that preserve the natural character of the area or promote preservation of open space, floodplain or sensitive lands either directly or over the long term should be the primary allowed uses. Uses that result in restoration of ecological functions should be allowed if the use is otherwise compatible with the purpose of the environment and the setting.

2. Standards should be established for shoreline stabilization measures, vegetation conservation, water quality, and shoreline modifications within the Urban Conservancy designation. These standards, in combination with proposed mitigation for any anticipated impacts, should ensure that new development does not result in a net loss of shoreline ecological functions or further degrade other shoreline values.

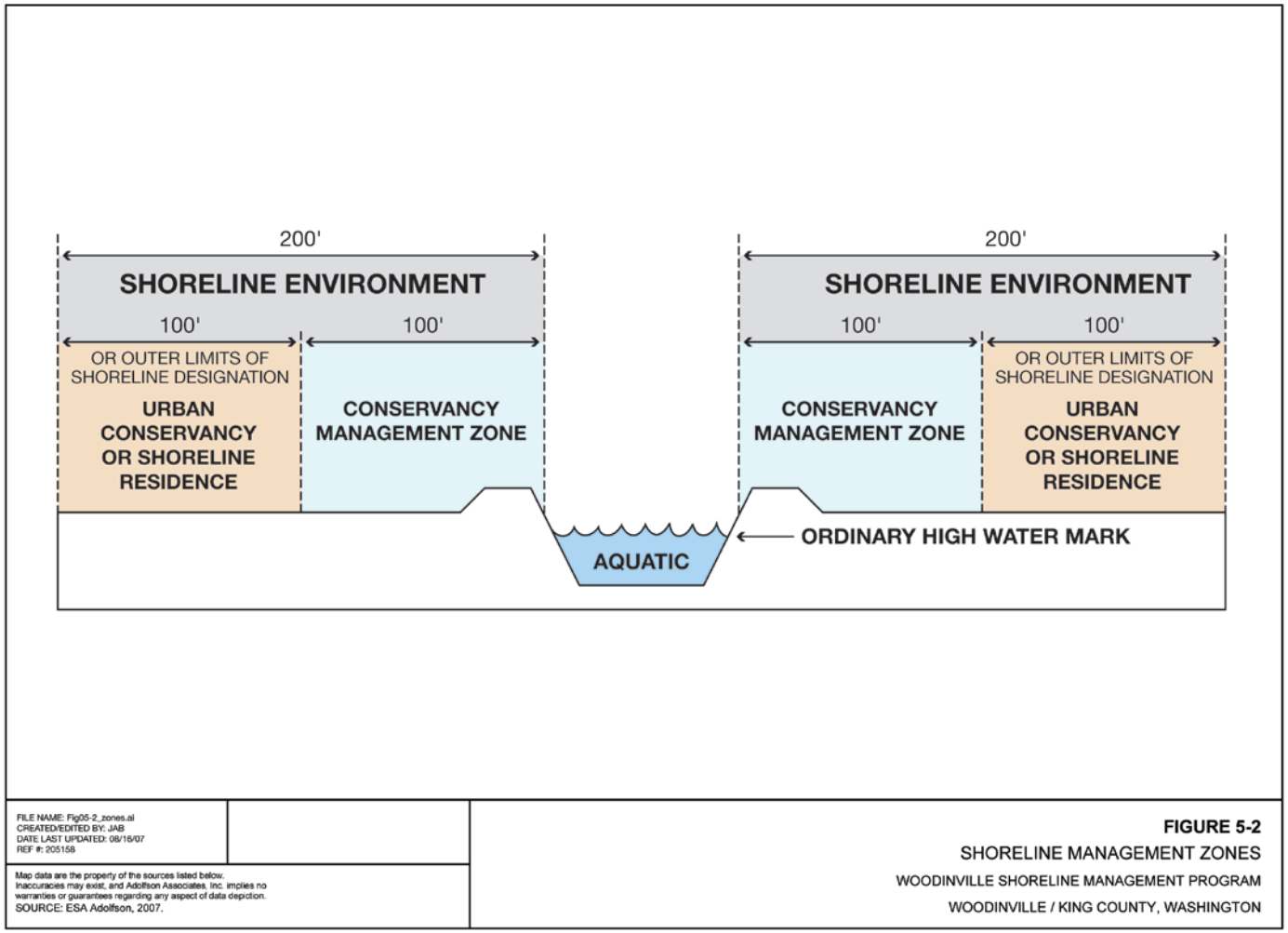
3. Public access and public recreation objectives should be implemented whenever feasible and significant ecological impacts can be mitigated.

4. Water-oriented uses should be given priority over non-water oriented uses. For shoreline areas with commercial development or adjacent to commercially navigable waters, water-dependent uses should be given highest priority.

5.3 Shoreline Environment Descriptions, Map, and Boundary

Figure 5-1 indicates the general boundary of the shoreline environment designations in the City of Woodinville. Official maps prepared pursuant to Chapter 173-26 WAC are on file with the City. The exact location of shoreline jurisdiction must be determined in the field, site by site, at the time of permitting for a particular project. Descriptions for each waterway are described generally from downstream to upstream limits within the city. The use of "left bank" and "right bank" refers to facing upstream. The shoreline environment designations are three parallel designations within the shoreline jurisdiction as illustrated in Figure 5-2.

Figure 5-2. Shoreline Management Zones



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5.3.1 **Sammamish River**

The Sammamish River from the southern city limits shall be designated as follows"

1. Aquatic—area waterward of the ordinary high water mark

2. Conservancy—area 100 feet landward of the ordinary high water mark

3. Urban Conservancy—area from 100 feet landward of the ordinary high water mark to the outer edge of the shoreline jurisdiction.

5.3.2 **Little Bear Creek**

Little Bear Creek from its mouth to the northern city limits shall be designated as follows:

1. Aquatic—area waterward of the ordinary high water mark

2. Conservancy—area 100 feet landward of the ordinary high water mark

3. Urban Conservancy—area from 100 feet landward of the ordinary high water mark to the edge of the shoreline jurisdiction.

    a. Right bank from mouth to approximately NE 200th Street

    b. Left bank from mouth to approximately NE 190th Street

    c. Left bank from NE 195th Street to NE 200th Street

4. Shoreline Residential—area from 100 feet landward of the ordinary high water mark to the edge of the shoreline jurisdiction.

    a. Left bank from approximately NE 190th Street to NE 195th Street

    b. Left and right bank from approximately NE 200 Street to the northern City Limits.

5.4 **Conclusion**

Chapter 6 (Development Standards and Use Regulations) lists the specific use activities which are permitted outright or conditionally in each shoreline environment; it also indicates the dimensional and performance standards for each of the use activities, which are essential to control development so that it is compatible with the environment within which it is located. It is the policy of this Master Program and the Woodinville Comprehensive Plan to encourage the concentration of urban land uses in areas with minimal environmental constraints to reduce the amount and/or rate of urban intrusion into natural areas.

CHAPTER 6– DEVELOPMENT STANDARDS AND USE REGULATIONS

6.1 Introduction

The uses and activities presented in each of the following sections of this chapter are a bridge between the more general goals and policies for Master Program elements given in Chapter 2. The use activities selectively paraphrase or expand upon the guidelines set forth in the Washington Administrative Code (WAC 173-26-241). They have been modified, in some instances, to fit conditions in the City of Woodinville.

The preceding chapters on general goals and policies and environment designations established general concepts to guide private and public development along Woodinville's Shorelines. The City's Zoning Ordinance legally regulates the kinds of uses permitted along the shoreline as well as in other parts of the City. However, the scope of the Shoreline Management Act requires that the City apply even more specific controls to development within the shoreline jurisdiction areas. These regulations are set forth in this chapter and are intended to implement the previously articulated general concepts. See Section 8, Definitions, for the definition of "Development".

Development proposals requiring a substantial development permit, including shoreline uses or activities not specified in this document, must be consistent with these use policies and regulations, the general goals and policies, and environment designations on which they are founded by the Shoreline Administrator or the appropriate hearing body. Exceptions to the regulations can be allowed only when a development proposal meets conditions required in the administrative provisions set forth in Chapter 5. Shoreline permit exemptions for those proposals which do not meet the substantial development criteria, as defined in RCW 90.58.030 (3)(e)(i-xii) and WAC 173-27-040 will be adhered to by this SMP.

According to the Shoreline Management Act, a proposal requiring a Substantial Development Permit is one which constitutes a substantial development. This is defined as:

> *Any development of which the total cost, or fair market value, exceeds five thousand seven hundred eighteen dollars ($5,718), or any development which materially interferes with the normal public use of the water or shorelines of the state except that the following shall not be considered substantial developments for the purpose of this chapter:*
>
> *(i) Normal maintenance or repair of existing structures or developments, including damage by accident, fire or elements;*
>
> *(ii) Construction of the normal protective bulkhead, common to single family residences;* [The City of Woodinville requires a shoreline exemption permit for bulkheads at single family residences.]
>
> *(iii) Emergency construction necessary to protect property from damage by the elements;*
>
> *(iv) Construction and practices normal or necessary for farming, irrigation, and ranching activities, including agricultural service roads and utilities on shorelands, and the construction and maintenance of irrigation structures including, but not limited to, head gates, pumping facilities, and irrigation channels. (A feedlot of any size, all processing plants, other activities of a commercial nature, alteration of the contour of the shorelands by leveling or*

filling other than that which results from normal cultivation, shall not be considered normal or necessary farming or ranching activities. A feedlot shall be an enclosure or facility used or capable of being used for feeding livestock hay, grain, silage, or other livestock feed, but shall not include land for growing crops or vegetation for livestock feeding and/or grazing, nor shall it include normal livestock wintering operations);

(v) Construction or modification of navigational aids such as channel markers and anchor buoys;

(vi) Construction on shorelands by an owner, lessee or contract purchaser of a single family residence for his own use or for the use of his family, which residence does not exceed a height of thirty-five feet above average grade level and which meets all requirements of the state agency or local government having jurisdiction thereof, other than requirements imposed pursuant to this chapter;

(vii) Construction of a dock, including a community dock, designed for pleasure craft only, for the private noncommercial use of the owners, lessee, or contract purchaser of single or multiple-family residences. This applies if, in fresh waters, the fair market value of the dock does not exceed ten thousand dollars. If subsequent construction on the dock occurs within five years of completion of the prior construction and exceeds five thousand seven hundred eighteen dollars, the subsequent construction shall require a substantial development permit;

(viii) Operation, maintenance, or construction of canals, waterways, drains, reservoirs, or other facilities that now exist or are hereafter created or developed as a part of an irrigation system for the primary purpose of making use of system waters, including return flow and artificially stored ground water for the irrigation of lands;

(ix) The marking of property lines or corners on state owned lands, when such marking does not significantly interfere with normal public use of the surface of the water;

(x) Operation and maintenance of any system of dikes, ditches, drains, or other facilities existing on June 4, 1975, which were created, developed, or utilized primarily as a part of an agricultural drainage or diking system;

(xi) Site exploration and investigation activities that are prerequisite to preparation of an application for development authorization under this chapter, if: a) the activity does not interfere with the normal public use of the surface waters; b) the activity will have no significant adverse impact on the environment including, but not limited to, fish, wildlife, fish or wildlife habitats, water quality, and aesthetic values; c) the activity does not involve the installation of a structure, and upon completion of the activity the vegetation and land configuration of the site are restored to conditions existing before the activity; d) a private entity seeking development authorization under this section first posts a performance bond or provides other evidence of financial responsibility

to the local jurisdiction to ensure that the site is restored to preexisting conditions; and e) the activity is not subject to the permit requirements of RCW 90.58.550;

(xii) The process of removing or controlling an aquatic noxious weed, as defined in RCW 17.26.020, through the use of an herbicide or other treatment methods applicable to weed control that are recommended by a final environmental impact statement published by the Department of Agriculture or the Department of Ecology jointly with other state agencies under chapter 43.21C RCW; and

(xiii)Public or private watershed restoration projects consistent with this Shoreline Master Program and pursuant to WAC 173-27-040(2)(o).

Shoreline development may therefore be deemed substantial by either a monetary measurement or a local decision that normal public use of the water or shoreline might be obstructed.

The use regulations within different shoreline environments are supplementary to, and in some cases, supersede the City's existing development codes. These interlocking development regulations are intended to make shoreline development responsive to specific design opportunities along the waterways and to maintain the public's interest in their recreational and aesthetic values. It is also the City's goal**,** as articulated in the Urban Design Element of the Woodinville Comprehensive Plan, to achieve a sense of harmony among the built, natural, and cultural environments through the application of design principles to individual buildings, residential, commercial, and industrial districts, and the City as a whole.

A particular land area within the City's shoreline management boundaries will therefore be governed by: (1) the Woodinville Comprehensive Plan land use designation; (2) the underlying zoning designation of the area; (3) the shoreline environment designation; (4) shoreline activity and use goals, policies, and regulations in the Shoreline Master Program; and (5) the discretion of the Shoreline Administrator in interpreting flexible areas of the Master Program. There may be certain instances where the underlying zone established in the zoning ordinance may be modified by a shoreline use regulation. This can be achieved where a density, height, or side yard bonus might be approved in exchange for shoreline development which provides more than the ordinary public amenity, shoreline access, or scenic view enhancement, consistent with the goals and objectives of the Master Program.

The following use matrix and regulations should therefore be viewed as supplementing the other development regulations which already apply to areas along Woodinville's shorelines. They should also be viewed as intending to allow all reasonable and appropriate uses, consistent with the Shoreline Management Act, while imposing only the regulatory control necessary to ensure preservation of the integrity of the natural systems and the public health, safety, welfare, and trust within the shoreline jurisdiction. A Shoreline Use, Activity, and Environment compatibility matrix is included in Table 6-1 to aid in distinguishing for the reader various uses and activities and the environments in which they are permitted, conditionally permitted, or prohibited.

The table in Section 6.2 identifies each shoreline modification or use within each shoreline environment designation. For each environment designation, a particular use is noted as P (permitted outright subject to Shoreline Substantial Development Permit and other regulatory requirements); C (permitted conditionally subject to a Shoreline Conditional Use approval and other regulatory requirements); N (prohibited), or SU (special use). SU permits are not shoreline permits or part of this Master Program and are only listed for convenience. If inconsistencies

exist between general management policies included in Chapter 3 and Table 6.1, the table will govern.

Table 6-1. Shoreline Use Matrix

USES	Aquatic	Conservancy	Shoreline Residential	Urban Conservancy	NOTES
General Section					
Critical Area Protection/Enhancement	P	P	P	P	
Discharges of sewage, waste, rubbish, litter, marine toilets	N	N	N	N	
Disposal of fuels, cleansers, lubricants, hydraulic fluid, or other possible toxic substances	N	N	N	N	
Agriculture	N/A	N/A	N/A	N/A	*Not Applicable to Woodinville*
Aquaculture	C	C	C	C	Allowed only for fish restoration activities such as shellfish restoration salmon fry incubation.
Forest Management	N/A	N/A	N/A	N/A	*Not Applicable to Woodinville*
Commercial Development					
Boat Launches	C	P	P	P	
Water-Related Primary Uses	N	C	N	P	
Water-Related Accessory Uses (when with primary use)	N	P	N	P	
Water Enjoyment Uses	N	C	N	P	
Offices	N	N	N	P	
Restaurants	N	N	N	P	+Other water-enjoyment uses
Motels/Hotels	N	N	N	P	+Other water-enjoyment uses
Mixed-Use Commercial Development	N	N	N	P	+Other water-enjoyment uses
Commercial Recreation	N	N	N	P	
Nurseries	N	N	N	P	
Commercial Parking Lots	N	N	N	N	
Parking (accessory) and Loading Areas	N	N	C	C	
Mining	N/A	N/A	N/A	N/A	*Not Applicable to Woodinville*
Outdoor Advertising, Signs					
On-premise, attached commercial signs	N	N	N	P	
Non-commercial and/or public	N	C*	C	P	*Only permitted for interpretive and trail signs.
On-premise, free-standing commercial signs	N	N	N	P*	* See regulations in Section 6.13.
Off-premise commercial signs	N	N	N	N	

P = Permitted Use N = Not Permitted C = Conditional Use SU = Special Use N/A = Not Applicable

USES	Aquatic	Conservancy	Shoreline Residential	Urban Conservancy	NOTES
Residential Development					
Over-water residential development	N	N	N	N	
Attached and detached single family	N	N	P	P	
Multi-family/Condo. Units	N	N	P	P	
Boarding/Rooming houses and dormitories	N	N	C	P	
Residential subdivisions	N	N	P	P	
Joint Use Docks	C	C	C	N/A	
Residence accessory to public/private parkland	N	C	P	P	
Utilities (see definitions for accessory (A) and primary (P) utilities)					
Service Lines (A)	C	C	P	P	
Regional/Trunk Lines (P)	C*	N	C	C	*Permitted only if bored under the stream channel.
Light Poles (A)	N	C*	P*	P*	*Lighting should be design not to shine on or reflect light onto the water.
High-tension transmission/ Distribution lines and facilities (Power Plants) (P)	N	N	N	C*	*Only where infeasible to locate upland of shoreline area
Water Treatment Plants (P)	N	N	N	C	
Intake Valves (A)	C	P	C	P	
Transfer sites/Stations (P)	N	N	N	N	
Sewage/Waste treatment (P)	N	N	N	N	
New pumping stations	N	N	N	N	
Shoreline Use					
Stormwater discharge pipes	C	P	P	P	
Expansion/Repair of existing pumping stations	C*	C*	C*	C*	*Only that necessary to meet needs of existing system
Natural gas distribution (P)	C	C	C	C	
Natural gas storage (P)	N	N	N	N	
Critical Facilities (21.06.138)	N	N	C*	P*	*Prohibited within 100-year floodplain area of shoreline jurisdiction

P = Permitted Use N = Not Permitted C = Conditional Use SU = Special Use N/A = Not Applicable

USES	Aquatic	Conservancy	Shoreline Residential	Urban Conservancy	NOTES
Industry					
Junk/Salvage yards	N	N	N	N	
Hazardous Waste Treatments	N	N	N	N	
R&D industries	N	N	N	P	
Light manufacturing*	N	N	N	P	*See definition in section 6.16 for list of actual types of uses
Warehousing	N	N	N	P	
Parking (accessory) and Loading Areas	N	N	C	C	
Staging/Storage Areas	N	N	N	N *	*Except where allowed as incidental to a primary use
Bulkheads	C	C	C	C	
Breakwaters	N	N	N	N	
Jetties/Groins	N	N	N	N	
Shoreline Fills					
for construction of otherwise permitted uses	N*	C*+	C+	C+	*Except in critical areas +For improvements to recreational uses, public access, emergency and public safety, public roadways and utilities, and drainage design
within critical areas	N	N	C+	C+	+ For improvements to recreational uses, public access, emergency and public safety, public roadways and utilities, and drainage design
Solid Waste Disposal	N	N	N	N	
Dredging	C	C	C	C	
Shoreline Protection					
Replanting	P	P	P	P	
Bank Stabilization	C	C	C	C	
Riprap	C	C	C	C	
New Dikes/Levees	C*	C*	C*	C*	*Subject to policies and general regulations in Section 6.22

P = Permitted Use N = Not Permitted C = Conditional Use SU = Special Use N/A = Not Applicable

USES	Aquatic	Conservancy	Shoreline Residential	Urban Conservancy	NOTES
Transportation Facilities (*only if meeting conditions as listed)					
Minor Arterials	N	C*	P	P	* See conditions as defined in Section6.23.2.5.j
Principal Arterials or Collectors	N	N	P	P	
Neighborhood or Local Access	N	C*	P	P	* See conditions as defined in Section 6.23.2.5.j
Bridges/Tunnels for Streets and Highways	C*	C	N	C	*Only as required to cross a river or stream
Railroad Bridges/Tunnels	C*	C*	N	C	*Only as required to cross a river or stream
Pedestrian, Bicycle, Equestrian Trails	N	P*	P*	P*	*Only as required to cross a river or stream
Highways and Freeways	N	N	N	C*	* See conditions as defined in Section 6.23.5
Piers and Docks					
Docks accessory to residential	C	C	C	N/A	
Docks for excursion/pleasure boat access to commercial activities	C	C	N	N/A	
Piers	N	N	N	N/A	
Marinas and Other Boating Facilities	**N**	**N**	**N**	**N**	
Boat Sheds	N	N	P*	P*	*Must be located 100 feet landward of the ordinary high water mark
Recreation					
Boat/Canoe Launching	P	P	P	P	
Bicycle Paths	N	P	P	P	
Pedestrian Paths	N	P	P	P	
Equestrian Paths	N	P	P	P	
Trail and Path Bridges	C*	C*	P	P	*Only as required to cross a river or stream. Bridges must avoid the waterway.
Parks (Active, Passive, Open Space)	N	P*	P	P	*Passive only
Parking (only as accessory to principal permitted use)	N	N	P*	P*	*Must be located 100 feet landward of the ordinary high-water mark
Commercial Recreation (rentals)	N	N	N	P	
Urban Garden Plots	N	N	P	P	
Instream Uses*	C	N/A	N/A	N/A	*Includes scientific equipment for fish and water quality monitoring and for fish and shellfish enhancement or restoration.

P = Permitted Use N = Not Permitted C = Conditional Use SU = Special Use N/A = Not Applicable

6.2 Critical Areas

6.2.1 Definition

The term "critical areas" in the SMP applies to those areas defined by the Woodinville Municipal Code, Section 21.06.136 and Woodinville Ordinance No. 375 §2, 2004, and includes any of those areas in the City of Woodinville which are subject to natural hazards or those land features which support unique, fragile or valuable natural resources including fish, wildlife and other organisms and their habitat and such resources which carry, hold or purify water in their natural state. Critical areas include erosion hazard areas, flood hazard areas, landslide hazard areas, seismic hazard areas, steep slope hazard areas, streams and wetlands.

6.2.2 Applicability

Subject to the exceptions listed below in this section of the SMP, the provisions of the Woodinville Critical Areas Regulations (WMC 21.24, and Woodinville Ordinance No. 375, 2004) shall apply to any use, alteration, or development where designated critical areas are physically located within the shoreline jurisdiction, whether or not a shoreline permit or written statement of exemption is required.

1. If provisions of the Critical Areas Regulations and other provisions of the Master Program conflict, the provisions most protective of the shoreline ecological functions shall apply, as determined by the City.
2. Provisions of the Critical Areas Regulations that are not consistent with the Shoreline Management Act chapter 90.58 RCW, and supporting Washington Administrative Code chapters shall not apply in the shoreline jurisdiction.
3. In the event an applicant wishes to adjust standards and provisions for designated critical areas per the Complete Exemptions (WMC 21.224.060), Partial Exemptions (21.24.070), Exceptions (WMC 21.24.080), or the Reasonable Use Exception (WMC 21.24.080(2)) provisions of the Critical Areas Regulations, such application shall be processed as a Shoreline Variance Permit process, per the provisions of the SMP and WAC 173-27, subject to the exception below:
    a. Alteration to designated critical areas and/or their buffers may be allowed without a Shoreline Variance Permit in all shoreline environments when necessary to accommodate allowed water-dependent uses or allowed public access opportunities that increase public access to the shoreline, provided that development is located, designed, constructed, and operated to minimize critical area disturbance to the maximum extent feasible. Design for such development or redevelopment shall include measures to restore or enhance degraded ecological functions to the extent possible. Such development must comply with the provisions of Section 6.4 of this section, Environmental Impact Mitigation.

6.2.3 Minimum Requirements

The following requirements are necessary to protect and preserve the ecological functions of critical areas within the shoreline jurisdiction based on review of the best available scientific literature. In the event of a conflict between any of the following regulations and any other provision of the Master Program, the regulation most protective of the critical area present shall prevail.

1. All shoreline uses and activities shall be located, designed, constructed, and maintained to protect shoreline ecologic functions, conserve fish and wildlife habitat, and to minimize adverse impacts to water quality and fish and wildlife resources including spawning, nesting, feeding areas, and migratory routes.
2. Concentration of urban land uses shall be encouraged in areas with minimal environmental constraints to reduce the amount and/or rate of urban intrusion into natural areas.
3. Critical areas within the shoreline jurisdiction area which are important for control of surface water runoff and which have been adversely affected by human activity prior to the effective date of this revised Master Program shall not be further degraded.
4. All measures for controlling erosion, stream flow rates, stormwater runoff, or flood waters shall use natural detention, retention, and recharge techniques to the maximum extent possible.
5. Public improvements and private developments shall not alter natural drainage systems when avoidable. Non-natural stream control works, when unavoidable, shall be located, designed, constructed, and maintained so that net on- and off-site impacts related to water do not degrade the existing water quality or wildlife habitat.
6. Wetlands located beyond the 200-foot shoreline jurisdiction boundary but "associated" with either the Sammamish River or Little Bear Creek shall also be subject to SMP jurisdiction. The term "associated" means wetlands that are in proximity to and either influence or are influenced by these two bodies of water. [WAC 173-22-030(1)] The City shall review all projects within the shoreline jurisdiction to determine if associated wetlands are present. The shoreline jurisdiction shall not extend to buffers of associated wetlands.
7. The City shall work cooperatively with adjacent county, state, and federal agencies to effectively control regional flooding problems and to encourage and ensure state water quality standards for regional fish and wildlife migration routes.
8. The City does not intend to deny all economic use of any property subject to these policies and regulations, except as the public trust doctrine would limit the use of the property. This policy will be implemented through the appropriate application of the following: project design standards, transfers of development rights, mitigation, and variances.

9. In the event an applicant wishes to adjust standards and provisions for designated critical areas per the Reasonable Use Exception provisions of WMC 21.24.080 (2), such application shall be processed as a Shoreline Variance permit process per the provisions of the SMP and WAC 173-27.
10. Alteration to critical areas and/or their buffers may be allowed in all shoreline environments when necessary to accommodate allowed water-dependent uses or allowed water-oriented uses that increase public access to the shoreline without a Shoreline Variance Permit, provided that development is located, designed, constructed, and operated to minimize critical area disturbance to the maximum extent feasible. Such development or redevelopment shall restore or enhance degraded ecological functions. Such development shall not be exempt from the provisions of Section 6.4, Environmental Impact Mitigation.

6.3 Vegetation Conservation

1. Required buffers shall be considered vegetation conservation areas. Existing native shoreline vegetation shall be preserved to the maximum extent feasible within the vegetation conservation area consistent with safe construction practices, and other provisions of this section. Native trees and shrubs shall be preserved to maintain and provide shoreline ecological functions such as habitat, shade, and slope stabilization.
2. Within the vegetation conservation area, no more than 15 percent of the area with native shoreline vegetation shall be cleared. All native trees in the vegetation conservation area over 4 inches in diameter at breast height shall be retained. Trees determined by the City to be hazardous or diseased may be removed.
3. The Shoreline Administrator may allow removal of vegetation exceeding that described above where an applicant agrees to replacement plantings that are demonstrated to provide greater benefit to shoreline ecological functions than would be provided by strict application of this section.

6.4 Environmental Impact Mitigation

1. All shoreline development and uses should be located and designed to ensure no net loss to shoreline ecological functions, to the extent feasible. In cases where impacts to shoreline ecological functions from allowed development and uses are unavoidable, those impacts shall be mitigated according to the provisions of this section.
2. To the extent Washington's State Environmental Policy Act of 1971 (SEPA), chapter 43.21C RCW, is applicable, the analysis of environmental impacts from proposed shoreline uses or developments shall be conducted consistent with the rules implementing SEPA (WMC 14.04 and WAC 197-11).
3. Where required, mitigation measures shall be applied in the following sequence of steps listed in order of priority.

a. Avoiding the impact altogether by not taking a certain action or parts of an action;
b. Minimizing impacts by limiting the degree or magnitude of the action and its implementation by using appropriate technology or by taking affirmative steps to avoid or reduce impacts;
c. Rectifying the impact by repairing, rehabilitating, or restoring the affected environment;
d. Reducing or eliminating the impact over time by preservation and maintenance operations;
e. Compensating for the impact by replacing, enhancing, or providing substitute resources or environments; and
f. Monitoring the impact and the compensation projects and taking appropriate corrective measures.

4. In determining appropriate mitigation measures applicable to shoreline development, lower priority measures shall be applied only where higher priority measures are determined to be infeasible or inapplicable.
5. Required mitigation shall not be in excess of that necessary to assure that proposed uses or development will result in no net loss of shoreline ecological functions.
6. Mitigation actions shall not have a significant adverse impact on other shoreline functions fostered by the policies of the Shoreline Management Act.
7. When compensatory measures are appropriate pursuant to the priority of mitigation sequencing above, preferential consideration shall be given to measures that replace the impacted functions directly and in the immediate vicinity of the impact. However, alternative compensatory mitigation within the watershed that addresses limiting factors or identified critical needs for shoreline resource conservation based on watershed or comprehensive resource management plans applicable to the area of impact may be authorized. Authorization of compensatory mitigation measures may require appropriate safeguards, terms or conditions as necessary to ensure no net loss of ecological functions.

6.5 Archaeological, Historic, and Cultural Resources

1. If any archeological artifacts are uncovered during excavations in the shoreline, work must stop and the City of Woodinville and the State Department of Archeology and Historic Preservation and affected tribes must be notified.
2. Permits issued in areas known or highly suspected to contain archeological artifacts and data shall have provisions providing for a site inspection and evaluation by an archeologist prior to initiation of disturbance and for monitoring of potentially disruptive activities. Cost for inspection and evaluation of the site will be the responsibility of the applicant. Significant

archeological data or artifacts shall be recovered before work begins or resumes on a project.

6.6 Nonconforming Use and Development Standards

1. In addition to the provisions of this program, nonconforming use or developments located in the shoreline are subject to the provisions of the Woodinville Zoning Code for nonconforming structures, land, and uses (WMC 21.32).
2. Structures that were legally established and are used for a conforming use but which are nonconforming with regard to setbacks, buffers or yards, area, bulk, height, or density may be maintained and repaired.
3. Uses and developments that were legally established and are nonconforming with regard to the use regulations of the Shoreline Master Program may continue as legal nonconforming uses. Such uses shall not be enlarged or expanded, except by the addition of normal appurtenances as defined in WAC 173-27-040(2)(g) upon approval of a Conditional Use Permit.
4. A use which is listed as a conditional use but which existed prior to adoption of the master program or any relevant amendment and for which a Conditional Use Permit has not been obtained shall be considered a nonconforming use.
5. A structure for which a variance has been issued shall be considered a legal nonconforming structure and the requirements of this section shall apply as they apply to preexisting nonconformities.
6. A structure which is being or has been used for a nonconforming use may be used for a different nonconforming use only upon the approval of a Conditional Use Permit. A Conditional Use Permit may be approved only upon a finding that:
    a. No reasonable alternative conforming use is practical; and
    b. The proposed use will be at least as consistent with the policies and provisions of the Shoreline Management Program and as compatible with the uses in the area as the preexisting use.
    c. In addition such conditions may be attached to the permit as are deemed necessary to assure compliance with the above findings, the requirements of the master program and the Shoreline Management Act and to assure that the use will not become a nuisance or a hazard.
7. A nonconforming structure which is moved any distance must be brought into conformance with the Shoreline Master Program.
8. If a nonconforming development is damaged to an extent not exceeding fifty (50) percent of the assessed value, with the exception of a Single Family Residence which can be replaced to its original configuration, it may be reconstructed to those configurations existing immediately prior to the time the development was damaged, provided that application is made for the permits necessary to restore the development within twelve months of the date

the damage occurred, all permits are obtained, and the restoration is completed within two years of permit issuance.

9. If a nonconforming use is discontinued for twelve (12) consecutive months or for twelve (12) months during any two-year period, the nonconforming rights shall expire and any subsequent use shall be conforming. A use authorized pursuant to subsection (6) of this section shall be considered a conforming use for purposes of this section.
10. An undeveloped lot, tract, parcel, site, or division of land located landward of the ordinary high water mark which was established in accordance with local and state subdivision requirements prior to the effective date of the Act or the applicable master program but which does not conform to the present lot size standards may be developed, if permitted by other land use regulations of the local government, and so long as such development conforms to all other requirements of the applicable master program and the Act.

6.7 General Use/Activity Regulations

The following general use and/or activity regulations apply to all environments and to all uses and/or activities. Some of these regulations may be mentioned elsewhere in this Master Program in connection with one or more individual use activities or environments but are repeated here because of their universal application.

1. All developments are subject to the goals, policies, use and activity regulations, and environment designations contained in this Master Program, the Woodinville Comprehensive Plan, the underlying regulations and map contained in the Woodinville Zoning Ordinance, and other applicable City ordinances. If there is a difference between the goals, policies, and use and activity regulations of this Master Program and other City ordinances, the Master Program goals, policies, and use and activity regulations shall govern within the shoreline management area.
2. Shoreline uses or activities not specified in this Master Program and for which no regulations explicitly apply shall require conditional use permits and be evaluated on a case-by-case basis. They shall also be required to conform to the goals and policies of the Woodinville Shoreline Master Program, the Woodinville Comprehensive Plan, the Woodinville Zoning Code, the Woodinville Environmental Protection Regulations, Section 2 of the Shoreline Management Act of 1971 [RCW 90.58.020], and the guidelines as articulated in the most recently adopted Washington Administrative Code (WAC 173-26).
3. If regulations covering a certain aspect of land use or development for the various use activities are not given in this Master Program, the provisions of other applicable City development regulations shall apply.
4. All new development proposals will be required, when appropriate, to provide evidence of:

    a. Coordination among affected jurisdictions and agencies,

b. Adequate means to mitigate, to the greatest extent possible, adverse environmental impacts to ensure no net loss of shoreline ecological functions,

c. Compliance with all relevant state and federal legislation related to air, noise, and water quality, and

d. Conformance with regional and local plans.

5. The property owner who constructs, or has a private party or public agency construct on his/her behalf, an improvement which encourages public access or use or has other public benefit, shall be responsible for the maintenance, upkeep, and provision of insurance thereof, if such improvement is on the property. If an owner constructs same on other than his/her own property, responsibility of maintenance, upkeep, and provisions of insurance shall fall on the owner or owners of the property on which the improvement was made. Maintenance specifications filed with the City shall be required before the issuance of a development permit.

6. All developments shall prepare the land to account for runoff, drainage, and water quality in conformance with King County's Surface Water Design Manual and all relevant adopted engineering standards.

7. Protection of the waterway from siltation and erosion shall be provided for all earth modification and construction activities.

8. No debris shall be allowed to enter the water. If debris is accidentally introduced, it shall be immediately removed.

9. Vegetation along the water's edge shall be restored or left in the original condition unless permit stipulations allow or require otherwise.

10. Where the use regulations permit location of a structure closer to the Sammamish River than the edge of the King County River Protection Easement, then each applicant desiring to build within this easement shall obtain approval of the construction location from the King County Division of Real Property. All such construction shall comply with the Shoreline Management Program and all applicable City regulations.

11. In the event that floodway and flood fringe zones are established by the appropriate federal agencies, construction shall thereafter, at a minimum, be in conformance with federal requirements and the Shoreline Management Act.

12. All developments and activities using navigable waters or their beds shall be located and designed to minimize interference with surface navigation, to minimize adverse visual impacts, and to allow for the safe, unobstructed passage of fish and animals, particularly those whose life cycles are dependent on such migration.

13. Discharge of sewage, waste, rubbish, and litter into the water is not permitted. Disposal of fuels, cleansers, lubricants, or hydraulic fluids and other possible toxic substances into water bodies on shoreline areas or tributaries of shorelines is prohibited.

14. If boats equipped with marine toilets and/or galleys do not have holding tanks, then these facilities must be sealed from use to prevent their discharge into Woodinville's waterways.
15. All measures for the treatment of runoff for the purpose of maintaining and/or enhancing water quality should be conducted on-site and before shoreline development impacts waters off-site.
16. Except in those cases in which the height requirements of the underlying zones are more restrictive, no building shall exceed 35 feet above average grade level. This requirement shall be modified if the view of more than 10 residences is blocked, and if the underlying zoning allows.
17. In cases where the waterway on or abutting a property has been degraded, developments may be required to rehabilitate the resources or the buffer for habitat or other ecological value. Required rehabilitation would occur on a case-by-case basis as determined by a City-accepted professional study outlining mitigation needs.
18. Parking facilities should minimize their visual impact upon shorelines and should be placed inland away from the immediate water's edge and recreational areas. [WAC 173-16-060(4)(d)] All parking facilities shall be located landward of buildings.
19. All developments shall be encouraged to provide for the continuation of existing or planned trail systems, as defined in the City's Parks, Recreation, and Open Space Plan.
20. Low Impact Development (LID) techniques and materials are encouraged when development or redevelopment occurs. A list of possible LID techniques is provided in Appendix C.

6.8 Agriculture

6.8.1 Definition

Agricultural practices are those methods used in vegetation and soil management, such as tilling of soil, control of weeds, control of plant diseases and insect pests, soil maintenance, and fertilization. [WAC 173-26-241(3)(a)]

6.8.2 Regulations

Not applicable to the City of Woodinville. Agriculture activities are not appropriate to or anticipated within the City of Woodinville's shoreline management jurisdiction and are prohibited in the shoreline jurisdiction.

6.9 Aquaculture

6.9.1 Definition

Aquaculture is the culture or farming of food fish, shellfish, or other aquatic plants and animals. This activity is of state-wide and national interest. [WAC 173-26-241(3)(b)]

6.9.2 Regulations

There are no known aquaculture activities existing or anticipated within the City of Woodinville's shoreline management jurisdiction. The City does anticipate that limited aquaculture activities may be required to restore fish and shellfish populations in the Sammamish River or Little Bear Creek. These activities are considered both a shoreline and regional land use and will be regulated through a Shoreline Conditional Use Permit and a special use permit as defined in WMC 21.08.

1. Aquaculture should not be permitted in areas where it would result in net loss of ecological functions or significantly impact existing uses including but not limited to neighboring commercial, residential or recreational uses.

2. Aquaculture proposal shall avoid, minimize, and if needed mitigate for potential ecological impacts resulting from the use, including but not limited to: water quality impacts (pollutants, temperature, and flow) and potential loss of either terrestrial or aquatic wildlife habitat.

3. Preference should be given to those forms of aquaculture that involve lesser environmental and visual impacts, and lesser impacts to native plant and animal species. In general, projects that require either no structures or submerged structures are preferred over those that involve substantial floating structures. Projects that involve little or no substrate modification are preferred over those that involve substantial modification. Projects that involve little or no supplemental food sources, pesticides, herbicides or antibiotic application are preferred over those that involve such practices.

4. Aquaculture that involves significant risk of cumulative adverse effects on water quality, sediment quality, benthic and pelagic organisms, and/or wild fish populations through potential contribution of antibiotic resistant bacteria, escapement of non-native species, or other adverse effects on ESA-listed species should not be permitted.

5. The City should actively seek substantive comment on any shoreline permit application for aquaculture from all appropriate Federal, State, Tribal and local agencies and the general public regarding potential adverse impacts. Comments of nearby residents or property owners directly affected by a proposal should be considered and evaluated, especially in regard to use compatibility and aesthetics.

6.10 Forest Management

6.10.1 Definition

Forest management practices are those methods used for the protection, production, and harvesting of timber. [WAC 173-26-241(3)(e)]

6.10.2 Regulations

Not applicable to the City of Woodinville. There are no known forest management practices existing or anticipated within the City of Woodinville's shoreline management jurisdiction and are prohibited in the shoreline jurisdiction. If such operations are established in the future, regulations will be established by amendment to this Master Program, according to procedures set forth in RCW 90.58.020 and the guidelines of WAC 173-26-241(3)(e), or as may hereafter be amended.

6.11 Commercial Development

6.11.1 Definition

Commercial developments are those uses involved in wholesale and retail trade or business activities. Commercial developments can range from small businesses within residences to high-rise office buildings. Commercial developments are intensive users of space because of extensive floor areas and because of accessory facilities, such as parking, necessary to service them. [WAC 173-26-241(3)(d)]

6.11.2 Regulations

1. Construction of buildings for commercial uses waterward of the ordinary high-water mark is prohibited.
2. Commercial development within the shoreline management area must be connected to the public sewage system.
3. Fills for the purpose of creating new land water-ward of the existing ordinary high-water mark are prohibited.
4. Building Heights. Pursuant to RCW 90.58.320, no permit shall be issued for any new or expanded building or structure of more than thirty-five (35) feet above average grade level on shorelines of the state that will obstruct the view of a substantial number of residences on adjoining such shorelines except where a master program does not prohibit the same and then only when overriding considerations of the public interest will be served.
5. Parking Areas
    a. Parking lots are allowed only as an accessory use. Accessory parking lots for more than four vehicles must be landscaped and sight screened in accordance with the criteria set forth in WMC 21.16 of the Woodinville Zoning Code, or as may hereafter be amended. A berm or wall, in addition to landscaping, may be required to be placed along the water-ward side of the parking lot.

b. Parking areas may not be located waterward of the development the parking serves.

c. Parking areas within the shoreline management area, because they accumulate sizable concentrations of oil, trash, dust, etc., must be designed and operated to avoid surface runoff of these contaminants into nearby watercourses, and their design shall be consistent with adopted City engineering and design standards.

d. To reduce the usage of scenic shoreline corridor property as surface parking area, the on-site parking requirements set forth in WMC 21.18 in the Woodinville Zoning Code or as hereafter amended, may, under certain circumstances, be reduced. Shoreline development applicants may submit proposals which accommodate some or all of their parking requirements by cooperative usage of parking spaces off the site, either within or outside of the shoreline management corridor.

e. It shall be the Shoreline Administrator's responsibility to ascertain the suitability of the cooperative agreement. Criteria for such judgments include:

   i. Timing of customer usage of the space, ensuring that one of the cooperating business establishments is relatively inactive during peak periods of the other.
   ii. A written contract which makes the arrangement continuous unless satisfactory alternative arrangements are made.
   iii. Location of the parking area a maximum of 300 feet from either of the cooperating users.
   iv. Adequate signing in the parking area and entrances to both cooperative establishments, to clarify for customers that the parking area is common to both.
   v. Safe and adequate pedestrian connections between the parking area and both cooperating establishments.
   vi. Guaranteed usage of space saved on site for purposes deemed more compatible with shoreline program policies than a parking lot would be (e.g., for landscaping, pedestrian facilities, or wildlife habitat).

f. Parking lot landscaping requirements of WMC 21.16 shall apply, except that:

   i. Landscaping shall be with Northwest native stock.
   ii. One tree with a minimum height of 4 feet shall be required for each 30 linear feet of planting area; and
   iii. The perimeter of any parking area must be maintained with a 5-foot-wide minimum landscaping strip.

g. Pervious surface materials are encouraged for parking areas in the shoreline management area.

6. Loading Areas. To minimize the disturbing noise and visual effects of truck maneuvering or loading and unloading and thereby serving commercial activities in the shoreline management corridor, loading areas shall:

a. Not be located waterward of commercial structures they serve and designed so as not to interfere with customer parking and access to the same structure.

b. If located in the side yard or waterward side of a structure, the loading area shall be screened from view of pedestrians on either side of the waterway, and be designed to muffle the noise of trucks maneuvering there. The visual screen shall be composed of a fence or wall with trees of sufficient height and density to soften the visual monotony of the fence or wall.

7. Building Colors, Materials, and Design

a. The approval of specific commercial development plans shall ensure that earth tones (greens, browns, tans, dark reds, blues) and white or other compatible colors predominate.

b. Construction materials to be encouraged in project design include natural colored wood and other materials of complementary texture and color such as anodized aluminum, wrought iron, copper, stucco, tile, and brick. Shiny metallic surfaces shall be discouraged or kept to a minimum, not covering more than 100 square feet of any one exposure of a commercial building.

c. Walls facing the shoreline shall be treated with windows, details or modulation, or shall be subject to mitigation required by Section IV.F of the City's adopted Design Principles, or as may hereafter be amended.

8. Landscaping

a. All landscaping in the shoreline jurisdiction shall use northwest native plantings.

b. Landscaping requirements of WMC 21.16 shall apply.

c. Service areas, loading, storage, and other areas which tend to be unsightly shall be screened from view with landscaping and/or fencing of an attractive material.

d. Mechanical equipment shall be screened with landscaping or attractive architectural features, or, if possible, integrated into the commercial structure itself. Mechanical equipment shall not project more than 10 feet above the commercial structure itself.

9. An assessment shall be made of the effect a commercial structure will have on a scenic view significant to a given area or enjoyed by a significant number of people and design modifications may be required by the Shoreline Administrator to accommodate the view.

10. Public Access

a. Public access design and location associated with non-water oriented commercial uses shall be provided consistent with section 6.27 Public Access and Appendix 6 of this Master Program.

b. Private or public trail easements as determined appropriate by the Planning Director and consistent with the Master Program may be required when development and/or redevelopment of non-water oriented commercial uses occur within shoreline jurisdiction.

6.12 Mining

6.12.1 Definition

Mining is the removal of naturally occurring materials from the earth for economic use. Mining in the shoreline generally alters the natural character, resources, and ecological functions of the shoreline. [WAC 173-26-241(3)(h)]

6.12.2 Regulations

Not applicable to the City of Woodinville. There are no known mining activities existing or anticipated within the City of Woodinville's shoreline management jurisdiction and are prohibited in the shoreline jurisdiction. If such operations are anticipated in the future, regulations will be established by amendment to this Master Program, according to procedures set forth in RCW 90.58.020 and the guidelines of WAC 173-26-241(3)(h), or as may hereafter be amended.

6.13 Outdoor Advertising and Signs

6.13.1 Definition

Signs are publicly displayed boards that provide information, direction, or advertising. Signs may be pleasing or distracting, depending upon their design and location. An effective sign must attract attention; however, a message can be clear and distinct without being offensive. There are areas where signs are not desirable, but generally it is the design that is undesirable, not the sign itself.

6.13.2 Regulations

1. Vistas and viewpoints shall not be degraded and visual access to the water from such vistas shall not be impaired by the placement of signs.
2. Sign standards and regulations specified in the Woodinville Zoning Code (21.20) shall apply within the shorelines area. Where conflicts may arise, this Master Program will govern.
3. Free-standing on-premise outdoor advertising signs shall be located on the upland side of public transportation routes which parallel or are adjacent to shorelines so that views will not be substantially obstructed.
4. When feasible, signs shall be attached and flush against buildings to minimize visual obstructions of the shorelines and water bodies.
5. <u>On Premise Commercial Signs</u>

a. Free standing sings are permitted on the street side of buildings, in the form of monument or perimeter signs, as defined in WMC 21.20, and limited to 6 feet in height.

b. Pole signs are prohibited.

c. Signs may be lighted but shall not be of the flashing or animated type. Indirect lighting of signs is preferable to internal illumination.

d. Signs and billboards shall not be located within riparian or wetland buffers with the exception of interpretive and trail signs.

6.14 Residential Development

6.14.1 Definition

Residential development consists of the placement on land of attached or detached buildings used by the population as dwellings. Such buildings include detached, single-family residences, duplexes, apartments, townhouses, or mobile home parks together with accessory uses such as garages, sheds, tennis courts, swimming pools, fences, cabanas, saunas, and guest cottages. Such buildings do not include hotels, motels, or other transient or camping facilities.
To the extent possible, residential development within shoreline areas shall cluster units, reserving substantial portions of land as open space or recreational areas for the joint use of the occupants of the development or set aside for and open to general public use and enjoyment, as long as the total number of dwellings does not exceed the total allowable in a regular subdivision. [WAC 173-26-241(3)(j)]

6.14.2 Regulations

1. Subdivisions and additions or modification of existing residential development shall be designated at a level of density compatible with the underlying Woodinville Comprehensive Plan designation of moderate density Five (5) Residential Units per Acre to Eight (8) Residential Units per Acre and subject to the physical capabilities of the shoreline and water as regulated by this Master Program.
2. Subdivisions and additions or modifications of existing residential development shall be designed, configured, and developed in a manner that assure no net loss of ecological functions and to adequately protect the water and shoreline aesthetic characteristics and shall comply with the following density standards, setbacks and the critical area buffers:

   a. Density Standards for shoreline residential zones include moderate density (Five (5) Residential Units per Acre to Eight (8) Residential Units per Acre zoning.)

   b. Setbacks: Minimum street setbacks 10 foot with at least at least twenty (20) feet linear feet of driveway. For townhomes or apartment development, the setback shall be the greater of:
      i. Twenty (20) feet along any property line abutting R-4 through R-8 zones or:

ii. The average setback of the R-4 through R-8 zoned single-family detached dwelling units from the common property line separating said dwelling units from the adjacent townhome or apartment development, provided the required setback applied to said development shall not exceed sixty (60) feet. The setback shall be measured from said property line to the closest point of each single-family detached dwelling unit, excluding projections allowed per WMC 21.12.160 and accessory structures existing at the time the townhome or apartment development receives Conditional Use Permit approval by the City.

c. See also landscaping requirements under WMC 21.16.060(2).

d. Standard critical area buffers are established from the ordinary high water mark or from the top of the bank if the ordinary high water mark cannot be identified:

i. Stream Type 1 Standard buffer 150 foot. This buffer may be reduced to 115 foot with enhancement/restoration. A 100 foot buffer may be allowed by the Development Services Director when a special study (based on BAS) determines that functions achieved in 100 feet are equal to the functions achieved in 115 feet for the site.

3. New residential development shall be sited, designed, and configured in a manner that avoids the need for new shoreline stabilization or flood hazard reduction measures.

4. Adequate sewage disposal facilities must be provided in accordance with appropriate state and local health regulations. Storm drainage facilities shall not be combined with sewage disposal systems.

5. Adequate water supplies and facilities must be available so that the groundwater quantity or quality will not be endangered by over-pumping.

6. In new residential developments of two or more dwellings, joint use or community docks are required in lieu of individual docks for each waterfront lot. These are intended to serve the residents of these developments, not the general public. Such joint-use shoreline facilities are encouraged in all residential developments (including docks and other facilities).

7. Structures or other developments accessory to residential uses require a Shoreline Substantial Development Permit and shall be designed and located to blend into the site as much as possible. Accessory uses and structures shall be located landward of the principal residence.

8. The multifamily development or subdivision plan must show that surface waters will not be significantly contaminated, that ground water supplies will not be depleted or significantly contaminated, and that surface runoff from the

development will not adversely affect shoreline ecological functions. Surface water runoff management shall meet the requirements of WMC 14.09.

9. New multiunit residential development (including subdivision of land creating more than four parcels) shall provide public access to shoreline areas consistent with section 6.27 Public Access and Appendix 6 of this Master Program.

10. Residential development floating on or extending over water is prohibited.

11. Building Height

    a. Buildings or structures shall be restricted to 35 feet in height as measured from the average grade level water-ward of the structure, except when overriding considerations of the public interest will be served, pursuant to RCW 90.58.320.

    b. Buildings shall not block the stream views of 10 or more existing residential units.

12. Parking Areas

    a. All paved parking areas utilized in common by more than three dwelling units shall be landscaped and sight screened from public view from land and water sufficiently to minimize the visual impact of the pavement itself and the cars which may be parked thereon. Parking areas shall be developed in accordance with the criteria set forth in the Woodinville Zoning Code (WMC 21.18), or as may hereafter be amended. The use of pervious surface materials is encouraged.

    b. Parking areas shall not be located waterward of buildings.

    c. Parking areas must be designed and operated to avoid surface water runoff into nearby water courses and shall be consistent with city engineering standards and the King County Surface Water Design Manual.

13. Parking lot landscaping requirements of WMC 21.16 shall apply; except that:

    a. All plantings shall be northwest native plant stock.

    b. One tree with a minimum height of 4 feet shall be required for each 30 linear feet of planting area, and;

    c. The perimeter of any parking area shall be maintained with a 5-foot wide minimum landscaping strip.

14. Building Color and Materials. Colors and materials used in building construction shall be of earthen tones, avoiding glossy or metallic surfaces which would detract from the natural surroundings.

15. Private Docks

    a. Common docking areas are preferred to separate individually owned structures. New residential subdivisions or developments containing four or more waterfront lots where docking facilities are desired shall be

required as part of the approval to provide for resident access to and a location for a joint-use dock. In the event such joint-use facility is provided within a residential waterfront development, only one such facility shall be constructed for that development. This condition of approval with required access easements and dedications shall be identified on the face of the plat. In addition, the community dock easement shall be recorded with the county Assessor's Office. Where a joint-use facility is provided, single-use docks serving individual waterfront lots are prohibited.

b. Where allowed, individual private docks shall be parallel to the river rather than perpendicular and shall not extend more than 8 feet beyond the ordinary high-water mark into the stream-way.

c. See section 6.24.3 for additional regulations.

16. Dry Land Storage. Storage of boats on dry land, either in the open or in an approved shelter fronting the shoreline, is permitted as an accessory use to private residential development. Storage facilities shared in common by two or more private residences are strongly preferred over separate, individually owned structures. All such structures shall meet the following criteria:

a. Maximum height 20 feet.

b. Maximum width of structure along shoreline equal to 25 percent of total lot width fronting the water's edge.

c. Minimum shoreline width of parcel occupied by such a shoreline structure shall be 50 feet (shared facilities must have at least that much combined shoreline frontage).

d. Building materials in this sensitive location shall be compatible with natural shoreline appearance and utilize such materials as wood, stone, textured concrete, or aggregate.

e. Colors shall be restricted to natural wood stains or paint of grays, browns, tans, greens, or similar colors if any are applied to concrete surfaces.

f. Construction of cinder block, metal, or other similar material is not permitted.

17. Vegetation. Removal of existing vegetation within the required buffer area from the ordinary high-water mark of the channel shall be allowed only where the developer demonstrates to the Shoreline Administrator's satisfaction that proposed modifications will improve existing shoreline ecological functions, habitat, appearance, and stability, or as required for stream or buffer rehabilitation. See Section 6.4.

6.15 Utilities

6.15.1 Definition

Utilities are services that produce and carry electric power, gas, sewage, communications, and oil. [WAC 173-26-241(3)(l)] For the purposes of this SMP, utilities have been divided into two types: accessory and primary. Accessory utilities are small-scale distribution services connected directly to the uses along the shoreline. Primary utilities are public high-tension utility lines on public property or easements, power generating or transfer facilities, natural gas regional/trunk distribution lines, and storage facilities.

The following use and activity policies and regulations apply to both primary and accessory utilities unless specifically noted.

6.15.2 Regulations

1. Whenever feasible, primary utility facilities shall be located outside the shorelines area. Whenever these facilities must be placed in a shoreline area, the location shall be chosen so as not to adversely impact shoreline ecological functions or obstruct or destroy scenic views.
2. Primary utility production and collection facilities shall not be located within the 100-year floodplain unless no physically feasible alternative location is available, and then only subject to critical area regulation controls as provided in Section 4.2 of this Master Program.
3. Whenever feasible, accessory utilities shall be placed underground or otherwise designed to do minimal damage to the ecological functions and aesthetic qualities of the shoreline area.
4. Upon completion of installation/maintenance projects on shorelines, stream banks shall be restored to pre-project configuration, replanted with non-invasive species, and provided maintenance care until the newly planted vegetation is established.
5. Utilities shall be located to meet the needs of future populations in areas planned to accommodate this growth.
6. Property owners possessing legal rights to water in the river or the creek shall be allowed to retain those water-intake valves or structures existing on the date of adoption of this Master Program which are necessary to maintain those rights.
7. Applications for installation of utility facilities shall include the following (at a minimum):
    a. Reason why utility facility must be in a shoreline area.
    b. Alternative locations considered and reasons for their elimination.
    c. Location of the same, similar or other utility facilities in the vicinity of the proposed project.
    d. Proposed method(s) of construction.
    e. Plans for reclamation of areas to be disturbed during construction.
    f. Landscape plans.

g. Documentation that major utility developments are consistent with adopted City and county comprehensive plans for utilities, where such plans exist.

8. New utilities which must be constructed across any part of Woodinville's shoreline management areas must submit a reclamation plan as part of an environmental impact assessment which is necessary for a shoreline development permit. The reclamation plan must ensure restoration of the shoreline, and if the Shoreline Administrator deems it necessary, enhance it by adding public amenities to offset the intrusion of such uses.

9. Any publicly owned utility which must of necessity cross the shoreline shall be designed and operated to reserve the option of general public recreational usage of the right-of-way in the future. This option shall be exercised by the public only where:

   a. The public will not be exposed to dangers from the utility equipment.

   b. The utility itself will not be subjected to unusual risks of damage by the public.

   c. Adjacent land uses will not be disrupted by public access, such as displacement of grazing or agricultural rights which might be in effect on the ground surface of the utility right-of-way.

10. Utilities shall be designed and installed in such a way as to minimize damage to the scenic view or aesthetic qualities of the shoreline area.

11. All underwater pipelines or those paralleling the waterway transporting liquids potentially injurious to aquatic life or water quality are prohibited, unless no other alternative exists to serve a public interest. In those limited instances where permitted, shut-off valves shall be provided at both sides of the water body except for public sanitary sewers of a gravity or siphon nature.

12. Lines buried under the stream bed are permitted, providing the stream bed is restored to existing conditions. Stream beds may not be disturbed during critical fish passage periods. During these times, boring is required.

13. Thermal power plant facilities shall be sited pursuant to RCW 80.50.

14. <u>Transmission/Distribution/Service Systems</u>

   a. All new accessory utility transmission, distribution and service lines for power, gas, sewage, communications, oil, water, etc., shall be installed outside the shoreline area or underground, unless it is physically impossible to do so.

   b. Primary utility lines shall be consolidated within a single easement, whenever feasible.

   c. If primary utility transmission/distribution structures such as substations, telephone exchanges, etc., must be constructed in Woodinville's shoreline management area, they must be landscaped to enhance the appearance from surrounding areas in accordance with the Woodinville Zoning Code

(WMC 21.16), or as may hereafter be amended. All vegetation shall be native, non-invasive species appropriate to stream banks and buffers.

d. Wherever possible, primary utility lines shall utilize existing rights-of-way rather than developing new ones.

15. Drainage

a. The utility shall control entry of contaminants from streets and parking areas into water courses or adjacent properties.

b. Outfalls shall be designed and installed so that during periods of heavy rainfall the velocity and quantity of runoff will not be detrimental to shoreline ecological functions or aquatic life in the receiving waters and so that it does not flood adjacent land.

c. Outfalls must be situated so that they are not aesthetically detrimental to their surroundings. Landscaping may provide a partial solution to the problem. In addition, the outfall should be set back from the water's edge so that stormwater will be discharged onto rocks or vegetative buffers to allow water dispersal before discharging to the water body.

d. Storm drain lines for any substantial development shall be designed so that they can be economically connected to a common collector system when the level of development makes that feasible. A common collector system and outfall will be preferred to a large number of outfalls from individual parcels of land.

e. Runoff from upland areas, even beyond the shoreline management corridor's jurisdiction, shall be controlled by the City through its adopted stormwater manual and engineering standards to assure that undue stormwater accumulations do not descend on shoreline corridor properties during periods of heavy rainfall.

16. Sanitary Sewers. Sanitary sewers shall be separated from storm sewers.

17. Parking areas shall be developed in accordance with the criteria set forth in the Woodinville Zoning Code (WMC 21.18), or as may hereafter be amended, except:

a. Parking areas shall not be located waterward of buildings;

b. Parking areas shall be screened with berms and landscaping;

c. Landscaping in parking areas shall be subject to WMC 21.16, and of northwest native stock. One tree shall be provided per 30 linear feet of landscaping, and a 5-foot wide landscaping strip shall be maintained at the perimeter of all parking areas.

6.16 Industry

6.16.1 Definition

Given Woodinville's shoreline characteristics (a shallow riverine system), few if any water-dependent or water-related industries as defined in WAC 173-26-020(36) are expected to locate in Woodinville. Instead, light manufacturing, research and development, and mixed-use business parks have located along the Sammamish River and Little Bear Creek, and are expected to continue.

The Woodinville Comprehensive Plan, Land Use element limits these business parks to their current locations and does not anticipate any expansion of these parks into other areas during the 20-year planning horizon of the Plan.

For the purposes of this section of the Master Program, the term "industry" is intended to provide for the location and grouping of industrial activities and uses involving the processing, handling, and creating of products, including research and technological processes, and major fabrication. A further purpose is to afford protection to the industries so located by prohibiting the intrusion of residential uses and certain commercial enterprises, thus establishing a pattern of land use advantageous to the specialized needs of these uses. Industry includes business parks.

6.16.2 Regulations

1. Future development/redevelopment of light manufacturing or industrial uses shall be located, designed, or constructed in a manner that assures no net loss of shoreline ecological functions and such that it does not have significant adverse impacts to other shoreline resources and values.
2. Future development /redevelopment of light manufacturing or industrial uses shall be designed to permit viewing of shoreline areas from view points, waterfront restaurants, and similar public facilities which should not interfere with business operations or endanger public health and safety.
3. Industrial development/redevelopment is encouraged to locate where environmental cleanup and restoration of the shoreline area can be incorporated.
4. Transportation and utility corridors serving industries and business parks located in shoreline areas shall follow the guidelines provided under the sections of this Master Program dealing with utilities and transportation facilities. Where feasible, transportation and utility corridors shall be located upland to avoid degradation of shoreline functions and values and waterfront views and other amenities.
5. The public's enjoyment of the minimum shoreline buffer area shall not be compromised by the effects of industrial activities occurring within the shoreline management corridor and, where possible and appropriate, public access shall be enhanced in accordance with the Woodinville Comprehensive Plan.
6. Buildings shall be sited to allow frequent visual access toward the shoreline.
7. Special care shall be taken to avoid uses characterized by noise, glare, dust, etc.

8. Building Height

    a. Buildings and structures shall be restricted to 35 feet in height as measured from the average grade level water-ward of the structure, except when overriding considerations of the public interest will be served, pursuant to [RCW 90.58.320].

    b. Buildings shall not block the stream views of 10 or more existing residential units.

9. Parking Areas. Standards for parking lot location and development are the same as for Commercial Development. See Section 6.11.

10. Loading Areas. Standards for loading area location and development are the same as for Commercial Development. See Section 6.11.

11. Surface Runoff Control. The runoff from extensive roof areas and accessory parking lot surfaces shall be collected and treated as required by the King County Surface Water Design Manual and the City's adopted engineering standards.

12. Building Materials, Colors, and Design. Construction materials, colors, and design shall be subject to the same criteria as set forth for commercial structures in Section 6.12.

13. Site Landscaping. Commercial requirements for landscaping shall apply (see section 6.12).

14. Parking Lot Landscaping. Developments shall meet the same requirements as commercial development. See section 6.11.

15. Outdoor Storage. Outdoor storage of equipment, vehicles, materials, or supplies shall not be permitted in stream buffer areas and shall be landscaped to provide a visual barrier from public areas.

16. Public Access. Public access to the shorelines within industrial areas is provided by an existing King County trail system on the east bank of the Sammamish River. Public access on the west bank of the Sammamish River shall be provided by a City proposed future trail, where portions of shoreline area have already been dedicated to the City of Woodinville. Other access will be provided where possible and appropriate in accordance with the Woodinville Comprehensive Plan and the adopted 2005 Parks, Recreation & Open Space Plan as specified in section 6.27 Public Access and Appendix 6 of this Master Program.

6.17 Shoreline Stabilization (Bulkheads)

6.17.1 Definitions

Shoreline stabilization (bulkheads) include actions taken to address erosion impacts to property and dwellings, businesses, or structures caused by natural processes such as floods, wind, or wave action. [WAC 173-26-231(3)(a)] While shoreline stabilization structures may protect the uplands, they do not protect the adjacent shoreline, and in many cases are actually detrimental to the beaches by speeding up erosion in front of the structures. Hard shore armoring refers to traditional designs for shoreline stabilization, including constructed steel, timber, rock, concrete, or boulder riprap. Soft shore armoring refers to alternative bank protection methods such as bioengineering or biotechnical bank stabilization, which may include use of anchored drift logs, vegetation plantings, and import of beach sediment and/or gravel (also referred to as beach nourishment).

6.17.2 Exemptions

The Shoreline Management Act exempts the construction of a normal protective bulkhead common to an existing single-family residence from the substantial development permit requirement. However, the City requires a shoreline exemption permit for these structures which are required to comply with all the policies, prohibitions, and development standards of this Master Program and of this section. To qualify for the RCW 90.58.030(3)(e)(ii) and WAC 173-27-040 exemption, and to ensure that such bulkheads will be consistent with this Master Program, a shoreline exemption permit is required.

6.17.3 Regulations

The Shoreline Administrator may approve bulkheads or other shoreline stabilization proposals when he/she determines that naturally occurring movement of the shoreline threatens existing structures, public improvements, unique natural resources, or the only feasible access to property and that the proposed stabilization complies with the criteria and standards in this section.

1. New development shall be located and designed to avoid the need for future shoreline stabilization to the extent feasible. Subdivision of land must be regulated to assure that the lots created will not require shoreline stabilization in order for reasonable development to occur.
2. New hardshore armoring stabilization measures shall not be allowed except when necessity is demonstrated in the following manner:
    a. To protect existing primary structures: New or enlarged structural shoreline stabilization measures for an existing primary structure, including residences, should not be allowed unless there is conclusive evidence, documented by a geotechnical analysis, that the structure is in danger from shoreline erosion caused by floods, wind, or waves. Normal sloughing, erosion of steep bluffs, or shoreline erosion itself, without a scientific or geotechnical analysis, is not demonstration of need. The

geotechnical analysis should evaluate on-site drainage issues and address drainage problems away from the shoreline edge before considering hard shore armoring techniques for shoreline stabilization.

b. In support of new nonwater-dependent development, including single-family residences, when all of the conditions below apply:

   i. The erosion is not being caused by upland conditions, such as the loss of vegetation and drainage.

   ii. Nonstructural measures, such as placing the development further from the shoreline, planting vegetation, or installing on-site drainage improvements, are not feasible or not sufficient.

   iii. The need to protect primary structures from damage due to erosion is demonstrated through a geotechnical report. The damage must be caused by natural processes, such as flooding, wind, and waves.

c. In support of water-dependent development when all of the conditions below apply:

   i. The erosion is not being caused by upland conditions, such as the loss of vegetation and drainage,

   ii. Nonstructural measures, planting vegetation, or installing on-site drainage improvements, are not feasible or not sufficient.

   iii. The need to protect primary structures from damage due to erosion is demonstrated through a geotechnical report.

d. To protect projects for the restoration of ecological functions or hazardous substance remediation projects pursuant to chapter 70.105D RCW when nonstructural measures, planting vegetation, or installing on-site drainage improvements are not feasible or not sufficient.

3. An existing shoreline stabilization structure may be replaced with a similar structure if there is a demonstrated need to protect principal uses or structures from erosion.

   a. The replacement structure should be designed, located, sized, and constructed to assure no net loss of ecological functions.

   b. Replacement walls or bulkheads shall not encroach waterward of the ordinary high-water mark or existing structure unless the residence was occupied prior to January 1, 1992, and there are overriding safety or environmental concerns. In such cases, the replacement structure shall abut the existing shoreline stabilization structure.

   c. Where a net loss of ecological functions associated with critical habitats would occur by leaving the existing structure, remove it as part of the replacement measure.

d. Soft shore stabilization measures that provide restoration of shoreline ecological functions may be permitted waterward of the ordinary high-water mark.

e. For purposes of this section, standards on shoreline stabilization measures, "replacement" means the construction of a new structure to perform a shoreline stabilization function of an existing structure which can no longer adequately serve its purpose. Additions to or increases in size of existing shoreline stabilization measures shall be considered new structures.

4. Geotechnical reports pursuant to this section that address the need to prevent potential damage to a primary structure, shall address the necessity for shoreline stabilization by estimating time frames and rates of erosion, and report on the urgency associated with the specific situation. As a general matter, hard armoring solutions should not be authorized except when a report confirms that there is a significant possibility that such a structure will be damaged within three years as a result of shoreline erosion in the absence of such hard armoring measures. Where the geotechnical report confirms a need to prevent potential damage to a primary structure, but the need is not as immediate as the three years, that report may still be used to justify more immediate authorization to protect against erosion using soft shore stabilization measures.

5. When any shoreline stabilization measures are demonstrated to be necessary, pursuant to above provisions, the following additional standards will apply:

   a. Limit the size of stabilization measures to the minimum necessary. Use measures designed to assure no net loss of shoreline ecological functions. Soft shore stabilization approaches that absorb and dissipate wave energy shall be used unless demonstrated not to be sufficient to protect primary structures, dwellings, and businesses.

   b. Ensure that publicly financed or subsidized shoreline erosion control measures do not restrict appropriate public access to the shoreline except where such access is determined to be infeasible because of incompatible uses, safety, security, or harm to ecological functions.

   c. Mitigate new erosion control measures, including replacement structures, or other actions that affect stream sediment-producing areas to avoid and, if that is not possible, to minimize adverse impacts to natural sediment transport processes.

   d. All new or replacement shoreline stabilization and flood protection measures shall be designed and constructed so that down-current banks will not be adversely affected. Shoreline stabilization measures, including riprap, shall be designed and constructed in a manner consistent with the Department of Fish and Wildlife, Corps of Engineers and/or other engineering and design specifications deemed appropriate by the Shoreline Administrator.

e. Bulkheads shall be permitted only where they provide protection to upland areas or facilities, not for the indirect purpose of creating land by filling behind the bulkhead.

f. Adequate toe protection shall be provided to ensure bulkhead stability.

g. Bulkheads shall be designed to permit the passage of surface or ground water without causing ponding or saturation.

h. To receive permit approval for bulkhead construction, the applicant shall agree to grant adjacent property owners the right to tie in adjacent bulkheads.

6. Existing native shoreline vegetation shall be preserved to the maximum extent feasible consistent with safe construction practices.

7. Cut-and-fill slopes and backfill areas shall be revegetated with native grasses, shrubs and/or trees.

8. Shoreline protection activities that may necessitate new or increased shoreline protection on the same or other affected properties where there has been no previous need for protection is prohibited.

6.18 Breakwaters, Jetties, Groins, and Weirs

6.18.1 Definition

Breakwaters, jetties, groins, and weirs are protective structures usually built offshore to protect beaches, bluffs, dunes, or harbor areas from wave action. [WAC 173-26-231(d)]

6.18.2 Regulations

Not applicable to the City of Woodinville. There are no known breakwaters existing or anticipated within the City of Woodinville's shoreline management jurisdiction and are prohibited from being located in the shoreline management jurisdiction in the future. If such operations are anticipated in the future, regulations will be established by amendment to this Master Program, according to procedures set forth in RCW 90.58.020, and prior to the permitting of such uses.

6.19 Shoreland Fills

6.19.1 Definition

Fills are the placement of soil, sand, rock, gravel, existing sediment, or other material (excluding solid waste) to create new land, tideland, or bottom land area along the shoreline below the ordinary high water mark, or on wetland or upland areas in order to raise the elevation. Fills can destroy the natural character of land, create unnaturally heavy erosion and silting problems, and reduce the amount of existing water surface. [WAC 173-26-231(c)]

6.19.2 Regulations

1. Fills are not permitted waterward of the ordinary high-water mark unless necessary for water-dependent use or to mitigate an environmental or public safety hazard.
2. Shoreland fills or cuts shall be designed and located so that significant damage to existing ecological functions or natural resources, or alteration of local currents will not occur and no hazard to on-site or adjacent life, property, or natural resources systems will be created.
3. All perimeters of fills shall be provided with vegetation, retaining walls, soil compaction as necessary, or other mechanisms designed to avoid or eliminate erosion and sedimentation impacts.
4. Priority shall be given to fills for water-dependent uses and for public uses. In evaluating fill projects and in designating areas appropriate for fill, such factors as total water surface reduction, navigation restriction, impediment to water flow and circulation, reduction of water quality, and destruction of habitat shall be considered.
5. Existing fills shall be landscaped to improve appearance.
6. Sanitary landfills are not allowed within shoreline jurisdiction.
7. Pile or pier supports should be utilized whenever feasible in preference of fills.
8. Fills may be permitted only in conjunction with a specific development already permitted by this Master Program or as proposed (i.e., permit applied for) simultaneously with such development. Speculative fills are prohibited.
9. Applications for fill permits shall include the following:
    a. Proposed use of the fill area.
    b. Physical, chemical, and biological characteristics of the fill material.
    c. Source of fill material.
    d. Method of placement and compaction.
    e. Location of fill relative to natural and/or existing drainage patterns and wetlands.
    f. Location of the fill perimeter relative to the ordinary high-water mark.
    g. Perimeter erosion control or stabilization means.
    h. Type of surfacing and runoff control devices. Protection of the water resource must be demonstrated.
    i. Contingency plan in the event of degradation of the water body.
10. Backfill behind a permitted bulkhead will be permitted and shall not be considered a fill if less than two cubic yards per linear foot of bulkhead or riprap.
11. Strict aesthetic controls shall be maintained to ensure that a fill restores or enhances the natural appearance of the area where it is applied. The fill must not have a significant adverse impact on shoreline ecological function, wildlife habitat or vegetation.

12. Where fills are permitted, the fill shall be the minimum necessary to accommodate the proposed use.
13. Where existing public access is reduced, greater public access as part of the development project shall be provided.
14. The timing of fill construction shall be regulated to minimize damage to water quality and aquatic life.
15. Fill Material
    a. Fill material shall be of such quality that leachate resulting from it will not introduce contaminants to the watercourse which would violate or reduce the water quality below the existing State standards applicable at the time of development.

    b. Refuse such as broken concrete or asphalt, building debris, appliances, car bodies, vegetation, flammable material, water soluble or toxic wastes, or similar materials or the use of polluted dredge spoils, solid waste, and/or sanitary landfill materials are prohibited as fill within the shoreline management corridor.

6.20 Solid Waste Disposal

6.20.1 Definition

Solid waste means any garbage, refuse, sludge from a waste treatment plant, water supply treatment plant, or air pollution control facility and other discarded materials, including solid, liquid, semi-solid, or contained gaseous material resulting from industrial, commercial, mining, and agricultural operations, as well as from community activities, but does not include solid or dissolved material in domestic sewage or solid or dissolved materials in irrigation return flows or industrial discharges which are point sources. [Solid Waste Disposal Act (P.L. 94-580), 1980]
Generally, all solid waste is a possible source of nuisance. Rapid, safe, and nuisance-free storage, collection, transportation, and disposal are of vital concern to all persons and communities. If the disposal of solid waste material is not carefully planned and regulated, it can become not only a nuisance, but a severe threat to the health and safety of human beings, livestock, wildlife, and other biota.

6.20.2 Regulations

Solid waste disposal sites or transfer sites or stations are prohibited in all environments within the shoreline management area.

6.21 Dredging

6.21.1 Definition

Dredging is the removal of earth from the bottom of a stream, river, lake, bay, or other water body for the purpose of deepening a navigational channel or to obtain use of aggregates such as sand and gravel or for the use of bottom materials for landfill. A significant portion of all dredged materials is deposited either in the water or immediately adjacent to it, often degrading water quality. [WAC 173-26-231(f)]

6.21.2 Regulations

1. Normal maintenance and repair of an existing facility which may include maintaining an existing navigational channel or other dredged facility for the purpose of periodically restoring a previously authorized configuration requires a conditional use approval and must comply with the Shoreline Management Act and all of the applicable provisions of this Master Program. [WAC 173-27-040]

2. The City of Woodinville shall control dredging to minimize damage to the existing shoreline ecological functions and values of natural resources of both the area to be dredged and the area for deposition of dredged materials. Dredging shall comply with the standards in the Woodinville Municipal Code 15.09.015 and 13.03.

3. New development should be sited and designed to avoid or, if that is not possible, to minimize the need for maintenance dredging.

4. Deposition of dredge material in the waterway is allowed only for habitat improvement, to correct problems of material distribution which adversely affect fish and shellfish resources, or where the alternatives of deposition of material on land is more detrimental to shoreline resources than deposition of it in water areas.

5. Dredging of waterway bottom materials for the single purpose of obtaining fill material is prohibited.

6. Any dredging or channel modification shall be based on a mitigation plan submitted to the Shoreline Administrator and Public Service Administrator for review, comment, and approval.

7. Dredging activities must employ techniques and equipment necessary to minimize disturbance of bottom material and excessive turbidity downstream.

8. Where dredging will extract organic material, adequate measures must be taken to prevent unnecessary suspension of this material in the water. The proper equipment and techniques to be used must be established by the Shoreline Administrator on a case-by-case basis, using the best available technology at the time of the proposed action.

9. Dredging and dredge disposal are prohibited on or in archaeological sites listed on the Washington State Register of Historic Places. Planning for the preservation of archaeological resources tentatively identified by the city,

county, state, or Indian Tribes for determination of its eligibility for the aforementioned Register shall be included in the project review.

10. Dry Land and Water Area Deposits

    a. Disposal of dredged material may be accomplished at approved, contained, upland disposal sites.

    b. Depositing dredged materials in water areas shall be allowed only by conditional use permit for one or more of the following reasons:

        i. For wildlife habitat improvement.
        ii. To correct problems of material distribution adversely affecting fish resources.
        iii. Where the alternatives of depositing material on land is more detrimental to shoreline resources than depositing it in water areas.

    c. Individual disposal operations shall comply with the Department of Ecology Water Quality Certification process and the U.S. Army Corps of Engineers permit requirements.

    d. Necessary measures must be taken to ensure that organic material will not wash or leach into an adjacent watercourse.

    e. Landscaping or soil stabilization techniques employed shall be visually harmonious with the shoreline environment. Landscaping shall be with native non-invasive species and shall occur as soon as possible in order to retard wind and water erosion and to restore the wildlife habitat value of the site.

    f. Dredge spoils containing toxic sediments according to state or federal criteria shall be contained in diked cells of sufficient capacity to allow settling of sediments and containment so that leachate cannot enter surface or ground water. Chemical and physical analysis of dredge spoil material shall be included in the environmental impact statement required prior to dredging.

11. Timing. Dredging shall be timed so that it does not interfere with migrating aquatic life or have a significant adverse impact on benthic productivity.

12. Aesthetic Treatment. The outside face of diked cells for dredge disposal on land shall be sloped at 1.5:1 (horizontal: vertical) or less, and shall be seeded with grass or otherwise protected to prevent erosion. Disposal sites that have been filled shall be drained, tilled, and planted by the first winter following completion of the fill in order to avoid erosion related to winter weather, unless other specific plans for use of the filled area have been accepted by the City prior to that time. Temporary but necessary mitigation measures shall be required at the discretion of the Shoreline Administrator on a case-by-case basis.

13. Discharge from Dredge Disposal Cells. Dredge disposal cells shall be designed to guarantee that water discharged from them meets all applicable

water quality standards established for the receiving waters by the appropriate state and/or federal agency.

14. Stockpiling of dredged material in or under water is prohibited.

6.22 Shoreline Protection and Flood Hazard Reduction

6.22.1 Definition

Flood protection and waterway modifications are those activities occurring within the waterway and wetland areas which are designed to reduce over-bank flow of high waters and stabilize eroding stream banks. Reduction of flood damage, bank stabilization to reduce sedimentation, and protection of property from erosion are normally achieved through watershed and floodplain management and by non structural and structural measures. Nonstructural measures include setbacks, land use controls, wetland restoration, dike removal, use relocation, biotechnical measures and stormwater management programs. Structural measures include dikes, levees, revetments, floodwalls, channel realignment, and elevation of structures. Such measures are often complementary to one another and several measures together may be necessary to achieve the desired end. Applicants should also refer to this Master Program's General Goals and Policies, Section 3.1.8 (Flood Hazard Management Element) for applicable policies.

6.22.2 Regulations

1. Flood hazard reduction is regulated through the Woodinville Municipal Code 21.24.210 (2004). Flood protection on the Sammamish River is regulated by the Corps of Engineers through the Sammamish River Flood Control Project.
2. New structural flood hazard reduction measures shall be allowed only under the following circumstances:
    a. When it can be demonstrated by a scientific and engineering analysis that they are necessary to protect existing development;
    b. That nonstructural measures are not feasible;
    c. That impacts to ecological functions and priority species and habitats can be successfully mitigated so as to assure no net loss; and
    d. That appropriate vegetation restoration and conservation actions are undertaken consistent with WAC 173-26-221(5).
3. The design of stabilization or protection works shall provide for the long-term multiple use of waterway resources and public access, when access is appropriate and safe.
4. Where flood protection measures such as dikes or levees are planned, they shall be placed landward of the stream way, including associated wetlands directly inter-related and interdependent with the stream proper.
5. Flood protection measures which result in channelization shall be avoided.

6. Regulations 2, 3, 4, and 5 do not preclude the need to maintain the function of existing dikes, levees, and other flood protection devices on the banks of the Sammamish River and Little Bear Creek.
7. All applicable state and federal permits shall be obtained and complied within the construction and operation of shoreline stabilization and flood protection works.
8. New shoreline stabilization and flood protection measures shall not be designed and constructed in such a manner that impacts neighboring properties, or creates the need for shoreline protection structures on other properties.
9. The Shoreline Administrator shall require and utilize the following information, in addition to the standard permit information requirements contained in WAC 173-27-180, during its review of shoreline stabilization and flood protection proposals:
    a. Statement of purpose of project.
    b. Description of hydraulic characteristics of the shore within 1/2 mile on each side of the proposed project.
    c. Description of existing shoreline stabilization and flood protection devices within 1/2 mile on each side of the proposed project.
    d. Description of proposed construction material and methods.
    e. Description of the physical, geological, and/or soil characteristics of the area.
    f. An explanation of the predicted impact upon area shore and hydraulic processes, adjacent properties, shoreline and water uses.
    g. A listing and description of alternative measures (including nonstructural) which will achieve the same purposes.
10. Levees and dikes shall be designed not to interfere with the natural pattern of ground water drainage associated with the shoreline management corridor.
11. Levee and dike structures and streambanks shall be designed to facilitate pedestrian access to the water's edge when such access is appropriate and not detrimental to any natural resources present.
12. Retention or replanting of streambanks with native, non-invasive vegetation shall be required as part of any substantial shoreline development.
13. Landscaping plans shall conform to the applicable requirements of the City's development standards for Tree Retention and Landscaping (WMC 21.16) and shall use northwest native plant stock. The Shoreline Administrator shall review streambank landscaping plans for their effectiveness in erosion control and aesthetic compatibility with shoreline surroundings. Additional landscaping may be required at the discretion of the Shoreline Administrator, if needed, to protect the aesthetic appearance or the natural functions of the shoreline location.

14. The Shoreline Administrator shall, where appropriate and legally permissible, require dedication and improvement of linear public access along new dikes or levees when it is determined that such access is in the public interest, is safe, and does not adversely affect natural resources. All shoreline development must conform to the General Goals and Policies (Section 3) and the Shoreline Environments (Section 5) stated in this Master Program.

6.23 Transportation Facilities

6.23.1 Definition

A road is a linear passageway, usually for motor vehicles, and a railroad is a surface linear passageway with tracks for train traffic. Other transportation facilities include bridges, bikeways, trails, and heliports. Their construction can create barriers which limit access to shorelines, impair the visual qualities of water-oriented vistas, expose soils to erosion, retard the runoff of flood waters, and permanently reduce vegetation growth in riparian and wetland buffer areas.

6.23.2 Regulations

1. All debris, overburden, and other waste materials from construction should be disposed of to prevent their entry by erosion from drainage, high water, or other means into the stream way.
2. Scenic corridors with public roadways should provide safe pedestrian and other non-motorized travel. Also, provision shall be made for sufficient view points, rest areas, and picnic areas in public shorelines.
3. All bridges and other water-crossing structures shall be designed not to impede normal annual high water or the passage of wood and sediment. Where feasible, bridge structures should be located outside the floodway. Bridge approaches and side slopes shall be planted with a suitable native, non-invasive ground cover.
4. Railroad tracks must be designed and operated to ensure compatibility with pedestrian and recreation usage within the shoreline management corridor. The railroad shall provide public easements across any tracks in the shoreline management corridor, deemed necessary by the City, to provide convenient public access to publicly-controlled river frontage.
5. Freeway, expressway, principal arterial, minor arterial, collector, neighborhood access, and trail design shall meet the following requirements:
    a. Introduce the minimum possible amount of paved surface into the shoreline management corridor insofar as this requirement is consistent with the essential public purposes of the roadway facility (to minimize pavement width, alternative routes outside the shoreline management corridor shall be utilized to the maximum).
    b. Utilize existing transportation corridors whenever possible.

c. Be based on the maximum utilization of public transit capacity within the context of available technology and metropolitan financial resources to reduce the design requirements for peak hour highway capacity and in keeping with the City's adopted level of service for transit facilities as defined in the City of Woodinville's Comprehensive Plan Transportation Element.

d. Provide frequent safe crossings for pedestrians and bicycles seeking access to public portions of the shoreline.

e. Incorporate pedestrian, bicycle, and equestrian facilities (using state funding sources for this purpose, when possible).

f. Provide scenic viewpoints and turnouts in the shoreline management corridor where they intersect or are adjacent to planned or existing pedestrian, bicycle, and equestrian trails along the water's edge. The trail-link may be established either on public right-of-way or as an easement on privately owned land.

g. Demonstrate that upland alignments are clearly infeasible.

h. Keep over-water structures for vehicles to an absolute minimum, allowed only when critically necessary to the operation of a permitted roadway and otherwise unavoidable.

i. Design bridge crossings of the Sammamish River and Little Bear Creek corridors so that vertical supports are set back from the ordinary high water mark to accommodate circulation of water-craft, horses, bicycles, skaters, and pedestrians.

j. Meet the following conditional use requirements when proposed in the Conservancy Environment:

i. Minor arterials, and neighborhood and local access streets shall be allowed as a conditional use only where essential connections must be made to circulate traffic to urban activity centers and subject to the conditions listed in this section.

ii. The only roadway construction permitted in the Conservancy Environment shall be that deemed necessary for maintenance, security, and/or low intensity visitor access. Any substantial volume of traffic or parking must be accommodated upland with parking consolidated there and with pedestrian/bicycle/equestrian connections to the shore.

6. Drainage

a. All changes in contour for roadways shall account for drainage by proper channeling and culverts, unless the natural drainage system can be effectively and attractively left as a natural stream bed/pathway and be traversed by a bridge structure instead.

b. All culverts or other stormwater management structures, where required, shall be consistent with the requirements of the City's adopted Surface Water Design Manual and relevant engineering standards (WMC. 14.09).

7. Consideration of Hydrologic Effects. Construction of roadways shall incorporate features that leave existing beneficial hydrologic effects as little disturbed as possible. Fill material, where allowed for a roadbed, shall be coarse and permeable enough to allow continued circulation of groundwater and prevent damming it on the upland side.

8. Landscaping. Approval of roadway design shall require an approved landscaping plan. A performance bond shall be required to guarantee implementation of the plans. The use of herbicides and pesticides is prohibited for maintenance of landscaping along roadways within or immediately adjacent to critical areas or their buffers as defined by the City's Zoning Code (WMC 21.24) (or as may hereafter be amended).

9. Utilities. Transportation and primary utility facilities shall be required to make joint use of rights-of-way and to consolidate crossings of water bodies where adverse impact to the shoreline can be minimized by doing so, and it is physically feasible to do so.

10. RCW 37.79.035 and RCW 35.87.130 prohibit the City from vacating any public road which abuts a body of fresh water unless the street or road is not currently used or suitable for boat moorage or launching, a park, viewpoint, recreation or education site, or other public purposes.

11. All shoreline development must conform to the General Goals and Policies (Chapter 2) and the provisions of Chapter 3 (Shoreline Environments), as stated in this Master Program.

12. Roadway construction shall include a design for impoundment structures that trap contaminants, such as oil and salt, and dispose of runoff contaminants safely without allowing incursion into the stream way.

6.24 Piers and Docks

6.24.1 Definition

A pier is a structure built on supportive pilings driven into the water and used as a mooring place for recreational crafts, such as sailboats, rowboats, kayaks, canoes, but not including motorboats or seaplanes. Docks are structures which float upon the water and are used for the same recreational purposes. While floating docks generally create less of a visual impact than those on pilings, they still constitute an impediment to boat traffic.

6.24.2 Exemptions

Docks for private, non-commercial pleasure craft, common to a single-family residence, in which the fair market value of the dock does not exceed $10,000 are exempt from the requirement for a shoreline substantial development permit pursuant to RCW 90.58.030(3)(e)(vii) and WAC 173-27-040(2)(h). Construction on existing docks within

five years of original construction in which the fair market value of the new construction does not exceed $5,000 is also exempt. The City will review all proposals for new docks and repair, improvement, or replacement of existing docks to determine if:

1. The proposal is or is not exempt from the requirement for a substantial development permit,
2. The proposal is suitably located and designed and that all potential impacts have been recognized and mitigated, and
3. The proposal is consistent with the intent, policies, and regulations of the Shoreline Management Act, RCW 90.58.140(1), and this Master Program.

6.24.3 Regulations

1. Piers are prohibited in the Woodinville shoreline jurisdiction.
2. Preference shall be given to the use of community docks in all new major waterfront subdivisions or developments. In general, the cooperative use of docks is encouraged. [WAC 173-26-231(3)(b)]
3. Docks, including those accessory to single-family residences, shall be designed and constructed to avoid or, if that is not possible, to minimize and mitigate the impacts to shoreline ecological functions, critical areas resources, and fish habitats. [WAC 173-26-231(3)(b)]
4. The City of Woodinville shall apply U.S. Army Corps of Engineers' regulations to the placement of docks in relation to the shorelines. Proposals for docks shall include at a minimum the following information:
    a. Description of the proposed structure, including its size, location, design, and any shoreline stabilization or other modification required by the project.
    b. Ownership of adjacent shorelands.
    c. Proposed location of floats, buoys, or docks relative to property lines and the ordinary high-water mark.
    d. Location width, height, and length of docks on adjacent properties within 300 feet.
5. Docks may be constructed on the shorelines of Woodinville only for pleasure boat access to shoreline activities serving the general public. Pleasure boats shall include sailboats, rowboats, kayaks, and canoes. No docks are permitted for motorboats or seaplanes.
6. As established in Section 6.14 (Residential Development), new residential development of two or more dwellings are required to provide joint use or community dock facilities, where feasible.
7. No more than one dock for each 100 feet of shoreline associated with multifamily, subdivision, commercial, or industrial development is permitted.

8. Boat moorages shall not be constructed to impede normal public use of the waterway or to significantly interfere with use of navigable waters. Docks may be prohibited where necessary to protect navigation, public use, or habitat values.

9. Covered boat sheds are permitted in the Shoreline Residential, and Urban Conservancy environments, but must be located 100 feet from the OHWM.

10. All docks shall be constructed and maintained in a safe and sound condition. Abandoned or unsafe docks shall be removed or repaired promptly by the owner. Where any such structure constitutes a hazard to the public, the City may, following notice to the owner, abate the structure if the owner fails to do so within 90 days and may impose a lien on the related shoreline property in an amount equal to the cost of the abatement.

11. Common docks may be located on or straddling the property line upon agreement of two or more adjacent property owners or as part of a subdivision plan. Appropriate legal instruments shall be submitted as part of the shoreline permit application, delineating joint interest, control of the structure, and maintenance responsibilities.

12. Dimensions

    a. All docks and recreational floats shall be constructed parallel to the shoreline rather than perpendicular to it and shall not extend more than eight feet beyond the ordinary high-water mark into the stream way. Dock length is measured parallel to the shoreline and dock width is measured perpendicular to the shoreline. The length of any dock or recreational float shall not exceed 40 feet.

    b. Docks and floats may occupy a maximum of 50 percent of the linear extent of any one shoreline parcel, and can be located only on parcels where shoreline lot width is at least 50 feet. In the case of a common dock, combined shoreline lot width must be at least 50 feet.

    c. No dock shall be closer than five feet to any adjacent property line, unless it is a jointly owned facility.

    d. No dock deck shall stand higher than two feet above the ordinary high-water mark. Houses and sheds are not allowed on a privately owned residential dock. Storage boxes shall not extend above the dock's railing and in no case more than 42 inches above the dock deck.

13. Issuance of a shoreline permit or exemption shall be based on clear evidence that stream bed disturbance is minimal, that aquatic and wildlife habitats are protected or enhanced, and that minimum interference is caused to general public usage of the water's surface during construction.

14. Structure Color and Materials

    a. Colors and materials shall be consistent with the natural appearance intended for the shoreline. Shiny metallic surfaces are prohibited, and

earth tone colors, as previously described for Commercial Development (Section 6.11), shall be used. Styrofoam floats are prohibited and other materials which bear no resemblance to natural stone or wood products are prohibited unless completely invisible to the public, either from the land or from the water's surface.

b. Floats or other members in direct contact with water shall not be treated or coated with biocides such as paint or pentachlorophenol. Use of arsenate compounds or creosote-treated members is also prohibited. In freshwater, untreated wood, pre-cast concrete, or other nontoxic alternatives shall be used unless the applicant can demonstrate that no feasible alternative to toxic treatments is available which will provide the structural characteristics necessary for the project.

c. No over-water field applications of paint, preservative treatment, or other chemical compounds shall be permitted except in accordance with best management practices as published by the State Department of Ecology.

d. Lighting is required to be the minimum necessary to locate the dock at night and is required to focus downward to minimize glare. Lighting shall not shine directly on the water and shall use lighting in the color spectrum that will not give salmonids predators an advantage.

6.25 Marinas and Other Boating Facilities

6.25.1 Definition

Marinas are facilities that provide boat launching, storage, supplies, and services for small pleasure craft. There are two basic types of marinas: the open-type construction (floating breakwater and/or open-pile work) and solid-type construction (bulkhead and/or landfill). Depending upon the type of construction, marinas affect fish resources and habitats in different ways. [WAC 173-26-241(3)(c)]

6.25.2 Regulations

Not applicable to the City of Woodinville. There are no known marina activities existing or anticipated within the City of Woodinville's shoreline management jurisdiction and are prohibited in the shoreline management jurisdiction. If such operations are anticipated in the future, regulations will be established by amendment to this Master Program, according to procedures set forth in RCW 90.58.020 and the guidelines of WAC 173-26-241(3)(c), or as may hereafter be amended.

6.26 Recreation

6.26.1 Definition

Recreation is the refreshment of body and mind through forms of play, amusement, or relaxation. Water-related recreation accounts for a very high proportion of all recreational activity in the Pacific Northwest. The recreational experience may be either an active one involving boating, swimming, or fishing, or the experience may be a passive one such as enjoying the natural beauty or flora and/or fauna of a vista, river, or

creek area from adjacent property. Recreational development includes commercial and public facilities designed and used to provide recreational opportunities to the public [WAC 173-26-241(3)(i)]
This section applies to both publicly and privately-owned shoreline facilities intended for use by the public or a private club, group, association, or individual.

6.26.2 Regulations

1. Access to public recreational locations such as fishing streams shall be a combination of areas and linear access (parking areas and easements, for example) to prevent concentrations of use pressure at a few points.
2. Woodinville encourages the linkage of shoreline parks and public access points through the use of linear access such as the Sammamish River regional park and the Tolt River water line. Many types of connections can be used such as hiking paths, bicycle trails, and/or scenic drives.
3. Coordination of the City's Parks, Recreation, and Open Space Plan as well as county, state, and federal recreation planning is also encouraged to mutually satisfy recreational needs in the most efficient and cost-effective manner.
4. Recreational developments shall be located and designed to ensure no net loss to shoreline ecological function and to preserve, enhance, or create scenic views and vistas.
5. To avoid wasteful use of the limited supply of recreational shoreland, parking areas shall be located landward of the stream buffer. Access shall be provided by walkways or other methods. Automobile traffic on fragile shoreland resources shall be prohibited with the exception of utilities and trail maintenance.
6. Facilities for intensive recreational activities shall only be provided where sewage disposal and vector control can be accomplished to meet public health standards without adversely altering the natural features attractive for recreational uses.
7. In locating proposed recreational facilities such as playing fields and other open areas which use fertilizers and pesticides in their turf maintenance programs, provisions must be made to prevent these chemicals from entering water.
8. Where appropriate, recreational uses with no permanent structures as defined by the Federal Emergency Management Agency may be permitted in floodplain areas.
9. All recreational developments shall adequately provide for:
    a. Vehicular and pedestrian access, both on- and off-site.
    b. Proper water supply and solid and sewage waste disposal methods.
    c. Security and fire protection.

10. Overflow and trespass onto adjacent properties shall be prevented by methods, including but not limited to landscaping, fencing, and posting of property notices.
11. Such development shall be buffered from adjacent private property or natural areas with a 5-foot-wide Type I landscaping strip using northwest native plant stock.
12. Water-dependent activities such as swimming, boating, and fishing, and activities that benefit from riverfront scenery such as picnicking, hiking, bicycling, and equestrian use shall be emphasized in planning public recreation sites in the shoreline management corridor. These uses are preferred to other kinds of recreational activities that do not inherently benefit from the water's recreational or scenic qualities.
13. Lighting. Area lighting of recreational activities, whether commercially or publicly operated, shall be designed so that its intensity and color do not conflict with adjacent shoreline and/or non-shoreline uses. Lighting should not shine directly on the water and should use lighting in the color spectrum to avoid giving salmonids predators an advantage.
14. Site Design
    a. When appropriate, foot bridges shall be encouraged as features of any recreational activity along the shoreline, providing that valued wildlife and aquatic habitat is protected both during and after construction. Where feasible, footbridges should be combined with other stream crossings to minimize the number of crossings.
    b. Retention or improvement of existing shoreline vegetation is encouraged, while activities that would remove large quantities of it shall be discouraged as shoreline uses.
    d. Parking areas are prohibited within the required setback from the ordinary high-water mark of the channel as described in Section 6.23. Parking areas shall be developed in accordance with the criteria set forth in the Woodinville Zoning Code (WMC 21.18), or as may hereafter be amended.
    e. Areas of significant wildlife or aquatic life habitat shall be developed primarily for controlled public access to view the habitats and only when adverse impacts to these areas can be avoided.

6.27 Public Access

6.27.1 Definition

Shoreline public access is the ability of the general public to reach, touch, and enjoy the water’s edge, and to view the water and the shoreline from adjacent locations. Public access facilities may include picnic areas, pathways and trails, floats and docks, viewing towers, bridges, and improved street ends.

6.27.2 Regulations

1. Future development within shoreline jurisdiction requiring dedication of Public Access shall be developed consistent with Appendix 6 of this Master Program and the City of Woodinville adopted the 2005 Parks, Recreation & Open Space Plan (Ordinance No. 396). Future proposed trail dedication easements to the City (both public and private) on the west side of Little Bear Creek will connect the City's Linear and Rotary Parks as a component of the City's non motorized trail plan.

2. Private or public trail easement as determined appropriate by the Planning Director and consistent with this Master Program may be required when development and/or redevelopment of non-water oriented commercial, industrial uses or residential subdivisions occur within shoreline jurisdiction. Access design and location shall be consistent with policies or standards as contained in Appendix 6 of this Master Program based on locally derived standards pursuant to the Woodinville Comprehensive Plan, Parks, Recreation, and Open Space Element or Parks, Recreation, and Open Space Plan.

3. Shoreline development by any public entities, including the City of Woodinville, state agencies, and public utility districts, shall include public access measures as part of each development project, unless such access is shown to be incompatible due to reasons of safety, security, or impact to the shoreline environment.
4. Public access provided by shoreline street ends, public utilities, and rights-of-way shall not be diminished (RCW 36.87.130).
5. All new residential subdivisions Creating more than four (4) new lots and multiunit apartment developments shall provide common public open space on the shoreline for residents of the development. Access design and location shall be consistent with Appendix 6 of this Master program and policies or standards as contained in the Woodinville Comprehensive Plan, Parks, Recreation, and Open Space Element or Parks, Recreation, and Open Space Plan.
6. Where a new development or use in the shoreline management zone within the Tourist District will create increased demand for public access to the shoreline, the development shall provide public access. Access design and location shall be consistent with policies or standards as contained in the Woodinville Comprehensive Plan, Parks, Recreation, and Open Space Element or Parks, Recreation, and Open Space Plan.
7. Public access locations shall be clearly marked with visible signage.
8. Public access shall consist of a dedication of land or a physical improvement in the form of a walkway, trail, bikeway, corridor, viewpoint, park, or other area serving as a means of view and/or physical approach to the shorelines and may include interpretive centers and displays.

9. Public access improvements shall not result in a net loss of shoreline ecological functions.

6.28 Instream Structural Uses

6.28.1 Definition

Instream structure means a structure placed by humans within a stream or river waterward of the ordinary highwater mark that either causes or has the potential to cause water impoundment or the diversion, obstruction, or modification of water flow. Instream structures may include those for hydroelectric generation, irrigation, water supply, flood control, transportation, utility service transmission, fish habitat enhancement, or other purpose.

6.28.2 Regulations

1. Instream structures may be permitted in all shoreline environments as a conditional use.
2. Instream structures shall provide for the protection and preservation, of ecosystem-wide processes, ecological functions, and cultural resources, including, but not limited to, fish and fish passage, wildlife and water resources, hydrogeological processes, and shoreline critical areas.
3. The location and planning of instream structures shall give due consideration to the full range of public interests, watershed functions and processes, and environmental concerns, with special emphasis on protecting and restoring priority habitats and species.
4. Instream structures shall be designed, located, and constructed in such a manner as to avoid extensive topographical alteration and preserve natural scenic vistas.
5. Instream structures that divert water shall return flow to the stream in as short a distance as possible.
6. All instream structures shall be designed to allow the natural transport of bedload materials.
7. Instream structures and their support facilities shall be designed to minimize removal of vegetation.

CHAPTER 7 – ADMINISTRATIVE PROCEDURES

7.1 Shoreline Environment Designation Map

There is hereby made a part of this Master Program, a map which shall be officially known as the Shoreline Environment Designation Map, but which, for the purpose of brevity shall be referred to in this Master Program as the "Map" (see Figure 2 in Chapter 3). There shall be only one official copy of this Map which shall reside in the custody of the Shoreline Administrator. There may be unofficial copies of this Map prepared for administrative purposes.

The Map will show the area of the City of Woodinville which is under the jurisdiction of this Master Program. Further, the Map will show the four shoreline environments as they affect the various lands and waters of the City of Woodinville.

Where uncertainty or conflict may occur in the exact location of a jurisdiction boundary line, or environment boundary line, the official designations prepared by the Department of Ecology will be used. Where this does not resolve the conflict, the following rules will apply:

1. Boundaries indicated as approximately following the center lines of streets, highways or alleys shall be construed to follow such lines.
2. Boundaries indicated as approximately following platted lot lines shall be construed as following such lot lines.
3. Boundaries indicated as approximately following the corporate limits shall be construed as following such corporate limits.
4. Boundaries indicated as following railroad lines shall be construed to be half way between railroad right-of-way lines.
5. Boundaries indicated as following shorelines of rivers shall be construed to follow such shorelines 200 feet to the upland side as measured from the ordinary high-water mark, the floodway, or whichever is greater. The jurisdiction boundary shall also be construed to follow the actual boundaries of associated wetlands or other critical areas and their buffers that are partially or completely within the 100-year floodplain. The term “associated” shall apply to wetlands that are hydrologically connected to or otherwise influenced by the shorelines of the Sammamish River or Little Bear Creek. The boundaries of wetlands or other critical areas and their required buffers would be construed as surveyed and mapped in the field. Such surveying or mapping may or may not be the responsibility of the applicant, depending on each situation. In the event of a change in a shoreline or critical area feature, boundaries shall be construed as moving with the actual shoreline or critical area and buffer edge.
6. Boundaries of the SMP jurisdiction along Little Bear Creek were determined by applying the 20 cfs criteria (RCW 90.58.030 (2)(d). The 20 cfs limit extends north of the City of Woodinville northern city limit.
7. The areas extending from the OHWM waterward to the centerline of the Sammamish River and Little Bear Creek are governed by the policies and regulations of the Aquatic environment. The Aquatic environment also extends from the OHWM

waterward to the King County boundary line in those portions of Woodinville where city and county boundary lines are contiguous along the Sammamish River.

8. Boundaries indicated as parallel to or extension of features indicated in 1 through 7 above shall be so construed.
9. Distance not specifically indicated on the Map shall be determined by the scale of the Map.
10. Where physical or cultural features existing on the ground vary from those shown on the Map or in other circumstances not covered by 1 through 6 of the above, the Administrator shall interpret the boundaries.

7.2 Regulatory Relationships

Shoreline Master Program regulations act as an overlay to the City of Woodinville's Zoning Code and shall take precedence over underlying zoning regulations.

7.3 Non-conformance

All shoreline uses and structures, lawfully erected and maintained in lawful condition prior to the effective date of this Master Program, August 2008, and all structures in the process of being lawfully erected prior to the effective date of this Master Program but which do not conform to the regulations contained herein, may continue to exist or be completed according to the provisions of its lawful approval. Non-conforming development standards as contained in WMC 21.32 and WAC 173-27-080(3), (6), and (7) shall apply. See additional information in Section 6.5.

7.4 Administrator

The Shoreline Administrator shall be appointed by the City Manager and shall perform all the duties ascribed to the Administrator by this Master Program. The Shoreline Administrator shall administer the permit and notification regulations.

The Shoreline Administrator shall also be responsible for making the judgments called for in these regulations. Whenever phrases subject to interpretation appear in these regulations, a determination must be made for specific cases involving the particular regulations. These determinations shall be made in accordance with section 5.6 of this chapter.

7.5 Permits

Certain forms of development or activity occurring within the area of jurisdiction must be granted permits, termed "substantial development permits" prior to commencement of construction or beginning the activity. The permit procedure shall be in accordance with WMC Chapter 17.07 through 17.17 and RCW 98.150, and amendments to that procedure shall automatically cause a similar amendment to this Master Program.

In certain circumstances as prescribed by the Shoreline Management Act, substantial development permits may not be required for particular activities. The proponent of the activity may still be required by the Shoreline Management Act to obtain a conditional use permit or a

variance. Developments that do not require a permit must still comply with the goals, policies, and regulations of this Master Program.

7.5.1 Application for a Permit

Once a potential applicant has determined that he/she must obtain a substantial development permit, conditional use permit, or variance for a contemplated project, he/she shall apply to the City for the same forms provided by the Shoreline Administrator. On the date the applicant submits a complete application along with the application fee and other information, the official permit procedure begins in accordance with WMC 17.07 through 17.17. The Shoreline Administrator shall determine whether an application is complete as set forth in WMC 17.09. When an applicant is required to obtain a shoreline permit, no other permits for the project shall be issued until the shoreline permit has been issued. All permits issued by the City shall also be in accordance with WAC 173-27-190, as follows:

1. Each substantial development, conditional use, and variance permit issued by the City of Woodinville shall contain a provision that construction pursuant to the permit shall not begin and is not authorized until twenty-one (21) days from the date of filing as defined in RCW 90.58.140(6) and WAC 173-27-130, or until all review proceeding initiated within twenty-one (21) days from the date of such filing have been terminated; except as provided in RCW 90.58.140 (5)(a) and (b),
2. Permits for substantial development, conditional use and variance may be in any form prescribed and used by the City, including a combined permit application form. Such forms will be supplied by the City.

7.5.1.1 Notification

Notification requirements shall be in accordance with WMC 17.11 Public Notice.

7.5.1.2 Revisions or Modifications to Applications or Permits

Any revisions or modifications to a permit shall be in accordance with WMC 17.09.070 and this subsection. A set of detailed plans and text describing the proposed changes of the permit shall be submitted to the City for review. If the City's Shoreline Administrator determines that the proposed changes are within the scope and intent of the original permit, the Shoreline Administrator may approve a revision or modification. In addition to consideration pursuant to WMC 17.09.070(1), within the scope and content of the original permit means the following:

1. No additional over-water construction is involved except that dock or float construction may be increased by 500 square feet or ten percent from the provisions of the original permit, whichever is less.
2. Ground area coverage and height of each structure may be increased a maximum of ten percent from the provisions of the original permit.
3. Additional separate structures may not exceed a total of 250 square feet.

4. The revised permit does not authorize development to exceed height, lot coverage, setback, buffer, or any other requirements of the applicable Master Program except as authorized under the original permit.
5. Additional landscaping is consistent with conditions, if any, attached to the original permit and with the applicable Master Program.
6. The use authorized pursuant to the original permit is not changed.
7. No substantial adverse environmental impact will be caused by the project revisions. [WAC 173-27-100(1)-(2)]

If the sum of the proposed revision and any previously approved revisions processed under this subsection is determined by the Shoreline Administrator as beyond the scope and intent of the original permit, the Shoreline Administrator shall require that the applicant apply for a new permit in the manner provided for herein. [WAC 173-27-100(4)]

The revised permit is effective immediately upon final action by the City or, when appropriate under WAC 173-27-100(6), by the Development Services Department. [WAC 173-27-100(7)]

Filing of the Shoreline Administrator's decision shall be done in accordance with adopted State law and the Washington Administrative Code as provided for in WAC 173-27-130. Appeals shall be in accordance with WAC 173-27-100(8) and RCW 90.58.180.

7.5.1.3 Filing of Decision

Filing of the Shoreline Administrator’s decision shall be done in accordance with WAC 173-27-130.

7.5.1.4 Revocation of Permit

If no work has begun on a project, the Administrator may revoke the permit and halt the project if conditions written on the permit are not fulfilled or are violated; or, if the permit is found to have been issued based on false information or misrepresentations of the applicant; or, if an activity is found to have been undertaken on shorelines of the state in violation of Chapter 90.58 RCW or the Shoreline Master Program. If work has begun on the project, and if conditions written on the permit are not fulfilled or are violated; or, other of these regulations or those of Chapter 90.58 RCW are violated; or, if the permit is found to have been issued based on false information or misrepresentations of the applicant, the administrator may revoke an issued permit or otherwise enforce compliance in accordance with WAC 173-27-240 through -300.

7.5.1.5 Letter of Exemption

The City of Woodinville shall issue a letter of Exemption for Projects meeting the WAC criteria (WAC 173-27-040) and requiring Section 10 or 404 federal permits. (WAC 173-27-050)

7.5.2 Substantial Development

Those developments for which permits must be obtained are termed "substantial developments" and are defined by the Shoreline Management Act of 1971, as amended, as follows:

"Substantial development" shall mean any development of which the total cost or fair market value exceeds $5,718, or any development which materially interferes with the normal public use of the water or shorelines of the state; except the following shall not be considered substantial development for the purpose of this Master Program and its codified regulations:

1. Normal maintenance or repair of existing structures or developments, including damage by accident, fire or elements.
2. Construction of the normal protective bulkhead common to single-family residences.
3. Emergency construction necessary to protect property from damage by the elements.
4. Construction and practices normal or necessary for farming, irrigation, and ranching activities, including agricultural service roads and utilities on shorelands and the construction and maintenance of irrigation structures including but not limited to head gates, pumping facilities, and irrigation channels. A feedlot of any size, all processing plants, other activities of a commercial nature, alteration of the contour of the shorelands by leveling or filling other than that which results from normal cultivation, shall not be considered normal or necessary farming or ranching activities. A feedlot shall be an enclosure or facility used or capable of being used for feeding livestock hay, grain, silage, or other livestock feed, but shall not include land for growing crops or vegetation for livestock feeding and/or grazing, nor shall it include normal livestock wintering operations.
5. Construction or modification of navigational aids such as channel markers and anchor buoys.
6. Construction on shorelands by an owner, lessee, or contract purchaser of a single-family residence for his/her own use or for the use of his family, which residence does not exceed a height of 35 feet above average grade level and which meets all requirements of the state agency or local government having jurisdiction thereof, other than requirements imposed pursuant to this ordinance.
7. Construction of a dock, including a community dock, designed for pleasure craft only, for the private noncommercial use of the owners, lessee, or contract purchaser of single or multiple-family residences. This applies if, in fresh waters, the fair market value of the dock does not exceed ten thousand dollars. If subsequent construction on the dock occurs within five years of completion of the prior construction and exceeds five thousand seven hundred eighteen dollars, the subsequent construction shall require a substantial development permit.
8. Operation, maintenance, or construction of canals, waterways, drains, reservoirs, or other facilities that now exist or are hereafter created or developed as a part of an irrigation system for the primary purpose of making use of system waters, including return flow and artificially stored groundwater for the irrigation of lands.

9. The marking of property lines or corners on state-owned lands, when such marking does not significantly interfere with normal public use of the surface of the water.
10. Operation and maintenance of any system of dikes, ditches, drains, or other facilities existing on June 4, 1975, which were created, developed, or utilized primarily as a part of an agricultural drainage or diking system.
11. Any project with a certification from the governor, pursuant to RCW 80.50;
12. Site exploration and investigation activities that are prerequisite to preparation of an application for development authorization under this Master Program, if:
    a. The activity does not interfere with the normal public use of the surface waters.
    b. The activity will have no significant adverse impact on the environment including, but not limited to fish, wildlife, fish or wildlife habitat, water quality, and aesthetic values.
    c. The activity does not involve the installation of a structure, and upon completion of the activity the vegetation and land configuration of the site are restored to conditions existing before the activity.
    d. A private entity seeking development authorization under this section first posts a performance bond or provides other evidence of financial responsibility to the local jurisdiction to ensure that the site is restored to pre-existing conditions.
    e. The activity is not subject to the permit requirements of RCW 90.58.550. [1995 Laws, Ch. 237, Sec. 1]
13. Removal or control of aquatic noxious weeds, as defined in RCW 17.26.020, through the use of an herbicide or other treatment methods applicable to weed control that are recommended by a final environmental impact statement published by the Department of Agriculture or the Department of Ecology jointly with other state agencies;
14. Public or private watershed restoration projects consistent with this Shoreline Master Program and pursuant to WAC 173-27-040(2)(o); and
15. A public or private project that improves fish or wildlife habitat or fish passage pursuant to WAC 173-27-040(2)(p).

7.5.2.1 Permit Requirements

An application for a Substantial Development Permit shall be in accordance with WMC 17.09.020 and WAC 173-27-180, and shall contain the following at a minimum:

1. Name, address, telephone number of applicant.
2. Name, address, telephone number of applicant's representative (if different).
3. Name, address, telephone number of property owner.
4. Relation of applicant to property (owner, purchaser, lessee, other).
5. Parcel number and section, township, range to the nearest quarter, quarter section or latitude and longitude to the nearest minute.
6. Address of property.

7. Name of shoreline or associated wetland.
8. Current use of property with existing improvements and physical characteristics.
9. Proposed use of property.
10. Activities necessary to accomplish the project.
11. Shoreline designation according to the Shoreline Master Program.
12. Shorelines of statewide significance.
13. Type of shoreline (marine, stream, lake, lagoon, marsh, bog, swamp, floodplain, delta).
14. Type of beach (accretion, erosion, high bank, low bank, or dike).
15. Type of material (sand, gravel, mud, clay, rock, riprap).
16. Extent and type of bulkheading, if any.
17. Description of the vicinity; adjacent uses, structures, and improvements; intensity of development; and physical characteristics.
18. Detailed drawings and text sufficient to fully explain the intended project which must include:
    a. Site boundary.
    b. Property dimensions in vicinity of project.
    c. Ordinary high-water mark.
    d. Typical cross section or sections showing:
        i. Existing ground elevations.
        ii. Proposed ground elevations.
        iii. Height of existing structures.
        iv. Height of proposed structures.
    e. Proposed land contours, where appropriate, at 5-foot intervals in water and 10-foot landward of the ordinary high-water mark.
    f. Dimensions and locations of existing structures to be maintained, including paved or graveled areas, roads, utilities, septic tanks and drain fields, material stock piles or surcharge, and storm water facilities.
    g. Dimensions and locations of proposed structures including paved or graveled areas, roads, utilities, septic tanks and drain fields, material stock piles or surcharge, and storm water facilities.
    h. Vegetation found on site.
    i. Landscaping plans (if applicable).
    j. Delineated wetlands if any.
    k. Source, composition, and volume of fill material.
    l. Composition, volume, and destination of extracted materials and proposed disposal area.
    m. Plans for off-site mitigation, if any.

n. Septic tank compliance with local health and state regulations.

o. Vicinity Map

i. Indicate site location using natural points of reference (roads, state highways, prominent landmarks, etc.)

ii. If the development involves the removal of any soils by dredging or otherwise, please identify the proposed disposal site on the map. If the disposal site is beyond the confines of the vicinity map, provide another vicinity map showing the precise location of the disposal site and its distance to the nearest city or town.

p. Elevations of structures.

q. Depiction of any residential or public views to be impacted.

19. The intended starting and completion dates.

20. The reason, if any, why this project requires a shoreline location as opposed to a non-shoreline location.

21. If critical areas are present, a critical areas report meeting City of Woodinville standards.

7.5.2.2 Permit Review and Approval

The Substantial Development review process shall be in accordance with WMC 17.07 through 17.17, or as may hereafter be amended. In addition, permits approved or denied by the City are reviewed by the state Department of Ecology. Permits that affect the water channel may also be reviewed by King County, affected tribes, the state Department of Fish and Wildlife, and/or the Army Corps of Engineers. Substantial development review shall also be in accordance with WAC 173-27-190.

7.5.3 Conditional Uses

Conditional uses are generally uses permitted to locate in shoreline areas, but usually seen as uses which either do not need, or, depending on the environment, are considered not to be suitable for siting in shoreline locations. It is understood, however, that there may be special circumstances or a special type or style of conditional use that would make shoreline siting of special cases acceptable to the goals, policies, and intentions of the Master Program. Conditional uses are defined as development or substantial development classified as a conditional use according to the regulations in Chapter 6 of this Master Program.

While most, but not all, uses and activities require substantial development permits, any conditional use, no matter what its particular characteristics, will require a conditional use permit before such use may be undertaken. The purpose of a conditional use permit is to allow greater flexibility in varying the application of the use and development regulations of the Master Program in a manner consistent with the policies of RCW 90.58.020, provided that conditional use permits should also be granted in a circumstance where denial of the permit would result in a contradiction of the policies enumerated in RCW 90.58.020.

Therefore, the applicant must supply whatever evidence, information, or agreements to assure the decision-making body that denial of the permit would result in a contradiction of the policies

enumerated in RCW 90.58.020, or for uses identified as conditional in Chapter 4 of this Master Program all of the criteria in Section 5.6.3.3 shall be met.

Other uses not classified or set forth in this Master Program may be authorized through a conditional use permit provided that the applicant can demonstrate, in addition to criteria in Section 5.5.3.3, that extraordinary circumstances preclude reasonable (economically viable) use of the property in a manner consistent with the use regulations of this Master Program. [WAC 173-27-160].

7.5.3.1 Permit Requirements

An application for a conditional use permit shall be in accordance with WMC 17.09.020, WAC 173-27-180, and shall consist, at a minimum, of the following as identified on the submittal checklist:

1. Name, address, telephone number of applicant.
2. Name, address, telephone number of applicant's representative (if different).
3. Name, address, telephone number of property owner.
4. Relation of applicant to property (owner, purchaser, lessee, other)
5. Parcel number and section, township, range to the nearest quarter, quarter section or latitude and longitude to the nearest minute.
6. Address of property.
7. Name of shoreline or associated wetland.
8. Current use of property with existing improvements and physical characteristics.
9. Proposed use of property.
10. Activities necessary to accomplish the project.
11. Shoreline designation according to the Shoreline Master Program.
12. Shorelines of statewide significance.
13. Type of shoreline (marine, stream, lake, lagoon, marsh, bog, swamp, floodplain, delta).
14. Type of beach (accretion, erosion, high bank, low bank, or dike).
15. Type of material (sand, gravel, mud, clay, rock, riprap).
16. Extent and type of bulkheading, if any.
17. Description of the vicinity; adjacent uses, structures, and improvements; intensity of development; and physical characteristics.
18. Detailed drawings and text sufficient to fully explain the intended project which must include:
    a. Site boundary.
    b. Property dimensions in vicinity of project.

c. Ordinary high-water mark.
d. Typical cross section or sections showing:
    i. Existing ground elevations.
    ii. Proposed ground elevations.
    iii. Height of existing structures.
    iv. Height of proposed structures.
e. Proposed land contours, where appropriate, at 5-foot intervals in water and 10-foot landward of the ordinary high-water mark.
f. Dimensions and locations of existing structures to be maintained, including paved or graveled areas, roads, utilities, septic tanks and drain fields, material stock piles or surcharge, and storm water facilities.
g. Dimensions and locations of proposed structures including paved or graveled areas, roads, utilities, septic tanks and drain fields, material stock piles or surcharge, and storm water facilities.
h. Vegetation found on site.
i. Landscaping plans (if applicable).
j. Delineated wetlands if any.
k. Source, composition, and volume of fill material.
l. Composition, volume, and destination of extracted materials and proposed disposal area.
m. Plans for off-site mitigation, if any.
n. Septic tank compliance with local health and state regulations.
o. Vicinity Map
    i. Indicate site location using natural points of reference (roads, state highways, prominent landmarks, etc.)
    ii. If the development involves the removal of any soils by dredging or otherwise, please identify the proposed disposal site on the map. If the disposal site is beyond the confines of the vicinity map, provide another vicinity map showing the precise location of the disposal site and its distance to the nearest city or town.
p. Elevations of structures.
q. Depiction of any residential or public views to be impacted.

19. The intended starting and completion dates.
20. The reason, if any, why this project requires a shoreline location as opposed to a non-shoreline location.
21. If critical areas are present, a critical areas report and survey to City of Woodinville standards.
22. An explanation of why the conditional use should be granted, including notation of any special features of the proposed project that support the request and explanation of how the request meets the requirements and criteria for conditional uses as

enumerated in Section 5.5.3, as well as an explanation of why denial of the permit would result in a contradiction of the policies enumerated in RCW 90.58.020.

7.5.3.2 Permit Review and Approval

The Conditional Use Permit review process shall be in accordance with permit processing regulations pursuant to WMC 17.07 through 17.17, or as may hereafter be amended. Conditional Use Permit review process shall also be in accordance with WAC 173-27-190.

In the review of all conditional use permit applications, consideration shall be given to the cumulative impact of additional requests for like actions in the area. For example, if conditional use permits were granted for other developments in the area where similar circumstances exist, the total of the conditional uses shall also remain consistent with the policies of RCW 90.58.020 and shall not produce substantial adverse effects on the shoreline environment. [WAC 173-27-160(2)]

The decision-maker shall consider: (1) whether the applicant has demonstrated that all of the applicable criteria exist; (2) the cumulative impact of additional requests for like actions in the area; and (3) whether special conditions may be attached to the permit to prevent the undesirable effects of the proposed use. After such consideration, the decision-maker may approve, conditionally approve, or deny the conditional use permit application.

If a conditional use permit is approved, the Administrator shall submit the permit to the Department of Ecology for approval, approval with conditions, or denial as provided in WAC 173-27-200.

Uses specifically prohibited by the Master Program may not be authorized. [WAC 173-27-160(4)]

Permits approved or denied by the City are reviewed by the State Department of Ecology. Permits that affect the water channel may also be reviewed by King County, affected tribes, the State Department of Fish and Wildlife, and/or the Army Corps of Engineers.

7.5.3.3 Conditional Use Approval Criteria

1. The proposed use is consistent with the policies of RCW 90.58.020 and the policies of this Master Program.
2. The proposed use will not interfere with the normal public use of public shorelines.
3. The proposed use of the site and design of the project is compatible with other existing and planned uses within the area.
4. The proposed use will cause no avoidable adverse effects to the shoreline environment in which it is to be located.
5. That water, air, noise, and other classes of pollution will not be more severe than the pollution that would result from the uses which are permitted in the particular environment.
6. That none of the goals, policy statements, or specific aims of the particular environment would be violated, abrogated, or ignored.

7. That no other applicable regulations will be violated.
8. The public interest suffers no substantial detrimental effect.

7.5.4 Variance

It is understood that these regulations may cause unnecessary hardships in particular situations, or that these regulations might be unreasonable in light of new evidence, technology, or other special circumstances, and that the goals and policies of the Master Program may not necessarily be served by the strict application of these regulations. The purpose of a variance permit is strictly limited to granting relief from specific bulk, dimensional, or performance standards set forth in this Master Program where there are extraordinary or unique circumstances relating to the property such that the strict implementation of the Master Program will interfere with reasonable uses of the property or impose unnecessary hardships on the applicant or thwart the policies set forth in RCW 90.58.020. [WAC 173-27-170]

7.5.4.1 Permit Requirements

An application for a Substantial Development Permit shall be in accordance with WMC 17.09.020, WAC 173-27-180, and shall, contain the following, at a minimum:

1. Name, address, telephone number of applicant.
2. Name, address, telephone number of applicant's representative (if different).
3. Name, address, telephone number of property owner.
4. Relation of applicant to property (owner, purchaser, lessee, other)
5. Parcel number and section, township, range to the nearest quarter, quarter section or latitude and longitude to the nearest minute.
6. Address of property.
7. Name of shoreline or associated wetland.
8. Current use of property with existing improvements and physical characteristics.
9. Proposed use of property.
10. Activities necessary to accomplish the project.
11. Shoreline designation according to the Shoreline Master Program.
12. Shorelines of statewide significance.
13. Type of shoreline (marine, stream, lake, lagoon, marsh, bog, swamp, floodplain, delta).
14. Type of beach (accretion, erosion, high bank, low bank, or dike).
15. Type of material (sand, gravel, mud, clay, rock, riprap).
16. Extent and type of bulkheading, if any.
17. Description of the vicinity; adjacent uses, structures, and improvements; intensity of development; and physical characteristics.

18. Detailed drawings and text sufficient to fully explain the intended project which must include:
    a. Site boundary.
    b. Property dimensions in vicinity of project.
    c. Ordinary high-water mark.
    d. Typical cross section or sections showing:
        i. Existing ground elevations.
        ii. Proposed ground elevations.
        iii. Height of existing structures.
        iv. Height of proposed structures.
    e. Proposed land contours, where appropriate, at 5-foot intervals in water and 10-foot landward of the ordinary high-water mark.
    f. Dimensions and locations of existing structures to be maintained, including paved or graveled areas, roads, utilities, septic tanks and drain fields, material stock piles or surcharge, and storm water facilities.
    g. Dimensions and locations of proposed structures including paved or graveled areas, roads, utilities, septic tanks and drain fields, material stock piles or surcharge, and storm water facilities.
    h. Vegetation found on site.
    i. Landscaping plans (if applicable).
    j. Delineated wetlands if any.
    k. Source, composition, and volume of fill material.
    l. Composition, volume, and destination of extracted materials and proposed disposal area.
    m. Plans for off-site mitigation, if any.
    n. Septic tank compliance with local health and state regulations.
    o. Vicinity Map
        i. Indicate site location using natural points of reference (roads, state highways, prominent landmarks, etc.)
        ii. If the development involves the removal of any soils by dredging or otherwise, please identify the proposed disposal site on the map. If the disposal site is beyond the confines of the vicinity map, provide another vicinity map showing the precise location of the disposal site and its distance to the nearest city or town.
    p. Elevations of structures.
    r. Depiction of any residential or public views to be impacted.
19. The intended starting and completion dates.
20. The reason, if any, why this project requires a shoreline location as opposed to a non-shoreline location.

21. If critical areas are present, a critical areas report and survey to City of Woodinville standards.
22. If a variance is being requested, the application shall contain the applicant's reasons why the variance should be granted.
23. On all variance applications the plans shall clearly indicate where development could occur without approval of a variance, the physical features and circumstances on the property that provide a basis for the request, and the location of adjacent structures and uses.

An applicant may make a joint application for a particular project and for variance to any of these regulations which he/she deems unreasonable, or which would provoke an unnecessary hardship in his/her case.

In addition to the other material required in the application, the applicant must identify each of the provisions in this Master Program for which he/she wishes a variance. Further, the applicant must supply evidence, information, and his/her rationale for each variance sought. An explanation of how the project meets the variance criteria of 5.5.4.3 of this section shall be submitted as part of the application.

7.5.4.2 Permit Review and Approval

The Variance Permit review process shall be in accordance with permit processing regulation pursuant to WMC 17.07 through 17.17, or as may hereafter be amended. The Variance Permit review process shall also be in accordance with WAC 173-27-190.

Failure to satisfy any one of the above will result in denial of the variance. The medium of variance is to be used only for the relaxation of these regulations as they apply to a permitted use, or in conjunction with an application for a conditional use.

In the granting of all Variance Permits, consideration shall be given to the cumulative impact of additional requests for like actions in the area. For example, if variances were granted to other developments in the area where similar circumstances exist, the total of the variances shall also remain consistent with the policies of RCW 90.58.020 and shall not produce substantial adverse effects to the shoreline environment. [WAC 173-27-170(4)]

The remainder of the variance procedure is identical to that for a conditional use.

Permits approved or denied by the City are reviewed by the state Department of Ecology. Permits that affect the water channel may also be reviewed by King County, affected tribes, the state Department of Fish and Wildlife, and/or the Army Corps of Engineers.

7.5.4.3 Variance Approval Criteria

1. Variances for development located landward of the ordinary high-water mark as defined in RCW 90.58.030(2)(b), except within those areas designated by the Woodinville Development Services Department pursuant to Wetlands Chapter 173-22-WAC or those areas defined as critical areas by the Growth Management Act or

the Woodinville Zoning Code (WMC 21.24), may be authorized provided the applicant can demonstrate all of the following:

a. The strict application of the bulk, dimensional, or performance standards set forth in this Master Program precludes or significantly interferes with a reasonable use of the property not otherwise prohibited by the Master Program.

b. The hardship described in Item a. above is specifically related to the property and is the result of unique conditions such as irregular lot shape, size, or natural features and the application of the Master Program, and not, for example, from deed restrictions or the applicant's own actions.

c. The granting of the variance(s) will not violate the goals, policies, or individual environment purposes spelled out in the Master Program.

d. The requested variance does not constitute a grant of special privilege not enjoyed by the other properties in the area, and is the minimum necessary to afford relief.

e. That the public interest, health, safety, and welfare will suffer no substantial detrimental effect.

f. That the design of the proposed project is compatible with other permitted activities in the surrounding area and will not cause adverse effects to adjacent properties or the shoreline uses, structures, or environment. [WAC 173-27-170(2)(c)]

2. For variance permits for development that will be located either water-ward of the ordinary high-water mark, as defined in RCW 90.58.030(2)(b), or within those areas designated by the Woodinville Development Services Department as marshes, bogs, or swamps pursuant to Chapter 173-22-WAC or those areas defined as critical areas by the Growth Management Act or the City's Code, may be authorized provided the applicant can demonstrate all of the following:

   a. The strict application of the bulk, dimensional, or performance standards set forth in this Master Program precludes all reasonable use of the property not otherwise prohibited by the Master Program.

   b. The proposal is consistent with the criteria listed above in Items b. through f. for variances landward of the ordinary high-water mark.

   c. The public rights of navigation and use of the shorelines will not be adversely affected. [WAC 173-27-170(3)(c)]

3. Failure to satisfy any one of the above will result in denial of the variance. The medium of variance is to be used only for the relaxation of these regulations as they apply to a permitted use, or in conjunction with an application for a conditional use.

4. Variances to gain relief from permitted uses are not allowed.

5. In the case of multiple variances in a given area, consideration shall be given to cumulative impacts.

7.6 Interpretation

Where the provisions of this Master Program may be unclear in special circumstances, or where judgments must be made because of the nature of the language used, the Shoreline Administrator shall make such interpretations and judgments. Use of "best science" and knowledge shall be included in the decision-making process.

When any provision of any other chapter of the City of Woodinville Code conflicts with the SMP or when provisions of the SMP are in conflict, that provision more protective of shoreline ecological functions shall apply unless specifically provided otherwise in the SMP or unless such provision conflicts with federal or state laws or regulations.

7.7 Applicability

When parcels are divided by a shoreline boundary, this program shall only apply to that portion of the parcel between the boundary and the water. The provisions of this program shall apply to all shoreline activities, regardless of whether a shoreline permit is required or not.

7.8 Appeal

All of the various actions that may be taken during the administration and enforcement of these regulations may be appealed, except for review of proposals for exceptions and exemptions. All of the actions fall into two categories: (1) actions automatically reviewed at the state level, and (2) actions that will not be so reviewed. The appeal procedure contained in the Shoreline Management Act itself provides for the avenue of appeal for all state reviewed actions, in accordance with RCW 90.58.180.

For decisions made by the Woodinville Shoreline Administrator, appeals shall be as provided for in WMC 17.17, for each of the types of permits involved. Should any conflict arise between the City's Municipal Code and the provisions of the state Shoreline Management Act, the Act shall prevail.

The Shoreline Administrator will keep careful records of the date and nature of each decision. The success or failure of each appeal effort shall be made public record and shall be used in future decisions of a similar nature. The decision-maker shall note such use or shall record the explanation as to why an earlier appeal action was not used.

7.9 Amendments and Boundary Changes

Any of the provisions of this entire Master Program, or Shoreline Management jurisdiction boundary lines, or environment boundary lines may be amended. Such amendment shall first occur in the form of a regular ordinance amendment according to the regular legislative rules of the City Council, except that before the City Council may consider any amendments, there must first be a public hearing held by the appropriate hearing body at which the matter of amendment is presented to the public and their comment considered.

When the City Council has acted, the proposed amendment will be sent to the Department of Ecology for its review. The Department of Ecology's review and action on the submitted Master

Program or any amendments thereto shall be as provided for in RCW 90.58.090. Amendments to this Master Program will take effect when and in such form as approved or adopted by the Department of Ecology.

All territory which may hereafter be annexed to the City shall be classified with an environment designation at the time of annexation. Shorelines that are not currently within the boundaries of the City of Woodinville may be designated a specific environment, in accordance with WAC 173-25-150. When that area is annexed by the City, it will automatically become part of this SMP.

7.10 Public Hearing Rules

Any public hearing conducted as an action of these regulations shall be held in accordance with WMC 17.15. Should any conflict arise between other sections of Woodinville's Municipal Code and the provisions of the state Shoreline Management Act, the provisions more protective of shoreline ecological functions shall prevail. Records will be kept for all hearings.

7.11 Enforcement

It is unlawful for any person, firm, or corporation to erect, construct, enlarge, alter, repair, move, improve, convert, demolish, equip, use, occupy, or maintain any building or structure in the City or cause the same to be done contrary to or in violation of any of the provisions of this Master Program.

Violations of this Master Program shall be enforced as set forth in City of Woodinville Ordinance No. 27 (or as may hereafter be amended). Violations and penalties shall be pursued as provided for in RCW 90.58.210 (civil penalties), RCW 90.58.220 (general penalties), and in RCW 90.58.230 (regarding the City's ability to recover the costs of restoration and attorney's fees). Orders to cease and desist and additional civil penalties shall also be adhered to as provided in WAC 173-27-270 and -280, respectively.

7.12 Court Actions to Ensure Against Conflicting Uses and to Enforce

The City Attorney may bring such injunctive, declamatory, or other actions as necessary to ensure that no uses are made of the shorelines of the state in conflict with the provisions and programs of this Program, and to otherwise enforce the provisions of this Program.

7.13 Other Requirements for Permits, Certificates, Etc.

Nothing in this Master Program shall preclude any requirement to obtain any permit, certificate, license, or approval from any state agency, local government, or any other agency with jurisdiction.

7.14 Provisions Not Limited by Titles and Headings

The specific provisions of this Program shall not be construed or limited by the wording or phrasing of the section titles or headings under which they fall.

7.15 Fees

Fees shall be in accordance with the City of Woodinville's adopted fee schedule.

7.16 Severability

If any provision of this Master Program, or its application to any person or legal entity or circumstances, is held invalid, the remainder of the provisions of this Master Program or the application of the provision to other persons or legal entities or circumstances shall not be affected.

7.17 Adoption and Effective Date

This Master Program is hereby declared necessary to meet the obligations and responsibilities now upon the City of Woodinville and is hereby adopted and shall take effect upon approval by the Department of Ecology as provided for by law in RCW 90.58.

CHAPTER 8 – DEFINITIONS

Act — Chapter 286, Laws of 1971 ex. sess., Chapter 90.58 RCW, the Shoreline Management Act of 1971, as amended.

Administrator — The City official or his/her designee, charged with the responsibility of administering the Shoreline Master Program.

Alluvial Soil — Unconsolidated fragmented rock and soil deposited by streams in river beds, floodplains, and lakes, which fan at the foot of slopes and estuaries.

Anadromous Fish — Species, such as salmon, which are born in fresh water, spend a large part of their lives in the sea, and return to freshwater rivers and streams to procreate. The Sammamish River and its tributaries provide habitat for these types of fish as well as other wildlife.

Associated Wetland — Associated wetlands are those wetlands which are in proximity to and either influence or are influenced by the shorelines of the state, such as the Sammamish River or Little Bear Creek.

Average Grade Level — The average of the natural or existing topography of the portion of the lot, parcel, or tract of real property which will be directly under the proposed building or structure, provided, that in the case of structures to be built over water, average grade level shall be the elevation of the ordinary high-water mark. Calculation of the average grade level shall be made by averaging the elevations at the center of all exterior walls of the proposed building or structure. [WAC 173-27-030(3)]

Benthic Productivity — The production and reproduction of organisms that live in or on the bottom of a water body.

Berm — A linear mound or series of mounds of sand and/or gravel generally paralleling the water at or landward of the line of ordinary high tide. Also, a linear mound used to screen an adjacent activity, such as a parking lot, from transmitting excess noise and glare, or presenting a visual eyesore.

Biofiltration System — A stormwater or other drainage treatment system that utilizes as a primary feature the ability of plant life to screen out and metabolize sediment and pollutants. Typically, biofiltration systems are designed to include grassy swales, retention ponds, and other vegetative features.

Biota — The animals and plants that live in a particular location or region (also sometimes referred to as flora and fauna).

Boat Launch or Ramp — Graded slopes, slabs, pads, planks, or rails used for launching boats by means of a trailer, hand, or mechanical device.

Breakwater — Offshore structure aligned parallel to shore, sometimes shore-connected, that provides protection from waves.

Buffer Areas An area which provides the margin of safety through protection of slope stability, attenuation of surface water flows and erosion controls necessary to minimize risk to the public of loss of life or well-being or property damage resulting from natural disasters, or an area which is an integral part of a natural ecosystem and which is intended to provide a transition area between the critical area and adjacent development and/or other activity, or provide protective functions such as shading, input of organic debris and coarse sediments, room for variation in stream or wetland boundaries, and habitat for wildlife.

Bulkhead A retaining wall used to hold back earth and to provide a solid, smooth surface to resist wave action. A "normal protective bulkhead" refers to a bulkhead common to single-family residences, constructed at or near the ordinary high-water mark to protect an existing single-family residence, and which sole purpose is for protecting land from erosion, not for the purpose of creating new land [WAC 173-27-040(1)(c)].

CFS Acronym for cubic feet per second. The SMA jurisdiction applies to “shorelines on segments of streams upstream of a point where the mean annual flow is twenty cubic feet per second or more…” RCW 90.58.030(2)(d)(ii).

Channel An open conduit for water either naturally or artificially created, but does not include artificially created irrigation, return flow, or stock-watering channels. See also "stream."

Circulation Network The interconnected system of public and private streets and roadways which provide pathways for vehicles, pedestrians, bicycles, and/or other transportation means to travel between two or more destinations.

Clean Water Act The primary federal law providing water pollution prevention and control; previously known as the Federal Water Pollution Control Act. See 33 USC 1251 et seq.

Community Structure A building, dock, or other structure intended for the common use of the residents of a particular subdivision or community. It is not usually intended to serve as a public facility.

Conditional Use A use, development, or substantial development classified as a conditional use or which is not classified within the City's Master Program.

Conservancy In the context of Woodinville's Shoreline Master Program, the purpose of the Conservancy Environment designation is to protect and restore ecological functions, while making the areas available for limited human use, when appropriate and non-destructive of critical areas. The chief constraints on human uses of land within the Conservancy Environment is that they be non-intensive and non-destructive. Allowed uses should be non-consumptive of the physical and biological resources of the area. The Conservancy Environment is intended to balance the existing development in the City’s shoreline areas and to be consistent with the City’s Critical Area regulations.

Continuous Urban Separators — Open space corridors, a minimum of 50 feet wide, within and at or near the boundaries of the Woodinville Planning Area which are created to provide for the aesthetic needs of the citizens of Woodinville, to protect critical areas including flood-prone lands and to conserve fish and wildlife habitat.

Covered Moorage — Boat moorage, with or without walls, that has a roof to protect the vessel.

Critical Areas — Defined by the Growth Management Act to include the following areas and ecosystems: wetlands; areas with a critical recharging effect on aquifers used for potable water; fish and wildlife habitat conservation areas; frequently flooded areas (100-year floodplain); and geologically hazardous areas.

Degrade — To scale down in desirability or salability, to impair in respect to some physical property, or to reduce in structure, function, or value.

Development — A use consisting of the construction or exterior alteration of a structure; dredging, drilling, dumping, filling, removal of any sand, gravel and minerals; bulkheading; driving of pilings; placing of obstructions; or any project of a permanent or temporary nature which interferes with the normal public use of the surface of the waters overlying land subject to this Master Program at any water level.

Dike — A bank or berm of earth erected, usually along a stream corridor, to form a barrier, usually to floodwaters.

Director — The director of the Department of Ecology unless clearly meant otherwise within the context of the statement.

Dock — A dock is a structure which floats upon the water and is used as a mooring place for recreational craft such as sailboats, rowboats, kayaks, or canoes, but not including motorboats or seaplanes. See also “Pier.”

Dredge Spoil — The material removed by dredging. Same as dredge material.

Dredging — Excavation or displacement of the bottom or shoreline of a water body. Dredging can be accomplished with mechanical or hydraulic machines. Most dredging is done to maintain channel depths or berths for navigational purposes; other dredging is for shellfish harvesting or for cleanup of polluted sediments.

Ecology — The Department of Ecology unless clearly indicated otherwise within the context of the statement.

Emergency An unanticipated and imminent threat to public health, safety, or the environment which requires immediate action within a time too short to allow full compliance with the Master Program. Emergency construction is construed narrowly as that which is necessary to protect property from the elements (RCW 90.58.030(3)(e)(iii) and [WAC 173-27-040(2)(d)].

Enhancement Alteration of an existing resource to improve or increase its characteristics and processes without degrading other existing functions. Enhancements are to be distinguished from resource creation or restoration projects.

Erosion The wearing away of land by the action of natural forces.

Exemption Certain specific developments as listed in WAC 173-27-040 are exempt from the definition of substantial developments and are therefore exempt from the substantial development permit process of the Shoreline Management Act. An activity exempt from the substantial development provisions of the Shoreline Management Act must still be carried out in compliance with policies and standards of the Act and this local Master Program. Conditional use and/or variance permits may also still be required even though the activity does not need a substantial development permit [RCW 90.58.030(3)(e); WAC 173-27-030(7) and -040].

Fair Market Value The open market bid price for conducting the work, using the equipment and facilities, and purchase of the goods, services and materials necessary to accomplish the development. This would normally equate to the cost of hiring a contractor to undertake the development from start to finish, including the cost of labor, materials, equipment and facility usage, transportation and contractor overhead and profit. The fair market value or any donated, contributed, or found labor, equipment or materials [WAC 173-27-030(8)].

FEMA Floodway The Federal Emergency Management Agency (FEMA) Floodway means the channel of the stream and that portion of the adjoining floodplain which is necessary to contain and discharge the base flood (100-year) flow without increasing the base flood elevation more than one foot.

Fills See Landfill definition.

Final Order Includes the approval or disapproval of a permit, or a letter of exemption as set forth in WAC 173-27-050.

Flood Fringe Zone The portion of the floodplain outside of the Federal Emergency Management Agency floodway which is covered by floodwaters during the base flood (100-year); it is generally associated with standing water rather than rapidly flowing water.

Floodplain Synonymous with 100-year floodplain. The land area susceptible to being inundated by stream derived waters with a one percent chance of being equaled or exceeded in any given year. The limits of this area are based on flood regulation ordinance maps or a reasonable method that meets the objectives of the Shoreline Management Act [WAC 173-22-030(2)].

Floodway Those portions of an area lying streamward from the outer limits of a watercourse upon which flood waters are carried during periods of flooding that occur with reasonable regularity, although not necessarily annually, and identified, under normal conditions, by changes in surface soil conditions or changes in types or quality of vegetative ground cover condition. The floodway shall not include those lands reasonably expected to be protected from floodwaters by flood control devices maintained by or maintained under license from the federal government, the state, or a political subdivision of the state. See also definition under FEMA floodway.

Geohydrological Processes Technically, refers to the flow characteristics or cycle of subsurface waters. Commonly used interchangeably with "hydrology" to reference all water characteristics on earth without regard to geologic aspects or locations. "Processes" refers to the hydrologic cycle, that is, the planet's water system and how water moves from the oceans to the atmosphere to the continents and back to the sea. Sometimes geohydrologic is used interchangeably with geohydraulic.

Grading The physical manipulation of the earth's surface and/or drainage pattern in preparation for an intended use or activity.

Grassy Swale A vegetated drainage channel designed to remove various pollutants from stormwater runoff through biofiltration before the water enters an aquatic feature such as a stream or wetland.

Guidelines Those provisions contained in Chapter 173-26 WAC entitled "Shoreline Master Program Guidelines." The Guidelines were adopted to implement the policy of Chapter 90.58 RCW for regulation of use of the shorelines of the state prior to adoption of master programs. This state law also provides criteria to local governments and the Washington State Department of Ecology in developing and amending master programs.

Groin Also referred to as a spur dike or rock weir. A barrier-type structure extending from the backshore or stream bank into a water body for the purpose of the protection of a shoreline and adjacent upland by influencing the movement of water and/or deposition of materials.

Habitat The environment with which an organism interacts and from which it gains its resources with which it lives and grows; habitat is often variable in size, content, and location, changing with the phases in an organism's life.

Hearings Board The state Shoreline Hearings Board established by the Act.

Height The distance measured from the average grade level to the highest point of a structure, provided that television antennas, chimneys, and similar appurtenances shall not be used in calculating height, except where it obstructs the view of a substantial number of residences on areas adjoining such shorelines (or the Master Program provides otherwise); provided further that temporary construction equipment is excluded in this calculation [WAC 173-27-030(10)].

Historical Flow (of drainage) The volume of stormwater that typically would runoff from a given area of land draining into the Sammamish River or Little Bear Creek, based on the level of land development prevailing during the years prior to and including the date of enactment of the Shoreline Management Act, June 1, 1971.

Hydric Soils Generally, soils which are, or have had a history of being, wet long enough to periodically produce anaerobic conditions, thereby influencing the growth of plants.

Hydrologic Function See "geohydrologic processes" definition.

Hydrophytes Plants capable of growing in water or on a substrate that is at least periodically deficient in oxygen as a result of excessive water content.

Impervious Surface Materials or structures placed on or above the ground which reduce the rate of water absorption at any location on the development sites from that which occurred prior to development. The term "impervious surface" includes but is not limited to: buildings, excluding roof overhangs, and balconies which project six feet or less; sidewalks and other paved ways; parking lots; paved area; decks, terraces, and patios; incidental outside storage.

Industry Industrial activities and uses involving the processing, handling, and creating of products, including research and technological processes, and major fabrication. Industry includes business parks.

Interested Party Synonymous with "party of record"; all persons who have notified the City of their desire to receive a copy of the final decision on a permit, who have submitted written comments on an application, or who have attended a public hearing on the application.

Jetty Structure(s) usually projecting out into the sea at the mouth of a river for the purpose of protecting a navigation channel, a harbor, or to influence water currents.

Landfill The placement of soil, sand, rock, gravel, existing sediment, or other material (excluding solid waste) to create new land, tideland, or bottom land area along the shoreline below the ordinary high water mark, or on wetland or upland areas in order to raise the elevation.[See WAC 173-16-060(14)]

Levee	A large dike or embankment, often having an access road or trail along the top, which is designed as part of a system to protect land from floods.
Marshes, bogs, and swamps	Lands transitional between terrestrial and aquatic systems where saturation with water is the dominant factor determining plant and animal communities and soil development. Such lands must have one or both of the following attributes: (a) at least periodically, the land supports predominately hydrophytes; and/or (b) the substrate is predominately undrained hydric soil. See also "hydrophytes," "hydric soil."
Master Program	The City's comprehensive use plan for the therein described shoreline management area, and the use regulations together with maps, diagrams, charts, or other descriptive material and text, a statement of desired goals, and standards developed in accordance with the policies enunciated in RCW 90.58.020 which is adopted by Ordinance by the Woodinville City Council and approved by the Department of Ecology.
May	The action is acceptable, provided it conforms to the provisions of this chapter.
Mitigation	The process of avoiding, reducing, or compensating for the environmental impact(s) of a proposal. See WAC 197-11-768.
Multiple-use Corridors	Utility or transportation corridors where more than one utility and/or type of transportation is located in the same linear corridor of land. Multiple-use corridors are preferred in order to prevent proliferation of single use corridors which needlessly use up land and prevent visual or physical access to shorelines.
Must	The action is required; it is a mandate.
Native Vegetation	Vegetation comprised of plant species, other than noxious weeds, which are indigenous to the coastal region of the Pacific Northwest and which reasonably could have been expected to naturally occur on the site.
Natural/Existing Topography	The topography of the lot, parcel, or tract of real property immediately prior to any site preparation or grading, including excavation or filling.
Non-conforming Development	A shoreline use or structure lawfully constructed or established prior to the effective date of the applicable Shoreline Management Act/Shoreline Management Program provision, and which no longer conforms to the applicable shoreline provisions [WAC 173-27-080(1)].
Non-water Related Uses	Uses that do not need a waterfront location to operate, though easements or utility corridors for access to the water may be desired.
Normal Maintenance or Repair	Usual acts to prevent a decline, lapse, or cessation from a lawfully established condition [WAC 173-27-040(2)(b)].

Open Space Land preserved in its undisturbed and natural state. Usually intended to be comprised of heavily treed steep slopes, wetlands, waterway corridors, or other critical areas.

OHWM Acronym for Ordinary High-Water Mark - The mark, on all lakes or streams, found by examining the bed and banks of streamways and ascertaining where the presence and action of waters are so common and usual, and so long continued in all ordinary years, as to mark upon the soil a character distinct from that of the abutting upland, in respect to vegetation as that condition exists on June 1, 1971, as it may naturally change thereafter, or as it may change thereafter in accordance with permits issued by a local government or the department.

Outfall The vent of a river, stream, drain, etc.

Party of Record Includes all persons who have notified the City of their desire to receive a copy of the final order on a permit under WAC 173-27-110.

Permit Any substantial development, variance, conditional use permit or revision authorized under chapter 90.58 RCW.

Person An individual, partnership, corporation, association, organization, cooperative, public or municipal corporation, or agency of the state or local governmental unit however designated.

Pier A pier is a structure built on pilings driven into the water and used as a mooring place for recreational craft such as sailboats, rowboats, kayaks, or canoes. See also “Dock.”

Piling Long, slender shafts (usually of timber, steel, or reinforced concrete) driven into the ground to carry a vertical cord and/or to resist a lateral force.

Public Access Provision by means of easement or similar legal agreement of physical or visual corridors or areas which serve as a means of ingress and egress from upland or adjacent property to and/or along public waters for use and enjoyment by the general public.

Public Interest The interest shared by the citizens of the State or community at large in the affairs of government, or some interest by which their rights or liabilities are affected such as an effect on public property or on health, safety, or general welfare resulting from a use or development.

RCW Revised Code of Washington.

Recharge Rainwater and snowmelt that has percolated through the unsaturated zone, increasing the amount of groundwater in storage and raising the water table.

Reservation of Easements	Preservation of land through legal agreement with the property owner. The land is usually prevented from being built upon to preserve open space, habitat, or steep slopes, or to allow access to adjacent parcels or utility lines.
Riparian	Of, on, or pertaining to the banks of a river.
Riprap	A layer, facing, or protective mound of large stones, boulders, or artificial material placed to prevent erosion, scour, or sloughing of a structure or stream embankment by absorbing wave action and retaining earth landward of its placement.
Setback	A required open space, specified in shoreline master programs, measured horizontally at a 90 degree angle inward from and perpendicular to the front, side, or rear property line.
Shall	The action must be done; it is a mandate.
Shoreland(s) Areas	Lands extending landward for 200 feet in all directions as measured on a horizontal plane from the ordinary high-water mark; floodways and contiguous floodplain areas landward 200 feet from such floodways; and all wetlands and river deltas associated with the streams, lakes, and tidal waters subject to the provisions of this Master Program.
Shoreline Administrator	The City of Woodinville Development Services Director or the City of Woodinville Hearing Examiner.
Shoreline	All the water areas of the state, including reservoirs and their associated shoreland, together with the lands underlying them, except those areas excluded under RCW 90.58.030(2)(d).
Shoreline Management Area	See Shoreline definition.
Shoreline of Statewide Significance.	Shoreline of State-wide Significance are as defined by chapter 90.58.030(2)(e) RCW.
Shorelines of the State	The total of all shorelines and shorelines of state-wide significance within the state (the jurisdictional limits of the Shoreline Management Act).
Should	The particular action is required unless there is a demonstrated, compelling reason, based on policy of the Shoreline Management Act and this chapter, against taking the action.

Signs, Business, or Identity

Any structure, device, or natural object containing words and/or symbols used to attract attention to, identify, or advertise the premises on which located, or the occupant of said premises, or relating to goods or services manufactured, produced, or available on said premises, or conveying other information. Such signs must relate directly, and not incidentally, to such business, use or service.

Streambank

The edge of the river or creek, parallel to and upland of the ordinary high-water mark.

Stream or Stream way

A naturally occurring body of periodic or continuously flowing water where: (a) the mean annual flow is greater than 20 cubic feet per second, and (b) the water is contained within a defined channel. Stream way generally describes the bed and banks of a stream. The water course may have been formed by nature or modified by humans. The term does not include irrigation and drainage ditches, grass-lined swales, canals, stormwater runoff devices, or other entirely artificial water courses unless they are used by salmonids or used to convey streams naturally occurring prior to construction in such watercourse. Streams which have been channelized or culverted shall continue to be considered streams for the purpose of the City's Critical Areas Ordinance regulations.

Structure

A permanent or temporary edifice or building, or any piece of work artificially built or composed of parts joined together in some definite manner, whether installed on, above, or below the surface of the ground or water, except for vessels.

Substantial Development

Any development of which the total costs or fair market value exceeds $5,000, or any development which materially interferes with the normal public use of the water or shorelines of the City. Exceptions that shall not be considered substantial developments for the purpose of this Master Program include:

1. Normal maintenance or repair of existing structures or developments, including damage by accident, fire or elements.

2. Construction of the normal protective bulkhead common to single-family residences.

3. Emergency construction necessary to protect property from damage by the elements.

4. Construction and practices normal or necessary for farming, irrigation, and ranching activities, including agricultural service roads and utilities on shorelands, and the construction and maintenance of irrigation structures including but not limited to head gates, pumping facilities, and irrigation channels. A feedlot of any size, all processing plants, other activities of a commercial nature, alteration of the contour of the shorelands by leveling or filling other than that which results from normal cultivation, shall not be considered normal or necessary farming or ranching activities. A feedlot shall be an enclosure or facility used or capable of being used for feeding

livestock hay, grain, silage, or other livestock feed, but shall not include land for growing crops or vegetation for livestock feeding and/or grazing, nor shall it include normal livestock wintering operations.

5. Construction or modification of navigational aids such as channel markers and anchor buoys.

6. Construction on shorelands by an owner, lessee, or contract purchaser of a single-family residence for his/her own use or for the use of his/her family, which residence does not exceed a height of 35 feet above average grade level and which meets all requirements of this Master Program, other than requirements imposed pursuant to the Act.

7. Construction of a dock, including a community dock, designed for pleasure craft only, for the private noncommercial use of the owners, lessee, or contract purchaser of single or multiple-family residences. This applies if, in fresh waters, the fair market value of the dock does not exceed ten thousand dollars. If subsequent construction on the dock occurs within five years of completion of the prior construction and exceeds five thousand seven hundred eighteen dollars, the subsequent construction shall require a substantial development permit;

8. Operation, maintenance, or construction of canals, waterways, drains, reservoirs, or other facilities that now exist or are hereafter created or developed as a part of an irrigation system for the primary purpose of making use of system waters, including return flow and artificially stored groundwater for the irrigation of lands.

9. The marking of property lines or corners on state owned lands, when such marking does not significantly interfere with normal public use of the surface of the water.

10. Operation and maintenance of any system of dikes, ditches, drains, or other facilities existing on June 4, 1975, which were created, developed, or utilized primarily as a part of an agricultural drainage or diking system.

11. Any project with a certification from the governor, pursuant to RCW 80.50;

12. Site exploration and investigation activities that are prerequisite to preparation of an application for development authorization under the Act, if:

    a. The activity does not interfere with the normal public use of the surface waters.

    b. The activity will have no significant adverse impact on the environment including, but not limited to, fish, wildlife, fish or wildlife habitat, water quality, and aesthetic values.

c. The activity does not involve the installation of a structure, and upon completion of the activity the vegetation and land configuration of the site are restored to conditions existing before the activity.

d. A private entity seeking development authorization under the Act first posts a performance bond or provides other evidence of financial responsibility to the City to ensure that the site is restored to pre-existing conditions.

e. The activity is not subject to the permit requirements of RCW 90.58.550.

13. Removal or control of aquatic noxious weeds, as defined in RCW 17.26.020, through the use of an herbicide or other treatment methods applicable to weed control that are recommended by a final environmental impact statement published by the Department of Agriculture or the Department of Ecology jointly with other state agencies;

14. Public or private watershed restoration projects consistent with this Shoreline Master Program and pursuant to WAC 173-27-040(2)(o); and

15. A public or private project that improves fish or wildlife habitat or fish passage pursuant to WAC 173-27-040(2)(p). [WAC 173-27-040(2)]

Swale See "grassy swale" definition.

Transmit To send from one person or place to another by mail or hand delivery. The date of transmittal for mailed items is the date that the Department of Ecology's final order is certified for mailing or, for hand-delivered items, is the date of receipt at the destination.

Upland Generally described as the dry land areas above and landward of the ordinary high-water mark.

Utility A service provided to the public, such as electricity, water, or transportation and its attendant conveyance equipment. This includes:

a. Primary: Public, high-tension lines, power-generating or transfer facilities, natural gas regional/trunk distribution lines, and storage facilities; and

b. Accessory: Distribution lines connected directly to uses.

Variance A means to grant relief from the specific bulk, dimensional, or performance standards set forth in this Master Program and not a means to vary a use of a shoreline.

Vessel Includes ships, boats, barges, or any other floating craft designed and used for navigation and does not interfere with the normal public use of the water.

Visual Corridor Used interchangeably with "view corridor." Unobstructed visual access to and from waterways and their adjacent shoreland features. View or visual protection can include, but is not limited to, preventing blockage or barriers through height limitations on structures or requiring aesthetic enhancement through the undergrounding of utility lines or added landscaping.

WAC Washington Administrative Code

WMC Woodinville Municipal Code

Water-dependent A use or a portion of a use which cannot exist in any other location and is dependent on the water by reason of the intrinsic nature of its operations. Examples of water-dependent uses may include ship cargo terminal loading areas, ferry and passenger terminals, barge loading facilities, ship building and dry docking, marinas, aquaculture, float plane facilities, and sewer outfalls.

Water-enjoyment A recreational use, or other use facilitating public access to the shoreline as a primary characteristic of the use; or a use that provides for recreational use or aesthetic enjoyment of the shoreline for a substantial number of people as a general characteristic of the use and which through the location, design and operation assures the public's ability to enjoy the physical and aesthetic qualities of the shoreline. In order to qualify as a water-enjoyment use, the use must by open to the general public and the shoreline oriented space within the project must be devoted to the specific aspects of the use that fosters shoreline enjoyment. Primary water-enjoyment uses may include, but are not limited to, parks, piers and other improvements facilitating public access to shorelines of the state; and general water-enjoyment uses may include, but are not limited to, restaurants, museums, aquariums, scientific/ecological reserves, resorts and mixed-use commercial, provided that such uses conform to the above-water enjoyment specifications and the provision of the Master Program.

Water-oriented Refers to any combination of water-dependent, water-related, and/or water-enjoyment uses and serves as an all encompassing definition for priority uses under the Shoreline Management Act. Non-water-oriented serves to describe those uses which have little or no relationship to the shoreline and are not considered priority uses under the Shoreline Management Act. Examples include professional offices, automobile sales or repair shops, mini-storage facilities, multi-family residential development, department stores and gas stations.

Water-related A use or a portion of a use which is not intrinsically dependent on a waterfront location, but whose economic viability is dependent upon a waterfront location because of a functional requirement for a waterfront location such as the arrival or shipment of materials by water or the need for large quantities of water, or the use provides a necessary service supportive of the water-dependent commercial activities, and the proximity of the use to its customers makes its services less expensive and/or more convenient. Examples include manufacturers of ship parts large enough that transportation becomes a significant factor in the product's cost, and professional services serving primarily water-dependent activities and storage of water-transported foods. Examples of water-related uses may include warehousing of goods transported by water, seafood processing plants, hydroelectric generating plants, gravel storage when transported by barge, oil refineries where transport is by tanker and log storage.

Waterward The direction from a point towards a body of water, stream, or river.

Waterways The path followed by flowing water normally indicated by stream banks, boulders, and/or alluvial soil which are arranged to define the pathway.

Wetlands Areas that are inundated or saturated by surface water or groundwater 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 non-wetland 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 are unintentionally created as a result of the construction of a road, street, or highway. Wetlands may include those artificial wetlands intentionally created from non-wetland areas created to mitigate conversion of wetlands.

APPENDIX A – INVENTORY AND CHARACTERIZATION

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1.0 INTRODUCTION

1.1 Background and Purpose

The purpose of this study is to conduct a baseline inventory and characterization of conditions relevant to the shoreline resources of the City of Woodinville, Washington. According to Substitute Senate Bill (SSB) 6012, passed by the 2003 Washington State Legislature, cities and counties are required to amend their local shoreline master programs (SMPs) consistent with the Shoreline Management Act (SMA), Revised Code of Washington (RCW) 90.58 and its implementing guidelines, Washington Administrative Code (WAC) 173-26. The City is conducting a comprehensive Shoreline Management Plan (SMP) update with the assistance of a grant administered by Washington State Department of Ecology (G0600224). A first step in the comprehensive update process is development of a shoreline inventory and characterization. The inventory and characterization documents current shoreline conditions and provides a basis for updating the City's SMP goals, policies, and regulations. This characterization will help the City identify existing conditions, evaluate existing functions and values of its shoreline resources, and explore opportunities for conservation and restoration of ecological functions.

Ecosystem processes and functions are evaluated at two different scales: a watershed or landscape scale, and a shoreline reach scale. The purpose of the watershed or landscape scale characterization is to identify ecosystem processes that shape shoreline conditions and to determine which processes have been altered or impaired. The intent of the shoreline reach scale inventory and characterization is to: 1) identify how existing conditions in or near the shoreline have responded to process alterations; and 2) determine the effects of the alteration on shoreline ecological functions. These findings will help provide a framework for the update of the City's shoreline management policies and regulations.

1.2 Report Organization

The information in this report is divided into the following eight main sections.

1 Section 1.0discusses the purpose of this report and describes the regulatory context for shoreline planning.

2 Section 2.0 describes the methods, approach, and primary data sources used for this inventory and characterization.

3 Section 3.0 describes the regional context, general landscape setting (climate, topography, etc.), and watershed conditions.

4 Section 4.0 provides an overview of ecosystem-wide processes and how they affect shoreline ecological functions in the City of Woodinville.

5 Section 5.0 addresses land use patterns and the physical and biological characterization of conditions in the vicinity of the shoreline regulatory zone (referred to as the shoreline planning area).

6 Sections 6.0 and 7.0 summarize conditions for the portions of the Sammamish River and Little Bear Creek in the City's planning area, provides an assessment of shoreline functions, and identifies and discusses potential opportunity areas for protection, enhancement, restoration, and enhanced public access.

7 Section 8.0 identifies data gaps and provides recommendations for addressing those gaps.

Appendix A of this report is a map folio that includes several figures that identify the City's approximate shoreline planning area and document various biological, land use, and physical elements at a variety of scales.

1.3 Regulatory Overview

1.3.1 Shoreline Management Act and Shoreline Guidelines

Washington's Shoreline Management Act (SMA) was passed by the State Legislature in 1971 and adopted by the public in a referendum. The SMA was created in response to a growing concern among residents of the state that serious and permanent damage was being done to shorelines by unplanned and uncoordinated development. The goal of the SMA was "to prevent the inherent harm in an uncoordinated and piecemeal development of the state's shorelines." While protecting shoreline resources by regulating development, the SMA is also intended to provide for appropriate shoreline use by encouraging land uses that enhance and conserve shoreline functions and values. The SMA gives priority to siting land uses that are water-dependent in the shoreline zone and encourages the provision of public access to shorelines.

The primary responsibility for administering the SMA is assigned to local governments through the mechanism of local shoreline master programs, adopted under guidelines established by Ecology. The guidelines (WAC 173-26) establish goals and policies that are implemented through "use" regulations such as local Comprehensive Plans and SMPs. The SMP is based on state guidelines but tailored to the specific conditions and needs of individual communities. The SMP is also meant to be a comprehensive vision of how the shoreline area will be managed over time.

1.3.2 Shoreline Jurisdiction

Under the SMA, the shoreline jurisdiction includes areas that are 200 feet landward of the ordinary high water mark (OHWM) of waters that have been designated as "shorelines of statewide significance" or "shorelines of the state."

These designations were established in 1972 and are described in WAC 173-18. Generally, "shorelines of statewide significance" include portions of Puget Sound and other marine water bodies, rivers west of the Cascade Range that have a mean annual flow of 1,000 cubic feet per second (cfs) or greater, rivers east of the Cascade Range that have a mean annual flow of 200 cfs or greater, and freshwater lakes with a surface area of 1,000 acres or more. "Shorelines of the state" are generally described as all marine shorelines and shorelines of all other streams or rivers having a mean annual flow of 20 cfs or greater and lakes with a surface area of 20 acres or greater.

Under the SMA, the shoreline area to be regulated under the City's SMP must include all shorelines of statewide significance, shorelines of the state, and their adjacent shorelands, defined as the upland area within 200 feet of the OHWM, as well as any associated wetlands (RCW 90.58.030). "Associated wetlands" means those wetlands that are in proximity to and either influence or are influenced by tidal waters or a lake or stream subject to the SMA (WAC 173-22-030 (1)). These are typically identified as wetlands that physically extend into the shoreline jurisdiction, or wetlands that are functionally related to the shoreline jurisdiction through surface water connection and/or other factors. The specific language from the RCW describes the limits of shoreline jurisdiction as follows:

> *Those lands extending landward for two hundred feet in all directions as measured on a horizontal plane from the ordinary high water mark; floodways and contiguous floodplain areas landward two hundred feet from such floodways; and all associated wetlands and river deltas* (RCW 90.58.030(2)(f)).

Local jurisdictions can choose to regulate development under their SMPs for all areas within the 100-year floodplain or a smaller area as defined above (RCW 90.58.030(2)(f)(i)).

1.3.3 City of Woodinville Shoreline Master Program

Two water bodies in Woodinville, the Sammamish River and the lower portion of Little Bear Creek, are currently regulated under the SMA and the City's SMP. The Sammamish River is designated as a "shoreline of statewide significance." The City currently regulates the lower portion of Little Bear Creek (from the mouth at the Sammamish River north to 132nd Avenue) as a "shoreline of the state" based on hydrologic information at the time the SMP was developed. The City of Woodinville adopted the King County SMP when the City incorporated in 1993. In 1997, the City revised its SMP to more accurately reflect conditions in Woodinville. Development regulations contained in the SMP are adopted by reference as part of the City of Woodinville Municipal Code (WMC) 24.10).

Local SMPs establish a system to classify shoreline areas into specific

"environment designations." The purpose of shoreline environment designations is to provide a uniform basis for applying policies and use regulations within distinctly different shoreline areas. In a regulatory context, shoreline environment designations function similarly to zoning overlay districts. That is, they do not change the underlying zoning or other applicable land use regulations, but provide an additional layer of policy and regulations that apply to land within the SMP jurisdiction. Generally, environment designations should be based on existing and planned development patterns, biological and physical capabilities and limitations of the shoreline, and a community's vision or objectives for its future development. During development of its current SMP in 1997, the City evaluated the natural and built characteristics of its shoreline jurisdiction and developed two shoreline environment designations: Conservancy and Urban. Both designations are applied to the Sammamish River and the lower portion of Little Bear Creek within the City's municipal boundaries (Figure 1).

A variety of other regulatory programs, plans, and policies work in concert with the City's SMP to manage shoreline resources and regulate development near the shoreline. The City's Comprehensive Plan establishes the general land use pattern and vision of growth the City has adopted for areas both inside and outside the shoreline jurisdiction. Various sections of the City's municipal code are relevant to shoreline management, such as zoning, flood damage prevention, and stormwater management. The City's development standards and use regulations for environmentally critical areas are particularly relevant to the City's SMP. Designated environmentally critical areas are found throughout the City's shoreline jurisdiction, including streams, wetlands, aquifer recharge areas, and geologic hazard areas.

2.0 METHODS

2.1 Data Sources

A number of City of Woodinville, King County, and state and federal agency data sources and technical reports were reviewed to compile this inventory and characterization, including but not limited to the following:

1 City of Woodinville Comprehensive Plan (Adopted 1995, updated 2002);

2 City of Woodinville Shoreline Master Program (1997);

3 City of Woodinville Parks, Recreation & Open Space Plan (2005);

4 Sammamish River Action Plan (U.S. Army Corps of Engineers and King County Department of Natural Resources and Parks, 2002);

5 Habitat Inventory and Assessment of Three Sammamish River Tributaries: North, Swamp and Little Bear Creeks (King County Water and Land Resources Division, 2002);

6 Little Bear Creek Corridor Habitat Assessment (David Evans and Associates, 2002)

7 The Catalog of Washington Streams and Salmon Utilization, Volume 1, Puget Sound Region (Williams et al., 1975);

8 Washington State Department of Fish and Wildlife Priority Habitats and Species database (2006);

A number of sources were also reviewed to characterize overall watershed conditions and to assess the ecological function of Woodinville's shorelines in an ecosystem-wide context. Watershed-level condition sources reviewed for this report include:

1 Redmond-Bear Creek Valley Ground Water Management Plan (Redmond-Bear Creek Ground Water Advisory Committee, 1999)

2 WRIA 8 Near Term Action Agenda for Salmon Habitat Conservation (WRIA 8 Steering Committee, 2002)

3 Lake Washington/Cedar/Sammamish Watershed (WRIA 8) Chinook Salmon Conservation Plan (WRIA 8 Steering Committee, 2005)

4 Groundwater/Surface Water Interactions in the Upper Sammamish River Watershed: A Preliminary Analysis (Ecology, 2003);

5 Salmon and Steelhead Limiting Factors Report for the Cedar-Sammamish Basin (Kerwin, 2001).

Mapping and aerial photographs of the study area were also consulted. Mapping and aerial photography integrated with GIS data included:

1 Vertical aerial photography by U.S. Army Map Service, 1938 (through University of Washington River History Project);

2 City of Woodinville GIS database, 2006

3 King County GIS database, 2005

A complete list of data sources used is included in the reference list (Section 9) of this report.

2.2 Determining Shoreline Jurisdiction and Planning Area Boundary

This characterization is focused on those shorelines of the state within the City limits and designated Urban Growth Area (UGA) of the City of Woodinville. This includes approximately 2.5 miles along the Sammamish River and Little Bear Creek from the northern City limits to its confluence with the Sammamish River (Figure 1). It is important to note that the area depicted on Figure 1 as the shoreline planning area roughly approximates the potential shoreline jurisdiction

as described in the previous section above. Boundaries were derived using existing available map information in GIS format. The area depicted is intended for planning purposes only as part of the City's SMP update process. The actual regulated shoreline jurisdiction may differ from the area shown on Figure 1 depending on information gathered on the ground at any specific location. For example, the ordinary high water mark for the Sammamish River and Little Bear Creek has not been delineated and mapped. Therefore, the mapped edges of the river and creek were used to approximate this boundary. Similarly, mapped wetlands in proximity to the Sammamish River and Little Bear Creek were considered "associated wetlands." The actual location of these wetlands and hydraulic connectivity would need to be determined site-by-site in the field. Furthermore, all areas mapped as 100-year floodplains for Little Bear Creek and the Sammamish River were included in the shoreline planning area boundary, although local jurisdictions can regulate a smaller area under their SMP as described above.

The shoreline planning area shown on Figure 1 is limited to the City's municipal boundaries and designated UGA, and represents:

1. 200 feet from the mapped edges of the Sammamish River and Little Bear Creek.
2. All floodways and 100-year floodplains currently mapped by the Federal Emergency Management Agency (FEMA) that are associated with the Sammamish River and Little Bear Creek.
3. All mapped wetlands that lie adjacent and contiguous to the areas above.

The shoreline planning area is approximately 414 acres and represents approximately 12 percent of the City's total UGA. The extent of the Sammamish River and Little Bear Creek in the City's shoreline planning area is summarized in Table 1. The Department of Ecology is in the process of revising the Shoreline Management Act administrative rules to acknowledge local SMPs as the regulatory documents defining SMP jurisdiction. Preliminary information indicates that the shoreline jurisdiction of Little Bear Creek extends further upstream than the stretch that is currently regulated by the City. Based on that information, the inventory and characterization for this report includes Little Bear Creek from its mouth to the City's northern boundary in that portion of Snohomish County's UGA contiguous to the City, in the area known as the Grace Neighborhood.

Table 1. Shoreline Planning Area, City of Woodinville

Shoreline	General Boundaries	Approximate Length (miles)	Approximate Percentage of City's Shoreline Planning Area
Sammamish River	From the City's southern city limits at NE 145th Street to the City's western city limits approximately .4 miles downstream of the confluence with Little Bear Creek.	2.5	58 %
Little Bear Creek	From 132nd Avenue NE to the mouth at the confluence with the Sammamish River in the City's UGA.	0.3	7 %
Little Bear Creek	From 132nd Avenue NE to the northern City limits	1.5	34 %

2.3 Approach to Characterizing Ecosystem-wide Processes and Shoreline Functions

The SMA guidelines require a local jurisdiction to evaluate ecosystem wide processes while updating its SMP. Ecosystem-wide processes that create, maintain, or affect the City's shoreline resources were characterized using an adapted version of the five-step approach to understanding and analyzing watershed processes described in *Protecting Aquatic Ecosystems: A Guide for Puget Sound Planners to Understand Watershed Processes* (Stanley, et al., 2005). This approach defines watershed processes as the delivery, movement, and loss of water, sediment, nutrients, toxins, pathogens, and large woody debris. These processes are qualitatively described using available reports and maps related to topography, geology, soils, land cover, and other themes. This approach is most appropriate at a county or watershed scale. However, it can be used in a simplified form to support local planning processes by providing a broader understanding of the processes at work that maintain the aquatic resources being regulated by a local jurisdiction.

Natural processes, and alterations to those processes, are described at a variety of geographic scales based on existing reports and readily available mapping information. For example, conditions, processes, and functions may be described at the following scales: 1) the entire Sammamish River watershed; 2) the Lower or Upper Sammamish River watershed; 3) the Woodinville vicinity or the extent of the City's UGA; and 4) the shoreline planning area or reach scale (Figure 2). Additionally, alterations to processes are described in terms of historical development, past land use, and existing development.

2.4 Approach to Inventory and Characterization of Regulated Shorelines

The inventory of the Sammamish River and Little Bear Creek at the shoreline reach scale, or within the limits of the mapped shoreline planning area as described above, is intended to characterize conditions adjacent to the regulated water body. The shoreline planning area roughly approximates the regulatory limits of the City's SMP as described above. GIS data and analysis were used to quantify certain conditions in this area (e.g., acres per zoning or land use designation). Aerial photography and review of existing reports and planning documents were used to qualitatively describe conditions in this area.

The portion of the Sammamish River shoreline running through the City is generally homogenous and was characterized as one reach. The Little Bear Creek shoreline is less homogenous, but was also characterized as one reach. The analysis of shorter reaches did not appear warranted for either water body. This approach should not suggest that only one regulatory shoreline environment designation in the City for either Little Bear Creek or the Sammamish River

would be appropriate.

3.0 REGIONAL CONTEXT

The City of Woodinville is located within the greater Lake Washington Watershed (WRIA 8), which includes two major river systems, the Cedar and Sammamish Rivers, as well as Lakes Sammamish, Washington, and Union and numerous tributaries to each (Figure 3). The Sammamish River flows approximately 13.8 miles from its origin at the north end of Lake Sammamish to its mouth at the northern tip of Lake Washington. The entire Sammamish River drains a watershed of approximately 240 square miles that consists of many rivers and streams, with the largest tributaries being Bear, Little Bear, North, and Swamp Creeks (Kerwin, 2001). The Sammamish River is fed primarily by Lake Sammamish and its tributary streams, which drain the Cascade foothills between the WRIA 7 and WRIA 9 drainages and also includes lowland streams originating in King and Snohomish County (Figure 3).

The City of Woodinville lies between River Miles (RM) 5.0 and 8.0 on the Sammamish River in the middle of the Sammamish River basin (Figure 3). WRIA 8 covers a land area of approximately 692 square miles. The City and its UGA occupy approximately 7 square miles, or 1 percent of the land area included in WRIA 8. The portion of the Sammamish River within the City and its UGA is approximately 21.7 percent of the total length of the river.

The Sammamish River has been dramatically changed in the past 100 years (U.S. Army Corps of Engineers and King County, 2002). The river corridor historically consisted of vast wetlands, with numerous braided channels. The floodplain was heavily forested. The first significant change resulted from the construction of the Hiram Chittenden Locks in 1917 built to connect the Lake Washington system with Puget Sound. The navigational project resulted in lowering of Lake Washington by 9 feet and Lake Sammamish by 6 feet. This reduced the river gradient and altered flow patterns. Drainage districts formed during the 1910s drained wetlands and diked and straightened the river for flood control to allow agriculture in the floodplain. In the 1960s, the U.S. Army Corps of Engineers took over flood control on the Sammamish River. The river was dredged and deepened. Although there is no formal levee system along the river, the excavated material from dredging was deposited along the channel creating *de facto* levees. All riparian vegetation was removed along the river and the Corps continues to maintain a grass-lined channel. As a result of these actions, the Sammamish River was channelized and straightened and the length was reduced by approximately half to 14 miles. The changes are illustrated in Figure 4.

3.1 Climate

Woodinville is located in the greater Puget Sound lowlands of western Washington. This area surrounding Puget Sound has a maritime climate with cool winters, dry summers, and a distinct rainy season through fall and spring. Precipitation in the Puget Sound lowlands varies considerably because of the effects of mountains. The Woodinville area receives on average between 35 and 55 inches of rain per year (NRCS, 2002). The majority of the precipitation falls between October and March. Winds are generally from the southwest during the rainy season and from the northwest during the dry summer months. These conditions generally result in greater volumes of flow and seasonal flooding in the Woodinville area during the rainy season associated with peak flow events driven by storms.

3.2 Topography

The Sammamish River flows north through a broad, flat floodplain from its source at Lake Sammamish to the mouth of Little Bear Creek. At Little Bear Creek, the river turns west and flows through a narrower floodplain to its mouth at Lake Washington. The broad floodplain is bordered on the east and west by steeply sloped hills that rise to elevations of 500 to 600 feet. The Sammamish River channel elevation decreases from approximately 28 feet near the outlet of Lake Sammamish to 20 feet in Woodinville.

Within the City of Woodinville the maximum topographic relief is approximately 510 feet. The low point of 40 feet is along the Sammamish River and the high point of approximately 550 feet is near the intersection of NE 175th Street and 159th Avenue. There are several ravines and valleys within the City that range from approximately 80 to 300 feet deep. The slopes west of the Sammamish River and the Woodinville-Redmond Road are dissected by steep ravines that contain intermittent drainages. The valley floor is approximately 0.5 miles wide through Woodinville south of the mouth of Little Bear Creek.

The headwaters of Little Bear Creek are located in Snohomish County at an elevation of approximately 250 feet and gradually decrease to an elevation of 20 feet near the confluence with the Sammamish River (David Evans and Associates, 2002). The overall grade varies between 0.6 and 0.8 percent (David Evans and Associates, 2002, 2002; Kerwin, 2001).

3.3 Geology and Soils

General geology in the vicinity of the City of Woodinville is illustrated by the geologic maps of the Kirkland, Bothell, and Maltby quadrangles (Minard, 1983; 1985a; and 1985b). Soil units mapped by the Natural Resource Conservation Service (NRCS, formerly the Soil Conservation Service) is shown in Figure 5. The geology of Woodinville is shown in Figure 6.

The Sammamish River watershed is located in the east central portion of the Puget Sound lowland, an elongated topographic and structural depression bordered by the Cascade Mountains on the east and the Olympic Mountains on the west. The lowland is characterized by glacial drift plains of low rolling relief separated by deeply cut ravine valleys.

Geology of the Sammamish River watershed is the result of mountain building, glaciation, and post-glacial alluvial deposits. The Sammamish River Valley is a glacially carved trough that has filled with sediment since the melting of glacial ice approximately 13,500 years ago. The valley contains three basic rock types: tertiary or older sedimentary and crystalline bedrock, semi-consolidated to unconsolidated fluvial, glacial, and marine Pleistocene sediments, and recent alluvium (Redmond-Bear Creek Ground Water Advisory Committee, 1999). Depth to bedrock generally ranges from 400 to 1,200 feet with few surface outcrops.

The Woodinville area is underlain by a thick sequence of unconsolidated glacial and nonglacial deposits of the Pleistocene age. Geologic maps for the area indicate that the Pleistocene deposits exposed at the ground surface within the City of Woodinville are from oldest to youngest: undivided glacial till (Qtu), Olympia gravel (Qob), Transitional beds (Qtb), Vashon advance outwash (Qva), Vashon recessional outwash (Qvr), older Holocene alluvium (Qoal), and younger Holocene alluvium (Qyal). These units are shown on Figure 6.

The surficial geology of the Sammamish River area is primarily the result of advances and retreats of glaciers during the Fraser Glaciation. Most of the Woodinville area is covered by glacial till from glacial recessions (Qvt). Vashon advance outwash (Qva) also covers large areas of the City. Glacial ice melted from the Woodinville area about 13,500 years ago. Since then, stream erosion and deposition and mass wasting have modified the landscape. In the Sammamish River Valley, the primary deposits are Pleistocene and Holocene alluvium (Qyal and Qoal, respectively). The older alluvium (Qoal) forms terraces along the margins of the river valley. The younger alluvium (Qyal) is located within the Sammamish River floodplain.

Soils in the Sammamish River area are typical of areas influenced by glaciers. The major soil type in the valley is the Alderwood gravelly loam (Figure 5). Other soil types include the Indianola loamy fine sand, Tukwila muck, Snohomish silt loam, Everett gravelly sandy loam, Norma sandy loam, and Earlmont silt loam. The Indianola and Alderwood soils are somewhat excessively drained to moderately well drained. The other soil types are somewhat to very poorly drained. In Woodinville, the Indianola and Alderwood soils are located on the upland areas. Soils in the river valley and within the shoreline jurisdiction are poorly drained with many hydric soils.

3.4 Aquatic Resources

3.4.1 Rivers and Streams

The Lake Washington/Cedar River watershed (WRIA 8) is subdivided into 12 drainage basins (Figure 3). Major tributary systems include Issaquah, Bear, Little Bear, North and Swamp Creeks and the Cedar River. The Sammamish River watershed makes up one-third of the entire watershed and is located predominantly within the UGAs of several jurisdictions. It extends generally from the outlet at Lake Sammamish to the confluence with Lake Washington. Major contributing subbasins include the Bear, Little Bear, North, and Swamp Creeks. The majority of the Sammamish River watershed is located in the Puget Sound lowlands and is significantly urbanized (Kerwin, 2001 and King County, 2001). The upper Sammamish River watershed includes the City of Redmond, while the middle Sammamish River watershed includes the City of Woodinville and portions of the City of Bothell. The lower portion of the Sammamish River includes the City of Kenmore and portions of the City of Bothell.

The City of Woodinville is located within three of the drainage basins in the middle Sammamish River watershed. The western portion of the City and its UGA are situated within the Little Bear Creek basin (Figure 3). The eastern portion is situated in the Bear Creek basin and the remaining portion of the City is located within the greater Sammamish River basin.

In the City, the flow of the Sammamish River is generally to the northwest and most tributaries drain to the Sammamish River in a north or south direction. Little Bear Creek is a 7.7-mile stream that drains a 9,600-acre watershed in King and Snohomish Counties, Washington (David Evans and Associates, 2002). Little Bear Creek flows from its source in a peat bog in Snohomish County through the City of Woodinville for approximately 2.2 miles from NE 205th Street to its mouth on the Sammamish River at RM 5.4 and has several unnamed tributaries (David Evans and Associates, 2002). The City contains many small watercourses that are remnant portions of previously existing natural drainage systems that originate from the slopes located east and west of the Sammamish River. Tributary streams other than Little Bear Creek include Derby Creek, Gold Creek, Woodin Creek, and smaller unnamed sidewall tributaries (Figure 3).

3.4.2 Wetlands

At a watershed scale, most wetlands in the City of Woodinville are positioned in the Sammamish River watershed where the topography is relatively flat and the gradient is low. Mapped soil units classified as poorly drained or hydric indicate the extent of potential or historic wetlands. In the Sammamish River floodplain, areas of Tukwila muck, Snohomish silt loam, Earlmont silt loam,

and Briscot silt loam represent the largest areas of poorly drained, hydric soils (Figure 5). Another poorly drained, hydric soil, Norma loam is mapped along Little Bear Creek.

The City of Woodinville's wetland inventory is based on the King County Wetland Inventory, the National Wetland Inventory (NWI), the Snohomish County Wetland Inventory (in the potential annexation area), and on site-specific studies from development projects. Most of the wetlands identified in the inventory are classified as "palustrine" or freshwater wetlands according to the Cowardin wetland typing system (Cowardin et al., 1979). Most are also considered to be "depressional" using the hydrogeomorphic (HGM) classification system. The HGM approach is based on the position of the wetland in the landscape (geomorphic setting), the hydrologic source of water, and the flow and fluctuation of the water once in the wetland (hydrodynamics). While the majority of the wetlands in the watershed are depressional wetlands, a number of riverine wetlands and slope wetlands are also present (Figure 7).

Depressional wetlands are those that form in topographically low-lying areas without natural outlets or with constrained outlets. Depressional wetlands in the City tend to be larger and more diverse in terms of habitat types than other wetland types such as riverine and slope. Common habitat types in depressional wetlands include palustrine open water, emergent, scrub-shrub, and forest. Most of these wetlands are positioned in the Sammamish River floodplain or are associated with Little Bear Creek, Woodin Creek, and other tributary streams (Figure 7).

Riverine wetlands are associated with a stream or river that frequently experiences overbank flooding. Riverine wetlands are found along the steep-sided banks of the Sammamish River and along Little Bear Creek and other tributary streams. Most of the wetlands above the banks of the Sammamish River are functionally depressional due to the Sammamish River flood control project that has separated floodplain wetlands from the river system (Figure 7).

Slope wetlands are also present in the watershed. Slope wetlands, which typically occur on hills or valley slopes, result from side slope seepage or groundwater expression. Within the City of Woodinville, slope wetlands likely occur on steep slopes in association with the numerous tributary streams southwest of the Sammamish River and near the headwaters of Woodin Creek and other tributary streams northeast of the Sammamish River (Figure 7).

3.5 Land Cover and Land Use

3.5.1 Land Cover

Historically, vegetation within the Puget Sound lowlands was coniferous forest,

marsh, wetland, and other native habitat types. Native vegetation is currently dominated by Douglas-fir forests with western hemlock and red cedar as the primary late-successional species. Oregon white oak, Pacific madrone, big-leaf maple, and red alder forests are other frequent components of the landscape (WDNR, 2003). Other special habitats within the region include wetlands, riparian areas, bogs, and estuaries.

Within the Sammamish watershed, vegetation existing today is largely a function of the type and degree of agricultural, residential, and commercial development. Little natural vegetation remains in the lowland as the floodplain has been extensively farmed or developed in light industrial or business, and residential development.

Most of the Sammamish River drainage lies within the incorporated cities of Redmond, Woodinville, Bothell, and Kenmore. Land use in the reach upstream of Woodinville includes open space and recreational areas at Marymoor Park, urban commercial and residential development in the City of Redmond, the Willows Run Golf Course, and the Sammamish Valley Agricultural Production District (Kerwin, 2002). The reach downstream of Woodinville includes the downtown cores of Bothell and Kenmore and some open space areas, including the Wayne and Inglemoor Country club golf courses, Bothell parkland along the Sammamish River Trail, and King County-owned parcels at the mouth of Swamp Creek and the mouth of the river.

The Little Bear Creek watershed is approximately 40 percent forested with 37 percent impervious surface (Kerwin, 2000). Within the City of Woodinville, approximately 46 percent of the Little Bear Creek 200-foot shoreline jurisdiction is impervious surface. The Sammamish River 200-foot shoreline jurisdiction is approximately 80 percent impervious surface within the City.

In Woodinville, developed land is generally concentrated near the major transportation corridors of Interstate-405 and State Route 522 (Figure 8). Developed areas are also more prevalent in the western portion of the Woodinville Planning Area and closer to the cities of Bothell and Kirkland.

Within the City of Woodinville, developed areas are concentrated in the Town Center, North Industrial, and Valley Industrial neighborhoods, as well as the western portion of the West Ridge Neighborhood. Developed lands are also located along both sides of State Route 522. Agricultural land cover is primarily located in the Sammamish River Valley where a number of large farms (particularly turf farms) exist. Much of this agricultural land is located within the 100-year floodplain of the river.

Natural Open Lands and Forest Lands are generally located east of the city limits, with the exception of the eastern half of the Leota Neighborhood, and

generally contain single-family houses located on large lots. Water within the Woodinville Planning Area includes the Sammamish River, Little Bear Creek and Leota, Crystal, and Cottage Lakes (City of Woodinville, 2002).

3.5.2 Land Use

The Sammamish watershed is part of the greater Lake Washington - Cedar River drainage, encompassing the land area in which rainwater drains to Lake Sammamish, the Sammamish River and out into Lake Washington. The Sammamish watershed includes Swamp Creek, North Creek, Bear Creek and Little Bear Creek, Cottage Lake Creek, Evans Creek, Issaquah Creek, Tibbetts Creek and a number of smaller creeks draining to the east and west shores of Lake Sammamish. Land use in the Sammamish watershed consists primarily of forestry uses in the eastern portions of the watershed and residential and commercial uses further west. Agricultural uses are common along the Sammamish River from the outlet of Lake Sammamish in Redmond to Woodinville (Ecology, 2006).

The predominant land use in and around the City of Woodinville is residential. Generalized existing land use is shown on Figure 9. Residential uses constitute 58? percent of the City's area, although significant areas of the City are used as retail services (8 percent) (8 percent is not significant?) and industrial uses (16 percent). Most of the residential area in the Urban Growth Area (UGA) is dedicated to low-density single-family uses. Table 3-1 provides a summary of current land use in the City of Woodinville, based on the City of Woodinville Comprehensive Plan (City of Woodinville, 2002).

Table 3-1. Existing Land Use, City of Woodinville

Category	Acres	Percent
Single Family	1,985	55
Multi-Family	99	3
Parks/Open Space	46	1
Retail Services	288	8
Office	19	0.5
Industrial	562	16
Public/Institution	128	4
Tourist Business	33	1
Vacant	427	12
Total	**3,587**	**100**

Source: City of Woodinville Comprehensive Plan, 2002

4.0 RELATIONSHIP OF ECOSYSTEM-WIDE PROCESSES TO SHORELINE FUNCTIONS

A number of key ecosystem processes work in concert to maintain aquatic ecosystems. Alterations or land use activities that occur across the landscape can affect ecosystem-wide processes and shoreline functions. Much watershed planning and assessment work has been conducted in the Sammamish River basin. A review of this work is useful in understanding the condition of the City's shoreline resources and identifying activities that influence those conditions but which may be beyond the City's jurisdiction and regulatory authority.

4.1 Overview of Key Processes

The processes that form and maintain the Sammamish River and its tributary systems are focused on hydrology (i.e., the quantity and timing of surface flow and groundwater flow characteristics). The movement of water and the hydrogeologic characteristics that control flow drive the input and distribution of sediment, water quality processes (influence of nutrients, toxins, and pathogens), and the input of large woody debris (Stanley et al., 2005). These processes and the factors and mechanisms that control them are discussed below. Geographic areas that are important in maintaining these processes are discussed at the watershed scale generally, and more specifically in the vicinity of Woodinville or throughout the City's UGA.

Processes occurring at a landscape or watershed scale form, maintain, or influence shoreline ecological functions. Examples of shoreline functions include habitat structure, nutrient filtering, and vegetation (which provides temperature control and organic inputs). Changes in land use patterns and development across the landscape, not solely at the river's edge, may change these processes and alter shoreline functions. Alterations in the Sammamish River watershed and in the City's UGA and their effects on shoreline functions are included in the following discussion.

4.2 Hydrology – Surface and Groundwater Flow

Water naturally enters a watershed through rain, snow, or movement of groundwater. Water moves within a watershed by surface water flow in rivers and streams, infiltrates and becomes groundwater, or is stored in wetlands, lakes, and floodplains. In a natural system, the movement and storage of water is generally controlled by physical conditions such as climate (precipitation patterns and volumes), topography (gradient), land cover (vegetation) and the permeability or infiltration capacity of soils and the underlying surficial geology (Stanley, et al., 2005).

Important areas for hydrologic processes include:

- Recharge areas with high amounts of precipitation and rain-on-snow zones that provide delivery of water;
- Saturated areas or areas with low permeability that provide overland or shallow subsurface flow;
- Areas with high permeability that provide groundwater recharge;
- Lakes, low-gradient floodplains, and depressional wetlands that provide surface water storage; and
- Topographic slope breaks or contact areas between geologic deposits of differing permeability that provide groundwater discharge (i.e., return to surface flow) (Stanley, et al., 2005).

Hydrologic processes influence the following shoreline functions:

- Quantity and timing of flow affects hydrologic functions, such as channel incision and flood storage;
- Quantity and timing of flow affects instream habitat functions, such as channel complexity and habitat availability; and
- Groundwater flow affects hydrologic and hyporheic functions, such as baseflow and temperature, as well as habitat and vegetation functions related to species diversity. Groundwater flow affects these functions in both riverine and wetland ecosystems.

General groundwater and hydrology in the Sammamish River basin are described in the Redmond-Bear Creek Valley Ground Water Management Plan (1999) and in Kerwin (2001). Soil units classified by infiltration rates (hydrologic rating) and permeability in the vicinity of Woodinville are shown on Figure 5.

Surface water in the Sammamish River flows generally northwest to Lake Washington. Precipitation falling within the watershed is conveyed directly to small lakes, ponds, streams, and rivers by surface runoff, or travels subsurface as groundwater flow. Water that is unable to infiltrate travels downslope across the ground surface as sheetflow. Small amounts of rainfall soak into the ground, but during heavy rainfall, the ground quickly becomes saturated, thus inhibiting further infiltration. The weir on Lake Sammamish at the head of the Sammamish River affects surface water flow volumes. However, periodic flooding occurs in the Sammamish River watershed due to rainy wet season cycles, as in much of the Puget Sound lowlands, when large storm events pass through the area.

As described earlier, the glacial and sedimentary deposits in the Sammamish River valley form a sequence of sand and gravel layers separated by finer grained layers of clay and silt or tight, well-graded soils, which are exposed in places along the steep slopes that lie between the upland plateau and the lowland floodplain. The deposits comprise several aquifers and aquitards within the

subsurface. These interspersed permeable and impermeable layers control subsurface water movement from the upland to the lowland (Redmond-Bear Creek Ground Water Advisory Committee, 1999). Water that infiltrates into the ground generally flows downward until impeded by less permeable soils and then flows laterally to a body of water or to a slope face where it may emerge as springs or seeps on the hillside. A portion of the groundwater, however, will percolate downward through lower-permeability soils, recharging underlying aquifers.

Natural surface and groundwater flow paths from the slopes and river floodplain have been altered or disrupted by constructed levees along the Sammamish River, by culverts, and by drainage ditches. Such constructed features disrupt hyporheic flow, which is surface water that travels in more permeable soils below or adjacent to river or stream channels. Former channels of the Sammamish River or its tributaries may influence hyporheic flow because more permeable soils commonly lie within the former channels. These former channels were abandoned as the river or stream suddenly changed locations. Sudden channel shifts (avulsions) are a natural stream process. Former channels were also created during the straightening of the Sammamish River channel in the early 1900s (U.S. Army Corps of Engineers and King County Natural Resources and Parks, 2002).

Under natural conditions, important areas for water storage in the Sammamish River valley include the floodplain and wetlands. Poorly drained soils generally correspond to hydric soil units. These areas approximate the extent of potential wetlands under natural conditions. Areas of Bristcot silt loam, Snohomish silt loam, Earlmont silt loam, and Tukwila muck in the river valley may have provided important storage for surface water (Figures 5). Historic river channel mapping of the Sammamish River indicates that the river was much more sinuous prior to channelization ((U.S. Army Corps of Engineers and King County Natural Resources and Parks, 2002). At that time, the natural floodplain would have been much broader than it is today, and would have been important for surface water storage during peak flow events.

4.3 Sediment Delivery

Sediment is naturally delivered to river systems through three primary processes: surface erosion (from overland sheet flow in upland areas), mass wasting (landslides), and in-channel erosion (eroding banks or streambeds). The delivery, movement, and storage of sediment is largely driven by hydrology and generally controlled by physical conditions such as topography (gradient), land cover (vegetation), soil characteristics (erodibility), and the transport capacity or velocity of moving water (Stanley, et al., 2005).

Important areas for sediment delivery and movement include:

- Steep slopes with erodible soils provide sediment input through surface

erosion or landslide (mass wasting) events;

- Natural or unconfined channels provide sediment input through in-channel erosion; and
- Lakes, depresssional wetlands, floodplains, and depositional channels provide sediment storage (Stanley, et al., 2005).

Sediment processes influence the following shoreline functions as follows:

- Sediment delivery affects hydrologic and hyporheic functions, such as channel morphology and hyporheic exchange; and
- Sediment delivery affects instream habitat functions by maintenance, loss, or homogenization of habitat availability. That is, sediment delivery is a natural process, but too much sediment input can adversely affect habitat.

At a landscape or watershed scale, most sediment processes that influence conditions in the Sammamish River are driven by conditions in the upper watershed. The Sammamish River is different from most systems in that its origins are from a lake, which essentially acts as a sediment trap. The low gradient of the Sammamish River also results in fine sediments dropping out of the water column to the channel bottom. Natural sources of sediment delivery may include landslides, and avulsions, which provide large amounts of sediment rapidly. Soil mapping by the Natural Resource Conservation Service (NRCS) and the Washington Department of Natural Resources Forest Practices Division indicates important areas for sediment inputs in the Sammamish River watershed. These include areas with high mass wasting potential, unstable slopes, and areas with high erosion potential. These areas are most extensive and most concentrated in the upper portions of the watershed including several of the Sammamish River tributary streams.

Across the City's UGA, important areas for sediment input include steep slopes with erodible soils and/or identified erosion or landslide hazard areas to the west of the Sammamish River. Critical erosion hazard areas are lands underlain by soils identified by the NRCS as having "severe" or "very severe" erosion hazards. These include Alderwood gravelly sandy loams; Kitsap silt loam, and Everett gravelly sandy loam. Landslide hazard areas occur when the combination of slope inclination and relative soil permeability create susceptibility to landsliding. Erosion and landslide hazard areas are generally concentrated along the transition between the upland plateaus on either side of the Sammamish River and the Sammamish River valley floor. Several streams that drain across this boundary, including the upper reaches of some Little Bear Creek tributaries, the upper reaches of Derby Creek and sidewall tributaries to the Sammamish River that originate from hillsides at the southwest corner of the City have the potential to erode streambanks where these conditions exist. These areas would represent important areas for sediment input to the Sammamish River and Little Bear Creek.

The majority of the Sammamish River shoreline is not mapped as having steep or slopes steeper than 15 percent. While the banks of these levees and dikes are typically steep enough to create landslide hazards, the underlying soil conditions would indicate these areas are of only moderate landslide risk.

Land use development and other uses can also result in sediment input to water bodies. Surface runoff from agricultural land can erode soils and deliver sediment to receiving water bodies. Vegetation clearing associated with urban development can result in erosion temporarily during construction activity if not properly managed, or more long-term, if exposed soils are not replanted. The agricultural activities and associated ditches adjacent to the City's shoreline jurisdiction are also likely contributors of fine sediments to the Sammamish River.

4.4 Water Quality

There are many processes at work that maintain or affect water quality in a watershed. This report focuses on the movement of phosphorus, toxins, nitrogen, and pathogens. Key processes include biotic uptake and decomposition, adsorption, and denitrification. The movement of water and sediment largely drives these processes, and they are generally controlled by physical characteristics such as biotic cover and composition, soil characteristics, and bacterial activity (Stanley, et al., 2005).

Important areas for water quality related processes include:

- Depressional wetlands with organic, mineral, or clay soils that provide adsorption of phosphorus, toxins, and pathogens (fecal matter);
- High and low permeability geologic deposits that provide a longer flow path relative to areas of overland and surface water flow and therefore have a greater capacity to remove pathogens;
- Depressional wetlands that transform nitrogen through nitrification movement) and denitrification (loss of nitrogen from the system);
- Riparian areas with a consistent supply of shallow groundwater that provide denitrification; and
- Headwater streams that can provide biotic uptake and decomposition, and/or adsorption of nitrogen (Stanley, et al., 2005).

Processes influencing water quality include the following shoreline functions:

- Delivery and storage of nitrogen, phosphorus and toxins, and pathogens affect hyporheic and vegetation functions such as denitrification and nutrient cycling. Habitat functions such as invertebrate abundance and diversity, and

food sources for fish, are also affected; and

- Delivery of nitrogen, phosphorus, and pathogens affects these functions in both riverine and wetland aquatic ecosystems.

At the watershed scale, important areas for processes influencing water quality are concentrated in the lower portions of the watershed. Under natural conditions, these lower gradient areas would provide surface water storage and nutrient cycling and filtering. In the vicinity of the Woodinville UGA, these areas would generally correspond to those areas important for surface water storage and hyporheic exchange. As described above, the extent of historic wetlands can be approximated by the mapped extent of poorly drained or hydric soil units. Within the City's UGA, these are mostly concentrated on the valley floor (Figure 5). The extent of the hyporheic zone generally corresponds to areas of alluvium or advanced glacial outwash in the historic floodplain, which are also concentrated on the valley floor (Figure 6). Finally, areas that provide groundwater recharge are located in the upland areas east of the river.

Impairments to water quality within the waters of the City of Woodinville have a variety of point and non-point sources. Many of these sources may also result from land uses and activities upstream of the City's jurisdictional boundaries. Agriculture, gardening practices, and property development can result in excessive nutrients (nitrogen and phosphorous) entering surface and groundwater, which promote algae growth and too much organic waste in the water. This reduces dissolved oxygen needed by fish. Failing septic systems and livestock are the typical sources of fecal coliform bacteria, which can indicate a risk to human health. Land development, roads, logging, and agriculture increase sediment in streams, cloud the water, and cover aquatic habitat. These activities may occur both upstream of the City and within the City's UGA and affect water quality in the City's water bodies.

At the north end of Little Bear Creek, east of SR 9, the Brightwater Wastewater Treatment facility is currently under construction. This site has been used for commercial and industrial purposes for many years and surface water and groundwater contamination from these uses has been documented. Site cleanup during construction, the low impact development (LID) measures being used, and restoration of three tributary streams and wetlands should result in improved surface and ground water quality overall in this area (King County Department of Natural Resources and Parks, 2003).

The Washington Department of Ecology (Ecology) maintains a 303(d) list of water bodies where tested pollutants exceed thresholds established by the state surface water quality standards (WAC 173-201A). Section 303(d) of the federal Clean Water Act requires Washington State to periodically prepare a list of all surface waters in the state for which beneficial uses of the water, such as drinking, recreation, aquatic habitat, and industrial use, are impaired by pollutants. Streams that do not appear on the 303(d) list may fall short of that pollutant threshold, but may not be free of pollutants. In addition, not all streams or all stream reaches are tested as part of this process. Therefore, absence from the 303(d) list does not necessarily indicate that the water body is not impaired.

Ecology's 2002/2004 Water Quality Assessment identifies and reports on tested water body segments as they relate to state water quality standards for a variety of parameters, including temperature, pH, dissolved oxygen, metals, etc. Water body segments are classified as Category 1, 2, 4, or 5. Category 5 waters are polluted waters that require a Total Maximum Daily Load (TMDL). A TMDL or the Water Quality Improvement Project process was established by Section 303(d) of the Clean Water Act (CWA). Federal law requires states to identify sources of pollution in waters that fail to meet state water quality standards, and to develop Water Quality Improvement Reports to address those pollutants. The Water Quality Improvement Project (TMDL) establishes limits on pollutants that can be discharged to the water body and still allow state standards to be met (Ecology, 2006b). In November 2005 the U.S. Environmental Protection Agency approved the list of Category 5 waters, which represents the state's 303(d) list of impaired waters. Category 4 waters are polluted but do not require a TMDL because a TMDL or pollution control plan is already in place or the water body is impaired by a non-pollutant such as low streamflow or dams. Category 2 waters are considered "waters of concern", where pollution is present but may not violate state water quality standards. Category 1 waters meet tested standards for clean waters, but may not be free of all pollutants.

Table 4-1 shows the water bodies within the City UGA that were evaluated for the 2002/2004 Water Quality Assessment and appear on the approved 303(d) list. The Sammamish River, Little Bear Creek, and Derby Creek (not a shoreline of the state) are included on the list.

Table 4-1. 2002/2004 Water Quality Assessment in Woodinville, WA

Water Body	Category Listing	Water Quality Parameter
Sammamish River	5	Fecal coliform; dissolved oxygen; temperature
	2	Dissolved oxygen; temperature; pH
	1	Alpha-endosulfan; ammonia-N; arsenic; beta-endosulfan; cadmium; chlorpyrifos; chromium; copper; endosulfan; lead; mercury; nickel; pentachlorophenol; pH; selenium; silver; zinc
Little Bear Creek	5	Dissolved oxygen (lower reach)
	4A	Fecal coliform
	2	Dissolved oxygen (lower reaches); temperature; pH; bioassessment
	1	Alpha-endosulfan; ammonia-N; arsenic; beta-endosulfan; cadmium; chlorpyrifos; chromium; copper; endosulfan; lead; mercury; nickel; pentachlorophenol; pH; selenium; silver; temperature; zinc
Derby Creek	5	Fecal coliform

Source: Washington State Department of Ecology, 2006a

In 2005, the Department of Ecology developed the *Little Bear Creek Water Cleanup Plan* (a TMDL?) to address the fecal coliform issue within the basin (Dettelbach and Garland, 2005). Major contributors of fecal coliform may include small farms, businesses that handle pet waste, failing septic systems, wildlife, and possible leaks in sanitary sewer lines. It was identified that the transport of fecal coliform is likely resulting from urban and stormwater runoff from roads and highways (Dettelbach and Garland, 2005). Ecology is currently working with the Washington State Department of Transportation (WSDOT), Snohomish County, and the City of Woodinville through the TMDL by assigning specific allowable discharges by each entity through their applicable stormwater permits, and to eliminate or reduce non-point sources of pollution generally.

A TMDL? has yet to be prepared addressing fecal coliform, dissolved oxygen, and temperature issues within the Sammamish River.

King County and the U.S. Army Corps of Engineers have undertaken a number of studies of water temperature in the Sammamish River (U.S. Army Corps of Engineers and King County Department of Natural Resources and Parks, 2002; King County Department of Natural Resources, 2001; Jain et al., 2000; and Martz, et. al., 1999). Water temperatures as high as 80º F (27º C) have been measured in late July (Martz et al., 1999). This temperature is well above the lethal limit for salmon. Water temperatures in the river frequently exceed the temperatures recommended as properly functioning habitat for salmonids (50 to 70º F or 10-14º C). The main causes of elevated water temperatures occur in the upper watershed. Elevated river temperatures are caused by high temperatures from Lake Sammamish. Downstream tributaries, especially Bear Creek, moderate the high temperatures somewhat. Increased development on those tributaries and increased withdrawals from them have reduced the moderating

effect.

4.5 Large Woody Debris and Organics

Large woody debris (LWD) consists of logs or trees that have fallen into a river or stream. In a natural system, LWD provides organic material to aquatic ecosystems and is considered a principal factor in forming stream structure and associated habitat characteristics (e.g., pools and riffles). Riparian vegetation is the key source of LWD. Large woody debris is primarily delivered to rivers, streams, or wetlands by mass wasting (landslide events that carry trees and vegetation as well as sediment), windthrow (trees, branches, or vegetation blown into a stream or river), or bank erosion (Stanley, et al., 2005).

Important areas for LWD delivery and movement include:

- Channel migration zones where unconfined channels allow streambank erosion and associated delivery of LWD;
- Forested mass wasting or landslide hazard areas deliver LWD during slide events;
- Forested areas adjacent to aquatic resources can provide LWD via windthrow; and
- Low-gradient channels (less than 4 percent slope) provide storage of LWD and organic material, subject to the transport capacity of water (flow velocity) (Stanley, et al., 2005).

The presence, movement, storage, and decomposition of LWD influence the following shoreline functions:

- Delivery of wood and organics affects vegetation and habitat functions such as instream habitat structure (pools and riffles) and species diversity; and
- Riparian vegetation, especially LWD, provides habitat in the form of nesting, perching, and roosting as well as thermal protection, nutrients, and sources of food (terrestrial insects) to a variety of wildlife species.

Historically, the upper portions of the Sammamish River watershed were important for LWD recruitment and movement. The lower portions of the watershed, characterized by lower gradients and broader floodplains, and coniferous riparian habitat, would have been important for LWD recruitment, as well as storage and accumulation. Within the City's UGA, important areas for LWD historically included forested riparian corridors along the Sammamish River and tributary streams. Additionally, landslide-prone areas adjacent to the river or tributary streams would have been important for delivery of LWD. Currently, LWD is lacking throughout the majority of the Sammamish River shoreline. Forests that once contributed LWD to the Sammamish River have been

dramatically reduced to allow for urban development, agriculture, trails, and other transportation infrastructure. In addition, the deepening and straightening of the Sammamish River channel resulted in removal of LWD from the channel. A 2002 assessment of riparian vegetation cover estimated that the extent of blackberry and reed canarygrass in the City's shoreline jurisdiction was 50 to 90 percent (King County and U.S. Army Corps of Engineers, 2002). Since then, the City has actively restored extensive sections of the river to native vegetation and the current estimate is 50 to 60 percent cover by blackberry and reed canarygrass (Crawford, personal communication, 2006). The presence of levees along the Sammamish River in the City's shoreline jurisdiction eliminates the potential for channel migration and introduction of new sources of LWD. In addition, vegetation is maintained along the levee in such a manner that mature trees are not allowed to establish along the shoreline, especially those with deep taproots that could potentially destabilize the levee. Roads, development, and trails occur within the functioning riparian buffer, which has eliminated LWD sources and reduced recruitment potential.

The Little Bear Creek basin is also highly urbanized resulting in the lower portion of the reach being devoid of LWD within the City's shoreline jurisdiction. Riparian vegetation is primarily limited to a narrow band (25 feet on either side of the stream) consisting primarily of shrubs and grasses (David Evans and Associates, 2002). Riparian width and quality improve north toward the current City boundary at NE 205th Street. However, the trees, where present, are dominated by deciduous species that do not provide the high quality LWD that coniferous species provide. No pieces of LWD meeting the NOAA Fisheries standards for properly functioning conditions were documented within the lower reach of Little Bear Creek within the City's shoreline jurisdiction (David Evans and Associates, 2002). The remainder of the stream above this reach contained some pieces of LWD; however, they were all well below the properly functioning conditions standard. The lack of LWD within Little Bear Creek reduces potential salmonid habitat by reducing channel complexity and the quality and quantity of pools.

5.0 SHORELINE PLANNING AREA INVENTORY

The purpose of this section is to inventory and characterize conditions within the approximate boundaries of the City's shoreline jurisdiction in greater detail and in the context of the larger watershed or landscape scale characterization of ecosystem-wide processes. The intent is to inventory elements of the natural and built environment as described in WAC 173-26-201(3)(c). Additionally, this section identifies how existing conditions in the shoreline jurisdiction influence or contribute to alterations of processes that maintain aquatic ecosystems or alter shoreline functions. The study area is shown on Figure 1 and subsequent figures as the City's "shoreline planning area."

5.1 Physical Features

Physical features in the shoreline planning area include natural landforms (steep slopes, floodplains, etc.) and structural alterations to the shoreline (bulkheads, levees, etc.). Landform features are shaped by natural processes and may influence or maintain shoreline functions. Alterations or shoreline modifications may affect natural processes and shoreline functions. Both natural features and modifications are related to biological resources (such as wetlands and streams) and land use patterns, which are described in subsequent sections.

Many physical and biological features of the shoreline (e.g., steep slopes, floodplains, wetlands) are subject to development standards or regulations by the City of Woodinville Municipal Code and/or other regulatory requirements. The following discussion focuses on how these features are defined, their location relative to regulated shorelines, and their relationship to shoreline ecological functions.

5.1.1 Geologically Hazardous Areas

Geologically hazardous areas are regulated under the City of Woodinville's Critical Areas Regulations (WMC 21.24). Geologically hazardous areas include areas susceptible to erosion, sliding, earthquake, or other geological events.

Erosion hazard areas are defined by the Woodinville Municipal Code (21.24.290) as areas defined by the NRCS or a critical area special study as having a severe to very severe erosion potential. No erosion hazard areas are shown on the City's map of geologically hazardous areas. Landslide hazard areas are defined as those areas subject to landslides based on a combination of geologic, topographic, and hydrologic factors (WMC 21.24.290). Landslide hazard areas in the City of Woodinville are located on the steep slopes to the west of the Sammamish River. No landslide hazard areas are located in the shoreline jurisdiction. Seismic hazard areas are areas subject to severe risk as a result of earthquake induced ground shaking, slope failure, settlement, surface rupture, or soil liquefaction (WMC 21.24.290).

Sammamish River

There are no erosion or landslide hazard areas within the shoreline jurisdiction of the Sammamish River. The entire Sammamish River valley floor in Woodinville is mapped as a seismic (liquefaction) hazard area.

Little Bear Creek

The shoreline jurisdiction of Little Bear Creek contains no erosion or landslide hazard areas. The entire length of Little Bear Creek in the City is mapped as seismic (liquefaction) hazard area.

5.1.2 Aquifer Recharge Areas

The primary source of information on aquifers in the Sammamish River Valley is the Redmond-Bear Creek Valley Ground Water Management Plan (Redmond-Bear Creek Ground Water Advisory Committee, 1999). According to this Plan, there are four aquifer zones underlying the Sammamish River Valley—Alluvial, Local Upland, Sea Level, and Regional. The Alluvial Aquifers are apparently restricted to alluvial deposits along Cottage Lake Creek, Evans Creek, and Bear Creek in the Redmond area. The local Upland Aquifers occur beneath the ridge of the Redmond-Bear Creek Ground Water Management Area. The Sea Level Aquifers underlie the entire Redmond-Bear Creek Ground Water Management area and are apparently independent of topography. The Regional Aquifers also underlie the entire Redmond-Bear Creek Ground Water Management Area and are also independent of topography. There is a high degree of connectivity between the surface water of the Sammamish River and its tributaries and the Alluvial Aquifer. The direction of flow between the river and the aquifers is the subject of on-going research (Carey, 2003).

There is limited information on groundwater within the City of Woodinville. The easternmost portion of the City is located in the Redmond-Bear-Creek Valley Groundwater Area. A 2004 King County study of groundwater in the Sammamish River Valley included monitoring at four locations in Woodinville (King County DNRP, 2005). This study indicated that groundwater flows in the Woodinville area like other areas in the Sammamish valley, toward the river.

King County GIS indicates several aquifer recharge areas in the Woodinville area (Figure 10). Critical aquifer recharge areas are protected by Woodinville's Critical Areas Regulations (WMC 21.24)

A shallow, unconfined aquifer is located along the City's northern border (King County Department of Natural Resources and Parks, 2003). The aquifer is fed by infiltration of precipitation from the surface and from upslope areas. The aquifer discharges to Little Bear Creek or flows in the same direction as Little Bear Creek.

The Cross Valley Aquifer is located north of the Woodinville city limits, but areas of the UGA are located within the aquifer. The aquifer was designated as a sole source aquifer by the Environmental Protection Agency (EPA) in 1987. A sole source aquifer is one that supplies 50 percent or more of the drinking water for an area. Contamination of a sole source aquifer could pose a threat to public health.

Sammamish River

Aquifer recharge areas are located to the east of the Sammamish River primarily

in the upland areas (Figure 10). As indicated above, groundwater flow is toward the river with the aquifers recharging the river.

Little Bear Creek

Detailed information on aquifers is limited along Little Bear Creek. It is likely, however, that aquifer recharge areas are located adjacent to the creek. As in the Sammamish River Valley, these aquifers likely recharge Little Bear Creek. Studies of the Cross Valley Aquifer indicate that the City of Woodinville lies outside the 10-year time of travel zone of the aquifer and that the flow of groundwater is away from the Cross Valley Aquifer water supply wells and toward the City.

5.1.3 Flood Hazard Areas

Flood hazard areas are defined in the Woodinville Municipal Code as "those areas in the City of Woodinville subject to inundation by the base flood" (WMC 21.06.245). The base flood is defined as "a flood having a one percent chance of being equaled or exceeded in any given year, often referred to as the 100-year flood" (WMC 21.06.043). These areas are typically identified on the Federal Emergency Management Agency (FEMA) flood insurance rate maps as the 100-year floodplain. Because of its hydrologic association, jurisdictions may regulate all areas within the 100-year floodplain for shoreline management under the SMA. Flood hazard areas in the City are regulated by the Critical Areas Ordinance (WMC 21.24). The 100-year and 500-year flood zones for the Sammamish River and Little Bear Creek are shown on Figure 7.

Sammamish River

FEMA is in the process of updating flood hazard mapping on the Sammamish River. The updated maps are expected to be completed in September 2006, but are unlikely to be official until sometime in 2007. Are they completed? As described above, the Sammamish River is part of a U.S. Army Corps of Engineers flood control project and has been channelized, dredged and straightened. The flood control project is designed to accommodate approximately the 40-year springtime flood (equivalent to the 10-year winter storm) (King County, 2006). The project has reduced the frequency and severity of flooding problems. Flooding that does occur is typically an overflowing of the river channel and generally not destructive. Flooding has primarily affected agricultural and recreational lands in the floodplain, but as development increases, residential and industrial lands may be affected in the future. No known threats to public safety are likely to result from flooding of the Sammamish River (King County, 2006).

Figure 7 shows that the 100-year floodplain for the Sammamish River is primarily confined to the river channel. In the area from Tributary 0090 to just

north of Woodin Creek, the 100-year floodplain extends beyond the river channel. The area on the east bank of the river is agricultural land, while the land on the west side is primarily industrial.

Little Bear Creek

The mapped floodplain for Little Bear Creek is relatively narrow in the lower reaches in the City (Figure 7). The floodplain widens north to the City limits. There is extensive commercial and industrial development adjacent to the floodplain, especially on the south side of the creek. Some older structures are constructed within the floodplain. Flooding of Little Bear Creek has posed little threat to public safety and there is no history of flood insurance payments along the creek.

5.1.4 Channel Migration Zones

The channel migration zone refers to the area along a river or stream within which the channel can be expected to migrate over time and which can generally correspond to the 100-year floodplain. Local geology, soils, and hydrologic conditions are principle forces driving channel migration. For example, a stream channel that occurs in areas underlain by bedrock or some other erosion-resistant soil would be relatively stable and not subject to channel migration. A stream channel that is underlain by highly erodible soils is more likely to migrate. Channel migration zones are generally greatest where stream channels exit steep terrain onto a broad valley floor. In a natural setting, channel migration zones provide important shoreline ecological functions, most notably aquatic habitat formation. These areas can provide the linkage between terrestrial (riparian) zones and aquatic systems, and regulate the entry of water, sediment, nutrients, and organic material into aquatic habitats (Gorsline, 2001).

Sammamish River

The Sammamish River shoreline planning area is not within an active channel migration zone. Due to the underlying geology, the Sammamish River in its natural state would be expected to have a fairly wide channel migration zone. However, historic and existing flood control projects (dikes and levees) have confined the channel to its present location. This channelization has eliminated shoreline functions that channel migration may have provided in an unaltered state, such as formation of off-channel habitat, LWD recruitment and storage, flood storage, and sediment delivery and storage.

Little Bear Creek

Little Bear Creek is essentially a low-gradient stream with a wide floodplain valley deriving most of its hydrology from groundwater seepage. The main channel of Little Bear Creek essentially (from the current City boundary to the

confluence with the Sammamish River) is composed of somewhat poorly drained soils, and therefore, channel migration, when it occurred, was a gradual process. Contributions of LWD would have contributed much to channel migration through this area. Upstream of the current City boundary and including the UGA and several tributary streams on the western side of Little Bear Creek, soils are somewhat excessively drained. It would be expected that these areas were more susceptible to channel migration. However, bank armoring has reduced the migratory capacity of the stream channel. The channel in the lower portions has also become more entrenched, which also limits channel migration. The only portion of Little Bear Creek that maintains limited channel migration capacity is upstream of the King/Snohomish County line. However, continued development in this area ultimately results in the channel being confined. Shoreline functions provided by channel migration are generally absent in Little Bear Creek.

5.1.5 Shoreline Modifications

Shoreline modification refers to structural changes to the shorelines' natural bank. Examples include shoreline armoring (bulkheads, riprap, etc.), overwater structures (dock and piers), or dredging and filling. The following assessment of the extent of shoreline modification is primarily based on the information presented in the *Habitat Inventory and Assessment of Three Sammamish River Tributaries: North, Swamp and Little Bear Creeks* (King County, 2001) and the *Little Bear Creek Corridor Habitat Assessment* (David Evans and Associates, 2002).

Shoreline armoring within the City's shoreline jurisdiction is primarily in the form of levees. These structures are typically used to protect upland property from flooding and to retain or stabilize unstable banks. However, shoreline armoring also has adverse effects on the physical processes necessary to maintain native species habitats and shoreline functions. Dikes and levees do not allow stream access to floodplains and thus cut off side channel areas and wetlands that support natural processes and are vital to a number of species. Maintenance of dikes and levees often includes vegetation removal, which can reduce the recruitment of LWD that would facilitate the formation and maintenance of habitat. In addition to the loss of shoreline functions that channel migration would provide (as described above), constrictions to a channel can alter rates of sediment transport, change sediment composition, and increase flow velocities.

The Sammamish River and Little Bear Creek contain man-made channel crossings via roads/bridges and footbridges. Support structures for bridges and other stream crossings, and bridge abutments that are placed within the active stream channel can cause a decrease in stream velocity, thereby increasing sediment deposition upstream of the structure. This can potentially constrict flow in the channel, resulting in localized scouring and erosion of the

streambed. If improperly constructed, some instream support structures can cause water to back up upstream of the bridge or crossing and result in localized flooding.

Sammamish River

The entire reach of the Sammamish River within the City's shoreline jurisdiction has been confined by levees. The U.S. Army Corps of Engineers (Corps) is responsible for the bank armoring activities and maintenance. Levee maintenance by the Corps is limited to the removal of wood debris if it is detrimental to the flood control structure. There are five bridges crossing the Sammamish River in the City's shoreline planning area. Two vehicular bridges cross the Sammamish River in the City—NE 145th Street in the Tourist District and NE 175 Street in the Town Center. A bicycle/pedestrian bridge crosses the Sammamish River immediately north of NE 145th. There are also two railroad crossings, one immediately north of NE 175th and one immediately south. Most bridges have footings constructed in or on the levees, rather than in the river channel.

Little Bear Creek

Industrial and commercial areas surround the lower reach of Little Bear Creek within the City's shoreline jurisdiction. This reach has been substantially armored with approximately 98 percent of the streambank being modified to protect properties from channel migration and the subsequent potential for erosion and loss of property. Armoring is primarily riprap along this reach. In addition, a culvert is located beneath State Route (SR) 202. The amount of armoring in the form of riprap generally decreases north toward the City limits and the UGA. Armoring here ranges from 10 to 17 percent and includes modifications such as riprap, culverts, gabion weirs, and bridges. There are approximately six stream crossings of Little Bear Creek within the City and the UGA.

5.2 Biological Resources

5.2.1 Wetlands

The City of Woodinville has GIS information on critical areas located in the City, including wetlands. The City's wetland inventory is based primarily on the King County Wetland Inventory, which used the National Wetlands Inventory (NWI). The City has since added further wetland information to its GIS database based on input from the City's Development Services Department and permitted development projects.

Sammamish River

The Sammamish River Valley was historically a wide area filled with wetlands and meandering and braided channels (U.S. Army Corps of Engineers and King County Department of Natural Resources and Parks, 2002). The river channel and valley have been significantly altered by development, forests have been cleared, wetlands have been drained, the river has been confined to one channel, the level of Lake Washington has been lowered altering the flow pattern of the river, and the river has been constrained for flood control.

Most floodplain wetlands no longer occur within the shoreline planning area of the Sammamish River due to the flood control project and other development projects. The remaining wetlands have high potential to provide hydrologic, water quality, and habitat functions, especially if more of them can be protected and enhanced. Restoring wetlands that are currently drained by agricultural activities can also create additional floodplain wetlands with relatively high functions. Most of the Sammamish River floodplain is mapped as having hydric soils.

A narrow swath of riverine wetland borders the Sammamish River for its length through the City of Woodinville. In most places this riverine wetland is dominated by reed canarygrass, but at a growing number of sites, enhancement projects have been installed and are becoming established, increasing the diversity of shrub and forest vegetation along the banks of the Sammamish River. Common species that have been planted in this zone include black cottonwood, red-osier dogwood, Pacific ninebark, and western red cedar.

Little Bear Creek

Wetlands are found along Little Bear Creek and are generally associated with Norma loam, a hydric soil, which is mapped along most of the length of Little Bear Creek through the City of Woodinville and its UGA. Wetlands in the Little Bear Creek shoreline planning area are riverine and depressional. The habitat types include palustrine emergent, scrub-shrub, and forest. The habitat quality of wetlands along Little Bear Creek varies between disturbed wetlands dominated by reed canarygrass and bordered by major highways to relatively pristine mature forest with native herb and shrub layers. Dominant plants in the mature forest wetlands include western red cedar, salmonberry, and skunk cabbage. Willow species, red alder, black cottonwood, and reed canarygrass

dominate wetland areas more disturbed by development.

Wetlands in the Little Bear Creek shoreline planning area provide a relatively high level of hydrologic, water quality, and habitat functions due to their diversity, ability to store floodwater flows, dense vegetation, and association with the stream. Though development continues to encroach upon the Little Bear Creek shoreline planning area, wetland functions are generally improving in many areas along Little Bear Creek due to a number of wetland mitigation projects that have been installed or are in the planning stages. Fill has been removed and wetlands have been restored along Little Bear Creek as part of a WSDOT mitigation project near the intersection of State Route (SR) 9 and SR 522. This newly created dense shrub-scrub wetland is quickly becoming a forested wetland, providing habitat protection and shade to Little Bear Creek. The City of Woodinville has recently acquired an 18-acre parcel as Little Bear Creek Rotary Park. The park is being developed to provide recreation, non-motorized transportation, and habitat restoration along the banks of Little Bear Creek as it passes through the City. In addition, the City has acquired land for Little Bear Creek Linear Park along the west bank of the creek. The park is not yet developed, but some restoration work has been done by volunteers.

5.2.2 Critical Wildlife Habitat and Species

Critical fish and wildlife habitat areas are those areas identified as being of critical importance in the maintenance and preservation of fish, wildlife, and natural vegetation. Critical habitat, or fish and wildlife habitat conservation areas, means habitat areas with which endangered, and threatened species of plants or wildlife have a primary association (e.g., feeding, breeding, rearing of young, migrating), heron rookeries and nesting trees, Type 1 Streams and their buffers, Class 1 wetlands and their buffers, native growth protection areas and bald eagle territories (Chapter 21.24.410 WMC). Fish and wildlife habitat areas mapped by WDFW and the City of Woodinville are shown on Figure 11.

State and Federally Listed Species

Several state and federally listed species are known to occur or could potentially occur within the City's shoreline jurisdiction. Federally listed species that have been documented within the City's shoreline jurisdiction include bald eagle and Puget Sound Evolutionarily Significant Unit (ESU) Chinook salmon. Puget Sound/Strait of Georgia coho salmon, a federal species of concern, also occurs in the area. *The Bull Trout and Dolly Varden Appendix to the 1998 Salmonid Stock Inventory* (WDFW, 1998) does not identify any reproducing bull trout (or Dolly Varden, a similar native char) populations within the Sammamish River or its tributaries, which includes Little Bear Creek. One bull trout was identified during a two-year creel survey in Lake Washington (Pfeiffer and Bradbury, 1992) and two bull trout were reported within Issaquah Creek in 1993. The

Coastal-Puget Sound Distinct Population Segment (DPS) bull trout is currently listed as threatened; however, the species has not been documented in the Sammamish River or its tributary streams. The Puget Sound ESU steelhead was recently proposed for listing as threatened and is anticipated to be listed in Fall 2006. Should this be updated? Steelhead may use the Sammamish River and any accessible tributary streams, although anecdodal evidence suggests that Steelhead numbers may be very limited.

The Sammamish River, including tributaries and upland areas adjacent to these streams within the City's shoreline jurisdiction do not contain critical habitat for any listed species.

Priority Habitats and Species

The Washington Department of Fish and Wildlife (WDFW) publishes the Priority Habitats and Species (PHS) list for Washington State, which includes a catalog of habitats and species considered to be priorities for both conservation and management. Priority species include those species that, due to their population status, sensitivity to habitat alteration, and/or recreational, commercial, or tribal importance, require specific protective measures to perpetuate their existence. This includes state Endangered, Threatened, Sensitive, and Candidate species; species congregations considered vulnerable; and those species of recreational, commercial, or tribal importance that are vulnerable. Priority habitats are those habitat types or elements with unique or significant value to a diverse assemblage of species, which may consist of unique vegetation types or dominant plant species, a described successional stage, or a specific structural element (WDFW, 2005).

The only priority species documented in the City are anadromous and resident fish species, including resident cutthroat trout (*Oncorhynchus clarki*), rainbow trout (O. mykiss), Chinook salmon (O. tshawytscha), coho salmon (Oncorhynchus kisutch), largemouth bass (*Micropterus salmoides*), sockeye salmon (*O. nerka*) and winter steelhead (*O. mykiss*). The City's shoreline planning area contains the following priority habitats: urban, natural open spaces, and wetlands (Figure 7). The area contains no nests or nesting territories for the bald eagle (*Haliaeetus leucocephalus*), and no great blue heron (*Ardea herodias*) rookeries or nests have been documented within the City or the City's shoreline jurisdiction. However, foraging for both bald eagle and great blue heron is likely to occur within this area.

Sammamish River

Chinook salmon are documented as occurring throughout the entire reach of the Sammamish River within the City's shoreline jurisdiction (Williams et al., 1975; WDFW, 2006; Kerwin, 2001; and David Evans and Associates, 2002). These are two separate stocks including the North Lake Washington tributary

stock and the Issaquah Creek stock (Kerwin, 2001). Both of these stocks are summer/fall runs that generally enter the system from June through November with spawning occurring from late September through October. The predominant use of the Sammamish River within the City's shoreline jurisdiction is limited primarily to rearing and migration. Spawning does not occur within the City's shoreline planning area primarily due to the historical straightening and channelization that has occurred. The presence of the system of levees has also cumulatively resulted in the creation of a uniform channel that is devoid of habitat conducive to spawning (such as spawning gravels and side channel habitat). The levees have essentially removed much of the riparian vegetation, and LWD presence and recruitment are limited. Channel migration and contributions of new sediment, especially gravels, have been eliminated by the levee system. Typical reaches of the Sammamish River are comprised of 70 to 90 percent silt and clay substrates (King County, 2002). Water quality, especially temperature, has been identified as the primary limiting factor for salmonids within the Sammamish River and its tributaries (Kerwin, 2001 and King County, 2002).

Coho salmon are also known to occur within the City's shoreline jurisdiction (Williams et al., 1975; WDFW, 2006; Kerwin, 2001; and David Evans and Associates, 2002). The coho stock in Lake Washington and the Sammamish River are all of one stock, which is a mixture of native and hatchery origin fish (Kerwin, 2001). Adults typically enter the system from August through December with spawning occurring in tributaries from November through December. Coho generally rear in freshwater for up to eighteen months and likely utilize the Sammamish River for rearing in addition to migration. Spawning is not known to occur in the mainstem Sammamish River (King County, 2002).

Winter steelhead are also considered as one stock throughout WRIA 8, and the stock is considered native (King County, 2002). Adults typically enter the system from December through March and spawn in all accessible tributaries from March through June. Spawning does not occur in the mainstem Sammamish River; however, juveniles may rear in freshwater for up to three years before they outmigrate to the ocean, so the Sammamish River likely provides some rearing opportunities for juvenile winter steelhead.

Bull trout status within WRIA 8 is largely unknown and information on their abundance is limited (U.S. Army Corps of Engineers and King County Department of Natural Resources, 2002 and Kerwin, 2001). A self-sustaining population does exist above Chester Morse Dam on the Cedar River; however, no spawning redds have been documented in the Sammamish River system. This is likely due to their preference for cold headwater streams, which are absent from the Sammamish River.

No bald eagle nests or breeding territories are located within the City's

Sammamish River shoreline jurisdiction. It is likely, however, that bald eagles use the area for foraging.

In addition to the state and federally listed species discussed above, the Sammamish River within the City's shoreline planning area contains several salmonid species that are not considered endangered or threatened, but are listed as priorities for conservation and management including: sockeye salmon, rainbow trout, and cutthroat trout. Existing instream conditions limit the use of the Sammamish River within the City's shoreline planning area to rearing and migrational corridors (U.S. Army Corps of Engineers and King County Department of Natural Resources, 2002 and Kerwin, 2001). Coho salmon and cutthroat trout have been documented within Woodin Creek, Gold Creek, and Derby Creek (stream # 0090), tributaries to the Sammamish River within the City's shoreline jurisdiction. Kokanee (*O. nerka*) are also known to occur and spawn in the mainstem Sammamish River. Kokanee have been observed spawning downstream of the mouth of Little Bear Creek (R2 Consultants, 1999).

Riparian habitat is limited along the Sammamish River within the City's shoreline jurisdiction. This is primarily due to development, the presence of levees/dikes, and agricultural areas. No priority riparian habitat is mapped along the Sammamish River in this area. The City has recently restored several sections of riparian vegetation as part of its Sammamish Re-Leaf Program. These restored areas have improved riparian vegetation along the river.

Little Bear Creek

Chinook salmon are known to occur within Little Bear Creek; however, the system is not highly utilized based on historical data and observations. Salmon spawning ground surveys performed by WDFW from 1952 through 2000 indicated that utilization over that time period was generally limited to less than 8 individuals with no adults documented from 1997 through 2000 (David Evans and Associates, 2002). Most Chinook are thought to be strays from the Issaquah Creek Hatchery or from Bear Creek. Little Bear Creek provides limited spawning, rearing, and migration habitat for Chinook salmon.

Coho salmon are also documented as occurring within Little Bear Creek. WDFW also performed salmon spawning ground surveys for coho during the same time frame identified above for Chinook and found that coho numbers vary year to year but indicated that "fair" numbers spawn in Little Bear Creek. Yearly observations ranged from 4,852 in the late 1970's to 68 in 1991. The Washington Department of Fish and Wildlife counted 21 coho in 2004. Little Bear Creek provides spawning, rearing, and migration areas for coho salmon.

Winter steelhead have not been observed in Little Bear Creek; however, the potential exists for them to occur in the system. Bull trout are not expected to

occur in Little Bear Creek due to life history requirements and preference for higher elevation streams with very cold water. These conditions do not exist within Little Bear Creek.

In addition to the state and federally listed species discussed above, Little Bear Creek within the City's shoreline planning area contains several salmonid species that are not considered endangered or threatened, but are listed as priorities for conservation and management including: sockeye salmon, chum salmon, pink salmon, rainbow trout, and cutthroat trout (David Evans and Associates, 2002). Chum and pink salmon have only been observed once in the system and are thought to be strays from another Puget Sound watershed. Kokanee (*O. nerka*) are also known to occur and spawn in Little Bear Creek.

5.2.3 Instream and Riparian Habitats

Rivers and streams provide valuable wildlife corridors, a source of fluvial sediments to the marine shoreline, recreational opportunities, and support for a range of fish species. Information on stream conditions was drawn in particular from the following documents: *Lake Washington/Cedar/Sammamish watershed (WRIA 8) Near Term Action Agenda* (WRIA 8 Steering Committee, 2002), *Sammamish River Corridor Action Plan* (King County and U.S. Army Corps of Engineers, 2002), *Final Lake Washington/Cedar/Sammamish Watershed (WRIA 8) Chinook Salmon Conservation Plan* (WRIA 8 Steering Committee, 2005), *Salmon and Steelhead Habitat Limiting Factors Report for the Cedar-Sammamish Basin (Water Resource Inventory Area 8)* (Kerwin, 2001), *A Catalog of Washington Streams and Salmon Utilization - Volume I, Puget Sound Region* (Williams et al., 1975), *Little Bear Creek Corridor Habitat Assessment* (David Evans and Associates, 2002) and the *Habitat Inventory and Assessment of Three Sammamish River Tributaries: North, Swamp, and Little Bear Creeks* (King County, 2001). The following characterization of the Sammamish River and Little Bear Creek is focused on conditions relative to fish and wildlife habitat.

Sammamish River

The Sammamish River Corridor Action Plan (King County, 2002) and the *Salmon and Steelhead Habitat Limiting Factors Report for the Cedar-Sammamish Basin (Water Resource Inventory Area 8)* (Kerwin, 2001) both discuss habitat conditions within the mainstem Sammamish River. The two main factors influencing the Sammamish River within the City's shoreline planning area are the channelization of the main channel and the rapid rate of urbanization. The impacts of agricultural development, urbanization, and channel modifications have impaired and effectively limited the ecological functions that the Sammamish River provides. Overall, habitat conditions are highly degraded compared to historical conditions. This in large part is due to

increased urbanization within the entire watershed, and historical and current flood control practices. The habitat assessment indicated the following disturbances as having the most impact on the riverine aquatic system:

- Riverbanks have been hardened along the entire length through the City's shoreline jurisdiction;
- Water quality, especially temperature and dissolved oxygen, have been impaired as a result of development, dependence upon aquifers for water supply, agriculture, and loss of riparian habitat. The loss of connections to wetlands has also reduced the overall water quality within the basin;
- Shoreline areas are highly developed with little riparian vegetation present, and vegetated areas that are present are primarily composed of invasive species;
- LWD recruitment is limited due to historical river widening practices and currently by development and its associated infrastructure (roads/trails) and agricultural activities;
- Channel straightening has resulted in lack of habitat complexity (e.g., proper pool to riffle ratios, LWD, substrate composition); and
- Bank stability is good and erosion is minimal; however, this is due primarily to the levees and other modifications. These modifications do not allow the stream to form natural meanders and limit floodplain connections to adjacent wetlands and off-channel habitats.

Little Bear Creek

Little Bear Creek drains an area of approximately 15 square miles and includes a large portion of the City of Woodinville and portions of Snohomish County with approximately 80 percent of the drainage basin occurring in Snohomish County. Little Bear Creek experiences many of the problems associated with streams found in urban areas including water quality degradation, altered hydrology, increased sedimentation and altered sediment transport, lack of habitat complexity and connectivity, and inadequate riparian buffers.

Habitat in Little Bear Creek is affected by urban development within and outside of the City's UGA. Increased development of the basin has resulted in an overall increase in impervious surface, with increased peak flows and decreased base flows in Little Bear Creek. Issues include:

- Increased peak flows cause erosion, excessive turbidity, scouring or downcutting of the channel bed, loss of pool habitat, and reduction in habitat complexity;
- Decreased base flows cause low flow during the dry summer months. The

presence of impervious surfaces does not allow the water to infiltrate, but rather the water is collected in man-made collection systems that direct the water to the streams at a much faster rate than would occur naturally;

- Removal of riparian vegetation has occurred throughout much of the stream length, which reduces the recruitment of habitat forming LWD, removes potential sources of food and nutrients to the system, increases overall stream temperatures, and increases risk of predation to salmonids and other aquatic biota;
- Streambanks have been armored to confine the channel, thus the stream has lost much of its access to its former floodplain and off-channel habitat including wetlands; and
- Improperly constructed road crossings present barriers to salmonid migration; and
- Channel complexity has been reduced by road crossings, armoring, abrupt land use changes, channel incision and instability, and clearing and development of the riparian areas.

Little Bear Creek within the City's shoreline jurisdiction is predominantly surrounded by industrial and commercial activities as well as transportation infrastructure. Historical and current development practices as well as associated armoring have resulted in degraded conditions throughout this reach. Approximately 98 percent of the reach is armored, and therefore, there is reduced connections to riparian wetlands and subsequently little off-channel habitat is provided for salmonids (David Evans and Associates, 2002). The riparian buffer along this reach averages approximately 25 feet with development along both banks and is typically of low quality consisting of red alder (*Alnus rubra*), Himalayan blackberry (*Rubus discolor*), bittersweet nightshade (*Solanum dulcamara*), and reed canarygrass (*Phalaris arundinacea*) (David Evans and Associates, 2002). The lowest reach contains only 5.1 percent forest habitat within a 400-foot wide riparian corridor (David Evans and Associates, 2002). The lack of LWD and potential for recruitment reduces pool quantity and quality and reduces quality of overall habitat. Impervious surface area throughout the basin has altered peak and base flows within the entire system. Substrates in this reach were found to consist primarily of coarse gravels that are approximately 29 percent embedded with fines, which would not provide adequate spawning conditions for salmonids. Few off-channel, ox-bows, or other potential refugia exist within the Little Bear Creek system. Water quality within the Little Bear Creek basin is also degraded. Temperature data collected indicate that temperatures within Little Bear Creek are not conducive to rearing and migration; however, temperatures are adequate during the timeframe when most adults are in the system spawning (David Evans and Associates, 2002). Little Bear Creek is also listed on the Washington State Department of Ecology 303(d) list of impaired water bodies for the dissolved oxygen parameter (Ecology, 2005). Little Bear Creek is no longer on the 303(d) list for fecal coliform bacteria. The *Little Bear*

Creek Water Cleanup Plan (a TMDL) was prepared to address the fecal coliform issue within the basin (Dettelbach and Garland, 2005). Pesticides have also been indicated as occurring in concentrations high enough to be toxic to test species (Kerwin, 2001). Overall, habitat within this reach is highly degraded.

Areas upstream extending to the current City boundary and into the UGA are not as degraded as the lower reach within the City's jurisdiction; however, they are under the same pressures as that occurring in the lower jurisdictional reach.

5.3 Land Use Patterns

Land use patterns are described in the context of existing land use, as well as planned or future land uses that are established by Comprehensive Plan land use designations and zoning designations.

5.3.1 Existing Land Use

The City of Woodinville's shoreline jurisdiction is located within three of the City's neighborhoods (as defined in the City's Comprehensive Plan, 2002). From south to north the Sammamish River flows through the Tourist District, the Valley Industrial Neighborhood and the Town Center (Figure 8). Little Bear Creek is only considered a shoreline of the state from slightly north of NE 132nd Avenue NE to its confluence with the Sammamish River. This reach extends through the Town Center and Valley Industrial neighborhoods. North of NE 131st Street (the shoreline jurisdiction boundary), the creek flows through portions of the City's UGA referred to as the Grace Neighborhood, the Wedge Neighborhood, and the North Industrial Neighborhood (Figure 9).

Sammamish River

Current land use within the City's Sammamish River shoreline jurisdiction is predominantly industrial, particularity on the west bank of the river, which lies completely in the Valley Industrial Neighborhood. The east bank includes multi-family uses in the Tourist District and a mix of parks, open space, and multi-family in the Town Center Neighborhood (City of Woodinville, 2002). The majority of the west bank of the Sammamish River near the City is the Sammamish River Trail owned by King County. East of the trail, from approximately NE 171st Street to NE 154th Street is unincorporated King County. Generalized existing land use within the City's shoreline area is shown on Figure 9.

Little Bear Creek

Current land use within the City's Little Bear Creek shoreline jurisdiction is also predominantly industrial with some park and open space near its

confluence with the Sammamish River and some retail service use further north. North of the 132nd Avenue NE (the shoreline jurisdiction boundary), land uses along Little Bear Creek are predominantly single family residential and general business services with a smaller amount of parks and open space (City of Woodinville, 2002). No current land use data was available for the City UGA (the Grace neighborhood).

5.3.2 Comprehensive Plan and Zoning Designations

The City's Comprehensive Plan provides a guide for future growth. The plan contains eleven land use goals developed through an analysis of existing conditions, projected needs, and community vision. These goals are meant to achieve a balance in the City's development patterns and are to be achieved by implementing future land use policies. The goals include accommodating growth (residential, commercial and industrial) patterns while maintaining and promoting the City's quality of life, encouraging less reliance on automobiles, and promoting development of the City's downtown (City of Woodinville, 2002).

To implement its planning policies, areas of the City are assigned discrete categories of land use illustrated on its Comprehensive Plan Land Use Map. In general, future land use designations along the Sammamish River and Little Bear Creek closely follow the existing land use patterns. Figure 9 illustrates the future land use designations according to the Comprehensive Plan.

Zoning designations in the City of Woodinville generally follow the future land use designations established in the City's Comprehensive Plan (Figure 8). These include Industrial, Residential, and Business. Snohomish County zoning designations apply in the UGA (Grace) until those areas are incorporated through annexation. Snohomish County zones in the Grace Neighborhood include Industrial and Agriculture.

Sammamish River

The Comprehensive Plan land use map shows that the west bank of the Sammamish River shoreline planning area, located entirely in the Valley Industrial Neighborhood, is primarily designated as Industrial. The east bank is designated Medium Density Residential in the Tourist District, a mix of Public/Open Space and Medium Density Residential in the Town Center, and Industrial north of SR 202 (City of Woodinville, 2002).

City zoning designations in the Sammamish River shoreline jurisdiction are, in general, consistent with the Comprehensive Plan land use designations. The west bank of the Sammamish River is zoned Industrial. The east bank is zoned a mix of Residential (R-12) and Tourist Business in the Tourist District,

Residential (R-18) and Public Park/Open Space in the Town Center, and Industrial and Public Park/Open Space in the Valley Industrial Neighborhood.

Little Bear Creek

Both banks of Little Bear Creek within the City's shoreline jurisdiction are designated on the Comprehensive Plan Land Use Map primarily as Industrial, with a small amount of land on the east bank designated Central Business. North of the City's shoreline jurisdiction boundary, Little Bear Creek flows through areas designated industrial in the Grace neighborhood, moderate density residential and Park in the Wedge Neighborhood, and Auto/General Business in the North Industrial Neighborhood (City of Woodinville, 2002).

Zoning designations in the Little Bear Creek shoreline jurisdiction (approximately south of 132nd Avenue NE include Public Park/Open Space, Industrial, Central Business District (CBD), and General Business. North of the shoreline boundary, the zoning adjacent to the creek includes General Business, Public Park/Open Space, and Residential (R-6) (City of Woodinville, 2002). The Little Bear Creek shoreline area in the UGA (Grace) is zoned by Snohomish County. Snohomish zoning designations adjacent to the creeks include Heavy Industrial, Light Industrial, and Agriculture (Snohomish County GIS, 2006).

5.3.3 Roads and Bridges

Road density is often used as an indicator of watershed conditions. Roads and transportation infrastructure near or adjacent to water bodies can create adverse impacts to those natural systems by blocking flow or creating impervious surfaces. Roadways represent a significant source of impervious surface in urban areas. Auto-related pollutants including petroleum products, hydrocarbons, and heavy metals, accumulate on road surfaces and are carried to nearby water bodies during storm events through sheet runoff or stormwater collection systems.

Sammamish River

Two automobile bridges cross the Sammamish River in the City, NE 145th Street in the Tourist District and NE 175th Street in the Town Center. A bicycle/pedestrian bridge crosses the Sammamish River immediately north of NE 145th Street. There are also two railroad crossings, one immediately north of NE 175th Street and one immediately south.

The density of roads along the west side of the Sammamish River is relatively low. Although there are few City roads along the river's west bank, there are large areas of business and parking access associated with buildings. SR 522 is within the shoreline jurisdiction of the Sammamish River where the river exits

the City. The Sammamish River Trail runs the length of the Sammamish River within the City.

Little Bear Creek

Little Bear Creek is crossed by NE 178th Street and NE 131st Street (SR 202) in the shoreline jurisdiction. The creek then flows under SR 522 further north. Little Bear Creek is also crossed near its confluence with the Sammamish River by a bicycle/pedestrian bridge that is part of the Sammamish River Trail

Road density within the Little Bear Creek jurisdiction is relatively high. In addition to NE 175th Street and NE 131st Street, SR 522 runs parallel to the Creek shoreline through the City and UGA. The total impervious surface in the Little Bear Creek watershed is approximately 37 percent. Road density in the Little Bear Creek watershed was estimated to be approximately 2.28 mi/mi^2. Based on this estimate, the NOAA Fisheries watershed conditions indicator for road density is not properly functioning (David Evans and Associates, 2002).

5.3.4 Utilities (Stormwater/Wastewater Outfalls; Other)

Sewer service is provided to the City at two levels. King County Metro provides sewage treatment and disposal as well as interception/transmission of collected wastewater. The Woodinville Water District provides for sewer collection and connection to the Metro system for most of the City. The Northshore Utility District provides service for a small area located in the southwest corner of the City. Sewer service in the City's UGA is provided by the Cross Valley Water District and the Alderwood Water District. According to the Woodinville Water District's Comprehensive Sewer Plan (1993), approximately 80 percent of the District's residential water consumers were using septic systems. Approximately two-thirds of the City is connected to sewer. Within the 200-foot floodplain jurisdiction for the Sammamish River and Little Bear Creek, 100 percent of the development is hooked up to sewer.

The district system includes 13 connections to Metro's system and approximately 60 miles of sewer mains ranging in size from 8 to 18 inches. Sewer lines cross the Sammamish Rivers at three locations and Little Bear Creek at two locations. King County's Brightwater Wastewater Treatment facility is currently under construction and is expected to begin operation in 2010. The facility is located at the north end of Little Bear Creek, east of SR 9, within the City's annexation area. The outfall for this facility would be in Puget Sound.

Runoff in the City of Woodinville drains to a network of rivers, streams, lakes, and wetlands that feed into Lake Washington. In addition to the natural water system, the area contains a complex system of built conveyance, water quality protection, and storage facilities. Increases in population and development in

this area have led to degraded water quality, erosion, flooding, and loss of habitat for fish and wildlife (City of Woodinville, 2002).

Upon incorporation, the City established a stormwater utility to manage flooding, erosion, sedimentation, aquatic habitat, and water quality. Chapter 13.03 of the Woodinville Municipal Code establishes stormwater standards for new development. The Sammamish River has seven stormwater outfalls maintained by the City. There are also 13 private outfalls and two maintained by King County. There are 13 stormwater outfalls located along Little Bear Creek. Nine of these are private and four are maintained by the City.

Undetained and untreated stormwater runoff can deliver pollutants to water bodies, including heavy metals and other pollutants associated with automobiles and roadways. Water quality impairments described in previous sections include the presence of fecal coliform, heavy metals, and chemical compounds in the Sammamish River and Little Bear Creek. Untreated stormwater discharging to water bodies are likely contributing factors.

Other Utilities

Water in the City is provided by the Woodinville Water District. The District purchases its water from the Seattle Water Department and is supplied from the Tolt River Pipeline and the Tolt Eastside Supply Line (City of Woodinville, 2003). The District operates and maintains eight storage facilities, five pumping stations (three active and two standby), 44 pressure-reducing stations, and 253 miles of transmission and distribution lines.

A variety of gas, telephone, electric, and related utilities serve the existing residential and commercial developments within the shoreline jurisdiction.

5.3.5 Existing and Potential Public Access Sites

The City of Woodinville has a diversity of parks, open space, and public facilities. There are approximately 45 acres of land zoned Parks. This includes the Sammamish River Trail, which parallels the Sammamish River; Woodin Creek Park, Wilmot Park, DeYoung Park (positioned in the heart of downtown along NE 175th Street), Little Bear Creek Rotary Park, Little Bear Creek Lineal Park Property, and a small residential pocket park in the Wedge Neighborhood.

Several parks and open space areas provide access to the Sammamish River and Little Bear Creek. The City's Parks Recreation and Open Space Plan (2005) describes many of them. These areas are shown on Figure 12.

PUBLIC ACCESS OPTIONS

Background

One of the goals of the Shoreline Management Act (SMA) is to provide public access to the shoreline. Public access includes both physical access to the shoreline or water and visual access. The SMA requires that both public entities and private development provide shoreline access to the public.

To acknowledge the SMA guidelines preference for public access and promotion of water-oriented uses, the Woodinville Shoreline Master Program (SMP) has required that public access be provided for non-water-oriented commercial and industrial. In response to comments and recommendations from the Citizen's Advisory Panel, staff changed the language to state that provision of public access for non-water oriented commercial, residential, and industrial development was encouraged, but not required. See Sections 6.11.2(5) Commercial, 6.14.2(11) Residential, and 6.16.2(1-5) Industrial of the latest version of the City's SMP.

The Department of Ecology has stated in its preliminary comments on the City's SMP revisions that public benefit must be required for non-water-oriented uses that are proposed in shoreline areas, for which public access and ecological restoration are both SMA preferred uses providing shoreline related public benefit. Because non-water oriented uses are not dependent on a shoreline location, they are not considered as 'preferred uses' within the SMP Guidelines and must provide some other form of shoreline related public benefit (WAC 173-26-241(2)(d)[1]. Joe Burcar of the Department of Ecology has provided city staff with additional guidance to assist the City in developing an acceptable public access program.

This memorandum summarizes the public benefit in the form of public access requirements of the SMA guidelines and provides the Planning Commission with options for meeting those requirements.

[1] Master programs should prohibit nonwater-oriented commercial uses on the shoreline unless they meet the following criteria:

(i) The use is part of a mixed-use project that includes water-dependent uses and provides a significant public benefit with respect to the Shoreline Management Act's objectives such as providing public access and ecological restoration; or

(ii) Navigability is severely limited at the proposed site; and the commercial use provides a significant public benefit with respect to the Shoreline Management Act's objectives such as providing public access and ecological restoration.

In areas designated for commercial use, nonwater-oriented commercial development may be allowed if the site is physically separated from the shoreline by another property or public right of way.

SMP Requirements

Ecology's SMP guidelines describe the requirements for public access (WAC 173-26-221(4)). The guidelines recommend that local governments plan for an integrated shoreline public access system to identify opportunities to provide public access. The guidelines include requirements for providing and maintaining access on public lands. The guidelines also require that private shoreline developments that are not water-oriented must provide public benefit Water-dependent water-oriented uses[2] consist of water-dependent, water-enjoyment or water-related uses. In general water-oriented uses, or portion of a use, which cannot exist in a location that is not adjacent to the water, and which is dependent on the water by reason of the intrinsic nature of its operations.

Non-water oriented uses are not allowed within shoreline areas except under the following scenarios:

- Where navigability is restricted and the local government provides more effective Shoreline related public benefit, typically done by providing public access through a public access planning process.
- Where it is demonstrated to be infeasible due to reasons of incompatible uses, safety, security, or impact to the shoreline environment, or due to constitutional or other legal limitations that may be applicable.
- Where the non-water oriented use is within shoreline jurisdiction, but physically isolated from the shoreline by another property or public right-of-way..

Shoreline development in Woodinville does not meet the water-dependent definition. The revised Use Analysis section of the Shoreline Inventory

[2] (36) "Water-dependent use" means a use or portion of a use which cannot exist in a location that is not adjacent to the water and which is dependent on the water by reason of the intrinsic nature of its operations.

(37) "Water-enjoyment use" means a recreational use or other use that facilitates public access to the shoreline as a primary characteristic of the use; or a use that provides for recreational use or aesthetic enjoyment of the shoreline for a substantial number of people as a general characteristic of the use and which through location, design, and operation ensures the public's ability to enjoy the physical and aesthetic qualities of the shoreline. In order to qualify as a water-enjoyment use, the use must be open to the general public and the shoreline-oriented space within the project must be devoted to the specific aspects of the use that fosters shoreline enjoyment.

(38) "Water-oriented use" means a use that is water-dependent, water-related, or water-enjoyment, or a combination of such uses.

(40) "Water-related use" means a use or portion of a use which is not intrinsically dependent on a waterfront location but whose economic viability is dependent upon a waterfront location because:

(a) The use has a functional requirement for a waterfront location such as the arrival or shipment of materials by water or the need for large quantities of water; or

(b) The use provides a necessary service supportive of the water-dependent uses and the proximity of the use to its customers makes its services less expensive and/or more convenient.

demonstrates that providing for water-dependent and some water-related uses in Woodinville would not be appropriate because of the limited navigation on the Sammamish River and Little Bear Creek, and because such uses would cause greater ecological harm to the shoreline than the existing use pattern.

Options for Public Access in Woodinville

The Planning Commission has two options for allowing non-water-oriented uses within shoreline jurisdiction on the Sammamish River and Little Bear Creek. Both options would meet Ecology guidelines.

The first option is to keep the public access regulations in the existing SMP that require private commercial, residential over 4-dwelling units, and industrial developments where safety will allow to provide public access that is compensatory to allowed use. This access may be either physical or visual depending on the proposed use and the physical characteristics of the area.A developer could potentially either provide an access corridor to the shoreline or provide a viewing area. The requirement only applies to new development or redevelopment in the shoreline jurisdiction; property owners would not be required to retroactively provide access. This option would require no changes to the existing SMP or the City's Park Recreation and Open Space Plan (2005).

The second approach that the City could take is to follow the recommendation of the Ecology guidelines and develop a plan for integrated public access to the shoreline. The City could take this opportunity to provide more effective public access through an integrated planning process rather than applying uniform public access requirements on all shoreline development. The City already provides several opportunities for shoreline access through public parks on the Sammamish River and Little Bear Creek (LBC). King County's Sammamish River Trail also provides public access along the length of the river in the City. The proposed Little Bear Creek linear trail would provide similar access. The linear trail would access off of the Sammamish River Trail and travel adjacent to the west bank of Little Bear Creek. The City's strategic plan is to acquire easements and/or purchase private properties along the west bank of Little Bear Creek to create the trail. The trail system would connect the City's current parks system (Wilmot Park to Little Bear Creek Park and finally, to Rotary Park which is located at the North end of the City.) The City also has options to purchase an easement in the Georgian Heights neighborhood, which would complete the LBC trail to the county border, eventually connecting it to the Brightwater ecological center. This integrated planning approach would provide more appropriate and accessible options for public access than could be provided on individual commercial and industrial properties. The existing and proposed park lands are located closer to residential and other areas where the demand for water related and/or water enjoyment passive recreation (i.e. salmon viewing, natural resource educational purposes, etc.) would be highest.

Providing public access through public parks and trails rather than on private developments would also address landowner's concerns about safety, security, and property rights. The City would need to reevaluate its Parks, Recreation and Open Space Plan (2005) to more specifically address shoreline access.

Furthermore, the City is currently planning for more appropriate land uses along the LBC corridor. Hotels and restaurants are prospects for this area (currently the LBC corridor is zoned General Business where many of the industries found, create health and safety issues if shoreline access was provided) which would potentially create greater public access to the shoreline and benefit Woodinville residents and/or other visitors to the City.

For either option, the City should add a new section to the SMP to specifically address public access requirements. Currently the requirements are located in several different subsections of Section 6, Development Standards and Use Regulations. Creating a specific public access section would clarify and consolidate the requirements. This would be an appropriate response to Ecology comments that the public access regulations need to more clearly define public access regulations and to clarify the requirements for public entities to provide public access.

Sammamish River

Wilmot Gateway Park

The Wilmot Gateway Park is a 3.7-acre Community Park located on the east bank of the Sammamish River in the Town Center Neighborhood. Park features include a playground and open play area, picnic tables and shelters, public art, restrooms, and a non-motorized boat launch to the River. The Sammamish River Trail also passes through the park (City of Woodinville, 2005).

Woodin Creek Park

Woodin Creek Park is located approximately 0.2 miles south of Wilmot Gateway Park. It is a 4.1-acre park that was transferred from King County in 1997. The park features picnic shelters and benches, tennis and basketball courts, public art and an open play area. The park is immediately east of the Sammamish River Trail right-of-way (City of Woodinville, 2005).

Lake Sammamish River Trail (King County)

The Burke Gilman/Sammamish River Trail is a 27-mile trail that begins at 8th Avenue NW in the Ballard Neighborhood of Seattle and follows an old railroad right-of-way along the Ship Canal and north along Lake Washington. At Blyth Park in Bothell the trail becomes the Sammamish River Trail and continues for 10 miles through Woodinville to King County's Marymoor Park in Redmond. The trail is primarily used by bicyclists and pedestrians, but equestrians are allowed on the Trail between NE 175th Street in Woodinville to Marymoor Park where a separate soft surface equestrian trail exists (King County Parks Website, Accesses May 2006). Shoreline access (both physical and visual) is available for most of the length of the trail though the City.

Little Bear Creek

Little Bear Creek Park

Little Bear Creek Park is a resource conservancy park that is planned as a future community or neighborhood park. The park is a 6.4-acre park located immediately east of SR 522 north of 134th Avenue NE. Little Bear Creek flows from north to south through the park. The park has several wetlands and is currently undeveloped (City of Woodinville, 2005). The park is within the City's shoreline jurisdiction.

Rotary Community Park and Trail

Rotary is an 18.3-acre park located approximately 0.5-mile north of Little Bear Creek on the west side of SR 522. Primarily a resource conservancy park, it has a high use area comprising a small portion along NE 195th Street. The high use portion of the park features a skate/BMX facility, picnic shelters/tables, restrooms, art wall, climbing rock, playground, and lookouts to Little Bear Creek. There are also trails through the resource conservancy portion of the park.

Little Bear Creek Linear Trail

A master plan for the Little Bear Creek Linear Park was completed in April 2004. The City's 1998 Parks Recreation, and Open Space Plan recommended a variety of open spaces, trails, and recreation areas. Among these was the development of a linear trail system along the length of Little Bear Creek from the Sammamish River to the City limits at NE 205th Street (City of Woodinville, 2004). Implementation of the master plan would include conservation or acquisition of additional riparian habitat, wetlands areas, and woodlands located along the Little Bear Creek corridor on the east and west sides of SR 522. The park would conserve these areas for water quality

protection, wildlife habitat, and open space buffer. Viewpoints, picnic facilities, and active and passive recreation activities may be developed. The plan seeks to link the downtown area with Little Bear Creek and residential areas through trails, bridges, and landscaping (City of Woodinville, 2005).

5.3.6 Historical/Cultural Resources

The existing Woodinville Shoreline Master Program (1997) provides a general goal to protect and restore those aspects, buildings, sites, and areas of shoreline having historic, cultural, scientific, or educational values or significance (City of Woodinville, 1997). The program establishes policies to encourage compatible surrounding environments to ensure planning for the preservation of significant archeological resources, especially Native American sites in river and stream corridors. The program's policies also direct the City to protect shoreline resources that provide educational opportunities or access to scientifically significant areas.

The Washington State Department of Archeology and Historic Preservation maintains a database of sites listed on Washington's Historic Register and the National Register of Historic Places. A search of the database for sites within the City revealed only one site, the Hollywood School House, located on NE 145th Street. This property is listed on both the state and national registers (Department of Archaeology and Historic Places, 2006). In addition to the Hollywood School, the Hollywood Farm, located a short distance east on NE 145th Street, and the Woodinville School, located in the Town Center, are on the King County's Local Landmarks List (King County, 2006). None of these sites are located within the City's shoreline jurisdiction.

6.0 ASSESSMENT OF SHORELINE FUNCTIONS AND OPPORTUNITY AREAS

This section summarizes key findings concerning how shoreline functions of the Sammamish River have been impaired, both by land use activities and alterations occurring at an ecosystem-wide scale, and by activities within the City, its UGA, and its shoreline planning area. This section also identifies opportunities for the protection or enhancement of areas where shoreline ecological functions are intact, and opportunities for restoration of impaired shoreline functions, at both a programmatic (i.e., City or UGA-wide) and site-specific level. Opportunities for enhanced or expanded public access to the shoreline are also discussed. A similar discussion for Little Bear Creek is presented in Section 7.0.

6.1 Status of Shoreline Functions

Table 6.1 provides a summary of shoreline ecological functions for the Sammamish River. Causes of impairment and the relative scale at which impairments are occurring (e.g., watershed, UGA-wide, shoreline reach scale, or multiple scales) are identified. Finally, general or programmatic restoration opportunities to address impairments are described. Following Table 6.1 is a more detailed discussion of site-specific restoration opportunities.

Table 6-1. Summary of Shoreline Functions and Programmatic Restoration Opportunities, Sammamish River

Condition and Causes of Impairment	Scale of Alterations and Impairment	Shoreline Ecological Functions Affected	Programmatic Restoration Opportunities
Peak and base flows may be impaired. Summer low flows in the Sammamish River have declined. Potential causes include increased impervious area and increased demand for groundwater and tributary withdrawals in the watershed.	Watershed scale	Hydrologic Hyporheic	Protect groundwater sources to the River, particularly in the Little Bear Creek basin.
Movement and storage of water has been highly altered. Channelization via dikes and levees has isolated the river from its former floodplain and associated wetlands, reducing flood storage capacity and increasing flow velocities. Levees constructed of or on compacted fill have likely altered groundwater movement, infiltration capacity, and capacity for groundwater exchange.	Watershed scale	Hydrologic Hyporheic	Support efforts to set back levees to reestablish connectivity to former floodplain and associated wetland. However, the potential for set backs is limited by Corps of Engineers policy and adjacent trails, roads, and development.

Wetlands cut off from the river can no longer provide essential storage, recharge, or water quality functions.	Watershed, UGA-wide, and reach scale	Hydrologic Hyporheic Water quality	Target local wetland restoration and mitigation so they provide storage, detention, and water quality functions. Restore and reconnect wetlands adjacent to tributary streams of the Sammamish River. Continue to restore wetlands within the levees.
Channel migration has been eliminated by the levee system along the river and the ability to incorporate new sediments (gravels) has been impaired.	Watershed scale	Hydrologic Instream habitat structure Off-channel habitat formation	Opportunities are limited. Localized setback levees could reestablish some sediment delivery processes.
Sources of suspended sediment in the river are natural, but increased flow velocities from channelization has resulted in increased bedloads, habitat homogenization, and lack of refugia for rearing and migrating salmonids.	Watershed scale	Hydrologic Instream habitat structure	Protect tributaries to the river which provide off-channel habitat.
Habitat is impaired. Channelization via dikes and levees has reduced riparian and off-channel habitats thus reducing instream habitat types. The lack of instream structure has limited the rearing and spawning habitat in the Sammamish River.	Watershed scale	Instream and riparian habitat structure	Protect tributaries to the river which currently provide off-channel habitat.
No forested riparian vegetation exists along the Sammamish River. Some areas along the river have been planted with trees in the last 10 years as part of riparian and wetland restoration projects. Vegetation management practices for the levees has eliminating large woody debris recruitment potential.	Watershed and reach scale	Instream and riparian habitat structure	Where feasible under Corps of Engineers regulations, restore riparian habitats, particularly conifers, through shoreline plantings. Continue riparian and wetland restoration plantings. Minimize future tree removal within the levees.
The potential causes of water quality impairment (i.e., contamination by fecal coliform) include leaking septic systems and animal wastes entering the stream (in the City and upstream in the watershed). Agricultural runoff and residential landscaping (in the City and upstream in the watershed) may be	Watershed, UGA-wide, and reach scale	Water quality	Manage, detain and treat stormwater discharging to the Sammamish River. Coordinate with King and Snohomish Counties to develop BMPs with existing

delivering increased nitrates and phosphorus. Dissolved oxygen, turbidity, temperature, and other heavy metals are issues of concern. Stormwater related pollutants (concentrated in urbanized areas including the City) may be the primary cause of metals. Wetlands cut off from the river can no longer provide essential water quality functions.			agricultural property owners to reduce runoff and pollutant loading. Target wetland restoration and mitigation in areas where they would provide water quality functions.
Summer water temperatures in the river are elevated above levels that are safe for salmonids.	Watershed	Water quality and instream habitat.	Coordinate with the WRIA 8 plans to reduce river temperature. These plans include riparian plantings to shade the river and protect tributaries, which provide cooler water to the River.

6.2 Site-Specific Restoration Opportunities

Site-specific restoration opportunities on the Sammamish River are somewhat limited by the Corps of Engineers flood control project. The flood control project constrains levee setbacks, reestablishing meanders, adding LWD, and riparian plantings. The City of Woodinville has worked within these constraints and has conducted or sponsored several riparian restoration projects along the Sammamish River in the past 10 years.

Several site-specific opportunities along the Sammamish River have been previously identified (U.S. Army Corps of Engineers and King County Department of Natural Resources and Parks, 2002; WRIA 8 Steering Committee, 2002 and 2005). The opportunity areas are described below and shown in Figure 14.

1. S-1. There are potential opportunities to restore the riparian area adjacent to and downstream of the Little Bear Creek confluence. Some restoration has already been done in this area. The existing vegetation should be maintained and efforts to remove invasive species and plant native vegetation should continue.
2. S-2. The creation and enhancement of pools in the Sammamish River has been identified as a way to provide cool water refuges for migrating adult salmon in the entire Sammamish River system (WRIA 8 Steering Committee, 2002 and 2005). In the Woodinville area, the mouths of the tributary streams, Gold, Woodin, and Derby Creeks, provide opportunities for pool creation.
3. S-3. Gold, Woodin, and Derby Creeks also provide opportunities for

enhancing tributary confluences. Enhancements could include correction of fish passage barriers, riparian restoration and placement of LWD.

4. S-4. Wetland restoration opportunities exist at Gold Creek. Restoration projects would include removal of non-native vegetation, creation of side channel and wetlands, revegetation of riparian and wetland areas with native plants, and placement of terrestrial LWD.
5. S-5. The general lack of riparian vegetation along the Sammamish River provides the opportunity for riparian restoration along the full length of the river corridor in Woodinville. The City has been actively involved in the Sammamish River Re-Leaf Program, an annual planting event along the river. Continuation of the Re-Leaf Program will increase riparian vegetation and provide shaded refuge areas for migrating salmon.

7.0 ASSESSMENT OF SHORELINE FUNCTIONS AND OPPORTUNITY AREAS – LITTLE BEAR CREEK

This section summarizes key findings concerning how shoreline functions of Little Bear Creek have been impaired, both by land use activities and alterations occurring at an ecosystem-wide scale, and by activities within the City, its UGA, and its shoreline planning area. This section also identifies opportunities for the protection or enhancement of areas where shoreline ecological functions are intact, and opportunities for restoration of impaired shoreline functions, at both a programmatic (i.e., City or UGA-wide) and site-specific level. Opportunities for enhanced or expanded public access to the shoreline are also discussed.

7.1 Status of Shoreline Functions

Table 7.1 provides a summary assessment of shoreline ecological functions for Little Bear Creek. Causes of impairment and general or programmatic restoration opportunities are described. Following Table 7.1 is a more detailed discussion of site-specific restoration opportunities.

Table 7-1. Summary of Shoreline Functions and Programmatic Restoration Opportunities, Little Bear Creek

Condition and Causes of Impairment	Scale of Alterations and Impairment	Shoreline Ecological Functions Affected	Programmatic Restoration Opportunities
Development of residential and industrial land uses and transportation corridors has resulted in the use of shoreline armoring to limit channel migration and protect private properties. This channelizes flow, limits sediment supply to the stream, reduces habitat complexity, and reduces off-channel habitat. Reduction in connectivity between streams and off-channel and riparian wetlands can reduce overall flood storage capacity, water quality, reduce biotic diversity, and simplify habitat types.	Reach scale	Hydrologic Instream habitat structure Off-channel habitat formation Water quality	Implement the City's updated Critical Areas Code (e.g., stream and wetland buffers on new development as well as on redevelopment). Where feasible, consider removal of bank armoring (riprap/concrete) and replacement with soft armoring and bioengineering measures (i.e., riparian plantings). More engineered types of armoring that would still maintain protection of private property, but would also allow more natural processes to occur could be employed.
Development (including bank armoring) has resulted in the removal of riparian vegetation. Riparian vegetation serves to protect water quality by providing thermal cover, serves to attenuate flooding by reducing the rate of flow entering streams, provides nesting, roosting, and foraging habitat for a variety of wildlife, and improves channel complexity by contributing LWD to streams, which is essential for forming pools.	Reach scale	Hydrologic Instream and riparian habitat structure Water quality	On a programmatic level, potential opportunities to increase habitat complexity through the introduction of LWD should be evaluated. Given the location of Little Bear Creek within the urban landscape, the amount of impervious surface in the basin, and general channel morphology, it is recommended that any placement of LWD be accompanied by carefully engineered design to assess potential scouring, erosion, and channel migration resulting from such activities. Given the density of residential and industrial land use encroaching on the stream buffers, public outreach and education promoting stream-friendly practices should be a component of long-term shoreline management.

			Educational materials and outreach could be made available to all streamside landowners addressing the importance of maintaining a vegetative buffer around streams.
Poorly constructed and maintained culverts have blocked fish passage on the creek and its tributaries.	Reach scale	Instream habitat	Implement programs to remove and improve culverts.
Little Bear Creek suffers from fecal coliform contamination and high pH levels. Stormwater runoff and animal wastes (predominantly waterfowl) contribute to fecal coliform contamination. A TMDL is being developed to address fecal coliform problems.	UGA-wide and reach scale	Water quality Instream habitat quality	Continue off-site stormwater improvements; runoff should be treated and detained prior to release to streams. Continue to work with Ecology to develop and implement a TMDL. Educational materials and outreach could be made available to all streamside landowners addressing proper use of fertilizers and herbicides.

7.2 Site-Specific Restoration Opportunities

Site-specific restoration opportunities on Little Bear Creek are limited by private ownership of large portions of the shoreline area in the City. The WRIA 8 planning process identified several site-specific opportunities along the creek (WRIA 8 Steering Committee, 2002 and 2005). Most of the opportunities are the removal of fish passage barriers. In addition, there are riparian restoration opportunities associated with the proposed Little Bear Creek Linear Park. The opportunity areas are described below and shown in Figure 14.

1 LBC-1. Fish passage barriers are located at several points along the lower reach of Little Bear Creek in the City. Removal of these barriers will improve fish passage opportunities. The City has completed fish passage improvements at NE 205th Street. The barriers are located at the following road crossings:

- 132nd Avenue NE;
- 134th Avenue NE;
- NE 195th Street

2 LBC-2. The City has plans to develop a linear park along the west bank of Little Bear Creek. This will provide opportunities for riparian restoration and providing public access to the Creek.

8.0 FUTURE DEMAND AND POTENTIAL USE CONFLICTS

State guidelines for SMP updates require that local jurisdictions analyze current and projected shoreline use patterns and trends and identify potential conflicts (WAC 173-26-201(3)(d)(ii). Potential conflicts in this context are focused on competing objectives or planning priorities between the Shoreline Management Act policy intent and other interests or regulatory requirements affecting shoreline resources.

The previous sections of this report describe existing land use, public access, and the general pattern of development and infrastructure within the shoreline planning areas. The shoreline use pattern in Woodinville is well established and encouraged by the Comprehensive Plan and zoning designations. The uses are largely business and industrial with some residential and public park areas. The shoreline areas of the Sammamish River and Little Bear Creek are paralleled by transportation corridors including a railroad and State Routes 522 and 9. Historically businesses and industries established themselves in the shoreline areas of Woodinville because of easy access to these transportation corridors. There is no commercial navigation in Woodinville. Motorized boat use of the Sammamish River is restricted between Bothell and the outlet of Lake Sammamish. Little Bear Creek is too narrow and has inadequate flow to allow navigation.

8.1 Existing Use and Future Demand

There is relatively little undeveloped shoreline available in Woodinville for subdivision or new residential, business or industrial construction. Future development will mainly involve redevelopment of existing parcels.

Residential use along Little Bear Creek and the section of the Sammamish River near the Town Center are consistent with the City's Comprehensive Plan (2002) and zoning regulations. According to the City's Buildable Lands Survey (2005), there is one vacant residential property and seven parcels with the potential for redevelopment along Little Bear Creek. These parcels are in an area zoned R-6 (six dwelling units per acre). There are no vacant or redevelopable residential properties along the Sammamish River. Single-family residential use is a priority use according to the SMA (RCW 90.58.020), when developed in a manner consistent with control of pollution and prevention of damage to the natural environment. New residential development or redevelopment along Little Bear Creek would comply with the City's development regulations, including a 150-foot buffer (or 115 feet with buffer enhancement) (Woodinville Municipal Code 21.24).

Industrial and business use along the Sammamish River and Little Bear Creek are also consistent with the City's Comprehensive Plan (2002) and zoning regulations. None of the business or industrial uses are water-dependent and few are water-oriented. The City has no plans and there does not appear to be a need for priority shoreline uses such as water-dependent port, industrial or commercial uses. Accommodating these priority

shoreline uses would potentially be problematic because:

1 Navigation on the Sammamish River and Little Bear Creek is restricted to non-motorized, recreational watercraft.

2 Water-dependent port, industrial or commercial uses would potentially cause greater ecological harm to the City's shoreline areas because they typically require extensive infrastructure, involve in-water/over-water structures, are located immediately adjacent to the shore (as opposed to being set-back), and often create noise and other types of secondary impacts.

As described in previous sections of this report, the City of Woodinville's park system provides several opportunities for public access to the Sammamish River and Little Bear Creek shorelines. The City proposes to develop a linear park along Little Bear Creek that would provide physical and visual access to Little Bear Creek. In addition, King County's Sammamish River trail provides both visual and physical access to most of the Sammamish River shoreline in the City. It is anticipated that these existing and proposed parks will provide adequate access to the shoreline to meet public demand. Because the businesses and industrial areas are not located near residential areas, the City does not anticipate that there will be a public demand for shoreline access at the business and industrial properties. The public parks provide shoreline access near residential areas and the Town Center where the highest demand for access would be generated.

Because of the limitations on navigation on the Sammamish River and Little Bear Creek, there is limited demand for docks in the City. There are currently no docks in the City and the City has not received any applications to install docks. Non-motorized boat launches are provided at Wilmot Gateway Park near the Town Center and at Willows Lodge. These boat launches are adequate to meet the demand for public boating access to the waterways in the City.

8.2 Potential Conflicts

The existing and planned uses in the shoreline jurisdiction are consistent with the SMA. As noted above, there are no plans or anticipated need for providing water-dependent shoreline uses in Woodinville because of the limitations of the Sammamish River and Little Bear Creek.

One area of potential conflict between the goals of the SMA and other policies and programs is shoreline restoration and the Corps of Engineers Sammamish River Flood Control Project. The Corps has dredged, deepened, and straightened the river and maintains the area adjacent to the river as a grass-lined channel. Restoration projects on the Sammamish River require a permit from the Corps. The flood control project limits the potential for riparian vegetation restoration and for setting back the levees or reestablishing channel meanders. Because of the challenges posed by these limitations, the City is working cooperatively with WRIA 8 to identify opportunities to modify the

flood control project and to develop more restoration projects.

9.0 DATA GAPS AND RECOMMENDATIONS

This section describes data gaps identified during development of the shoreline inventory and characterization. It also provides recommendations for addressing data gaps as the City continues the process to update its Shoreline Master Program.

1 Floodplain Mapping. Since the location of the floodplain is integral to the definition of the City's shoreline management jurisdiction and planning area, accurate mapping is critical to the City's SMP. FEMA is remapping flood hazard areas in the City of Woodinville and expects to release the maps sometime in 2006. Incorporating this mapping would enhance the City's understanding of baseline conditions as it continues to update its SMP.

2 Little Bear Creek and Sammamish River TMDLs. The City is working with Ecology, WSDOT, and Snohomish County through the TMDL process to assign specific allowable discharges. The TMDL assignments will assist the City in eliminating and reducing non-point sources of pollution. The TMDL that will be developed for fecal coliform, dissolved oxygen and temperature issues on the Sammamish River will also help the City identify sources of water quality problems and potential restoration opportunities.

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APPENDIX B – RESTORATION PLAN

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1. Introduction

The Sammamish River and Little Bear Creek are central features in the City of Woodinville. The Sammamish River serves as an important connection between the upland drainages of the Cascade foothills to the rest of the Lake Washington watershed and is an important migration route for Chinook salmon. The Shoreline Management Act (SMA or the Act) (RCW 90.58) is charged with balancing how shorelines should be developed, protected, and restored. The Act has three broad policies or mandates; it strives to: 1) encourage water-dependent uses, 2) protect shoreline natural resources, and 3) promote public access. Restoration planning is an important component of the environmental protection policy of the Act.

The City of Woodinville's Shoreline Master Program (SMP), originally adopted in 1993 and revised in 1997 is being updated to comply with the SMA requirements (RCW 90.58), and the state's 2003 SMP guidelines (Washington Administrative Code [WAC] 173-26, Part III). This report supports the development of a restoration element for the SMP update.

The 2003 SMP guidelines specify that local governments must include a "real and meaningful" strategy to address restoration of shorelines. The guidelines also specify how the policies in the SMP promote "restoration" of impaired shoreline ecological functions, where such functions are found to have been impaired based on the inventory and characterization of shoreline ecological functions and ecosystem processes. Local governments are further encouraged to contribute to restoration by planning for and supporting restoration through the SMP and other regulatory and non-regulatory programs.

This report provides a framework to:

a) Identify primary goals for ecological restoration of the Sammamish River and Little Bear Creek ecosystems;

b) Identify how restoration of ecological function can be accomplished;

c) Suggest pathways for how the SMP process may be utilized to accomplish the restoration of impaired shoreline functions associated with the Sammamish River and Little Bear Creek ecosystems; and

d) Prioritize restoration projects so that the highest value restoration actions may be accomplished first.

Regulatory Background

The state has directed local governments to develop SMP provisions "…to achieve overall improvements in shoreline ecological functions over time when compared to the status upon adoption of the master program."

The concept of no net loss of shoreline ecological function is embedded in the Act and in the goals, policies and governing principles of shoreline guidelines and other federal and state environmental protections (e.g., the Clean Water Act). Washington's general policy goals for shorelines of the state include the "protection and restoration of ecological functions of shoreline natural resources." This goal derives from the Act, which states, "permitted uses in the shoreline shall be designed and conducted in a manner that minimizes insofar as practical, any resultant damage to the ecology and environment of the shoreline area." Furthermore, the governing principles of the guidelines clarify that protection of shoreline ecological functions is accomplished through the following (WAC 173-26-186):

a) Meaningful understanding of the current shoreline ecological conditions,

b) Regulations and mitigation standards that ensure that permitted developments do not cause a net loss of ecological functions,

c) Regulations that ensure exempt developments in the aggregate do not result in net loss of ecological functions,

d) Goals and policies for restoring ecologically impaired shorelines,

e) Regulations and programs that fairly allocate the burden of mitigating cumulative impacts among development opportunities, and

f) Incentives or voluntary measures designed to restore and protect ecological functions.

It is important to note that the restoration planning component of the SMP is focused on voluntary mechanisms, not regulatory provisions. Restoration planning is focused on economic incentives, available funding sources, volunteer programs, and other programs that can contribute to a no net loss strategy. However, the restoration framework developed for these non-compensatory mitigation projects can also be applied to compensatory mitigation projects. In this way, all efforts to improve ecosystem functioning are coordinated and will be designed to work together.

To date, restoration, rehabilitation, enhancement or other improvements to shoreline ecological functions have either been voluntary or in the form of mitigation for impacts resulting from development. Preservation of existing conditions has been, and continues to be, the primary regulatory approach to protecting ecosystem functions:

> *Through numerous references to and emphasis on the maintenance, protection, restoration, and preservation of "fragile" shoreline "natural resources," "public health," "the land and its vegetation and wildlife," "the waters and their aquatic life," "ecology," and "environment," the act makes* ***protection of the shoreline environment*** *an essential statewide policy goal consistent with the other policy goals of the act* (WAC 173-26-186(8)).

Defining Restoration

There are numerous definitions for "restoration" in scientific and regulatory publications. Specific elements of these definitions often differ, but the core element of repairing damage to an existing, degraded ecosystem remains consistent. In the SMP context, the WAC defines "restoration" or "ecological restoration" as:

> *"…the reestablishment or upgrading of impaired ecological shoreline processes or functions. This may be accomplished through measures including, but not limited to, revegetation, removal of intrusive shoreline structures and removal or treatment of toxic materials. Restoration does not imply a requirement for returning the shoreline area to aboriginal or pre-European settlement conditions"* (WAC 173-26-020(27)).

Using the WAC definition of restoration in regards to state shorelines, it is clear the effort should be focused on specific shoreline areas where natural ecological functions have been impaired or degraded. The emphasis in the WAC is to achieve overall improvement in existing shoreline processes or functions, if these functions are impaired. Therefore, the goal is not to restore historically natural conditions, but rather to improve on existing, degraded conditions. In this context, restoration can be broadly implemented through a combination of programmatic measures (such as surface water management; water quality improvement; public education) and site-specific projects (such as riparian plantings and wetland restoration). It is important to note that the guidelines do not state that local programs should or could require individual permittees to restore past damages to an ecosystem as a condition of a permit for new development (Ecology, 2004). The required restoration planning element, therefore, focuses on the City as a whole rather than parcel by parcel, or permit by permit.

Table 1 below summarizes the key elements included in restoration planning within the context of an SMP update under the state's current guidelines (WAC 173-26-201(2)(f)). These key elements provide the organization and content for this report.

Table 1. Restoration Planning Structure

Key elements for the shoreline restoration planning process WAC 173-26-201(2)(f)	Section in this report
Identify degraded areas, impaired ecological functions, and sites with potential for ecological restoration.	Assessment of Functions; Programmatic and specific restoration opportunities are described in Restoration Opportunities
Establish overall goals and priorities for restoration of degraded areas and impaired ecological functions.	Policy Development
Identify existing and ongoing projects and programs that are currently being implemented which are designed to contribute to local restoration goals (such as capital improvement programs (CIPs) and watershed planning efforts (WRIA habitat/recovery plans).	Restoration Planning
Identify additional projects and programs needed to achieve local restoration goals, and implementation strategies, including identifying prospective funding	Restoration Opportunities

sources for those projects and programs.	
Identify timelines and benchmarks for implementing restoration projects and programs and achieving local restoration goals.	Implementation
Provide for mechanisms or strategies to ensure that restoration projects and programs will be implemented according to plans and to appropriately review the effectiveness of the projects and programs in meeting the overall restoration goals (e.g., monitoring of restoration project sites).	Implementation

2. Restoration Planning

The guidelines for the SMP process direct that local shoreline master programs shall include "goals, policies and actions for restoration of impaired shoreline ecological functions." Under the guidelines, restoration planning has a purpose distinct from development regulations and mitigation standards. "The guidelines expressly focus restoration requirements on the use of master program policies, as opposed to development regulations" (Ecology, 2004). Therefore, to develop specific restoration goals and policies, an overall restoration framework was considered to maintain consistency with an approach to restoration currently recommended at the national level. This restoration framework includes elements that go beyond the traditional no net loss philosophy to target a long-term improvement in a broad base of ecosystem functions where feasible in the City of Woodinville.

Restoration Framework

Significant national attention has recently been applied to the development of an approach to restoring riverine ecosystems that will more consistently result in long-term improvement in ecosystem functioning (Brinson, 1993, Kondolf, 1995, Palmer et al., 2005, Bernhardt et al., 2005). The National River Restoration Science Synthesis project recently focused efforts on developing both: 1) a database of existing and proposed river restoration projects; and 2) criteria to consistently determine if a restoration is successful (Palmer and Allan, 2006). This work is intended to provide a consistent restoration approach across jurisdictions, and to improve the probability of future success by learning from existing river restoration projects.

These national efforts have resulted in the recent publication of a recommended approach to river restoration (Palmer and Allan, 2006). A slightly modified version for use within this restoration framework is presented in Figure 1, below. The approach has three phases: (1) Decision, (2) Design and Implementation, and (3) Monitoring and Assessment. This framework is offered here to provide the following:

a) Background and insight into how current approaches to ecosystem restoration have been developed;

b) A way to consider how to integrate new information as it becomes available; and

c) A basis for integrating the City's efforts into regional efforts.

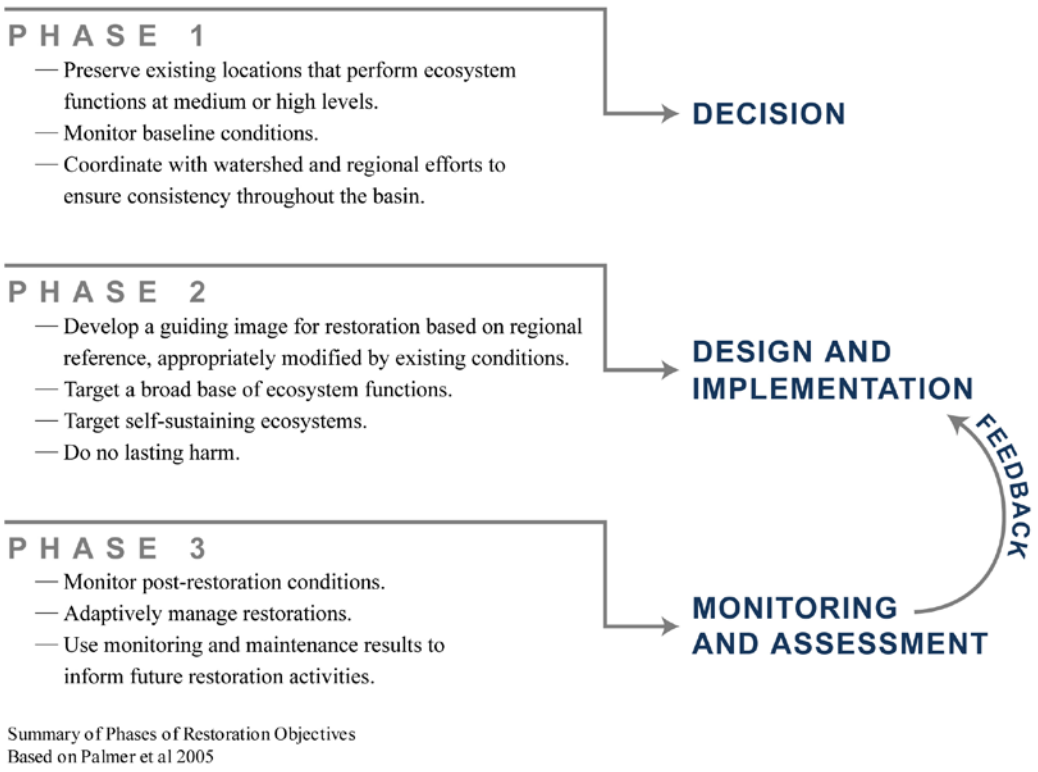


Figure 1. Schematic View of Overall Restoration Framework.

Assessment of Functions

Shoreline restoration planning begins with the identification of "degraded areas" or areas with "impaired ecological functions." The City's *Shoreline Inventory and Characterization Report* (Adolfson, 2006) examined riverine ecosystem processes that maintain shoreline ecological functions; and identified impaired ecological functions. Key findings of the inventory and characterization are summarized below.

Watershed Context and Shoreline Modifications

The City of Woodinville includes approximately 2.5 miles of the Sammamish River and 1.8 miles of Little Bear Creek within its boundary and designated urban growth area (UGA). The Sammamish River drains a large area of the Cascade foothills from its origin at Lake Sammamish to its mouth at Lake Washington. Little Bear Creek is one of several tributaries to the Sammamish River, with its confluence located in the City.

The Sammamish River basin is part of the Lake Washington/Cedar River Watershed

Resource Inventory Area (WRIA 8). WRIA 8 covers an area of approximately 692 square miles. The City and its UGA occupy approximately 7 square miles, or 1 percent of the land area included in WRIA 8. The portion of the Sammamish River within the City and its UGA is approximately 22 percent of the total length of the river.

Historically, the Sammamish River corridor consisted of complex wetland systems, with numerous braided channels. The floodplain was heavily forested. The first significant change resulted from the construction of the Hiram Chittenden Locks in 1917 built to connect Lake Washington with Puget Sound. The navigational project resulted in lowering Lake Washington by 9 feet and Lake Sammamish by 6 feet. This reduced the river gradient and altered flow patterns. Drainage districts formed during the 1910s drained wetlands and diked and straightened the river for flood control to allow agriculture in the floodplain. In the 1960s, the U.S. Army Corps of Engineers took over flood control on the Sammamish River. The river was dredged and deepened, and as a result, the Sammamish River was channelized and straightened reducing the river's length by approximately half, to 14 miles. Although there is no formal levee system along the river, the excavated material from dredging was deposited along the channel creating *de facto* levees or berms. All riparian vegetation was subsequently removed along the channelized river and continues to be maintained by the Corps as a grass-lined channel.

The Little Bear Creek basin encompasses a drainage area of approximately 15 square miles. Although it is the least developed of the three main lowland tributaries to the Sammamish River (the other two are North and Swamp Creeks), the creek has been impacted by the processes of urbanization resulting in the degradation of channel and habitat conditions.

Habitat and Species

The shorelines within the City of Woodinville provide important habitat for a number of fish and wildlife species. Most notably, Chinook salmon have been documented in the entire length of the Sammamish River within the city limits. Chinook salmon are also known to occur in Little Bear Creek. Chinook are listed as threatened under the federal Endangered Species Act. Coho salmon are also known to occur within the City's shoreline jurisdiction, both in the Sammamish River and Little Bear Creek. Therefore, fish passage, especially for federally listed species, is an important function of the shorelines within the City.

Modifications to the Sammamish River system have resulted in reduced levels of ecosystem functioning, including hydrology, water quality, riparian habitat, and instream habitat. Changes to hydrology are caused by levees/dikes, channel modifications, and urbanization, which have modified the timing and volume of flow. The two main factors influencing the Sammamish River within the City's shoreline planning area are the channelization of the main channel and the rapid rate of urbanization. Overall, habitat conditions are highly degraded compared to historic conditions. River management and berms have reduced the river's connection with adjacent wetlands and off-channel

habitats, changing the spatial extent of habitats, and increasing the potential for pollutants to impact water quality. Urbanization and agricultural development have resulted in impaired water quality, especially temperature and dissolved oxygen. Disturbances to the channel banks have resulted in areas that are dominated by non-native, invasive species. Large woody debris, in the form of riparian trees and in-channel wood, is generally lacking throughout the system, which decreases the quality and quantity of riparian and aquatic habitats. Channel straightening has resulted in an overall lack of habitat complexity.

Habitat in Little Bear Creek is also affected by urbanization that has decreased water quality, changed stream flow, and increased sedimentation in the creek. Urbanization has reduced riparian buffers and habitat. Approximately 98 percent of the reach from the mouth to 132nd Avenue NE is armored, reducing potential stream connections to riparian wetlands. As a result, this reach of Little Bear Creek offers little off-channel habitat for salmonids. In addition, several improperly constructed road crossings and culverts present barriers to upstream salmonid migration.

Land Use and Public Access

The Sammamish watershed is a sub-basin of the greater Lake Washington/Cedar River drainage, encompassing the land area that drains to Lake Sammamish and the Sammamish River. Land use in the Sammamish watershed consists primarily of forestry uses in the eastern portions of the watershed and residential development further west. Agricultural uses are common along the Sammamish River from Woodinville upstream to the outlet of Lake Sammamish in Redmond.

While the predominant land use in and around the City of Woodinville is residential, land use near the Sammamish River is predominantly industrial, particularly on the west bank of the river. The east bank includes multi-family uses and a mix of parks, open space, and multi-family housing. The Sammamish River Trail, owned by King County, follows the west bank of the Sammamish River near the City.

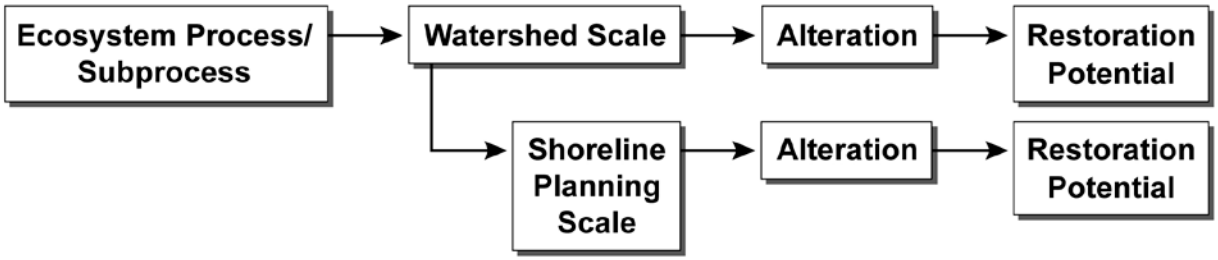
Land use within the City's Little Bear Creek shoreline jurisdiction is predominantly commercial and general business, however, there are several park and open space areas located near the confluence with the Sammamish River. There is also a residential area and parkland on the northwestern shore.–

There are significant opportunities for public access to the shorelines of the Sammamish River and Little Bear Creek. There are approximately 45 acres of land that are zoned parks within the City. Shoreline access (both physical and visual) is available for most of the 10-mile length of the Sammamish River Trail through the City. Other parks with shoreline access include Woodin Creek Park, Wilmot Park, Little Bear Creek Rotary Park, Little Bear Creek Lineal Park Property and a small residential pocket park in the Wedge Neighborhood.

Condition of Ecosystem Processes

Key findings regarding current levels of ecosystem functioning within the Sammamish River and Little Bear Creek systems are reported in Sections 6 and 7 of the *City of Woodinville Shoreline Inventory and Characterization Report* (Adolfson, 2006). The inventory report identified key ecosystem processes, and provided a qualitative assessment of their levels of functioning at both a watershed and City reach scale.

Figure 2. Organization of Summary Tables



The method used for assessing watershed-wide processes, shoreline ecological functions, and restoration opportunities is derived from the five-step approach to understanding and analyzing watershed processes described in *Protecting Aquatic Ecosystems: A Guide for Puget Sound Planners to Understand Watershed Processes* (Stanley et al., 2005). This approach defines watershed processes as the delivery, movement, and loss of water, sediments, nutrients, toxins, pathogens, and large woody debris. Factors evaluated in the City of Woodinville under this approach include:

a) River hydrology,

b) Sediment delivery,

c) Water quality, and

d) Habitat formation and structure.

Examining conditions and processes at the watershed and City scales informs local restoration planning by providing a broader understanding of how ecosystem-wide processes form and influence shoreline ecological functions. As illustrated above in Figure 2, this approach evaluates ecosystem-wide processes at both the watershed and shoreline area scales to determine the appropriate restoration opportunities and potential for specific sites. Tables 2 and 3, taken from the City's Inventory and Characterization Report, summarize the assessment of shoreline functions and the impairments or alterations of functions, and identify programmatic approaches to restoration of the functions in the Sammamish River and Little Bear Creek, respectively. As indicated in the tables, many of the alterations to shoreline functions and ecosystem processes in the Sammamish River and Little Bear Creek are due to watershed scale issues within the upper watershed, which cannot be fully restored or addressed in the reaches that flow

through Woodinville. However, hydrologic, water quality, and habitat restoration measures in the City do have the potential to improve the overall functioning of this section of the Sammamish River system and improve conditions lower in the Lake Washington basin.

Table 2. Summary of Shoreline Functions and Programmatic Restoration Opportunities, Sammamish River

Condition and Causes of Impairment	Scale of Alterations and Impairment	Shoreline Ecological Functions Affected	Programmatic Restoration Opportunities
Peak and base flows may be impaired. Summer low flows in the Sammamish River have declined. Potential causes include increased impervious area and increased demand for groundwater and tributary withdrawals in the watershed.	Watershed scale	Hydrologic	Protect groundwater sources to the River, particularly in the Little Bear Creek basin.
Movement and storage of water has been highly altered. Channelization has isolated the river from its former floodplain and associated wetlands, reducing flood storage capacity and increasing flow velocities. Berms have likely altered groundwater movement, infiltration capacity, and capacity for groundwater exchange.	Watershed scale	Hydrologic	Support efforts to reestablish connectivity to former floodplain and associated wetlands. However, the potential for set backs is limited by Corps of Engineer policy and adjacent trails, roads, and development.
Wetlands cut off from the river can no longer provide essential storage, recharge, or water quality functions.	Watershed, UGA-wide, and reach scale	Hydrologic Water quality	Target local wetland restoration and mitigation to provide storage, detention, and water quality functions. Restore and reconnect wetlands adjacent to tributary streams of the Sammamish River. Continue to restore wetlands within the berms.
Channel migration has been eliminated by the levee system along the river and the ability to incorporate new sediments (gravels) has been impaired.	Watershed scale	Hydrologic Instream habitat structure Off-channel habitat formation	Opportunities are limited. Localized set-back berms could reestablish some sediment delivery processes.
Sources of suspended sediment in the river are natural, but increased flow velocities from channelization have resulted in increased bedloads, habitat homogenization, and lack of refugia for	Watershed scale	Hydrologic Instream habitat structure	Protect tributaries to the river that provide off-channel habitat.

rearing and migrating salmonids.			
Habitat is impaired. Channelization via dikes and berms has reduced riparian and off-channel habitats thus reducing instream habitat types. The lack of instream structure has limited the rearing and spawning habitat in the Sammamish River.	Watershed scale	Instream and riparian habitat structure	Protect tributaries to the river which currently provide off-channel habitat.
No forested riparian vegetation exists along the Sammamish River. Some areas along the river have been planted with trees in the last 10 years as part of riparian and wetland restoration projects. Vegetation management practices for the berms have eliminated large woody debris recruitment potential.	Watershed and reach scale	Instream and riparian habitat structure	Where feasible under Corps of Engineers regulations, restore riparian habitats, particularly conifers, through shoreline plantings. Continue riparian and wetland restoration plantings. Minimize future tree removal within the berms.
The potential causes of water quality impairment (i.e., contamination by fecal coliform) include leaking septic systems and animal wastes entering the stream (in the City and upstream in the watershed). Agricultural runoff and residential landscaping (in the City and upstream in the watershed) may be delivering increased nitrates and phosphorus. Dissolved oxygen, turbidity, temperature, and other heavy metals are issues of concern. Stormwater related pollutants (concentrated in urbanized areas including the City) may be the primary cause of metals. Wetlands cut off from the river can no longer provide essential water quality functions.	Watershed, UGA-wide, and reach scale	Water quality	Manage, detain and treat stormwater discharging to the Sammamish. Coordinate with King County to develop BMPs with existing agricultural property owners to reduce runoff and pollutant loading. Target wetland restoration and mitigation in areas where they would provide water quality functions.
Summer water temperatures in the river are elevated above levels that are safe for salmonids.	Watershed	Water quality and instream habitat.	Coordinate with WRIA 8 plans to reduce river temperature. These plans include riparian plantings to shade the river and protecting tributaries, which provide cooler water to the river.

Table 3. Summary of Shoreline Functions and Programmatic Restoration Opportunities, Little Bear Creek

Condition and Causes of Impairment	Scale of Alterations and Impairment	Shoreline Ecological Functions Affected	Programmatic Restoration Opportunities
Development of residential and industrial land uses and transportation corridors has resulted in the use of shoreline armoring in the lower reach to limit channel migration and protect private properties. This channelizes flow, limits sediment supply to the stream, reduces habitat complexity, and reduces off-channel habitat. Reduction in connectivity between streams and off-channel and riparian wetlands can reduce overall flood storage capacity, water quality, and biotic diversity, and simplify habitat types.	Reach scale	Hydrologic Instream habitat structure Off-channel habitat formation Water quality	Utilize the City's buffer enhancement program in the Environmentally Critical Areas Code as an opportunity for restoration for new development and redevelopment). Where feasible, consider removal of bank armoring (riprap/concrete) and replacement with soft armoring and bioengineering measures (i.e., riparian plantings). More engineered types of armoring that would still maintain protection of private property, but would also allow more natural processes to occur could be employed.
Development (including bank armoring) has resulted in the removal of riparian vegetation. Riparian vegetation serves to protect water quality by providing thermal cover, serves to attenuate flooding by reducing the rate of flow entering streams, provides nesting, roosting, and foraging habitat for a variety of wildlife, and improves channel complexity by contributing large woody debris to streams, which is essential for forming pools.	Reach scale	Hydrologic Instream and riparian habitat structure Water quality	On a programmatic level, potential opportunities to increase habitat complexity through the introduction of large woody debris should be evaluated. Given the location of Little Bear Creek within the urban landscape, the amount of impervious surface in the basin, and general channel morphology, it is recommended that any placement of large woody debris be accompanied by carefully engineered design to assess potential scouring, erosion, and channel migration resulting from such activities. Given the density of residential and industrial land use encroaching on the stream buffers, public outreach and education promoting stream-friendly practices should be a component of long-term shoreline management.

			Educational materials and outreach could be made available to all streamside landowners addressing the importance of maintaining a vegetative buffer around streams.
Poorly constructed and maintained culverts have blocked fish passage on the creek and its tributaries.	Reach scale	Instream habitat	Implement programs to remove and improve culverts.
Little Bear Creek suffers from fecal coliform contamination and high pH levels. Stormwater runoff and animal wastes (predominantly waterfowl) contribute to fecal coliform contamination. A TMDL is being developed to address fecal coliform problems.	UGA-wide and reach scale	Water quality Instream habitat quality	Continue off-site stormwater improvements; runoff should be treated and detained prior to release to streams. Continue to work with Ecology to develop and implement a TMDL. Educational materials and outreach could be made available to all streamside landowners addressing proper use of fertilizers and herbicides.

Existing Plans and Programs

Regional Work

The Sammamish River plays an important role in the Cedar River/Lake Washington ecosystem and continues to be the focus of several restoration efforts. With the federal listing of Chinook salmon as an endangered species, the WRIA 8 watershed planning has focused on developing a Salmon Conservation Plan (WRIA 8, 2005). The plan establishes goals, objectives, and programmatic and site specific actions to address restoration of habitat critical to salmon species in the Cedar River/Lake Washington watershed. In general, the WRIA 8 approach appears to be consistent with the overall national restoration framework in the sense that the proposed projects address a broad base of ecosystem functions.

City Progress to Date

Woodinville has made significant progress in shoreline restoration projects. The City has engaged the Decision, Design and Implementation stages of the restoration framework and is moving toward Monitoring and Assessment. The City has identified and implemented several restoration projects with a focus on shoreline plantings and wetland restoration projects along the Sammamish River and Little Bear Creek. Fish passage improvements have been made on Little Bear Creek and a habitat assessment has been prepared for the creek. Woodinville has been an active participant in the WRIA 8

Conservation Plan development and has identified several restoration projects within that framework. In addition to restoration projects within the City, Woodinville has provided support to the regional WRIA 8 restoration projects.

The Monitoring and Assessment phase of the restoration framework is especially important, because it helps to form a continuous-improvement loop where lessons learned from earlier restoration efforts are used to improve later restoration phases. The inclusion of maintenance is also important; success of restoration projects is often directly attributable to maintenance during the early formative years of the restored system. The City conducts maintenance on its completed restoration projects. The City should consider developing a more formalized monitoring and assessment program for the sites.

Completed Projects

Several projects have already been completed in the City. These projects provide an excellent opportunity to learn about what river restoration measures are the most effective. Most of the planting projects were undertaken as part of the Sammamish ReLeaf project, funded by the King County Conservation District.

Table 4. Completed Projects

PROJECT	STATUS
145th Street, Sammamish River—planting and bank enhancement	Maintenance and monitoring
Woodin Creek confluence and Sammamish River—planting and bank enhancement	Maintenance and monitoring
Little Bear Creek confluence and Sammamish River—planting and bank enhancement	Maintenance and monitoring
Little Bear Creek--Acquisition of two parcels and planting	Maintenance and monitoring
NE 205th Street, Little Bear Creek—baffle installation and planting (cooperative project with Snohomish County)	Maintenance and monitoring Completed 2000
NE 205th Street, Little Bear Creek—fish passage improvements including installation of log weirs, pool enhancement, and plantings	Maintenance and monitoring Completed 2002
Little Bear Creek—habitat assessment study	Completed 2002
Rotary Park, Little Bear Creek—some restoration work completed, a boardwalk installed, and a restoration plan developed for volunteers.	On-going projects
Little Bear Creek Linear Park—shoreline restoration	Some work has been completed

The City has learned several lessons from the Sammamish River planting projects. The projects were undertaken in the early rush to complete shoreline restoration projects in response to the listing of salmon. The projects were undertaken without a comprehensive restoration plan and did not have specific goals and objectives, planting plans, maintenance needs, or monitoring goals. The City began a new enhancement project each year without plans for monitoring or maintaining completed projects. In retrospect, City staff think they should have developed plans for one area and planted, maintained and monitored that area until the re-vegetation was well established before moving on to another project. In response to those lessons learned, the City is developing a monitoring and maintenance program for all of the sites.

3. Policy Development

The current Woodinville Shoreline Master Program (SMP) (adopted in 1997) contains specific goals and policies related to restoration of shoreline habitat and ecological functions. The following objectives and supporting policies are located in Goal RES-1 and RES-2 of the Restoration Element:

> **RES-1.3.** Work with the public and any other interested parties to investigate and identify any environmentally sensitive areas within the shorelines jurisdiction which deserve public reclamation, restoration, or preservation and inclusion within the City's open space system.
>
> **RES-1.4.** Prioritize those properties identified in accordance with RES-1.3 as to their value to the City and their vulnerability to degradation or loss. Emphasis should be given to those areas which facilitate the development of uninterrupted natural passageways for wildlife, provide for continuous urban separators between jurisdictions and within the community, and enhance public access to the waterfront.
>
> **RES-2.1.** Provide regulations for shoreline restoration and beautification which will restore to suitable condition those areas damaged by misuse.

Other adopted planning goals, objectives, and policies related to enhancement, improvement, or restoration of shoreline resources are established in the City's Comprehensive Plan (City of Woodinville, 2002). Stated objectives and supporting policies in Goal Env-3, Preserve and Enhance Aquatic and Wildlife Habitat, include the following:

> **Env-3.3.** Maintain a standard of no net loss in the functions and values of sensitive habitat features, including wetlands, streams, lakes, and shoreline areas.
>
> **Env-3.4.** Maintain connectivity between sensitive areas, including the

Sammamish River and related streams, to provide safe travel routes for wildlife and fish and improve the biological integrity of sensitive habitat areas.

Env-3.5 Support watershed-based salmon recovery efforts and compliance with the requirements of the Endangered Species Act (ESA).

Env-3.9. Employ adaptive management for natural habitat. Adaptive management allows the City to monitor and make adjustments to its regulations as appropriate in response to changing conditions or new information.

Env-3.10. Encourage acquisition of sites that protect habitat, stream corridors, and provide aquatic habitat.

Env-3-11. Encourage the restoration of ecological functions and the natural environment in environmentally damaged areas.

Env-3-12. Participate in efforts to minimize drawdowns and warming of the Sammamish River.

Proposed SMP Restoration Policies

We have developed nine policies that the City could use to promote restoration of ecosystem functioning in the Sammamish River and Little Bear Creek ecosystems. These proposed policies would add a regional component to restoration of the shoreline, provide incentives for landowner restoration, and encourage public education for shoreline landowners.

Policy 1. Identify opportunities in the Sammamish River and Little Bear Creek watersheds where the City can support WRIA 8 restoration projects.

Policy 1 is intended to allow Woodinville to support restoration efforts throughout the basin. As noted in the *Inventory and Characterization Report*, there are some issues, including water temperature, that are better addressed at a watershed level. For example, by the time high temperature river water reaches Woodinville, it is not possible to cool the water sufficiently to have a meaningful effect on local habitat conditions.

Policy 2. Identify specific restoration opportunities within the City where the City can take the lead with support from other regional entities.

Policy 2 is intended to continue Woodinville's support of ecosystem restoration efforts. The restoration framework and goals presented above provide a preliminary method for the City to identify high-priority restoration projects. This method is intended to help the City focus its efforts in an organized way.

Policy 3. Use the City's critical area buffer enhancement program to help restore stream conditions with new development as well as redevelopment.

Policy 3 is intended to provide the City with a way to coordinate implementation of the critical areas ordinance and shoreline restoration.

Policy 4. Provide monitoring and adaptive management of restoration projects implemented within the City. Utilize the adaptive management principles developed as part of the WRIA 8 Conservation Plan.

Policy 4 is intended to move the City into a leading role in monitoring and maintaining restoration projects that occur within the City. The City is well-suited to day-to-day maintenance (e.g., maintenance of irrigation systems) and adaptive management of these restoration sites to ensure that they have the highest potential for success. Monitoring and maintenance are key elements of the restoration framework, and will be essential to the continuous improvement of restoration projects.

Policy 5. Use this restoration framework to integrate compensatory mitigation projects into the broader restoration vision for the City.

Policy 5 is intended to recognize that future development allowed under the SMP may have unavoidable adverse impacts to shoreline functions. In those cases, the restoration planning element of the SMP should help inform development of mitigation.

Policy 6. Cooperate with King County and WRIA 8 to identify opportunities to work with the US Army Corps of Engineers to modify operation of the Sammamish River Flood Control Project to improve opportunities for shoreline restoration.

Policy 6 is intended to provide an opportunity to remove some of the restrictions to shoreline restoration currently imposed by the flood control project.

Policy 7. Cooperate with the WRIA 8 public education program to develop education materials that promote stream-friendly practices as a component of long-term shoreline management.

Policy 7 is intended to recognize the importance of public education and the role that individual actions play in stream restoration.

Policy 8. Evaluate opportunities for City acquisition of land along the Sammamish River and Little Bear Creek.

Policy 8 is intended to recognize that City acquisition of key shoreline areas may be needed to provided restoration and public access opportunities.

Policy 9. Evaluate existing City land use plans and regulations to identify opportunities to encourage protection and restoration of shorelines.

Policy 9 is intended to encourage coordination between the Shoreline Management Program and other City policies and regulations. For example, the Downtown Little Bear Creek Master Plan should be reviewed to evaluate implications for the Little Bear Creek shoreline.

Policy 10. Evaluate opportunities to provide more public access along Little Bear Creek.

Policy 10 recognizes that opportunities for public access are more limited on Little Bear Creek than on the Sammamish River and encourages the City to continue to improve public access.

4. Restoration Opportunities

Based on the alteration of key ecosystem functions, there appear to be two types of restoration actions that will benefit the Sammamish River and Little Bear Creek ecosystems most in Woodinville. These actions are intended to boost the levels of ecosystem functioning as part of a self-sustaining ecosystem that will limit the need for future manipulation. While these projects are intended to restore many ecosystem it should be acknowledged that restoration must exist within the highly urban valley bottom, and cannot fully achieve pre-disturbance channel conditions.

1. Enhance existing habitats. This action will improve the functioning of the existing aquatic, riverine wetland, and riparian habitats that currently exist along the Sammamish River and Little Bear Creek.

2. Coordinate with on-going watershed planning for the Sammamish River watershed. This action will allow the City to participate in watershed scale projects that will benefit ecosystem functions of the Sammamish River including reducing water temperature. Future watershed actions may include coordination with the Corps of Engineers to set back berms and improve floodplain connections.

Identify Restoration Opportunities

Significant work has occurred to identify both programmatic and site-specific opportunities for shoreline restoration or enhancement in Woodinville. Opportunities have been identified by regional plans such as the Sammamish River Action Plan, the WRIA 8 Near Term Action Agenda, the WRIA 8 Salmon Conservation Plan, and the City's *Shoreline Inventory and Characterization* (Adolfson, 2006).

Programmatic Opportunities

Tables 5 and 6 summarize the programmatic restoration opportunities that have been identified in the City of Woodinville for the Sammamish River and Little Bear Creek. The opportunities represented in the tables could be pursued to focus resources on impaired areas and provide a net improvement in ecosystem functioning. Each programmatic opportunity is keyed to ecosystem functions.

Table 5. Summarized Programmatic Opportunities – Sammamish River

PROGRAMMATIC OPPORTUNITY	ECOSYSTEM FUNCTIONS ADDRESSED
Protect groundwater sources to the River.	Hydrologic
Support efforts to set back berms to reestablish connectivity to former floodplains and associated wetlands.	Hydrologic
Target local wetland restoration and mitigation so they provide storage, detention, and water quality functions.	Hydrologic Water quality
Restore and reconnect wetlands adjacent to tributary streams of the Sammamish River. Continue to restore wetlands within the berms.	Hydrologic Water quality
Localized setback berms could reestablish some sediment delivery processes.	Hydrologic Instream habitat structure Off-channel habitat formation
Protect tributaries to the river that provide off-channel habitat.	Hydrologic Instream habitat structure
Where feasible under Corps of Engineers regulations, restore riparian habitats, particularly conifers, through shoreline plantings.	Instream and riparian habitat structure
Minimize future tree removal within the berms.	Riparian habitat structure
Manage, detain and treat stormwater discharging to the Sammamish.	Water quality
Coordinate with King County to develop BMPs with existing agricultural property owners to reduce runoff and pollutant loading.	Water quality
Target wetland restoration and mitigation in areas where they would provide water quality functions.	Water quality
Coordinate with the WRIA 8 plans to reduce river temperature. These plans include riparian plantings to shade the river and protecting tributaries, which provide cooler water to the River.	Water quality and instream habitat.
Include public outreach and education promoting stream-friendly practices as a component of long-term shoreline management. Utilize existing resources such as City staff and the Sammamish River Stewards to provide education on shorelines at special events, and use the City web site and Woodinville Weekly to provide restoration briefings.	Hydrologic Instream and riparian habitat structure Water quality
Coordinate with the Washington Department of Ecology and WRIA 8 to evaluate water rights and water withdrawals from the Sammamish River	Hydrologic Water quality

Table 6. Summarized Programmatic Opportunities – Little Bear Creek

PROGRAMMATIC OPPORTUNITY	ECOSYSTEM FUNCTIONS ADDRESSED
Where feasible, consider removal of bank armoring (riprap/concrete) and replacement with soft armoring and bioengineering measures (i.e., riparian plantings).	Hydrologic Instream habitat structure Off-channel habitat formation
Increase habitat complexity through the introduction of large woody debris where appropriate.	Hydrologic Instream and riparian habitat structure Water quality
Include public outreach and education promoting stream-friendly practices as a component of long-term shoreline management. Utilize existing resources such as City staff and the Sammamish River Stewards to provide education on shorelines at special events and use the City web site and Woodinville Weekly to provide restoration briefings.	Hydrologic Instream and riparian habitat structure Water quality
Implement programs to remove and improve culverts.	Instream habitat
Continue off-site stormwater improvements; runoff should be treated and detained prior to release to streams.	Water quality Instream habitat quality
Continue to work with Ecology to develop and implement a TMDL to identify and address point and non-point source pollution problems.	Water quality Instream habitat quality
Continue riparian and wetland restoration plantings.	Instream and riparian habitat structure
Manage, detain and treat stormwater discharging to Little Bear Creek.	Water quality
Coordinate with Snohomish County to develop BMPs with existing property owners to reduce runoff and pollutant loading.	Water quality
Target wetland restoration and mitigation in areas where they would provide water quality functions.	Water quality
Coordinate with Washington Department of Transportation to improve water quality of runoff from SR 522	Water quality

Site-Specific Opportunities

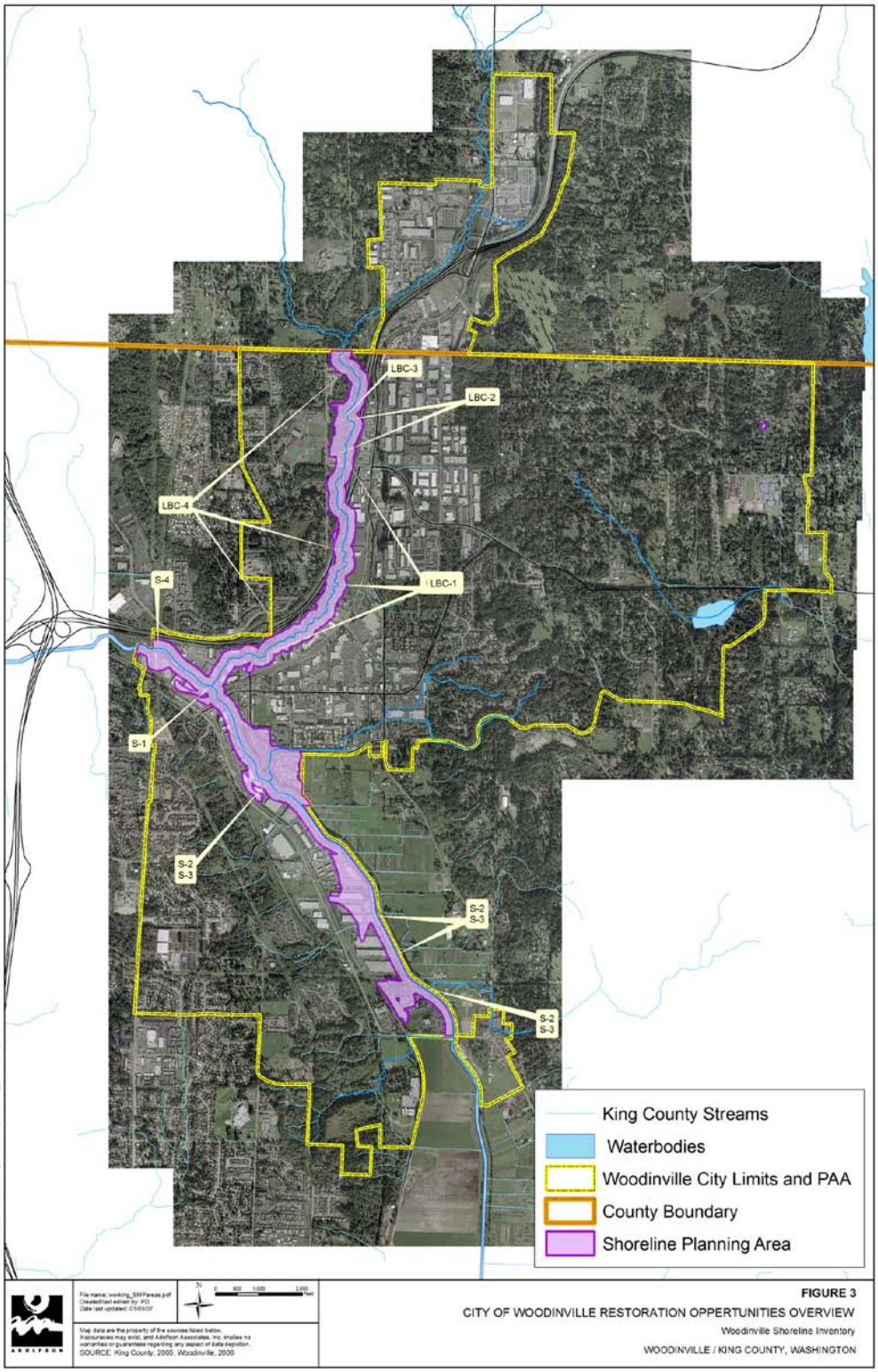
Past work within WRIA 8 has resulted in the collection of a useful set of data that establishes baseline conditions, and identifies potential restoration opportunities (WRIA 8 Steering Committee, 2002 and 2005). The WRIA 8 planning process also identified several site-specific opportunities along Little Bear Creek, which are primarily opportunities to remove fish passage barriers. The opportunity areas are described below in Tables 7 and 8 and shown in Figure 3. Note that the tables do not include the preservation of existing functioning areas.

Table 7. Site-Specific Opportunities for the Sammamish River in the City of Woodinville

IDENTIFIER (FIG. 4)	ACTION	SOURCE
S-1	Restore the riparian area adjacent to and downstream of the Little Bear Creek confluence.	Sammamish River Action Plan
S-2	Create and enhance pools in the Sammamish River to provide cool water refuges for migrating adult salmon in the entire Sammamish River system. In the Woodinville area, the mouths of the tributary streams, and Woodin and Derby Creeks, provide opportunities for pool creation.	WRIA 8 Near Term Action Agenda and Salmon Conservation Plan
S-3	Enhance tributary confluences of Woodin and Derby Creeks. Enhancements could include correction of fish passage barriers, riparian restoration and placement of large woody debris.	WRIA 8 Near Term Action Agenda and Salmon Conservation Plan
S-4	Restore riparian areas along the full length of the river corridor in Woodinville. The City has been actively involved in the Sammamish River ReLeaf Program, an annual planting event along the river. Continuation of the ReLeaf Program will increase riparian vegetation and provide shaded refuge areas for migrating salmon.	WRIA 8 Near Term Action Agenda and Salmon Conservation Plan

Table 8. Opportunities For Little Bear Creek in the City of Woodinville

IDENTIFIER	ACTION	SOURCE
LBC-1	Fish passage barrier removal at 132nd Avenue NE, 134th Avenue NE, and NE 195th Street.	WRIA 8 Near Term Action Agenda and Salmon Conservation Plan
LBC-2	City plans to develop a linear park along the west bank of Little Bear Creek. This will provide opportunities for riparian restoration and providing public access to the Creek.	City of Woodinville
LBC-3	The City plans to restore the banks of Little Bear Creek and the associated wetland system at Rotary Park (17 acres).	City of Woodinville
LBC-4	The City proposes to prepare a plan for habitat restoration of all of Little Bear Creek.	City of Woodinville


LBC-3
LBC-2
LBC-4
LBC-1
S-4
S-1
S-2
S-3
S-2
S-3
S-2
S-3
King County Streams
Waterbodies
Woodinville City Limits and PAA
County Boundary
Shoreline Planning Area
FIGURE 3
CITY OF WOODINVILLE RESTORATION OPPERTUNITIES OVERVIEW
Woodinville Shoreline Inventory
WOODINVILLE / KING COUNTY, WASHINGTON

Restoration Priorities

To aid the City in developing an internal ranking system, a preliminary qualitative (high, medium, low) project ranking system is employed.

High priority projects will typically;

a) Address both hydrologic and habitat ecosystem functions,

b) Be eligible for additional funding sources, and

c) Be included in the WRIA 8 Conservation Plan.

Medium priority projects will typically;

a) Address only hydrologic or habitat ecosystem functions, and

b) Be eligible for additional funding sources.

Low priority projects will typically;

a) Address only hydrologic or habitat enhancement, or

b) Not be eligible for additional funding sources.

This ranking system has been applied to the projects from Tables 7 and 8 (shown on Figure 3) that the City will undertake in the near future. The City will prioritize the other proposed projects in the future.

Table 9. Initial Project Ranking

PROJECT	RANKING	NOTES
Restore Sammamish River riparian area adjacent to and downstream of Little Bear Creek confluence. Map ID = S-1	3	
Restore riparian areas along the length of the Sammamish River corridor. Map ID = S-4	1	Planting has been completed along most of the river. City is currently maintaining and monitoring.
Fish passage barrier removal on Little Bear Creek. Map ID = LBC 1	4	
Develop a linear park along the west bank of Little Bear Creek. Map ID = LBC 2	2	

5. Implementation

The following section is intended to provide information about a general implementation approach that is consistent with guidance offered for SMP development (WAC 173-26-201(2)(f)(vi)). The City can use this framework to develop a more detailed implementation plan in the future.

Funding and Partnership Opportunities

There are a variety of funding sources available for restoration projects, including federal and state grants and legislative funds administered by state agencies. For the City of Woodinville, the greatest likelihood to obtain funding would be through continued participation in implementation of the WRIA 8 Conservation Plan. Local and regional funding options for the implementation stage of restoration planning are described in Appendix B.

Timelines and Benchmarks

Restoration planning is a long-term effort. As stated earlier, the SMP guidelines for restoration include the general goal that local master programs "include planning elements that, when implemented, serve to improve the overall condition of habitat and resources within the shoreline area" (WAC 173-26-201(c)). Because the SMP restoration plan is a long-range policy plan, it is difficult to establish meaningful

timelines and measurable benchmarks in the SMP by which to evaluate the effectiveness of restoration planning or actions. Nonetheless, the legislature has provided an overall timeframe for future amendments to the SMP. In 2003, Substitute Senate Bill 6012 amended the Shoreline Management Act (RCW 90.58.080) to establish an amendment schedule for all jurisdictions in the state. Once the City of Woodinville amends its SMP (on or before August 30, 2007), the City is required to review, and amend if necessary, the SMP once every seven years (RCW 90.58.080(4)). During this review period, the City should provide documentation of the progress achieved toward meeting shoreline restoration goals. The review should include:

a) Re-evaluating adopted restoration goals, objectives, and policies,

b) Summarizing both planning efforts (including application for and securing grant funds) and on-the-ground actions undertaken in the interim to meet those goals, and

c) Revising the SMP restoration planning element to reflect changes in priorities or objectives.

Another mechanism that may serve to establish timelines and benchmarks would be establishment of a shoreline restoration program organized like or integrated with the City's capital improvement program (CIP). Similar to an infrastructure CIP, a shoreline restoration CIP would be evaluated and updated regularly. The shoreline restoration CIP would be focused on site-specific projects that could largely be funded through grants. In addition, other CIP projects, such as stormwater facility improvements, could be evaluated to determine if their design could advance shoreline restoration goals.

Mechanisms and Strategies for Effectiveness

The SMP guidelines for restoration planning state that local programs should "…appropriately review the effectiveness of the projects and programs in meeting the overall restoration goals" (WAC 173-26-201(2)(f)). Phase 3 of the restoration framework described previously (based on Palmer et al., 2005) provides a general roadmap for assessing restoration actions and revising the approach to meeting restoration goals. It includes the following core objectives:

a) Monitor post-restoration conditions,

b) Adaptively manage restoration projects, and

c) Use monitoring and maintenance results to inform future restoration activities.

These core objectives have been expanded upon by regional entities focused on restoration such as the WRIA 8 Salmon Recovery Council. Strategic principles and concepts intended to guide ecosystem recovery are expressed in the WRIA 8 Salmon Conservation Plan (WRIA 8, 2005).

While the WRIA 8 Salmon Recovery Council has not yet finished the monitoring and adaptive management work plan, the Salmon Conservation Plan identifies monitoring

principles that will likely form the basis of the work plan (Shared Strategy, 2005). Three types of monitoring are defined: 1) implementation monitoring to track which potential programs and projects are carried out, 2) direct effectiveness monitoring to determine the degree of effectiveness achieved and for improving the design and execution of action where needed, and 3) cumulative effectiveness monitoring to evaluate how multiple actions are affecting habitat condition and fish populations, and what kinds of overall adjustments in conservation priorities may be needed. In addition, the WRIA 8 Salmon Conservation Plan identifies monitoring protocols specific to achieving Chinook recovery goals (WRIA 8, 2005).

6. Conclusions

State guidelines require all jurisdictions to address shoreline restoration planning as part of the Shoreline Master Program update process (WAC 173-26-201(2)(f)). This restoration plan presents an overall framework to allow the City of Woodinville to pursue the restoration of ecosystem functioning of the Sammamish River and Little Bear Creek ecosystems. Key alterations to ecosystem functioning were identified in previous inventory and characterization work:

1. The Sammamish River has been greatly altered from historical conditions. The Sammamish River Flood Control Project limits shoreline restoration potential along the river.
2. Aquatic and wetland habitats on the Sammamish River are largely homogeneous in terms of both hydrology and vegetative structure, and these habitats are typically restricted to the area between the berms within the City of Woodinville.
3. The transitional riparian zones between terrestrial and aquatic habitats have been highly simplified reducing the quality and quantity of habitat for fish and wildlife within the City of Woodinville.
4. Degradation of water quality, especially water temperature in the watersheds above Woodinville, has effects that cannot be fully mitigated within the City.
5. Development along Little Bear Creek has resulted in bank armoring and channelization, which restricts channel functions.

Based on these alterations, we identified two key restoration actions for the aquatic ecosystems within Woodinville:

1. Enhance existing habitats. This action will improve the functioning of the existing aquatic, riverine wetland, and riparian habitats that currently exist along the Sammamish River and Little Bear Creek.

2. Coordinate with on-going watershed planning for the Sammamish River watershed. This action will allow the City to participate in watershed scale projects that will benefit ecosystem functions of the Sammamish River including reducing water temperature. Future watershed actions may include coordination with the Corps of Engineers to set back the berms and improve floodplain connections.

Based on our review of existing projects, it appears that these goals are at the core of most of the projects being implemented via regional restoration efforts. The City of Woodinville is the lead on at least one of these projects, and is pursuing additional projects. The City will maintain its active role in regional restoration efforts, and continue to focus on improvement of functions in the Sammamish River and Little Bear Creek ecosystems.

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APPENDIX B-1

PUGET SOUND RESTORATION PLANS AND PROGRAMS

Puget Sound Restoration Plans and Programs

A number of plans and programs have been developed in the Puget Sound region to improve water management and water quality and to benefit salmon recovery. These efforts are summarized below. Woodinville has been actively involved in many of these efforts and will coordinate restoration efforts in the City with these plans and programs.

Regional

Water Resource Inventory Area (WRIA) 8 Steering Committee: Chinook Salmon Conservation Plan

Woodinville's shoreline includes the Sammamish River within WRIA 8. The City is a participating local agency in WRIA 8 watershed planning. After several years of planning and scientific study, WRIA 8 recently completed the Chinook Salmon Conservation Plan (WRIA 8, 2005). The plan is both broad in scope and specific in recommendations for protection, enhancement, and restoration of habitat in the North Lake Washington tributaries, including along the Sammamish River and Little Bear Creek. The plan identifies the following general land use, planning and infrastructure actions for the Sammamish River:

1 Protect and restore cool clean water sources and inflows to the Sammamish River by protecting and restoring large and small tributaries to the Sammamish River, and protecting sources of groundwater. Impact of surface and groundwater withdrawals on flow conditions should be investigated and addressed. Protect and restore water quality.

2 Protect and restore riparian vegetation along the mainstem and tributaries to the Sammamish River to provide shade and reduce water temperatures as well as provide future sources of large woody debris. In reaches 3 through 6, restore floodplain connections and increase meandering of river by regarding river banks, creating flood benches at or below ordinary high water mark.

The plan identifies the following general land use, planning and infrastructure actions for Little Bear Creek:

1 Protect forest cover, soil infiltrative capacity, and wetland areas, and minimize impervious areas, in order to maintain watershed function and hydrologic

integrity (especially maintenance of sufficient base flows) and protect water quality.

2 Protect and restore riparian function such as revegetation, which provides sources of large woody debris to improve channel stability, contributes to pool creation, and reduces peak water temperatures.

3 Protect and improve water quality to prevent adverse impacts from fine sediments, metals (both is sediments and in water), and high temperatures to key Chinook life stages. Adverse impacts from road runoff should be prevented through stormwater BMPs and the minimization of the number and width of roads in the basin.

4 Maintain and restore floodplain connectivity and channel complexity. Road crossings should be minimized to maintain floodplain connectivity.

5 Provide adequate stream flow to allow upstream migration and spawning, by establishing in-stream flow levels, enforcing water rights compliance, and providing for hydrologic continuity.

Shared Strategy for Puget Sound: Draft Puget Sound Salmon Recovery Plan

Shared Strategy for Puget Sound (Shared Strategy) is a collaborative effort to protect and restore salmon runs across Puget Sound that was initiated as a result of Endangered Species Act (ESA) listings of salmonid species in the Puget Sound region. Shared Strategy engages local citizens, tribes, technical experts and policy makers to build a practical, cost-effective recovery plan endorsed by the people living and working in the watersheds of Puget Sound.

Shared Strategy has developed a draft salmon recovery plan (Shared Strategy, 2005) that provides a blueprint for salmon recovery strategies throughout Puget Sound and incorporates, by reference, local watershed plans for salmon recovery. Amongst other strategies described in the draft plan, Shared Strategy describes their 'Top 10 Actions Needed for Salmon Recovery', many of which have additional beneficial impacts for humans. The specific actions that are relevant to the City of Woodinville are:

a) Restoring riparian areas to stabilize river banks and create complex side channel and pool habitats,

b) Setting instream flow requirements, successfully achieving flow requirements, and forming a 'toolbox' of strategies needed to maintain flow requirements for individual systems,

c) Improving water quality by reducing or eliminating sources of point and non-point pollution and by cleaning up contaminated sediments, and

d) Implementing 'H-Integration' strategies, which encourage restoration efforts to examine habitat, hatcheries, and harvest (the major factors influencing salmon population dynamics).

Cascade Land Conservancy

The Cascade Land Conservancy (CLC) seeks to conserve urban and rural natural spaces within the Central Puget Sound region, including areas throughout King County. Priority natural areas include lands along streams, rivers, other areas in the cascade foothills, and estuary areas. Additionally, the CLC also works to preserve working farms and forests. The CLC conservation strategies have included securing lands through purchase and donation, conservation easements, and ownership agreements. Since 1989, the CLC has completed 139 projects that have conserved a total 117,783 acres (85% in King County). Although no CLC protected lands currently exist within the City of Woodinville, the shoreline landscapes of both the Sammamish River and Little Bear Creek basins could provide conservation opportunities for the CLC.

County and City

King County's Water and Land Resources Division

Working with the Water and Land Resources Division, the King County Executive recently released the Proposed 2006 King County Flood Hazard Management Plan (KCFHMP). The KCFHMP identifies a series of countywide priority repairs and improvements that are needed within the coming decade. No projects specific to the Sammamish River at or above the City of Woodinville are included in the plan.

The Sammamish River is unique among King County's rivers in that the entire river is considered a flood protection facility. Under a maintenance agreement developed 40 years ago, management objectives and even specific practices are dictated. Any modification, natural or constructed, to the river or its banks must therefore be consistent with the flood control objective for the design flood. Specifically, the channel and its banks are expected to be kept sufficiently free from obstructions that could impede the conveyance of flood flows.

City of Woodinville Surface Water Management Program

The City of Woodinville adopted by reference King County's Surface Water Management Plan (WMC 13.03.010). King County Code (KCC) Chapter 9.08 identifies as its priority methods of surface water management the protection or enhancement of natural surface water drainage systems.

The City is currently in the design phase for a sedimentation facility on Woodin Creek.

On-going Restoration Projects

Specific restoration projects that the City has completed or is currently involved with are described in Section 3 and Table 4. This section describes on-going restoration programs in the City of Woodinville.

Sammamish ReLeaf

The Sammamish ReLeaf program is a City of Woodinville sponsored annual planting event to restore native habitat along the Sammamish River. Sammamish ReLeaf is focused on, 1) removing non-native vegetation (primarily blackberry, thistles and Scot's broom), thereby improving the growing conditions for native species, 2) mulching cleared areas, and 3) planting native vegetation to achieve greater plant diversity. Specific projects undertaken as part of the ReLeaf program are described in Section 3.

Sammamish River Stewards

City has established a volunteer base called the Sammamish River Stewards. This group of about 8 people conduct maintenance and monitoring work at the Sammamish River restoration sites once or twice a month.

Maintenance and Monitoring Projects

All of the completed Sammamish ReLeaf sites have been mapped into the City's GIS system and are being monitored for success rates.

The City has two other events (spring and fall) that volunteers attend to maintain restoration areas. Typically at least 100 people attend to plant, pull weeds, water, etc.

The City has received grants to hire Earth Corp to do some of the maintenance at restoration sites.

Additional and/or Needed Programs

The significant focus on natural resources within the City of Woodinville, and more broadly within WRIA 8, appears to cover the primary areas necessary to track existing conditions and propose restoration activities. The existing programs appear to be well suited to apply a watershed-based approach consistent with the national framework discussed above, and have the ability to identify impaired ecosystem functions and propose restoration actions that have a good chance of resulting in long-term improvement in ecosystem function.

APPENDIX B-2 – FUNDING OPPORTUNITIES

Funding and Partnership Opportunities

Funding opportunities for restoration projects include both federal and state grants and legislative funds administered by state agencies. For potential projects in Woodinville, the greatest likelihood to obtain funding would result from continued participation in the WRIA 8 Steering Committee and/or strategic partnering with King County and state and federal agencies. Targeting funding requests to address levee setback projects would fit well into the scientific and restoration plans/goals of the organizations listed below. A few of these programs and organizations most relevant to Woodinville are described below.

Salmon Recovery Funding Board (SRFB)

With the listing of salmonid species under the Endangered Species Act in 1999, the Legislature created the Salmon Recovery Funding Board. Composed of citizens appointed by the Governor and five state agency directors, the Board provides grant funds to protect or restore salmon habitat and assist related activities. It works closely with local watershed groups and has helped finance over 500 projects. The Salmon Recovery Funding Board awarded over $5 million during the first five funding cycles for salmon habitat protection, restoration, and assessment projects in the Lake Washington/Cedar River watershed (WRIA 8). These grants build on other funding sources such as the King County Conservation District and Waterways 2000. Salmon Recovery Funding Board funding requires lead entity approval and is coordinated through WRIA 8. Typically, the projects put forward by WRIA 8 for Salmon Recovery Board funding have been for projects in the "Tier 1" areas—Cedar River, Bear Creek, etc. None of the WRIA 8 restoration projects currently identified in Woodinville appear to meet the criteria for Salmon Recovery Board funding. However, the City should continue to coordinate with WRIA 8 to identify projects that might meet Salmon Recovery Board criteria in the future.

King County Conservation District

The King Conservation District (KCD) is a non-regulatory natural resources assistance agency founded in 1949. The District promotes conservation through demonstration projects, educational events, and technical assistance. Through a special assessment, KCD funds natural resource conservation work. A portion of the assessment is allocated

to the WRIAs in King County for salmon restoration. The WRIA 8 lead entity prioritizes projects in the WRIA that meet the criteria for KCD funding. KCD also allocates a portion of the assessment to local jurisdictions. These funds are available non-competitively. The City has used the non-competitive grants to fund the Sammamish ReLeaf projects. The funding has ranged from $15,000 to $20,000 per year from 1998 to 2005.

Community Salmon Fund

The Community Salmon Fund is established by the National Fish and Wildlife Foundation (NFWF) and Salmon Recovery Funding Board (SRFB) to stimulate small-scale, voluntary action by community groups, in cooperation with landowners and businesses, to support salmon recovery on private property in the Cedar River, Lake Washington, and Sammamish Watershed (WRIA 8). Grants are jointly selected by NFWF and King County and administered by the foundation to fund habitat protection and restoration projects that have a substantial benefit to watershed health and are consistent with local salmon habitat plans.

The Fund awards grants of up to $75,000. Grant requests in the $10,000-$20,000 range are strongly encouraged. The program's primary focus is smaller, community-based restoration projects, so requests for funds for large-scale restoration projects (such as SRFB proposals) will not be considered. The following costs are eligible:

a) Restoration of habitat within and along salmon-bearing rivers and streams.

b) Project design and development that is anticipated to lead to an on-the-ground restoration project within 18 months.

c) Some funds are also available for less than fee acquisition.

APPENDIX C – LID TECHNIQUES

List of LID Techniques:

Stormwater and surface water management:

- Manage stormwater through a land development strategy that emphasizes conservation and use of on-site natural features integrated with engineered, small-scale hydrologic controls to more closely mimic predevelopment hydrologic conditions.
- Utilization of several drainage facilities such as bio-swales, grassed filter strips and rain gardens, that are integrated into the landscape features and which are distributed throughout a project site. These provide treatment of stormwater near the source where pollutants are generated.
- Use of pervious surfaces such as porous materials, open drainage swales with amended soils and rain barrels.
- Limiting the amount of impervious surfaces when development occurs.
- Limiting the amount of clearing and grading.
- Use of Green Building materials, green roofs, recyclable materials.

Residential Density Incentives

- Provide density incentives to developers of residential lands in exchange for public benefits to help achieve Comprehensive Plan goals of affordable housing, open space protection, low impact development, historic preservation and energy conservation.
- Transfer of Residential Density Credits (TDOs) – Where sending sites must contain low impact development as defined in WMC 21.37.
- To achieve the goals of low impact development, residential lots shall be clustered within the designated development area of the site. Clustering is intended to preserve open space, reduce total impervious surface area, and minimize development impacts on critical areas and associated buffers, as defined in Chapter 14.04 WMC. Preservation of open space reduces potential stormwater runoff and associated impacts and provides area for dispersion, filtration and infiltration of stormwater.

Tree Canopy Cover

- Increase of tree canopy coverage (60 %).
- Encourage the creation or preservation of permanent forested open space.

Street Standards

- Decrease in street width.
- A bio-retention swale with compost amended soils shall be provided within the right-of-way or in islands created by loop roadways.
- Loop roadways are encouraged to minimize impervious surfaces, facilitate emergency vehicle access, and provide vegetated areas to help manage stormwater.

Appendix D – City of Woodinville Shoreline Master Program

City of Woodinville Parks, Recreation and Open Space Plan (PRO)[1]:

[1] Woodinville Parks, Recreation and Open Space Plan (PRO) adopted under Ordinance #396, July 11 2005

The vision for the future of parks and recreation in Woodinville is encompassed in this chapter, the Development Plan, and is conceptualized on the Future Park Resources Plan and Facilities Map (Figure 27) and the Trail Resources Plan Map (Figure 28) both located at the end of this chapter. The Development Plan is based on desires derived from public involvement as goals and objectives, and as needs and demand analysis. Field analysis and environmental inventories are also factors that played a part in planning for future parks and recreation system improvement projects. This chapter of the Plan is organized into proposals by park categories defined in Chapter 2 and by activity demand as outlined in Chapter 4. The development proposals in this chapter supplement the existing park resources identified in Chapter 2.

Application of the Woodinville PRO-Plan to the Shoreline Master Program:

1. Future proposed trail dedication easements to the City (both public and private) on the west side of Little Bear Creek will connect the City's Linear and Rotary Parks as a component of the City's non motorized trail plan.

Future dedication easements shall be incorporated consistent with the following section of the Woodinville PRO-Plan (2005) including "Trail Standards", listed below:

Walking and Hiking Trails

Walking and hiking trails should be developed to link major environmental assets, park and recreational facilities, community centers, and historical features throughout the city. Generally, walking and hiking trails will be developed as dirt, gravel, or bark surfaced routes on interior alignments through environmental features. Portions of the system within the more densely developed areas, however, may be developed as sidewalks or boardwalks with urban streetscape furnishings and amenities.

Walking and hiking trails should be developed in alignments that are separate from vehicular or other motorized forms of transportation, when possible. For example, walking and hiking trails may be located within natural drainage corridors, wooded ravines, and utility easements. In some instances and for short durations, walking and hiking trail systems may be developed as improvements within the right-of-way of established vehicular or other transportation corridors.
Generally, walking and hiking trails may be developed to class 2-5 walking trail standards providing 2-way travel on a crushed rock, bark or compacted dirt base varying between 2 and 5 feet in width. The trails will be of a slope not more than 1:12 unless provided with stairs or other erosion controls. Class 2-3 trail segments will be handicap accessible and usable by all age and skill groups.

Within the most urban alignments, walking and hiking trails may be developed to class 1 walking trail standards providing 2-way travel on an asphalt or concrete surface between 4

and 6 feet in width. Such sidewalk or boardwalk trails will be of a slope not more than 1:50. Class 1 trail segments will be handicap accessible and usable by all age and skill groups. Walking and hiking trail corridors should be located to coincide with other park and recreational improvements or public facilities to access rest stops, parking lots, restrooms, and other services.

Walking and hiking trail corridors may be independent properties or include portions of other sites provided for Community Parks and Neighborhood Parks, and other park and recreational or public facility properties. Linked with conservation areas and parks, the walking and hiking trails will create a system of interconnected greenways to integrate and define the urban and natural portions of the city in accordance with the Growth Management Act's (GMA) provisions for urban separators.

> *Vision: As described, the walking and hiking trails vision will be realized by providing recreational trail opportunities within the city that: a) access natural features that may not be available otherwise, b) link open spaces, downtown, Little Bear Creek, King County's Sammamish River Trail and conservation areas into a greenway system, c) serve persons with varied physical abilities and skills, d) establish high visibility and volume pedestrian routes through the most developed urban areas, including the Downtown central business district (CBD), e) expand the park system to connect with public properties, and f) expand roadway corridors to provide recreational and commuter trail opportunities in concert with the City's Non-Motorized Transportation Plan (2005).*

Proposed Walking and Hiking Trails

The trail will begin at the Sammamish River Park frontage overlooking Little Bear Creek's outfall into the Sammamish River, and then continue northeast along the west bank of the creek to SR202. A direct connection is needed at SR202/131st Avenue NE to provide uninterrupted creek- side trail passage along Little Bear Creek between reaches one and two. This could be accomplished via an underpass or constructed at-grade as part of proposed roadway improvements to the intersection of SR202 and SR522.

From 131st Avenue NE, the trail will continue northeast along the west bank of the creek across 134th Avenue NE where at 134th the trail becomes split. The trail will continue north on the west bank where it connects with the SR 522 pedestrian bridge, then crosses the creek to the east bank where it connects with the Woodinville Snohomish Road trail and/or north to NE 190th Street crossing. The western segment will cross SR522 via a pedestrian bridge over the freeway. Both trails join the street system at NE 195th Street and passes under SR522.

From NE 195th Street, the trail will continue west under SR522 to the west side of Little Bear Creek, then north along the creek, connecting with the existing trail segment in Rotary Community Park and through the Georgian Heights wetland buffer to NE 205th Street.

From NE 205th Street, the trail will extend north into Snohomish County and integrate with the proposed Brightwater Treatment Facility landscape areas.

Trailheads with signage, parking, and restroom services will be designated at Little Bear Creek Park, Rotary Community Park, and the Brightwater plant.

North Creek/Woodway Trail – Wedge and Valley Industrial neighborhoods. This class 1-3 trail will create a walking and hiking route around the scenic bluff overlooks of the North and Little Bear creeks in the northwest portion of the city. The trail will link wetlands, woodlands, schools, parks, employment centers, and the downtown with local neighborhood areas.

From 132nd Avenue NE, the trail will continue east on NE 195th Street past Woodinville High School to 136th Avenue NE and an intersection of the Little Bear Creek Linear Trail.

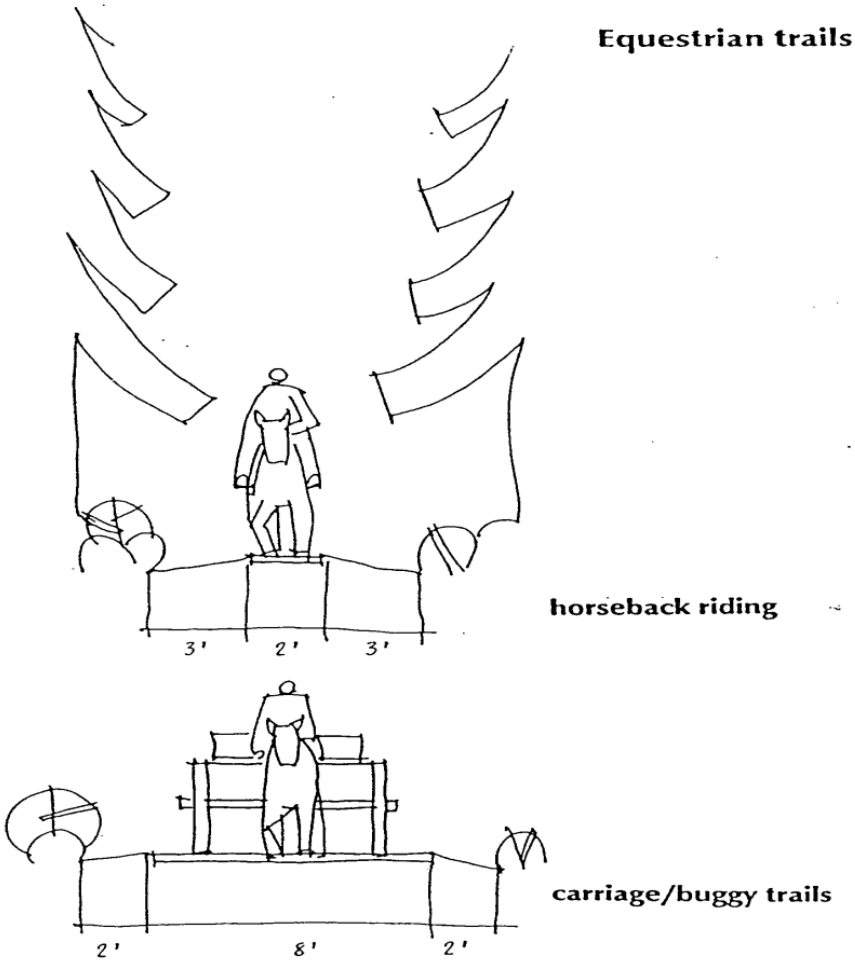
From Woodinville High School, the trail will continue south along Little Bear Creek and/or 136th Avenue NE to NE 186th Street and an overlook of the downtown and Sammamish River Valley.

From the overlook, the trail may cross SR522 to downtown Woodinville on a proposed future overpass (see the Little Bear Creek Linear Park Master Plan). It also will continue south along the edge of SR522 right of way if possible, or on NE 186th Street to 132nd Avenue NE and then south to the point of beginning at the intersection with SR522.

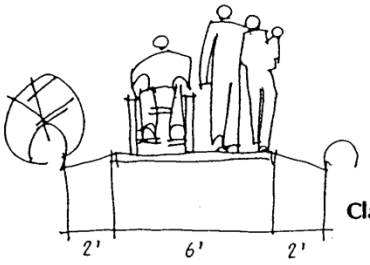
Trail spurs may extend north under powerline right of way from NE 180th Street to Hollyhills Drive, and west from 136th Avenue NE to Woodin Glen Pond.

Trailheads with signage, parking, and restroom services may be designated at Woodinville High School, and Woodin Glen Pond among other places.

Trail Standards (City of Woodinville PRO-Plan, 2005)



Walking and hiking trails



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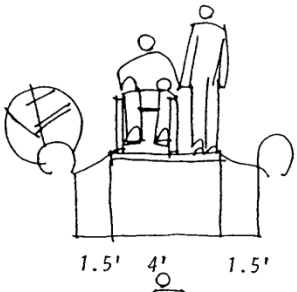

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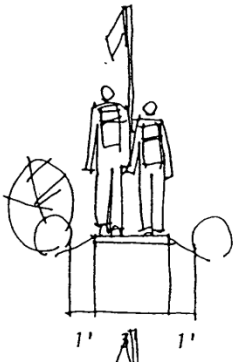

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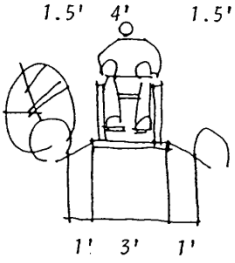

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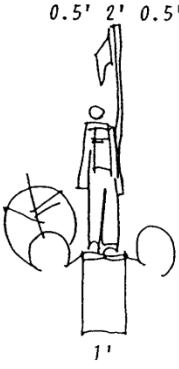

Class 5