

City of Snoqualmie
Grant No. G0800107

Shoreline Restoration Plan
for
City of Snoqualmie

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1.0 - Introduction

The City of Snoqualmie is strongly influenced by the presence of the Snoqualmie River and its floodplain which encompasses the majority of the historic downtown and surrounding residential neighborhoods. The most notable shoreline feature in the City is Snoqualmie Falls, attracting thousands of visitors each year. In addition to the Snoqualmie Falls, the Snoqualmie River, Kimball Creek, and adjacent wetlands and floodplains that are within the jurisdictional shorelines in the City of Snoqualmie provide flood storage, water quality improvement, recreation opportunities, wildlife habitat, and strong cultural values within the older part of the City.

The Shoreline Management Act (SMA) regulates use and development along the City's jurisdictional shorelines (RCW 90.58). The State has mandated that jurisdictions update their Shoreline Master Programs to be consistent with the new Shoreline Master Program (SMP) Guidelines (WAC 173-26). This Shoreline Restoration Plan incorporates information from the City's Shoreline Inventory and Characterization Report.

Per the SMP Guidelines, when updating the shoreline master program, the City must include a strategy to address restoration of shorelines. Per the SMP Guidelines (WAC 173-26-201(2)(f)), the restoration plan must address the following subjects :

1. Identify degraded areas, impaired ecological functions, and sites with potential for ecological restoration;
2. Establish overall goals and priorities for restoration of degraded areas and impaired ecological functions;
3. Identify existing and ongoing projects and programs that are currently being implemented, or are reasonably assured of being implemented (based on an evaluation of funding likely in the foreseeable future), which are designed to contribute to local restoration goals;
4. Identify additional projects and programs needed to achieve local restoration goals, along with implementation strategies, including identifying prospective funding sources for those projects and programs;
5. Identify timelines and benchmarks for implementing restoration projects and programs and achieving local restoration goals;
6. 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.

This Shoreline Restoration Plan addresses each of the required subjects mentioned above.

1.1 Study Area

The City of Snoqualmie is located in eastern King County in the southern portion of the Snoqualmie river valley and up the hills to the south/south-west in the newer incorporated areas of the City. The City encompasses approximately 7.43 square miles. Most of the historic city lies within the floodplain or floodway of the Snoqualmie River. A section of the Snoqualmie River main stem, approximately 3 miles, runs through the city limits. The most notable natural feature of the Snoqualmie River within the City is the Snoqualmie Falls, where the river drops 268 feet at the northwestern corner of the city limits. Immediately to the east, Snoqualmie is bordered by the City of North Bend. Also within the City, slightly upstream of the Snoqualmie Falls and north of the Snoqualmie River is Borst Lake. The City's urban growth area (UGA) includes additional floodplain and upland areas to the south and northwest of the existing city limits. Unincorporated areas of King County surround the remaining boundaries of the City with approximately 1.16 square miles of the County within the City's UGA.

The study area for the City of Snoqualmie Shoreline Characterization Report is comprised of all land currently within the City's shoreline jurisdiction including the recently annexed former mill site area. These areas include lands adjacent to the main stem Snoqualmie River, the south fork Snoqualmie River, Kimball Creek, as well as extensive associated floodplains and wetlands. See Figure 1 for a map of the Snoqualmie River watershed.

1.2 Historic Land Use

The City of Snoqualmie's historic land use patterns developed in response to the natural features of the valley, the presence of the river, topography, and soils. The Snoqualmie River created a broad flat plain that is filled with alluvium and fines eroded over the millennia from the hills and mountains to the east. The condition of the soils and the flatness of the valley, the presence of the floodplain forests in near proximity to the river, and the plentiful water, all influenced the Euro-Asian settlement patterns of the Valley. Geologic history, changes in land-uses, the extent of forests in the upper watershed, and human actions (e.g., levees and diking) have strongly influenced the current conditions in the valley and the shorelines of the rivers and streams. Geologic processes over hundreds of years have formed oxbow sloughs, bogs and other types of wetlands throughout the City in the valley bottom. The topography is generally flat, and the overall drainage patterns typically flow north/northwest towards the River, eventually heading west/northwest over Snoqualmie Falls.

Nearly all facets of the old-town portion of the City of Snoqualmie have been shaped or influenced by the Snoqualmie River. The Snoqualmie Valley has experienced a wide variety of human activity and use, including pre-European tribal settlements, mining, logging, farming, tourism, railway and vehicle transportation corridors and electrical power

Section I— Introduction

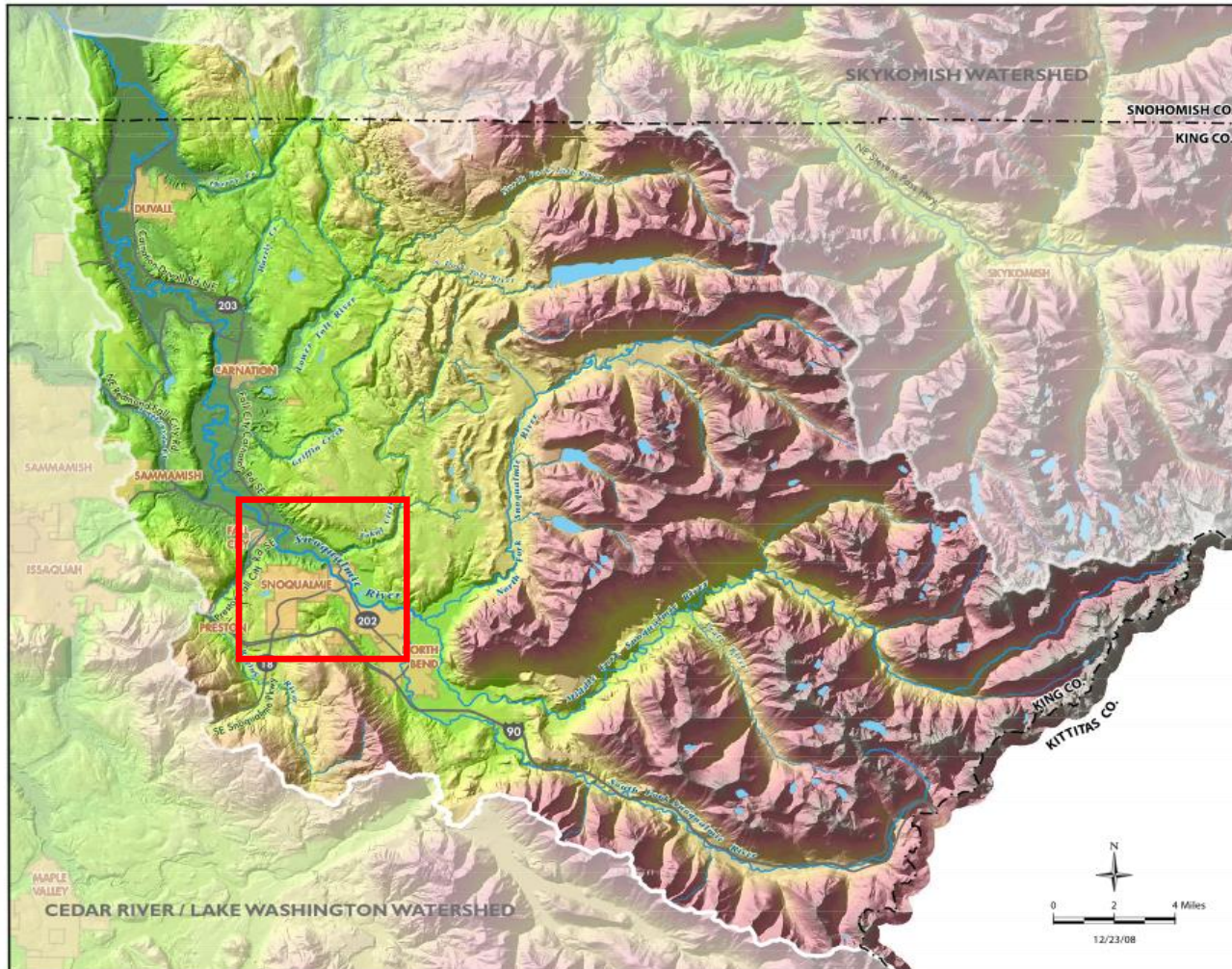
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generation (at the Falls). Large stands of timber in the floodplain near the river provided opportunity for lumbering after early Euro-Asian settlement. Once cleared of forest, the rich soil of the valley bottom allowed for the establishment of farms in the upper valley during the first half of the twentieth century. Over 100 years ago, the City of Snoqualmie was platted along the banks of the Snoqualmie River. Changes in land-uses and forest clearing in the Snoqualmie River watershed resulted in changes in the extent and pattern of floods. Clear-cutting resulted in more frequent floods in the valley bottom and strongly influenced the bedload of the river which also influenced the pattern and effects of floodwaters.

The City has taken a number of steps to minimize the potential for threats to humans and property damage from flooding and conserve shoreline resources within the floodplain. The City has acquired over 570 acres of land along the Snoqualmie River shoreline or within the floodplain, and continues to pursue further public acquisitions in order to promote shoreline management goals, including flood damage reduction, public access and enjoyment, and shoreline environmental quality. Through zoning, the City has identified the majority of the undeveloped land in the floodplain as Open Space or Constrained Residential to minimize flood risk to humans and public/private property.

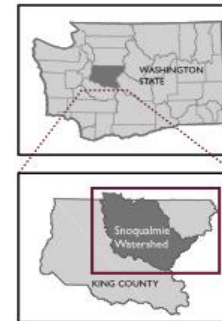
Section I — Introduction Continued

Figure I — Snoqualmie Watershed Map



Map I
SNOQUALMIE WATERSHED
Snoqualmie Water Quality Synthesis Report

- Major Streams
- Major Road
- County Boundary
- Incorporated Areas
- Lakes and Reservoirs



Data Sources: Standard King County datasets TOPO, WATERSHED, MAJOR_ROADS, MAJ_STRM_WTRBDY, CGN, CITY, WASHCO, REG_4COCHS.

Notes: The information included on this map has been compiled by staff from a variety of sources and is subject to change without notice. This map has been developed for planning purposes only. King County makes no representations or warranties, express or implied, as to accuracy, completeness, timeliness, or rights to the use of such information. King County shall not be liable for any general, special, indirect, incidental or consequential damages including, but not limited to, lost revenues or lost profits resulting from the use or misuse of the information contained on this map. Any sale of this map or information on this map is prohibited except by written permission of King County.

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King County
Department of Natural Resources and Parks
Water and Land Resources Division

2.0 Evaluation of Existing Plans and Programs

There are numerous plans and programs in place at both the City and regional level that outline existing conditions and provide recommendations for improving water quality, habitat enhancement projects, reducing and managing flood flows, and enhancing public access to and enjoyment of the Snoqualmie River shoreline.

Many of the water quality and habitat studies, plans, and programs in place focus on fish, particularly anadromous fish occurring below the Falls, and are a result of regional efforts to recover salmon stocks throughout the Puget Sound region. While anadromous salmon are only present at the base of Snoqualmie Falls within the City's shoreline area, upstream there are native trout above the falls. Stream conditions can affect the health of the river and the runs located downstream. Additionally, improved water quality and habitat will also benefit the fish runs located upstream of the falls that do not out-migrate to the Puget Sound.

2.1 City Plans and Programs

Plans and programs developed by or for the City level *provide* guidance for shoreline restoration and water quality; these are outlined below. Two land management plans, the Meadowbrook Farm Master Plan and the Three Forks Natural Area Plan, address over 800 acres of preserved open space within the floodplain of the Snoqualmie River, most of which is located within the City's shoreline area. In addition, the City's Comprehensive Plan identifies significant proposed land-use changes along the river's shoreline in Segment 6. That long-term planning implication is discussed in Section 2.1.7.

2.1.1 City of Snoqualmie Storm Water Management Comprehensive Plan

In 2003 the City's stormwater utility was expanded to include the older downtown area that is within the City's shoreline area. There is a current (TetraTech 2010) draft of a new Stormwater Management Comprehensive Plan (SWMP); with the adoption of the SWMP the City will address drainage problems, reduce flood insurance rates, and manage growth within the City limits. Per the stormwater plan, the primary focus for improvements is the City's historic core (all of which is located in the shoreline jurisdiction), where there is minimal stormwater conveyance infrastructure and the dominant management issues are stormwater runoff (water quality) and overbank flooding of the Snoqualmie River. However, the plan does not directly address Snoqualmie River flooding because that is the focus of separate analyses by the Federal Emergency Management Agency (FEMA), and is addressed in both the City's Hazard Mitigation Plan and Flood Hazard Regulations (SMC 15.12). The Draft SWMP also addresses Kimball Creek flooding issues. The City is also preparing a Stormwater System Operations and Maintenance (O&M) Manual which covers all areas of the city. The Draft (SWMP) identified the need for the O&M Manual to establish, stormwater utility rates and support future compliance with NPDES.

The City's stormwater plan outlines potential solutions for stormwater problems, both structural and nonstructural that would have an impact on the shoreline environment and

Section 2— Evaluation of Existing Plans and Programs

Continued

ecosystem. Structural solutions include the installation, repair, or replacement of culverts, storm drain pipelines, pipeline outfall improvements for water quality control, and the use of Low Impact Development (LID) practices. The Plan states that nonstructural solutions are often more economical than construction of a capital facility. The most important nonstructural solution relating to the shoreline area noted in the plan is the preservation of the City's natural drainage systems which includes streams and wetlands. The main categories for nonstructural solutions covered in the Plan include: administration, finance, maintenance and operations, program monitoring, public involvement and education, regulatory/ enforcement, and waste control. The City is currently working towards Phase II NPDES permit compliance for the next permit cycle. Many of the above mentioned categories are required components of a NPDES permit.

2.1.2 City of Snoqualmie Stormwater Management Regulations

The City's stormwater regulations (SMC 15.18) adopt the 2009 King County Surface Water Design Manual (2009 KCSWDM) with certain local amendments. The 2009 KCSWDM is generally accepted to embody state of the art measures for water quality protection, and are fully compliant with the requirements of the NPDES Phase II Municipal Storm Water Permit. Drainage review is required for all development that proposes to add more than 2,000 square feet of new impervious surface, or proposes more than 2,000 square feet of new and replaced impervious surface.

2.1.3 City of Snoqualmie Sensitive Areas Regulations

The City of Snoqualmie's sensitive areas regulations, which apply outside of shoreline jurisdiction, are found in Snoqualmie Municipal Code Chapter 19.12. The regulations provide protection to sensitive areas in the City, including wetlands, streams, channel migration zones, aquifer recharge areas, fish and wildlife habitat conservation areas, and geologically hazardous areas.

The major protection afforded to streams and wetlands is the establishment of required buffers in which alterations are severely limited. The width of buffers varies by the classification of the wetland (SMC 19.12.180) or stream (SMC 19.12.170). Buffer widths may be increased according to specific criteria (SMC 19.12.080.E). Management of the City's sensitive areas using these regulations should help ensure that ecological functions and values are not degraded and impacts to sensitive areas are mitigated. These sensitive areas regulations are important tools that will help the City meet its restoration goals.

2.1.4 City of Snoqualmie Flood Hazard Regulations

In 1984, the City joined the National Flood Insurance Program (NFIP), which requires adoption and enforcement of a local floodplain management ordinance that meets minimum

Section 2— Evaluation of Existing Plans and Programs

Continued

Federal and State law regulations. Chapter 15.12 of the Snoqualmie Municipal Code contains the City’s regulations for areas of special flood hazard. The flood hazard regulations establish performance standards and specify allowed uses and activities within the special flood hazard area. The Constrained Residential zoning limits the amount of density within the floodplain. Per State law, no new residential construction is allowed in the floodway areas.

2.1.5 Community Rating System

The City participates in the NFIP’s Community Rating System (CRS) Program, which recognizes community efforts beyond the NFIP minimum standards by reducing flood insurance premiums for the community’s property owners. Those efforts include activities such as the open space preservation and acquisition of flood prone buildings. Furthermore, the 1997 Floodplain Management and Repetitive Loss plan identifies the preservation of open space within the special flood hazard area.

2.1.6 Meadowbrook Farm Master Plan

Meadowbrook Farm is a 460 acre open space property jointly owned by the Cities of Snoqualmie and North Bend. The entire property is located in the floodplain of the Snoqualmie and South Fork Snoqualmie Rivers, so the portion of Meadowbrook Farm that is within the City is entirely within shoreline jurisdiction. The site remains a mosaic of open meadow and forested wetlands with portions of the property being adjacent to the South Fork Snoqualmie River and old oxbow of the Snoqualmie River.

The Meadowbrook Farm property was purchased by the Cities in 1996 using City, King County, and State funds. Through an interlocal agreement with both cities, the non-profit Meadowbrook Farm Preservation Association was given authority for day to day operation and management of the property, subject to the approved Meadowbrook Farm Master Plan. The Master Plan was updated in 2013. The objective of the recent update was to identify how the site could be managed to optimize its environmental, cultural and recreational benefits for future generations. To encapsulate these ideas, a mission statement was adopted by the Meadowbrook Farm Preservation Association in 1997 to state “Our mission as stewards of Meadowbrook Farm is to guide the uses of these lands in a way that preserves and enhances their scenic, historic, and agricultural assets, while providing public education and recreational opportunities.” A branding statement was developed in an effort to enhance marketing to the appropriate users and provide a unified direction by the Cities and the Meadowbrook Farm Association in regard to the use of the Farm, including opportunities to enhance revenues from the Farm to cover capital improvements and operating costs. The brand statement for the Farm is “Meadowbrook Farm is the scenic and natural outdoor recreation and event venue for the Puget Sound Area”. The foregoing Mission and Brand

Section 2— Evaluation of Existing Plans and Programs

Continued

Statements are reflected in the major categories of uses programmed for the site which include:

- Trails and recreation
- Community gatherings and special events
- Education and interpretation of natural and cultural history
- Meadow/prairie maintenance (including viewshed maintenance)
- Limited agriculture
- Wildlife habitat preservation and enhancement

The Master Plan includes a landscape maintenance plan. The Plan outlines numerous actions that can be taken (including no action) for the different habitat types found at the farm. The different habitat types include meadows, scrub-shrub, woodlands, ditches, trail surfaces, wildlife and an interpretive center.

The Plan was not written with the sole intent to restore natural habitats on the site; it anticipates a multi-use open space property that incorporates appropriate agricultural activities (including existing and ongoing activities), passive recreation, habitat preservation, and improvement in habitats by removal of non-native invasive vegetation and replacing them with more appropriate native plant communities.

Restoration efforts have been implemented on the farm since the inception of the original Master Plan. The construction of a public trail and associated boardwalks through a Category II wetland on Meadowbrook Farm caused approximately 2,450 square feet of permanent impacts. There is a 5:1 mitigation ratio for restoration /rehabilitation of habitat. 12,700 square feet of restoration was implemented by planting live willow stakes in the wetland in order to restore the historic scrub/shrub habitat.

The Camas Meadow on Meadowbrook Farm has been identified as an off-site wetland mitigation site for the State Route 202/Tokul Road Improvement project. Approximately 1.204 acres of habitat is proposed to be enhanced to mitigate for the habitat function affected through filling 0.151 acres of wetland off-site. The wetland enhancement activities will increase the habitat diversity, increase species richness, and improve habitat suitability for native wildlife. Overall, the Meadowbrook Farm and the proposed mitigation site represent extraordinary opportunities for ecosystem restoration and wetland functional improvement.

2.1.7 Three Forks Natural Area Master Plan

The Three Forks Natural Area is 418 acres and includes more than 5 acres of river front. While the majority of the natural area is located in and owned by King County, 165 acres are located in and owned by the City of Snoqualmie. The property is located at the confluence

Section 2— Evaluation of Existing Plans and Programs

Continued

of three forks of the Snoqualmie River, the largest river system in King County. The majority of the natural area is located east of the City's core downtown area, within the floodway of the Snoqualmie River and within shoreline jurisdiction. Some smaller portions of the park are located adjacent to the Middle and North Forks, outside of City limits and shoreline jurisdiction.

The Three Forks Natural Area is a significant area for conservation because it is situated near or adjacent to major public and private land-holdings that represent key natural landscapes in eastern King County. As described in the King County Master Plan (King County, 1998), the Three Forks Natural Area is situated between the Mt. Si Natural Resource Conservation Area (8,000+ acres), the 180,000 acre Weyerhaeuser Tree Farm (actively managed private commercial forest lands), the Cedar River Watershed (90,000 acres of restricted access native forest managed by Seattle Public Utilities as a portion of Seattle's domestic water supply), and the federally protected and managed Mt. Baker-Snoqualmie National Forest (more than 1.7 million acres). Thus the strategic geographic location of Three Forks Natural Area is very significant to the growing population in eastern King County: it is the gateway to wilderness and the threshold between burgeoning rural/urban densities and wilderness lands to the east. This geographic location also means the Three Forks Natural Area functions as a corridor for wildlife populations moving between wilderness lands to the east and low to high density lands to the west.

The Three Forks Natural Area Master Plan separates the lands within the property into several use categories, including: natural areas; passive recreation areas; staging areas (parking); and special management areas (agricultural use and habitat preservation areas). As outlined in the Master Plan (King County, 1998), the following goals were established in order to plan for the use and management of the property:

- Conserve, protect and restore the natural systems on site for wildlife habitat;
- Preserve and highlight the natural and cultural environment for educational purposes;
- Allow for appropriate low impact recreational uses;
- Accommodate regional trails system;
- Recognize connection with surrounding public lands; and
- Preserve rural character of property to blend in with surrounding community.

The City of Snoqualmie in partnership with Mountains to Sound Greenway Trust has been restoring habitat conditions for fish and wildlife along a section of Meadowbrook Slough located within the Three Forks Natural Area. Meadowbrook slough, one of the most notable Class I wetlands in the Three Forks Natural Area, has suffered degradation through the introduction of invasive vegetation. Approximately 8 acres of habitat have been restored with 12,000 trees, shrubs and willows around Meadowbrook Slough within the Three Forks Natural Area. An additional 4.5 acres of native habitat will be restored along Meadowbrook

Section 2— Evaluation of Existing Plans and Programs

Continued

Slough, which extends adjacent to private golf course property. There is ample opportunity for other future restoration efforts within the Three Forks Natural Area.

2.1.7 Comprehensive Plan concepts for Riverfront Access and Acquisition

The current land use within Segment 6 is single family residences. The primary comprehensive land use designation adjacent to the Snoqualmie River on its east and west banks between the SR202 bridge and the Meadowbrook bridge is Parks/Open Space. Acquisition of vacant properties along the Snoqualmie River for a river walk to provide shoreline protection, open space and visual shoreline access is identified as a capital improvement project in the City of Snoqualmie's 2012 Open Space, Parks and Recreation Plan, which is adopted by reference in the City's Comprehensive Plan. There are numerous policies in the City of Snoqualmie's 2012 Open Space, Parks and Recreation Plan and Comprehensive Plan that call for riverfront property acquisition and improvements for public open space, visual access, recreation and restoration.

City of Snoqualmie's 2012 Open Space, Parks and Recreation Plan:

Policy 9.B.1.5 Develop trail systems (pedestrian, equestrian and bicycle) to connect opens spaces, parks, trails, recreation facilities, neighborhoods, employment areas, shopping areas, schools and other public spaces and facilities with specific attention to regional trail connections.

Policy 9.B.1.6 Examine all publicly owned lands for potential recreational or open space value before their disposal.

Policy 9.B.1.12 Work to acquire and preserve additional shoreline access for waterfront trails and water-related recreational activities.

Policy 9.B.2.1 Continue to prioritize the importance of open space for the preservation of natural resources, and use the full range of regulatory and land preservation tools available to create, maintain and steward the local and regional open space system.

Policy 9.B.2.3 Energize the community around stewardship by utilizing volunteers for habitat and urban forest restoration.

Policy 9.B.2.4 Identify and prioritize acquiring and protecting open space sites that provide scenic views, valuable wildlife habitat, watershed conservation, serve scientific or education purposes, and/or contain other significant natural or cultural resources; examples include threatened and urban wildlife habitat, nesting sites, foraging areas and wildlife mitigation corridors that promote habitat connectivity.

Section 2— Evaluation of Existing Plans and Programs

Continued

Policy 9.B.2.7 Work to protect visual access to water bodies and rivers

Policy 9.B.3.1 Institute a strong property acquisition program in order to obtain suitable land for the City's integrated park system.

Policy 9.B.4.7 Maintain and regularly update an ongoing list of acquisition and capital improvement projects.

City of Snoqualmie 2014 Comprehensive Plan:

Policy 3.5.2 Maximize the Snoqualmie River as a tourism asset by protecting downtown riverfront properties from erosion and opening the riverfront to visitors by developing a looped "riverwalk" trail with connections to the local Centennial Trail and the regional Snoqualmie Valley and Preston-Snoqualmie trails.

Policy 3.5.6 Promote and market Snoqualmie to outside users, prospective businesses and local residents as a place to engage in numerous outdoor recreation activities, and appreciate the City's unique scenic and natural landscape.

Policy 5.1.2 Protect roadside views of the shoreline and other natural features from unnecessary clearing, signage and other visually degrading features or practices, and allow for the maintenance of existing view corridors through vegetation management that minimizes sensitive areas impacts.

Policy 6.1.5 Locate open space areas to protect critical areas such as wetlands, landslide hazard and erosion-prone areas, and maintain such areas in their natural condition, including native vegetation preservation.

Policy 6.3.1 Coordinate the management and restoration of rivers, streams, wetlands and other water resources within the Snoqualmie watershed through participation in the Snoqualmie Watershed Forum and implement of the Puget Sound Action Plan.

Policy 7.2.7 Provide an ample supply of specialized open space in the form of squares, greens and parks whose frequent use is encourages through placement and design.

Policy 7.3.4 Work with the King County Flood Control District to target high risk, chronically affected and repetitive loss riverfront properties within the floodway for eventual acquisition.

Section 2— Evaluation of Existing Plans and Programs

Continued

Significant progress has been made towards accomplishing this goal. Thirty-one riverfront parcels totaling approximately 6,250 lineal feet and 46 acres along the left bank of the Snoqualmie River have been acquired with 20 properties yet to be purchased. The riverfront properties on the right bank of the Snoqualmie River are privately owned. The City obtained a commitment for a public right-of-way trail corridor through those parcels with the recent annexation of the mill site properties. The approximate 3-mile river walk trail is envisioned to run parallel alongside both banks of the Snoqualmie River and loop across the river at the SR202 bridge and the King County Snoqualmie Valley Regional trail bridge.

The City is currently developing a Shoreline Public Access & Restoration Master Plan (Riverwalk Plan) for the proposed riverwalk corridor. The Plan will identify priority areas for restoration and include restoration guidelines for various segments of the river shoreline as well as a conceptual plan for a trail with associated viewpoints and recreation facilities along the Snoqualmie River.

2.2 Regional Plans and Programs

The regional programs outlined below have an overarching goal of preserving and restoring Puget Sound and the native salmon runs, and in particular, the habitats used by salmon in all life stages. The plans provide action items pertaining to the goals, and how cities and counties can participate and contribute to reach these goals set on a regional level. Many documents reviewed for the City's restoration plan focus on the protection and recovery of salmon habitat. While this report is mainly focused on the functions provided in shoreline areas, there are many overlapping and integrated approaches through which shoreline programs can help salmon recovery and the protection of salmon (and other aquatic species) and their habitats can help ensure that there is no-net-loss of shoreline functions.

2.2.1 Snohomish River Basin (WRIA 7) Salmon Conservation Plan

The formation of the Snohomish Basin Salmon Recovery Forum was a result of the federal listing of Chinook salmon and bull trout under the Endangered Species Act in 1999. The Forum created a Salmon Conservation Plan to “*guide protection and restoration actions in the Snohomish River Basin*”, of which the Snoqualmie River is a tributary (Snohomish Basin Salmon Recovery Forum 2005). The near-term (first 10 years) recovery actions include improving habitat quantity and quality and minimizing habitat losses and making habitat gains through restoration. Many of these restoration recommendations and techniques go hand in hand with restoration projects associated with shoreline areas.

As a result of this Salmon Conservation Plan and funding from the King Conservation District and King County Flood District, the following projects have been implemented in the City and some of this work is ongoing:

Section 2— Evaluation of Existing Plans and Programs

Continued

- 2002 Kimball Creek Monitoring Project- Local college students monitored the water quality in Kimball Creek and developed recommendations for improving water quality.
- 2004 Snoqualmie River Bank Restoration Project- Remove invasive plants, install riparian planting and erosion control on 500 feet of stream bank.
- 2005 Kimball Creek Restoration Phase II- Restore riparian buffer along Kimball Creek by removing non-native plants, installing 2,250 native trees, shrubs and willow stakes.
- 2006 Riverfront Property Acquisition- Protect riverfront open space-zoned parcels along the Snoqualmie River in the City of Snoqualmie for open space in perpetuity.
- 2009 Kimball Creek Water Quality Improvement Snoqualmie Tribe water quality report- Perform field surveys and data collection to understand why water quality is impaired in the creek and then prioritize stream reaches for targeted restoration and water quality improvement measures.
- 2010 Kimball Creek Watershed Pollution and Habitat Restoration- Riparian restoration near the mouth of Kimball Creek to improve water quality in the Kimball Creek sub-basin.
- 2008, 2010, 2011 and 2014 Three Forks Natural Area Phase I, II, III and IV- Restore habitat conditions for fish and wildlife along a section of the Meadowbrook Slough located within the Three Forks Natural Area. Restoration efforts include the removal of non-native plants and installation of approximately 15,000 native trees and shrubs.

2.2.2 The Snoqualmie Watershed Forum

The Snoqualmie Watershed Forum is comprised of elected city and county officials, non-profits, citizens and tribal representatives from throughout the Snoqualmie Watershed who meet bi-monthly to help coordinate the actions of local governments on fish habitat, flooding, and water quality issues in the Snoqualmie Watershed. The Snoqualmie Watershed Forum also helped coordinate the local participation in the development of the salmon conservation plan for the Snohomish River Basin (King County 2010).

In 2009, the Forum and King County published the Snoqualmie Watershed Synthesis Report (Kaje, 2009) that provided a synthesis of reports and studies conducted to date on the water quality conditions within the Snoqualmie River. The report covered the entire Snoqualmie Basin. It contains recommendations for restoration and maintenance of native habitats within floodplains and riparian zones within the City. Overall, this synthesis report finds that temperatures in the river reaches within the City are high; and they conclude this is likely a result of historic and ongoing forestry practices in areas upstream and outside of the City limits. The report also notes, however, that Kimball Creek water quality standards are below acceptable State standards for all parameters, including temperature, dissolved oxygen, fecal coliform and pH: they attribute this to development within the basin contributing to the stream.

Section 2— Evaluation of Existing Plans and Programs

Continued

Several restoration projects for the Snoqualmie Watershed are outlined in *Snoqualmie 2015: Building for Salmon Recovery and Watershed Health* (King County, 2006), a 10-year visioning document for protecting and restoring natural resources for salmon habitat. The report provides descriptions, maps, status, budget and contact information for 41 restoration projects and 10 habitat projects in the Snoqualmie River Watershed. Two of the restoration projects identified in the City include the Sandy Cove Park Restoration and Riverbank Bio-Stabilization project and the Three Forks Natural Area Restoration project. The one habitat protection project noted in the document is the City of Snoqualmie Natural Area Acquisitions. Furthermore, all of the projects mentioned under Section 2.2.1 above were recommended for funding by the Forum.

2.2.3 Mountains to Sound Greenway

The mission of the Mountains to Sound Greenway Trust is to lead and inspire action to conserve and enhance the landscape along the Interstate-90 corridor from the Seattle waterfront across the Cascade Mountains to Central Washington, ensuring a long-term balance between people and nature. Some of the goals of the Trust that are pertinent to shoreline areas include: land acquisitions for wildlife and recreational access; creating a connected regional trail system; and conducting habitat restoration.

The Mountains to Sound Greenway Trust has a restoration program that brings volunteers and conservation corps crew together to remove non-native invasive species and replant with native trees and shrubs to improve wildlife and salmon habitat. Restoration projects are underway at numerous sites, including the Three Forks Natural Area and along the banks of the Snoqualmie River. Part of the Trust's restoration program includes several years of monitoring and maintenance at restoration sites (Mountains to Sound Greenway Trust 2010). The restoration projects mentioned in the section above were completed by the City in partnership with the Mountains to Sound Greenway Trust.

2.2.4 The King County Flood Control District

The King County Department of Natural Resources River and Floodplain Management section implements flood risk reduction projects and programs to protect public safety along King County's major rivers. The work of this section is funded by the King County Flood Control District (FCD), which is instrumental in acquiring repetitive loss properties and other at-risk properties. Acquiring properties not only eliminates public health and safety risk, but provide the added benefits of improved flood storage and conveyance, and the creation of permanent open space.

In 2012, the City entered into an agreement with King County where the FCD allocated up to \$150,000 per property to assist the City in acquiring 20 flood-prone properties within the

Section 2— Evaluation of Existing Plans and Programs

Continued

city limits from willing sellers. These funds are used in combination with other grant funding.

In 2011, the FCD developed the Cooperative Watershed Management grant award program for water quality and water resources and habitat restoration and management projects and activities in the Snoqualmie & South Fork Skykomish Watersheds. The City received funding through this grant source toward completion of the Riverwalk Master Plan, which, as noted above, will provide restoration guidelines for various segments of the riverbank and conceptual designs for a trail along the Snoqualmie River. Funding was also awarded for restoration of habitat conditions for fish and wildlife along a section of the Meadowbrook Slough located within the Three Forks Natural Area including a section of the slough located along private golf course property. Restoration efforts include the removal of non-native plants and installation of approximately 3,000 native trees and shrubs.

2.2.5 Federal Emergency Management Agency (FEMA)

FEMA's Hazard Mitigation Grant Program (HMGP) provides funding for acquisition of frequently-flooded and repetitive damages structures and flood-proofing of structures. The FEMA funds allowed the City to acquire 18 residential properties since the 1980's, remove the existing structures and restore the properties for flood conveyance and to improve fish and wildlife habitat. Since the 1980's, FEMA funds were used to elevate more than 100 single family residences above the 100-year floodplain elevation.

2.2.6 Puget Sound Partnership

The Puget Sound Partnership works closely with its many partners to coordinate the recovery and long-term protection of the ecosystem. The collaborative effort includes government agencies, tribes, businesses and private sector interest groups, non-governmental organizations, and citizens, who work together to plan, evaluate, and continually improve efforts to meet our collective vision of a healthy Puget Sound.

The Puget Sound Partnership released an Action Agenda in December 2008 which describes a set of actions and priorities to restore and protect Puget Sound by 2020. In 2015, the priorities in the Action Agenda include preventing pollution from urban stormwater runoff, protecting and restoring habitat and restoring and re-opening shellfish beds. Implementation of this Action Agenda has resulted in State and Federal funding of restoration and protection initiatives and projects.

2.2.7 Department of Ecology

The City of Snoqualmie continues to utilize Ecology staff as a resource for technical support and regulatory assistance when needed. Ecology's goals are to: 1) protect and restore land, air

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Continued

and water 2) prevent pollution, 3) promote healthy communities and natural resources, and 4) deliver efficient and effective services. Snoqualmie’s stormwater regulations refer to Ecology’s 2005 Stormwater Management Manual for Western Washington.

3.0 Restoration Goals and Policies

Ecology directs local jurisdictions to establish goals and policies in their SMP's that address the opportunities within their jurisdiction to re-establish the landscape-scale processes that will recreate or allow the establishment of ecological functions that are driven by those landscape-processes ([WAC 173-26-186\(8\)\(c\)](#)). Ecology expects local jurisdictions to develop SMP updates that demonstrate “no net loss” of ecosystem functions over time. This means that goals to protect existing natural habitats within shoreline jurisdiction must also be accompanied by goals to restore impacted or degraded areas.

Key functions to be addressed include flood control, water quality, and habitat restoration. Provisions of the Flood Management and Repetitive Loss Plan have been implemented through the Zoning Code and could be reflected within the SMP update.

Based on the identified issues in the City, the following are the proposed goals for restoration to be included in the updated SMP.

SU G18 Habitat and natural ecosystem restoration and enhancement projects are accomplished as appropriate and feasible within all shoreline environments.

SU P60 Allow habitat and natural ecosystem restoration and enhancement programs and projects including projects required as mitigation for other shoreline development in all shoreline environments, consistent with the following Goals and Objectives of the City's Shoreline Master Program Shoreline Restoration Plan.

Goal 1. Protect and enhance shoreline riparian areas.

Objective A. Protect shoreline processes and ecological functions through acquisition of properties or conservation easements along the Snoqualmie River.

Objective B. Stabilize banks along the Snoqualmie River adjacent to public infrastructure and park and open space areas while restoring riparian shoreline conditions.

Objective C. Remove invasive plants and install native riparian trees, shrubs, and groundcover.

Goal 2. Maintain appropriate native habitats within shoreline jurisdiction.

Objective A. Maintain native forests within the floodway to provide diversity of habitat recruitment of woody debris to the river, attenuate flood flow velocities, and reduce sedimentation and erosion to the river.

Objective B. Protect wetlands through application of appropriate SMP and critical area regulations in Chapters 19.08 and 19.12 of the Snoqualmie Municipal Code to public and private lands, with emphasis on preserving the highest rated wetlands in natural

Section 3— Restoration Goals and Policies

Continued

conditions, and restoring degraded wetlands to higher functional conditions.

Objective C. Conserve and protect critical areas within shoreline jurisdiction from loss or degradation.

Goal 3. Protect and improve water quality.

Objective A. Maintain infrastructure within shoreline areas in accordance with Best Management Practices that minimize water quality impacts, and pursue design modifications or alternative siting options for when significant alterations are taken.

Objective B. Protect and restore native plant communities within shoreline areas.

Goal 4. Restore habitat on public lands and encourage restoration on private lands.

Objective A. Encourage land use applicants in need of off-site mitigation to utilize the publically owned open-space lands of Meadowbrook Farm and the Three Forks Natural Area.

Objective B. Work with the private sector and other volunteer organizations to under-plant forests and reduce the presence of invasive non-natives in riparian shoreline areas.

Objective C. Develop a public outreach and education habitat restoration program for property owners within the shoreline area.

Goal 5. Facilitate public access on publicly owned property within the shoreline area to enhance public enjoyment, appreciation and stewardship of shoreline natural functions and values.

Objective A. Develop public recreation trail linkages between major public parks and other open space areas that preserve shoreline natural functions and values as well as their aesthetic and scenic qualities.

4.0 Degraded Functions and Shorelines

One of the first steps of shoreline restoration planning (WAC 173-26-201(2)(f)) is “identifying degraded areas, impaired ecological functions, and sites with potential for ecological restoration”. The existing conditions and functions of the City’s shoreline area were detailed in the City’s Shoreline Inventory and Characterization Report (Chapter 5). A summary of these findings is presented below.

4.1 Watershed Context

The Snoqualmie watershed is located in the Snohomish River watershed, Water Resource Inventory Area (WRIA) 7. In addition to the Snoqualmie River, the Skykomish and Snohomish Rivers also drain to the Snohomish River. The Snoqualmie and Skykomish Rivers converge to form the Snohomish River approximately 20 miles upstream before flowing into Puget Sound near the City of Everett. Major tributaries to the Snoqualmie River include the North, Middle, and South Forks of the Snoqualmie River above Snoqualmie Falls, and the Tolt River and Raging River below the Falls.

Primary land uses in the upper Snoqualmie River basin portion of WRIA 7 are wilderness, timber production, and low density residential within the unincorporated areas, and some medium-density housing along with commercial and employment centers within the cities of North Bend and Snoqualmie. Residential uses become less common upstream of the two cities (Haring 2002).

The majority of the Snoqualmie upper watershed, which extends to the western crest of the Cascade Mountains, is forested. Extensive forest stands in protected ownership or long-term commercial forestry rotation provide habitat for a broad range of native wildlife; with connectivity to wilderness foothill and mountain habitats in the Cascades to the east. The current conditions of the upper watershed still influence the processes that drive ecological functions. Historic and ongoing logging activities have had, and continue to have, influences on the timing and condition of river flows and floodwaters entering the mid-Snoqualmie basin.

The Snoqualmie River drains the southern 694 square miles of the Snohomish River Basin. Snoqualmie Falls is a bedrock constriction that divides the River into two segments; upper and lower. The river has a higher gradient upstream of the falls and is very low gradient downstream of the falls. Snoqualmie Falls is a natural barrier to the upstream movement of anadromous salmon. However, there is an extensive resident salmonid (i.e., native trout) distribution upstream of the falls (Haring 2002).

4.2 Water Quality

In 2008, Ecology produced a document titled *Snoqualmie River Basin Fecal Coliform Bacteria, Dissolved Oxygen, Ammonia-Nitrogen, and pH Total Maximum Daily Load: Water Quality*

Section 4— Degraded Functions and Shorelines

Continued

Effectiveness Monitoring Report. In addition to the Snoqualmie River, the report also includes water quality sampling and analysis for the South Fork Snoqualmie River and Kimball Creek.

In 2009 King County and the Snoqualmie Watershed Forum (Kaje, 2009) prepared the Snoqualmie Watershed Water Quality Synthesis Report which synthesized data and findings from a variety of sources regarding water quality conditions of the Snoqualmie watershed from the confluence up to the headwaters. The Executive Summary identifies a limited list of water quality issues for the upper basin.

Temperature impairment is not meeting State standards for the Middle Fork; and several areas in the upper-watershed are slightly impaired for water quality. The report goes on to identify that these upper watershed locations have a very high percent of forested cover and low concentrations of residential and agricultural uses. It concludes that past and perhaps ongoing forestry activities may have a strong influence on current temperature considerations. Additional studies find that other water quality parameters in Kimball Creek are exceeding State standards for temperature, dissolved oxygen, fecal coliform, nutrients and pH. Small tributaries like these are of concern as their basins may contain a significant percent of properties that are not served by public sanitary sewer and may have failing septic systems, as well as small hobby farms with cattle and horses both of which may have impacts on fecal coliform levels.

The following is a summary of issues identified from the compilation from the Kaje (2009) report that pertain to the three ‘main tributaries’ and Kimball Creek within the City:

- Water quality in rural residential areas can be impacted by old, non-maintained and outdated septic systems.
- Wetlands are the best defense against water quality degradation. The City should protect intact wetlands and forests as a known means to assure long-term water quality protection. These natural systems also reduce flooding and bank erosion at much lower costs than constructed remedies.
- More than a century of logging has altered many rivers and streams, causing channels to become wider and shallower. Forestry practices and large lot residential uses may also alter the water-retention capacity of forest soils. The study found that when the rivers and tributaries lack LWD (large woody debris), it results in reduced in-stream habitat complexity and this lack of in-channel complexity reduces the supply of thermal refugia for fish when stream/river temperatures are elevated in the summer months.
- The greatest risk from forest conversion is the resultant creation and expansion of fringe of rural residential areas. The viability of commercial forestry is a key for maintaining the long-term protection of the watershed (otherwise those lands risk being converted to residential uses).
- Enforcement of existing City regulations and permit conditions are critical components of water quality protection for the watershed.

Section 4— Degraded Functions and Shorelines

Continued

4.2 Riparian Function

Riparian vegetation in the Snoqualmie basin has been historically cleared as a result of various land practices, including timber extraction, agriculture, and residential or commercial development. Riparian habitat conditions were considered fair through the cities of North Bend and Snoqualmie based on 2002 data (WSCC, 2002), and were considered to improve dramatically upstream of the confluence point of the three forks of the Snoqualmie. While the majority of the forested vegetative communities in and near the City of Snoqualmie is comprised of younger mixed deciduous-coniferous or deciduous-dominated habitat, habitat in and around the three upper forks of the Snoqualmie contains substantial mature coniferous forest.

Within the City of Snoqualmie UGA, much of the riparian vegetation along the river's left bank—between Northern Street to a point approximately 375 feet upstream of the Meadowbrook bridge—has been cleared for development of the City's downtown. Remaining habitat in the built-out areas of the City is largely confined to a thin band of mostly herbaceous vegetation, shrubs, and deciduous trees such as red alder (*Alnus rubus*) and black cottonwood (*Populus balsamifera*). Non-native invasive species such as Himalayan blackberry (*Rubus armeniacus*) and reed canary grass (*Phalaris arundinacea*) are common along the disturbed margins of this habitat. Grass lawns and ornamental plant species are associated with the residential parcels that occur in this portion of the floodplain. Spatial and taxonomic complexity is simplified in these impacted riparian habitats, and ecological function has been reduced as a result.

Other portions of the riparian habitat within the City's UGA are substantially less impacted by development. The right bank of the Snoqualmie River, across the river from the City's downtown area, has little development associated with it—containing few structures and a single road (SE Mill Pond Road). Vegetative communities associated with the left bank riparian habitat consist of a mix of deciduous-dominated forest with a subdominant and younger coniferous component; shrub communities; and wetland communities. Black cottonwood, red alder, and big leaf maple (*Acer macrophyllum*) tend to be the dominant deciduous tree species, with numerous willow (*Salix* spp), salmonberry (*Rubus spectabilis*), and red-osier dogwood (*Cornus stolonifera*) providing a shrub component to the understory. Coniferous species are generally represented by Douglas fir (*Pseudotsuga menziesii*) and western red cedar (*Thuja plicata*). Areas of cleared and disturbed riparian habitat and a higher density of roads occur further downstream on the left bank, near the old Weyerhaeuser mill site and the current City of Snoqualmie wastewater treatment plant.

Along the left bank of the Snoqualmie River outside of the downtown area, the Coal Creek-Kimball Creek drainage supports mixed deciduous-coniferous forested riparian habitat

Section 4— Degraded Functions and Shorelines

Continued

primarily, interspersed with scrub-shrub riparian habitat. Deciduous tree species consist of black cottonwood, red alder, and big leaf maple. Coniferous species include red cedar and Douglas fir, and generally appear to be of a similar size with the dominant deciduous species. Vine maple (*Acer circinatum*), salmonberry, willow, and snowberry (*Symphiocarpus albus*) are common plant species in the riparian shrub understory. Portions of the upper watershed of both Coal Creek and Kimball Creek have been subject to development and vegetative clearing, and the riparian corridor in some of these areas has been substantially reduced and simplified.

Further along the left bank, upstream of the developed downtown area of Snoqualmie, riparian habitat consists of a mosaic of forested riparian, upland, and wetland habitats with a primarily deciduous species composition consisting of black cottonwood and red alder. Open grassy habitat, emergent wetland, and open water aquatic habitat are associated with Meadowbrook Slough and the Three Forks Natural Area in this part of the City. At the eastern edge of the City's UGA, the South Fork of the Snoqualmie River confluences with the Middle Fork, surrounded by a mixed forested riparian corridor primarily composed of black cottonwood and red alder, with Douglas fir and red cedar scattered in the larger deciduous-dominated forest matrix.

Although much of the riparian corridor for the reaches of Snoqualmie River above the Falls is vegetated, previous habitat assessments indicate that over half of this habitat either lacks trees or contains young trees (stem diameters less than 30 cm) (SRBSRTC, 2002) as a result of timber harvesting practices and other land use patterns. Large woody debris (LWD) is considered to be limited in quantity and transport capacity from the upper watershed into the mainstem Snoqualmie River above the Falls (WSCC, 2002), and the density and size of LWD in the upper mainstem Snoqualmie is ranked as fair or poor (WSCC, 2002).

The Shoreline Inventory and Characterization Report (Chapter 4.0) discusses the riparian and associated stream habitat functions for each Shoreline segment, including water flow, vegetation, hyporheic flow, and habitat.

4.3 Snoqualmie Shorelines

Most of the shorelines within the City limits are still in somewhat natural conditions with intact riparian forests along the margins. It is the historic changes in the floodplain that comprise the majority of areas of degradation of City shorelines. This is discussed in the Shoreline Inventory and Characterization Report (Chapter 4.0), and summarized in Table 4-1 below. Shoreline Area segment locations are shown on Figure 2, below.

Section 4— Degraded Functions and Shorelines

Continued

Table 1— Degraded Shoreline Functions. Shoreline Areas are organized by the segments identified in the shoreline inventory report. Locations are mapped on Figure 2.

Shoreline Area	Existing Use/Potential Degradation	Comprehensive Plan Designation	Degraded Functions
Segment 1	Undeveloped riparian forest below the Falls	<ul style="list-style-type: none"> • Parks/Open Space (6.53 acres/49.6 %) • Utility Park (6.63 acres/50.4%) 	Assumed highly functional: in relatively natural state; having been logged historically, but recovered. May contribute LWD to the river below the Falls. No ready public access.
Segment 2	Power generating facilities, extensive bank armoring, bridge abutments	<ul style="list-style-type: none"> • Utility Park (20.12 acres/64.3 %) • Business/Retail (0.91acres/2.9 %) • Parks/Open Space (4.54 acres/14.5%) • Residential (3.10 acres/9.9%) 	Heavy bank armoring limits riparian functions; no riparian forest eliminates shading and input of organics. Some presence of invasive vegetation.
Segment 3	Undeveloped riparian forest	<ul style="list-style-type: none"> • Utility Park (18.9 acres/100.0%) 	Undeveloped forest; previously logged. Contains upland and wetland habitats, fully functioning.
Segment 4	Vacant/open space	<ul style="list-style-type: none"> • Parks/Open Space (5.43 acres/50.3%) • Utility Park (0.46 acres/4.3%) 	Lack of native vegetation; presence of non-natives; periodic use for light commercial purposes means soils are compacted.
Segment 5	Undeveloped riparian forest except for the presence of a small sewer lift station	<ul style="list-style-type: none"> • Mixed Use (20.48 acres/28.7%) • Parks/Open Space (45.92 acres/64.3%) • Residential (2.67 acres/3.7%) • Utility Park (0.43 acres/0.6%) 	Some bank armoring and bridge abutments from highway and RR bridges that cross the River and Kimball Creek. Mostly native forest with intact functions.

Section 4— Degraded Functions and Shorelines

Continued

Shoreline Area	Existing Use/Potential Degradation	Comprehensive Plan Designation	Degraded Functions
Segment 6	An older part of the City with mixed uses of residential, limited commercial, and some parks/open space.	<ul style="list-style-type: none"> • Parks/Open Space (14.45 acres/66.7%) • Business/Retail (4.49 acres/20.7%) • Utility Park (0.68 acres/3.1%) • Residential (1.43 acres/6.6%) 	Lack of native vegetation; limited habitat conditions of residential uses; perhaps some water quality impacts. Shoreline of river has some native vegetation and woody debris but recruitment comes from upstream.
Segment 7A	Predominantly residential, commercial and retail uses. Part of the historic “old town”	<ul style="list-style-type: none"> • Residential (175.42 acres/57.3%) • Business/Retail (22.66 acres/7.4%) • Parks/Open Space (42.85 acres/14.0 %) • Utility Park (0.79 acres/0.3%) 	The older residential portion of town with little native habitat remaining; potential for pollution generating surfaces and uses from residential and modest commercial uses.
Segment 7B	Predominantly residential, commercial and retail uses. Part of the historic “old town”	<ul style="list-style-type: none"> • Residential (19.02 acres/66.2%) • Planned Commercial/Industrial (6.24 acres/21.7%) • Parks/Open Space (1.16 acres/4.0%) 	The older residential portion of town with little native habitat remaining; potential for pollution generating surfaces and uses from residential and modest commercial uses.
Segment 7C	Ongoing agricultural farm	<ul style="list-style-type: none"> • Residential (34.10 acres/95.4%) • Parks/Open space (1.64 acres/4.6%) 	Lack of native vegetation or habitats; some potential for water quality effects.
Segment 7D	Predominantly residential, newer than oldest part of town; limited commercial/business	<ul style="list-style-type: none"> • Residential (16.66 acres/64.9%) • Business/Retail (2.29 acres/8.9%) • Office Park (5.10 acres/19.9%) 	Residential portion of town with little native habitat remaining; potential for pollution generating surfaces and uses from residential and modest commercial uses.

Section 4— Degraded Functions and Shorelines

Continued

Shoreline Area	Existing Use/Potential Degradation	Comprehensive Plan Designation	Degraded Functions
Segment 8	3 Forks Natural Area, Meadowbrook Farm and Vacant forested open space	<ul style="list-style-type: none"> • Residential (140.54 acres/18.5%) • Parks/Open Space (595.77 acres/78.6%) 	Large open space with less than 20% residential uses present. Historic agricultural fields lack native habitats; some limited ongoing agricultural uses may influence water quality.
Segment 9	Golf course	<ul style="list-style-type: none"> • Parks/Open Space (144.92 acres/97.9%) 	Lack of native habitat communities; potential for water quality impacts from golf course management practices.
Segment 10	Residential	<ul style="list-style-type: none"> • Residential (158.24 acres/100%) 	Residential portion of town with little native habitat remaining; potential for pollution generating surfaces and uses from residential and modest commercial uses.
Segment 11	Undeveloped Riparian Forest	<ul style="list-style-type: none"> • Parks/Open Space (311.28 acres/100%) 	Mostly native forest containing upland and wetland habitats, Borst Lake, and terrestrial linkages for wildlife; assumed highly functional.
Segment 12	Predominately commercial/business	<ul style="list-style-type: none"> • Planned Commercial/Industrial (207.92 acres/95.5%) • Utility Park (9.76 acres/4.5%) 	Lack of native vegetation; limited habitat conditions of industrial uses; perhaps some water quality impacts. Contains upland and wetland habitats, previously logged and degraded.

5.0 Restoration Opportunities and Actions

Based on the information provided in the Characterization report and findings in other City-specific and/or regional plans, the opportunities for restoration are summarized below and suggested actions by segment are provided in Table 5-1. Restoration opportunity and shoreline segment locations are shown on Figure 2, below.

Ecology's *Shoreline Master Program Guidelines* (173-26 WAC) includes the following definition:

“Restore,” “Restoration” or “ecological restoration” means the reestablishment or upgrading of impaired ecological shoreline processes or functions. This may be accomplished through measures including but not limited to re-vegetation, 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.

Consistent with Ecology's definition, use of the word “restore,” or any variations, in this document is not intended to encompass actions that re-establish historic conditions. Instead, it encompasses a range of actions that can be approximately delineated into three categories: creation (of a new resource), restoration (of a converted or substantially degraded resource), and enhancement (of an existing degraded resource). The City can encourage applicants to implement restoration actions that will improve ecological functions relative to the applicant's pre-project condition.

As stated in WAC 173-26-201(2)(c):

It is intended that local government, through the master program, along with other regulatory and non-regulatory programs, contribute to restoration by planning for and fostering restoration and that such restoration occur through a combination of public and private programs and actions. Local government should identify restoration opportunities through the shoreline inventory process and authorize, coordinate and facilitate appropriate publicly and privately initiated restoration projects within their master programs. The goal of this effort is master programs which include planning elements that, when implemented, serve to improve the overall condition of habitat and resources within the shoreline area of each city and county.”

5.1 Opportunity Areas

The Opportunity Areas present options for “restoration” that would improve ecological functions. Restoration Opportunity Areas and shoreline segment locations are shown on Figure 2, below. Portions of the Restoration Opportunity Areas and shoreline segment locations are outside of the designated shoreline jurisdiction for the City of Snoqualmie, but are included in order to provide a more complete evaluation of potential restoration

Section 5— Restoration Opportunities and Actions

Continued

opportunities. Many of the restoration opportunities are similar for each of the segments and include:

- Use the Meadowbrook Farm Master Plan and the Three Forks Natural Area Master Plan as guidance for preservation of existing natural habitats and the installation of restoration that has been identified in each plan.
- Segment 6 (along the south bank of the Snoqualmie River) is identified as an area for restoration. Publicly owned parcels should be evaluated for the presence of non-native invasive species as well as how the parcel was previously used. The parcels should be appropriately cleaned up by removing septic or oil tanks (if present), as well as removing garbage or other items that could end up in the river during flood events.
- Replacement of non-native invasive plants with appropriate native species as a requirement of future land-use actions, as a volunteer effort, and as an overall-goal within the floodway.
- Educational opportunities for residents that include topics such as the use of fertilizers and pesticides, the installation of native plant species, and the use LID and green building techniques.
- The use of LID as suggested in the City’s Stormwater Master Plan in appropriate areas throughout the City to address water quality influences on the river.
- The use of green building techniques for the redevelopment of the City parks in shoreline jurisdiction.
- In areas of natural or semi-natural habitats, education of private land-owners regarding the preservation and maintenance of these features is highly encouraged.

Prioritization is provided for each potential project or opportunity in Table 5.1 below.

Higher priority projects typically either:

- Address multiple ecosystem processes and/or functions (i.e. habitat and water quality)
- Exhibit a potential emergency (i.e., failing banks)
- Have funding or are eligible for funding (including applying for grants)
- Have or can have a strong volunteer base
- Expand on previous restoration projects
- Can be accomplished with limited funds (e.g. choosing a project that only requires planting vegetation v. choosing a project that needs earthwork)

Lower priority projects typically either:

- Benefit single ecosystem functions.
- Have no funding
- Take a long time to implement
- Occur outside of the shoreline jurisdiction

Section 5— Restoration Opportunities and Actions

Continued

Table 5.1 also includes a project timeframe which are indicated as either short, medium or long term. Short-term projects include projects in progress or planned to be implemented for the near future. Long term projects are projects that require coordination among multiple agencies and substantial design and permitting.

Section 5— Restoration Opportunities and Actions

Continued

Table 2— Restoration Opportunities. Potential site-specific projects in and around the City’s shorelines. Projects are organized by the segments identified in the shoreline inventory report. Locations are mapped on Figure 2.

Segment	Existing Conditions	Action	Opportunity/Project Description	Source Plan*	Timeframe	Primary Sponsor	Priority
Segment 1	<p>Undeveloped riparian forest</p> <p>Comprehensive Plan map indicates the future land use for this segment as Parks/Open Space and utility park</p> <p>Existing shoreline environment designation is Natural Environment.</p>	Preserve native upland/riparian forests	Where existing riparian forest is intact, protect from future loss.	2,3	Medium Term (5-10 years)	Snoqualmie; PSE	Med
Segment 2	<p>Significant right and left bank shoreline modifications just upstream of the falls with shoreline armoring of boulders and cement walls for hydroelectric facility improvements.</p> <p>Shorelines contain buildings, parking areas, and equipment for the hydroelectric power plant,</p>	1. Explore opportunities to remove historic bridge abutments and armoring if SR 202 is rebuilt by WSDOT.	Opportunity to remove bridge abutments and relocate them outside of the ordinary high water mark and remove armoring when the SR 202 bridge is rebuilt. If armoring is needed along the shoreline to protect the bridge, natural armoring practices should be used that include native vegetation and large woody debris, both of which will also provide habitat features.	2	Long Term (10-15 years)	Snoqualmie; WSDOT	Low

Section 5— Restoration Opportunities and Actions Continued

Segment	Existing Conditions	Action	Opportunity/Project Description	Source Plan*	Timeframe	Primary Sponsor	Priority
	<p>as well as buildings, viewing platforms, trails and parking for public access and enjoyment.</p> <p>Comprehensive Plan map indicates the future land use for this segment as Utility Park, Business/Retail, Parks/Open Space and Residential.</p> <p>Existing shoreline environment designation is Hydropower Environment.</p>	2. Improve shoreline habitat where bank protection exists	There is opportunity for removal of non-native invasive plant species in the shoreline area and replanting with native species.	2,3	Medium Term (5-10 years)	Snoqualmie; PSE; Private Property Owners	Med
Segment 3	<p>Undeveloped wetland, floodplain forest</p> <p>Comprehensive Plan map indicates the future land use for this segment as Utility Park likely for City treatment plant.</p> <p>Existing shoreline environment designation is Urban Floodplain</p>	Wetland, riparian and floodplain forest preservation	Preserve the existing wetland, riparian and floodplain forest through regulation and site planning if/when expansion is needed for City's wastewater treatment facility.	2	Medium Term (5-10 years)	Snoqualmie;	Med
			Consider zoning change to Open Space or designate the area within this Segment that is appropriate for future utility infrastructure.	2	Short Term (1-5 years)	Snoqualmie	Low
Segment 4	Primarily vacant city-owned open space land; around the	Kimball Creek Riparian edge Restoration and Enhancement	Build on previous riparian restoration and edge	2, 3	Medium Term (5-10 years)	Snoqualmie; Mountains to	High

Section 5— Restoration Opportunities and Actions Continued

Segment	Existing Conditions	Action	Opportunity/Project Description	Source Plan*	Timeframe	Primary Sponsor	Priority
	<p>SR202/Snoqualmie Parkway intersection.</p> <p>Comprehensive Plan land use designation is Parks/Open space and Utility Park.</p> <p>Existing shoreline environment designation is Urban Floodplain</p>		enhancement along Kimball Creek, including removal of invasive species and supplemental planting of appropriate native tree and understory species.			Sound Greenway	
Segment 5	<p>Entire segment is publicly owned, undeveloped forested open space consisting of wetland, stream, sensitive area buffers, upland areas and a city owned sewer lift station</p> <p>Comprehensive Plan land use designations for this segment include Mixed Use, Utility Park and Parks/Open Space. Zoning is Open Space 1 and Mixed Use, although Mixed Use portion is a city-owned sensitive area tract.</p> <p>Existing shoreline</p>	Kimball Creek Mouth Preservation and Restoration	<p>Preserve native forests in the floodplain and within riparian buffers of Kimball Creek.</p> <p>Remove non-native invasives and manage the forests to assure adequate native tree diversity and appropriate under-plantings.</p> <p>Consider increasing the buffers along Kimball Creek.</p>	2, 3	Medium (5-10 years)	Snoqualmie; Mountains to Sound Greenway Trust	High

Section 5— Restoration Opportunities and Actions Continued

Segment	Existing Conditions	Action	Opportunity/Project Description	Source Plan*	Timeframe	Primary Sponsor	Priority
	environment designations are Urban Floodplain and Conservancy.						
Segment 6	<p>Mix of utility facilities, park land, historic downtown commercial buildings, single-family residences and open space;</p> <p>Zoned single-family residential and public open space;</p> <p>Comprehensive Plan future land use to be primarily open space with pockets of business/retail, residential and public utility uses. Zoning includes Business-Retail, Open Space, Single-Family Constrained Residential and Utility Park.</p> <p>Existing shoreline environment designation is Urban Riverfront.</p>	1. Snoqualmie Riverfront Acquisitions	Acquire Open Space zoned riverfront properties to remove homes that are at risk from flood damages and protect from future development. Provide for restoration of native riparian forest, public “Riverwalk” trail for shoreline access and passive enjoyment.	1,2,4	Short term (1-5 years), due to funding opportunities	City with funding from FEMA, King County Flood Control Zone District, Conservation Futures Tax, RCO, Cooperative Watershed Management	High
		2. Snoqualmie River Knotweed Control and Riparian Restoration	Treat knotweed infested areas, remove other non-native invasives and replant appropriate native species along the mainstem.	2, 3	Short term (1-5 years)	Snoqualmie; Mountains to Sound Greenway; King County Noxious Weed Control Program	High
		3. Snoqualmie River Bank Protection	Install LWD to address erosion and bank scour. If feasible, replace traditional armoring with a more bio-engineered approach. Add armoring where needed to protect roads, public utilities and downtown commercial district.	1,2, 3	Long term (10-15 years)	Snoqualmie; King County Flood Control Zone District	Medium

Section 5— Restoration Opportunities and Actions Continued

Segment	Existing Conditions	Action	Opportunity/Project Description	Source Plan*	Timeframe	Primary Sponsor	Priority
Segment 7 (A-D)	Existing uses are a combination of public open space, city parks, schools, businesses, residential and the Northwest Railway Museum. Segment also includes large wetland areas in private ownership. Comprehensive Plan indicates the future land use for this area to include single family residential, business/retail, and parks/open space. Existing shoreline environment designation is Urban Floodplain.	1. Preserve and Enhance Wetland Vegetation	Explore opportunities to preserve wetland vegetation and where possible, improve wetland vegetation on private property.	2	Medium term (5-10 years)	Snoqualmie; Private Property Owners	High
		2. Public Outreach	Provide a link on the City's webpage to resources on low impact development practices including tree preservation, wetland protection and landscaping with native species. Promote the use of appropriate native species for landscaping on public and private properties. Encourage public use of King County Basin Steward program for private property stewardship.	2,4	Short term (1-5 years)	Snoqualmie	High
Segment 8	Dominated by public open spaces including Three Forks Natural Area and Meadowbrook Farm Open Space. Meadowbrook Farm is jointly owned by Snoqualmie and North Bend. Public funding for acquisition allows passive recreation uses only. Portions of the historic	1. Three Forks Natural Area Restoration and Maintenance	Preserve, restore and enhance riparian vegetation in the Three Forks Natural Area. Removing non-native invasives and replanting with native species will improve the functions for habitat, flood storage and water quality. Consider removing the buried armoring in the natural area	1,2, 3	Short term (1-5 years)	Snoqualmie; Mountains to Sound Greenway; King County FCZD	High

Section 5— Restoration Opportunities and Actions Continued

Segment	Existing Conditions	Action	Opportunity/Project Description	Source Plan*	Timeframe	Primary Sponsor	Priority
	farm property are mowed to maintain historic use and preserve views. Segment also includes mature forested riparian area along South Fork within private golf course property and along Mainstem within Three Forks Natural Area. Segment also includes large wetland areas in private ownership.		along the Snoqualmie River. This is located north of the trail and could restore river processes in the reach. Encourage the involvement of citizen volunteers and local schools to help with the labor. Continue maintenance of recent invasive vegetation removal and native plant installations within the Three Forks off-leash dog park area.				
	Comprehensive Plan future land use designation is Residential and Parks/Open space; zoning is Constrained Residential and Open Space. Shoreline environment designation for this area is Urban Floodplain	2. Meadowbrook Farm Restoration	Preserve, restore and enhance riparian vegetation in the Three Forks Natural Area. Removing non-native invasives and replanting with native species will improve the functions for habitat, flood storage and water quality.	1,2, 3	Long term (10-15 years)	Snoqualmie; Meadowbrook Farm Preservation Association; King County FCZD	Medium
		3. Public access/trail improvements	Expand and link existing city and county public trails.	1,2, 4	Long term (10-15 years)	Snoqualmie; King County	Low
			Explore opportunities to obtain public access easements across private properties along the mainstem Snoqualmie River west of Snoqualmie Valley trail to connect public	2	Medium term (5-10 years)	Snoqualmie	Low

Section 5— Restoration Opportunities and Actions Continued

Segment	Existing Conditions	Action	Opportunity/Project Description	Source Plan*	Timeframe	Primary Sponsor	Priority
			trails.				
		4. Preserve and Enhance Wetland Vegetation	Explore opportunities to preserve wetland vegetation and where possible, improve wetland vegetation on private property.	2	Medium term (5-10 years)	Snoqualmie; Private Property Owners	High
Segment 9	Existing use is an 18-hole golf course. Comprehensive Plan designation is Parks/Open space; Shoreline environment designation for this area is Urban Floodplain	Mt. Si Golf Course Restoration opportunities	Opportunities may include the use of native species for golf course landscaping, removal/control of inappropriate non-native shrubs and trees, and golf course management practices to reduce the use of chemical fertilizers, pesticides or herbicides.	2	Short term (1-5 years)	Snoqualmie; private property owners; Mountains to Sound Greenway	High
Segment 10	Existing uses within the UGA area are primarily residential with large wetland areas in private ownership. Comprehensive Plan designation is Single Family Residential Shoreline environment designation for the UGA area is Urban Conservancy.	Kimball Creek Restoration	Install woody native plant species for bank stabilization and shade to help reduce water temperatures and in-channel habitat.	2	Medium term (5-10 years)	King County; private property owners; Snoqualmie Tribe	Low
			Explore opportunity to improve water quality through conversion of septic tanks to the City's sewer system as well as coordination with hobby farmers to improve livestock management and reduce the	2	Long term (10-15 years)_	King County; Snoqualmie	Low

Section 5— Restoration Opportunities and Actions Continued

Segment	Existing Conditions	Action	Opportunity/Project Description	Source Plan*	Timeframe	Primary Sponsor	Priority
			use of fertilizers.				
Segment 11	Privately owned forested open space and Mill Pond. Comprehensive Plan designation is Open Space. Shoreline environment designations are Natural and Urban Conservancy.	Borst Lake Restoration	Opportunity for removal of non-native invasive plant species and replanting with native species along SE Mill Pond Road near the south and southeast ends of the lake including at the intersection of SE Reinig Road and 396 th Drive SE.	2	Medium term (5-10 years)	Snoqualmie; private property owners	Medium
Segment 12	The site contains a number of remnant lumber mill structures. The site is currently occupied by a specialized driving instruction school and a small wood recycling and topsoil production business. Comprehensive Plan designation is Planned Commercial/Industrial and Utility Park.	Former Weyerhaeuser Snoqualmie Mill site Restoration	Asses the presence of toxic or hazardous contamination within the area and address appropriate clean-up prior to any future development.	2	Long term (10-15 years)	Private property owners	Low

Section 5— Restoration Opportunities and Actions

Continued

Segment	Existing Conditions	Action	Opportunity/Project Description	Source Plan*	Timeframe	Primary Sponsor	Priority
	Shoreline environment designation is Urban Floodplain.						

Source Plan Legend

- ¹Snoqualmie 2015: Building for Salmon Recovery and Watershed Health (King County, 2006)
- ²City of Snoqualmie Shoreline Analysis Report (OTAK, 2013)
- ³Snohomish River Basin Salmon Recovery Plan (WRIA 7, 2005)
- ⁴City of Snoqualmie 2012 Open Space, Parks and Recreation Plan

Section 5— Restoration Opportunities and Actions Continued

5.2 Potential Restoration Funding Sources

Funding opportunities for restoration projects in the City of Snoqualmie include local and state grants, and potentially federal funds that are administered through state or local programs. For potential projects in the City and surrounding area, the greatest likelihood of obtaining funding would result from continued partnerships with the Snoqualmie Watershed Forum, King Conservation District, and non-profit organizations such as Mountains to Sound Greenway. Potential grant sources are described below.

Snoqualmie Watershed Forum/King County Flood Control District Cooperative Watershed Management Grant Program

Attn: Perry Falcone
KC DNRP WLRD
201 S. Jackson Street, Suite 600
Seattle, WA 98104
perry.falcone@kingcounty.gov

The King County Flood Control District in partnership with the Snoqualmie Watershed Forum provides the Cooperative Watershed Management grant program. This program has provided grants that have reached more than \$100,000 for individual projects. Approximately \$500,000-\$600,000 is available each year to non-profits and government agencies. These grants fund salmon recovery projects throughout the Snoqualmie Watershed.

King Conservation District Member Jurisdiction Grant Program

Attn: Jessica Saavedra
KCD
1107 SW Grady Way, Suite 130
Renton, WA 98057
Jessica.saavedra@kingcd.org

The King Conservation District Member Jurisdiction Grant Program awards grants for private and public projects that directly improve the condition of natural resources, provide education and outreach to increase awareness, build capacity to enhance implementation of natural resource improvement projects and implement pilot or demonstration projects.

Washington State Department of Ecology

PO Box 47600
Olympia, WA 98504-7600
www.ecy.wa.gov

Section 5— Restoration Opportunities and Actions

Continued

Ecology’s Water Quality Program administers the following funding programs that provide low-interest loans and grants for projects that protect and improve water quality in Washington State: The Centennial Clean Water Program, The Water Pollution Control Revolving Fund, The Clean Water Section 319 Program, and Stormwater Retrofit and Low Impact Development Grant Program. Local governments, Native American nations, conservation districts, and non-profit groups are eligible for funding. Grants and loans are available for point source and nonpoint source projects, for example, treatment facilities, stormwater control and treatment, stream restoration and protection, and on-site septic repair and replacement.

Washington State Recreation and Conservation Office (RCO)

1111 Washington Street SE
PO Box 40917
Olympia, WA 98504
360-902-3000
www.nfwf.org

The Recreation and Conservation Funding Board provides funds for the acquisition and development of recreation and conservation lands. The board distributes funds through several grant programs, such as:

- Land and Water Conservation Fund: This program provides funding to preserve and develop outdoor recreation resources, such as parks, trails and wildlife lands.
- Segment 6 (along the south bank of the Snoqualmie River) is identified as an area for restoration. Publicly owned Washington Wildlife Recreation Program: The Washington Wildlife Recreation Program Account involves support for critical habitat, natural areas, urban wildlife, local parks, state parks, trails, and water access categories.
- Aquatic Lands Enhancement Account: This program funds acquisition, restoration, and public access projects that benefit wildlife habitat and aquatic conservation in waterfront areas.

The Recreation and Conservation Funding Board’s grant process is open and competitive. Applications are submitted annually for some grant programs and every two years for others. The grant applications are reviewed by board staff and citizen committees. Letters of intent are usually due March 1. Applications are usually due May 1.

King County Flood Control District sub-regional opportunity fund

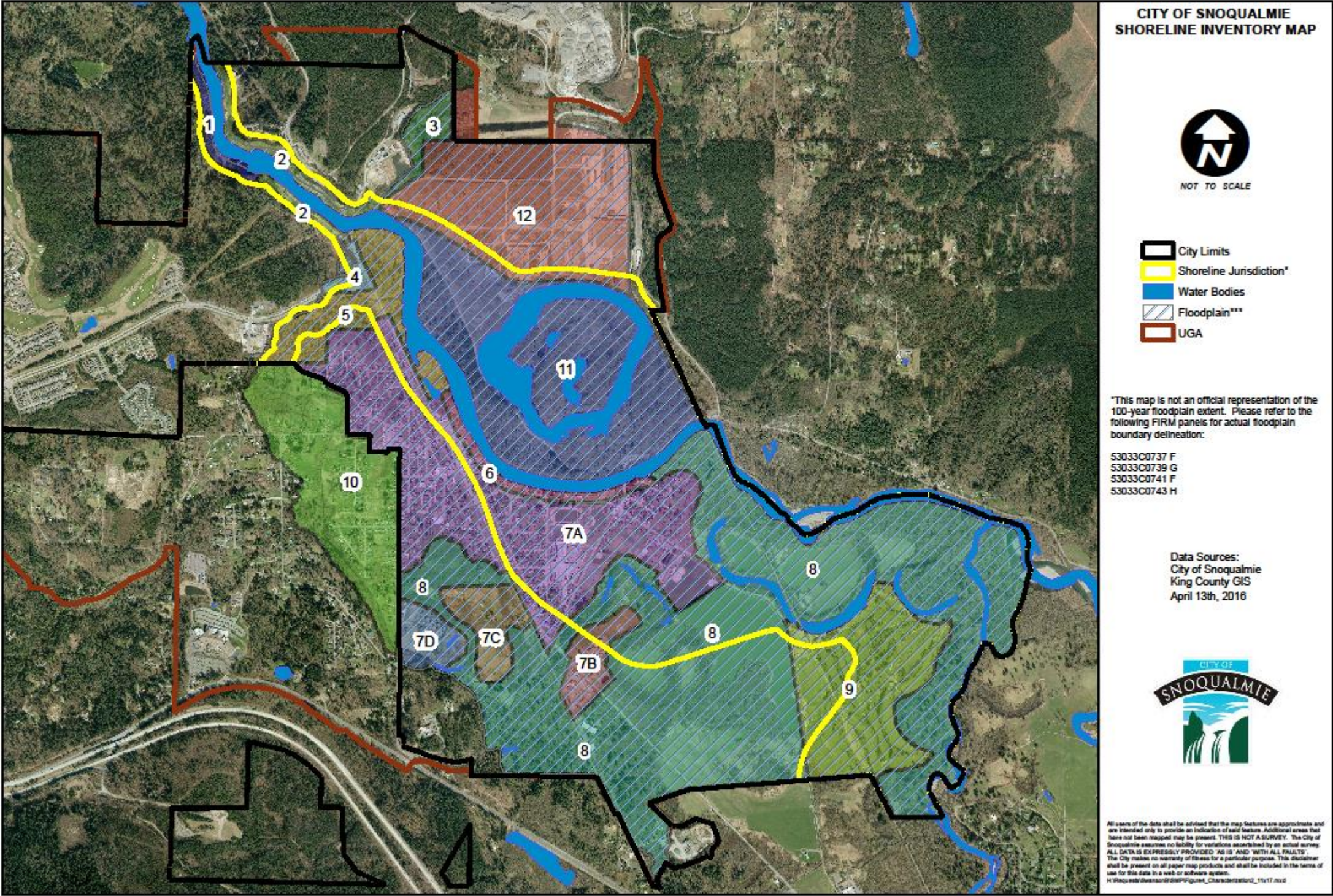
513 3rd Ave Room 1200
Seattle, WA 98104
206-477-1020
www.kingcountyfloodcontrol.org

Section 5— Restoration Opportunities and Actions

Continued

A percentage of the Flood Control District’s annual property tax levy is set aside for the Sub-Regional Opportunity Fund. Funds are distributed to each jurisdiction proportional to assessed value (AV) for an eligible project or activity with a minimum distribution of \$10,000 per eligible jurisdiction. Opportunity funds can be used for any project or activity that includes flood control and stormwater improvements, as well as watershed management activities such as habitat conservation, if such projects are linked to flood or stormwater activities.

Figure 2— Restoration Opportunities and Actions by Segment



6.0 Proposed Implementation and Monitoring Methods

6.1 Proposed Implementation

The following table (6-1) outlines a possible schedule and funding sources for implementation of a variety of efforts that could improve shoreline ecological function.

Table 3— Restoration Implementation

Restoration Program	Schedule	Funding Source or Commitment
Snoqualmie Stormwater Comp. Plan Update	Ongoing	Anticipated adoption of SWCP Spring 2015.
Snoqualmie Critical Areas Regulations	Last revised 2005	The City continues to make project and program reviews to determine consistency and compliance with their Critical Areas Regulations.
Snoqualmie Comprehensive Plan	Ongoing	The City will continue to make project and program reviews to determine consistency with the Comprehensive Plan.
Public Education	Ongoing	The City will encourage public use of King County Basin Steward program for private property stewardship.
Meadowbrook Farm Master Plan	Ongoing	The City will continue to make project and program reviews to determine consistency with the Meadowbrook Farm Master Plan.
Three Forks Natural Area Master Plan	Ongoing	The City will continue to make project and program reviews to determine consistency with the Three Forks Natural Area Master Plan.
WRIA 7 Salmon Conservation Plan	Ongoing	The City will continue to implement the recommendations listed in the recovery plan.
Mountains to Sound Greenway Trust	Ongoing	The City will continue to partner with Mountain to Sound on future restoration projects.
Snoqualmie Watershed Forum	Ongoing	Snoqualmie Forum Interlocal Agreement; Grants from Flood Control District through the Cooperative Watershed Management Program
Hazard Mitigation Plan programs and capital projects	Ongoing	King County Flood Control District flood levy fees and FEMA mitigation grant programs. The City will be covered by the King County Hazard Mitigation.

Section 6—Proposed Implementation and Monitoring Methods

Continued

6.2 Monitoring

In the context of the SMP update, restoration planning is a long-term effort. The SMP guidelines 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)).

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 Snoqualmie amends its SMP, the City is required to review, and amend if necessary, its SMP once every eight years (RCW 90.58.080(4)). During this review period, the City could document progress toward achieving shoreline restoration goals. The review could include:

- Re-evaluating adopted restoration goals, objectives and policies;
- 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
- Revising the SMP restoration planning element to reflect changes in priorities or objectives.

In preparation and as part of its Shoreline Master Program updates, the City will review project monitoring information and shoreline conditions, and reevaluate restoration goals, priorities and opportunities.

City planning staff is encouraged to track all land use and development activity, including exemptions, within shoreline jurisdiction, and shoreline actions and programs of other departments as well. The City of Snoqualmie should consider tracking information using their GIS and permit systems as projects occur. Benchmarks that could be tracked include following such as:

- a) Non-native vegetation removed
- b) Square feet of native vegetation planted or maintained
- c) Linear feet of eroding bank stabilized through plantings
- d) New impervious surface areas

With each project application, staff should consider whether implementation of the SMP is meeting the basic goal of no net loss of ecological functions relative to the baseline condition established in the Shoreline Analysis Report. As a function of achieving this goal, the City will require monitoring of individual restoration and mitigation projects consistent with the Shoreline Sensitive Areas Regulations (SMC 19.08.610.D and 19.08.640.F(4)) of the City of Snoqualmie SMP. In the long term, the City should be able to demonstrate a net improvement in the City of Snoqualmie’s shoreline environment.

7.0 References

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