

CITY OF NOOKSACK
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CITY OF NOOKSACK
SHORELINE MASTER PROGRAM UPDATE
RESTORATION PLAN

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RESTORATION PLAN

CITY OF NOOKSACK SHORELINE MASTER PROGRAM UPDATE

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1.0 INTRODUCTION

1.1 Statutory Requirements

The Washington State Department of Ecology shoreline master program guidelines, WAC 173-26, direct local governments to review and update their shoreline master programs, including development of a “real and meaningful” strategy to address restoration of shorelines.

Restoration planning is required by WAC 173-26-186 and shall include goals, policies, and actions for restoration of impaired shoreline ecological functions. The goal of restoration planning is to implement elements that will serve to improve the overall condition of habitat and resources within the shoreline area. Restoration plans will vary based on:

- Size of jurisdiction
- Extent and conditions of shorelines
- Availability of grants, volunteer programs, other tools
- The nature of ecological functions to be addressed

This restoration plan describes restoration opportunities identified through a detailed inventory and assessment of ecosystem processes and shoreline ecological functions in the City of Nooksack. The results of this assessment are detailed and described in the City of Nooksack Draft Shoreline Inventory and Analysis Report and the accompanying map folio.

1.2 No Net Loss and Restoration

The concept of no net loss is a central idea for shoreline management and is rooted in the goals, policies, and governing principles of the Shoreline Management Act, RCW 90.58, and the Shoreline Management Guidelines. In general, the state’s policy goals for shorelines of the state include the “protection and restoration of ecological functions of shoreline natural resources.” No net loss of ecological function is accomplished through a combination of regulatory and non-regulatory approaches, including the shoreline regulations and this restoration plan. Restoration planning to achieve no net loss is dependent upon economic incentives, available funding sources, volunteer programs, and other programs.

Shoreline restoration planning is required to address the elements included in WAC 173-26-201(2)(f). These requirements provide the framework for restoring impacted, degraded, or missing ecological functions resulting from past development of the shoreline. The Department of Ecology master program guidelines state that:

“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 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.

The City of Nooksack has a number of areas with the potential for restoration of shoreline functions and ecological processes. Restoration and enhancement opportunities are generally related to improvements in water quality, enhancement of degraded wetland areas, and restoration of shoreline vegetation. These opportunities are detailed on a reach-by-reach basis in Section 4, below.

1.3 Restoration Plan Requirements

Ecology's shoreline guidelines suggest that restoration plans consider and address all of the following (WAC 173-26-201(2)(f)):

- Identify degraded areas, impaired ecological functions, and sites with potential for restoration;
- Establish overall goals and priorities for restoration of degraded areas and impaired ecological functions;
- Identify existing and ongoing projects and programs that are currently being implemented, or are reasonably assured of being implemented, which are designed to contribute to local restoration goals;
- Identify additional projects and programs needed to achieve local restoration goals and implementation strategies including identifying prospective funding sources for those projects and programs;
- Identify timelines and benchmarks for implementing restoration projects and programs and achieving local restoration goals; and
- Provide 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.

These restoration requirements are intended to provide a framework to restore impaired, altered, or degraded shoreline functions. The restoration is not intended to mitigate past or future development impacts, but to improve overall ecological conditions over time.

2.0 DEGRADED AREAS AND IMPACTED FUNCTIONS

The Nooksack shoreline jurisdictional area has been impacted by a variety of processes, including agriculture and residential, commercial and industrial development. Agricultural alterations have included ditching and draining wetlands, straightening of stream channels, and removal of native vegetation, including forest cover. These practices have resulted in significant loss of historic wetlands. Riparian corridors throughout the Nooksack shoreline area are lacking in large woody debris (LWD) and have insufficient cover. Predominant conditions in riparian corridors include mowed grass to within 25 feet or less of the Nooksack Slough and invasive species such as Himalayan blackberry and reed canary grass in many locations.

Water quality degradation is evident in a number of areas. High levels of fecal coliform have been documented in numerous reaches, and the Sumas River has some of the highest concentrations of nitrate in the entire county. Low dissolved oxygen is also a problem in some water bodies.

3.0 RESTORATION GOALS & POLICIES

Shoreline restoration is rooted in the idea that the widespread loss or alteration of rivers, streams, wetlands and adjacent uplands and alteration of their associated ecological functions have serious implications for our quality of life and for overall ecosystem sustainability. The overarching goals, priorities and objectives of restoration planning are to improve water quality through natural processes, restore degraded and lost habitat and corridors, and improve connectivity of shoreline environments. The following goals and policies are consistent with the Nooksack Shoreline Management Master Program.

3.1 Shoreline Master Program Purpose

The purpose for which the Nooksack Shoreline Master Program has been developed includes: To manage the shorelines of the City to minimize, insofar as practical, damage to the shoreline area, while actively encouraging the restoration and enhancement of degraded shoreline functions and processes.

3.2 Shoreline Restoration Goal and Objectives

Goal: Support the restoration and enhancement of shoreline ecological functions within the City of Nooksack through vegetation conservation and timely restoration and enhancement of impaired shoreline areas to achieve a net gain in shoreline ecological functions over time.

This goal is intended to support the following objectives:

- Protection of naturally occurring shoreline processes.
- Protection and restoration of native vegetation and native vegetation corridors.
- Protection and restoration of wetlands and riparian areas associated with the Sumas River, Breckenridge Creek, and the Nooksack Slough.
- Management and treatment of stormwater and wastewater from new and existing uses.

3.3 Shoreline Restoration Policies

3.3.1 General Policies

Policy: The goals and objectives of the City of Nooksack Shoreline Restoration Plan should be supported and pursued to achieve a net gain in shoreline ecological functions.

Policy: Areas of existing native vegetation should be protected and allowed to mature to enhance shoreline functions and ecological processes.

Policy: Cooperative restoration programs between local, state, and federal agencies, tribes, non-profit organizations, and landowners should be encouraged to address shorelines with impaired ecological functions and/or processes.

Policy: Restoration actions should be prioritized to restore native vegetation in riparian areas, improve water quality, and restore native vegetation and natural hydrologic functions of degraded areas.

Policy: Restoration and enhancement efforts should be targeted towards improving habitat requirements of sensitive, priority and/or locally important fish and wildlife species.

Policy: Shoreline ecological functions and processes and features should be restored and enhanced through voluntary and incentive-based public and private programs.

3.3.2 Shoreline Use

Policy: Preference should be given to water-dependent uses that are consistent with preservation of shoreline ecological functions and processes. Secondary preference should be given to water-related and water-enjoyment uses. Nonwater-oriented uses should be allowed only when substantial public benefit is provided with respect to the goals of the Act for public access and ecological restoration.

Policy: Activities and facilities shall be located on the shorelines in such a manner as to maintain or improve the ecological functions of the shoreline environment and assure no net loss of ecological functions.

3.3.3 Aquatic Environment

Policy: New over-water structures shall only be allowed for water-dependent uses or public access or ecological restoration.

3.3.4 Natural Environment

Policy: Development or significant vegetation removal shall not be allowed that would reduce the capability of vegetation to perform normal ecological functions or result in net loss of vegetation.

Policy: The City should utilize grants and other funding sources to purchase those properties located in the Natural environment that contain high-value fish and wildlife habitats or species.

3.3.5 Shoreline Residential Environment

Policy: Development should be permitted only in those shoreline areas where adequate setbacks or buffers are possible to ensure no net loss of shoreline ecological functions, where there are adequate access, water, sewage disposal, and utilities systems and public services available, and where the environment can support the proposed use in a manner which protects or restores the ecological functions.

Policy: Development standards for setbacks or buffers, shoreline stabilization, vegetation conservation, critical area protection, and water quality shall be established to ensure no net loss of ecological functions.

3.3.6 Urban Conservancy Environment

Policy: Uses that preserve the natural character of the area or promote preservation of open space, critical areas, 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 found compatible.

Policy: Standards shall be established for shoreline stabilization measures, vegetation conservation, water quality, and shoreline modifications. These standards shall ensure that new development does not result in a net loss of shoreline ecological function or further degrade other shoreline values.

3.3.7 Urban Conservancy-Slough Environment

Policy: Uses that preserve the natural character of the area or promote preservation of open space, critical areas, 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 found compatible.

Policy: Standards shall be established for shoreline stabilization measures, vegetation conservation, water quality, and shoreline modifications. These standards shall ensure that new development does not result in a net loss of shoreline ecological function or further degrade other shoreline values.

3.3.8 Critical Areas

Policy: The public interest should be promoted and enhanced by reducing risks to life and property, by protecting and restoring ecological functions and ecosystem-wide processes and ensuring no net loss of these functions.

Policy: The protection of existing ecological functions and ecosystem-wide processes should be encouraged and, wherever possible, restoration of degraded areas should be supported.

Policy: The protection and restoration of critical areas within shoreline jurisdiction should be encouraged through implementation of the full range of planning and regulatory measures.

3.3.9 Rivers and Streams – Critical Freshwater Habitat

Policy: River and stream corridors should be protected and restored where necessary to ensure no net loss of ecological functions within shoreline jurisdiction.

Policy: Degraded riverine shoreline areas should be restored wherever feasible.

3.3.10 Flood Damage Minimization

Policy: River and stream corridors should be retained in or restored to more natural hydrological conditions, and it should be recognized that seasonal flooding is an essential natural process.

3.3.11 Vegetation Conservation

Policy: The ecological functions and ecosystem-wide processes performed by vegetation along shorelines should be protected and restored.

Policy: Vegetation conservation and restoration policies and regulations should be implemented as necessary to assure no net loss of ecological functions, to avoid adverse impacts on soil hydrology, and to reduce the hazard of slope failures or accelerated erosion.

Policy: Riparian corridors and significant habitat should be protected and restored.

Policy: The importance of shoreline vegetation should be recognized, including: providing shade to maintain cooler water temperature, providing organic input, providing food, stabilizing banks and minimizing erosion, reducing fine sediment through stormwater retention and filtering, providing a source of large woody debris, regulating the microclimate, and providing critical riparian habitat.

3.3.12 Commercial Development

Policy: Restoration of impaired shoreline ecological functions and processes should be encouraged as part of commercial development.

3.3.13 Industrial Development

Policy: Where feasible, industrial development should incorporate environmental cleanup and restoration of the shoreline area.

Policy: Restoration of impaired shoreline ecological functions and processes should be encouraged as part of industrial development.

3.3.14 Landfill and Excavation

Policy: Fills waterward of the ordinary high water mark should be allowed only when necessary to support: water-dependent uses, public access, ecological restoration, and other uses as outlined by WAC 173-26-231(3)(c). Unavoidable impacts should be mitigated to the maximum extent practicable.

Policy: Landfill should be permitted in limited instances to restore uplands where recent erosion has rapidly reduced upland area, to build beaches and protective berms for shore stabilization or recreation, to restore or enhance degraded shoreline ecological functions and processes, or to moderately elevate low uplands to make such uplands more suitable for purposes consistent with this Program.

3.3.15 Shoreline Protection

Policy: Wherever possible, construction of shoreline protection structures should provide for protection, preservation and restoration of ecological functions and ecosystem-wide processes.

3.3.16 Shoreline Stabilization

Policy: Failing, harmful, unnecessary, or ineffective structures should be removed and, where appropriate, replaced. Shoreline ecological functions and processes should be restored using non-structural methods or less harmful long-term stabilization measures.

4.0 RESTORATION OPPORTUNITIES

The City of Nooksack has a number of potential restoration opportunities as mentioned in the introduction of this restoration plan. The amount and timing of restoration will depend on the availability of funding and coordination between the City, other agencies and volunteers. The following are areas of degraded ecological function or areas providing opportunities for future restoration and enhancement:

4.1 Reach 1

Reach 1 is defined as the shoreline of the Sumas River from South Pass Road north to the southern end of the Village of Nooksack subdivision. This reach is characterized by fully developed residential subdivisions set back from the shoreline a distance of 100 to 150 feet on the west (within City limits) and agricultural fields (raspberries) on the east (in the UGA Reserve area). Restoration and enhancement opportunities within Reach 1 include the following:

- Toxic components contained in the sediments carried and deposited by the Sumas River make large-scale restoration projects unlikely; however, shoreline setback and buffer regulations, which limit human disturbance, will help improve water quality and allow terrestrial vegetation, habitat and riparian corridors to increase naturally over time.
- Planned cluster residential development on the east side of the Sumas River may also limit development within the 100-year floodplain, which would preclude development within the full width of shoreline jurisdiction and allow some natural restoration to occur over time.

4.2 Reach 2

Reach 2 is defined as the shoreline of the Sumas River from the southern end of the Village of Nooksack subdivision to E. Madison Street. This reach is characterized by a fully developed residential subdivision set back from the shoreline a distance of 150 to 200 feet on the west (within City limits) plus one residence in the UGA and agricultural fields (raspberries) on the east to the point where the Sumas River is joined by Breckenridge Creek. Restoration and enhancement opportunities within Reach 2 include the following:

- Toxic components contained in the sediments carried and deposited by the Sumas River make large-scale restoration projects unlikely; however, shoreline setback and buffer regulations, which limit human disturbance, will help improve water quality and allow terrestrial vegetation, habitat and riparian corridors to increase naturally over time.
- Planned cluster residential development on the east side of the Sumas River may also limit development within the 100-year floodplain, which would preclude development within the full width of shoreline jurisdiction and allow some natural restoration to occur over time.

4.3 Reach 3 (A & B)

Reach 3 is defined as the shoreline of the Sumas River from E. Madison Street north to the City boundary. This reach is divided into two geographically separate areas – with Reach 3A being located adjacent to E. Madison Street. This reach is characterized by both fallow and active agriculture. Restoration and enhancement opportunities within Reach 3 include the following:

- No future development is anticipated within Reach 3, based on the presence of the FEMA-designated floodway and sediments containing naturally occurring asbestos.
- Although the toxic components contained in the sediments carried and deposited by the Sumas River make large-scale restoration projects unlikely, some restoration of ecological functions over time is possible based on limitations on human disturbance.

4.4 Reach 4

Reach 4 is defined as Breckenridge Creek within the eastern portion of the UGA and UGA Reserve. This reach includes agricultural fields and a public school adjacent to a well-vegetated riparian corridor. Restoration and enhancement opportunities within Reach 4 include the following:

- Shoreline setback and buffer regulations will help improve water quality and allow terrestrial vegetation, habitat and riparian corridors to increase naturally over time.
- Property owner initiated restoration and enhancement is a possibility, including removal of invasive species and planting of native vegetation.
- The full width of the naturally vegetated corridor along Breckenridge Creek has been included in the Natural shoreline designation; therefore, no development is anticipated in these ecologically intact areas.
- Enhancement of the riparian buffer by increasing the width of native shoreline vegetation in pasture or agriculture areas, to the full extent of shoreline jurisdiction, will be encouraged in conjunction with development.

4.5 Reach 5

Reach 5 is defined as Breckenridge Creek within the western half of the UGA and UGA Reserve. This reach includes a public school and cemetery to the north and agricultural fields (raspberries) to the south adjacent to a well-vegetated riparian corridor. Restoration and enhancement opportunities within Reach 5 include the following:

- Shoreline setback and buffer regulations will help improve water quality and allow terrestrial vegetation, habitat and riparian corridors to increase naturally over time.
- Property owner initiated restoration and enhancement is a possibility, including removal of invasive species and planting of native vegetation.
- A Natural-designated corridor has been identified along the full length of Breckenridge Creek through this reach; therefore, no development is anticipated.
- Enhancement of the riparian buffer by increasing the width of native shoreline vegetation in pasture or agriculture areas, to the full extent of shoreline jurisdiction, will be encouraged in conjunction with development.

4.6 Reach 6

Reach 6 is defined as the Nooksack Slough, east of Nooksack Avenue (State Route 9). This reach includes undeveloped areas and fully vegetated areas adjacent to the Nooksack Slough. Restoration and enhancement opportunities within Reach 6 include the following:

- Shoreline setback and wetland buffer regulations will help improve water quality and allow terrestrial vegetation, habitat and riparian corridors to increase naturally over time.
- Property owner initiated restoration and enhancement is a possibility, including removal of invasive species and planting of native vegetation.
- This fully vegetated wetland area has been designated Natural, which will preclude new development.

4.7 Reach 7

Reach 7 is defined as the Nooksack Slough from Nooksack Avenue to Jackson Street. This reach is characterized by fully developed residential areas adjacent to the Nooksack Slough. A narrow vegetated corridor exists through much of this reach. Restoration and enhancement opportunities within Reach 7 include the following:

- Shoreline setback and wetland buffer regulations will help improve water quality and allow terrestrial vegetation, habitat and riparian corridors to increase naturally over time.
- Some property owner initiated restoration and enhancement is anticipated in this reach, including removal of invasive species and planting of native vegetation.

4.8 Reach 8

Reach 8 is defined as the Nooksack Slough from Jackson Street to the western terminus of W. Lincoln Street. This reach is characterized by fully developed residential development adjacent to the Nooksack Slough. A narrow but at times wider vegetated corridor exists throughout this reach. Restoration and enhancement opportunities within Reach 8 include the following:

- Shoreline setback and wetland buffer regulations will help improve water quality and allow terrestrial vegetation, habitat and riparian corridors to increase naturally over time.
- Some property owner initiated restoration and enhancement is anticipated in this reach, including removal of invasive species and planting of native vegetation.
- A riparian buffer enhancement project is located just north of Jackson Street.

4.9 Reach 9 (A & B)

Reach 9 is defined as the two segments of the Nooksack Slough lying west of the western terminus of W. Lincoln Street that are within City limits. This reach is characterized by agricultural pasture with little or no intact vegetation except in the southernmost segment (Reach 9B) where some riparian vegetation remains intact. Restoration and enhancement opportunities within Reach 9 include the following:

- Shoreline setback and wetland buffer regulations will help improve water quality and allow terrestrial vegetation, habitat and riparian corridors to increase naturally over time.
- Property owner initiated restoration and enhancement is a possibility, including removal of invasive species and planting of native vegetation.
- Agricultural fencing will allow some natural restoration of riparian corridors over time.
- Restoration of the full length of the riparian corridor would also be encouraged or required in conjunction with new residential development.
- Any encroachment into shoreline buffers would require mitigation sufficient to ensure no net loss.

4.10 Reach 10

Reach 10 is defined as the Nooksack Slough from the western terminus of Hayes Street to Nooksack Avenue. This reach is characterized by both fully developed residential areas and undeveloped agricultural areas adjacent to the Nooksack Slough. Some areas of intact vegetation are present within this reach. Restoration and enhancement opportunities within Reach 10 include the following:

- Shoreline setback and wetland buffer regulations will help improve water quality and allow terrestrial vegetation, habitat and riparian corridors to increase naturally over time.
- Some property owner initiated restoration and enhancement is anticipated in this reach, including removal of invasive species and planting of native vegetation.
- Agricultural fencing will allow some natural restoration of riparian corridors over time.
- Restoration of the full length of the riparian corridor would also be encouraged or required in conjunction with new residential development.
- Any encroachment into shoreline buffers would require mitigation sufficient to ensure no net loss.

4.11 Reach 11

Reach 11 is defined as the Nooksack Slough from Nooksack Avenue to the northern terminus of E. Third Street. This reach is characterized by undeveloped agricultural fields and a few residences adjacent to the Nooksack Slough. Very limited intact vegetation is present within this reach. Restoration and enhancement opportunities within Reach 11 include the following:

- Shoreline setback and wetland buffer regulations will help improve water quality and allow terrestrial vegetation, habitat and riparian corridors to increase naturally over time.
- Some property owner initiated restoration and enhancement is anticipated in this reach, including removal of invasive species and planting of native vegetation.
- Any encroachment into shoreline buffers, including the establishment of new crossings of the Nooksack Slough, would require mitigation sufficient to ensure no net loss.
- Some removal of invasive species has occurred along the southern bank of the Slough.

4.12 Reach 12

Reach 12 is defined as the Nooksack Slough from the northern terminus of E. Third Street to the city boundary near Gilies Road. This reach is characterized by undeveloped agricultural fields adjacent to the Nooksack Slough with pockets of intact vegetation. Restoration and enhancement opportunities within Reach 12 include the following:

- Shoreline setback and buffer regulations will help improve water quality and allow terrestrial vegetation, habitat and riparian corridors to increase naturally over time.
- Restoration of the full length of the riparian corridor would also be encouraged or required in conjunction with new residential development.
- Any encroachment into shoreline buffers would require mitigation sufficient to ensure no net loss.

5.0 RESTORATION PROGRAMS AND PARTNERS

5.1 Restoration Programs

5.1.1 WRIA 1 Salmon Recovery Plan (SRP)

The SRP outlines actions necessary to recover ESA-listed salmonid populations, with a particular focus on Chinook salmon. The draft SRP includes a Salmonid Habitat Restoration Strategy that identifies and prioritizes specific projects to protect and restore habitats and the ecosystem processes essential to the recovery of threatened Chinook salmon and bull trout, along with other salmonids native to the Nooksack and other watersheds. The restoration measures identified in the SRP have the potential to benefit the full range of shoreline processes and can therefore be expected to have a direct benefit on shoreline ecological functions throughout the County. <http://whatcomsalmon.whatcomcounty.org/action-processes-recoveryplan.html>

5.1.2 WRIA 1 Watershed Management Plan (WMP)

The WRIA 1 planning process provides a framework for government and non-governmental organizations to plan for and address issues relating to water quantity, water quality, instream flow and fish habitat within Whatcom County. The result of this planning effort was the WRIA 1 Watershed Management Plan (WMP). The WMP is intended to be a living document that will be updated over time as projects and programs to address water quantity, quality, instream flows, and fish habitat are implemented. These projects are expected to have direct benefits on shoreline resources and contribute to meeting the no net loss goals of the Shoreline Management Act and the Nooksack Shoreline Master Program.

<http://wria1project.whatcomcounty.org/Plan-Implementation-/Watershed-Management-Plan/6.aspx>

5.1.3 Conservation Reserve Enhancement Program (CREP)

CREP is a joint partnership between the State of Washington and the USDA, and is administered by the Whatcom Conservation District and the Natural Resource Conservation Service. This conservation program provides incentives to restore and improve salmon and steelhead habitat on private land. This program is voluntary for landowners, and generally involves removal of invasive species and planting trees and shrubs for 10-15 years to stabilize stream and riverbanks. <http://www.whatcomcd.org/CREP>

5.1.4 Whatcom County Shoreline Restoration Plan

In conjunction with updating its shoreline management program, Whatcom County has developed a draft Restoration Plan. This plan identifies restoration projects within the City of Nooksack and urban growth area that have the potential to restore and enhance the shoreline processes within the City.

<http://www.whatcomcounty.us/pds/naturalresources/shorelines/index.jsp>

5.2 Restoration Partners

5.2.1 Lummi Nation

The Lummi Nation is active in most of the ongoing natural resource protection and management efforts in Whatcom County. These efforts encompass a wide range of issues related to salmon recovery and water quality/quantity. <http://lnnr.lummi-nsn.gov/LummiWebsite/>

5.2.2 Nooksack Tribe

The Nooksack Tribe is also very active in natural resource protection and management, with a focus on fisheries restoration. The Nooksack Natural Resources Department (NNR) works to protect and recover the treaty resources of the Nooksack Tribe by assessing, preserving and restoring salmon habitat, and by managing fish resources for the long term in an ecologically sound, sustainable manner. http://www.nooksack-tribe.org/Natural_Resource.htm

5.2.3 Nooksack Salmon Enhancement Association (NSEA)

NSEA is one of the 14 regional salmon enhancement groups in the Washington Department of Fish and Wildlife Regional Fisheries Enhancement Group Program. NSEA works closely with local, state, and federal agencies and local tribes, including the Whatcom Conservation District, the Nooksack Recovery Team, WDFW, DNR, Ecology, USFWS, the Nooksack Tribe, and the Lummi Nation. NSEA works with habitat restoration and salmon enhancement through replanting native vegetation, restoring riparian zones, reducing livestock impacts on water quality, improving instream habitat, and stabilizing eroding banks. <http://www.n-sea.org/restoration>

5.2.4 Whatcom Conservation District (WCD)

Whatcom Conservation District works with landowners and farmers to manage natural resources in Whatcom County. WCD is involved in school programs such as 6th Grade Tour (of restoration sites) and Students for Salmon (in coordination with NSEA). These programs could be used to increase ecological awareness and involvement among school-aged children. <http://www.whatcomcd.org/home>

5.2.5 Washington Department of Ecology (Ecology)

Washington Department of Ecology has regulatory authority over waters of the state. Ecology is actively involved in watershed planning, as well as outreach and education efforts to improve water quality throughout Whatcom County. Ecology also administers the Coastal Zone Management (CZM) grant program that funds shoreline planning and improvement projects, such as the Nooksack Shoreline Master Program Update. <http://www.ecy.wa.gov/livingshorelines/index.html>

5.2.6 Washington Department of Fish and Wildlife (WDFW)

The Washington Department of Fish and Wildlife is a state leader in providing technical support staff as well as funding for salmon recovery and habitat protection and restoration efforts. One of the mechanisms for this support is through the Priority Habitats and Species (PHS) program, which provides management guidelines pertaining to a wide variety of habitats and species throughout the state. <http://wdfw.wa.gov/conservation/>

5.2.7 Washington State Department of Natural Resources (DNR)

The Washington State Department of Natural Resources manages forests, farms, commercial properties and underwater lands under state ownership within Whatcom County. Much of this land is dedicated to supporting public institutions like schools and universities. DNR's aquatic lands are managed to provide access to rivers, lakes, streams and Puget Sound. The DNR also works to serve the continuation of navigation and commerce. <http://www.dnr.wa.gov>

5.2.8 Washington State Recreation and Conservation Office (RCO)

The RCO administers a wide range of grant programs that support development of recreational facilities, acquisition of open space and greenways, protection and enhancement of aquatic lands, and increased access to public resources. <http://www.rco.wa.gov/>

5.2.9 WSU Cooperative Extension

WSU Cooperative Extension, a non-degree program funded through Washington State University, offers a variety of hands-on public educational materials and programs that support environmental and natural resource management in the community. Courses are available to landowners in the following subject areas: forestry, riparian management, water, wildlife, and watershed and beach masters. WSU Cooperative Extension often works closely with other community organizations such as the Conservation District and Whatcom County in providing public educational services. The Cooperative Extension is also active in supporting agriculture and best management practices throughout Whatcom County. <http://extension.wsu.edu/nrs/>

5.2.10 Whatcom County

Whatcom County has jurisdiction over a large area of land that impacts the quality of the shorelines within the City of Nooksack. County land use regulations have been updated to provide increased protection of aquatic resources, and the County has also prepared a draft shoreline restoration plan that addresses the Sumas River watershed. The County is also one of the lead agencies in the implementation of the WRIA 1 Salmon Recovery Plan and Watershed Management Plan. <http://www.co.whatcom.wa.us/pds/naturalresources/index.jsp>

5.2.11 US Army Corps of Engineers (USACE)

The USACE designs, constructs and permits civil works projects, including flood control and habitat restoration. Through their regulatory program, they oversee the protection and utilization of public water resources, including evaluating applications and issuing permits for work in US waters. They regulate the filling of wetlands and require mitigation that typically includes restoring and enhancing wetland and shoreline functions. <http://www.nws.usace.army.mil/>

6.0 IMPLEMENTATION AND MONITORING

6.1 Timelines and Benchmarks

The goals and objectives of this Restoration Plan are intended to be implemented over the course of the next twenty years, with some actions being accomplished in the short-term through adoption of the updated Nooksack Shoreline Master Program and other actions being completed within 5, 10 or 20 years. The following section presents the groups of actions that are anticipated to be completed during the course of the various time horizons. These groupings include the restoration opportunities discussed previously in Section 4 and can be used as benchmarks for reviewing the success of the restoration strategies and evaluating the need for any changes.

6.1.1 Short-term Benchmark

- Protection of shoreline processes and existing shoreline vegetation through adoption of updated SMP policies and regulations

6.1.2 Five-year Benchmark

- Survival and maturation of recent plantings of riparian vegetation within the buffer enhancement area in Reach 8.
- Continued removal of invasive species and some initial plantings of native vegetation in Reach 11.

6.1.3 Ten-year Benchmark

- Additional enhancement projects within Reach 8.

- Some property owner initiated enhancement activities in Reach 7.
- Additional planting of riparian vegetation in Reach 11.
- Initial enhancement of riparian corridors in Reaches 9 and 12 through planting of native vegetation.

6.1.4 Twenty-year Benchmark

- Removal of invasive species and planting of native vegetation at multiple locations.
- Maturation of existing or enhanced native vegetation in Natural designation areas in Reaches 4,5, and 6.
- Maturation of native vegetation plantings within riparian corridors in Reaches 9 and 12.

6.2 Monitoring and Adaptive Management

Adaptive management is the process of continually reviewing and improving management policies and practices in response to results. As data are gathered and compared to prior results, the City will be able to better understand the success of completed restoration efforts and how environmental functions and processes are being impacted. As this understanding increases, the City will have the opportunity to adjust shoreline and restoration policies, regulations and priorities to adapt to changes in conditions and new information. The City will need to take action based on the principles of adaptive management if the mandate of no net loss of shoreline ecological functions is not being met and if shoreline restoration goals and objectives are not being met satisfactorily.

The City should monitor development and shoreline processes through a variety of methods, including:

- Tracking information using permitting activities and GIS work to display new shoreline development, shoreline variances, compliance issues, new impervious surfaces, vegetation retention/loss, and bulkheads/armoring.
- Review and provide input to regional ongoing monitoring programs through the coordination with regional agencies to identify any major environmental changes that might occur.
- Re-review the status of environmental processes and functions at the time of periodic SMP updates to validate the effectiveness of the SMP, including what restoration activities actually occurred.

Policies, goals, regulations, and restoration efforts should be monitored and evaluated every five years. Through the collection and display of data, the City should be able to monitor and adapt to changing shoreline conditions to ensure that the goals of the shoreline program related to no net loss and restoration are being met.

6.3 Potential Funding Sources

Local, state, and federal public agencies, along with other non-profit organizations offer a variety of funding and grant sources for restoration projects. The following table outlines a select few as examples of potential funding sources.

Table 1 – Grant Funding Sources

Grant Name	Allocating Entity	Grant Size	Contact
Coastal Protection Fund - <i>Terry Husseman Account</i>	Washington State Department of Ecology	Capped at \$50,000	Ann Wessel Phone: (360) 715-5215 Email: awes461@ecy.wa.gov http://www.ecy.wa.gov/programs/sea/grants/cpf/index.html
Nonpoint Source Implementation Grant (319) Program	Environmental Protection Agency, Washington State Department of Ecology	Varies	Alissa Ferrell Phone: (360) 407-6429 Email: alfe461@ecy.wa.gov http://www.ecy.wa.gov/programs/wq/funding/FundingPrograms/Section319/Sec319Prgm.html
Centennial Clean Water Grant Program	Washington State Department of Ecology	Varies	Jeff Nejedly Phone: (360) 407-6566 Email: jnej461@ecy.wa.gov http://www.ecy.wa.gov/programs/wq/funding/FundingPrograms/Centennial/Cent.html
Clean Water State Revolving Fund Loan Program	Washington State Department of Ecology	Varies	Cindy Price Phone: (360) 407-7132 Email: cpri461@ecy.wa.gov http://www.ecy.wa.gov/programs/wq/funding/FundingPrograms/CWSRF/cwsrf.html
Community-Based Restoration Program	NOAA	Varies	Paul Cereghino Phone: (360) 902-2603 Email: Paul.r.cereghino@noaa.gov http://www.habitat.noaa.gov/funding/crp.html http://www.habitat.noaa.gov/funding/northwest.html
Ecotrust		\$20,000 to \$100,000	http://www.ecotrust.org/wwri/
Cooperative Endangered Species Conservation Fund	USFWS	Varies	Heather Hollis Phone: 503-231-2372 Email: Heather_Hollis@fws.gov http://www.fws.gov/endangered/grants/grant-programs.html
Aquatic Lands Enhancement Grants (ALEA)	RCO	Varies	Lorinda Anderson Phone: (360) 902-3009 Email: lorinda.anderson@rco.wa.gov http://www.rco.wa.gov/grants/alea.shtml

7.0 RESTORATION MANAGEMENT AND UNCERTAINTY

Volunteer efforts and regional coordination among governmental and non-governmental agencies are two components that are key to the success of restoration projects. Regulatory and non-regulatory incentives could also be utilized to encourage new projects to include some restoration as a condition of development. Management and maintenance are also integral to creating successful restoration projects. The availability of government funding to support restoration and ongoing maintenance efforts is also subject to change. Based on all of these factors, a degree of uncertainty exists related to how quickly and how successfully the City will be able to achieve its goals related to restoration of the City's shoreline areas. However, with a strong policy base, a clear commitment from City administration and a framework that includes adoptive management, there is strong likelihood of success.