ORDINANCE D13-56
ATTACHMENT "D"

City of Bonney Lake
Grant No. G1000016

Final

Shoreline Restoration Plan Component of the Shoreline Master Program for the City of Bonney Lake Shorelines: Lake Tapps and Fennel Creek

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This report was funded in part through a grant from the Washington Department of Ecology.

November 2013

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SHORELINE RESTORATION PLAN
CITY OF BONNEY LAKE

1.0 INTRODUCTION

The City of Bonney Lake's Shoreline Master Program (SMP) applies to activities in the shoreline jurisdiction zone. Compensatory mitigation is required for activities that have adverse effects on the ecological functions and values of the shoreline. By law, the proponent of any such activity is required to return the subject shoreline to a condition equivalent to the baseline level at the time the activity takes place. It is understood that some uses and developments cannot always be mitigated fully, resulting in incremental and unavoidable degradation of the baseline condition. The subsequent challenge is to improve the shoreline over time in areas where the baseline condition is degraded, severely or marginally.

WAC Section 173-26-201(2)(f) of the Shoreline Master Program Guidelines (Guidelines)[1] says:

> … master programs shall include goals and policies that provide for restoration of such impaired ecological functions. These master program provisions shall identify existing policies and programs that contribute to planned restoration goals and identify any additional policies and programs that local government will implement to achieve its goals. These master program elements regarding restoration should make real and meaningful use of established or funded nonregulatory policies and programs that contribute to restoration of ecological functions, and should appropriately consider the direct or indirect effects of other regulatory or nonregulatory programs under other local, state, and federal laws, as well as any restoration effects that may flow indirectly from shoreline development regulations and mitigation standards.

Degraded shorelines are not just a result of pre-SMP activities, but also of unregulated activities and exempt development. The new Guidelines also require that "[l]ocal master programs shall include regulations ensuring that exempt development in the aggregate will not cause a net loss of ecological functions of the shoreline." While some actions within shoreline jurisdiction are exempt from a permit, the SMP should clearly state that those actions are not exempt from compliance with the Shoreline Management

[1] The Shoreline Master Program Guidelines were prepared by the Washington Department of Ecology and codified as WAC 173-26. The Guidelines translate the broad policies of the Shoreline Management Act (RCW 90.58.020) into standards for regulation of shoreline uses. See http://www.ecy.wa.gov/programs/sea/sma/guidelines/index.html for more background.

Act or the local SMP. Because the shoreline environment is also affected by activities taking place outside of a specific local master program's jurisdiction (e.g., outside of city limits, outside of the shoreline area within the city), assembly of out-of-jurisdiction actions, programs and policies can be essential for understanding how the City fits into the larger watershed context. The latter is critical when establishing realistic goals and objectives for dynamic and highly interconnected environments.

Restoration of shoreline areas, in relation to shoreline processes and functions, commonly refers to methods such as re-vegetation, removal of invasive species or toxic materials and removal of bulkhead structures, piers, and docks. Consistent with Ecology's definition, use of the word "restore," or any variations, in this document is not intended to encompass actions that reestablish historic conditions. Instead, it encompasses a suite of strategies that can be approximately delineated into four categories:

- Creation (of a new resource)
- Restoration (of a converted or substantially degraded resource)
- Enhancement (of an existing degraded resource)
- Protection (of an existing high-quality resource)

As directed by the Guidelines, the following discussions provide a summary of baseline shoreline conditions, list restoration goals and objectives, and discuss existing or potential programs and projects that positively impact the shoreline environment. In total, implementation of the SMP (with mitigation of project-related impacts) in combination with this Restoration Plan (for restoration of lost ecological functions that occurred prior to a specific project) should result in a net improvement in the City of Bonney Lake's shoreline environment in the long term.

In addition to meeting the requirements of the Guidelines, this Restoration Plan is also intended to support the City's or other non-governmental organizations' applications for grant funding, and to provide the interested public with contact information for the various entities working within the City to enhance the environment.

2.0 SHORELINE INVENTORY SUMMARY

2.1 Introduction

The City recently completed a comprehensive inventory and analysis of its shorelines (The Watershed Company and Makers 2010) as an element of its SMP update. The purpose of the shoreline inventory and analysis was to gain a greater understanding of the existing condition of Bonney Lake's shoreline environment to ensure the updated SMP policies and regulations are well suited in protecting ecological processes and functions. The inventory describes existing physical and biological conditions in the shoreline zones within City limits and includes recommendations for restoration of ecological functions where they are degraded. The *Shoreline Analysis Report for the City of Bonney Lake's Shorelines: Lake Tapps and Fennel Creek* (The Watershed Company and Makers 2010) is summarized below.

2.2 Shoreline Boundary

As defined by the Shoreline Management Act of 1971, shorelines include certain waters of the state plus their associated "shorelands." At a minimum, the waterbodies designated as shorelines of the state are streams whose mean annual flow is 20 cubic feet per second (cfs) or greater and lakes whose area is greater than 20 acres. Shorelands are defined as:

> … those lands extending landward for 200 feet in all directions as measured on a horizontal plane from the ordinary high water mark; floodways and contiguous floodplain areas landward 200 feet from such floodways; and all wetlands and river deltas associated with the streams, lakes, and tidal waters which are subject to the provisions of this chapter…Any county or city may determine that portion of a one-hundred-year-floodplain to be included in its master program as long as such portion includes, as a minimum, the floodway and the adjacent land extending landward two hundred feet therefrom… Any city or county may also include in its master program land necessary for buffers for critical areas (RCW 90.58.030)

The City's existing SMP is presently is in the process of being updated. The SMP will consist of the goals and policies in the City's comprehensive plan and provisions in the City's municipal code.

The northern portion of the City of Bonney Lake is located along the shoreline of Lake Tapps. Lake Tapps is approximately 4.5 square miles in size, and is therefore included in a classification of unique shorelines known as Shorelines of Statewide Significance.

Following the completion of the Final City of Bonney Lake Shoreline Analysis Report (The Watershed Company and Makers 2010) it was determined mutually by the City and The Washington State Department of Ecology (Ecology) that the portion of the Printz Basin Flume from its terminus to the City's jurisdictional boundary was not regulated under the SMA or the SMP. As a result, this area is no longer included in the City's SMP documents, including this Restoration Plan.

Fennel Creek exceeds the 20 cfs cutoff point after it leaves the main southern boundary of the City. However, the stream then briefly flows through a City owned parcel located on Rhodes Lake Road East (just downstream of Victor Falls). Proposed shoreline jurisdiction is shown below in Figure 1. The entire jurisdiction assessment and determination process can be reviewed in greater detail in Appendix C of the Final City of Bonney Lake Shoreline Analysis Report (The Watershed Company and Makers 2010).

Figure 1. City of Bonney Lake shoreline jurisdiction.

2.3 Inventory

The Final City of Bonney Lake Shoreline Analysis Report included all land within the City's proposed shoreline jurisdiction and the area upland of the Printz Basin Flume determined later not to be within the shoreline jurisdiction. Not including aquatic area or the Printz Basin Flume area, the shoreline jurisdiction totals approximately 217 acres (0.34 square miles) in area and encompasses about 9.7 miles (51,399 linear feet) of shoreline.

In order to break down the shoreline into manageable units and to help evaluate differences between discrete shoreline areas, the shorelines were divided into assessment units based on waterbody, land use and ecological condition. The Lake Tapps and Fennel Creek unit are shown below in Figures 2 and 3, respectively.

Table 1 shows the shoreline frontage and acreage of each assessment unit on Lake Tapps. A summary of inventory and analysis information from the Shoreline Analysis Report (The Watershed Company and Makers 2010) is presented in the following sections.

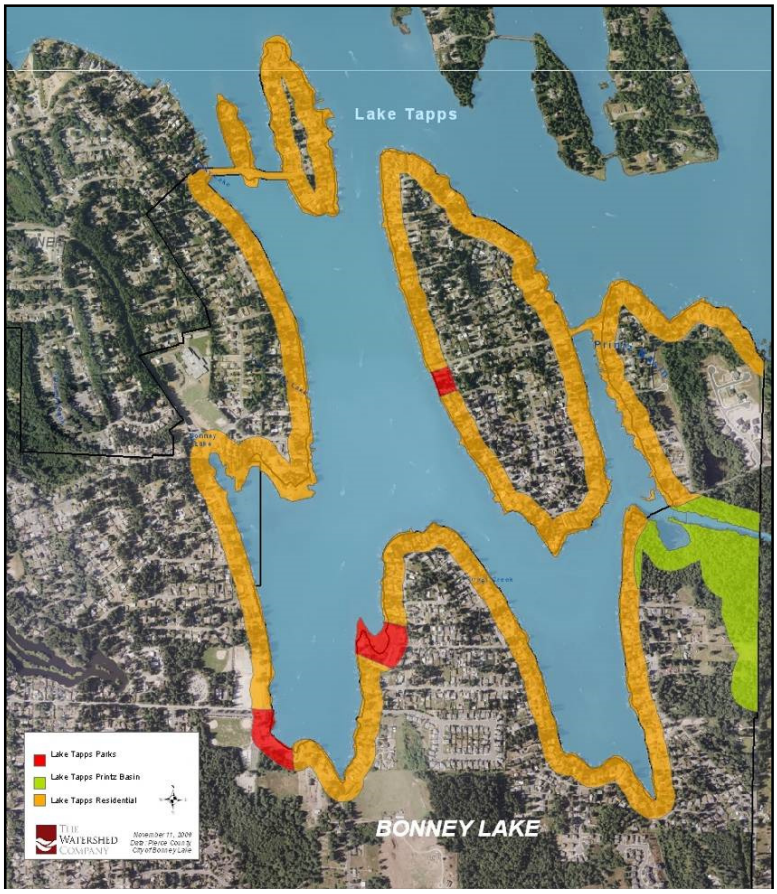

Figure 2. Lake Tapps shoreline assessment units.

Figure 3. Fennel Creek shoreline assessment unit.

Table 1. Dimensions of Lake Tapps shoreline assessment units.

Assessment Unit		Shoreline frontage (lineal feet)	Land Area[1] (acres)
Lake Tapps	Residential	48,382.3	201.1
	Park Facilities	1,727.4	9.7
Fennel Creek		1,289.2	6.8
TOTAL		54,761.3	245.3

[1] Assessment unit area is the landward portion of the shoreline management area.

2.3.1 Land Use and Physical Conditions

The City of Bonney Lake is located in Pierce County, Washington, along the southern section of the shoreline of the approximately 4.5-square-mile Lake Tapps. The entire area is within Washington State's Water Resource Inventory Area (WRIA) 10. The City encompasses approximately 5.5 square miles and is bordered nearly on all sides by unincorporated Pierce County jurisdiction, with a small shared border with Sumner along the northwest portion of the City. The City of Auburn is located generally north of Bonney Lake at the north end of Lake Tapps. Puyallup is located to the west, Buckley to the east, and Orting to the south. Only a portion of Lake Tapps is located in the City's shoreline jurisdiction, while the remainder is located in unincorporated Pierce County. The upper portion of Fennel Creek passes through a substantial portion of the City, but as mentioned above, Fennel Creek does not meet the 20 cfs flow threshold (i.e., shoreline

designation criteria) until further downstream, south of the main southern boundary of the City. Only briefly does the stream pass through the City-owned parcel located on the south side of Rhodes Lake Road East. The study area for this report includes all land currently within the City's proposed shoreline jurisdiction.

Present land use in shoreline jurisdiction varies in some cases by assessment unit. The Residential assessment unit of the Lake Tapps shoreline is zoned 89 percent residential. Remaining land in the residential unit is zoned medium- and high-density residential and public facilities (1 percent). The Lake Tapps Park Facilities unit is 74 percent public facilities and 26 percent residential zoning. Fennel Creek is zoned entirely as public facilities. Much of the Lake Tapps shoreline is at build-out and contained within the Residential assessment unit. The much smaller Fennel Creek unitis undeveloped and nearly entirely vegetated. The Park Facilities unit is highly developed for recreational uses. At present, two of the three parks that make up the unit are in private ownership. The lot to the north of City-owned Allan Yorke Park is planned for development, with dedication of part of the shoreline to City ownership in the future by an approved permit. City-owned public access is limited to Allan Yorke Park at this time. Wetlands are depicted by a County inventory and the National Wetland Inventory along the majority of Lake Tapps shoreline and along Fennel Creek in the Fennel Creek assessment unit; much of the shoreline, however, is developed with lawns, bulkheads and docks and may no longer be functioning wetland.

The elements of impervious surface, overwater cover, shoreline armoring, vegetated cover, critical/historic areas, water quality, and Washington Department of Fish and Wildlife (WDFW) Priority Habitats and Species (PHS) and listed species occurrence are shown in Table 2.

Table 2. Summary of Inventory by Assessment Unit.

Inventory Element	Shoreline Assessment Unit		
	Lake Tapps		Fennel Creek
	Residential	Park Facilities	
Impervious Surface	**40%**	**29%**	**1%**
Overwater Cover[1]	• 516 piers, docks, or other structures • 5 lots w/o structures (1%) • ~83 boat canopies (18% of waterfront lots)	• 8 piers, docks, or other structures – includes swim enclosures	NA
Shoreline Armoring[2]	• Not Armored: ~4,750 ft (10%) • Bulkhead: 90% • Boat Ramps: ~49 ramps (11% of waterfront lots)	• Not Armored: ~1020 ft (59%) • Bulkhead: ~700 ft (41%) • Boat Ramps: 3	NA
Critical Areas	• Wetlands – as percent of area (**13**%) • Floodplain – **10**% • Geologically Hazardous Areas - **29**% • Habitat Conservation Areas - **0**%	• Wetlands – **18**% • Floodplain – **16**% • Geologically Hazardous Areas - **0**% • Habitat Conservation Areas – **54**%	• Wetlands – **49**% • Floodplain – **35**% • Geologically Hazardous Areas - **85**% • Habitat Conservation Areas – **0**%
Listed Species	• None listed	• None listed	• Chinook salmon • Steelhead
Priority Habitat and Species	• Waterfowl concentrations • Priority wetlands • Bald eagle	• Waterfowl concentrations • Priority wetlands • Bald eagle	• Priority wetlands
Impaired Waters (303d/305b)	• Invasive exotic species (Category 4C) • Total Phosphorus (Category 1)	• Invasive exotic species (Category 4C) • Total Phosphorus (Category 1)	N/A

[1] Assessment of overwater cover conducting using2008 aerial photo. Digitized cover was not available in GIS.

[2] Assessment of shoreline armoring conducting using 2008 aerial photo. This assessment tallied the number of unarmored waterfront lots. Based on the total shoreline length and the number of waterfront parcels, an average length of 100 feet of water edge was estimated per lot.

2.3.2 Biological Resources and Critical Areas

The City of Bonney Lake's shorelines are located in the Lake Tapps Sub-basin (of the White River watershed) and the Fennel Creek Sub-basin (of the Puyallup River

watershed). Characteristics for the White River Basin are described in the White River Basin Plan Characterization Report (Pierce County 2007). Additional characteristics for Lake Tapps as a whole are presented in the Draft Pierce County Inventory and Characterization Report (ESA 2007).

Lake Tapps, which was originally four small lakes, is now the largest lake/reservoir in Pierce County, totaling approximately 4.5 square miles in surface area (2,296 acres) and includes approximately 45 miles of shoreline. The City includes 9.5 miles of Lake Tapps shoreline frontage, resulting in 211 acres of shoreline jurisdiction area associated with the lake (includes associated wetland complexes). The entire jurisdiction assessment and determination process can be reviewed in detail in Appendix C of the Shoreline Analysis Report (The Watershed Company and Makers 2010).

Lake Tapps was formed in the early 1900's as a water reservoir for hydroelectric power generation by building nearly 2.5 miles of dikes and embankments around four small lakes. Water is diverted from the White River at a facility in the City of Buckley and then transported through a combination of flumes and open channels to Lake Tapps. Discharge from Lake Tapps enters back into the White River near the City of Sumner. Puget Sound Energy has recently ceased hydroelectric production in Lake Tapps and has sold the lake and the associated water right to the Cascade Water Alliance (CWA). Future lake operation (elevation and corresponding hydrograph) will be determined by CWA but coordinated through the Lake Tapps Community Council. The Washington State Department of Ecology is reviewing current information regarding the use of Lake Tapps as a municipal water supply. Much like operations conducted during Puget Sound Energy's ownership, CWA plans to maintain higher water levels in the spring, summer and fall for recreational purposes. In late fall through winter, the lake levels are lowered to allow homeowners to repair and maintain docks and bulkheads and also to provide for dike maintenance/repair and control of milfoil.

Testing of Lake Tapps water quality by the Department of Ecology has found that the lake can be classified as oligotrophic (i.e., nutrient limited) but has recorded elevated levels of chlorophyll concentrations and hypolimnetic oxygen depletion which would indicate that the lake is more mesotrophic (i.e., moderately productive) (Ecology 2006).

Within the southern portion of the City, shoreline jurisdiction includes a small segment of Fennel Creek, totaling ¼-mile, as it meanders through City owned property. The shoreline area for the stream is 6.8 acres. Fennel Creek is a tributary to the Puyallup River, and drains a total of approximately 11 square miles. Fennel Creek originates near the north side of SR-410 east of its intersection with 233rd Street East. The stream drains

an area of various land uses including, agricultural, rural, and residential. Fennel Creek flows through several steep canyons before emptying into the Puyallup River.

Biological resources of the Bonney Lake shoreline areas perform hydrologic, vegetative, hyperheic and habitat functions, which are used in the Shoreline Analysis Report (The Watershed Company and Makers 2010) to evaluate assessment unit performance. They are summarized in the following paragraphs and Table 3.

The following summarizes the general existing condition along most of the Lake Tapps shoreline in the City of Bonney Lake, noting the overall degradation of shoreline function due to historical development and clearing along the lakeshore. The Lake Tapps Residential assessment unit is entirely residential parcels and primarily single-family. Biological function is low for the unit because of the built conditions: a high degree of shoreline armoring, numerous overwater structures, high potential for pollutants from lawns and developed areas, and a very low degree of remaining natural vegetation. Little potential for large woody debris and organic matter recruitment exists. The lack of both living and dead vegetation greatly limits many biological functions, include wave attenuation, nutrient and sediment removal, bank stabilization, temperature regulation, and food production and delivery.

The Park Facilities unit of the Lake Tapps shoreline consists of three parks. The sole public park, Allan Yorke Park, is located in the southwestern corner of Lake Tapps and includes approximately 700 feet of shoreline. The entirety of the shoreline is hardened with bulkheads. The park is bisected by West Tapps Highway East. Amenities on the eastern (waterward) portion of the park include a boat launch, fishing dock, and swimming areas. Upland amenities include ball fields, playgrounds, a skateboard park, tennis courts, and restrooms. The southernmost portion of the shoreline is owned by CWA, while the northern portion is owned by the City. Church Lake Park is located just to the northeast of Allan Yorke Park. The park is made up of two parcels and includes approximately 800 feet of shoreline frontage. The park is not open to the public, as it is commonly owned by nearby property owners. Park amenities include a basketball court, picnic areas, a boat launch and a dock. The third and final park on Lake Tapps within City jurisdiction is located on the western shoreline of Inlet Island. The park is made up of four separate parcels, and just like Church Lake Park, is not open to the public. The park includes a volleyball court, playground, several buildings, a boat launch, two docks and an enclosed swimming area. The park includes a total of approximately 280 feet of shoreline frontage.

Biological function in the Park Facilities unit is also low, due to high development that includes impervious surface and maintained lawn. Potential for contaminated runoff is high, and little natural vegetation exists to perform water quality, water storage, or habitat functions. A lack of woody debris and organic materials further limits habitat function, as well as the normal functions of vegetation, as described previously in this section for the Residential unit.

The Fennel Creek assessment unit consists of that portion of Fennel Creek that flows through City-owned property just south of Rhodes Lake Road East. The parcel, approximately 9.7 acres in size, is completely surrounded by areas of unincorporated Pierce County, with the nearest areas of City jurisdiction located approximately 500 feet northwest of the parcel. Victor Falls, an 80-foot-high waterfall on Fennel Creek, is located just upstream of the City property. The property through which Fennel Creek passes is the location of the Victor Falls Springs, one of four wells from which the City draws its water. The City has assessed each of the four wells and determined that Victor Falls Springs is the least safe of the four due to its close proximity to nearby septic systems. However, nitrate levels at the well do not exceed the State Board of Health's maximum contaminant level.

Fennel Creek is a perennial stream whose headwaters are located near the north side of SR 410, east of its intersection with 233rd Street East. The entire Fennel Creek Sub-basin drains approximately 11 square miles, of which three square miles are located within Bonney Lake. Victor Falls presents a fish passage barrier to anadromous fish attempting to migrate up Fennel Creek. Below the falls, and therefore on City property, Fennel Creek contains steelhead, coho, Chinook, and possible bull trout. Overall, biological function in the unit is moderate/high. Habitat function is high because of dense native forest in the unit. The stream channel is relatively undisturbed. However, the shoreline soils are susceptible to erosion and development in upper basin has likely altered flow regime. These characteristics temper sediment transport and nutrient/toxin removal function somewhat.

Washington Department of Fish and Wildlife (WDFW) Priority Habitats and Species (PHS) maps indicate the presence of waterfowl concentrations in the entirety of Lake Tapps (see the Shoreline Analysis Report, Appendix D, Figure 9). Coho salmon, resident cutthroat trout, and winter steelhead occurrences are depicted in Fennel Creek within shoreline jurisdiction.

Table 3. Summary of shoreline inventory ecological function ratings by assessment unit.

Shoreline Processes and Functions Occurring within Assessment Unit	Shoreline Assessment Unit		
	Lake Tapps		Fennel Creek
	Residential	Park Facilities	
Hydrologic			
Storage of water and sediment	Low/moderate	Low/moderate	Moderate/high
Transport of water and sediment	N/A	N/A	Moderate
Attenuation of flow energy	Low/moderate	Moderate	Moderate/high
Developing pools, riffles and gravel bars	N/A	N/A	Moderate/high
Removing excess nutrients and toxic compounds	Low	Low	Moderate
Recruitment and transport of LWD and other organic materials	Low	Low	Moderate/high
Vegetation			
Temperature regulation	Low	Low	Moderate/high
Water quality improvement	Low	Low	Moderate/high
Attenuation of flow energy	Low	Low	High
Sediment removal and bank stabilization	Low	Low/moderate	Moderate/high
Recruitment of LWD and organic matter	Low	Low	High
Hyporheic			
Removing excess nutrients and toxic compounds	N/A	N/A	Moderate
Water storage and maintenance of base flows	N/A	N/A	Moderate
Support of vegetation	N/A	N/A	Moderate
Habitat			
Physical space and conditions for life history support	Low	Low/moderate	High
Food production and delivery	Low	Low	Moderate/high
Summary	Low	Low	Moderate/high

3.0 RESTORATION GOALS AND OBJECTIVES

In accordance with statewide provisions (WAC 173-26-201(2)(f)), this restoration plan includes "goals, policies and actions for restoration of impaired shoreline ecological functions…designed to achieve overall improvements in shoreline ecological functions over time, when compared to the status upon adoption of the master program." The documents summarized in this section target at various levels the general goal of shoreline ecological function improvement.

In support of this general goal, the City's SMP (Chapter 13, Section 5.6) includes the following goal and policies as part of the Shoreline Restoration and Ecological Enhancement provisions:

Goal SL-21: Implement the projects, programs, and plans to restore areas that have been degraded or diminished as a result of past activities.

Policy SL-21.1: Include provisions for shoreline vegetation restoration, fish and wildlife habitat enhancement, and low impact development techniques in projects located within the shoreline.

Policy SL-21.2: Minimize impacts from publicly initiated aquatic vegetation management efforts.

3.1 Pierce County Shoreline Restoration Report

The Pierce County SMP update includes five goals in its restoration report component (ESA Adolfson 2009). These goals are intended to fulfill the County-wide restoration vision:

> The County will strive to restore, protect and enhance the shoreline resources and ecological processes that contribute to those resources through a combination of public actions and voluntary private actions. Restoration efforts, combined with protection of existing shoreline resources, will be targeted to create a net improvement in the shoreline ecosystem over time so as to benefit native fish and wildlife, and maintain public amenities for the people of Pierce County, Washington.

The Pierce County restoration goals are as follows:

1. To improve shoreline processes, functions, and values over time through regulatory and voluntary and incentive-based public and private programs and actions that are consistent with the SMP and other agency/locally adopted restoration plans.

2. To increase the availability, viability and sustainability of shoreline habitats for salmon, shellfish, forage fish, shorebirds and marine seabirds, and other species; improve habitat quality for sensitive and/or locally important species; and support the biological recovery goals for federally protected species.

3. To integrate restoration efforts with capital projects and other resource management efforts including, but not limited to, shellfish closure response plans and water cleanup plans.

4. To encourage cooperative restoration actions involving local, state, and federal public agencies, tribes, non-government organizations, and private landowners.

5. To participate in the Puget Sound Partnership and commit energy and resources to implementation of the Puget Sound Action Agenda.

4.0 Ongoing City Plans and Programs

The City of Bonney Lake implements elements of the Growth Management Act through the adoption of the City's comprehensive plan and the Bonney Lake Municipal Code, which includes critical areas regulations that apply outside of shoreline jurisdiction. The City also has stormwater regulations and a Septic System Abatement Master Plan.

4.1 Comprehensive Plan

The Bonney Lake Comprehensive Plan (City of Bonney Lake 2007) goals and policies pertaining to shoreline area enhancement and restoration are listed below. These policies center on enhancing sensitive and critical areas and habitat, with particular attention to improving water quality within Lake Tapps by reducing septic system use as well as enhancing vegetated buffers along the Fennel Creek corridor.

Policy 2-2d Require new subdivisions and commercial development to connect to public sewers.

Policy 2-2e Encourage homes and businesses with septic systems to connect to public sewers.

Policy 2-3d Encourage vegetative buffers along streams and drainage ways to enhance water quality, protect habitat, and prevent erosion.

Policy 2-7b Help implement the Fennel Creek corridor environmental improvements identified in the 1999 Environmental Analysis of the Fennel Creek Corridor.

4.2 City of Bonney Lake NPDES Stormwater Management Program

The Phase II NPDES Stormwater Management Program includes ordinances and programs in fulfillment of local, state and federal stormwater stormwater requirements, as well as identifying water quality and quantity problems that may impact the environment and making recommendations for improvements. Adoption of the 2005 Ecology Stormwater Management Manual for Western Washington is required by the NPDES Phase II permit.

The objectives of the City plan are as follows:

1. Public education and outreach on stormwater impacts.
2. Public involvement/participation.
3. Illicit discharge detection and elimination.
4. Construction site stormwater runoff control.
5. Post-construction stormwater management in new development and redevelopment.
6. Pollution prevention/good housekeeping for municipal operations.

4.3 City of Bonney Lake Septic System Abatement Master Plan

The City has developed a Septic System Abatement Master Plan that identifies areas within the City's Core Sewer Service Area that are currently served by on-site septic systems and drainfields, and establishes a systematic program for connecting these areas to the municipal sewer system. As part of this effort, an abatement criteria matrix was developed to assist in ranking the potential abatement areas. One of the criteria used in developing the matrix was the proximity to high groundwater and surface water areas. The estimated cost to implement the plan at all the abatement areas studied is approximately $25 million. A project report indicated that creating a local improvement district, obtaining Public Works Trust Funds, and allocating money from the City's General Fund were potential financing strategies and recommended that the City

develop a formal policy document to guide septic system abatement (RH2 Engineering, Inc. 2012).

5.0 PARTNERSHIPS

Federal, state, regional, and local agencies and organizations are actively involved in shoreline restoration, conservation, and protection in and around the City of Bonney Lake. These partners and their local roles in shoreline protection and/or restoration are identified below and generally ordered by the scope of the organization, from the larger state and watershed scales to the City-scale in the Bonney Lake area.

5.1 Washington State Conservation Commission

The completion of the 1999 Salmonid Habitat Limiting Factors Report for the Puyallup River Watershed Area (WRIA 10) identifies areas in the Puyallup watershed, including Lake Tapps, in need of protection, as well as data gaps.

5.2 Washington State Department of Ecology

The Washington State Department of Ecology completed the Puyallup-White Watershed Assessment Summary in 1995. This document describes existing data on water rights, stream flows, precipitation, geology, hydrology, water quality, fisheries resources, and land use patterns.

WRIA 10 is currently not working under the Watershed Planning Act (Ecology is the lead agency for this legislation).

5.3 Shared Strategy for Puget Sound

Shared Strategy for Puget Sound (SSPS) is a collaborative effort supported by state and federal agencies, local governments and non-government organizations, and legislators aimed at encouraging recovery plans to protect and restore salmon runs in Puget Sound. The Puyallup/White River Watershed Profile of the Puget Sound Salmon Recovery Plan (SSPS 2007) identifies as limiting factors in salmon recovery access, sedimentation, lack of nearshore habitat, point and non-point source pollution, degraded and lacking riparian conditions, and lost floodplain processes. The Plan includes a number of recommendations for salmon recovery in the White River Basin. These include but are not limited to restoration of floodplain connectivity in the lower White River and increased protection and restoration of tributaries that presently support high salmon productivity.

5.4 Puget Sound Partnership

The Puget Sound Partnership (Partnership) consists of representatives from a variety of interests from the Puget Sound region including business, agriculture, the shellfish industry, environmental organizations, local governments, tribal governments, and the Washington State Legislature. Some of the Partnership's key tasks are as follows:

- Develop a set of recommendations for the Governor, the Legislature and Congress to preserve the health of Puget Sound by 2020 and ensure that marine and freshwaters support healthy populations of native species as well as water quality and quantity to support both human needs and ecosystem functions.

- Engage citizens, watershed groups, local governments, tribes, state and federal agencies, businesses and the environmental community in the development of recommendations.

- Review current and potential funding sources for protection and restoration of the ecosystem and, where possible, make recommendations for the priority of expenditures to achieve the desired 2020 outcomes.

The Partnership, through the Leadership Council, released an Action Agenda in December 2008. Implementation of this Action Agenda has resulted in state and federal funding of restoration and protection initiatives and projects. This includes integrating the work of the Puget Sound Nearshore Restoration Project to increase focus on completing work necessary to request Puget Sound restoration funds under the Water Resources Development Act slated for 2012.

5.5 Pierce County

5.5.1 Pierce County Public Works and Utilities: Surface Water Management Division

The Pierce County Public Works and Utilities Department's Surface Water Management Division completed the White River Basin Plan Characterization Report in 2007. The document includes an analysis of basin conditions, including impervious surface, land use, water quality, habitat, floodplain, and stream characteristics. The County intends to present recommendations for solutions to identified problems regarding water quality, habitat, and floodplains in the next phase of study.

5.5.2 Pierce County Parks and Recreation

The Pierce County Park, Recreation and Open Space Plan was completed in 2008 and updated in 2009 (Pierce County 2009). One of the core values put forth in the plan is the conservation of natural and open spaces, wildlife habitat, shoreline environments, and ecological resources. Goals of the plan include providing parks and open spaces that conserve and enhance environmental features, link open space and significant environmental features, and incorporate natural areas to protect and conserve threatened species, habitat, and migration corridors.

5.5.3 Pierce County Lead Entity

Pierce County serves as the Lead Entity for the Puyallup/White watershed. The Lead Entity is charged with gathering information so that the a Citizen's Advisory Committee (CAC) of stakeholders can rank projects for funding consideration by the Salmon Recovery Funding Board (SRFB). The CAC's mission is "to support the recovery of self-sustaining, harvestable salmon populations in Puget Sound by restoring and protecting the habitat in WRIAs 10 and 12."

The Salmon Habitat Protection and Restoration Strategy for WRIAs 10 and 12 was completed in March 2008 (Pierce County Lead Entity 2008). The goal of the document is "to provide guidance to the CAC and TAG [Technical Advisory Group], the SRF Board, and Project Sponsors to identify and prioritize salmon habitat recovery projects in WRIAs 10 and 12." No projects within Bonney Lake shoreline jurisdiction are identified in the strategy; this does not preclude future project recommendations within the jurisdiction, however.

5.6 Pierce Conservation District

The Conservation District's mission is "To protect the natural resources and sustainable agriculture of Pierce County, by empowering local individuals and communities." To this end, the Conservation District provides guidance to Pierce County landowners on practices that reduce non-point pollution; in some cases, the Conservation District provides funding for landowners to assist them in implementing best management practices. The Conservation District's 5-Year Plan (2010 to 2015) summarizes the agency's priorities: to enhance and protect soil water, biodiversity, salmon, shellfish, and native plant resources; to assist landowners in protecting water quality, improving habitat, and conserving natural resources, while sustaining the agricultural community; and to involve and educate the local community through volunteer projects that improve stream quality in the County for the benefit of fish, wildlife and people.

The Stream Team began as a one-year Conservation District project and continues to work county-wide with volunteers to complete habitat and water quality improvement projects.

5.7 South Puget Sound Salmon Enhancement Group (SPSSEG)

This 501(c)(3) organization's mission is to work in cooperation with other groups to locate funding and plan, implement, and monitor fish and habitat enhancement and restoration projects, focusing on salmon and aquatic habitats. The SPSSEG takes an ecosystem approach and utilizes volunteers and public education in the region, which includes the entirely of WRIA 10.

5.8 Puyallup Tribe

The Tribe's Natural/Environmental Resources Program's mission is:

> To protect, enhance, manage and restore the Natural Resources of the Puyallup Tribe of Indians. Key department entities include Water Quality, Air Quality, Wildlife, Fisheries, GIS and Environmental. This department continues to build relationships and establishes cooperation with local, state and federal jurisdictions to protect human health and the environment of Tribal members.

Goals of the Tribe include addressing habitat mitigation associated with PSE/CWA water right issues; continuing water quality sampling, monitoring, and analysis; and continuing watershed analysis for habitat enhancement and restoration opportunities.

5.9 National Fish and Wildlife Foundation (NFWF) Community Salmon Fund

The NFWF and Pierce County formed the Pierce County Community Salmon Fund in 2002 as a funding program for restoration projects that involved landowners and raise local support for salmon recovery. The goals of the Fund are:

- To fund salmon protection and restoration projects that have a substantial benefit to the watershed and that are consistent with Pierce County's Ecosystem and Diagnosis Treatment (EDT).
- To enlist landowners and community groups in project implementation and monitoring.
- To foster creativity and leadership in the community to address conservation needs.

- To focus on community members and groups that can be of particular help in salmon recovery.

5.10 Fennel Creek Preservation Group

This group of Bonney Lake citizens' mission is "the protection, preservation and restoration of the Fennel Creek Watershed and to encourage environmental education about its valuable Pacific Northwest habitats and ecosystems." The organization hosts speakers and forums on restoration and other environmental issues, holds educational events, and conducts volunteer projects in the Fennel Creek watershed.

5.11 Cascade Water Alliance

Cascade Water Alliance (CWA), owner and operator of Lake Tapps for the future purpose of supplying regional potable water, maintains a close association to Bonney Lake and Pierce County, as well as the neighboring cities of Auburn, Buckley and Sumner to help assure a consistent water supply for the next 50 years. CWA is actively working on planning efforts to maintain and improve long-term water quality for Lake Tapps. Current restoration activities include the eradication of Eurasian milfoil. CWA has also noted that future restoration of shoreline vegetation is expected at both Church Lake Park and along their shoreline owned property located south of 61st Street E and east of S. Tapps Drive E.

5.12 Other Environmental Organizations

Several environmental groups maintain offices and/or programs in Pierce County. While these groups have not historically worked in the shoreline jurisdiction of Bonney Lake, this does not preclude involvement in restoration activities in the future. Potentially active groups include:

- Cascade Land Conservancy
- Foothills Trail Coalition
- Forever Green
- Bonney Lake Conservation Group
- The Washington Wildlife and Recreation Coalition
- Trout Unlimited

6.0 POTENTIAL PROJECTS

Although Lake Tapps is geographically located in WRIA 10, it is disconnected from major waterways and salmon-bearing streams via the diversion flume in the City of Buckley (inlet) and the former Puget Sound Energy powerhouse channel (outlet). Otherwise, the lake is generally connected through localized effects of urbanization on watershed-level processes (e.g., generation and discharges of stormwater runoff, reduced groundwater recharge, deforestation, etc). As such, restoration opportunities on Lake Tapps are less about salmon conservation (as is common around the region) and more about water quality and habitat improvements for other terrestrial and aquatic wildlife.

Opportunities include:

- Collaborate on the removal of Eurasian milfoil and other invasive aquatic plants. Cascade Water Alliance is actively planning for the removal and eradication of Eurasian milfoil, having received grants from the Washington Department of Ecology.

- Improve water quality by implementing projects identified in the City's Septic System Abatement Master Plan and encourage the future conversion to connect both existing and future development to the city municipal sewer system.

- Remove non-native invasive terrestrial vegetation.

- Enhance shoreline vegetation by planting native tree and shrub communities. The City is establishing an incentive program for single-family residential development to address shoreline vegetation restoration around the lake. Through the implementation of BLMC 16.56.040, incentives are provided to single-family residential property owners to allow for reduced setbacks in exchange for the installation of shoreline vegetation. This would apply to developed lots, which may redevelop in the future. Implementation of this incentive program will address the overall lack of shoreline vegetation along the lakeshore as identified in the Shoreline Analysis Report and encourage the installation of native shoreline species which will enhance habitat availability and improve lake water quality (The Watershed Company and Makers 2010).

- Working with CWA to restore shoreline vegetation at Church Lake Park and their property located south of 61st Street E and east of S. Tapps Drive E.

- Encourage the joint-use of overwater structures.
- Many residential (and some park) shoreline properties on Lake Tapps have the potential for improvement of ecological functions through: 1) reduction or modification of shoreline armoring, 2) reduction of overwater cover and in-water structures (grated pier decking, pier size reduction, pile size and quantity reduction, moorage cover removal), 3) improvements to nearshore native vegetative cover, and/or 4) reductions in impervious surface coverage.

7.0 STRATEGIES TO ACHIEVE LOCAL RESTORATION GOALS

This section discusses programmatic measures for Bonney Lake designed to foster shoreline restoration and achieve a net improvement in shoreline ecological processes, functions, and habitats. With projected budget and staff limitations, the City of Bonney Lake does not anticipate leading most restoration projects or programs. However, the City's SMP represents an important vehicle for facilitating and encouraging restoration projects and programs that could be led by private and/or non-profit entities. The City's restoration goal focuses on restoring areas that have been degraded or diminished as a result of past activities. The discussion of restoration mechanisms and strategies below highlights programmatic measures that the City may potentially implement as part of the achieving this goal, as well as parallel activities that would be led by other governmental and non-governmental organizations.

7.1 Pierce County White River Basin Plan

The 2007 White River Basin Plan Characterization Report (Pierce County Public Works and Utilities 2007) represents Phase 1 of White River watershed planning. The document includes a comprehensive description of the watershed, including land use, climate, and all natural features and conditions. Phase II is in progress and will consist of project identification, rating and ranking. Protecting habitat and water quality and reducing flooding will be the primary focus of the projects investigated as part of Phase II. While the plan itself will consider only projects in unincorporated Pierce County, the processes by which projects are identified and ranked will provide guidance to the City for characterizing and prioritizing potential restoration projects in Bonney Lake's shoreline jurisdiction.

7.2 Capital Improvement Projects and Transportation Improvement Plans

The City could develop and incorporate a shoreline restoration goal for capital and transportation improvements. Outfalls and discharges to Lake Tapps make potential projects candidates for restoration components.

Currently, approximately $300K is allocated annually for the conversion of local residential areas from septic to municipal sewer. At a minimum, the continuation of this program will serve to incrementally improve water quality in Lake Tapps. However, as identified in the Septic System Abatement Master Plan recommendations, further funding may be allocated in the future to help accelerate this effort. Funding options include developing a local improvement district, drawing from the City's general fund, obtaining Public Works Trust Funds, as well as seeking other State or Federal grants.

7.3 Development Opportunities/Incentives

The shoreline vegetation incentive program (BLMC 16.56.040) was developed to promote shoreline revegetation along Lake Tapps. By allowing for incremental reductions to the shoreline setback requirement based on revegetation area, existing homeowners who are likely to redevelop will have mechanisms to allow them to balance the use of their residential property with improvement in ecological function.

7.5 Tax Relief/Fee System

A tax relief/fee system to directly fund shoreline restoration measures may be investigated in the future. One possibility is to have the City work with the County to craft a preferential tax incentive through the Open Space-Public Benefit Rating System-Tax Program administered by the County under the Open Space Taxation Act (RCW 84.34) to encourage private landowners to preserve natural shore-zone features for "open space" tax relief. Ecology has published a technical guidance document for local governments who wish to use this tool to improve landowner stewardship of natural resources. More information about this program can be found at http://www.ecy.wa.gov/biblio/99108.html. The guidance in this report provides technically based property selection criteria designed to augment existing open space efforts with protection of key natural resource features that directly benefit the watershed. Communities can choose to use any portion, or all, of these criteria when tailoring a Public Benefit Rating System to address the specific watershed issues they are facing.

7.6 Shoreline Restoration Fund

A chief limitation to implementing restoration is local funding, which is often required as a match for state and federal grant sources. To foster ecological restoration of the City's shorelines, the City may establish an account that may serve as a source of local match monies for non-profit organizations implementing restoration of the City's shorelines. This fund may be administered by the City shoreline administrator and be supported by a levy on new shoreline development proportional to the size or cost of the new development project. Monies drawn from the fund would be used as a local match for restoration grant funds, such as the SRFB, Aquatic Lands Enhancement Account (ALEA), or another source.

7.8 Resource Directory

Development of a resource list would be helpful in aiding both property owners and City departments who want to be involved in restoration. For example, landowners and/or the City might be directed toward SRFB. SRFB administers two grant programs for protection and/or restoration of salmon habitat. Eligible applicants can include municipal subdivisions (cities, towns, and counties, or port, conservation districts, utility, park and recreation, and school districts), tribal governments, state agencies, nonprofit organizations, and private landowners.

7.9 Volunteer Coordination

The City will continue to emphasize and accomplish restoration projects by using volunteers from within the community. The City can also coordinate with the groups listed in Section 5.0, many of which already have volunteer programs in place.

7.10 Regional Coordination

The City should look for opportunities to coordinate restoration efforts with Pierce County and the Pierce Conservation District for involvement in regional restoration planning and implementation.

8.0 PROPOSED IMPLEMENTATION TARGETS AND MONITORING METHODS

8.1 Project Evaluation

When a restoration project is proposed for implementation by the City, other agency, or by a private party, the project should be evaluated to ensure that the project's objectives are consistent with those of this Restoration Plan of the SMP and, if applicable, that the project warrants implementation above other candidate projects. (It is recognized that, due to funding sources or other constraints, the range of any individual project may be narrow.) It is also expected that the list of potential projects may change over time, that new projects will be identified and existing opportunities will become less relevant as restoration occurs and as other environmental conditions, or our knowledge of them, change.

When evaluating potential projects, priority should be given to projects most meeting the following criteria:

- Restoration meets the goals and objectives for shoreline restoration.
- Restoration of processes is generally of greater importance than restoration of functions.
- Restoration avoids residual impacts to other functions or processes.
- Projects address a known degraded condition.
- Conditions that are progressively worsening are of greater priority.
- Restoration has a high benefit to cost ratio.
- Restoration has a high probability of success.
- Restoration is feasible, such as being located on and accessed by public property or private property that is cooperatively available for restoration. Restoration should avoid conflicts with adjacent property owners.
- There is public support for the project.
- The project is supported by and consistent with other restoration plans.

The City should consider developing a project "score card" as a tool to evaluate projects consistent with these criteria.

8.2 Monitoring and Adaptive Management

In addition to project monitoring required for individual restoration and mitigation projects, the City should conduct system-wide monitoring of shoreline conditions and development activity, to the degree practical, recognizing that individual project monitoring does not provide an assessment of overall shoreline ecological health. The following three-prong approach is suggested:

1. Track information using the City's permit system as activities occur (development, conservation, restoration and mitigation), such as those listed below:

    a. New shoreline development

    b. Shoreline variances and the nature of the variance

    c. Compliance issues

    d. New impervious surface areas

    e. Number of pilings

    f. Removal of fill

    g. Vegetation retention/loss

    h. Bulkheads/armoring

    The City may require project proponents to monitor as part of project mitigation, which may be incorporated into this process. Regardless, as development and restoration activities occur in the shoreline area, the City should seek to monitor shoreline conditions to determine whether both project specific and SMP overall goals are being achieved.

2. Re-review status of environmental processes and functions at the time of periodic SMP updates to, at a minimum, validate the effectiveness of the SMP. Re-review should consider what restoration activities actually occurred compared to stated goals, objectives and priorities, and whether restoration projects resulted in a net improvement of shoreline resources.

Under the Shoreline Management Act, the SMP is required to result in no net loss of shoreline ecological functions. If this standard is found to not be met at the time of review, the City will be required to take corrective actions. The goal for restoration is to achieve a net improvement. The cumulative effect of restoration over time between reviews should be evaluated along with an assessment of impacts of development that is not fully mitigated to determine effectiveness at achieving a net improvement to shoreline ecological functions.

Evaluation of shoreline conditions, permit activity, policy, and regulatory effectiveness should occur at varying levels of detail consistent with the SMA review cycle. A complete reassessment of conditions, policies and regulations must be conducted at least once every eight years, consistent with RWC 90.58.080. To conduct a valid reassessment of the shoreline conditions every eight years, it is necessary to monitor, record and maintain key environmental metrics to allow a comparison with baseline conditions. As monitoring occurs, the City should reassess environmental conditions and restoration objectives. Those ecological processes and functions that are found to be worsening may need to become elevated in priority to prevent loss of critical resources. Alternatively, successful restoration may reduce the importance of some restoration objectives in the future.

8.3 Reporting

The restoration opportunities presented in this document included are based upon a detailed inventory and analysis of shoreline conditions by many sources. Nonetheless, exhaustive scientific information about shoreline conditions and restoration options is cost prohibitive at this stage. Additionally, restoration is at times experimental. Monitoring must be an aspect of all restoration projects. Information from monitoring studies will help demonstrate what restoration is most successful. Generally, conservation of existing natural areas is the least likely to result in failure. Alternatively, enhancement (as opposed to complete restoration of functions), has the highest degree of uncertainty.

This Restoration Plan does not provide a comprehensive scientific index of restoration opportunities that allows the City to objectively compare opportunities against each other. If funding was available, restoration opportunities could be ranked by which opportunities are expected to have the highest rates of success, which address the most pressing needs, and other factors. Funding could also support a long-term monitoring program that evaluates restoration over the life of the SMP (as opposed to independent

monitoring for each project). However, the following table (Table 4) outlines a possible schedule and funding sources for implementation of a variety of efforts that could improve shoreline ecological function, and are described in previous sections of this report.

Table 4.
Implementation Schedule and Funding for Restoration Projects, Programs and Plans.

Restoration Project/Program	Schedule	Funding Source or Commitment
Washington State Conservation Commission	Ongoing	The City will refer to the Salmonid Habitat Limiting Factors Report for guidance regarding habitat limiting factors and data gaps as restoration projects are considered.
Washington Department of Ecology	Ongoing	The Puyallup-White Watershed Assessment was completed in 1995. The City is not currently working under the Watershed Planning Act.
Pierce County Lead Entity	Ongoing	The Lead Entity's Salmon Habitat Protection and Restoration Strategy does not include any projects within Bonney Lakes' shoreline jurisdiction. This does not preclude involvement of the City as new projects are proposed and considered.
Pierce Conservation District	Ongoing	The City will pursue partnership opportunities as time and budget permit.
Bonney Lake Comprehensive Plan	Ongoing	The City makes a substantial commitment of staff time in the course of project and program reviews to determine consistency and compliance with the recently updated Comprehensive Plan.
Bonney Lake Phase II NPDES Stormwater Management Program	Completed in February 2008	The SWMP commits the City to education and outreach, public involvement, detection and enforcement, stormwater control, and pollution prevention.
Bonney Lake Septic System Abatement Master Plan	Ongoing	Options include forming local improvement district, obtaining Public Works Trust Funds, and allocating money from the City's General Fund.
Bonney Lake Shoreline Vegetation Incentive Program	Following SMP approval	Funding for project implementation would be directly from private shoreline property owners for work on their own shorelines.

City planning staff tracks all land use and development activity, including exemptions, within shoreline jurisdiction, and may incorporate actions and programs of the other departments as well. A report may be assembled that provides basic project information, including location, permit type issued, project description, impacts, mitigation (if any), and monitoring outcomes as appropriate. Examples of data categories might include square feet of non-native vegetation removed, square feet of

native vegetation planted or maintained, reductions in chemical usage to maintain turf, linear feet of eroding stream bank stabilized through plantings, or linear feet of shoreline armoring removed. The report would also outline implementation of various programs and restoration actions (by the City or other groups) that relate to watershed health.

The staff report may be assembled to coincide with the SMP review cycle and may be used, in light of the goals and objectives of the SMP, to determine 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 inventory and analysis report. In the long term, the City should be able to demonstrate a net improvement in the City of Bonney Lake's shoreline environment.

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