APPENDIX A

RESTORATION AND PROTECTION PLAN

TOWN OF FRIDAY HARBOR SHORELINE MASTER PROGRAM

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List of Acronyms and Abbreviations

ALEA	Aquatic Lands Enhancement Account
GIS	Geographic Information System
OHW	Ordinary High Water
MRC	San Juan County Marine Resources Committee
FOSJ	Friends of the San Juans
NOAA	National Oceanic and Atmospheric Administration
PSNERP	Puget Sound Nearshore Ecosystem Restoration Project
Plan	Restoration and Protection Plan
RCW	Revised Code of Washington
SMA	Washington State Shoreline Management Act
SMP	Town of Friday Harbor Shoreline Master Program
SRFB	Salmon Recovery Funding Board
WAC	Washington Administrative Code

Glossary

The following terms will have these definitions in the context of this Restoration and Protection Plan, in alphabetical order:

Ecological function: the influences of the living and nonliving environment on organisms; functions provide for the growth and survival of organisms.

Impairment: habitat degradation; in this document, refers to the loss of ecological function of shorelines.

Impervious surface: a hard surface area which either prevents or retards the entry of water into the soil mantle as under natural conditions prior to development. Also refers to a hard surface area that causes water to run off the surface in greater quantity or at an increased rate of flow from the flow present under natural conditions prior to development.

Applicable Restoration Actions: a list of the actions on which to focus effort and funding for restoration.

Project: a site-specific set of habitat activities.

Reach: for the purposes of this report a reach is a contiguous area within the shoreline jurisdiction that has somewhat consistent physical and biological conditions.

Restoration: "the reestablishment or upgrading of impaired ecological shoreline processes or functions. This may be accomplished through measures including but not limited to re-vegetation, removal of intrusive shoreline structures and removal or treatment of toxic materials. Restoration does not imply a requirement for returning the shoreline area to aboriginal or pre-European settlement conditions" (Washington Administrative Code [WAC] 173-26-020).

Restoration Strategy: refers to whether the restoration prescribed supports habitat forming processes sustainably or substitutes a habitat sustaining process with constructed habitat structure. Strategies include protection, process restoration, rehabilitation, or creation.

Shorelands: means those lands extending landward for 200 feet in all directions as measured on a horizontal plane from the ordinary high water mark; and all wetlands and river deltas associated with the streams, lakes, and tidal waters.

Stormwater: the runoff from residential, commercial, and other urban areas. As rain falls and runs off of urban surfaces, pollutants associated with the urban environment are transported to

surface waters where they may damage aquatic organisms and reduce the aesthetic value of the water body.

Watershed processes: the dynamic physical and chemical interactions that form and maintain the landscape at the geographic scales of watersheds to basins (hundreds to thousands of square miles; Stanley et al. 2005). These processes include the delivery, movement, and loss of water, large woody debris, sediment, phosphorus, nitrogen, toxins, and pathogens, as well as wave energy, tidal influences, and light energy.

1: Introduction

The Shoreline Area of the Town of Friday Harbor is noted for its scenic beauty in a highly developed and yet charming residential and commercial environment. The Town strives to maintain this character that invites tourists and residents year-round. The ecological value of this area has decreased from human development, and will likely never be fully restored to pre-settlement conditions; however there are areas where restoration is quite feasible. This restoration plan will provide details of specific areas and techniques that could be employed to improve water quality, enhance wildlife habitat, and improve ecological function, while enhancing the aesthetic values that define Friday Harbor.

Development of a comprehensive restoration plan is required as a component of the Shoreline Master Program update and provides strategic direction to achieve overall improvement in ecological function of the Town of Friday Harbor's shoreline area. It builds upon the Shoreline Characterization and Analysis, the Cumulative Impact Analysis, and the SMP Ordinance created as part of the SMP update process. This report follows Ecology's guidance for Restoration Planning, based on WACs 173-26-186(8)(c) and 173-26-201(2)(f) as described below.

WAC 173-26-186 (8)(c) requires that counties and cities containing any shorelines with impaired ecological functions include goals and policies that provide for restoration of such impaired ecological functions in their Shoreline Master Program. "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."

WAC 173-26-201 (2)(f) Clearly outlines the parameters of shoreline restoration planning. "Consistent with principle WAC 173-26-186 (8)(c), master programs shall include goals, policies and actions for restoration of impaired shoreline ecological functions. These master program provisions should be designed to achieve overall improvements in shoreline ecological functions over time, when compared to the status upon adoption of the master program. The approach to restoration planning may vary significantly among local jurisdictions, depending on:

- The size of the jurisdiction;
- The extent and condition of shorelines in the jurisdiction;
- The availability of grants, volunteer programs or other tools for restoration; and
- The nature of the ecological functions to be addressed by restoration planning.

Master program restoration plans shall consider and address the following subjects:

i. Identify degraded areas, impaired ecological functions, and sites with potential for ecological restoration;

ii. Establish overall goals and priorities for restoration of degraded areas and impaired ecological functions;

iii. Identify existing and ongoing projects and programs that are currently being implemented, or are reasonably assured of being implemented (based on an evaluation of funding likely in the foreseeable future), which are designed to contribute to local restoration goals;

iv. Identify additional projects and programs needed to achieve local restoration goals, and implementation strategies including identifying prospective funding sources for those projects and programs;

v. Identify timelines and benchmarks for implementing restoration projects and programs and achieving local restoration goals;

vi. Provide for mechanisms or strategies to ensure that restoration projects and programs will be implemented according to plans and to appropriately review the effectiveness of the projects and programs in meeting the overall restoration goals.

No Net Loss of Ecological Function

In addition to the requirements above, the state's SMP policies also require no net loss of ecological functions. The Washington State Department of Ecology (Ecology) defines this as using protection, restoration, and mitigation to achieve a "final result that is no worse than maintaining the current level of environmental resource productivity" (Ecology 2004). No net loss means that the existing condition of shoreline ecological functions should remain the same and no new impacts to shoreline ecological functions resulting from development should occur.

Achieving no net loss is required of local governments under RCW 90.58.020. The challenge for local governments is maintaining or improving shoreline ecological functions while allowing new development to occur. The goals and policies developed in the draft SMP Ordinance attempt to meet this challenge. This restoration plan is an integral part of the overall strategy to achieve no net loss. Both protection and restoration are needed to achieve no net loss. Meeting the no net loss requirement and achieving restoration of ecological conditions is the intent of the Town's draft SMP, inclusive of this plan.

This restoration and protection plan addresses the shoreline master program requirements to protect and restore the Town's marine shoreline, which includes designated Critical Chinook Salmon and Southern Resident Killer Whale Habitat within the entire marine Aquatic Environment. It provides details of specific goals and policies designed to meet these requirements and describes how and where shoreline ecological functions can be restored within the Town's boundaries.

The following section summarizes the goals and policies established in the SMP Ordinance relating to restoration of degraded areas and impaired ecological functions, and protection of existing habitat and ecological functions. Section 3 provides a summary of degraded areas and impaired ecological functions. Section 4 identifies potential restoration sites. Section 5 discusses existing and currently planned restoration projects, additional projects and programs planned to achieve restoration goals, prospective funding sources, and timelines and benchmarks for achieving restoration goals. Section 6 provides an implementation and evaluation strategy to ensure that restoration projects and programs will be implemented effectively.

2: Protection and Restoration Goals and Policies

Statement of Purpose

The purpose of the Urban, Natural, and Aquatic Environment designations is partially to provide for habitat protection and restoration. The Urban Environment designation requires pursuit of protection of existing ecological functions and restoration of ecological functions in areas that have been previously degraded. The Natural Environment designation requires that only very low intensity uses be allowed in order to maintain the ecological functions and ecosystem-wide processes. The Aquatic Environment designation is designed to protect the quality and quantity of surface water and marine waters, to preserve critical habitats for threatened and endangered species, and to preserve natural features and resources of Friday Harbor from unnecessary degradation. The following goals and polices, included in the Town of Friday Harbor's draft Shoreline Master Program Ordinance, are designed to guide these protection and restoration requirements.

Goals

- To assure preservation of scenic and nonrenewable natural resources, including habitats for threatened and endangered species, and to assure conservation of renewable natural resources for the benefit of existing and future generations. *4.03*

- To develop sure, safe, economical transportation systems to assure efficient movement of people with minimum disruption of the shoreline environment and minimum conflict between different types of users. *4.05*

- To acknowledge the presence of identified Critical Areas within and adjacent to the shoreline jurisdiction and provide appropriate protective policy and regulation. 4.09

Policies Governing the Use of Shorelines of Statewide Significance 3.03

The overarching policies for the Town of Friday Harbor, and for all of San Juan County, are the policies established to govern the use of Shorelines of Statewide Significance (WAC 173-26). All proposed activities within Shorelines of Statewide Significance must be consistent with these

policies. Uses which are not generally consistent with the following policies should not be permitted on Shorelines of Statewide Significance:

- The natural character of Shorelines of Statewide Significance should be preserved.
- Actions that would commit resources to irreversible uses or would detrimentally alter natural conditions characteristic of such shorelines should be severely limited.
- The short-term economic gain or convenience associated with a proposed development should be evaluated in relationship to long-term and potentially costly impairments to the natural environment.
- The natural resources and natural systems of Shorelines of Statewide Significance should be protected. Areas containing unusual or fragile natural resources or natural systems should be left undeveloped.

Additional Protection and Restoration Policies

- Where the land is scarred or stripped of natural cover it should be replanted with native species or landscaped. *4.03*
- Aesthetic and ecological qualities of the Local Shoreline should be recognized as valuable resources and preserved. *4.07*
- Habitats for threatened and endangered species should be preserved and where possible restored. *4.07*
- The natural, dynamic processes of shoreline formation and change should not be interfered with except for urgent reasons of public necessity or benefit. *4.07*
- There should be no net loss of the ecological functions and values of the shoreline as a result of actions permitted under this Master Program. *4.07*
- Natural vegetation on shorelines should be retained or increased to the extent possible in new shoreline development. *4.07*
- Sand, gravel and mineral extraction is incompatible with existing and planned shoreline use and should not be permitted. When grading and/or excavation are necessary for site preparation for development, all available practical methods to control ecological degradation, erosion, siltation and other impacts on adjoining properties and water quality should be provided. *4.07*
- Commercial harvesting of timber is incompatible with existing and planned use of the shoreline and should not be permitted. When noncommercial timber cutting occurs on shorelines, in conjunction with other development, aesthetic effects and protection against ecological degradation, erosion and siltation should be considered. *4.07*
- Appropriate conservation easements may be accepted by the Town. *4.07*

- All development in the vicinity of the wetland should provide protective buffers, where no development or landscaping can occur. *4.09*
- The WRIA 2 Salmon Recovery Plan notes the importance of providing a vegetated riparian buffer and overhanging riparian vegetation to improve the habitat for juvenile Chinook salmon. As a result, when substantial new upland development or redevelopment occurs, the on-site landscaping should be designed to incorporate or increase native plant buffers along the shoreline. *4.09*
- Critical areas within the shoreline area should be conserved, protected, and restored from loss or degradation. *4.09*
- All urban shoreline development should be regulated in a manner designed to minimize cumulative adverse impacts on critical habitats, adjacent shoreline, upland areas, and ensure no net loss of the ecological functions and values of the shoreline. *5.03*
- Natural areas should be kept free of all development which would adversely affect their character and scenic value. *5.05*
- Only those alterations which would not be detrimental to the forces which created and now maintain a Natural area should be permitted. *5.05*
- Limited access to Natural areas should be permitted for scientific, historic, educational and low-intensity recreational purposes, provided that no significant adverse impact on the area will result. *5.05*
- Uses which consume physical and biological resources should be prohibited. *5.05*
- Allow new over-water structures only for water-dependent uses, public access, or ecological restoration. 5.06
- In order to reduce the impacts of shoreline development and increase effective use of water resources, multiple uses of over-water facilities should be encouraged. 5.06
- The size of new over-water structures should be limited to the minimum necessary to support the structure's intended use. 5.06
- Development in the Aquatic Environment should not degrade critical habitats for threatened and endangered species. *5.06*
- Development in the Aquatic Environment should be compatible with the adjacent upland environment designation; provided that, in the event Aquatic development is adjacent to two different upland environments the most restrictive shall apply unless the Shoreline Administrator determines that application of the less restrictive would not compromise the public interest. *5.06*

- The natural circulation and volume of water should be maintained to the greatest extent possible. *5.06*
- Uses which are not water-dependent should be prohibited, provided that Water-Enjoyment Uses at or near the OHWM, which provide public access to the Local Shoreline, may be considered as a conditional use subject to applicable use policies and regulations. *5.06*
- The Aquatic environment should be managed in a manner that will result in no net loss of the ecological functions and values. Activities and uses which will degrade the ecological or aesthetic values of the area should be prohibited. *5.06*
- Developments and activities using Aquatic areas should be located and designed to minimize interference with navigation, minimize adverse visual impacts, allow for passage of fish and other aquatic animals, and minimize adverse effects on water quality, geohydraulic shoreline processes, and biological resources. *5.06*
- Land-based motor vehicles should not be permitted on tidelands except when necessary for emergency vehicles or when authorized in permitted construction or repair or for boat launchings. *5.06*

These goals and polices provide a clear and comprehensive foundation for protection and restoration regulations and activities within the Town of Friday Harbor's shoreline areas. The following section will identify the areas and ecological functions most severely degraded and will help focus restoration and protection efforts.

3: Degraded Areas and Impaired Ecological Functions

The Town of Friday Harbor's shoreline jurisdiction includes Trout Lake and approximately 1.2 linear miles of marine shorelines. The current zoning designates Trout Lake as Natural and the marine shoreline as approximately 40 percent Shoreline Residential and 60 percent Urban. The Shorezone Inventory classifies the marine shorelines of Friday Harbor as protected mud flat, mixed-fine beaches (marine), open rocky shores (estuarine), and protected rocky shores (marine) (Washington Department of Natural Resources).

Trout Lake is a protected area of high ecological value. There are no current restoration priorities in this area. The highest concerns for ecological restoration are marine water quality and marine nearshore habitat. Impacts from climate change, such as sea level rise and ocean acidification are a fairly new consideration for habitat protection and restoration and there is not much guidance on how to plan for this occurrence. Nevertheless, the Town recognizes the importance of this concern and will address it briefly in this document, with the intention of providing a more detailed plan during the next scheduled SMP update when guidance is likely to be available.

Marine Water Quality

A priority ecological concern for the Town of Friday Harbor is degraded marine water quality. Numerous pollutants enter the water through untreated stormwater and non-point pollution from the upland urban environment, as well as from boater traffic. In addition, the Wastewater Treatment Plant outfall runs under the Port of Friday Harbor Marina and discharges out into the bay.

The Spring Street outfall is the primary outfall for municipal storm water. There is a second stormwater outfall pipe located approximately 1500 feet north of the Spring Street outfall. The Town of Friday Harbor separated its storm water flow from the sanitary sewer system in 1969. While it is likely that some cross connections still exist the Town sewer plant is no longer overwhelmed by storm events.

Documented water quality problems include low dissolved oxygen and elevated fecal coliform bacteria concentrations. Friday Harbor is on the Department of Ecology's 2008 303(d) list for dissolved oxygen and the 1996 and 1998 lists for fecal coliform bacteria (Ecology 2011). Friday Harbor is currently classified as Category 2: Waters of Concern for fecal coliform bacteria and Sediments of Concern for exceeding Sediment Management Standards for Trichlorobenzene, Dichlorobenzene, and Hexachlorobutadiene (Ecology 2011).

The Town of Friday Harbor's Stormwater Management Plan identifies the major sources of nonpoint pollution as urban development and transportation-related activities. These sources may include illicit connections to the storm drain system, on-site sewage systems, and improper waste storage and disposal practices. The general impacts of non-point stormwater runoff on beneficial uses include bacterial viruses, sediment and suspended solids, metals, and toxic organic

chemicals. With projected increases in population, future commercial and residential development and conversion of existing open space will likely further degrade the water quality in Friday Harbor (TFH Stormwater Management Plan, 2005).

This degradation may result in part from erosion and increase from sediment loading from the construction-related activities of land clearing and site preparation. General increases in vehicular traffic over time will also increase pollutants in storm water from streets. In addition stormwater runoff usually increases as vegetative cover is removed and impervious surface is created carrying other pollutants such as pesticides, fertilizers, petroleum products, cleaning solvents, paints, asphalt by-products, acids, and salts into water bodies.

In addition to stormwater and sewer outfalls, the extensive boater traffic within Friday Harbor can be a significant source of pollutants entering the marine waters. Surveys completed in Friday Harbor and adjacent San Juan Channel concluded that high fecal coliform concentrations were attributable to the Town of Friday Harbor's Wastewater Treatment Plant (WWTP) and boater wastes. The WWTP has since been upgraded with newer technology and the plant and operations were expanded to provide secondary treatment and to increase flow capacity in 2001. A follow-up survey completed after improvements to the treatment plan operations, concluded that boater wastes were the significant contributor to the fecal coliform counts in Friday Harbor (SJC Health and Community Services, 2001).

While water quality is an on-going concern, recent marine water quality data show some signs of improvement. Data collected by the San Juan County Marine Resources Committee (MRC) and Friends of the San Juans (FOSJ) indicate that water quality has improved. The MRC/FOSJ marine water quality monitoring program is ongoing and data is provided to the Town as it is collected and processed. The University of Washington Friday Harbor Labs Science Outreach Program is also collecting marine water quality data (FHL 2011). Students take measurements five times a year at six sites to test for fecal coliform with results categorized as extraordinary, good, or below standards. The most recent aggregate test results from 3/08 – 5/11 show that out of six sites, four were categorized as extraordinary and two were categorized as good.

The Town also has it's own storm water monitoring program. At this time all of the data is in paper form. The data is currently being converted to digital form so that it can be analyzed. The digital form and the analysis will be returned to the town when it is completed.

The Port of Friday Harbor has undertaken numerous efforts to minimize pollutants from boaters. In 2007 the Port of Friday Harbor received the Clean Marina Award with a Five Star rating – the highest available – for meeting requirements to manage hazardous wastes and educate boaters on clean boating practices (Port of Friday Harbor, 2008).

Marine Nearshore Habitat

Approximately 85 percent of the Friday Harbor marine shoreline has been modified from its original state primarily from ongoing human activities. Shoreline modifications include over-water structures, riprap, bulkheading and fill, marinas, and a ferry landing. The most significant shoreline modifications are the numerous large overwater structures located downtown including the Port of Friday Harbor marina, Spring Street Landing multimodal transportation facility, Cannery Landing retail center, and the ferry landing. Nearly continuous bulkheading, other armoring, and filling exist along the downtown shoreline. Bulkheading, armoring, filling and overwater structures are also prevalent within the segments of shoreline extending north and south from the downtown. Upland shoreline vegetation is limited.

While there is significant degraded habitat and impaired functions, some functional areas remain. One of these areas is Segment 10 with a documented eelgrass bed, rockweed, barnacles, and potential clam habitat (DNR Shorezone 2001, FOSJ Eelgrass Survey Mapping Project, 2004). Table 1 below provides specific details of habitat degradation and potential restoration opportunities.

Sea Level Rise

Global Projected Sea Level Rise is expected to be somewhere in the range of 7.1 to 59 inches by the year 2100 (IPCC, 2007; USACE, 2009). Local projected sea level rise is expected to be somewhere between 6.3 and 50.3 inches by the year 2100 (Mote et al., 2008). While there is considerable variation in the projections from different studies, they all agree that sea level rise is occurring and will continue to do so. Consequently, the Town of Friday Harbor will need to consider this for future restoration, protection, and development.

"The Shoreline Management Act (SMA) and the Shoreline Master Program (SMP) Guidelines currently contain no explicit references to climate change or sea level rise. However, they require local jurisdictions to take into account scientific and technical information pertinent to shoreline management issues. The Guidelines require local governments use "the most current, accurate and complete scientific and technical information available" (WAC 173-26-201(2)(a)" (Ecology, 2010).

In a recent study of sea level rise vulnerability in the San Juans, Friday Harbor shorelines were rated as one of the most at risk and least resilient habitat areas (MacLennan, et al. 2011). To address sea level concerns, this restoration plan will consider projects that would increase the ecological resiliency of the Town's shoreline areas.

4: Applicable Restoration Activities

Given the built-out urbanized nature of most of the Town of Friday Harbor shoreline area, the two primary areas of restoration potential are improving water quality and increasing function of nearshore habitat. This section will outline general strategies for achieving both of these goals, as well as specific examples of where and how these might be achieved.

Water Quality Improvement

Pollutants in Friday Harbor waters come from numerous sources. Consequently, a comprehensive water quality protection program will include a multi-faceted approach. Recommended additions to the existing programs and regulations that would serve to protect Friday Harbor's water quality include the following:

- Adopting Low Impact Development code that requires all new development and re-development to minimize clearing and grading, retain native vegetation and soils, and utilize on-site stormwater management techniques.
- Develop a program to convert an annual percentage of impervious surface within the Town to pervious surface, with a goal of 50 percent pervious surface by 2030. This would include installation of pervious concrete, pavers, and vegetated areas with permeable soils.
- Install additional rain gardens to slow and filter stormwater runoff and to disconnect impervious surfaces.
- Provide educational workshops and materials to all shoreline residents about basic shoreline stewardship practices and encourage them to participate in the Greenshores rating system.
- Onsite residential stormwater retention and buffering.

Habitat Restoration

Barriers to habitat restoration include funding and landowner willingness. To address funding challenges, potential funding sources have been identified in Section 5. A Landowner Willingness Assessment was conducted throughout San Juan County and found that one of the sites that surfaced as the most feasible to pursue restoration at included the central modified sections in West Friday Harbor. This includes segments 9 and 10 in Table 1. Another high priority area for potential restoration is approximately 800 feet of shoreline fringing the mudflats behind the Port of Friday Harbor. This area has been identified as potential forage fish spawn habitat (WDFW, FOSJ, San Juan County MRC 2004). Table 1 provides detail of habitat degradation in each shoreline segment and potential restoration actions.

Table 1: Degraded Habitat and Potential Restoration Actions

Town of Friday Harbor Marine Shoreline Area			
Shoreline Segment	**Environmental Designation**	**Level of impairment to processes and functions and causes**	**Solutions and Actions: Recommended restoration**
Segment 1	Residential	**Status:** Impaired **Causes of impairment:** Upland development, bulkhead, creosote pilings, docks and floats, derelict vessels.	**Solutions and actions:** Soften shoreline armoring, enhance riparian vegetation, replace creosote pilings, add grating to docks and floats.
Segment 2	Urban, Commercial	**Status:** Impaired **Causes of impairment:** Port facilities, public park, creosote pilings, docks and floats	**Solutions and actions:** Replace creosote pilings, add grating to docks and floats, improve existing and potential public parks.
Segment 3	Urban, Commercial	**Status:** Impaired **Causes of impairment:** Streets, ferry terminal, public park, stormwater outfall.	**Solutions and actions:** No restoration potential.
Segment 4	Residential	**Status:** Impaired **Causes of impairment:** Residential development, streets, potable water piping, sanitary sewer piping, creosote pilings, docks, and floats.	**Solutions and actions:** Replace creosote pilings, add grating to docks and floats.
Segment 5	Residential	**Status:** Impaired **Causes of impairment:** Residential development, streets, potable water piping, sanitary sewer piping, creosote pilings, docks, and floats.	**Solutions and actions:** Replace creosote pilings, add grating to docks and floats.
Segment 6	Residential	**Status:** Impaired **Causes of impairment:** Residential development, streets, potable water piping, sanitary sewer piping, creosote pilings, docks, and floats.	**Solutions and actions:** Replace creosote pilings, add grating to docks and floats.
Segment 7	Urban	**Status:** Impaired **Causes of impairment:** Marina facilities, docks, ramps, landscaping, bulkheads, large overwater structures.	**Solutions and actions:** Replace creosote pilings, add grating to docks and floats.
Segment 8	Urban	**Status:** Impaired **Causes of impairment:** Marina facilities, residential development, streets, potable water piping, sanitary sewer piping, bulkheads.	**Solutions and actions:** Removal of two degraded bulkheads, enhance riparian vegetation, replace creosote piling, add grating to docks and floats.
Segment 9	Residential	**Status:** Impaired **Causes of impairment:** Residential development, creosote pilings, docks, floats, bulkheads.	**Solutions and actions:** Remove degraded bulkheads, enhance riparian vegetation replace creosote piling, add grating to docks and floats.
Segment 10	Residential	**Status:** Impaired **Causes of impairment:** Residential development, derelict vessels.	**Solutions and actions:** Remove degraded bulkhead, enhance riparian vegetation.

Ecological Functions

WAC 173-26-201 requires that SMP restoration plans consider the following ecological processes in restoration planning:

- Ecosystem-wide processes such as those associated with the flow and movement of water, sediment and organic materials; the presence and movement of fish and wildlife and the maintenance of water quality.
- Individual components and localized processes such as those associated with shoreline vegetation, soils, water movement through the soil and across the land surface and the composition and configuration of the beds and banks of water bodies.

These ecological functions are addressed in Table 2.

Restoration Methods

The most feasible types and methods of restoration that will occur in Friday Harbor are as follows:

- **Soften Shoreline Armoring** – Some existing areas of shoreline armoring can be softened utilizing the following techniques:
  - Bulkhead removal
  - Reducing shoreline slope
  - Installing native berm vegetation and drift logs
  - Beach nourishment
- **Replace Creosote Pilings** – Replacing creosote pilings with non-toxic materials. The Department of Natural Resources has developed extensive protocols for the safe removal of toxic creosote pilings.
- **Enhance Riparian Vegetation** – Planting native plants along the shoreline is a relatively easy and cost effective method of restoring ecological function.
- **Add Grating for Docks and Floats** – Adding grating to docks and floats can allow light to permeate the water and assist in photosynthesis and growth for eelgrass and other aquatic vegetation.
- **Preserve Remaining Natural Areas** – Preservation of remaining natural areas through acquisition or easement.
- **Build Stewardship Ethic** – Educate shoreline property owners on ways to restore and protect shoreline areas and assist landowners in locating resources.

Table 2. Restoration Opportunities and Improvement of Ecological Functions

		Shoreline Segments

Opportunities	Functions Improved	1	2	3	4	5	6	7	8	9	10
Restoration of armored shorelines by softening shoreline or removing bulkhead.	Allow natural sediment movement from upland areas to shorelines Improve conditions for growth of riparian vegetation Improve nearshore foraging, migration, and refuge habitat for salmon	X							X	X	X
Replace creosote pilings	Remove toxic substances from the environment		X		X	X	X	X	X	X	
Add grating to docks and floats	Increase light filtration for aquatic vegetation.	X	X		X	X		X	X	X	
Enhance Riparian Vegetation	Increased input of detritus and insects from shoreline vegetation; Improved wildlife habitat; Reduction of invasive plant species Improve retention and filtering of stormwater	X							X	X	X
Preserve remaining natural areas through acquisition or easement	Potential for incremental improvement in all the functions										X
Educate shoreline property owners on ways to restore and protect shoreline areas; assist landowners in locating resources	Potential for incremental improvement in all functions in the marine shoreline.	X	X	X	X	X	X	X	X	X	X

5: Existing Restoration and Protection Programs and Projects

There are several on-going efforts from numerous interested and engaged organizations to monitor and improve Friday Harbor's water quality. San Juan County Public Works, Health and Community Services, and Marine Resources Committee; Town of Friday Harbor; Port of Friday Harbor; University of Washington's Friday Harbor Labs; Friends of the San Juans; and Kwiaht have all participated in monitoring or strategies to implement water quality improvements. Nearshore habitat restoration and protection programs are implemented by the Town of Friday Harbor and Friends of the San Juans. The current programs in place are detailed below.

Stormwater Runoff Prevention

Town of Friday Harbor's Stormwater Management Plan

The Town's Stormwater Management Plan includes the use of non-structural alternatives to control stormwater quantity and quality. These alternatives include maintenance programs,

changes to the municipal codes or regulations, enforcement actions for non-compliance with stormwater regulations, public education, and Stormwater Best Management Practices. One of these Best Management Practices is to use source control measures to minimize or eliminate release of stormwater and pollutants at the site of origin, such as a grass lined swale or rain garden.

Other source control methods include education of the public to prevent disposal of yard wastes, household chemicals, and motor oil into drainage facilities. The plan encourages public involvement and education related to the public's role in surface water problems and what can be done about them. Recommended public education programs in Friday Harbor are:

- Voluntary ditch maintenance
- Catch basin stenciling
- Citizen hotline
- Oil recycling center
- Newsletter articles

Town of Friday Harbor's Stormwater Technical Manual (TFH, 2007)

- Minimize water quality degradation and sedimentation in streams, ponds, lakes, wetlands, Puget Sound and other water bodies.
- Minimize the impact of increased runoff, erosion and sedimentation caused by land development and maintenance practices.
- Maintain and protect groundwater resources;
- Minimize adverse impacts of alterations on ground and surface water quantities, locations and flow patterns;
- Decrease potential landslide, flood and erosion damage to public and private property;
- Promote site planning and construction practices that are consistent with natural topographical, vegetational and hydrologic conditions;
- Maintain and protect the Town's stormwater management infrastructure and those downstream;
- Provide a means of regulating clearing and grading of private and public land while minimizing water quality impacts in order to protect public health and safety; and
- Provide minimum development regulations and construction procedures which will preserve, replace or enhance, to the maximum extent practicable, existing vegetation to preserve and enhance the natural quality of lands, wetlands and water bodies.

Spring Street Rain Garden

The Spring Street Rain Garden Demonstration Project was initiated in 2010 by the San Juan County Marine Resources Committee in response to concerns about pollutants in the stormwater runoff entering Friday Harbor. The rain garden was installed in the spring of 2011 through a grant from the Department of Ecology and is currently being monitored and modified as needed.

The project was developed in partnership with the Town of Friday Harbor, San Juan County, Boundary Waters Inc., 2020 Engineering, Mike Carlson Enterprises, Island Gardens Company, LOEA Design, Atlantis Construction, Banyon Tree, the Friday Harbor Marine Health Observatory, and Crystal Seas Kayaking. Ownership and maintenance of the project will shift from the county to the town in 2013.

Boater Pollution Prevention

Port of Friday Harbor

The Port of Friday Harbor provides education materials and facilities for boaters to encourage stewardship of the waters and islands. Their program provides the following facilities:

- **Pump-out boat:** The Port and Town of Friday Harbor purchased a state-of-the-art sewage pump-out boat to provide boaters with pump-out service. They also provide a portable pump-out cart and dockside pump-out at the end of B dock.
- **Garbage and recycling:** We provide facilities on our main pier for both garbage and recycling collection. Help us keep garbage out of the water! Plastics, especially, can look like food to fish, and can be deadly.
- **Re-use center:** Speaking of recycling, maybe you have some stuff aboard that you don't need but is too good to throw away. On the main pier we have a "Marine Re-Use Center", where you can drop off boat items for someone else to use. Check to see if there's anything you need!
- **Oil recycling:** Check at the office for the location of our oil recycle tank. We have oil-spill absorbent pads for sale, too. You should keep a few of these on board for emergency cleanups in the bilge, or for use at fuel docks that may not provide them. Even a little fuel in the water makes it tough for the creatures that live there.

The Port's educational materials provide information about the following boater best management practices:

- **Wash-downs:** Use a nozzle on your hose when washing boats to prevent overuse of water, and use a minimal amount of environment-friendly soap.
- **Bilges:** Don't pump in the marina, and don't ever pump if there's fuel in your bilge. Ask at the marina office if you have fuel or oil in your bilge water.
- **Gray-water:** Use as little water as possible while onboard.
- **Fueling practices:** The Port strives for zero spills at the fuel pier. The most difficult thing to control in most vessel fueling is that bubble of fuel that spills out the vent as the tank gets full. Go slow and be careful! (Port of Friday Harbor, 2012a).

They also post Best Management Practices for maintenance at the top of each ramp. These BMPs include the following guidance:

- No more than 25% of a vessel's above water surface can be worked on in the marina.
- Larger projects belong in a boat yard.
- Plan your project so that no debris, sanding dust or spills go into the water.
- Use a tarp suspended between the boat and float.

- A small vacuum cleaner and vacuum sanders are essential equipment for refinishing work.
- Mix paint on a tarp or on shore.
- Have rags and absorbents ready.
- Limit open paint cans to one gallon or less.

San Juan County Watershed Management Action Plan

The County's Watershed Action Management Plan provides an implementation strategy to decrease pollutants coming from boaters. The key strategies within this plan are as follows:

- Facilitate boater survey to determine numbers, overnight activity, and pump-out use
- Disseminate educational material to boaters on the effects of illegal discharges
- Pursue obtaining or developing additional pump-out facilities. The cost of this strategy is a barrier to implementation.

Derelict Vessel Recovery Program

The Derelict Vessel Recovery Program is sponsored by the San Juan County Auditor. It addresses the on-going problem of unregistered, derelict or abandoned vessels moored illegally in state-owned aquatic lands. Sewage, oil, and fuel from these vessels are a threat to marine water quality. The volunteer program monitors and documents vessel and moorage violations and provides assistance to the Sheriff and the Department of Natural Resources (DNR) with tagging and enforcement efforts.

Water Quality Monitoring

The Friday Harbor Marina Water Quality Sampling Project is conducted by Friday Harbor Labs five times a year at six sites to test for fecal coliform. These data are recorded, graphed and shared with the Port of Friday Harbor.

Another data collection project is the Friday Harbor Marine Health Observatory that is measuring the health of the Port of Friday Harbor by counting marine invertebrates throughout the year and noting changes in populations, diversity, location, and seasonality. Volunteers also collect data on water quality, water visibility, temperature, depth and weather. This is a collaborative effort through the Port of Friday Harbor, Kwiaht, and the WSU Beach Watchers.

6: Implementation Strategy and Timeline

Restoration planning is a long-term effort. The following section will outline the specific projects and programs that the Town will intend to implement, the mechanisms for implementing them, and the approximate timeline for implementation.

The timeline is categorized by short and long-term projects. Short-term projects are those to be completed or started prior to the next round of SMP updates for the Town. Long-term projects are those that will be evaluated for landowner willingness and funding opportunities in the future, prior to the next round of SMP updates. These are detailed in Table 3.

Table 3. Potential Prioritization of Restoration Projects

Projects	Comments
Short-term	
Improvement of water quality: green infrastructure	Construction of the Spring Street Rain Garden was completed in 2010 but a recent study shows that it is not yet fully functional and needs improvement or augmentation. The Marine Resources Committee, which initiated the effort, is planning to complete improvement strategies in 2013.
Improvement of water quality: adoption of LID regulations	The Town of Friday Harbor will consider adoption of LID regulations by 2015.
Improvement of water quality: implementation of Stormwater Management Plan	These projects and programs will be implemented or initiated by 2020 as funding becomes available.
Build stewardship ethic: educate shoreline landowners about restoration and protection options and assist in providing resources.	Shoreline landowner education materials will be developed and distributed by 2015.
Long-term	
Restoration of armored shorelines by softening shoreline or removing bulkhead.	Work with willing landowners to develop a long-term plan.
Replace creosote pilings	Work with DNR to develop plan.
Add grating to docks and floats	Develop program to work with landowners.
Enhance Riparian Vegetation	Develop program to work with landowners.
Preserve remaining natural areas through acquisition or easement	Partner with Friends of the San Juans.

The primary barriers to implementation of the recommendations within this plan are funding, lack of understanding of the issues of concern, and landowner willingness. To address the funding barrier, we have compiled a list of potential funding sources from which the Town can seek grants to implement programs and projects.

Potential Funding Sources

Grant Name	Allocating Entity
Aquatic Lands Enhancement Account	Washington Recreation and Conservation Office
Bring Back the Natives	National Fish and Wildlife Foundation
Coastal and Estuarine Conservation	National Oceanic and Atmospheric Administration
Estuarine and Salmon Restoration Program	Washington Recreation and Conservation Office; Puget Sound Nearshore Partnership
Five-Star Restoration Program	National Fish and Wildlife Foundation

Land and Water Conservation Fund	Washington Recreation and Conservation Office
Salmon Recovery Funding Board	Washington Recreation and Conservation Office
SRFB Community Salmon Fund	National Fish and Wildlife Foundation
Water Quality Grants and Loans	Washington Department of Ecology
Washington Wildlife and Recreation	Washington Recreation and Conservation Office
Wildlife and Habitat Conservation Fund	National Fish and Wildlife Foundation
State Wildlife Action Project	National Wildlife Federation

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