APPENDIX A

Hylebos Waterway Natural Resource Enhancement

KARILEEN RESTORATION PROJECT: RESTORATION PLAN – FINAL

Prepared for:

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For submittal to:

US Army Corps of Engineers
US Fish and Wildlife Service
National Oceanic and Atmospheric Administration
Washington State Department of Fish and Wildlife
City of Federal Way

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Consent Decree - Appendix A

Table of Contents

Figures and Tables

Acronyms

Acronym	Definition
BA	biological assessment
CBNRT	Commencement Bay Natural Resource Trustees
CBRP	Commencement Bay Restoration Plan
FHW	Friends of the Hylebos Wetlands
General Metals	General Metals of Tacoma, Inc.
I-5	Interstate 5
JARPA	Joint Aquatic Resources Permit Application
LWD	large woody debris
NOAA	National Oceanic and Atmospheric Administration
NRDA	Natural Resource Damage Assessment
NWI	National Wetlands Inventory
SCS	Soil Conservation Service
SEPA	State Environmental Policy Act
Smayda	Smayda Environmental Associates, Inc.
USACE	US Army Corps of Engineers
USFWS	US Fish and Wildlife Service
USGS	US Geological Survey
WDFW	Washington State Department of Fish and Wildlife
Windward	Windward Environmental LLC
WSDOT	Washington State Department of Transportation

1.0 Introduction

This stream and wetland restoration project will be implemented by General Metals of Tacoma, Inc. (General Metals), to settle its alleged natural resource damage liability for the Hylebos Waterway associated with the Commencement Bay Nearshore/Tideflats Superfund Site. The parcel of land is owned by General Metals through Karileen, LLC (Karileen), and therefore the project is called the Karileen Restoration Project.

This project is designed to provide significant enhancements to fish and wildlife habitat and wetlands on the west branch of Hylebos Creek. The project site was selected in consultation with Friends of the Hylebos Wetlands (FHW) and other regional stakeholders. Some of the last remaining potential salmon spawning habitat on Hylebos Creek occurs in this area. This location will also provide connectivity both to the high-quality habitat downstream at the Gethsemane Cemetery, which is owned by the Puyallup Tribes, and to stream restoration projects located upstream. The Karileen Restoration Plan includes the creation and enhancement of salmonid spawning and rearing habitat, restoration and enhancement of riparian buffer and wetland habitats for birds and wildlife, improvement of wetland functions, the restoration of native plant communities, and an overall increase in biological productivity.

This document presents the overall plan for restoration at the Karileen property, including site-specific restoration goals, descriptions of existing conditions and proposed restoration activities, best management practices for mitigating construction impacts and disturbances, a summary of monitoring tasks, a proposed schedule for all aspects of the project (from permitting to monitoring), and projected total costs for construction activities. The restoration plan drawings, prepared by Smayda Environmental Associates, Inc. (Smayda), are presented in Smayda et al. (2007). A wetland delineation report compiled by Windward Environmental LLC (Windward) and Smayda is presented in Appendix A. Smayda also prepared a revegetation plan, which is presented in Appendix B. This document is a companion document to the Karileen Restoration Project biological assessment (Windward 2006) and the Karileen Restoration Project post-construction monitoring program (Windward 2007).

1.1 PROJECT HISTORY

General Metals was identified as a potentially responsible party in the Head of the Hylebos Waterway Problem Area, part of the Commencement Bay Nearshore/ Tideflats Superfund Site. In discussions with the Commencement Bay Natural Resource Trustees (CBNRT), General Metals proposed implementing a habitat and wetland enhancement project in exchange for settlement of alleged natural resource damage claims.

In February 2004, General Metals submitted to the CBNRT a written project proposal and settlement offer based on the Karileen Restoration Project. This restoration project is designed to create and restore salmonid spawning and rearing habitat, create additional wetland habitat, restore and enhance the native plant community, promote bird and wildlife habitat availability and diversity, and remove the onsite structures and grazing impacts.

In spring 2006, General Metals and the CBNRT met to discuss the project and a draft consent decree. All parties agreed to move forward to finalize the consent decree and implement the restoration project in a timely fashion. This document presents the overall plan for implementing this project.

In May 2007, this plan was revised based on comments provided by the CBNRT and the City of Federal Way. In August 2007, this plan was revised based on comments provided by the USACE and the City of Federal Way. A revised proposed schedule for the project is presented in Section 4.0.

1.2 PROPERTY LOCATION

The 10-acre Karileen property is located in Federal Way, Washington, at the southern end of King County as detailed below and shown in Figure 1-1. The property is zoned for residential use, similar to surrounding properties. The Gethsemane Cemetery property abuts the south property boundary, and two residential properties abut the north, east, and west property boundaries (Figure 1-2).

Karileen Property Details[1]

Address:	326 South 376th Street, Federal Way, Washington
Current owner:	Karileen, LLC
Tax parcel:	3221049021
Size:	10.3 acres
Section, township, and range:	NW S32, T21N, R4E
County:	King

[1] Source: King County iMap (http://www.metrokc.gov/gis/mapportal/iMAP_main.htm).

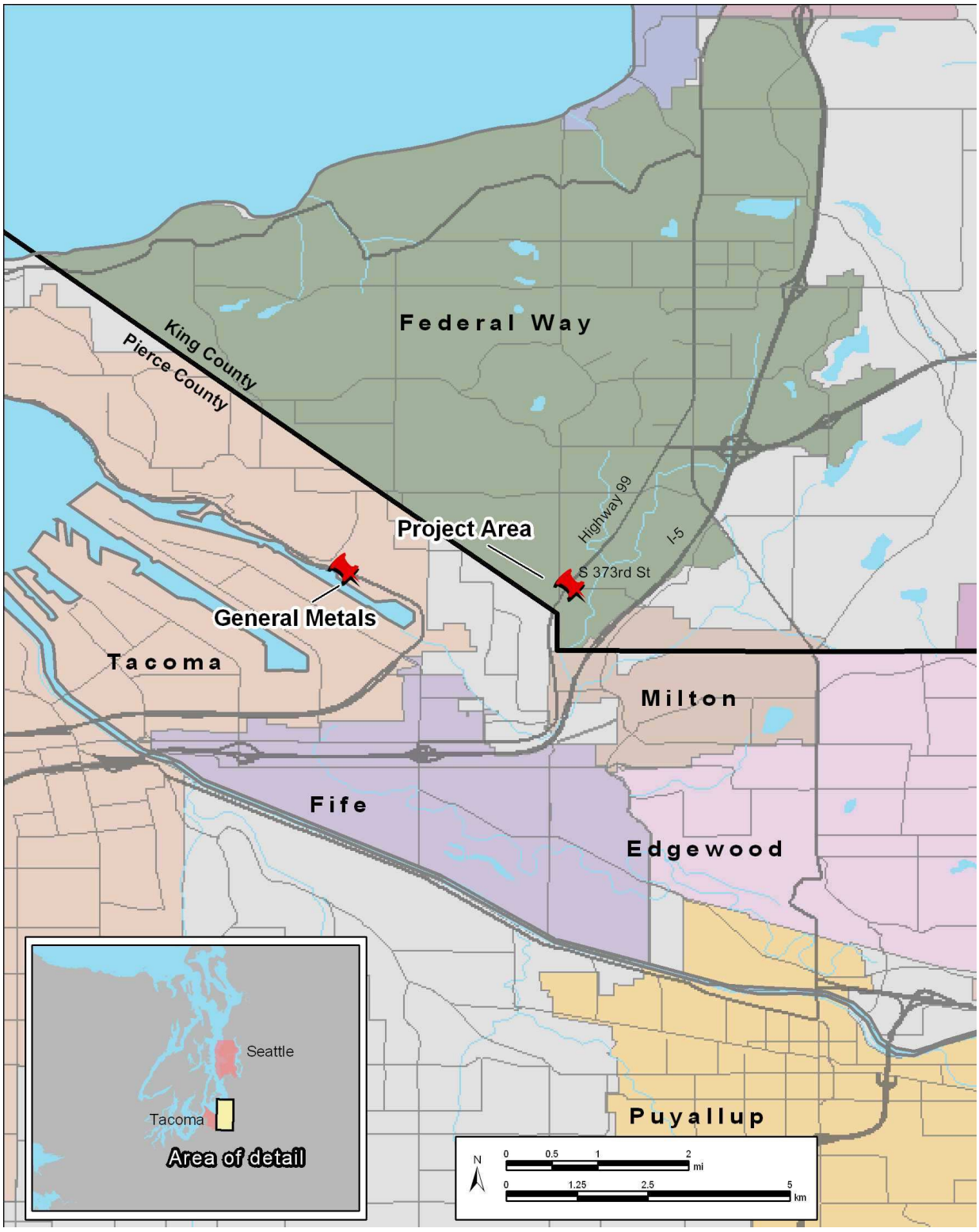

Figure 1-1. Vicinity map

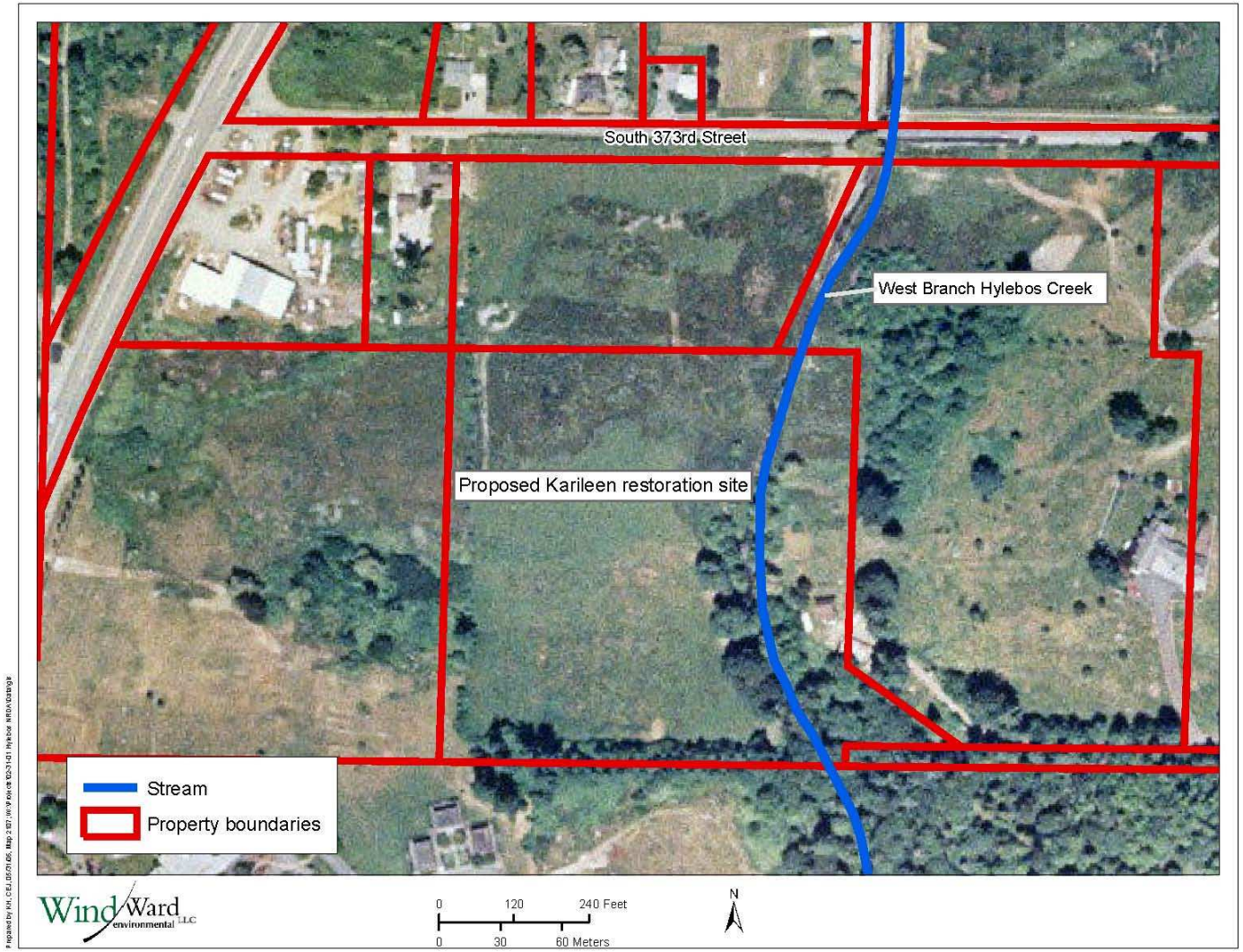

Figure 1-2. Aerial view of proposed Karileen restoration site

A small bridge is located on South 373rd Street, north of both the Karileen property and the neighboring property to the north, the Campbell property. The City of Federal Way and the Washington State Department of Transportation (WSDOT) are currently in the process of adding another bridge approximately 200 ft east of this bridge on South 373rd Street and creating a new main channel for Hylebos Creek on the parcel just north of South 373rd Street (Bucich 2006). This parcel was formerly known as the Mase property and is currently being developed for a stream restoration project called the Spring Valley Restoration Project (CH2M HILL 2005). The goals of this restoration project are to alleviate the sediment trapping problems associated with the current bridge at South 373rd Street, which has caused localized flooding on adjacent properties for many years, and to restore and enhance stream channel and wetland habitats on the former Mase property. Windward and Smayda Environmental Associates (Smayda) have been informed of the development of this project by WSDOT and CH2M HILL and will continue to maintain contact to best coordinate the restoration plans and construction activities for both sites.

2.0 Restoration Project Goals and Objectives

The Karileen Restoration Project is designed to comply with the restoration goals and objectives of the Commencement Bay Restoration Plan (CBRP; CBNRT 1997), as described below. In addition, site-specific restoration goals and objectives were defined for the Karileen property to provide a basis for developing the restoration design plan and the objectives for the post-construction monitoring program.

2.1 Compliance with Commencement Bay Restoration Plan Goals

Restoration at the Karileen property will provide valuable services for the watershed because the site falls within the primary study area delineated in the CBRP (CBNRT 1997). In addition, the Karileen Restoration Project creates off-river habitat, which was historically common on creeks and rivers in the Commencement Bay ecosystem but now is rare. The CBRP states that "creating well-stratified riparian corridors and buffers, augmenting in-stream flows to benefit fish movement, and creating off-river habitat … will provide some of the habitat components currently limiting efforts to enhance the injured fish and wildlife species in the Basin" (CBNRT 1997).

The restoration design presented in this report meets the following restoration objectives outlined in the CBRP (CBNRT 1997):

- **Objective 1 – Provide a functioning and sustainable ecosystem.** This restoration project will create rare, valuable spawning habitat for salmonids in the Hylebos Creek watershed. The design addresses the factors that limit salmon habitat (Kerwin 1999) in the section of the watershed with the highest priority (Mobrand 2001). Restoring salmon spawning habitat in the watershed

will sustain salmon in the estuary and will benefit resources throughout the watershed.

- **Objective 2 – Integrate restoration strategies.** This restoration project will protect and enhance threatened freshwater wetland habitat in the Hylebos Creek watershed and connect the stream to upland habitats. The spawning habitat from this project will connect to existing spawning habitat downstream in the Gethsemane Cemetery and reinforce recent and ongoing restoration projects throughout the watershed, such as the planned Spring Valley Restoration Project immediately upstream. The Karileen Restoration Project will be an integral part of a network of restoration sites along the west branch that are designed to increase salmon returns (FHW 2000).
- **Objective 4 – Involve the public in restoration planning and implementation.** This project was chosen in consultation with FHW and is supported by the Puyallup Tribes, Citizens for a Healthy Bay, and Washington State Representative Skip Priest, among others. In addition, the post-construction monitoring program and adaptive management plan will potentially incorporate the participation of FHW for additional site monitoring to visually detect any major issues that may occur on the site (e.g., cattle grazing or other herbivore presence, sudden infestations of invasive exotic plants) in between scheduled monitoring events.

2.2 SITE-SPECIFIC RESTORATION GOALS

Table 2-1 presents the site-specific restoration goals that have been defined for the Karileen Restoration Project. These goals provide the basis for this restoration plan as depicted in the restoration plan drawings (Smayda et al. 2007).

Table 2-1. Karileen Restoration Project goals and associated restoration actions

GOAL	RESTORATION ACTIONS
Enhance and restore stream habitat for salmonid spawning and rearing	Lengthen and increase the sinuosity of the stream channel, add large woody debris to increase habitat diversity, and increase the inundation of the adjacent floodplain to create off-channel refuge.
Create wetland habitat	Lower elevation of buffer habitat to the current emergent wetland habitat elevation to link hydrology, place wetland substrate from excavated areas to create additional stream channel, and plant native wetland vegetation.
Improve wetland functions	De-level areas throughout the open emergent wetland, particularly areas of soil compaction resulting from cattle, to increase flood frequency and provide diverse habitats for plant community enhancements.
Restore and enhance native plant communities	Remove or control invasive exotic plant species, and plant and maintain native vegetation.
Restore and enhance fish, bird, and other wildlife habitats	Establish diverse native plant communities consisting of a variety of vegetation strata; add habitat features such as large woody debris and snags.
Eliminate human and cattle disturbances	Remove all existing buildings; exclude cattle by fencing site perimeter.

3.0 Project Description

The Karileen Restoration Project is designed to enhance and restore habitat resources for fish and wildlife and to improve wetland functions in the Hylebos Creek system. The existing conditions, both site-specific and system-wide, are described below to provide context for the activities prescribed in this restoration plan. These activities can be separated into four main components:

- Stream enhancement, in particular, the creation of spawning and rearing habitat
- Creation and enhancement of wetland habitats
- Restoration and enhancement of riparian buffer and upland habitats
- Removal of negative impacts associated with the structures and the presence of cattle

Sheet 4 (Smayda et al. 2007) illustrates the overall restoration plan and associated activities, including the creation of stream meanders and general placement of large woody debris (LWD) in the newly created channel, restoration of native plant communities, and removal of invasive plant species and the house and other structures.

3.1 EXISTING RESOURCES

3.1.1 Drainage basin and stream channel

The Hylebos Creek drainage basin is divided into eastern and western sub-basins by Interstate-5 (I-5) (King County 1986). The east branch of Hylebos Creek originates at Lake Killarney and North Lake and meets the west branch in Pierce County, approximately 5 river miles from the mouth at the waterway (King County 1991). The headwaters of the west branch of Hylebos Creek were formerly located in historical wetlands in the northern part of the basin. Today, the west branch originates mostly from surface runoff from urban development, including SeaTac Mall and the West Hylebos Wetlands State Park (King County 1991). The main stem and east branch consist of 18.5 river miles, and the west branch consists of 9.7 river miles (King County 1991).

The east branch is similar to many other lowland Puget Sound creeks in that the channel drops from the upper plateau of the drainage basin into a narrow canyon. In contrast, the channels of the west branch and Lower Hylebos Creek (mainstem below two branches) follow the course of a wide glacial outwash. Urban development is prevalent in the uplands of both sub-basins and has resulted in high flows and subsequent channel erosion, hillside erosion, and downstream deposition of sediment. However, the west branch and Lower Hylebos Creek are in general less prone to erosion and sediment transport in comparison to the east branch because the location

of the drainage course on wide glacial outwash aids in slowing flow (King County 1991).

According to the Hylebos/Browns-Dash Point Basin Plan (Pierce County 2006), the west branch of the Hylebos Creek has been classified as a Type 3 Stream under the Washington State Department of Natural Resources interim water typing system, meaning that it has moderate-to-slight fish, wildlife, or human use. The City of Federal Way Municipal Code regulates two stream types, minor and major (City of Federal Way 2005). Major streams are those that contain or support resident or migratory fish and would apply to the portion of Hylebos Creek on the Karileen property.

The Karileen Restoration Project is located on the west branch of Hylebos Creek, approximately 5 miles from the Hylebos Waterway and approximately 2 miles from the confluence of the east and west branches. In this reach of the west branch, the stream channel has been channelized, straightened, and/or narrowed to accommodate agricultural and residential land uses. Many areas throughout the west branch are prone to flooding because of sediment deposition that occurs during heavy rain events, which drastically reduce the flow capacity of the stream (City of Federal Way and King County 1990). This problem is exacerbated by the separation of the channel from the adjacent floodplain as a result of the channelization efforts. One example is the existing bridge at South 373rd Street, which traps sediments that flow downstream, thereby reducing the flow capacity under the bridge and causing localized flooding of adjacent properties and the road.

Daily average flow rates of the west branch of Hylebos Creek have been monitored during a 731-day period by US Geological Survey (USGS)[2] and indicated a peak flow of 79 cfs, a minimum flow of 0.19 cfs, and an average flow of 2.7 cfs. Based on Smayda's survey measurements of creek slope and cross-sectional shape, the creek capacity is approximately 45 cfs at bankfull. USGS data indicated that for 4 days during a 2-year period, the capacity of the stream was 45 cfs or greater, suggesting that the stream exceeds its banks and floods the adjacent open wetland approximately twice annually (Smayda and Windward 2003).

The segment of the west branch of Hylebos Creek on the Karileen property is fairly channelized, lacks meanders and off-channel habitats, and receives heavy sediment loads during storm events. In addition, it lacks sufficient riparian vegetation to shade the creek channel from higher temperatures, as well as LWD for habitat diversity. Two to three smaller channels drain neighboring properties, to the east and west, to the main creek channel on the Karileen property.

[2] Measured at the USGS gage at South 356th Street, Milton, Washington (Station 12102920), during the 1986 and 1987 water years. Source: http://waterdata.usgs.gov/nwis/discharge/.

3.1.2 Wetlands

A review of historical and current aerial photos, National Wetlands Inventory (NWI) maps, and the King County soil survey indicated that a broad, nearly level floodplain wetland was present along the northern portion of the creek on the Karileen property. This wetland was identified as a palustrine emergent/forested wetland (NWI 1987). Additional forested wetland area was identified adjacent to the creek in the narrow riparian area in the southern portion of the property (NWI 1987). Aerial photos taken between 1944 and the present indicate little change in tree canopy cover of the wetland area. The large floodplain area has remained open or emergent, whereas the riparian area has remained forested. The forested riparian area appears to have decreased in size over the years.

According to a local wetland inventory conducted by the City of Federal Way in 1998 (Gamble 2002), plant species found in these wetlands include soft rush (*Juncus effusus*), reed canary grass (*Phalaris arundinacea*), Douglas spiraea (*Spiraea douglasii*), Nootka rose (*Rosa nutkana*), red alder (*Alnus rubra*), and black cottonwood (*Populus balsamifera* var. *trichocarpa*). The emergent wetland has been used as a pasture, but patches of forested wetland are present.

Windward and Smayda delineated the wetland boundaries on the Karileen property in 2003 (Appendix A). Two wetlands were identified. The larger wetland located in the northern section of the property was classified as a palustrine emergent/forested wetland.[3] This wetland has been rated as a Category II wetland according to the Washington State Department of Ecology's Washington State Wetlands Rating System (Hruby 2004), and a Category I based on City of Federal Way regulations. A second wetland was delineated at the top of the hill near the southern property boundary but lacked strong evidence of hydrology indicators and hydric soils, likely a result of cattle disturbance. This wetland has been rated as a Category IV wetland according to Washington State guidelines (Hruby 2004) and a Category III wetland based on City of Federal Way regulations. Cattle disturbance is prevalent throughout the property, resulting in compacted and disturbed soils, grazed vegetation, and the dominance of pasture grasses.

3.1.3 Plant community

A pre-construction vegetation survey was conducted by Windward in 2004 to characterize the existing plant community of the Karileen property and to inform the final design of the restoration plan (Windward 2004). This survey found that the open emergent wetlands located on the northern half of the property are dominated by rushes (*Juncus* sp.), cattail (*Typha* sp.), and reed canary grass with very little shrub cover. In addition, no canopy cover of the stream channel (measured using a

[3] US Fish and Wildlife Service Classification (Cowardin et al. 1979).

densiometer) was observed in this area. The most common invasive, exotic plant species included blackberry (*Rubus* sp.) and reed canary grass.

In the riparian buffer, Himalayan blackberry (*Rubus discolor*) dominated both the herbaceous and shrub strata. Japanese knotweed (*Polygonum cuspidatum)* was also present in patches adjacent to the creek. Other shrub species included red elderberry (*Sambucus racemosa*), willow (*Salix* sp.), and salmonberry (*Rubus spectabilis*). Tree canopy cover was more prevalent in this area and averaged 83% at the center of the stream. Red alder and weeping willow were the dominant tree species.

The upland plant community is dominated by pasture grasses, bentgrass species (*Agrostis* sp.) in particular. Some shrubs and trees are present near the house and driveway areas and along the fence at the southern property boundary. Similar to the emergent wetland and riparian buffer, blackberry is common throughout the upland. Tansy ragwort (*Senecio jacobaea*) and Canada thistle (*Cirsium arvense*) are other invasive plants in the upland area.

3.1.4 Soils

The soils of the Karileen property are dominated by Norma fine sandy loam and Alderwood gravelly sandy loam on the northern and eastern side of the property (SCS 1973). Norma fine sandy loam is very deep with an approximate depth to bedrock greater than 4.5 ft. This soil is also poorly drained with a high water-holding capacity and usually floods from November to April. Alderwood gravelly sandy loam usually occurs on upland slopes and is moderately deep. This soil type is moderately well drained; however, the presence of a hardpan, a layer of weakly cemented compact material, below the substratum prevents the filtration of water to groundwater and usually results in lateral water movement, creating seeps at the base of slopes (SCS 1973).

The southwest portion of the property is dominated by Kitsap silt loam, which is characteristically found on hillsides with 2 to 8% slopes. This soil is very deep, moderately well drained, and has a high water-holding capacity because clay content increases with depth (SCS 1973). The northwestern corner of the property is dominated by Bellingham silty clay loam, which is a deep, poorly drained soil that forms in depressional areas from material deposited by streams (SCS 1973). This soil is subject to very long and frequent periods of flooding.

3.2 PROPOSED RESTORATION ACTIVITIES

The following is a description of the major restoration activities that will take place during construction. The restoration plan drawings are presented in the revised design plan set (Smayda et al. 2007).

3.2.1 Stream enhancement

Specific actions for stream enhancements include increasing a straightened 400-ft reach to approximately 600 ft by adding meanders to increase the sinuosity. An existing ditch will also be lengthened and expanded to 110 ft. This will increase the amount of available open-water habitat and will also slow the rate of flow to reduce scour. In addition, the meanders are designed to increase the length and duration of inundation of the adjacent wetland habitat, thereby improving wetland habitat values and functions. Excavation will occur alongside the existing creek channel and in an existing ditch on the east side of the creek as indicated on Sheet 5 of the restoration plan drawings (Smayda et al. 2007). Net material to be excavated for the creek re-alignment is 962 yd^3 plus an additional 24 yd^3 for the enhancement of the ditch. Excavated material will be used to fill the old channel and to create planting mounds as discussed below.

To accommodate the increase in flooding caused by the re-meandering of the stream, areas in close proximity to the stream will be de-leveled to create hollows and mounds (Sheet 5 of the restoration plan drawings (Smayda et al. 2007)). The hollows will accommodate the increased flooding and offer opportunity to enhance emergent wetland functions; the mounds will serve as slightly drier "islands" for the planting of larger native trees and shrubs. The wetland topography in this area is hummocky, and de-leveling for the creation of mounds and hollows is intended to mimic natural conditions. These features will increase the flood storage capacity of this site, provide refuge for rearing fish during periods of high water, increase the shade cover of the creek area, and also increase the habitat and plant diversity in a wetland disturbed by cattle grazing. The total area of wetland mounds adjacent to the creek channel is 1016 yd^2 (0.11 ac); the height of the mounds will not exceed 12 in. above the seasonal water table. Total area of hollows (called enhanced emergent wetlands on plan set) is 1,113 yd^2 (0.26 ac). These areas will be excavated to a maximum depth of 2 ft.

Spawning gravels (approximately 80 yd^3) will be used in the creek channel area. Local material has been stockpiled on site from sediment dredging in the vicinity of the bridge at South 373rd Street. Gravel will be added primarily to reduce turbidity; however, spawning habitat, such as riffles, will be placed in a few locations during construction at the direction of the field engineer.

3.2.2 Placement of large woody debris

LWD will be installed throughout the creek channel to create the desired pool, riffle, and run habitats, thereby increasing overall habitat diversity within the stream channel, promoting localized scour holes to improve rearing habitat, and stabilizing areas of gravel to improve spawning habitat. An average of one piece of LWD will be placed every 10 feet in the channel, as appropriate, and an additional sixty pieces will be placed throughout the floodplain for a total of approximately 160 pieces. LWD will be installed by burying a significant proportion of each piece (up to two-thirds, as

appropriate) in narrow trenches that will be excavated just large enough for the log, thereby avoiding the disturbance of surrounding vegetation. The use of man-made materials will be minimized throughout the project; therefore, anchors or pins will not be used unless specified by the field engineer. Sheet 7 of the restoration plan drawings (Smayda et al. 2007) presents the details of LWD installation.

3.2.3 Wetland creation

A small area (approximately 0.15 ac in size) adjacent to the existing wetland on the west side of the creek will be excavated for the creation of additional wetland habitat (Sheets 3 and 4 of the restoration plan drawings (Smayda et al. 2007)). The elevation of the excavated area will be contiguous with the adjacent wetland habitat. Total volume to be excavated will be 405 yd^3. Excess wetland soils excavated for the creation of the meanders and hollows will be placed in the created wetland to provide appropriate substrate. The created wetland area will be planted with native vegetation (see Section 3.2.4).

This proposed wetland creation area is located at the boundary of the existing wetland at the base of an incline from the southern property boundary. Overall difference in elevation between the wetland and the top of the hill (near the southern property boundary) is approximately 25 ft. It was observed during the wetland delineation that the bottom of this slope on the southern side of the wetland boundary is "soggy," particularly during rain events, likely the result of surface water runoff from the adjacent upland area. This surface water runoff, and the contiguous elevation with the adjacent wetland, will provide necessary hydrology for the created wetland.

3.2.4 Restoration planting plan

Native tree, shrub, and emergent species will be planted in areas specified on Sheets 13 and 14 of the restoration plan drawings (Smayda et al. 2007). All plantings will be native species and will come from a local source if possible. Construction activities will attempt to minimize impacts to existing native vegetation. If potential impacts appear possible, existing native vegetation will be transplanted to a different location onsite, when feasible.

A list of native plant species found onsite is presented on Sheet 10 of the restoration plan drawings (Smayda et al. 2007); the revegetation plan, presented in Appendix B, is based on this list. All excavated areas in the wetland will be seeded with wetland seed mixes during construction. The revegetation plan will be executed following construction during the wet season. Seven zones are identified for revegetation, and the area and some examples of plant species for each zone are as follows:

- Zone 1, Wetland Pasture (approximately 2.31 acres): pea-fruit rose *(Rosa pisocarpa)*, black twinberry (*Lonicera involucrata*) for the scrub/shrub wetland habitat and sedge species (*Carex obnupta* and *Carex stipata*), tufted hairgrass (*Deschampsia caespitosa*) for the emergent wetland habitat.

- Zone 2, North Reach West Branch Hylebos Creek Wetland (approximately 1.4 acres): scrub/shrub wetland habitat with planting mounds consisting of red alder (*Alnus rubra*), Oregon ash (*Fraxinus latifolia*), red-osier dogwood (*Cornus sericea*), for example.
- Zone 3, Side-slope wetland pasture (approximately 0.15 acres): forested wetland habitat consisting of trees and shrubs such as big-leaf maple (*Acer macrophyllum*), red alder *(Alnus rubra)*, Douglas hawthorne (*Crataegus douglasii*), and Indian plum (*Oemleria cerasiformis*).
- Zone 4, Upland home site and pasture (0.8 acres): upland woodland consisting of trees and shrubs such as grand fir (*Abies grandis*), big-leaf maple, sword fern (*Polystichum munitum*) and salal (*Gaultheria shallon*).
- Zone 5, Upland pasture (approximately 3.2 acres): upland woodland consisting of trees and shrubs similar to zone 4. Other species may include Garry oak (*Quercus garryana*), thimbleberry (*Rubus parviflorus*), Nootka rose (*Rosa nutkana*), red-flowering current (*Ribes sanguineum*), mock orange (*Phiadelphus lewisii*), serviceberry (*Amelanchier alnifolia*), and snowbrush (*Ceanothus velutinus*).
- Zone 6, South reach of West Branch Hylebos Creek (approximately 1.02 acres): forested wetland and upland habitat that will be managed for invasive species only, areas greater than 10 square feet of disturbed soils to be replanted with shrub species such as dull Oregon grape *(Mahonia nervosa)*, Indian plum *(Oemleria ceraiformia)*, Nootka rose *(Rosa nutkana)*, or snowberry *(Symphoricarpos alba)*..
- Zone 7, Wetland creation site (0.05 acres of herbaceous species and 0.11 acres of shrub species): emergent and scrub/shrub wetland habitat consisting of sedge species, tufted hairgrass, black twinberry, and Pacific ninebark (*Physocarpus capitatus*), for example.

Invasive, exotic vegetation identified onsite includes Himalayan blackberry, Scot's broom (*Cytisus scoparius*), Japanese knotweed, and reed canary grass (Sheet 9 of restoration plan drawings (Smayda et al. 2007)). Large patches of invasive species will be removed and buried on-site. These areas may be mulched and planted with fast-growing, native vegetation as a means to control the invasive species. The plant community will be monitored and maintained, particularly in the first 3 years following construction, to control invasive plant species.

3.2.5 Removal of structures and cattle

Onsite buildings, including house, garage, and well house, are planned to be demolished and removed from the site. These locations will be filled to surrounding elevations, seeded and mulched. The barn will remain in place, with lower doors secured shut, for barn owl habitat. In addition, the perimeter of the project area (i.e., property boundary) will be fenced in its entirety to exclude cattle from entering the

site. Remnant lengths of barbed-wire fencing present throughout the interior of the site will be removed.

3.3 IMPACTS AND BEST MANAGEMENT PRACTICES

Potential impacts throughout the project area may include increased turbidity, noise disturbances, vegetation disturbance, and wetland soil compaction due to construction equipment and activities. Construction best management practices will help to avoid or mitigate these potential impacts. However, the habitat enhancements proposed in this restoration plan will provide long-term benefits resulting in more productive stream and wetland habitats, including the creation of salmon spawning and rearing habitats and improved wetland functions such as increased plant diversity, bird habitat, and flood storage.

Best management practices to avoid or mitigate potential impacts related to construction will include the following:

- Major earthwork will be conducted during low-flow conditions of late summer (in accordance with Washington State Department of Fish and Wildlife [WDFW] Hydraulic Project Approval) and will not coincide with salmonid spawning times.
- Heavy equipment will avoid sensitive soils (e.g., areas of mucky wetland soils) to avoid soil compaction. As needed, wetland soils will be decompacted and native vegetation will be installed to restore any construction-related damage.
- Work in or near the stream channel will be performed so as to minimize turbidity, erosion, and other water quality impacts. All work will be in compliance with the conditions of the US Army Corps of Engineers (USACE) permit, the WDFW Hydraulic Project Approval, and the City of Federal Way's Master Land Use Permit.
- LWD will be anchored by burying significant portions of each piece throughout the site.
- Disturbances to existing, desirable native vegetation will be minimized throughout the site. Existing native vegetation will be avoided or transplanted to another area of the site where possible.
- Heavy equipment will be limited to areas that will be excavated. It is anticipated that stream construction will proceed by building one meander at a time. It is also anticipated that concurrent with the creation of meander bends, the planting mounds and emergent wetlands close to the excavated stream channel will be constructed, the abandoned section of channel will be filled, and large woody debris will be installed while the heavy equipment is in the area. This will aid in minimizing movement of heavy equipment over sensitive wetland soils.

- A similar sequence of events is anticipated for the creation of emergent wetland areas and the Sound Transit wetland creation area where heavy equipment will enter the wetland area just north of the wetland creation area, move to the northern extent of the enhancement area, and the work its way back south while excavating emergent wetland areas, creating planting mounds, and finally excavating the created wetland.

An erosion control plan is specified on Sheet 12 of the restoration plan drawings (Smayda et al. 2007). Erosion controls that may be implemented during construction include, but are not limited to, the placement of mulch, the seeding or planting of bare soil immediately following construction of the creek channel, and the use of silt fences and coffer dams to reduce turbidity downstream. In addition, a block net may be used upstream of the stream channel construction area to prevent the passage of any fish, if deemed necessary. This net will be monitored daily during construction by a Windward biologist, and fish will be transported from upstream to downstream if necessary. Fish will be handled minimally, and fish transport will comply with the capture and release terms specified in the National Oceanic Atmospheric Administration (NOAA) terms and conditions (Steger 2006).

3.4 SUMMARY OF POST-CONSTRUCTION MONITORING PROGRAM

A 10-year post-construction monitoring program has been designed to quantitatively document the development of the restoration project, particularly the presence of fish and wildlife habitat such as salmonid spawning and rearing habitat (Windward 2007). The goals and objectives of this monitoring program are to:

- Document the condition of the restoration project by comparing monitoring data with appropriate references, such as the as-built construction plans and appropriate restoration success criteria
- Determine appropriate maintenance actions, if necessary, by evaluating monitoring data to assess the need for the modification of physical or biological factors related to the development of the restoration project
- Comply with all required permit conditions

The physical and biological monitoring parameters included in this monitoring program are summarized in Table 3-1. These parameters were selected based on a review of several monitoring protocols that are implemented locally or regionally (e.g., Pleus et al. (1999), Schuett-Hames et al. (1999), and FHW (2004)). The CBNRT monitoring program (CBNRT 2001) was developed specifically for estuarine sites and therefore is not applicable to this freshwater restoration site. However, the monitoring parameters suggested for this restoration program are in large part analogous to the parameters included in the CBNRT monitoring program. A description and rationale for each parameter proposed for this program are presented in Table 3-1. Detailed

methodology for each parameter is presented in the Karileen Restoration Project post-construction monitoring program (Windward 2007).

Table 3-1. Monitoring parameters to be evaluated during the post-construction monitoring program

PARAMETER	ACTIVITY	PURPOSE
Physical		
Discharge	measurement of discharge (cubic feet per second)	determine quantity of water flowing past a given location in the stream channel at a given time to assess energy of the system
Channel cross sections	characterization of channel morphology	ensure stable channel morphology to provide habitat for fish, maintain refuge, and reduce turbidity
Habitat unit survey	characterization of types of in-stream habitats (e.g., riffle, pool, run, wetland, or subsurface flow)	assess fish habitat availability, in particular spawning and rearing habitat for salmonids
Sediment characterization	measurement of dominant particle size and the degree to which gravels are embedded in finer-grained sediment	assess fish habitat availability based on sediment size and embeddedness
Large woody debris	evaluation of large pieces of wood placed in creek to provide channel complexity and create pools	assess the stability and function of large woody debris placed in restored creek channel to maintain bank stability, sinuosity, cross-sectional diversity, and pool formation
Wetland Hydrology	monitor water level of enhanced and created wetlands	determine if soil saturation is sufficient to meet performance criteria
Biological		
Herbaceous, shrub, and tree vegetation	measurement of plant species composition, cover, and survival	assess the health and diversity of the plant community and the success of the planting plan and determine whether maintenance actions will be required
Invertebrate prey resource production	evaluation of creek macroinvertebrate community composition	assess the diversity and composition of the macroinvertebrate community to determine the prey resource capacity of the restored creek
Fish presence (adult spawners)	observation of fish onsite and throughout Hylebos Creek	evaluate fish presence throughout the system and assess the availability of restored habitat onsite
Fish presence (fish stranding)	survey stream channel, side-channels, and enhanced emergent wetlands for stranded fish	evaluate whether newly created habitat features are stranding fish and take adaptive management actions if necessary
Bird presence	observation of birds onsite and throughout Hylebos Creek	determine bird use of restored habitat onsite

The post-construction monitoring program also includes an adaptive management plan, which describes how decisions will be made for providing maintenance of the restoration site. All decisions will involve communication with the CBNRT following submittal of the annual monitoring report. In addition, coordination with community groups such as FHW to provide additional monitoring or maintenance will be investigated and pursued if deemed appropriate. The adaptive management plan is

described in further detail in Section 5.0 of the post-construction monitoring program (Windward 2007).

4.0 Proposed Schedule

The proposed schedule for the design, construction, and monitoring of the Karileen Restoration Project is shown in Table 4-1. This schedule assumes construction will occur in 2008. The schedule will depend on permit agency review, the length of the summer low-flow construction window (i.e., fish window), and all parties signing the consent decree.

Table 4-1. Proposed schedule for completion of the Karileen Restoration Project

TASK	DESCRIPTION	APPROXIMATE COMPLETION DATE
Submission of all permit applications—Major milestone	The Joint Aquatic Resources Permit Application (JARPA) form was submitted with associated documents to the USACE for the Nationwide Permit 38 and to the City of Federal Way to request a Master Land Use Permit pre-application conference. The JARPA will be submitted to WDFW for the Hydraulic Project Approval, once a SEPA determination has been made by the City of Federal Way and the SEPA public comment and appeal period is complete.	Submission of applications was completed June 6, 2006. SEPA review and appeal period ends August 29, 2007.
Submission of biological assessment (BA) —Major milestone	The BA was submitted to NOAA and the US Fish and Wildlife Service (USFWS) for programmatic consultation.	June 13, 2006
Submission of draft post-construction monitoring and adaptive management plan—Major milestone	A work plan for post-construction monitoring of the Karileen Restoration Project was prepared based on the methods and performance criteria described in the CBNRT monitoring program (CBNRT 2001). This monitoring plan was designed to satisfy monitoring requirements of both the CBNRT and relevant permitting agencies.	July 5, 2006
Permit review	USACE and the City of Federal Way have reviewed the permit applications. Several rounds of document and design plan reviews and revisions have been completed. USACE has written the permit letter and after review of the final permit package will issue a permit. The City of Federal Way has issued a SEPA determination of non-significance. We are currently in the public comment and appeal period. Once the City receives the final permit package they will issue a "Letter of Authorization."	Late August 2007
Construction coordination and mobilization	A contractor will be identified, and materials and plans for construction will be obtained.	Winter and Spring 2008
Project construction—Major milestone	The restoration project will be constructed in summer of 2008 within the fish window. It is anticipated that construction will take	Shall commence within 45 days after the opening of the fish window or 30 days after the granting of all

Task	Description	Approximate Completion Date
	approximately 2-3 weeks to complete.	necessary permits, which ever is later. Project construction shall be completed within 45 days after commencement (anticipated late summer 2008).
Completion of planting	Some planting will occur during construction, but the remaining planting effort will occur during the following the wet season (i.e., December-March) when plants are dormant.	Winter 2008
Monitoring and maintenance	The restoration project will be monitored and maintained on an annual basis for 10 years following construction. A monitoring report will be submitted to the CBNRT and appropriate permitting agencies on an annual basis or as appropriate.	2009 – 2019

5.0 Projected Cost of Restoration Activities

A cost estimate for the Karileen Restoration Project was prepared by Smayda and is presented in Table 5-1. Costs for construction, including stream enhancement, wetland creation, and removal of the structures, are estimated at $174,232. Completion of the planting plan during the following wet season is estimated to cost $111,500. Total construction costs, including construction contingencies and engineering tasks, are estimated at $408,025. Total project costs reported here do not include costs for land acquisition, project design, and post-construction monitoring and maintenance.

Table 5-1. Construction cost estimate for the Karileen Restoration Project

Item	Unit	Unit Price	Quantity	Total Price
Preparation				
Mobilization	lump sum	$4,500.00	1	$4,500
Clearing and grubbing	lump sum	$1,200.00	1	$1,200
Construction surveying	lump sum	$600.00	1	$600
Traffic				
Temporary traffic protection and direction	lump sum	$200.00	1	$200
Temporary Erosion Control				
Diversion pipe, pump, and check dams	lump sum	$4,500.00	1	$4,500
Sediment control fence	linear feet	$15.00	100	$1,500
Coir fabric	square feet	$1.25	1650	$2,063
Construction entrance	each	$700.00	1	$700
Fish block nets	each	$300.00	2	$600
Soil stabilization, upland seed, straw mulch	acre	$3,500.00	0.7	$2,450
Drainage				
Creek excavation	cubic yard	$18.00	986	$17,748
Wetland excavation	cubic yard	$22.00	939	$20,658

ITEM	UNIT	UNIT PRICE	QUANTITY	TOTAL PRICE
Mound construction and ditch fill	cubic yard	$4.00	1,925	$7,700
Install spawning gravel	cubic yard	$55.00	80	$1,700
Furnish and install of restoration logs	each	$270.00	160	$43,200
Structure Removal				
Fence removal	linear feet	$3.50	510	$1,785
Structure demolition	lump sum	$7,500.00	1	$7,400
Landfill disposal	ton	$105.00	42	$4,410
Debris hauling	cubic yard	$32.00	50	$1,600
Planting During Construction				
Perimeter fence replacement	linear feet	$11.00	2,878	$31,658
Live stakes installation	each	$3.00	500	$1,500
Transplant onsite plants	each	$20.00	100	$2,000
Invasive species removal	acre	$9,200.00	0.2	$1,840
Wetland seed, straw mulch	acre	$5,500.00	0.39	$2,145
Furnish and stockpile arborist chips on-site	cubic yard	$7.00	1225	$8,575
Trimming and cleanup	lump sum	$2,000.00	1	$2,000
Subtotal				**$174,232**
Planting After Construction				
Plant supplies	lump sum	$78,500.00	1	$78,500
Installation	lump sum	$33,000.00	1	$33,000
Subtotal				**$111,500**
Subtotal of two construction phases				**$285,732**
Sales tax (9.8%)				$28,002
Construction contingencies (15%)				$42,860
Engineering and science (18%)				$51,432
Estimated project total[a]				**$408,025**

Source: Smayda Environmental Associates, Inc., 5/01/2007

[a] Total cost reflects construction only and does not include land acquisition, engineering design, and post-construction site monitoring and maintenance.

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Hylebos Waterway Natural Resource Enhancement

KARILEEN RESTORATION PROJECT: WETLAND DELINEATION REPORT

Prepared for:

General Metals of Tacoma, Inc.
1902 Marine View Drive
Tacoma, WA 98422
253-572-4000

July 27, 2006

Prepared by:

Wind Ward environmental LLC
200 West Mercer Street • Suite 401
Seattle, Washington • 98119

and

Smayda Environmental Associates, Inc.
139 NE 61st Street
Seattle, Washington 98115

Table of Contents

List of Figures and Tables

List of Acronyms

ACRONYM	Definition
Ecology	Washington State Department of Ecology
General Metals	General Metals of Tacoma, Inc.
NWI	National Wetlands Inventory
PAS	Pacific Aerial Surveys, Inc.
SCS	Soil Conservation Service
Smayda	Smayda Environmental Associates, Inc.
USGS	US Geological Survey
WDNR	Washington State Department of Natural Resources
Windward	Windward Environmental LLC

1.0 Introduction

The Karileen property, as detailed below, has been identified by General Metals of Tacoma, Inc. (General Metals) as the location for a potential salmon habitat enhancement project located on the West Branch of Hylebos Creek in Federal Way, Washington (Figure 1). To determine the extent and boundaries of the wetland habitat located at this site, Windward Environmental LLC (Windward) and Smayda Environmental Associates, Inc. (Smayda) delineated the wetland boundary on October 28 and 30, 2003. This report presents the methods, results, and conclusions of the wetland delineation at the Karileen property.

Karileen Property Details[1]

Address:	326 South 376th Street, Federal Way, Washington
Current owner:	Karileen LLC.
Tax parcel:	3221049021
Size:	10.3 acres
Section, township, range:	NW S32, T21N, R4E
County:	King

[1] Source: King County iMap (King County 2004).

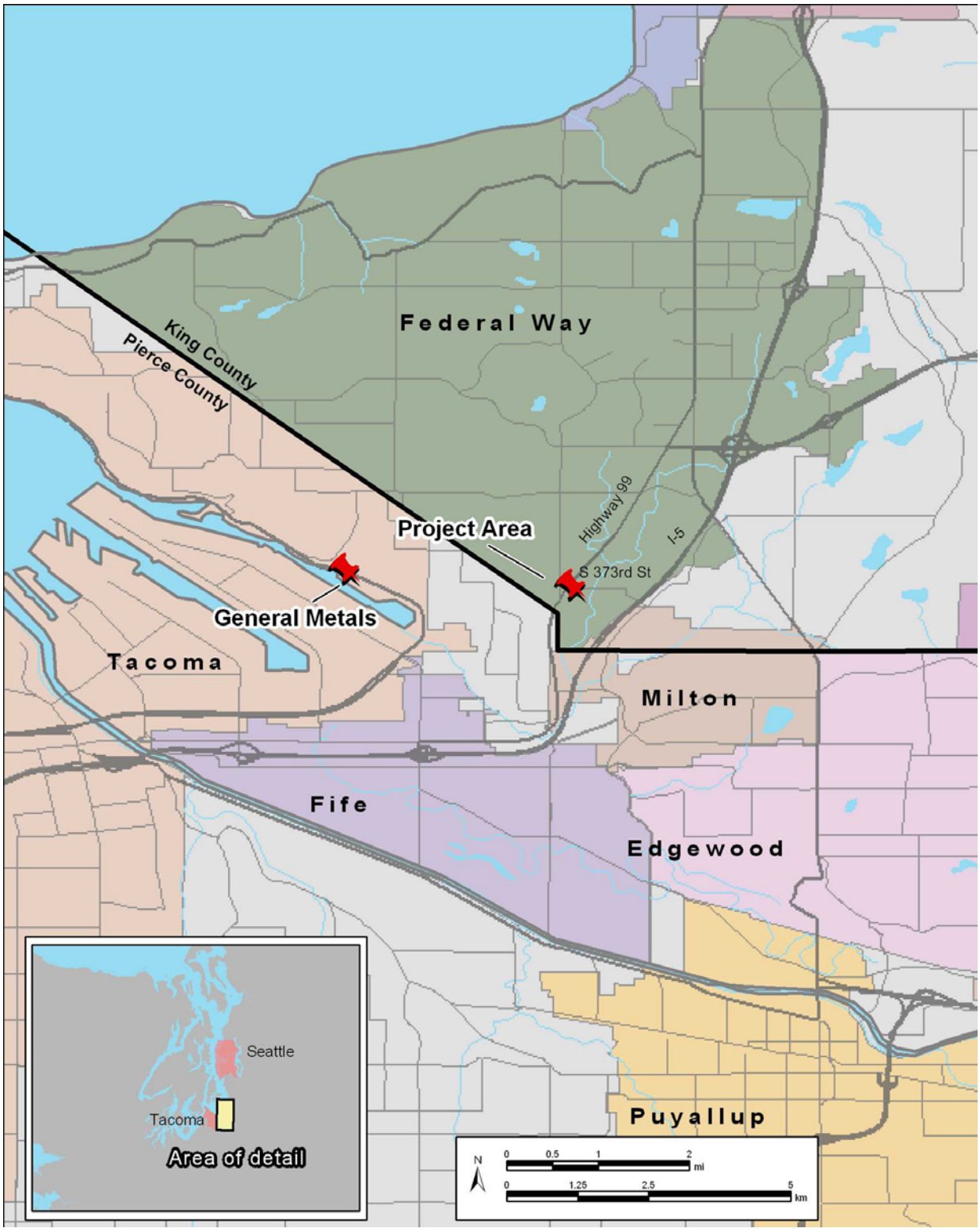

Figure 1. Site vicinity map

2.0 Methods

2.1 Review of Existing Information

Several sources were consulted prior to initiating fieldwork to better understand the extent of the wetland area at the Karileen property. These sources included historical and current aerial photographs (PAS 1961; Triathlon 1996; USACE 1944; WDNR 1978), the National Wetlands Inventory (NWI) Map for Poverty Bay, Washington (NWI 1987), a local wetland inventory (Gamble 2002), and the King County soil survey (SCS 1973). These sources were used to predict potential wetland areas based on the presence of topographic depressions and drainages, hydric soils, and hydrophytic vegetation. In addition, a survey was conducted in June 2003 by Windward and Smayda to determine the feasibility of restoring the stream and wetland habitats onsite. This survey provided a cursory analysis of the plant community, the local topography and hydrology, and the feasibility of the proposed restoration and enhancement actions.

2.2 Field Investigation

A routine determination was conducted to delineate the wetland boundary at the Karileen property using methods outlined in the Washington State Department of Ecology's (Ecology's) wetland delineation manual (Ecology 1997). Windward and Smayda staff investigated the site on October 28 and 30, 2003, for distinctive hydrologic, vegetative, and geological features that indicate wetlands. Using knowledge of wetland characteristics, plots were established in areas that represented unique combinations of soil, vegetation, and hydrologic attributes. Each plot was categorized as representing a wetland area or an upland area using Ecology routine determination data forms (Ecology 1997). The data collected at these plots were used to establish a preliminary wetland boundary. To more accurately define the boundary between wetland and upland zones at the site, additional plots were established in areas where the hydrologic regime could not be established with certainty by means of visual inspection. The final wetland boundaries were delineated with flagging. Positive wetland indicators of plant community, soils, and hydrology must be present for a wetland determination to be made. These three parameters are also used to delineate the boundary between the upland and the wetland. Completed data forms are presented in Appendix A.

2.2.1 Vegetation

Plants occurring within each plot were identified to the species level and were categorized as either facultative, facultative wetland, or obligate according to the *National List of Vascular Plant Species that Occur in Wetlands* (Reed 1996) (Table 1). Genus, species, strata, and percent cover of all plants within a community type were

recorded for each plot. Species dominance was determined for each vegetation layer according to the Ecology guidelines (1997), where dominant trees are those with the greatest basal area, dominant shrubs or woody understory are those with the greatest height, and dominant herbaceous plants are those with the greatest areal cover or the greatest number of stems. At least 50% of the dominant plant species within a community must be facultative, facultative wetland, or obligate species in order for hydrophytic vegetation presence to be determined.

Table 1. Definitions of wetland plant indicator categories used to determine the presence of hydrophytic vegetation

WETLAND INDICATOR CATEGORY	DEFINITION
Obligate (OBL)	occurs almost always (estimated probability > 99%) under natural conditions in wetlands
Facultative wetland (FACW)	usually occurs in wetlands (estimated probability 67 to 99%), but occasionally found in non-wetlands
Facultative (FAC)	equally likely to occur in wetlands or non-wetlands (estimated probability 34 to 66%)
Facultative upland (FACU)	occurs in non-wetlands (estimated probability 64 to 99%)
Upland (UPL)	occurs almost always in non-wetland areas (estimated probability > 99%)

Source: Reed (1996)

2.2.2 Soil

Hydric soils are characterized by features that only develop when soils are inundated with water long enough to support anaerobic conditions. Anaerobic soil conditions occur when soil is saturated with water via regular ponding, seeping, or flooding events during the growing season. Indicators of anaerobic activity and hydric soils include (Ecology 1997):

- High organic material content or presence of organic soils
- Sulfurous odor
- Aquic moisture regime
- Reducing soil conditions
- Presence of gleyed soils and mottles
- Iron and manganese concretions
- Listed hydric soil

Soil pits were dug in each sample plot, and observed indicators of anaerobic activity were recorded on the data forms (Appendix A). In addition, soil color was interpreted using a Munsell soil color chart.

2.2.3 Hydrology

Because the West Branch of Hylebos Creek flows through the wetland, daily flow rate data collected upstream by the US Geological Survey (USGS) during the period from 1986 to 1988 were used to estimate average, minimum, and peak flow rates onsite. In addition, flow rates and bank full widths were calculated from data collected during a field survey conducted in June 2003. This information was used to assess the hydrology of the creek and its influences on the wetland. In addition, regional weather stations were queried for summer and early autumn rainfall. Indicators of hydrology observed during the wetland delineation survey included:

- Soil inundation and saturation
- Water marks, water-stained leaves, drift lines, sediment deposits, and drainage patterns
- Oxidized rhizospheres

All hydrology indicators at each plot were recorded on the data forms (Appendix A).

3.0 Results

The wetland area present on the Karileen property is adjacent to Hylebos Creek and forms a wide floodplain along the creek in the northern half of the property (Figure 2). In the southern half of the property, the riparian wetland is constricted within a steep ravine along the creek. The wetland boundary was delineated at the base of the north-facing slope on the southern portion of the property and along a narrow bench on the east bank of the creek. In addition, a smaller wetland area was delineated at the top of the hill. This section presents the results of the review of existing information and the field investigation.

3.1 Review of Existing Information

A review of historical and current aerial photos, NWI maps, the City of Federal Way local wetland inventory, and the King County soil survey and a field visit in June 2003 indicated that a broad, nearly level floodplain wetland was present along the northern portion of the creek on the Karileen property. This wetland was identified as a palustrine emergent/forested wetland (NWI 1987; City of Federal Way 2002). Additional forested wetland area was identified adjacent to the creek in the narrow riparian area in the southern portion of the property (NWI 1987; City of Federal Way 2002; Gamble 2002). Aerial photos taken from 1944 to the present indicated little change in tree cover of the wetland area. The large floodplain area has remained open or emergent, whereas the riparian area has remained forested. The forested riparian area appears to have decreased slightly in size over the years.

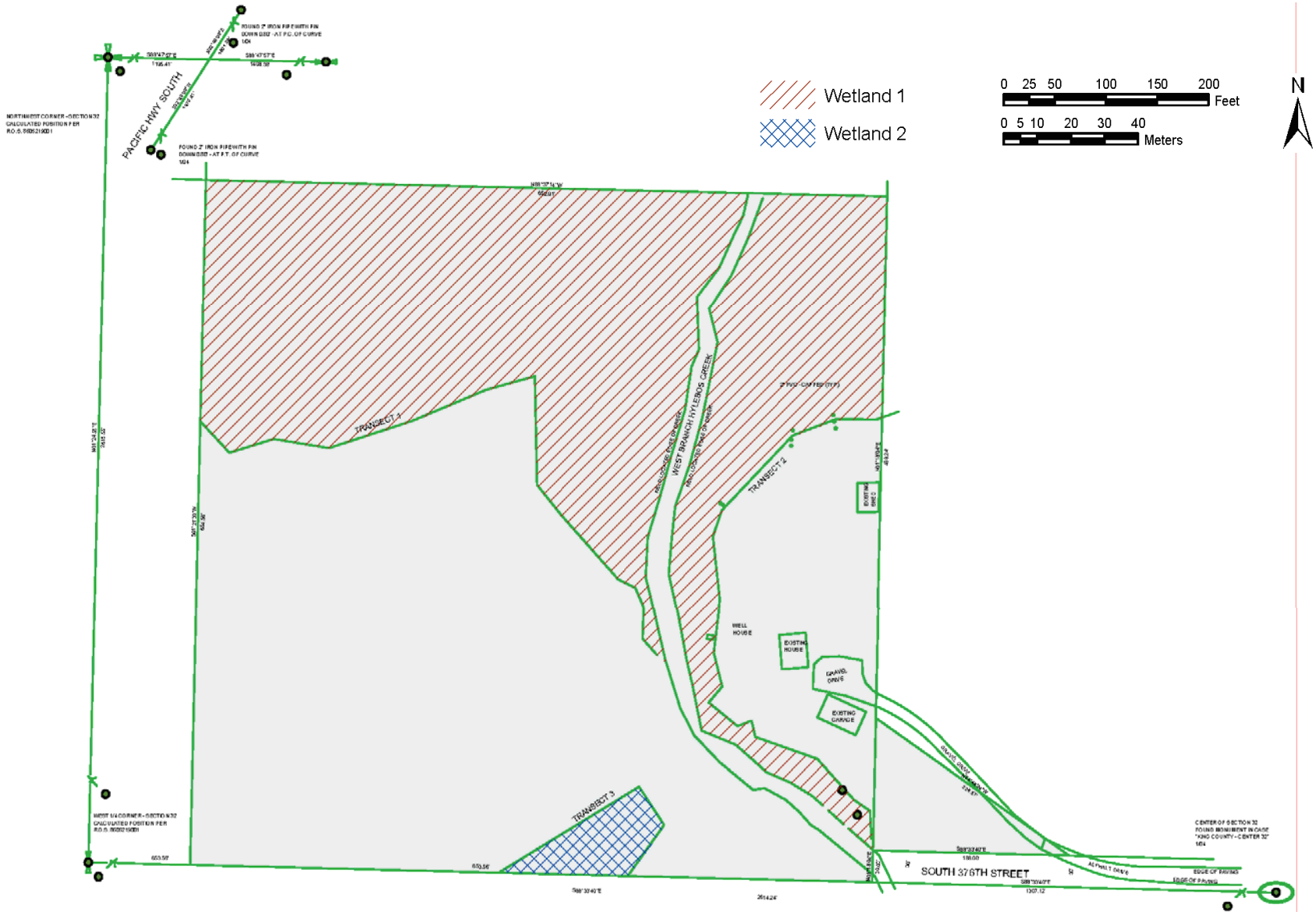

Figure 2. Wetland boundaries on the Karileen property

According to the King County soil survey (SCS 1973), soils in the wetland area consisted of Norma fine sandy loam, which is a poorly drained soil with a high water-holding capacity and usually floods from November to April. Additional soils onsite included Kitsap silt loam, which is characteristically found on hillsides, is very deep, moderately well drained, and has a high water-holding capacity; and Bellingham silty clay loam, which is a deep, poorly drained soil that forms in depressional areas from material deposited by streams (SCS 1973). This soil is subject to very long and frequent periods of flooding.

The field survey conducted in June 2003 identified both obligate and facultative wetland plant species throughout the floodplain wetland and the forested riparian wetland. A list of species occurring throughout the property is presented in Appendix B. In addition, a flow rate of 3.4 cfs was measured during this survey (on June 5, 2003). Daily average flow rates of the West Branch Hylebos Creek have been monitored during a 731-day period by USGS[2] and indicated a peak flow of 79 cfs, a minimum flow of 0.19 cfs, and average flow of 2.7 cfs. Based on Smayda's survey measurements of creek slope and cross-sectional shape, the creek capacity is 45 cfs at bank full. USGS data indicated that over the course of 2 years, the capacity of the creek was 45 cfs or greater during 4 days, suggesting that the creek exceeds its banks and floods the adjacent open wetland approximately twice annually. One restoration goal for this site is to increase the frequency and length of inundation of the wetlands by creating more interaction between the creek and wetland.

3.2 FIELD INVESTIGATION

The boundary of the wetland was delineated by investigating the presence of wetland vegetation, soil, and hydrology indicators in plots along two transects (Figure 2): the first transect (Transect 1) began at the western property boundary and ran east to the creek, and the second transect (Transect 2) started at the eastern property boundary and ran west along the base of the hill and then ran parallel to the creek south to the southern property boundary. A third transect (Transect 3) investigated a wet area at the top of the hill on the southwest side of the property. Flags were placed at the locations of vegetation plots and soil pits along each transect.

The delineated area of Wetland 1 is 4.05 ac in size and extends north from the bottom of the north-facing slope to the property boundaries and extends south along the creek within the steep ravine. Wetland 2 (0.15 ac in size) was delineated in an area at the top of the southwest hill near the southern property boundary and appeared to be the location of a seep. This wetland determination is considered tentative due to the lack of hydrologic evidence and strong soil indicators. Overall, the entire wetland area throughout the property has been negatively impacted by the presence of cattle. Soil

[2] Measured at the USGS gage at S 356th St, Milton, WA (Station 12102920) during the 1986 and 1987 water years. Source: http://waterdata.usgs.gov/nwis/discharge/.

disturbance and compaction were observed throughout and, in some areas, made identifications of positive wetland indicators difficult.

Based on observations of adjacent properties, it appears that both Wetland 1 and Wetland 2 extend offsite and are likely incorporated within larger wetland complexes. Wetland determination or delineation of adjacent properties was not included in the scope of this investigation.

The results of the presence of wetland vegetation, hydrology, and soil indicators are discussed below and presented in Table 2. Plots were determined to be within a wetland if all three criteria (vegetation, hydrology, and soils) were positively determined. If one or more of the criteria was not met, a negative determination was made for that plot. Several plots were found to be on the border of the wetland inasmuch as wetland indicators were observed but lacked strong evidence. Flags were placed along the boundary of the wetland.

Table 2. Summary of results from wetland boundary test plots

Plot	Transect	Community Type[a]	Dominant Vegetation Classification[b]	Wetland Vegetation Present?	Hydrology Indicators	Wetland Hydrology Present?	Soil Indicators[c]	Wetland Soils Present?	Plot Within Wetland?	Flag Placement
1	1	H UPL	100% FAC	yes	oxidized rhizospheres (few)	yes	oxidized rhizospheres, matrix chroma ≤ 2 with mottles	yes	yes (border)	flag placed in between plot 1 and 2 in transition area outside of wetland vegetation
2	1	H WET	> 90% FAC or FACW	yes	soil saturation and free water in pit, oxidized rhizospheres	yes	aquic moisture regime, oxidized rhizospheres, matrix chroma ≤ 2 with mottles	yes	yes	
3	1	H WET	100% FAC or FACW	yes	soil saturation and free water in pit, oxidized rhizospheres	yes	aquic moisture regime, oxidized rhizospheres, gleyed matrix, matrix chroma ≤ 2 with mottles	yes	yes	flag placed upland of plot 3 where soil indicators became less apparent
4	1	F UPL/ border WET	57% FAC or FACW	yes	soil saturation below root zone	no	aquic moisture regime, appears disturbed	no	no	flag placed close to plot 4
5	2	H/F WET	90% FAC or FACW	yes	soil saturation and free water in pit	yes	aquic moisture regime, matrix chroma ≤ 1 in unmottled soil	yes	yes	flag placed in between plot 5 and 6
6	2	H UPL	90% FAC or FACW	yes	none	no	none	no	no	
7	2	S/H UPL/ WET	80% FAC or FACW	yes	none	no	gleyed matrix, mottles present	yes	no	flag placed close to plot at slightly lower elevation on bench
8	2	S/H UPL/ WET	60% FAC or FACW	yes	none	no	gleyed matrix, mottles present	yes	no	flag placed close to plot
9	2	H/F WET	100% FAC or FACW	yes	soil saturation below root zone	no	gleyed matrix, mottles present	yes	no	flag placed close to plot on bench
10	2	S/H/F UPL	71% FAC or FACW	yes	soil saturation below root zone	no	none	no	no	flag placed lower on bench where soil and hydrology indicators more obvious
11	2	F/S UPL	57% FAC or FACW	yes	soil saturation	yes	none	no	no	flag placed lower on bench where soil and hydrology indicators more obvious

Plot	Transect	Community Type[a]	Dominant Vegetation Classification[b]	Wetland Vegetation Present?	Hydrology Indicators	Wetland Hydrology Present?	Soil Indicators[c]	Wetland Soils Present?	Plot Within Wetland?	Flag Placement
12	2	S WET	85% OBL, FAC, or FACW	yes	none	no	gleyed matrix, mottles present	yes	no (border)	flag placed close to plot due to strong presence of wetland vegetation and soil indicators
13	2	S/F WET	60% FAC	yes	none	no	gleyed matrix, mottles present	yes	no (border)	flag placed close to plot due to strong presence of wetland vegetation and soil indicators
14	1	F/H WET	100% OBL, FAC, or FACW	yes	soil inundation	yes	matrix chroma ≤ 2 with mottles	yes	yes	flag placed at upland edge of seep
15	3	H WET	50% FAC or FACW	yes (borderline)	oxidized rhizospheres-but minimal	yes (borderline)	oxidized rhizospheres, matrix chroma ≤ 2 with few mottles apparent	yes (borderline)	yes	flags placed around depression on slope where vegetation, soils, and hydrology indicators were present

[a] Community type refers to the wetland (WET) or upland (UPL) plant community: herbaceous (H), shrub (S), or forested (F).

[b] Indicates the probability of species occurrence in wetlands as described in Reed (1996) (see Table 1):
OBL – obligate
FACW – facultative wetland
FAC – facultative

[c] Definition of soil indicators (Ecology 1997):

Aquic moisture regime: Saturated by ground or surface water.

Oxidized rhizospheres: Soil surrounding roots of aquatic plants is lighter in color than soil matrix due to root respiration.

Matrix chroma ≤ 2 with mottles: Soil is dark in color with contrasting spots or mottles lighter in color (rust).

Gleyed matrix: Increased chemical reduction of iron, manganese, and other chemicals due to prolonged anaerobic conditions resulting in gray soil colors.

3.2.1 Vegetation

The open wetland area in the northern portion of the property consisted of a wide floodplain adjacent to the creek and is dominated by emergent vegetation, including sedges (*Carex* spp.), small-fruited bulrush (*Scirpus microcarpus*), common rush (*Juncus effusus*) and cattail (*Typha* spp.). Grasses, such as Kentucky bluegrass (*Poa pratensis*) and bentgrass (*Agrostis* sp.), dominated the edges of the wetland with patches of stinging nettle (*Urtica dioica*) and Himalayan blackberry (*Rubus discolor*) dispersed throughout in drier areas of the wetland and along the edges. The forested riparian wetland, restricted to the narrow, steep banks of the ravine in the southern portion of the property, was dominated by skunk cabbage (*Lysichiton americanum*), salmonberry (*Rubus spectabilis*), lady fern (*Athyrium filix-femina*), and red alder (*Alnus rubra*). Water parsley (*Oenanthe sarmentosa*) and creeping buttercup (*Ranunculus repens*) were also prevalent throughout this area. The additional wet area at the top of the hill appeared to be a seep and was dominated by bentgrass, creeping buttercup, Kentucky bluegrass, and Canada thistle (*Cirsium arvense*) with Himalayan blackberry occurring on the edge. Overall, cattle disturbance was prevalent throughout the property and made identification of vegetation, grass species in particular, difficult. Table 3 presents a summary of vegetation identified within the plots established to delineate the wetland boundary. A list of vegetation identified throughout the wetland and upland areas during the field survey conducted in June 2003 is presented in Appendix B.

Table 3. Vegetation observed on the wetlands boundaries on the Karileen property

Plant Species	Indicator Status[a]
Alfalfa (*Medicago sativa*)	FAC
Bedstraw (*Gallium trifidum*)	FACW+
Bentgrass (*Agrostis* sp.)	FAC
Bigleaf maple (*Acer macrophyllum*)	FACU
Bird vetch (*Vicia cracca*)	NI
Canada thistle (*Cirsium arvense*)	FACU+
Common rush (*Juncus effusus*)	FACW
Creeping buttercup (*Ranunculus repens*)	FACW
Cut-leaved geranium (*Geranium dissectum*)	NI
Fireweed (*Epilobium ciliatum*)	na
Himalayan blackberry (*Rubus discolor*)	FACU-
Horsetail (*Equisetum* spp.)	FAC-FACW
Kentucky bluegrass (*Poa pratensis*)	FAC
Lady fern (*Athyrium filix-femina*)	FAC
Piggyback plant (*Tolmiea menziesii*)	FAC
Red alder (*Alnus rubra*)	FAC
Red elderberry (*Sambucus racemosa*)	FACU

PLANT SPECIES	INDICATOR STATUS[a]
Salmonberry (*Rubus spectabilis*)	FAC+
Skunk cabbage (*Lysichiton americanum*)	OBL
Stinging nettle (*Urtica dioica*)	FAC+
Sword fern (*Polystichum munitum*)	FACU
Water parsley (*Oenanthe sarmentosa*)	OBL
Western dock (*Rumex occidentalis*)	FACW+

[a] Indicates the probability of species occurrence in wetlands as described in Reed (1996) (see Table 1).
OBL – obligate
FACW – facultative wetland
FAC – facultative
FACU – facultative upland
NI – no indicator status
UPL – upland
na – not applicable

3.2.2 Soils

The soils at the boundary of the open emergent wetland area consisted of dark brown clay loam (10YR 4/2)[3]. Hydric soil indicators observed in soil pits in this area included an aquic moisture regime and oxidized rhizospheres, with a gleyed chroma matrix occurring lower in the profile (Chart 1 6 10YR) and mottles (10YR 5/6). The forested riparian wetland area adjacent to the creek in the southern portion of the property contained sandier soils that were darker in color (10YR 3/2), but with similar gleyed chroma matrix with mottles occurring lower in the profile. In the wet area at the top of the hill (Wetland 2), soils were very compacted due to cattle but were comparable in color to soils down the slope at the edge of Wetland 1 (10YR 5/2). Clay content increased with depth in this area, and a few oxidized rhizospheres and small mottles were present lower in the profile. The hydric soil indicators in Wetland 2 were not as prevalent as those observed in Wetland 1, which may be due to the timing of the survey (late October) following a period of little rainfall.

3.2.3 Hydrology

The open emergent wetland in the northern portion of the property (Wetland 1) was inundated with small channels bisecting the wetland and draining into the creek. As described in Section 3.1, the creek floods this wetland approximately twice annually and therefore, likely influences the water-level throughout this area. At the boundary of this wetland, soil saturation ranged from just below the surface to 18 inches. Along the creek channel, soil saturation varied from just below the surface to no saturation. Overall, wetland hydrology indicators present in Wetland 1 included oxidized roots, soil saturation, free water in pit, and inundation. In Wetland 2 (at top of southwest hill), only oxidized roots were observed. However, rainfall in late summer/early fall

[3] Munsell soil color chart notation

had been below normal for 2003 and may have impacted the prevalence of hydrology indicators in this area, particularly for Wetland 2.

3.3 WETLAND DETERMINATION

Wetland 1 is a palustrine emergent/forested wetland[4] and was delineated based on the presence of wetland vegetation, hydrology and soil indicators. Wetland 2 was delineated, but lacked strong evidence of hydrology indicators and hydric soils. Therefore, the delineation of Wetland 2 is considered tentative. At this time, wetland restoration is planned for Wetland 1, whereas no specific wetland restoration is planned for Wetland 2 (only revegetation and removal of cattle disturbance). Further investigation of Wetland 2 may be warranted in the event that ground-disturbing activities are proposed for this area in the future.

Wetlands 1 and 2 were rated according to Ecology's Washington State Wetlands Rating System (Hruby 2004). Based on these guidelines and the lack of formal documentation of the presence of Chinook salmon or other threatened or endangered species on the Karileen site, Wetland 1 was rated as a Category II wetland, and Wetland 2 was rated as a Category IV wetland (Appendix C). Ecology and King County regulations require a buffer width of 100 to 200 feet for Category II wetlands. Ecology regulations require a 25- to 50-foot buffer width around Category IV wetlands, and King County regulations require a 50-foot buffer.

A portion of the west branch of the Hylebos Creek passes through the Karileen property. According to the Hylebos/Browns-Dash Point Basin Plan (Pierce County 2006), the west branch of the Hylebos Creek has been classified as a Type 3 Stream under the Washington State Department of Natural Resources interim water typing system, meaning that it has moderate-to-slight fish, wildlife, or human use.

Surveys by local conservation groups (e.g., FHW) have identified small numbers of coho and chinook in the west branch of Hylebos Creek (FHW 2004). However, according to personal communication from Mr. Travis Nelson, WDFW Area Habitat Biologist, the west branch of Hylebos Creek is not likely to support self-sustaining wild populations of chinook in the future and has not supported wild chinook for at least ten years (Nelson 2006). Mr. Nelson stated the chinook that have been observed in the creek in the recent past are most likely hatchery fish that were planted as smolts. Historically, however, Hylebos Creek was a productive stream that supported many fish, including coho, chum, and chinook salmon and steelhead and cutthroat trout (Kerwin 1999).

The City of Federal Way Municipal Code regulates two stream types, minor and major (City of Federal Way 2005). Major streams are those that contain or support resident or migratory fish and would apply to the portion of Hylebos Creek on the Karileen property, which historically has supported these populations and may currently

[4] USFWS classification (Cowardin et al. 1979)

support them in small numbers. Populations of salmon from the Puyallup and White Rivers may also use Hylebos Creek to spawn and the Karileen site may support increasing numbers of resident and migratory fish in the future.

City of Federal Way regulation 22-1306 requires a 100-foot setback width from the ordinary high-water mark of these streams (City of Federal Way 2005). Wetland 1, which is hydrologically connected to this major stream, would therefore be considered a Category I wetland requiring a 200 foot buffer based on City of Federal Way regulations. Wetland 2 would be considered a Category III wetland, requiring a 25-foot buffer according to the Federal Way wetland classification system.

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Revegetation Plan for the Karileen Restoration Project

West Branch Hylebos Creek, Federal Way, WA

Prepared for Windward Environmental, LLC
Revised August 20, 2007

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1.0 Introduction

This report describes the construction and post-construction revegetation plan for the Karileen Restoration Project on the West Branch Hylebos Creek. The proposed revegetation enhancements will benefit habitat for salmon in the West Branch Hylebos Creek, as well as native plant and animal species at the site.

1.1 Project Location

The project site consists of the 10-acre Karileen property, located along the West Branch Hylebos Creek in the City of Federal Way, Washington. The property is located south of South 373rd St. The West Branch Hylebos Creek enters the Karileen property in the northeast corner and flows southward exiting the property via a forested ravine in the southeast corner. In addition to the creek, the Karileen property includes wet pasture, scrub-shrub and forested wetland, upland pasture, and upland forest habitats. A house and several outbuildings are present.

2.0 Enhancement Plan Summary

Species of concern at the project site may include chinook, coho, chum, and resident and migratory trout. Native plant communities and associated wildlife species are also of interest, especially as they relate to fish habitat. Limiting factors for the site include the following:

- The stream consists of a long glide, largely devoid of rearing pools, undercut banks, spawning areas and woody substrate.
- Stream gravels are good for spawning, but lack of instream structure allows the gravel to shift during high flows so that redds may be washed away.
- The upper portion of the stream is open to the sky, largely devoid of overstory vegetation.

- The wetland is directly adjacent to the stream, but has been partially leveled and is not inundated with great frequency.
- Plant species diversity is low in pasture areas and in major portions of the wetlands.
- Historically, cattle had access to wetland, stream and upland areas, and crossed the creek at an unimproved ford.
- At some locations, invasive plants are out-competing native plant species.

Improvements to the quality of existing degraded wetland and upland habitats on the property includes actions to be taken during construction of the realigned stream channel, as well as post-construction enhancement plantings of native vegetation. This section summarizes the combined construction/post-construction enhancement activities in each of seven zones on the property (refer to Design Plan Sheet 9 for locations of the zones). Section 3.0 Revegetation Plan, describes the post-construction installation of plant materials in detail.

2.1 Wetland and Wetland Buffer Enhancement

Several wetland habitats on the Karileen site will be enhanced to improve wetland functions and values including water quality, riparian habitat, native plant diversity, and wildlife habitat. Emergent wetlands will be created at one location. Upland parcels which serve (at least in part) as wetland buffers will be enhanced through invasive species management and planting of native plant species to improve plant community diversity and wildlife habitat. The proposed enhancement activities are described below by individual planting zone.

Zone 1, Wetland Pasture

Planting Zone 1 occupies the northwestern portion of the property and consists of wetland pasture dominated by grasses and other herbaceous species. Several depressions are present and are dominated by cattails. Within this zone, enhancement will consist of a slight increase in inundation frequency, excavation of two additional depressions within the emergent wetland, and planting of native species to increase plant community diversity.

In at least two locations, the existing ground surface will be deepened to accommodate increased inundation provided by stream realignment. Depressions will be excavated in the existing pasture with the intent of enhancing these areas of wet pasture habitat by allowing establishment of emergent wetland species. Disturbed soil will be seeded with wetland area seed mix during construction. Only limited portions of the site will be accessed and disturbed by heavy equipment during construction. Post-construction, the depressions will be planted with rooted stock of emergent herbaceous species. Soils excavated from these locations will be used on-site for other enhancement activities requiring soil (*e.g.*, filling abandoned stream channel, creating planting mounds).

Rooted stock of native shrub species will be overplanted across the parcel in scattered groupings outside of the natural and created depressions, to increase species and structural diversity.

Zone 2, North Reach West Branch Hylebos Creek and associated Wetland

Zone 2 includes the majority of the West Branch Hylebos Creek stream enhancement site. The stream will be realigned and meandered to increase the frequency of inundation of the adjacent wetlands. During construction, access by heavy equipment will be limited to the minimum necessary to accomplish excavation of segments of realigned stream channel, contour wetland drainage associated with realigned stream channel, refill abandoned stream channel, and dispose of excess soils as planting mounds. One existing ditch on the east side of the stream will be excavated slightly to enhance its shape, while retaining and salvaging adjacent wetland vegetation to the extent practicable. Two small areas will be excavated and enhanced with emergent herbaceous species. The majority of the eastern portion of Zone 2 will remain undisturbed. Excavation will be used as needed to remove large patches of invasive non-native species including reed canarygrass and yellow flag iris. Excavated soils free of invasive plants will be used to create narrow planting mounds parallel to the stream. Soils containing invasive plants will be disposed of as described on sheet 9 of the Plan Set.

During the stream construction phase, clumps of common rush, willow, and other suitable species will be salvaged and transplanted along the realigned stream. Approximately 500 live stakes of willow or other wetland shrubs available on site will be installed along the streambanks. Disturbed soils will be seeded with wetland seed mix. Refer to sheet 9 of the Plan Set for details on construction planting.

During the revegetation phase, native tree and shrub species will be overplanted across the parcel to increase native species diversity, structural complexity of the plant community, and wildlife habitat. A variety of tree and shrub species will be planted.

Zone 3, Side-slope Wetland Pasture

Zone 3 is located at a small, isolated wetland along the southern edge of the property. The area is of uncertain hydrology and is considered a borderline wetland site. Enhancement on this parcel will consist of overplantings of native tree and shrub species tolerant of the somewhat moist soil conditions. Invasive species will be removed at specified locations (refer to Plan Sheet 3).

Zone 4, Upland Homesite and Pasture

Zone 4 includes the homesite, barn, upland pasture, and additional outbuildings along the southeastern edge of the property. Enhancement activities within this zone will include the removal of most structures, reseeding of disturbed soils with upland seed mix during construction at locations where enhancement plantings will not occur, removal of invasive species at specific locations, and post-construction overplanting of native trees, shrubs, and ferns in upland pasture and locations of former structures. At locations of exposed soils where enhancement plantings will occur, 6 inches of arborist chips will be spread over the exposed soils to prevent erosion and to minimize establishment of grasses and invasive species. The barn structure will remain in place on the property for barn owl habitat.

Zone 5, Upland Pasture

Approximately three acres of upland pasture in the southwest corner of the project site will be enhanced by planting of native tree, shrub, and fern species. Excess soils excavated from the stream and wetland enhancement activities in Zone 1 (enhanced emergent wetlands

and Zone 7 (wetland creation) are anticipated to provide about 80 percent of the amount of fill proposed in Zone 5. The remainder of the fill will come from the lower portion of Zone 2 (wetland enhancement and stream realignment), and possibly from the excavation of invasive weeds in Zone 2. The excavated soils will be placed in Zone 5 as large, gently sloped planting mounds, as a means of on site soil disposal. Prior to depositing soil, the existing sod layer will be tilled or otherwise broken up to a depth of 12 inches. Post-construction, rooted stock of native tree, shrub, and fern species will be planted on the mounds and 6 inches of arborist chips will be spread over the exposed soils to prevent erosion and to minimize establishment of grasses and invasive species. The remainder of the zone will be overplanted with trees, shrubs, and ferns to increase structural complexity, species diversity, and wildlife habitat. These plantings will be mulched around their bases.

Zone 6, South Reach of West Branch Hylebos Creek

Within the forested corridor along the southern reach of West Branch Hylebos Creek enhancement activity will consist solely of invasive species management with any necessary followup revegetation on treated sites (refer to Section 6). The habitat within this corridor consists primarily of native trees and shrubs, and the stream is well-shaded. An invasive non-native species, Japanese knotweed, is present at a small number of locations; at least one large infestation of Himalayan blackberry is present on a steep slope to the east of the stream. Manual and small mechanical methods will be the primary means of weed management; no heavy equipment will be used in this zone.

2.2 Wetland Creation

Zone 7, Wetland Creation Site

This location was selected for creation of wetland habitat within existing wetland buffer in conjunction with realignment of the stream channel. Upland soils will be excavated to bring the ground surface and the plant rooting zone into contact with the water table. The excavated area will be topdressed during construction with amended soils and/or topsoil obtained from excavated portions of the adjacent zones 1 and 2. The created wetland will be planted with native herbaceous emergent species (where it is continuous with the emergent wetland depression in the adjacent Zone 1) and shrub wetland species.

3.0 Revegetation During Construction

All soils in the wetland area disturbed during construction will be reseeded with a wet site seed mix and mulched with straw. As needed, wetland soils will be decompacted and native vegetation installed to mitigate for any construction related damage. Mulch will not be placed in areas where flooding or high water is expected. Livestakes of willow, black cottonwood, black twinberry, or other appropriate species present on or near the site will be installed along the realigned stream channel during construction. Approximately 500 livestakes, minimum, are to be installed. Mulch of arborists' chips will be applied to livestaked areas outside the active stream channel. Additional arborists' chips will be stockpiled in a several locations on site for use during fall/winter planting of trees and shrubs. Infestations of Himalayan blackberry, yellow flag iris, and reed canarygrass will be excavated during construction at specified locations. Refer to Plan sheet 9 for details, including seed mixes.

4.0 Revegetation Following Construction
4.1 Introduction

This section describes the plant species, types of plant materials, layout and planting methods, to be used at the Karileen Restoration Site after construction is complete.

The plan is designed to enhance the existing vegetation, including both native and non-native species, by increasing the diversity and structural complexity of native plant species assemblages. The objectives of the revegetation plan are linked to other enhancement plan activities, including creek realignment, floodplain modification, and structure removal. The plan is intended to supplement erosion control seedings of upland and wetland grass seed mixes that will be implemented during construction. Plant materials are specified to achieve both short- and long-term objectives for soil cover and stabilization, stream shading, wetland value, structural characteristics, wildlife habitat, and woody debris recruitment. Native plant species are emphasized in the plan, although non-native, non-invasive species may be used on the site where necessary to achieve habitat management objectives. Management of selected non-native, invasive plants species is included in the plan.

4.2 Plant Materials

Rooted tree stock:

Preferred stock for trees is 1 gallon stock of 18-24 inch height. Bare root stock may be used to supplement containerized stock, up to a maximum of 25 percent of any individual planting zone. Larger tree stock, including large container and balled and burlapped, may be substituted for no more than 1 percent of the trees in any individual planting zone. All stock shall be of western Washington origin.

Rooted shrub/fern stock:

One gallon containerized stock or bare root stock of 18-24 inch height shall be installed, with exception of salal and sword fern which shall only be planted as containerized stock. All stock shall be of western Washington origin.

Rooted herbaceous stock:

Containerized, bare root, and/or plugs are acceptable. Plugs shall be a minimum of 10-cubic inches in size. All stock shall be of western Washington origin.

4.3 Installation Methods, Schedule, and Irrigation

All rooted tree stock shall be installed with 18-inch minimum height rodent-protection tubes. Shrubs that can be fitted with tubes will be installed with tubes. Netting or other protection from foraging animals will be installed across emergent wetland sites, as necessary based on site conditions. Herbivore protection will be replaced if damaged and removed either when the plant outgrows the device or when site monitoring is complete.

Arborist's chips, or other suitable mulch, shall be placed 6-inch deep in circle approx. 2 feet in diameter around the bases of installed trees, shrubs, and ferns, wherever installed as

overplantings. Sites which have received ground disturbance during construction or filling of the realigned channel, excavation of weeds, and/or deposition of excess soils, will be mulched 6 inches deep across the entire area of soil disturbance (even over erosion control seedings), rather than just around the bases of installed plants. Mulch will not be placed in areas where flooding or high water is expected. This is expected to be necessary in the very eastern portion of Zone 1, along the stream realignment area of Zone 2, locations of large weed excavations, and on the upland soil disposal mounds in Zone 5.

Containerized, plug, and balled and burlapped stock (if used to supplement) shall be planted during fall or winter following construction. Bare root stock shall be planted during the first winter (January through February) following construction.

Irrigation shall be provided on an as needed basis to all planted and seeded sites for two growing seasons following plant installation. It is expected that irrigation will be supplied to the upland planted sites and drier portions of the wetland sites at a rate of 1" approximately once weekly during the June through September period. Specific watering schedules and locations shall be implemented based on site conditions.

Design Sheets 9 and 10 contain planting notes regarding planting during construction.

4.4 Plant Species, Density, and Layout

An overall planting density target and estimated number of stems is provided for each habitat type in each planting zone. Plant species shall be selected from the planting lists provided below using commercially available rooted stock. It is intended that the final plantings in each zone will meet the following criteria:

1. at least 60 percent of the species on the primary species list for each planting zone will be represented in the plantings, in roughly equal proportions; and
2. where a list of additional optional species is provided to increase species diversity, no more than 10 percent of the installed plants in that planting zone will be from the optional species list.

Species on the preferred species lists may be replaced by other native species with the field engineer's authorization.

Emergent herbaceous wetland plants and live stakes should be installed in a systematic, grid pattern, 12 inches on center. The other plant materials may be installed in somewhat irregular groupings to more closely reflect natural conditions. A mix of species may be clustered together at a location. For example, a small number of fast-growing red alder may be partnered with a few western red cedar, with the alder positioned to provide shade for the young cedar. In some cases a large 'drift' of one species may be installed, with a variety of other species surrounding its periphery. The final layout will be determined by the planting contractor, and will take into consideration the final grading contours of the site as well as the plant materials available for use, and the need for post-planting maintenance, such as mowing of reed canarygrass.

Monitoring of the installed vegetation will be conducted annually during years 1 through 10, as described in the Post-Construction Monitoring Program and Work Plan.

Zone 1, Wetland Pasture

Scrub/shrub wetland habitat enhancement:
Plant materials: rooted stock of native shrub species
Area: approximately 2.08 acres, excluding existing and enhanced emergent wetlands
Planting density: 2,700 stems/acre (4 foot on center)
Number of stems: approximately 5616 stems

Preferred shrub species (select at least 5 of 8, approximately equal numbers of stems per species):

Black twinberry	*Lonicera involucrata*
Pea-fruit rose	*Rosa pisocarpa*
Salmonberry	*Rubus spectabilis*
Red elderberry	*Sambucus racemosa*
Hooker's willow	*Salix hookeriana*
Sitka willow	*Salix sitchensis*
Douglas spirea	*Spirea douglasii*
Snowberry	*Symphoricarpos albus*

Emergent wetland habitat enhancement: rooted stock of native, herbaceous emergent wetland species
Area: approximately 0.23 acres (NOTE: Approx. 0.04 ac. of which is located in Zone 2)
Planting density: 43,560 per acre (12 inch on center, evenly spaced)
Number of stems: approximately 10,019

Herbaceous species (select two Carex species plus at least 2 additional species, in approximately equal numbers of stems per species):

Slough sedge	*Carex obnupta*
Sawbeak sedge	*Carex stipata*
Tufted hairgrass	*Deschampsia caespitosa*
Common spikerush	*Eleocharis palustris*
Daggerleaf rush	*Juncus ensifolius*
Small fruited bulrush	*Scirpus microcarpus*

Optional herbaceous species for increased diversity (up to 10 percent of total, or 1000 plants):

Large-leaf lupine	*Lupinus polyphyllus*
Monkey flower	*Mimulus guttatus*
Silverweed	*Potentilla pacifica*
Water buttercup	*Ranunculus aquatilis*
Woolly bulrush	*Scirpus cyperinus*
Water parsnip	*Sium suave*
Narrowleaf burreed	*Sparganium emersum*
American brooklime	*Veronica americana*

Zone 2, North Reach West Branch Hylebos Creek Wetland

Scrub-shrub/forested wetland zone with planting mounds: rooted stock of coniferous and deciduous trees and shrubs
Area: approximately 1.4 acre, excluding eastern forested area and stream bed
Planting density: 2,700 stems/acre (4 foot on center)
Number of stems: (50:50 distribution): approximately 3,780 stems (1,890 trees: 1,890 shrubs)

Tree species: ('+' species are best-suited to planting mounds and drier portions of site) (select at least 4 of 6, in approximately equal numbers of stems per species):

Red alder	*Alnus rubra*
Oregon ash	*Fraxinus latifolia*
Sitka spruce	*Picea sitchensis+*
Black cottonwood	*Populus balsamifera ssp. trichocarpa*
Western red cedar	*Thuja plicata+*
Pacific willow	*Salix lasiandra*

Shrub species: ('+' species are best-suited to planting mounds and drier portions of site) (select at least 8 of 11, in approximately equal numbers of stems per species):

Oceanspray	*Holodiscus discolor+*
Black twinberry	*Lonicera involucrata*
Indian plum	*Oemleria cerasiformis+*
Pacific ninebark	*Physocarpus capitatus*
Mock orange	*Philadelphus lewisii+*
Pea-fruit rose	*Rosa pisocarpa*
Thimbleberry	*Rubus parviflorus+*
Red elderberry	*Sambucus racemosa*
Hooker's willow	*Salix hookeriana*
Sitka willow	*Salix sitchensis*
Snowberry	*Symphoricarpos albus+*

Zone 3, Side-slope Wetland Pasture

Forested wetland: rooted tree stock with shrubs
Area: approximately 0.15 acres
Planting density: 2,700 stems/acre (4 foot on center)
Number of stems: (50:50 distribution) 406 stems (203 trees: 203 shrubs)

Tree species (select at least 4 of 6, in approximately equal numbers of stems per species):

Big-leaf maple	*Acer macrophyllum*
Red alder	*Alnus rubra*
Western crabapple	*Malus fusca*
Bitter cherry	*Prunus emarginata*
Cascara	*Rhamnus purshiana*
Western red cedar	*Thuja plicata*

Shrub species (select at least 4 of 6):

Beaked hazelnut	*Corylus cornuta*
Douglas hawthorne	*Crataegus douglasii*
Indian plum	*Oemleria cerasiformis*
Pacific ninebark	*Physocarpus capitatus*
Nootka rose	*Rosa nutkana*
Snowberry	*Symphoricarpos albus*

Zone 4, Upland Homesite and Pasture

Upland woodland: rooted tree, shrub, and fern stock
Area: approximately 0.8 acre
Planting density: 2,700 stems/acre (4 foot on center)
Number of stems: (50:40:10 distribution) 2,160 stems (1,080 trees: 864 shrubs: 216 ferns)

Tree species (select grand fir, Douglas fir, and at least 2 other species, in approximately equal numbers of stems per species):

Grand fir	*Abies grandis*
Big-leaf maple	*Acer macrophyllum*
Red alder	*Alnus rubra*
Bitter cherry	*Prunus emarginata*
Douglas fir	*Pseudotsuga menziesii*
Cascara	*Rhamnus purshiana*

Shrub species (select at least 5 of 8, in approximately equal numbers of stems per species):

Beaked hazelnut	*Corylus cornuta*
Douglas hawthorne	*Crataegus douglasii*
Salal	*Gaultheria shallon*
Oceanspray	*Holodiscus discolor*
Tall Oregon grape	*Mahonia aquifolium*
Indian plum	*Oemleria cerasiformis*
Nootka rose	*Rosa nutkana*
Snowberry	*Symphoricarpos alba*

Fern species:

Sword fern	*Polystichum munitum*

Zone 5, Upland Pasture

Upland woodland: rooted tree and shrub stock
Area: approximately 3.2 acres
Planting density: 2,700 stems/acre (4 foot on center)
Number of stems: (60:40 distribution) 9,072 stems (5,454 trees: 3,618 shrubs)

Tree species: (include all three species, in approximately equal numbers of stems per species)

Grand fir	*Abies grandis*
Red alder	*Alnus rubra*
Douglas fir	*Pseudotsuga menziesii*

Optional species for increased diversity, up to 10 percent of total, or 545 plants:

Big leaf maple	*Acer macrophyllum*
Cascara	*Rhamnus purshiana*
Garry Oak	*Quercus garryana*

Shrub species: (select all three, in approximately equal numbers of stems per species):

Oceanspray	*Holodiscus discolor*
Tall Oregon grape	*Mahonia aquifolium*
Snowberry	*Symphoricarpos alba*

Optional species may include:

Thimbleberry	*Rubus parviflorus*
Nootka rose	*Rosa nutkana*
Red-flowering current	*Ribes sanguineum*
Mock orange	*Phiadelphus lewisii*
Serviceberry	*Amelanchier alnifolia*
Snowbrush	*Ceanothus velutinus*

Zone 6, South Reach of West Branch Hylebos Creek

Forested wetland and upland: invasive species management only.
Area: approximately 1.02 acres
Arborist's chips to be placed 8"-10" deep on any sites of disturbed soils between 3 square feet and 10 square feet on relatively gentle slopes, away from streambank.

Spot reseeding with native erosion control seed mix as needed for sites of disturbed soils between 3 square feet and 10 square feet on steep slopes or adjacent to streambank.

Sites greater than 10 square feet to be replanted with rooted shrub stock at density of 2,700 stems/acre (4 foot on center).

Shrub species:

Dull Oregon grape	*Mahonia nervosa*
Indian plum	*Oemleria cerasiformis*
Nootka rose	*Rosa nutkana*
Snowberry	*Symphoricarpos alba*

Zone 7, Wetland Creation Site

Emergent and Scrub/shrub wetland: herbaceous and shrub stock.
Area: Herbaceous species: approximately 0.05 acres
Shrubs: approximately 0.11 acres
Planting density:
Herbaceous species: 43,560 stems per acre (12 inch on center)
Shrubs: 2,700 stems per acre (4 foot on center)
Number of stems/plugs:
Herbaceous species: 1742 plugs

Shrubs: 297 stems

Herbaceous species (select both *Carex* species plus at least 3 additional species, in approximately equal numbers of stems per species):

Slough sedge	*Carex obnupta*
Sawbeak sedge	*Carex stipata*
Tufted hairgrass	*Deschampsia caespitosa*
Common spikerush	*Eleocharis palustris*
Daggerleaf rush	*Juncus ensifolius*
Small fruited bulrush	*Scirpus microcarpus*

Optional herbaceous species for increased diversity (up to 10 percent of total, or 174 plants):

Large-leaf lupine	*Lupinus polyphyllus*
Monkey flower	*Mimulus guttatus*
Silverweed	*Potentilla pacifica*
Water buttercup	*Ranunculus aquatilis*
Woolly bulrush	*Scirpus cyperinus*
Water parsnip	*Sium suave*
Narrowleaf burreed	*Sparganium emersum*
American brooklime	*Veronica americana*

Shrub species (select at least 5 of 8, in approximately equal numbers of stems per species):

Black twinberry	*Lonicera involucrata*
Pacific ninebark	*Physocarpus capitatus*
Pea-fruit rose	*Rosa pisocarpa*
Salmonberry	*Rubus spectabilis*
Red elderberry	*Sambucus racemosa*
Hooker's willow	*Salix hookeriana*
Sitka willow	*Salix sitchensis*
Snowberry	*Symphoricarpos alba*

5.0 Monitoring and Maintenance of Vegetation

Installed vegetation will be monitored annually during years 1, 2, 3, 5, 7 and 10. During years 1-3, survivorship of planted stock will be measured and sites failing to meet survivorship criteria will be provided supplemental plantings. Percent cover of all vegetation by strata and habitat type will be measured during each monitoring year, to evaluate the overall development and composition of the communities. Details on the monitoring and maintenance activities are provided in the Post-Construction Monitoring Program and Work Plan. Monitoring of weed populations and weed management activities are discussed in the following section and detailed in the Post-Construction Monitoring Program and Work Plan.

6.0 Invasive Plant Management

A number of non-native plants are present at the Karileen property, including intentionally seeded pasture grasses as well as common invasives such as reed canarygrass, Scotch broom, and yellow flag iris. No weed species requiring eradication, control, or containment (Washington State Class A or King County Class B-designates) were observed at the site. Noxious weeds listed and/or recognized by the King County Noxious Weed Control Board in 2006 (NWCB) are shown below, along with the County's management recommendations.

Common Name	**Scientific Name**	**King County NWCB Status**
Canada thistle	*Cirsium arvense*	Non-designated; control recommended but not required.
Field bindweed	*Convolvulus arvensis*	Non-designated; control recommended but not required.
Scotch broom	*Cytisus scoparius*	Non-designated; control recommended but not required.
Yellow flag iris	*Iris pseudacorus*	Non-designated; control recommended but not required.
Reed canarygrass	*Phalaris arundinacea*	Non-designated; control recommended but not required.
Invasive knotweeds	*Polygonum spp. (4 total)*	Non-designated; control recommended but not required.
Himalayan blackberry	*Rubus discolor*	Weed of concern; control and containment of existing populations recommended; new plantings discouraged.
Bitter nightshade	*Solanum dulcamara*	Weed of concern; control and containment of existing populations recommended; new plantings discouraged.

Source: King County Noxious Weed Control Board 2006. King County Noxious Weed List. Available online at: http://dnr.metrokc.gov/weeds

Noxious weeds will be managed at the Karileen site both during and after construction activities. Currently, none of the species occurring at the site are required to be eradicated, controlled, or contained. Therefore, the overall goal of weed management at the site is to reduce the size of existing infestations and to support the establishment of seeded/planted vegetation on the site.

Weed management will include implementation of standard best management practices to reduce the potential for introduction of noxious weed plant materials at the site. These practices shall include, but not be limited to:

1. Certification by the grower that all plant seed used on the site is weed-free;
2. Certification by the supplier that all mulch imported to the site is weed-free;
3. Certification by the supplier that all gravel imported to the site be washed; and
4. Specification that all heavy equipment used on the site be cleaned of weed seed and plant debris before entering site.

During construction, large weed infestations of weeds will be excavated by the construction contractor. Himalayan blackberry, reed canarygrass, Canada thistle, yellow flag iris, and/or other species will be removed at a total of approximately 17 sites as specified on Plan Sheet 3 as updated by Windward or its consultant prior to construction. Heavy equipment will be available on site to excavate these weed infestations. Weeds shall be disposed of by burying on site. Portions of the ditch to be filled may be used, as well as other pits dug for the purpose of weed disposal. The upland soil disposal sites in Planting Zone 5 may be used for weed disposal prior to soil disposal; this will also allow the sod layer to be broken up as required prior to replanting.

Infestations of invasive knotweeds, Scotch broom, bindweed, and nightshade will be managed largely through manual or small mechanical means such as digging, pulling, grubbing, and mowing. Locations of these infestations will be updated immediately prior to construction, and will be manually managed during the construction season by Windward or its consultant.

Management of target weed species shall continue for ten years following construction, with field inspections conducted twice each year by Windward or its consultant. Following each field inspection, target weeds shall be managed in areas where these weed species are interfering with successful establishment and growth of desired native vegetation. Formal monitoring to be conducted during years 1, 2, 3, 5, 7, and 10 will also provide information on extent of target weed infestations and indicate the need for additional management. Manual and mechanical methods of management are preferred, including hand-pulling, grubbing, digging, and mowing. Chemical herbicides shall only be used as a second choice, and shall be used in accordance with King County NWCB recommendations and label directions. At the Karileen site, herbicide will be applied by an applicator licensed by the State of Washington with an endorsement for aquatic pest control. Chemical herbicides shall not be used in open water areas.

The list of target weed species shall be reviewed annually and updated as necessary to reflect changes in the State of Washington and King County Noxious Weed Class A and B-designate weed lists.

Species-specific management objectives for the site have been developed based on each species' characteristics, the number and extent of infestations, and the risks posed by the infestations to the environment.

Species targeted for eradication. Scotch broom, invasive knotweeds, and yellow flag iris are present in relatively small and discrete infestations. Scotch broom is present in a few locations mainly in upland habitats within Planting Zone 5, and will be removed by manual or small mechanical methods. Invasive knotweeds are currently present only in the lower stream corridor in a few spot locations. The infestations are still small enough to be removed by hand digging. Japanese knotweed shall not be tolerated at the Karileen Restoration site; the presence of Japanese knotweed will initiate invasive species management action. Yellow flag iris is present in several patches in the upper stream corridor where the stream realignment will occur. Heavy equipment will be used to excavate this species during construction; followup management will be manual and/or mechanical. These species will be targeted for eradication from the site within five years.

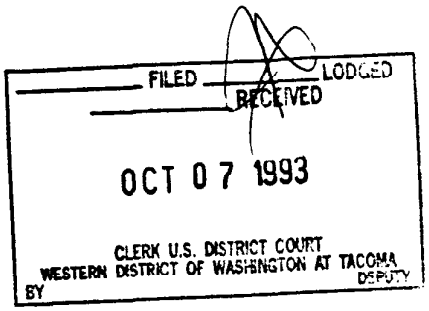
Species targeted for containment and reduction. Canada thistle, field bindweed, reed canarygrass, Himalayan blackberry, and bitter nightshade will be targeted for containment and reduction of existing infestations. Field bindweed and bitter nightshade are present in scattered small populations on the site; these species will be reduced through manual or small mechanical methods. Canada thistle is present primarily in Planting Zone 1 which is a wet pasture. Excavation of wetland depressions will help to remove some of the Canada thistle; remaining populations will be managed manually or mechanically after construction, for

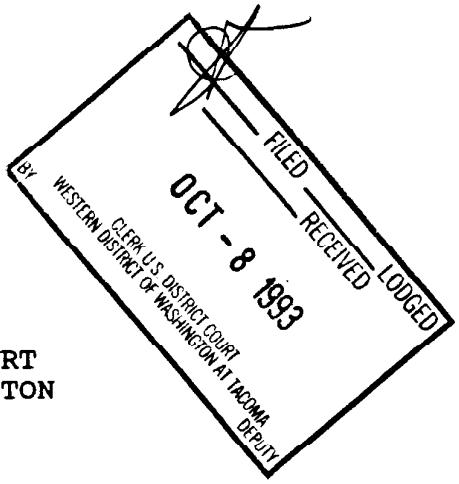
example by mowing during site maintenance. Himalayan blackberry is present in several large patches along the upper stream corridor and homesite; these will be excavated using heavy equipment during construction. Smaller patches and resprouting plants will be managed after construction through manual and mechanical methods. Reed canarygrass is common along the upper stream corridor and eastern portion of Planting Zone 1. This species will be excavated at a number of locations during stream construction. Disturbed sites in the wetland will be seeded during construction with wetland seed mix, and mulched with straw. Mulch will not be placed in areas where flooding or high water is expected. Exposed soils in upland areas where enhancement plantings will be installed will not be seeded. Instead, 6 inches of arborist chips will be spread over exposed soils in upland areas to prevent erosion and to prevent establishment of invasive species. During the fall/winter following construction, the sites will be overplanted with rooted tree and shrub stock. Arborist's chips will be available on the site to mulch planted stock. It is not expected that reed canarygrass can be completely eradicated from the site, and it may persist for some time in the herbaceous layer. However, mulching, mowing, and other manual and mechanical management methods will be used over the first ten years to prevent the canarygrass from overtopping and outcompeting the installed rooted stock.

Non-quantitative monitoring of the weed infestations, consisting of a weed survey for presence/absence/spread, will be conducted twice yearly, in late spring and late summer by Windward or its consultant. Immediately following the survey, followup management will be conducted, *e.g.*, pulling of newly sprouted knotweed or Scotch broom; weed whacking or mowing of reed canarygrass that is growing taller than installed shrubs).

APPENDIX B

Hon. Robert J. Bryan





c/Financial

UNITED STATES DISTRICT COURT
WESTERN DISTRICT OF WASHINGTON

ENTERED
ON DOCKET
OCT 8 1993
By Deputy

UNITED STATES OF AMERICA, ON BEHALF OF THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, THE UNITED STATES DEPARTMENT OF THE INTERIOR, AND THE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION; STATE OF WASHINGTON; PUYALLUP TRIBE OF INDIANS; MUCKLESHOOT INDIAN TRIBE; Plaintiffs, v. PORT OF TACOMA Defendant	Civil No. C93-5462B ORDER DIRECTING THE DEPOSIT OF NATURAL RESOURCE DAMAGES INTO THE REGISTRY OF THE COURT

This Order is entered in furtherance of a Consent Decree in the above captioned matter between Plaintiffs the United States of America, State of Washington, Puyallup Tribe of Indians and Muckleshoot Indian Tribe and Defendant the Port of Tacoma ("Settling Defendant"). Under the Consent Decree, Settling Defendant has agreed, among other matters, to pay $12,000,000

U.S. Department of Justice
Environmental Enforcement Section
P.O. Box 7611, Ben Franklin Station
Washington, D.C. 20044

Consent Decree - Appendix B

9

(twelve million dollars), in installments as identified in the Consent Decree, to the Natural Resource Trustees (National Oceanic and Atmospheric Administration of the U.S. Department of Commerce, the U.S. Department of the Interior, the Washington Department of Ecology (on behalf of the Washington Department of Fisheries, the Washington Department of Natural Resources, and the Washington Department of Wildlife), the Puyallup Tribe of Indians, and the Muckleshoot Indian Tribe) in settlement of Settling Defendant's liability for Natural Resource Damages caused by releases of hazardous substances from property owned, managed or operated by Settling Defendant within the Commencement Bay Environment, as defined in the Consent Decree. This Order addresses handling and investment of those funds by the Registry of the Court.

Pursuant to Rule 67 of the Federal Rules of Civil Procedure, 28 U.S.C. § 2041, and Local Rule GR 6, and in accordance with the terms of the Consent Decree, it is hereby

1. ORDERED that Settling Defendant, following entry of the Consent Decree and in accordance with the payment schedules established therein, pay to the Clerk of the Court all sums specified in paragraph 51.b. of the Consent Decree, which sums constitute recovery for Natural Resource Damages and Future Trustee Assessment Costs, as defined in the Consent Decree; and it is

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Environmental Enforcement Section
P.O. Box 7611, Ben Franklin Station
Washington, D.C. 20044

2. ORDERED that Settling Defendant shall make the aforementioned payments by checks made payable to the Clerk of the Court, bearing the notation Civil Action No. C93-5462B (W.D. Wash.), which checks shall be sent to:

Office of the United States Attorney
3600 SeaFirst Fifth Avenue Plaza
800 Fifth Avenue
Seattle, Washington 98104

The U.S. Attorney shall immediately deposit such funds with the Registry of the Court. The Settling Defendant shall cause photocopies of each check and of any transmittal letter accompanying the check to be sent to: Chief, Environmental Enforcement Section, Department of Justice, P.O. Box 7611, Ben Franklin Station, Washington, D.C. 20044; and to Robert A. Taylor, NOAA Damage Assessment and Restoration Center, 7600 Sand Point Way NE, BIN C15700, Seattle, WA 98115; and it is

3. ORDERED that an account shall be established in the Registry for payments received in the above captioned matter and for such other payments as may be received from time to time in connection with restoration and protection of the ecosystem of the Commencement Bay watershed, and that the account shall be titled Commencement Bay Natural Resource Restoration Account ("Commencement Bay Restoration Account"); and it is

4. ORDERED that the Clerk of the Court shall administer the funds so received as follows:

U.S. Department of Justice
Environmental Enforcement Section
P.O. Box 7611, Ben Franklin Station
Washington, D.C. 20044

a) $100,000 of the funds received shall be deposited in such interest-bearing federally insured commercial bank account or accounts as the Clerk deems appropriate;

b) the balance of the funds received shall be used to purchase 91-day Treasury Securities, at the highest prevailing interest rate available for such Treasury Securities;

c) upon maturity of the Treasury Securities referred to in subparagraph b), the Clerk shall consult with counsel for the United States regarding the allocation of the proceeds of such Treasury Securities between the bank account or accounts identified in subparagraph a) and the purchase of additional short-term Treasury Securities. Counsel for the United States shall consult with representatives of the Natural Resource Trustees and, depending upon the Natural Resource Trustees' anticipated funding needs, shall advise the Clerk regarding the desired allocation of such proceeds between the bank account or accounts and reinvestment in Treasury Securities. The Clerk may make any such allocations of funds as directed by counsel for the United States without further Order of the Court; and it is

5. ORDERED that all income earned as interest on funds so invested or deposited shall be credited to the Commencement Bay Restoration Account; and it is

6. ORDERED that the Natural Resource Trustees may apply to the Court for an Order establishing an investment procedure or vehicle alternative to that identified in paragraph 4 above that

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Washington, D.C. 20044

provides a comparable level of security and earnings potential, which application may be acted upon by the Court without notice to or consent by Settling Defendant; and it is

7. ORDERED that the Clerk shall prepare quarterly reports on the status and activity of the Commencement Bay Restoration Account showing payments received, disbursements made, income earned, maturity dates of securities held, and principal balance, and shall distribute the reports to counsel for the United States; and it is

8. ORDERED that funds in the Commencement Bay Restoration Account shall remain in the Registry until further order of this Court; and it is

9. ORDERED that the Natural Resource Trustees shall establish such decision making procedures regarding expenditures of funds from the Commencement Bay Restoration Account as they deem appropriate. Applications for orders for disbursements from the Commencement Bay Restoration Account shall be made by the United States on behalf of the Natural Resource Trustees. The application shall be supported by a certification of the Natural Resource Trustees that their determination to make such disbursement was in compliance with said decision making procedures and is consistent with the terms of the Consent Decree and other applicable law. Such applications may be acted upon by the Court without notice to or consent by Settling Defendant. Any of the Natural Resource Trustees may petition the Court for

U.S. Department of Justice
Environmental Enforcement Section
P.O. Box 7611, Ben Franklin Station
Washington, D.C. 20044

review of a decision by the United States to seek or not to seek an application for an order for disbursement, provided that the party or parties seeking review have complied with any dispute resolution provisions adopted as part of the decision making procedures referred to above; and it is

10. ORDERED that counsel for the United States shall serve as the point of contact for the Clerk on behalf of the Natural Resource Trustees, and shall distribute copies of the reports referred to in paragraph 7 of this Order to the other Natural Resource Trustees; and it is

11. ORDERED that the Clerk is authorized and directed by this Order to deduct for maintaining funds in the Registry Account the fee as authorized in the Federal Register Vol. 56, No. 213 at page 56356 (November 4, 1991); and it is

12. ORDERED that a certified copy of this Order shall be served upon the Clerk of this Court.

Dated 8 October 1993

Hon. Robert J. Bryan, Judge
United States District Court
Western District of Washington

U.S. Department of Justice
Environmental Enforcement Section
P.O. Box 7611, Ben Franklin Station
Washington, D.C. 20044

APPENDIX C

Appendix C

DRAFT
RESTRICTIVE COVENANT AND GRANT OF ENTRY
KING COUNTY TAX PARCEL
NO. 3221049021

The Property that is the subject of this restrictive covenant is King County tax parcel number 3221049021 more specifically described in attachment A, hereinafter "the Property."

The undersigned, Karileen LLC, hereinafter "the Owner," holds legal title to the Property.

The Owner hereby limits, as set forth below, the uses to which the property may be put, and declares that such limitations shall constitute covenants which shall run with the land, as provided by law, shall continue in perpetuity or the maximum time permitted by law and shall be binding upon the current owners and all persons or entities claiming or taking the Property under the Owner now or in the future.

Limitations:

The Property shall be put to no uses whatsoever except as stated below:

1. The property may be used for natural resource restoration purposes by the Owner and the Commencement Bay Natural Resource Trustees. The Commencement Bay Natural Resource Trustees consist of the National Oceanic and Atmospheric Administration (NOAA), the U.S. Fish and Wildlife Service (USFWS), the Washington Department of Ecology, the Washington Department of Natural Resources, the Puyallup Tribe of Indians and the Muckleshoot Indian Tribe. The term "natural resource"shall have the meaning defined at 42 U.S.C. § 9601 (16).

2. Other uses compatible with the restoration goals set forth in Appendix A to the Consent Decree, W.D. Wash. Civil No._____, incorporated herein by reference, as agreed to by the Owner and the Commencement Bay Natural Resource Trustees.

Grant of Entry:

Subject to the provisions of Sections VII and VIII of the above mentioned Consent Decree, the Owners hereby grant entry to the Property to the Commencement Bay Natural Resource Trustees or their designees the right of entry to the Property for purposes of conducting natural resource restoration projects.

Karileen LLC

By: _____ Dated: _____

[Notary statement, signature and seal]

APPENDIX D

Appendix D
NOTICE OF CONSENT DECREE

NOTICE IS HEREBY GIVEN to all persons claiming any right, title, estate, lien, leasehold, or interest in the real property described below that a Consent Decree has been entered in the United States District Court for the Western District of Washington, under Civ. No. _____, and that the Consent Decree affects title to the following real property located in King County:

[insert legal description]

which is situated at 326 S. 376th Street, in Federal Way, Washington.

All persons in any manner dealing with the real estate subsequent to the filing hereof will take subject to the rights of the plaintiffs as established in that action, including certain limits on the transfer and use of the real estate as detailed in Sections VII and VIII of the Consent Decree.

Dated this day of , 2007.

Karileen LLC

By: _____