

Quimper Wildlife Corridor Management Plan

**May 19, 2008
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Jefferson Land Trust

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List of Acronyms

BAS	Best Available Science
DNR	Department of Natural Resources
DOE	Department of Ecology
ESA	Environmentally Sensitive Area
FPA	Forest Practice Act
GIS	Geographic Information System
GMA	Growth Management Act
HPA	Hydraulic Permit Application
JCCP	Jefferson County Comprehensive Plan
JLT	Jefferson Land Trust
NMTAB	Non-Motorized Transportation Advisory Board
NMTP	Non-Motorized Transportation Plan
PHS	Protected Habitats and Species
P/OS	Public Open Space [zoning classification]
PTCP	Port Townsend Comprehensive Plan
PTMC	Port Townsend Municipal Code
SEPA	State Environmental Policy Act
SOC	Species of Concern
UGA	Unified Growth Area
WDFW	Washington Department of Fish and Wildlife
WSPRC	Washington State Parks and Recreation Commission

CHAPTER ONE

INTRODUCTION

Project Mission Statement

*To preserve an undeveloped wildlife corridor of native vegetation
connecting important wildlife habitat areas
between Fort Worden and the Middlepoint Land Conservancy.*

The Quimper Wildlife Corridor (QWC) is an ambitious project spearheaded by Jefferson Land Trust (JLT). The Quimper Wildlife Corridor is a series of high quality wetlands, floodplains, and forested connections located on the North Quimper Peninsula in East Jefferson County, Washington. This 3.5-mile drainage course stretches from the Middlepoint Land Conservancy near Protection Island on the west side of the Quimper Peninsula to Chinese Gardens Wetland near Fort Worden State Park.

The wildlife corridor links six major wildlife habitat areas, including four significant and high-priority wetlands. The wildlife corridor also contains areas of significant habitat value within the connections between the major habitat areas.

Purpose

The purpose of this plan is to re-examine and refine the vision of the Quimper Wildlife Corridor Project (QWCP) and to provide recommendations for long-term management strategies for Jefferson Land Trust and its partners. The QWCP was first conceptualized in 1992 and much has been accomplished since then. Consequently, the focus of this document is not to complete a feasibility study but to provide management tools for long-term protection between multiple property owners and governmental jurisdictions.

Primary goals include:

- Establish a greenbelt of native vegetation
- Protect and Improve wildlife habitat for multiple species with a corridor that connects key habitat areas/nodes
- Preserve the long-term viability of the QWC
- Increase community stewardship

Secondary goals include:

- Protection of the largest natural drainage basin within the City
- Providing opportunities for passive recreational uses

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Primary Objectives

The primary objectives of this plan are as follows:

Complete an inventory and habitat assessment of the corridor. Initial feasibility studies of the QWC identified six major habitat areas. Since that initial assessment, the research for this Plan has identified other significant habitat areas. This plan will provide an inventory and assessment of the major habitat areas as well as the connecting lands between.

Evaluate land use policy. This plan will examine current state and local land use policies and regulations and assess their compatibility with the QWC.

Identify and/or update land acquisition strategy. JLT developed a tiered acquisition strategy in 1999 at the onset of its capital campaign. This plan will examine current ownership and provide recommendations on the final phases of land acquisition for the project.

Identify protection strategies other than acquisition. Some areas are highly developed and are unlikely to either be acquired or to have conservation easements. This plan will identify alternative strategies for adding and protecting wildlife habitat.

Manage invasive species. This plan will identify areas of invasive species and make recommendations on containment strategies.

Evaluate trails and human usage and potential areas of conflict. This plan will examine the City of Port Townsend's adopted Non-Motorized Transportation Plan and identify any potential areas of conflict. It will also examine points of entry and identify areas for signage and interpretation.

Evaluate utility and infrastructure encroachment. This plan will identify existing utility and infrastructure encroachments into the QWC and will also identify potential future conflicts as proposed by utility comprehensive plans.

Identify areas for restoration. This plan will examine the corridor and identify areas for potential restoration efforts.

Identify Mitigation Opportunities. This plan will consider identification of opportunities for off-site mitigation through implementation of the City's Critical Areas Ordinance.

Applicability Within the City Limits

This plan includes guidance for a corridor that traverses through unincorporated portions of Jefferson County and within the municipal boundaries of the City of Port Townsend. The City, through review and adoption of this plan, can implement only policies and standards for lands located within its jurisdiction. Land located within unincorporated Jefferson County is not subject to the standards and policies in this plan unless action is taken by Jefferson County.

The City has further chosen to limit applicability of the plan to encompass only the following lands:

- Land located within the corridor protected by a conservation easement held by the Jefferson Land Trust.
- Land located within the corridor owned by the Jefferson Land Trust.
- Land located within the corridor owned by the City of Port Townsend, excepting the City's Wastewater Treatment facility (i.e., the north-half of Block 11, all of Blocks 20 and 21 of the California Addition to the City of Port Townsend) and the northerly and westerly portions of the Levinski property (i.e., Tax Parcels 52-57 inclusive and Tax Parcel 59).

In regards future land purchases by the city, this plan shall apply in cases where stormwater funds are used to purchase parcels for the purpose of protecting the 100-year floodplain.

This plan shall be considered advisory only for all other properties located within the City's jurisdiction. Although not mandatory, owners of private property located within the corridor in the City are encouraged to implement the policies and standards of the plan on a voluntary basis.

Relationship to Other City Plans and Ordinances

In 1996, the City of Port Townsend adopted a comprehensive plan consistent with the planning goals of the Growth Management Act (GMA). As an urban growth area, the city is charged with the responsibility to plan for urban density sufficient to absorb its allocated share of Jefferson County's population growth over the planning horizon.

Consistent with the GMA planning goals, the city's comprehensive plan contains policies and goals to retain open space, enhance recreational opportunities, conserve fish and wildlife habitat, increase access to natural resource lands and water, and develop parks and recreation facilities.

A number of the stated goals and policies of the City's comprehensive plan support the Quimper Wildlife Corridor (QWC) project as further outlined in Chapter Three. The City of Port Townsend adopts the QWC Plan as a "functional" and "implementing" land use and development planning document for the City of Port Townsend, supplementing

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and implementing the 1996 Comprehensive Plan, adopted by Ordinance 2539. Adoption of the QWC Plan significantly meets the city's obligation to meet open space requirements within an urban growth area.

In the event of conflict between the provisions of the Critical Areas Ordinance (CAO), codified in Chapter 19.05 PTMC, and the Quimper Wildlife Corridor Management Plan, the CAO shall prevail.

The City of Port Townsend's Role in Implementing the Plan

Through adoption of this plan, the City fully implements the Comprehensive Plan's Land Use Element Policy 3.6.2. The direction of this policy is to "*Support the establishment of a Quimper Peninsula wildlife and open space corridor.*"

Adoption of this plan allows for specific management policies and standards to be applied to lands located within the corridor that are owned by the City or subject to a Jefferson Land Trust conservation easement. The City, through its regulatory authority, will ensure compliance with the requirements contained within the plan for applicable properties.

A significant aspect of the plan is the direction to establish through either voluntary agreement or purchase, permanent conservation easements on lands located within the corridor. The City intends to seek funding to acquire key parcels within the corridor to ensure their permanent protection. The City plans to pursue acquisition of these parcels in partnership with the Jefferson Land Trust. This partnership will have designated roles: the City will apply for grant funding and the Land Trust will seek donations, contributions and/or funding from other sources to meet any required jurisdictional "match" for grants obtained.

Several rezones of city-owned lands are recommended in the QWC Management Plan. Recommended rezones will require a Comprehensive Plan amendment. The city will require additional analysis and opportunity for public comment prior to acting on the recommended rezones.

Project History

The Quimper Wildlife Corridor was first conceptualized in 1992. At that time the City of Port Townsend and Jefferson County were experiencing one of the highest human population growth rates in the state. Concurrently, both the City and the County were working to implement the State of Washington's Growth Management Act (GMA). The purpose of the GMA is to address the problems of rapid growth and encourage planning efforts and appropriate land use. One of the goals of the GMA legislation is to protect "Critical Areas," which include wetlands, fish and wildlife habitat areas, aquifer recharge areas, and frequently flooded areas.

The City formed the Wetlands and Stormwater Advisory Committee, which began work on an inventory of wetlands and drainage corridors within the city limits. This committee is largely credited with developing the “natural drainage system approach” that is identified as a goal in the City’s comprehensive plan. This committee was the first to identify the string of wetlands across the north Quimper Peninsula.

In the spring of 1992, Kathleen Mitchell, a local resident, biologist, and student, completed a report: *Investigating the Feasibility of an Urban Wildlife Corridor in Port Townsend, Washington* (Mitchell, 1992). This paper was the seminal work that launched the QWCP. In her report, Mitchell notes the threat to wildlife habitat by urban development and fragmentation. The paper also introduced the concept of the “wildlife corridor” as a way to counter fragmentation.

Corridors are regarded as narrow strips of habitat that have wildlife value (Adam and Dove, 1989). A corridor can connect “nodes” of high conservation value such as existing parks, wetlands, natural areas, and forestlands. The paper then recommended that eight habitat areas be identified as nodes within a corridor. Seven of these habitat areas, or nodes, have been incorporated into the QWC (see Figure 1):

- Fort Worden State Park
- Chinese Gardens
- Quaking Aspen (Levinski) Wetland
- Winona Wetland
- Tibbals Lake Reserve
- Department of Natural Resources (DNR) State School Land Parcel
- Middlepoint Land Conservancy

In 1995, the City of Port Townsend completed an area study of the city’s largest drainage basin (Polaris Engineering and Surveying, 1995) that contains a good portion of the QWC. This plan delineated and mapped the 100-year floodplain for the basin and includes Winona Wetland, Quaking Aspen Wetland, and Chinese Gardens. This delineated floodplain, along with the adopted “natural drainage system approach” to stormwater management, spurred to City to obtain funding to acquire properties within the floodplain. Much of Winona Wetland and the connecting properties between the Levinski property (Quaking Aspen Wetland) and Winona Wetland were purchased using funds from the Washington State Revolving Fund as a loan to the City’s stormwater utility (see Figure 1).

Also in 1995, JLT adopted the QWCP as its first proactive land protection project. This was a major policy shift for JLT. Traditionally, the land trust did not solicit conservation easements or protection plans nor did they try to form geographically or biologically cohesive ownership and protection patterns. In adopting the project, the JLT Board of Directors sought to preserve the QWC through the acquisition of property and conservation easements, partnerships with other government agencies, and educational and outreach programs. In 1999, the JLT launched a major capital campaign for

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acquisition of properties within the corridor. Over the years, more than \$500,000 was raised, which includes more than \$80,000 of county Conservation Futures Funding. The majority of this money has gone to purchase properties within the corridor (see Figure 2), with a portion contributed to JLT's stewardship fund for long-term protection.

Even with the amount of money raised, JLT knew that not enough money was available to purchase all the land or conservation easements desired. Therefore, the following priority tiering system was developed to strategically identify properties for acquisition or easements:

Tier 1: top priority properties, with the highest habitat values and connectivity

Tier 2: properties with good habitat values, to be pursued if additional money remaining after Tier 1 acquisitions or if there were landowners willing to donate land or easements

Tier 3: properties adjacent to the corridor, with a focus on landowner outreach and education

While the first phase of the QWCP, that of property acquisition, continues, it was never the goal to simply acquire all of the property within and affecting the wildlife corridor. That is simply unattainable. JLT also faces the challenge of managing its properties and working with surrounding property owners and government agencies to preserve the long-term viability of the QWC.

CHAPTER TWO

HABITAT ASSESSMENT

“Green space and wildlife corridors help reduce isolation and fragmentation...and enhance the movement of animals which promotes genetic exchange and population stability.”

D. R. Ludwig. 1995
Natural Areas Journal

The Quimper Wildlife Corridor Project (QWCP) began in 1992 with the goal to protect a permanent “ribbon of green”, connecting six distinct wetlands and stretching 3.5 miles across the Quimper Peninsula, from McCurdy Point, in close proximity to Protection Island, to Fort Worden State Park, following the natural drainage path to the Strait of Juan de Fuca. Protection Island and the shoreline of the Quimper Peninsula are on the Pacific flyway and provide habitat for numerous migratory, resident, and breeding waterfowl species. The QWCP provides safe passage and habitat critical to perpetuation of species diversity in an area of looming urban development. It is home for a wide variety of flora and fauna, from the rough-skinned newt and Calypso orchid to nearly 120 bird species and numerous small and large mammals. These include: Bald eagle, Merlin, Wood duck, Great Blue Heron, Pileated Woodpecker, western screech owl, barred owl, cougar, elk, black tailed deer, and bob cat. Several of the species and habitats in the corridor have been identified by WDFW as Priority Species and Priority Habitats. The corridor allows these species and others the safety of cover to move between significant habitat areas. The primary goal of the project is to protect intact habitat for multiple species. Secondary goals include protection of the largest natural drainage basin within the City, and providing opportunities for passive recreational uses such as hiking and bird watching. This report examines these goals in the context of the current science available about wildlife corridors and provides an assessment of the habitat found within the original corridor route.

Design Guidelines

When establishing green space or wildlife corridors, it is important to look at the structure and use of the surrounding landscape and see how each natural area fits within the region as a whole (Diamond and May, 1976). Detailed biological information about the species and habitats of concern is highly advantageous when designing natural areas. However, in the absence of comprehensive information, the following guidelines are recommended (Noss and Cooperrider, 1994; Ferguson, 2001).

- 1) Maintain large, intact patches of native vegetation by preventing fragmentation. Blocks of habitat close together are better than blocks far apart.
- 2) Maintain connections among wildlife habitats by protecting corridors for movement.
- 3) Minimize edge; round patches are optimal overall, though at a local scale, complex edges, in contrast, provide more suitable habitat for wildlife, as they increase cover and provide escape terrain.
- 4) Establish priorities for species protection.
- 5) Protect rare landscape features.
- 6) Maintain ecological processes.
- 7) Balance recreation with wildlife needs.

General Introduction

The QWC encompasses a landscape that is biologically and culturally complex. The biological complexity is a function of the topography, hydrology, and soils that produce a wide range of vegetation types (wetlands, riparian, shrub, prairie, and coniferous forest). The cultural richness is evident from thousands of years of aboriginal presence and a recent occupation by peoples of European origin. The degree to which human activities have shaped the landscape varies widely across the corridor, ranging from moderate density suburban neighborhoods in the San Juan Valley to larger relatively unfragmented tracts of coniferous forest in Middlepoint/DNR area.

Nearly all the habitat within the corridor exhibits mild to severe disturbance by humans in the form of timber harvesting, clearing for roads, housing, agriculture, and fire suppression. The QWC is a mélange of natural and human processes, native and non-native plants, public and private interests. The degree to which the project is successful will depend on the JLT's ability to collaborate with the various stakeholders in unifying their management vision.

History

The former aboriginal presence is evidenced by grassland soils and the Hall Street legacy tree, which suggests that portions of the QWC (San Juan Valley, Tibbals Plateau) were characterized by prairie and savanna-like conditions subject to frequent low-intensity fires. The recent presence of Euro-Americans brought abrupt changes to the land during the past 150 years. This included land clearing for agriculture, home sites, timber, and roads. During this early land-clearing phase there was extensive use of fire, although in more modern times, fire suppression has been practiced.

General Site Description

The QWC falls within the western hemlock zone as described by Franklin and Dyrness (1973). They recognized that the drier portions of this zone dominated by Douglas fir would likely be reclassified as a separate vegetation unit. A subsequent classification by Klinka et al., (1991) characterizes this region as part of the British Columbia Coastal Douglas Fir Zone. This scheme recognizes the under-representation of western hemlock, which is a distinctive feature of the Olympic Peninsula's rainshadow areas and is precisely the conditions found in the QWC. In the classification provided here, the native forests are divided into three basic types: dry, mesic, and wet. Although each of these forest types typically occurs as distinct and recognizable units, intermediate forest types are pervasive. Higher resolution mapping will be required to delineate these intermediate forest types. One native non-forested community is recognized, consisting of a shrub/emergent mosaic. The final habitat noted is groomed pasture, which occurs predominantly along the southern boundary of the corridor and is interspersed among residential neighborhoods in the eastern lowlands.

Topography is the principal factor influencing vegetation characteristics of the corridor lands. Greater moisture (and hence higher site potential) is found in low-lying areas and basins. In contrast, drier conditions prevail on upland sites and on ridge tops. The drainage system that dominates the eastern portion of the corridor is best described as a shallow U-shaped basin that trends in an east to northeast direction. The slopes on the north side of the basin tend to be drier (because of their southward orientation) while slopes on the south side of the basin are more protected from sunlight and prevailing winds. Consequently, these wetter northward-oriented slopes have superior growing conditions and tend to produce larger trees with more structurally complex canopies (e.g., Winona Wetland buffer area).

The drainage system is characterized as a series of small, partially impounded, low-gradient, intermittent, minerotropic wetlands. Minerotropic wetlands are those that contain no marine-derived salts and are fed by water that has been in contact with mineral soil (Damman, 1986; Kunze, 1994). Sphagnum moss and its associated plant species are absent.

Soil characteristics are also an important feature influencing vegetation structure and composition of the QWC. Wherever water can be impounded for extended periods, hydric soils and vegetation favoring wet conditions develop. Nearly all of the soils in the corridor are underlain by a compact till basement, which is nearly impervious to water (Clallam Series). This basement is overlain by deposits of well-drained outwash that vary widely in thickness (Hoypus Series). The soils are saturated in winter with a high water table, while during the dry summer months most soils experience a moisture deficit.

The past disturbance history (predominantly fire and human harvest) also strongly affect vegetation structure and composition. In general, Douglas fir competes well after major disturbance, but in many sites is gradually replaced by more shade-tolerant species such as cedar, grand fir, and hemlock on the mesic to wet sites.

Vegetation Inventory

The habitat assessment began with an inventory of vegetation associations. Seven site visits were made to the corridor lands between the October 24, 2003 and December 7, 2003 totaling 18.5 hours of field observations. Field surveys were conducted by entering the area on foot and making notes of the plant and animal communities. An aerial reconnaissance flight was conducted on January 19, 2004 to obtain photographs and video to assist with the vegetation mapping. Plants names follow Hitchcock and Cronquest (1974).

Principal Native Habitat Types

Five principal native habitat types were identified throughout the corridor. One additional non-native habitat type was also identified. These habitat types are described below and their approximate boundaries are shown in Figure 2.

- **Dry Forests**

This relatively simple plant association is dominated by Douglas fir and salal. This community is found on dry, nutrient- poor sites with flat to southward-oriented slopes (i.e., Tibbals Plateau). Madrona and ocean spray are present along edges and in forest gaps.

- **Mesic Forests**

This is the most widespread of the forest associations and is characterized by sites of intermediate soil moisture such as north slopes and low-lying areas without standing water (Winona-Levinski Connector, 50th Street Connector, Winona Wetland area, DNR/Middlepoint Area). The principal conifer species are Western red cedar, grand fir, and Douglas fir. The common broadleaf trees include red alder, Scouler's willow, and bitter cherry. The most prevalent shrubs are salmonberry and red elderberry.

- **Wet Forest**

This localized association is characterized by hydric soils and standing water for all or part of the year. It follows the main drainage channel through the 50th Street Connector and is found at the Quaking Aspen (Levinski) Wetland, around the periphery of Winona Wetland, and locally on the Tibbals Plateau. The principal trees are Scouler's willow, Pacific willow, red alder, red cedar, and locally trembling aspen. Salmonberry, Nootka rose, and slough sedge occur as the principal understory species.

- **Shrub/Emergent Forb Wetland**

Shrub and herbaceous communities are found in open wet sites. Primary species include hardhack, Nootka rose, and canary grass (Winona Wetland, eastern 50th Street Connector).

- **Kah Tai Prairie**

Perhaps the most biologically significant and most degraded natural feature of the QWC is native grasslands. That the Kah Tai Prairie once extended north to the Strait of Juan de Fuca is evidenced by the pre-settlement grassland soils that underlie this area (Chappel et al., 1998). Human development of the San Juan Valley, however, has almost completely eliminated the prairie vegetation from this site, thus, it has not been indicated on Figure 2). The open meadowland found around Chinese Gardens in Fort Worden State Park is heavily degraded and dominated by exotic grasses.

- **Pasture**

Open farmland occurs extensively along the southern perimeter of the QWC, primarily beyond the city limits. The predominant plant species include non-native bluegrasses, fescues, bromes, and other grasses.

Detailed Plant Associations

The following is a detailed description of the plant associations found along the corridor. For narrative purposes the corridor was broken into the following habitat nodes (Figure 3):

- North Beach Segment (from Chinese Gardens to Hendricks Street)
- Quaking Aspen (Levinski) Wetland
- Levinski-Winona Connector
- Winona Wetland
- Winona-Tibbals Connector
- Tibbals-DNR Connector
- DNR Parcel

North Beach Segment

The North Beach segment is heavily timbered and possesses considerable variation in forest associations including 1) cedar/sword fern, 2) nearly pure stands of grand fir with a heavily shaded poorly developed understory, and 3) Douglas fir/grand fir/cedar mix. In the wetter portion of the corridor, deciduous species are more prevalent, including alder,

willow, cherry, wild pear, and rose. Crossing Jackman Street, the drainage corridor is characterized by mowed field, culverts, and ditches. The vegetation is predominantly shrubs and grasses including rose, wild pear, canary grass, common rush, and a variety of pasture grasses. At the Chinese Gardens, bulrush and pickleweed compete favorably with canary grass, presumably due to the elevated salinity.

Quaking Aspen (Levinski) Wetland

The most distinctive feature of the Quaking Aspen (Levinski) wetland is a stand of aspen, which is situated in a slight depression where the drainage corridor widens. Willow is present as a co-dominant, while the most conspicuous understory species are Nootka rose, slough sedge, and minor amounts of hardhack. Along the southern edge of the aspen grove is a forest composed principally of cedar and grand fir (with some standing dead wood). On the north side of the aspen grove, drier conditions are present which favor patches of Douglas fir and salal. The primary drainage corridor becomes less noticeable as it traverses the remainder of the Levinski property between the aspen grove and Cook Avenue. Moisture conditions are intermediate here, and the vegetation is typified by open mixed stands of Douglas fir, cedar, hemlock with a well-developed shrub layer of willow, cherry, and regenerating alder. Where the drainage corridor intercepts Cook Street, a large patch of canary grass has become established.

Winona-Levinski Connector

This low-lying site possesses relatively moist conditions dominated by cedar, willow, grand fir, and Douglas fir. To the north, the width of the drainage corridor appears constrained by Sapphire Street. The southern portion of the Winona-Levinski connector is moderately sloped and dominated by Douglas fir and salal (suggesting dry conditions and past fire). However, there is robust regeneration of shade-tolerant cedar in the understory, suggesting that this northward-orientated slope possess relatively mesic conditions.

Winona Wetland

This site possesses important wetland habitat despite considerable disruption by human activities. Human perturbations include harvesting of forest buffers and the construction of roads and a sewer line that encroach into the wetland. Along Peary Street, trenching and diking has occurred (toward Cook Avenue), presumably contributing to the drying of the wetland. As noted by Mitchell (1992), the construction of a dirt road along the east side of the wetland may have facilitated flooding of the upland buffer, resulting in conifer mortality in the mid-1980s. The wetland is also characterized by locally heavy infestations of canary grass.

The vegetation in the central portion of the wetland is characterized by discrete patches of cattail, hardhack, canary grass, and bentgrass. Pacific willow is present in the central portion of the wetland, while Scouler's willow is prevalent around the periphery. A low-lying area extends to the northwest to Cook Avenue. This site contains some of the largest/oldest trees noted on the corridor lands. The basin's bottomland supports a diverse mix of tree and shrub species including alder, cedar, grand fir, Douglas fir, bitter cherry, elderberry, hawthorn, salmonberry, and Nootka rose. The largest trees (predominantly grand fir and Douglas fir) are found on slightly elevated sites around the periphery of the basin. The southern side of the basin is bounded by a relatively steep slope heading up to the Tibbals Plateau. This slope protects the stand from winds, thus contributing to the large size class of individual trees. Moving upslope, the presence of stumps indicates past logging and apparently a low incidence of wildfire. No open water was noted anywhere in the Winona Wetland area.

Winona-Tibbals Connector

This portion of the corridor is topographically and vegetationally diverse. The western portion of the connector (Tibbals Plateau) occurs along a flat ridge top. In general, this area supports dry Douglas fir forests. However, small-scale topographical undulations, combined with extensive graded roadways, have produced a number of small pocket wetlands, including the Elmira and Alwood wetlands. Consequently, the vegetation changes abruptly from a dry fir/salal association (on raised sites) to wet forests in depressions dominated by willow, alder, and slough sedge.

A single legacy tree was located just south of the corridor lands near the corner of 39th and Hall Street. The age of this tree is unknown, but is estimated to be at least 200 years and thus may predate European presence (Figure 3). Its short stature and dense, wind-swept crown suggest open conditions formerly prevailed on this site. Fire scars on the trunk suggest that fire formerly may have maintained this site in open park-like conditions. To the north in the vicinity of Linden and Topaz Streets, the forest is a mix of Douglas fir and Scouler's willow and suggests relatively dry, hard-packed soils with occasional standing water.

The eastern portion of the Winona-Tibbal's Connector drops off steeply into the Winona Wetland ravine. Conditions are more mesic, with cedar and alder becoming co-

dominants with Douglas fir and willow. In the ravine bottom land, cedar and alder become the most conspicuous components of the canopy, with elderberry, salmonberry, and nettle forming the understory. A portion of ravine bottom land is held in private ownership and is being maintained in open conditions for intensive gardening. Moving up the eastern slope of the ravine, alder and cedar are replaced by the Scouler's willow/Douglas. Near the top of the ravine (South Garnet Street), Douglas fir and salal are dominant, suggesting relatively dry conditions.

Tibbals Lake

Tibbals Lake Reserve is held in common ownership through a property association agreement. At the request of the property association and JLT, this property was not examined.

Tibbals-DNR Connector

The environmental conditions in this part of the corridor are relatively dry, with wind shear a major factor influencing stand characteristics. Exposure to prevailing southeast winds is high, given the relatively flat open terrain and extensive farmland to the south. In the Lewis/George Street area, the forests are dominated by second-growth Douglas fir and salal. On the northern portion of this connector (View Street), the land slopes gently to the north, producing more mesic conditions. Much of this area appears to be former pastureland, and is currently being invaded by regenerating stands of alder, willow, Douglas fir, and hemlock. A small swale situated along Walnut Street runs from Jacob Miller to the Tibbals Lake property. The eastern portion of this swale contains well-developed wetland vegetation including hardhack, Nootka rose, canary grass, and Scouler's willow. A few Douglas fir snags are situated immediately to the south of this wetland.

DNR Property

This area contains dry to mesic forest types dominated by Douglas fir and grand fir. Alder and other deciduous vegetation are being removed as part of the site's management plan. This parcel is not designated as a Natural Area Preserve or a Natural Resource Conservation Area (Mike Cronin, pers. com.). Thus, the site should not be considered protected indefinitely. The current management plan prescribes removal of one-third of the stand's volume every 20 years (Mike Cronin, pers. com.). The prescription practiced on this block may be modified in the future and could include an expanded harvest, trading, or selling for rural housing, although efforts are currently underway to enable Jefferson County to lease this property for 50 years from DNR in order to preserve its habitat and recreational value.

Wildlife Habitat Value

Once plant associations were identified and mapped, their value to wildlife was analyzed. The four principal habitat types or vegetation associations can be further characterized as either upland or riparian wildlife habitats. The previously described Dry Forest and Mesic Forest are considered upland habitat, while the Wet Forest and Shrub/Emergent Forb Wetland are considered riparian habitat. The relationships of these plant associations to wildlife are described below.

Upland Forests and Dependent Species

Numerous studies have demonstrated that late successional or old-growth forests are important for wildlife. Many species of birds reach their greatest abundance in stands with greater vegetation height, structural complexity, and canopy layers (Olson et al., 2001). Larger forest parcels provide more suitable habitat for interior species, and reduce the microclimate nest parasites associated with edges.

This survey, in addition to previous studies (Resources Northwest, 1992), found no evidence that any of the corridor forests support old-growth-dependent species such as the marbled murrelet, Vaux's swift, goshawk, or spotted owl. In addition, the projected development over the next 50 years, suggests it is unlikely that a number of large- to medium-sized mammals (bear, elk, cougar, bobcat, beaver) will be able to maintain viable populations on the north Quimper Peninsula. Nonetheless, some of the forests along the corridor were found to possess relatively high-quality habitat. These include the deciduous component of the forests in the eastern lowlands (Winona Wetlands, Levinski Wetland) that supports a number of riparian- or broadleaf-dependent bird species including black-headed grosbeak, warbling vireo, and black-throated gray warbler. In addition, the relatively tall crowns and open stand conditions found on the DNR/Middlepoint lands provide excellent nesting habitat for the olive-sided flycatcher. Regionally, there have been concerns that this neotropical migrant is declining due to habitat loss on the breeding grounds. At least one WDFW priority species, the pileated woodpecker has been identified in several areas of the QWC. Although not considered in this study, it is likely that the QWC currently supports a diverse assemblage of small mammals and amphibians. The Vaux's swift may colonize the site in the future if management activities promote snag development.

(Note: The following birds were noted during the field investigations: bald eagle, pileated woodpecker, western screech owl, barred owl, downy woodpecker, northern flicker, brown creeper, chestnut-backed chickadee, ruby-crowned kinglet, golden-crowned kinglet, Hutton's vireo, American robin, dark-eyed junco, purple finch, and evening grosbeak. The local chapter of the Audubon Society has conducted annual bird counts in the area of the corridor, and has documented over 120 species of birds.

Large trees, snags, and downed logs are known as "legacy structures." These features are ecologically important and regulate many basic forest processes including hydrology,

nutrient cycling, and habitat for fish and wildlife (Franklin and Waring, 1980). Large trees, snags, and downed logs provide protection and habitat for birds, amphibians, reptiles, and small mammals (Bigley, 2001). Habitat quality for species associated with these legacy structures can be seriously diminished if management activities result in their loss from the landscape (Hayes, 2001).

Assessment of Upland Forests in the QWC

Legacy structures are infrequent to lacking on corridor lands with the exception of the Winona area and DNR/Middlepoint area. One of the most important factors associated with the paucity of legacy features on corridor lands is human modification of the landscape. Similar to lowland areas throughout Puget Sound, the Quimper Peninsula underwent early and intensive lumbering activities. During the last 150 years, land clearing, farming, road building, and housing have continued and have not facilitated replacement of legacy structures. The absence of these structures is attributed to fire, which has been shown to be a primary agent of wood degradation in drier forest types (Rose et al., 2001). Given the corridor's close proximity to the Kah Tai Prairie, it is likely that aboriginal fires were relatively frequent during pre-settlement times (Norton 1979). It is likely that forests bordering the prairie were "fire conditioned," with open savanna-like conditions. During the early settlement period, fire frequency and intensity likely increased, as hot, stand-destroying fires were common in association with land clearing (Mike Cronin, pers. com.).

Another important feature reducing the input of legacy structures to corridor lands is the relatively poor growing conditions. These poor growing conditions are most evident on drier Douglas fir stands, particularly in the Tibbals Plateau area.

Given that the drainage corridor is a low-energy system, flood events will lack sufficient force to redistribute large logs along the corridor. Consequently, snags and downed logs must be produced by trees growing in each specific locale. Sites along the corridor that possess optimal growing conditions and large live trees should be given high priority for protection. The opportunistic harvesting of downed logs for firewood should be strongly discouraged.

Riparian Habitat

The habitats on the corridor lands with the greatest biological significance are those found on wet sites. Riparian zones serve as natural corridors for migration routes, particularly in highly fragmented landscapes (Kauffman, 1996). Riparian sites are of biological importance given their strategic position between terrestrial and aquatic environments. These habitats are hotspots of biodiversity by virtue of their high productivity, deep soils, and availability of water (Kauffman, 2001). Wildlife makes disproportionately greater use of wetland habitats in drier conifer-dominated landscapes such as the Quimper Peninsula, which receives relatively low rainfall and has few perennial streams. Many species of wildlife reach their greatest abundance here, while a

number of birds are restricted to the deciduous vegetation that proliferates in these sites (McGarigal and McComb, 1993).

Assessment of Riparian Habitat within the QWC

Although the Winona drainage does not possess a free-flowing annual stream, it does possess many of features indicative of a riparian zone. This includes a preponderance of deciduous species and high-quality growing conditions for conifers. The relatively young regenerating vegetation found over much of the Levinski property possesses a high percentage of deciduous species (ocean spray, red alder, willow, wild cherry) and thus encourages several deciduous inhabiting species to use this area including the Wilson's warbler and orange-crowned warbler.

Investigating and restoring the groundwater conditions to the Winona Wetland is critical. In the recent past, the site possessed a much greater variety of riparian birds including great blue heron, wood duck, and mallard. Recent inventories failed to locate other typical wetland species such as common yellowthroat, marsh wren, or red-winged blackbird. The marsh is drying, and is being invaded by more upland species such as non-native grasses, thistle, and bedstraw. The aspen stand in the Levinski Wetland has been compromised and reduced in size by the access road that transects the site. Restoration of this wetland could include decommissioning of the road and converting to single-lane recreation trail. Tilling of the compact road surface may permit aspen to invade.

Natural Disturbances and Human Impacts in the QWC

Once the vegetation community inventory and the wildlife habitat value assessment were completed, an analysis of the natural disturbances and human impacts in the QWC was undertaken. The following is a general description of impacts to wildlife habitat within an urbanizing environment as well as specific observations of impacts within the QWC.

Habitat Fragmentation

Fragmentation can result in genetic isolation of less mobile species such as reptiles, amphibians, and small mammals (Howard et al., 2001). Fragmentation is the result of human activities dividing natural habitat into small areas that are isolated and disconnected (Howard et al., 2001). This can have serious impacts for wildlife (Dickerman, 1987). The richness and abundance of wildlife found in a fragmented landscape depends on: 1) parcel size, 2) the amount of isolation between parcels, and 3) the characteristics of the surrounding habitat.

- 1) **Parcel Size:** Smaller parcels provide less habitat to meet a species' needs (Andre, 1994). Smaller parcels also have greater amounts of edge relative to interior habitat (Wilcove et al., 1986). Although edges are beneficial to a number

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of wildlife species, they also are associated with higher densities of nest predators (raccoons, jays, crows, cats, skunks, opossums) and nest parasites such as cowbirds (Yahner, 1988). If these parasites and predators occur in sufficient densities, they may create ecological traps.

2) **Isolation:** Habitat blocks that are close together are better than those that are farther apart (Noss and Cooperrider, 1994). It should be a goal to maintain connectedness between habitat parcels within corridors (Ferguson, 2001).

3) **Connecting Habitat:** The impact of fragmentation depends on the surrounding landscape between habitat parcels (Dorney, 1986). As the surrounding landscape becomes increasingly developed, many species have greater difficulty moving between habitat parcels (Bolger, 1999).

The consideration of these characteristics is the founding principal of the QWC concept:

To preserve an undeveloped wildlife corridor of native vegetation connecting important wildlife habitat areas between Fort Worden and the Middlepoint Land Conservancy.

Observations of Impacts within the QWC

The following is an assessment of the existing impacts in or near the QWC and of the state of “connectedness” between the habitat nodes.

Housing

Medium-density neighborhoods cover much of the San Juan Valley and portions of the North Beach area. Low-density to rural neighborhoods characterize Fowlers Park and the 49th Street neighborhoods. It is not readily apparent where the historical boundary between the forest and the Kah Tai Prairie was situated. Regardless, the medium-density neighborhoods that now occur in the San Juan Valley/North Beach area appear to have lost most of their former ecological function. Natural prairie vegetation has been almost entirely eliminated and much of the native forest cover has been removed. The most conspicuous natural features remaining in medium-density neighborhoods are shrub communities and young conifers.

Landscape Aesthetics

The landscape in the connecting lands is heavily platted (with relatively small, rectangular parcels) and contains numerous vehicular right-of-ways. As development and land clearing continues in the surrounding lands, it will increase the regular or geometric character of the landscape. Given the surrounding land use patterns (agriculture, hobby farms, home sites, and roads), edges will often be abrupt. It was noted above in the design guidelines that it is best to maintain habitat patches where the overall shape is round. At a local scale however, complex edges, in contrast, provide more suitable habitat for

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wildlife, as they increase cover and provide escape terrain (Edge, 2001). Consequently, parcels acquired in Tier 2 or Tier 3 lands (including those not spatially linked to Tier 1 lands) will have considerable aesthetic value. Encouraging adjacent landowners to retain fencerows and shelter belts and to maintain portions of their pastures in an unimproved state will further “soften” the landscape and enhance value to wildlife.

Flooding

Periodic flooding is a natural process that contributes to the ecological functioning of riparian communities (Olson et al., 2001). The maintenance of avian diversity in wetland environment ultimately depends on maintenance of natural hydrological and disturbance regimes (Kauffman et al., 2001). Flooding results in the deposition of sediments and organic matter, increasing soil fertility (Boon et al., 2001). Flooding or periods of elevated water levels can result in tree mortality, producing snags (e.g., Peary Street in the Winona Wetland area). Flooding is a particularly important natural disturbance agent in low-energy systems like the Winona drainage corridor where flowing water is generally absent. In low-energy systems, disturbance in the form of bank cutting and tree toppling is also lacking. Although fire was historically a major disturbance agent in the corridor lands (Mike Cronin, pers. com.), it obviously is not practical under current conditions. Consequently, less catastrophic forms of disturbance (i.e., small-scale flooding) will likely remain the principal natural disturbance agent.

Non-Native Wildlife

Non-native wildlife can exert a variety of negative impacts. Starlings compete for food resources, transmit disease, and usurp nest sites from many native cavity-nesting birds including songbirds, woodpeckers, and waterfowl (Weitzel, 1988). Feral or free-ranging cats are heavy predators of native birds and small mammals, and often found in high densities in suburban environments (Coleman et al., 1997; Fitzgerald, 1988).

Starlings are common in the Port Townsend area. The species is known to have a disproportionately greater impact on native birds when cavities are limited (Bursh, 1983). The degree of cat predation on corridor lands is not known, but is presumed to be high given the close proximity to human habitation.

Given that starlings make extensive use of human structures for nesting, starling awareness campaigns in neighborhoods surrounding the corridor are advised. By encouraging landowners to exclude starlings from buildings and trees, the local population can decline (Johnson and Glahn, 1994). Starlings will disperse from high-density roosts to forage over large areas (Glahn et al., 1991). Consequently, deterring the species from roosts on structures in the downtown area of Port Townsend may reduce starling density on corridor lands. Encouraging the use of “dissuader design” nest-boxes, and delaying the erection of songbird nest boxes until later in the breeding season further limits opportunities for starlings (Lamsden, 1986). Coyotes and other native carnivores may help reduce the abundance of feral cats and other small mammals that prey on songbirds, thus helping to maintain a natural ecosystem balance (Quinn, 1997)

Roads

Roads can impact wildlife by causing habitat fragmentation, altering drainage patterns, facilitating the spread of non-native species, and causing direct mortality from vehicle collisions (Forman, 1995). Roads can cut across long-established animal migration paths (Rost and Bailey, 1979) and may pose barriers to movement for amphibians along riparian zones.

The corridor lands are heavily impacted by roads. As development of the corridor and surrounding lands continues, traffic will increase and smaller secondary roads will be upgraded. The rough-skinned newt is known to cross roads regularly and is subject to considerable vehicle-induced mortality (D Kelso, pers. com.).

As information is accumulated on the vertebrate biota of the corridor, management prescriptions for individual road crossings can be implemented (i.e., speed reduction features, reducing posted speed limits, modifying culverts, driver education).

Long-Term Monitoring

While it is beyond the scope of this document to develop a monitoring program, the following discussion offers recommendations for monitoring.

Amphibians

Amphibians are good indicators of ecosystem health as they are especially sensitive to pollution, water diversions, habitat loss, and increases in water discharge associated with impervious surfaces (Booth and Reinelt, 1993; Howard et al., 2001). Because amphibians have limited mobility and dispersal capabilities, continuous riparian zones are important pathways for colonization of suitable habitat (Kauffman et al., 2001).

The rough-skinned newt is an ideal species for monitoring in the QWC as it 1) is locally abundant, 2) benefits from very small wetlands, 3) is easily censused, and 4) is currently the focus of an informal monitoring and management program (D. Kelso, pers. com.). Perhaps most importantly, the newt's life history patterns (i.e., moderate dispersal distance, well-established travel corridors, reliance on ponds and riparian zones) suggest that it is benefiting from the QWC conservation efforts.

Birds

A major factor impacting bird communities is the alteration or loss of native vegetation, particularly riparian and understory deciduous vegetation. In particular, the loss of

structural complexity, such as snags and foliage height diversity, is critical (Van Druff et al., 1994; Lancaster and Rees 1979).

The following are recommended indicator species to consider for long-term monitoring:

Neotropical migrants: Olive-sided flycatcher

Mature/old-growth: Townsend's warbler, pileated woodpecker

Riparian obligates: warbling vireo, yellow warbler

Deciduous understory: Swanson's thrush, Wilson's warbler

Raptors: Coopers hawk, Red-tailed hawk, small owls, eagle roost trees

Mammals

In highly fragmented areas, small mammals with limited dispersal capabilities are particularly susceptible to local extinctions (Soule et al., 1991). Elevated levels of suburban predators (cats, dogs) also negatively effect populations (Beck 1974, Fitzgerald 1988). Small mammals are an important food resource for birds of prey, coyotes, and medium-sized mammals. Monitoring of small mammals will give important information as to the availability of food for larger predators.

In general, JLT should consider continuing to capture data from periodic monitoring such as the Audubon Christmas bird count and breeding bird surveys. JLT should also consider establishing permanent census plots.

Action Plan	
Habitat Assessment	
Recommendation	Implementation Action
1. Update acquisition and protection strategy incorporating new habitat assessment data.	<ul style="list-style-type: none"> • Secure/protect the remaining larger habitat blocks including the Winona Basin (with its remnant mature growth), the DNR property, and the Levinski Property. • Retain the basic 3-tier corridor concept, while broadening the search to include biologically significant habitats within 1 km. • Secure protection for the Hall Street legacy tree, Ivy Street wetland (Frog Forest), and the 43rd Street unit.
2. Develop specific habitat and management goals.	<ul style="list-style-type: none"> • Delineate management units based on habitat type and/or location. • Designate a lead entity responsible for managing each management unit.
3. Develop public outreach program.	<ul style="list-style-type: none"> • Expand enhancement program guidelines for planting with native vegetation and erecting nest boxes. • Produce educational materials on best practices for both landowners and small woodlot managers residing in the greater corridor area. Include information on invasive plant and bird species as well as effect of pet and feral cats and dogs. • Implement docent program to involve and educate residents.
4. Develop long-term monitoring program.	<ul style="list-style-type: none"> • Establish long-term monitoring programs during all seasons and spanning multiple years, with particular emphasis on quantifying indicator species. • Continue efforts to gain insight into the corridor's pre-settlement plant communities through tree ring data, photo archives, and vegetation analysis of analogous sites.

CHAPTER THREE

LAND USE AND REGULATORY OVERVIEW

The Quimper Wildlife Corridor is composed of seven major wildlife areas connected by a greenbelt and is located in both the City of Port Townsend and Jefferson County. Both Jefferson County and the City of Port Townsend have adopted Comprehensive Land Use Plans consistent with the State of Washington Growth Management Act (GMA) that include goals relating to land use patterns and preservation of fish and wildlife habitat. Both jurisdictions have land use and environmental regulations which govern development within and adjacent to the corridor. At this time, the majority of land use and environmental regulations affecting the Quimper Wildlife Corridor are “trigger” regulations; that is, they are triggered by a land use application. The exception can be the Non-Motorized Transportation Plan, an adopted plan of the City of Port Townsend, consistent with the 1996 Comprehensive Plan. In certain instances, the City of Port Townsend may choose to implement the Non-Motorized Plan for parcels and right-of ways in City ownership.

Federal Regulations

Clean Water Act

Section 404 of the Clean Water Act regulates the placement of fill in waters and wetlands of the United States. The U.S. Army Corps of Engineers administers the permitting program for this law. (for more detailed information, refer to *Wetlands Regulations Guidebook*, Ecology Publication #88-5.)

Section 401 of the Clean Water Act requires that proposed dredge-and-fill activities permitted under Section 404 be reviewed and certified by the Washington Department of Ecology to ensure that the proposed project meets State water quality standards. The Federal permit is deemed invalid unless it has been certified by the State.

Washington State Regulations

Water Pollution Control Act

This WPCA [Chapter 90.48 RCW] and the Shoreline Management Act give the Washington Department of Ecology authority to regulate wetlands. The WPCA’s definitions of “pollution” [90.48.020] and “discharges” [90.48.080] are broad and include all of the impacts that typically degrade wet land functions, including placing fill and

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discharging stormwater runoff. The Act gives the DOE wide latitude in protecting waters of the State, and designates the DOE as lead State agency for implementing provisions of Sections 401 and 404 of the Federal Clean Water Act.

The implementing regulations for the statute include **Surface Water Quality Standards** [Chapter 173-201A WAC]: the primary regulations that cover wetlands and other waters of the State. The **Antidegradation Policy** [Chapter 173-201A-070 WAC] provides the basis for protecting wetlands. The primary mechanism for implementing the provisions of this statute is the State Water Quality Certification issued pursuant to Sections 401 and 404 of the Federal Clean Water Act. Because most wetland impacts are regulated under Section 404 of the Clean Water Act, this process is used to address the State's concerns with wetland impacts. For those activities that degrade wetlands and fall outside the purview of the 404 program, the DOE may use other State water quality permitting processes such as wastewater discharge permits, short-term water quality modifications, and administrative orders.

State of Washington Growth Management Act

The State of Washington adopted the amended GMA in 1995 to ensure local implementation of statewide goals regarding land use, growth and environmental protection. Included within the State GMA are goals specifically related to preservation of "Critical Areas" including wetlands, geologically hazardous areas, fish and wildlife habitat areas, aquifer recharge areas, and frequently flooded areas. GMA requires that wetlands be recognized and rated according to their relative function, value, and uniqueness in each city and county jurisdiction. Fish and wildlife habitat areas include areas with threatened, endangered, and sensitive species habitats and species of local importance; naturally occurring ponds under 20 acres that provide fish and wildlife habitat; and state natural areas and preserves. The GMA allows that cities and counties may consider classifying and designating habitat corridors. The GMA does not, in itself, protect these areas; rather, it requires that cities and counties adopt regulations that will provide Critical Areas protection consistent with the Act. The Act was amended to require that cities and counties revise their critical areas protection to include Best Available Science (BAS) requirements.

Addition of Best Available Science Requirements

Washington counties and cities are required to review and, if needed, revise their Critical Areas policies and development regulations within certain specified timeframes. In doing so, jurisdictions must abide by provisions that the state legislature added to the GMA in 2001 requiring local governments to:

- Incorporate BAS when developing policies and regulations to protect the functions and values of Critical Areas.
- Give special consideration to conservation or protection measures to preserve or enhance anadromous fisheries. (Anadromous fish include salmon, steelhead, and sea-run cutthroat trout that hatch in fresh water, migrate to the ocean, and then return as adults to spawn in fresh water.)

These requirements increase the responsibilities that local governments have with regard to protecting Critical Areas. The deadline for counties and cities to incorporate the changes was December 1, 2004, though jurisdictions could petition to have the deadline extended.

The state adopted a rule to guide jurisdictions in identifying and including BAS. This rule provides local governments with a procedure for acquiring and evaluating scientific information to determine whether it constitutes BAS. The rule also provides guidance to help local governments demonstrate that they have included BAS in developing their Critical Areas policies and that they have given special consideration to anadromous fisheries.

While the rule states that information from non-scientific sources may be valuable to consider, non-scientific information may be used to supplement—but not replace—valid scientific information. In addition, the rule includes specific requirements for local governments to follow in documenting that they have obtained and considered BAS. Finally, if a city or county departs from science-based recommendations, it must explain its rationale for doing so and identify how it will limit potential risks to the Critical Areas at issue.

The Washington State Office of Community Development has published a handbook: Citations of Recommended Sources of Best Available Science For Designating and Protecting Critical Areas, March 2002 that guides local jurisdictions in implementing the BAS requirements to update Critical Areas protections. Specific guidelines relating to wildlife habitat protection include identification of wildlife species needs for adequate environmental conditions to support reproduction, cover, foraging, resting, and dispersal of animals at a variety of scales across the landscape. Fragmentation and habitat corridors are specifically addressed. BAS provisions of the GMA do not apply until local jurisdictions take action to amend their Comprehensive Plans and implement ordinances.

Washington Department of Fish and Wildlife

The Washington Department of Fish and Wildlife (WDFW) establishes and maintains the State Habitats and Species Lists and Management Recommendations, issues Hydraulic Project Applications (HPA) permits, and provides technical assistance and Geographic Information System (GIS) information for land use planning purposes through a variety of programs.

The State Habitats and Species Lists and Management Recommendations fulfills one of WDFW's most fundamental responsibilities—to provide comprehensive information on important fish, wildlife, and habitat resources in Washington. Initiated in 1989, the PHS (Protected Habitats and Species) Program was identified as the agency's highest priority. Today, the PHS Program serves as the backbone of WDFW's proactive approach to the conservation of fish and wildlife. There are 18 habitat types, 140 vertebrate species, 28 invertebrate species, and 14 species groups currently on the PHS List. These constitute

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about 16 percent of Washington's approximately 1,000 vertebrate species and a fraction of the state's invertebrate fauna. In addition, the agency maintains the Species of Concern (SOC) List. This list includes those species that are listed as Endangered, Threatened, or Sensitive or as Candidates for these designations. Endangered, Threatened, and Sensitive species are legally established in Washington Administrative Codes. Candidate species are established by WDFW policy. There are currently 29 Endangered, 16 Threatened, 10 Sensitive, and 103 Candidate species on the SOC List.

The PHS List is the principal means by which WDFW provides important fish, wildlife, and habitat information to local governments, state and federal agencies, private landowners and consultants, and tribal biologists for land use planning purposes. PHS is the agency's primary means of transferring fish and wildlife information from State resource experts to those who can protect habitat. The PHS Program identifies which species and habitat types are priorities for management and conservation, where these habitats and species are located, and what should be done to protect resources when land use decisions are made.

Specifically, the PHS List identifies habitats and species determined to be priorities based on defensible criteria; maps the known locations of priority habitats and species using GIS technology; provides information on the conditions required to maintain healthy populations of priority species and viable, functioning priority habitats using BAS; provides consultation and guidance on land use issues affecting priority habitats and species; and distributes this information and makes it easily accessible

Habitats identified include both rural and urban natural open space areas, snags and downed logs, freshwater wetlands, and aspen stands.

The State Habitat and Species List needs to be adopted by local jurisdictions and integrated into local land use and environmental regulations in order to ensure that it is a controlling regulation for the purposes of land use review. In addition, WDFW uses the Habitat and Species List and Management Recommendations to review HPA and Forest Practice Act (FPA) Applications. FPA applications are reviewed by the DNR and local jurisdictions whenever a landowner proposes to cut or thin a significant amount of standing timber. WDFW specifically uses the Habitat and Management recommendations to respond to FPA applications through the State Environmental Policy Act (SEPA) review process administered by the local jurisdiction or the DNR and to comment specifically on potential impacts to wildlife and habitat relating to the clearing of large amount of trees. WDFW comments are recommendations only; the local jurisdiction and/or DNR need to act on these recommendations. In addition, WDFW is a SEPA review agency, and will be contacted for review and advice whenever a land use proposal requires SEPA review at the local level. WDFW provides a significant source of expertise and grant funding for landowners through a variety of programs that support habitat restoration and acquisition.

HPAs are required for work near, over, or in the waters of the state of Washington, which may include larger wetland complexes such as the Quaking Aspen (Levinski) or Winona wetlands.

Washington State Open Space Act

The Washington State Open Space Act (RCW 84.34.020) defines open space as any land area, the preservation of which, in its present use, would:

- Conserve or enhance natural, cultural or scenic resources.
- Protect streams, stream corridors, wetlands, natural shorelines, and aquifers.
- Protect soil resources and unique or critical wildlife and native plant habitat.
- Promote conservation principles by example or by offering educational opportunities.
- Enhance the value of parks, forests, wildlife preserves, nature reservations, and other open spaces.
- Enhance recreational opportunities.
- Preserve historic and/or archaeological sites.

The tax benefits provided under this Act could provide incentives to landowners to protect open space and attendant habitat values.

Local Jurisdictions

Jefferson County Land Use Regulations

In 1998, Jefferson County adopted a Comprehensive Land Use Plan and Map consistent with Washington's GMA regulations. The City of Port Townsend is one of only two designated Urban Growth Areas (UGA) on the Quimper Peninsula, and all lands included in the Quimper Wildlife Corridor outside of the City of Port Townsend boundaries have been zoned for Rural Residential (RR1) development. QWC lands located in the county are subject to the County codes and plans discussed in the following sections.

Jefferson County Comprehensive Plan

The Comprehensive Plan was adopted by the Board of County Commissioners in 1998 following five years of community participation and review. Included in the Comprehensive Plan was a Community Vision Statement intended to create a foundation for land use decisions and provide for internal consistency within the document. The Community Vision Statement includes the following statement: “...*Protect and conserve the environment, ecologically sensitive areas, and preclude development and land uses which are incompatible with critical areas*” (Jefferson County Comprehensive Plan)

(JCCP), 1998, Appendix C). Further goals, policies and text relating to the importance of preserving wildlife habitat are included in Comprehensive Plan.

The Land Use chapter designates land uses for the unincorporated lands lying outside the two UGAs. The chapter includes a land supply inventory and needs allocation that recognizes that there is a 20-year demand for 500 residential lots, that 1,735 currently exist, creating a 1,235 lot oversupply. All land areas located on the Quimper Peninsula within the area of the QWC are designated as rural lands, with a proposed zoning designation of 1 housing unit per 5 acres of land. The Land Use chapter recognizes existing lots of record which may not be consistent with this designation as being “grandfathered,” but adopts policies that may address the need to preserve larger parcels. No existing areas of rural commercial development are identified within the QWC planning area.

Open Space Strategy

The County adopted an Open Space Strategy that proposed planning goals and policies designed to:

- Protect and preserve the natural environment including air, water, soil, vegetation, and wildlife habitat, as well as other significant ecosystem elements.
- Integrate adequate open space into rural development projects in order to provide amenities and help foster community identity.
- Protect and manage natural resources for long-term productive use, including buffering natural resource lands from adjacent non-resource-related land uses.
- Create a county-wide system of interconnected open spaces, including forests, farmland, parks, trails, waterways, meadows and tree stands, critical areas, and natural resource lands both in public and private ownership.

In order to promote consistency and provide certainty in the application of the planning goals and policies, the first step in this strategy is to define open space as it pertains to Jefferson County. Open space is a broad term used to describe different types of lands that have important values and provide benefits to the public. Generally, open space lands include natural and environmentally critical areas such as wetlands; aquifer recharge areas; lakes and streams; designated parks and trails; and natural resource lands, such as agricultural and forest lands. Based upon the characteristics of the land and its uses, a variety of open space lands are recognized in Jefferson County.

Jefferson County Unified Development Code

Jefferson County adopted its Unified Development Code in 2003. This code sets development standards and outlines allowable land uses. This code also identifies Environmentally Sensitive Areas (ESAs) and establishes regulation for land uses within their boundaries. ESAs identified include critical aquifer recharge areas, frequently flooded areas, geologically hazardous areas, fish and wildlife habitat areas and wetlands.

City of Port Townsend

City of Port Townsend Comprehensive Plan (PTCP)

The Port Townsend Comprehensive Plan was adopted in 1996 in compliance with the GMA. Of the multitude of goals and policies contained within this document, many directly or indirectly affect the QWC.

- **Natural Drainage System Approach.** This approach to stormwater management was adopted in the PTCP (Policy 5.4 of the Land Use Element). It calls for preservation of natural drainage systems to convey and treat stormwater runoff. This innovative approach has won much praise throughout Washington and led to the identification of many of the natural features located in the QWC such as the 100-year floodplain and many of the wetlands.
- **Land Use R1 Zoning.** The PTCP designates a vast majority of the land area of the QWC found within the city limits as R1 residential (or ~ 4 units per acre). This is less dense than the standard residential density of 8 units per acre found throughout most of the rest of the city. The decision to lower the density in this area was based on a basin area study funded by the Washington Department of Ecology that identified and delineated the 100-year floodplain. This study found that if development occurred at the standard 8 units per acre, the 100-year floodplain would no longer have the capacity to convey the 100-year flood.
- **Designation of ESAs.** Identified ESAs include critical aquifer recharge areas, frequently flooded areas, geologically hazardous areas, fish and wildlife habitat areas, and wetlands. ESAs and their regulatory process are codified in Title 19.05 of the Port Townsend Municipal Code (PTMC). The City's Critical Areas Ordinance of this code was updated in 2006 (Ordinance 2929 adopted September 15, 2006).
- **Designation of Potential Open Space.** The PTCP and its land use map identify areas to potentially be protected as open space, including most of the ESA's found within the QWC. The PTCP specifically mentions the QWC as part of its open space planning (Policy 3.6.2, Land Use Element).
- **Transportation and Non-Motorized Transportation Planning.** The PTCP addresses both motorized and non-motorized transportation. The goals and policies affect development of roads, trails, and protection of rights-of-way.

Parks, Recreation and Open Space Plan

This plan addresses the need to protect open space as well as the connection between open space and trail and non-motorized transportation development. The plan devotes a

relatively long section to the QWC and identifies cooperation between local and state agencies and private landowners as a determining factor on the ultimate path of the corridor.

Port Townsend Non-Motorized Transportation Plan (NMTP)

The NMTP seeks to develop a network of non-motorized transportation trails throughout the city and especially in the relatively undeveloped northwest quadrant.

“The Non-Motorized Transportation Plan seeks to harmonize its objectives with the goals of the Quimper Wildlife Corridor Project. Facilities will be planned to be compatible and of low impact and some areas of the corridor will be avoided entirely. This plan attempts to minimize the number of paths crossing the corridor.”
(p.8)

Analysis of the NMTP and its potential impacts on the QWC is provided in Chapter Six of this management plan.

Stormwater Management

The City adopted the Department of Ecology’s most recent Stormwater Management Manual as part of its engineering design standards, thus, the City is in compliance with statewide stormwater regulations. The 1999 Draft Stormwater Management Plan has yet to be adopted. This draft plan contains strategies for regional stormwater management systems that use the “natural drainage system approach” and calls for preservation of natural hydrologic regimes. The plan also calls for continued funding of the land acquisition within the 100-year floodplain found within the QWC as part of its capital improvements plan.

The Planning Relationship

As one can tell from this very brief summary of relevant regulations, planning at the local level has become a very complicated business. The relationship between local planning and management of the QWC can, and should, be a two-way relationship. On one hand, regulations equip JLT with tools for shaping and controlling growth and other factors influencing the QWC. On the other hand, JLT can suggest or request revised or new regulations, codes, and policies that contribute to the goal of managing the QWC.

Undoubtedly, the most successful relationship between JLT and especially the two local governments (City of Port Townsend and Jefferson County) will be that of partnership. However, this partnership relationship will be most effective if it extends beyond the incidental. This plan recommends that both jurisdictions designate a key staff person to

act as a point of contact for JLT and the QWCP. This person can receive an in-depth training as to the goals of the QWC and can help keep JLT informed as to how new rules and policies may affect the project. They can also help other staff members to consider the QWC while reviewing development proposals. The partnership can also work on joint efforts for such things as funding and restoration efforts.

Action Plan	
Land Use and Regulatory Overview	
Recommendation	Implementation Action
1. Develop an “active partnership” with the City of Port Townsend and Jefferson County.	<ul style="list-style-type: none"> • Request that a staff person be designated as a point of contact to better facilitate communication. • Conduct a two-way training seminar between agency staff and JLT staff. • Work with City staff to facilitate acquisitions/mitigation along the QWC as a viable off-site mitigation site in situations where on-site mitigation is determined to be infeasible or of minimal value.
2. Develop compatibility between trail placement and design and the QWC.	<ul style="list-style-type: none"> • Ensure 2008 supplement to the Non-Motorized Transportation Plan addresses potential conflicts, as is currently proposed. • Work with Non-Motorized Transportation Advisory Board to ensure any new trails are compatible.

CHAPTER FOUR

LAND PROTECTION STRATEGY

The QWC will ultimately consist of a patchwork of property owned by JLT, the City of Port Townsend, other public agencies such as Jefferson County, Washington DNR, and private individuals. It has not been the goal of the QWCP to acquire all the land within and affecting the wildlife corridor. Rather, it is the goal of JLT to create a common vision of long-term management of properties to insure the viability of the wildlife habitat.

Current Ownership

First, the current ownership of the significant habitat nodes was examined in the context of long-term protection of the property from a natural resources management perspective (Figure 1). The originally identified seven major habitat nodes were analyzed first. These properties have been considered the nodes of the wildlife corridor.

Originally Identified Significant Habitat Nodes

Areas 1 and 2 – Fort Worden State Park and Chinese Gardens. Management of these properties falls under the purview of the Washington State Parks and Recreation Commission. Consequently, long-term management of these areas falls outside the scope of this document, though there may be opportunities to work with WSP as they develop their Park Plan.

Area 3 –Quaking Aspen/Levinski Wetland. This property is commonly referred to as the Levinski property and is owned by the City of Port Townsend (Tax Parcels 52-60). The property was purchased with wastewater funds as a possible site for meeting future wastewater treatment needs. The Seaview sewer crosses the site impacting the Quaking Aspen itself, as well as leaving vulnerable the access road as a disturbed area prone to invasive plant species. In recent years, several non-motorized trails have been developed on the property. It is currently zoned as public/open space-mixed use (POS-B), and consideration should be given to changing this to POS as this designation would be more consistent with the goals of this Plan. The actual wetland and drainage corridor comprise only a small portion of the property. However, as discussed in the habitat assessment section of this plan, the site also contains other significant habitat. A 14.5 – acre portion of the Levinski property is permanently protected through a conservation easement, (Tax Parcel 60) and the remaining property cannot be considered protected with regards to the QWC. With adoption of this plan, the City intends to increase the area of permanently protected land to include Tax Parcel 58 (approximately 6.84 acres).

Area 4 – Winona Wetland. This large wetland consists of dozens of 50- x 100-foot lots. The City of Port Townsend has purchased most of the area including the buffer using a Washington State Revolving Fund loan as part of its “natural drainage system approach” to stormwater management. Deed restrictions have not been placed on these properties, but requirements of the grant funding used for their purchase limit their use. The City’s adoption of this Plan will clarify its policy regarding use of these properties (i.e., that the parcels remain in their current or restored condition). Again, the City may consider a rezone of the Winona parcels in order for the long-term land-use to be consistent with QWC goals.

Area 5 – Tibbals Lake Reserve. Tibbals Lake is an open-water wetland located just outside of Port Townsend city limits. The wetland is on a 43-acre privately owned reserve that was established to protect the wetland, while allowing for a limited number of development/house sites on the perimeter of the property. The majority of the property is held in common by the owners of these properties and is managed through a property owners association. Building, development, and vegetation removal are managed by restrictive covenants. While JLT does not hold a conservation easement on the property, it has worked with the property owners association to steward the property. If a commitment can be continued by both JLT and the Tibbals Reserve property association to work in partnership, this property could be considered protected with regards to the QWC.

Area 6 – DNR School Trust Lands Property. This parcel is not designated as a Natural Area Preserve or a Natural Resource Conservation Area (Mike Cronin, pers. com.). Thus the site should not be considered protected indefinitely. The current management plan prescribes removal of one-third of the stand’s volume every 20 years (Mike Cronin, pers. com.). The prescription practiced on this block may be modified in the future and could include an expanded harvest, trading or selling for rural housing. DNR is considering a 50 year lease of this parcel to Jefferson County as part of its Trust Land Transfer Program, which could provide some protection measures to this significant habitat area.

Area 7 – Middlepoint Land Conservancy. JLT holds a conservation easement on this private development. Monitoring of the observance of the terms of this easement is conducted annually by the JLT stewardship committee. This property can be considered protected with regards to the QWC.

Connectors and other Significant Habitat

The habitat assessment completed in this plan as well as refinement of the acquisition goals by JLT staff have revealed areas of significant wildlife habitat that were not originally identified (see Figure 3). The current ownership of these significant habitat areas was examined in the context of long-term protection of the property from a natural resources management perspective.

- **50th Street Connector.** Four blocks along this stretch have been purchased by the City (Blocks 8-11 of the Montana Addition). Through adoption of this plan, the City indicates its intent to permanently retain these areas in their natural or restored condition. A portion of this connector remains in private ownership. Future development of these parcels would be subject to the City's CAO, though this does not prohibit all development. Consequently, this connector can be viewed as partially protected.
- **49th Street Wetlands.** These wetlands are bisected by 49th/Cook Avenue and are also impacted by the sewer access road. JLT owns the property on the northeast corner of this property, and the City owns the property on the southwest corner (Tax Parcel 58). Through adoption of this plan, the City indicates its intent to permanently retain Tax Parcel 58 in its natural or restored condition (See Applicability in Chapter 1).
- **Levinski-Winona Connector.** The City has purchased land within this connector. The majority is, however still held in private ownership. This portion of the corridor cannot be considered protected with regards to the QWC. Through adoption of this plan, the City indicates its intent to permanently retain city-owned lands in this area in their natural or restored condition (excepting portions of the Levinski property, see Applicability in Chapter 1).
- **TeePee Wetland.** This wetland lies within the 100-year floodplain to the south of Winona. JLT has purchased the majority of the wetland, and those lots held by JLT may be considered protected. A small portion of the wetland remains in private ownership and thus cannot be considered protected.
- **Ivy Street Wetland.** The wetland forest has old-growth characteristics rarely seen in east Jefferson County, and is a haven for songbirds and amphibians. The area appears to be connected hydrologically to Elmira Wetland, and is adjacent to significant JLT holdings.
- **Winona-Tibbals Connector.** This area is where JLT has focused much of its acquisition efforts and much of the area is now owned by JLT. Property owned by JLT can be considered protected. JLT is currently seeking funding to add to its holdings in this area.
- **Tibbals – DNR Connector.** JLT has purchased a small amount of property in this area, which can be considered protected. Other privately owned parcels cannot be considered protected at this time.

Acquisition Strategy Update

Ownership of property by JLT, the City of Port Townsend, and Washington DNR offers varying degrees of protection with regard to the QWC. The following are recommendations to further clarify the long-term protection of these habitat lands.

- In adopting this plan, the City clarifies its intent to retain all of the property purchased with stormwater funds located within the QWC in their natural or restored state (excepting portions of the Levinski property and the Kuhn Street Wastewater Treatment Plant, See Chapter 1, Applicability). It is recommended that the City consider transferring conservation easements on these properties so that these policies can be enforced in perpetuity. Discuss areas within the City of possible rezoning to P/OS.
- Transfer conservation easements to an eligible agency (likely the City of Port Townsend) for JLT properties. This “double layer” of protection will insure the long-term preservation of the habitat.
- Continue working to secure the long-term protection of the DNR parcel. This 80-acre parcel is a very large, vulnerable piece of the corridor that cannot currently be considered protected.

Some property remains to be acquired to “fill in the gaps” of the corridor. Some of the parcels have been identified as significant habitat areas, but are not currently protected by either ownership or regulation by either City or County ESA or Critical Areas ordinances. As discussed previously, these regulations offer only limited protection. Figure 1 depicts the acquisition priorities (Tiers 1 and 2). Alternative protection measures that might be employed are discussed below.

Alternative Protection Strategies

Portions of the QWC are already developed to a relatively high density. This is especially true in the eastern end nearing Fort Worden. Much of the habitat value has been lost and some homes have been located in the 100-year floodplain. The following are alternatives to acquisition:

Owner Outreach - Backyard Wildlife Sanctuaries. This type of educational, outreach program seeks landowners to voluntarily improve their property as habitat. Practices generally involve planting native vegetation and employing organic gardening methods. They may also encourage small water features or other ways to encourage wildlife. These programs typically provide education by way of brochures, resource lists, and workshops. The program may also help provide native vegetation at reduced or no cost. This type of program seems ideally suited as an outreach program for JLT. Partnerships

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could also be formed with Jefferson Conservation District to obtain native plant starts and technical expertise. Properties that would benefit from this type of an outreach program are shown as Tier 3 in Figure 1.

Right-of-Way Vacations. Many of the existing platted rights-of-way within the corridor are semi-developed, usually without a permit or other permission from governmental agencies. Some are vestiges of logging roads, others are impacts from off-road vehicular traffic. As JLT and the City secure more properties, rights-of-way that are bounded on both sides by protected properties can be considered for street vacation (Figure 1). This process would reduce future threats of development. It is important to note that the right-of-way vacation process is fundamentally different within the city limits and outside the limits (Jefferson County jurisdiction). Those rights-of-way shown platted in Jefferson County have been statutorily abandoned and require a quiet title process to vacate them.

Action Plan Land Protection Strategy	
Recommendation	Implementation Action
1. Coordinate with City of Port Townsend staff on the use of city-owned property within the QWC.	<ul style="list-style-type: none"> • Form a study group with JLT and City of Port Townsend staff. • Ensure that the adopted natural drainage system approach is incorporated into the Stormwater Master Plan. • Request that the City designate a staff member to be a point of contact for issues involving the QWC to better facilitate communication. • Discuss possible rezoning of some protected parcels owned by the City or JLT.
2. Transfer conservation easements to an eligible agency (likely the City of Port Townsend) for JLT properties.	<ul style="list-style-type: none"> • Investigate ownership alternatives with the above recommended study group. • Investigate mechanisms for placing conservation easements or transferring development rights.
3. Secure the long-term protection of the DNR School Lands parcel.	<ul style="list-style-type: none"> • Form a study group with Jefferson County staff to investigate how this parcel fits within the County’s open space goals. • Work with Jefferson County staff to accept 50-year lease to Jefferson County under DNR’s Trust Land Transfer program.
4. Update Acquisition Strategy.	<ul style="list-style-type: none"> • Use the map provided in this plan to determine a new cost estimate for remaining acquisitions. • Develop a funding strategy to complete acquisitions.
5. Pursue street vacations.	<ul style="list-style-type: none"> • Identify rights-of-way eligible for vacation. • Begin vacation applications with City of Port Townsend. • Begin quiet title process for those rights-of-way in Jefferson County jurisdiction as appropriate.

CHAPTER FIVE

INVASIVE PLANT SURVEY AND STEWARDSHIP

Invasive plants threaten native plant and animal communities in the wildlife corridor. Because they evolved in a different locale, there are few ecological mechanisms—such as animal browsing or fire—to keep non-native plants in check. They are often “pioneer species” well adapted to disturbed environments, and they have rapidly and tenaciously stabilized the soil disturbances along roads, trails, and the sewer access right-of-way. Their rapid spread prevents native plant species from obtaining the water, sunlight, space, and nutrients they need. Since native insects, birds, and mammals have evolved to depend on native plant food sources, invasive plants directly diminish wildlife populations. Once established, invasive plant species can be extremely difficult and expensive to control.

In winter 2003-2004, a field study was conducted to verify the extent, location, and types of non-native plant invasions present within select areas of the QWC. This report is a synopsis of the field study, and offers recommendations for stewardship.

Given the grid work of platted and constructed roads and trails (abandoned roads) that intersect that corridor throughout its length, the QWC has surprisingly few areas of severe non-native plant invasions; many of the gaps along old roads are sufficiently covered over by native plants. That said, there are several severe problem areas. The worst invasions occur along the biggest land scars: large roads such as 49th Street, and the path of the sewer line such as in Winona Wetland.

The corridor has benefited from past efforts to remove invasive species, most notably in Elmira Wetland, where multiple road intersections through the wetland would have caused much more invasion if not for stewardship interventions.

Methods

Field studies were conducted on December 31, 2003 and January 1-2, 2004 in clear winter conditions, when plants were easy to see and identify, due to the lack of deciduous leaf growth. In each of seven areas, site location was confirmed on both a plat map and with Global Positioning System (GPS) readings, and all non-native plants were noted along 100-foot transects in several directions. For all transects, compass direction was taken using magnetic north. In some cases, additional field observations were made en route to study sites. Conditions were clear and sunny, and the corridor was surveyed from northeast to southwest.

Locations listed here cite street names that were used on the original plat map, but many exist on the ground only as trails, as many roads have not (yet) been constructed, or were roughed in but never completed.

Areas Surveyed

- 1) 50th Street Connector
- 2) 49th Street Wetland
- 3) Quaking Aspen (Levinski) Wetland
- 4) Levinski -Winona Connector
- 5) Winona Wetland
- 6) TeePee Wetland
- 7) Alwood/Elmira Wetland

Results and Recommendations

Non-native plants identified in the QWC include: reed canary grass (*Phalaris arundinacea*), English holly (*Ilex aquifolium*), English and other ivies (*Hedera helix*, *Parthenocissus sp.*), Himalayan blackberry (*Rubus discolor*), evergreen blackberry (*Rubus laciniatus*), Scot's broom (*Cytisus scoparius*), and bamboo (species not identified). Their distribution is described below.

In general, recommendations are to remove invasive species and attempt to re-establish native populations. Specific methods are described in each appropriate section. Note that where herbicides are recommended, they should be applied 1) only where other methods have been tried unsuccessfully, 2) in the lowest possible effective dose and 3) and by trained, licensed applicators.

Descriptions of the invasive plants found in the surveyed areas as well as recommendations for removal and replanting with native species are found below.

50th Street Connector

In this area, **English holly** (*Ilex aquifolium*) seedlings and several mature (fruiting) trees thrive in the shady understory of an otherwise native forest. Holly is insidious because birds disperse the seeds of fruits in their droppings, and seeds can germinate in deep shade. Although their initial growth is partially suppressed by shade, they are poised to out-compete the native evergreen tree species (such as Western red cedar and grand fir) when mature falling trees create light gaps. Holly, a prickly, tough-leaved evergreen imported from England, has no native browsers.

Also, in this neighborhood, landowners have planted potentially invasive species such as **Butterfly bush** (*Buddleia sp.*) in their yards, which have the potential to invade the

wildlife corridor. Many people plant this bush to attract butterflies, but it may prove to be invasive in wetland and riparian (streamside) areas.

In the yards of residential homes to the north of 49th Street, ivy is growing on many of the mature trees. This is clearly visible from the road. While technically this area is “outside” of the corridor, it is ecologically connected to the corridor and should be treated as such.

Recommendations:

- 1) **Remove mature holly trees and seedlings.** English holly is an escaped ornamental, which often invades upland forests and wetland areas. English holly often grows into a tall, thick-trunked tree. Removal in winter would be best, as plants are easier to see. Seedlings must be pulled up including roots, or they will re-sprout. Re-sprouting is a problem with mature trees as well; a new multi-stemmed shrub or tree will grow back immediately from a pruned stump. Cut stumps should be judiciously painted with herbicide as soon as they are cut. The wound will absorb the herbicide and thus kill the root of the plant.
- 2) **Replant with natives.** Wherever holly is removed, replant with red cedar (*Thuja plicata*), sword fern (*Polystichum munitum*), Indian plum (*Oemelaria cerasiformis*), and dwarf native rose (*Rosa gymnocarpa*).
- 3) **Work with neighbors** to spread understanding about the threat of invasive plants to the adjacent wildlife corridor and their special relationship to the corridor. Encourage them to be proactive about replacing non-native plants with native species. Residents along 49th Street should be encouraged to pull ivy from their trees. These residents may also be helpful in efforts to remove invasive plants from the nearby 49th Street Wetland, described below.
- 4) **Recognize and praise volunteer stewardship activities.** Note that landowners adjacent to the eastern edge of the sedge/open water wetland, Mike and Laurel Dawson, are already removing English ivy (*Hedera helix*) from the Douglas fir (*Pseudotsuga menziesii*) trees on their property, immediately adjacent to the QWC to the east. This stewardship should be recognized and encouraged; if they stopped, the ivy would quickly move into the sedge wetland. Other efforts throughout the corridor should likewise be encouraged.

49th Street Wetland

This is the most severe invasion of non-native plants in the QWC. The wetland is located at the intersection of 49th Street and the public path/sewer line access road heading due south, located just west of Hendricks Street. Approximately one-third acre of wetland—including at least 12 mature trees—is entirely covered in ivy (*Hedera helix*, as well as *Parthenocissus sp.*). In this area, native vegetation is almost entirely suppressed on the ground. In addition, reed canary grass (*Phalaris arundinacea*) covers much of this

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area. Also penetrating this area are small patches of Himalayan blackberry (*Rubus discolor*) and Scot's broom (*Cytisus scoparius*).

This area, especially the wetland and trees visible from 49th street (looking south) presents a major stewardship challenge for the Jefferson land Trust and its partners.

Along the sewer access road, there are invasions of Scot's broom along the east-westerly trail along "46th Street" between "Hancock" and "Rosecrans" trails.

Recommendations:

- 1) **Remove ivy from mature trees and ground** in the area just south of 49th Street, just west of Hendricks. Winter will be the easiest time to accomplish this. Remove plant debris from site, as it will re-root if left in place. Large ivy stumps (>2 inches in diameter) should be judiciously painted with a "wetland safe" herbicide just after cutting.
- 2) **Remove non-native blackberry.** Himalayan blackberry was introduced from Asia by way of England. It prefers disturbed, open, upland sites, but you will find it here in some shady areas as well. Birds and animals readily spread it, as its fruits are delicious. Best removal techniques are to prune back vines to the ground (leave in a heap to dry out in an open area), and judiciously paint the cut stems with a "wetland safe" herbicide.
- 3) **Manage reed canary grass.** This is the most invasive grass species in wetlands of the Pacific Northwest. It is a rhizomatous, mat-forming perennial, which takes over wetland habitats. It is especially fond of wet, disturbed areas. Reed canary grass is a native of Eurasia. It was widely planted in this area between the 1930s and 1980s for erosion control. Attempted control methods include: changing hydraulic conditions, mowing, herbicide application, hand pulling, fire, and others. In this area, a combination of mowing and herbicide application to resprouting clumps in spring may be the preferred alternative.
- 4) **Narrow the roadbed.** Along the sewer access road or the "46th Street trail," the trail is wide enough to invite Scot's broom and blackberry invasion. This area could be cleared of Scotch broom by pulling mature and seedling plants up by the roots, tilling the old roadbed, and replanting with sun-tolerant species such as Douglas fir, dwarf native rose (*Rosa gymnocarpa*), and small seedlings of Pacific madrone (*Arbutus menziesii*). A limiting factor in restoration will be the road width needs of sewer maintenance vehicles.

Quaking Aspen Wetland (Levinski property)

This otherwise pristine (and unique) grove of aspen (*Populus sp.* — locally referred to as *Quaking aspen* (*P. tremuloides*-- but efforts were not made to confirm species)) harbors a single 3-inch diameter ivy vine climbing a tree in its epicenter, as well as at least three mature English holly trees. On the small trail that circumnavigates the entire wetland,

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Himalayan blackberry abounds along the western edge only. The northern edge is quite intact.

Recommendations:

- 1) **Remove ivy and English holly** trees from interior of wetlands. Scour more carefully for seedlings in summer when water conditions permit.
- 2) **Remove blackberry.** This will be an ongoing task in the trail to the west of the Levinski wetland.

Winona-Levinski Connector

Deep within the Winona–Levinski connector are some scattered patches of English holly, Himalayan blackberry, and Scot’s broom. Problem areas include Magnolia Street-Bell Street, south of East Sapphire Street, and Willamette Street-Caines Street south of East Sapphire Street.

Recommendations:

- 1) **Remove non-native plants**, including English holly, Himalayan blackberry, and Scot’s broom as described above.
- 2) **Replant with natives** such as red cedar (*Thuja plicata*), sword fern (*Polystichum munitum*), Indian plum (*Oemalaria cerasiformis*), and dwarf native rose (*Rosa gymnocarpa*).

Winona Wetland

This wetland site was disturbed by the construction of the Seaview sewer line. Reed canary grass covers almost the entire wetland. An academic debate continues about whether this species is actually non-native to the continent. It may have, in fact, been present on the Pacific Northwest coast for several centuries, based on evidence of use in basketry “by the Halq’emylem and probably other Salish groups” (Pojar and Mackinnon, 1994). However, all sides agree that the plant has become unusually invasive in wetlands. Reed canary grass invasion to the extent it is present in the Winona Wetland is usually the result of artificially altered hydrology and soil disturbance.

Scattered cattails and sedges throughout indicate the past vegetation of Winona Wetland. Generally, when a wet site becomes a bit drier (i.e., water levels decrease), or when frequency of flooding to a wetland decreases, reed canary grass out competes natives.

Thistle, Scot’s broom, and blackberries are also present on this site, but are in smaller populations.

Recommendations:

- 1) **Explore the possibility of restoring or simulating native water flow regime.** Options should be evaluated for answering the following questions: What are the advantages and disadvantages of altering stormwater runoff to increase flooding in the wetland from nearby housing? Is there some way to change the topography of the site to allow for more flow?
- 2) **Manage reed canary grass removal.** Attempted removal methods include: heavy mulching, mowing, herbicide application, and fire. Removal by hand or machine is strongly discouraged, as this plant re-sprouts vigorously from the root mat. Note, however, that these methods are short- and mid-term solutions, and do not account for the process that allowed the reed canary grass to become established and thrive. Therefore, before attempting labor-intensive, expensive solutions, further study should be conducted to determine whether a creative solution could be found to create a water flow pattern more favorable to native sedges, rushes, and tules. (See Appendix C for additional notes on reed canary grass.)
- 3) **Continue efforts to pull Scot's broom, blackberry, and thistle.**

TeePee Wetland

This wetland area is very unusual. The south end is forested, with an overstory of alder (*Alnus rubra*) and willow (*Salix spp.*). The north end is an intensive garden plot, complete with a fence, benches, raised beds, and small garden shed. The only potentially invasive species here is the bamboo planted along the north edge of the garden. There are approximately six recent privacy plantings (1-2 inches in diameter), as well as one large (12-foot) clump to the east side. Bamboo is highly invasive, spreading by woody runners underground. Once established, it is very tenacious and hard to eradicate.

Also on this site is a fresh quarter-acre clearing on the west side of the garden plot (bare soil).

There are scattered clumps of blackberry along the southern edge of the trail leading from S. Garnet to S. Ruby along "39th Street trail."

Recommendations:

- 1) **In coordination with the City, contact landowners** to determine whether improvements are consistent with the Critical Areas Ordinance. In addition, determine if they are willing to have bamboo taken out and replaced with Western red cedar or some other native plant that provides the same function they seek. If landowners are willing, remove large bamboo clump and small plantings. Inquire

about their intentions for the cleared area. A fruit orchard would not be a threat to the QWC. A bamboo nursery, however, would.

2) Continue efforts to cut back blackberry from southern trail.

Alwood/Elmira Wetland

On “Lenore Street Trail,” between TeePee Wetland and Alwood/Elmira Wetland, there is an unusual abundance of Scot’s broom. Elmira Street as well as Cook Avenue divides Alwood Wetland. Considering this fragmentation, the site is in good condition. Alwood Wetland itself contains some trash and debris, but very few non-native plants. Evidence of past Scot’s broom removal was noted. On the east side of the wetland, Alwood Street roadbed restricts water flow.

Recommendations

- 1) **Continue to pull Scot's broom** seedlings, which could persist for seven more years.
- 2) **Consider removing old roadbed** on the "Alwood Street trail" and replacing it with a wooden plank walkway to reestablish water flows. This might be a good public service project for a youth group.

Ivy Street Wetland or "Frog Forest"

This intact, forest wetland is bounded by Elm Street to the west, 39th to the north, Spring Street to the east, and 35th Street to the south. The wetland forest has old-growth characteristics rarely seen in east Jefferson County, and is a haven for songbirds and amphibians. The area appears to be connected hydrologically to Elmira Wetland, and is adjacent to significant JLT holdings. No invasive species were noted in this area, and the area is only mentioned here because it impressed the field surveyor with its wildlife habitat value and charm.

Notes

According to the Washington State Noxious Weed Control Board, the QWC contains only one "Class B Weed," *Scot's broom*. However, this list was designed for agricultural needs rather than wildlife protection. "Class B Weeds are non-native species presently limited to portions of the state. Species are designated for control in regions where they are not yet widespread. Preventing new infestations in these areas is a high priority. In regions where a Class B species is already abundant, control is decided at the local level, with containment as the primary goal" (Washington Noxious Weed Board, 2004). Although Scotch Broom does fix nitrogen in soil, removal is recommended.

English ivy is listed as a "Class C Weed, species that are considered widespread in the state. Long-term programs of suppression and control are a county option, depending upon local threats and the feasibility of control in local areas" (Washington Noxious Weed Board, 2004). Removal is recommended.

Invasive Plant Control and Stewardship Priorities

Areas can be grouped according to both the degree of problem, and the ease with which these can be remedied. When prioritizing stewardship in the QWC, it may be helpful to managers to consider the following questions:

- How intact or pristine is the micro-site?
- What disturbances or processes caused the invasion?
- How severe is the invasion? What processes exacerbate it?
- How do adjacent areas affect stewardship?
- What are known remedies? Are they “do-able”?
- Are remedies long-term or short-term solutions?

Advanced invasion/ difficult to remedy:

- **“49th Street Wetlands”** (southeast of Cook/Hendricks/49th): English and other ivies, reed canary grass and Himalayan blackberry are overtaking more than a quarter acre of wetlands. See notes below for suggestions.
- **Winona Wetland:** Reed canary grass, Himalayan blackberry, and Scot’s broom cover most of this wetland. Encroaching housing developments will cause further hydrologic disruptions as stormwater runoff increases and/or flooding frequencies change.

High concern/early invasion/easy to remedy:

- **Quaking Aspen (Levinski) Wetland:** An otherwise pristine (and unique) quaking aspen grove harbors a single 3-inch diameter ivy vine climbing a tree in its epicenter, as well as at least three mature English holly trees. Ivy and holly could be removed from this site in one day.

Moderate invasion/difficult to remedy:

- **The Levinski-Winona Connector:** Between Winona Wetland and Quaking Aspen (Levinski) Wetland are scattered pockets of Himalayan blackberry, Scot’s broom, and English holly. Removal will require frequent revisits to scour the area, especially in springtime to pull sprouts. Long-term, sustained effort is required.
- **Alwood/Elmira Wetland:** The wetland is in surprisingly good condition. A roadbed at Alwood Street trail just east of Cook could be removed and converted into a plank walkway, thus allowing hydrologic recovery.

Moderate invasion/easy to remedy:

- **50th Street Wetland:** English holly seedlings and trees could easily be removed and replanted with native plants.
- **TeePee Wetland:** Residents have recently established “privacy plantings” of bamboo, which is very highly invasive. Working with the landowners to remove this and replant with natives may be easy or difficult, depending on the landowner. One planting is >12 feet in diameter; others are much smaller. There is also a large (approximately a quarter acre) new clearing adjacent to

the large garden/farm in the north end of TeePee Wetland, which may or may not invite invasive plants in the near future.

Action Plan	
Invasive Plant Control	
Recommendation	Implementation Action
1. Begin invasive species control program.	<ul style="list-style-type: none"> • Follow recommendations of this plan for species removal/control and revegetation with native species. • Incorporate this program into ongoing JLT stewardship program. • Consider forming a “Friends of the QWC” volunteer program. Trained stewards can be responsible for ongoing invasive species control in addition to organized work parties.
2. Incorporate invasive species control into larger restoration programs.	<ul style="list-style-type: none"> • Winona Wetland and 49th Street Wetland invasive species control must be considered in the context of overall restoration. Consider partnerships to seek funding and implement comprehensive restoration activities at these two sites.
3. Develop a local Backyard Wildlife Sanctuary Program and/or other owner outreach programs.	<ul style="list-style-type: none"> • Incorporate this program into on-going JLT stewardship activities. • Develop partnerships to implement this program, e.g., Jefferson Conservation District, Audubon Society, etc.

CHAPTER SIX

NON-MOTORIZED TRAILS WITHIN THE QWC, SIGNAGE, AND INTERPRETIVE DISPLAYS

The establishment of a non-motorized trail system and the protection of a wildlife corridor are both worthy goals. However, trail development and usage can have a significant negative impact on wildlife habitat. With careful planning and continuing communication between land managers responsible for trails and wildlife corridors, impacts can be minimized and the two public uses can successfully co-exist.

Trails and QWC - Areas of Overlapping Use

This section identifies areas of overlapping use within the corridor and provides recommended measures to minimize impacts to natural resources. Areas of overlapping use are those in which trails or other human uses cross, intersect, intrude upon, or otherwise impact, a designated Habitat Area and/or fall within the 100-year flood plain (see Chapter Two for definitions of these areas). Sixteen such overlapping areas were identified and are shown in Figure 4. Recommended measures to minimize or mitigate impacts to natural resources include physical responses and management responses. Each area of overlapping use and a measure recommended for that area are summarized below.

Areas of Overlapping Use

Table 6-1 lists the 16 areas of overlapping use identified in the corridor. These areas were identified through a comprehensive review of the Port Townsend and Jefferson County Non-Motorized Transportation Plans (NMTPs). The trail data from each of these plans were overlaid with the mapped Habitat Areas and 100-year floodplain within the corridor (see Figure 4). Areas of overlapping use were identified where trails cross, intersect, intrude upon, or otherwise impact, an area designated as Habitat Area, and/or fall within the 100-year floodplain. While it is recognized that there may be other human uses that may overlap with these areas, none was found in the analysis conducted for this plan.

The majority of the overlaps are with proposed trails. There are a number of these conflicts, because the Port Townsend NMTP, in general, proposes the construction of as many trails as possible in the undeveloped rights-of-way in the northwest part of the city. The goal of the NMTP is to weave a “network” so that non-motorized users travel between almost any two points in that area of the City without using an open, paved street. While such a network of trails may be consistent with the management goals of the corridor, the impacts of these proposed trails should be investigated prior to construction.

The Port Townsend NMTP addresses the impact of trails on the natural environment in following statements:

"[The goal is to] develop a comprehensive open space and trails plan and implementation program which protects the natural environment and significant cultural resources, provides passive recreation opportunities, is integrated with the non-motorized component of the Transportation Element, and is designed to link neighborhoods with parks, significant open spaces, schools, shoreline access areas, mixed use centers and employment centers."

-Open Spaces & Trails Goal excerpted from the 1996
Comprehensive Plan

"The Non-Motorized Transportation Plan seeks to harmonize its objectives with the goals of the Quimper Wildlife Corridor Project. Facilities will be planned to be compatible and of low impact and some areas of the corridor will be avoided entirely. This plan attempts to minimize the number of paths crossing the corridor" (p.8)

"This multi-modal loop also unites neighborhoods with an extensive system of parks and open spaces, including many environmentally sensitive areas that provide significant wildlife habitat." (p. 21)

While it is clear from these statements that such impacts were a consideration in the policies and other text of the NMTP, it appears the conceptual trail alignments did not consider the impacts of trails on environmentally sensitive and protected lands. Many proposed trails cross environmentally sensitive areas. However, as indicated in the concerns and intent expressed in the body of the NMTP—in addition to those in the Comprehensive Plan—impacts of the trails on natural resources will be an important consideration in the final planning of any trail. A 2008 supplement to the NMTP is expected to address these concerns and to include a policy of finding alternate routes for trails that are proposed across wetlands or other critical habitat areas.

Recommended Measures

A wide variety of potential measures exists to address overlapping uses. The challenge within the corridor is to maximize natural resource protection while avoiding significant restriction of the outdoor recreation experience or manipulation of the non-motorized transportation network. Recommended measures are grouped into three broad categories: no action, physical measures, and management measures. Many of these measures are adopted from current publications on trail design and management. These publications and suggested resources for further reading are included at the end of this section.

Physical measures can be implemented for new trail construction and/or where realignment/reconstruction is necessary. Proper trail design, layout, and maintenance are essential for natural resource protection and also contribute positively to trail user satisfaction. Proper design can encourage users to utilize the trail in ways that minimize resource degradation. Given that there is an extensive network of existing and proposed

*Quimper Wildlife Corridor
Management Plan
May 19, 2008*

trails throughout the corridor, proper trail design, layout, and maintenance should be a primary consideration. Physical design, layout, and maintenance measures that can help avoid or minimize natural resource impacts in overlapping areas include adequate buffers, design and construction of trails to accommodate expected use and minimize erosion, adding (or leaving) physical barriers, and implementing an effective maintenance program.

Management measures are intended for trails that are already in place. Management measures can be divided into two broad categories: 1) interpretation and education, and 2) regulations and enforcement. It is common that natural resource impacts resulting from trail use are often the result of uninformed or unintentional actions. Effective communication regarding the location and value of natural resources within the corridor can prevent further impact and degradation. Specific examples of interpretation and education elements are provided in Table 6-2. These elements include entrance and directional signs and interpretive signs and displays. Regulations such as speed limits, separating users (e.g., mountain bikes and pedestrians), right-of-way yield requirements, and closing trails or trail sections during sensitive seasons could be established to minimize impacts in overlapping areas.

Measures will differ depending upon whether the trail is existing or proposed and, in some cases, a number of different measures may be appropriate. In some cases, no action is recommended for overlapping areas located along existing, permanently paved roadways. Specific recommended measures for each area of overlapping use are summarized in Table 6-1.

Trail Design, Construction, and Management Resources

Ryan, Karen-Lee, ed. 1993. *Trails for the Twenty-first Century: Planning, Design and Management Manual for Multi-Use Trails*. Rails-to-Trails Conservancy. Island Press: Covelo, CA.

Flink, C. and R. Searns. 1993. *Greenways: A Guide to Planning, Design, and Development*. Island Press: Washington, D.C.

Knight, R.L. and D.N. Cole. 1995. Wildlife responses to recreationists. In: *Wildlife and Recreationists: Coexistence through Research and Management*. A.L. Knight and K. Gutzwiller, eds. Island Press: Covelo, CA. Pp. 51-69.

Smith, D. and P. Hellmund. 1993. *Ecology of Greenways*. University of Minnesota Press: Minneapolis, MN.

Table 6-1 Areas of Overlapping Use

Map No	Item	Existing (E) or Proposed (P)	Street (if applicable)	From	To	Description of Overlap*	Recommended Measures	Notes/ Comments
1	Trail	P	49 th	Landes	Holcomb	X FP	None	Overlapping area on existing paved road.
2	Trail	P	Kuhn	50 th	51 st	Same as above	None	Overlapping area on existing paved road.
3	Trail	P	Jackman	49 th	50 th	Same as above	None	Overlapping area on existing paved road.
4	Trail	P	Cleveland	49 th	52 nd	X ESA, SE/WF HA and FP	None	Overlapping area on existing paved road; proposed trail provides north-south connector for NMTP.
5	Trail	E	--	Cook/ 49 th	East Diamond	Ex trail X ESA, E HA and FP	Physical: Remove existing trail within sensitive area and relocate to Cook Avenue ROW. Proposed trail circumvents these areas. Management: interpretive and direction sign.	In City ROW within City property; restoration of existing trail area following relocation.
6	Trail	E	--	[47 th]	45 th & Rosecrans	Ex Trail X ESA, WF HA and FP	Physical: Remove existing trail within sensitive area and relocate as shown. Proposed trail circumvents these areas.	In City ROW within City property; restoration of existing trail area following relocation.
7	Trail	E, P	Thomas	Lorena	[47 th]	Both trails X ESA, HA	Physical: Design and construct proposed trail to minimize impacts (e.g., drainage, erosion control); add barriers to restrict entry into wetland. Management: interpretive display.	Proposed trail routed along wetland edge will minimize impacts.

* Legend located below

Table 6-1 Areas of Overlapping Use (cont.)

Map No	Item	Existing (E) or Proposed (P)	Street (if applicable)	From	To	Description of Overlap	Recommended Measures	Notes/ Comments
8	Trail	E, P	Willamette	Peary	[45 th]	Ex trail and P trail X ESA, SE/WF HA and FP	Physical: Route proposed trail onto Land Trust parcel and other parcels to the east of Willamette. Management: interpretive and regulation sign.	Involves private property owners' agreement or new Land Trust purchases of at least 2 properties.
9	Trail	P	Michigan Pl	Cook	Peary	P trail X SE/WF HA and FP	Physical: Remove proposed trail from NMTP. Management: directional and regulation sign.	Winona Wetland/Forest historically and significantly disturbed; should avoid future impacts; other trails in immediate vicinity provide adequate access/opportunity
10	Trail	P	42 nd	[Emerald]	Ruby	P trail X FP	None	Overlapping area on existing paved road.
11	Trail	E, P	39 th	Venu	Shasta	Both trails X ESA, HA	Management: interpretive and regulation sign.	
12	Trail	E, P	39 th	Ivy	Spring	Both trails X ESA and WF HA	Management: interpretive and regulation sign.	
13	Trail	P	Cook	Elmira	Oneonta	X ESA	Management: interpretive sign.	
14	Trail	P	Elmira	39 th	Alwood/Elmira	X ESA	Management: interpretive sign.	
15	Trail	P	Elm	Lewis	George	X ESA	None	Overlapping area on existing paved road.
16	Trail	P	Elmira	Walnut	Sutter Pl	X ESA (Hazardous Slope) and HA "Elmira Wetland"	None	Overlapping area on existing paved road.

Key to Abbreviations: X = crosses; Ex = existing; P = proposed; ESA = environmentally sensitive area; HA= habitat area; SE = shrub emergent; WF = wet forest; DF = dry forest; E = emergent; MF = mesic forest; R = rural; P = pasture; ROW = right-of-way; FP = FEMA 100-year flood plain

Areas for Signs and Interpretation

Signs and interpretive elements will serve to enable and assist JLT and other landowners of corridor properties to achieve several goals. These goals can be divided into the following two categories:

- 1) Informing users of efforts to protect, preserve, and facilitate enhancement and/or restoration of the corridor, and informing users of ownership and custodianship status of lands. This goal will be achieved primarily through the use of **signs**. These signs will typically be either simple indicators of the entrance or boundary of the corridor, ownership and/or stewardship, and maps of the corridor or section of the corridor.
- 2) Informing and educating users of particular characteristics of the surrounding lands and other natural features. This goal will be achieved primarily through the use of **interpretive elements**. The interpretive elements will typically address a specific area of interest and be placed within view of that area of interest. They will typically contain informative literature and possibly accompanying diagrams, illustrations, photographs and maps.

A strategy for employing the signs and interpretive elements should be divided into the following phases. These are also designated in Table 6-2.

- 1) Addressing existing features and situations on existing trails
- 2) Addressing future – or planned – features and situations on existing trails
- 3) Addressing features and situations on proposed trails

A countervailing view is that the QWC contains areas that are sufficiently wild, rural, undeveloped, and uncontrolled that any formalization of the area will compromise those characteristics. This view would hold that any signs, maps, and interpretive elements would damage many of the QWC's rare—if not unique—qualities. Perhaps the most important aspect of this view is that the QWC, because it is largely in a natural state, and because its trails are mostly unmapped and perplexing, provides an intriguing, even mysterious, adventure to those who are willing to explore it. For many Port Townsend urban dwellers, this is not only an enchanting experience, but one that is rarely available to people in other cities. In this view, the signs, maps, and interpretive elements, while helping some visitors appreciate and understand the surrounding natural environment, are simultaneously obliterating some of those very characteristics and making the area similar to many others that one can find much more easily across the country.

For these reasons, the placement of signs and other elements that formalize the experience of visiting and traveling through the QWC should be done extremely judiciously. The recommendations in Table 6-2 seek to address both concerns: the desire to promote the preservation and conservation of sensitive areas and the desire to maintain the Corridor's rare combination of wildness, informality and proximity to an urban area.

The majority of the signs in the table are simply informing passersby that the lands adjacent to a trail are either owned by JLT or are otherwise protected or sensitive. An interpretive element is recommended, either at Thomas and East Sapphire or east of the intersection of Willamette and Morton. More detailed site inspections should determine which of these locations is chosen. Either location will help direct visitors to an accessible part of the QWC, will provide beautiful and interesting surroundings, and will be located within a short walking distance of paved streets.

Table 6-2 Areas for Signs and Interpretation

Map No.	Item Type	Item Code	Location	Description	Notes/Comments
1	S	A	New trail on Cook at entrance to "49 th Street Wetland" – could be on new trail at Hendricks as well	Sign indicating trail entrance and corridor and sign directing users to interpretive display	Possibly map of corridor; location of sign(s) depends on future alignment of trail that becomes "main access" from Cook/49 th /Hendricks area
2	S	C	On proposed trail on Cleveland, at 51 st	Sign indicating ESA	May not be necessary
3	I	A	Thomas and E Sapphire OR (east of) Willamette and Morton	Interpretive display	Possible inclusion of "rest area" elements: bench(es) and picnic table
4	S	B	East Sapphire and Willamette	Sign directing users to interpretive display	Location depends on location of interpretive display
5	S	B	45 th and Thomas	Sign directing users to interpretive display	Location depends on location of interpretive display
6	S	A	Cook and Arizona Place	Sign indicating entrance to corridor	Existing trail may not warrant sign; proposed trail to be a more formal entrance
7	S	C	Cook and Peary, S side of Cook	Sign indicating entrance to corridor	May be necessary only very long term
8	S	C	Cook and Michigan, S side of Cook	Sign indicating entrance to corridor	May be necessary only very long term
9	S	C	Cook and Winona	Sign indicating entrance to corridor	May be necessary only very long term
10	S	C	Cook and Linden	Sign indicating entrance to corridor	May be necessary only very long term

KEY to Abbreviations:

ITEM TYPE:

S = sign

I = interpretive element

ITEM CODE:

A: addressing existing features on existing trails

B: addressing future or planned features on existing trails

C: addressing future or planned features on proposed trails

Table 6-2 Areas for Signs and Interpretation (cont.)

Map No.	Item Type	Item Code	Location	Description	Notes/Comments
11	S	A	39 th and Howard	Sign indicating entrance to corridor, map, direction to interpretive display	Advise regular inspection of sign for vandalism; consider sign "experimental"
12	S	C	McClellan and Umatilla	Sign indicating entrance to corridor	May be necessary only very long term
13	S	C	Elmira, between Cook and Ann	Sign indicating Land Trust ownership	
14	S	C	Cook, between Elmira and Albatross	Sign indicating Land Trust ownership	
15	S	A	39 th , between Cook and Topaz	Signs indicating Land Trust ownership	

KEY to Abbreviations:

ITEM TYPE:

S = sign

I = interpretive element

ITEM CODE:

A: addressing existing features on existing trails

B: addressing future or planned features on existing trails

C: addressing future or planned features on proposed trails

Non-Motorized Trails, Signage, and Interpretive Displays	
Recommendation	Implementation Action
1. Resolve existing and potential future trail conflicts within the QWC.	<ul style="list-style-type: none"> • Support the Port Townsend NMTAB in rerouting trails as recommended. • Work with the Port Townsend NMTAB to update the plan to reflect new trail alignments as recommended.
2. Provide signage and interpretive displays in the QWC.	<ul style="list-style-type: none"> • Work with the Port Townsend NMTAB to coordinate signage needs. • JLT has recently acquired funding to provide signage and interpretive display(s) in the QWC.
3. Minimize impacts of trails to habitat.	<ul style="list-style-type: none"> • Work with Port Townsend NMTAB and others to develop trail maintenance schedule to prevent widening trail impact areas. • Follow restoration recommendations for rerouted trails and narrowing impact areas of trails.

CHAPTER SEVEN

UTILITY ENCROACHMENT INTO THE QWC

The QWC occurs within an area of the City of Port Townsend and Jefferson County that was platted without regard to topography or environmentally sensitive areas in the 1890s. Development of public utilities and infrastructure based upon these historic plats has continued without much knowledge or regard for wetlands and wildlife habitat.

This section identifies public utility development that has encroached into the area of the QWC. It also identifies potential future encroachment as contained in public utility comprehensive plans. While this plan does not attempt to present an exhaustive analysis of the impacts of such encroachments, it does make recommendations as to those areas that might benefit most from mitigation.

Following are areas where utility development crosses, encroaches into, or otherwise affects the QWC. Figure 5 shows utility locations in relation to the habitat areas.

49th Street Wetlands (#1). The most significant impact here is from the installation of the Seaview sewer line and the associated service access road. There also appear to be water lines in the area, though they probably have little impact on the surface features. The access road has left a good deal of disturbed area that is prone to invasive plants. The function of the culvert under 49th Street is also questionable and undoubtedly affects the hydroperiod of the wetland to the south. This area is identified as an opportunity for restoration.

Quaking Aspen (Levinski) Wetland (#2). The Seaview sewer line and associated service access road encroaches into the Quaking Aspen Wetland and hydrologically isolates one corner from the rest of the wetland. The service road is wide throughout the area and is prone to invasive plants. This area is also recommended for restoration, including an examination of the hydrology of the site.

Willamette Street across the 100-year floodplain (#3). A water line was installed here in the late 1970s and has certainly affected the hydrology of Winona Wetland, resulting in significant conifer mortality. A service “road” remains here and is used as a trail. However, the trail was never developed to any acceptable standard and is annually inundated. Because this area has a fairly large volume of bike and

pedestrian traffic, the “trail” continues to widen as users seek to avoid the quagmire. This area is recommended for restoration and for relocation of the trail if an alternate route can be arranged.

Karno Street Detention Pond (#4). A recent development of properties was permitted to construct a detention pond on City-owned property and within the buffer of Winona Wetland. This issue has been reviewed and the City no longer allows stormwater facilities in rights of way except in unique circumstances or for a regional facility, as provided in the City’s CAO [19.05.110(D)(5)].

Winona Wetland (#5). The Seaview sewer line was constructed in the middle of Winona Wetland. This encroachment undoubtedly affects the surface hydrology of the area and may affect local surficial and groundwater flows. This area has also been recommended for restoration and may be one area where relocation of the offending utility line may be warranted. The first step would be to undertake a multi-year hydrologic analysis of current conditions before developing an action plan.

Potential Future Utility Impacts

Streets

The City’s Comprehensive Plan [Fig. VI-1] shows a proposed extension of 39th Street through the Winona wetland. This is conceptual only and will require a more detailed analysis. All parties concerned need to cooperate in determining optimal alignment that is compatible with the QWC and with regulatory environmental constraints.

From Winona Wetland, the QWC and drainage corridor/100-year floodplain lie in a west to east fashion. To the north, development (Fowler’s Park area) and associated utility and road improvements have occurred. As population pressure increases, the development trend may move to the south of the QWC, and it is likely that a road crossing across the QWC will be proposed. JLT should work with the City to develop an alternative in a revised arterial street plan.

Stormwater

- 1) Pursuant to the City's Comprehensive Plan, the City has adopted a "natural drainage system" approach to managing stormwater (Policy 5.4 of the Land Use Element). Subsequently, the City adopted the Department of Ecology's most recent Stormwater Management Manual as part of its engineering design standards, thus, the City is in compliance with statewide stormwater regulations. However, the city's most current 1999 Draft Stormwater Plan, is still awaiting further revisions and action. In the future the City should develop specific plans for each drainage basin to be incorporated into their stormwater plan.

Sewer and Water

The City's Comprehensive sewer and water plans do not show any planned major capital improvements projects within the QWC planning area. However, it should be noted that the Levinski property was purchased using funds from the sewer utility fund. (This property does contain the Seaview sewer line.) Further clarification of the long-term intended use of this property is needed.

Action Plan	
Utility Encroachment	
Recommendation	Implementation Action
1. Mitigate impact of utility encroachment of utilities into wetlands.	<ul style="list-style-type: none"> Analyze impacts of utilities in the context of overall wetland restoration for Winona, Quaking Aspen/Levinski, and 49th Street wetlands. Consider impacts to wetland hydrology from utility encroachment. Follow recommendations for restoration.
2. Mitigate and minimize impact of utility access roads.	<ul style="list-style-type: none"> Work with City Public Works Department to develop minimum standards for utility access roads (Seaview sewer, Willamette Street) Follow restoration recommendations for narrowing impact areas of such roads and re-vegetate as appropriate.
3. Minimize impacts of stormwater to QWC.	<ul style="list-style-type: none"> Ensure that any future development of portions of the properties purchased with stormwater funds that are not specifically protected by this plan occurs in a manner that minimizes stormwater impacts to the QWC. The JLT should continue to work with city staff on revisions to the 1999 draft stormwater plan and urge adoption of the plan in the near future. Work to educate and update City and County development review staff regarding QWC.
4. Minimize future impacts of utility development on the	<ul style="list-style-type: none"> Review utility comprehensive plans with JLT and wetland and habitat experts.

QWC.	<ul style="list-style-type: none">• Recommend that both the City and County designate a staff person as a point of contact for QWC related issues.
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CHAPTER EIGHT

RESTORATION OPPORTUNITIES AND METHODS

This chapter provides recommendations regarding locations and methods for habitat restoration within the QWC. Inventory and analysis of primary habitat types, presence and severity of invasive species, and location of existing and proposed non-motorized trails provided in other sections of this plan were used as baseline information to determine relevant need and potential strategies for restoration. The recommendations set forth in this section are intended to provide a general framework for future restoration activities that will serve to meet the overall management goals of the corridor (see page 5). Restoration goals, overall restoration recommendations, and specific restoration opportunities and methods are discussed below.

Restoration Goals

Recommendations for habitat restoration within the QWC are based on three overall goals:

- Establish a greenbelt of native vegetation
- Improve wildlife habitat quality
- Increase community stewardship

These goals are applicable to the entire corridor. It is anticipated that specific goals, objectives, and performance standards will be developed for individual restoration projects on a case-by-case basis. The overall restoration goals discussed below are intended to achieve the overall management goals of the corridor.

- **Establish a greenbelt of native vegetation.** As stated earlier in this plan, the QWC began as a project with the goal of establishing a greenbelt of native vegetation averaging 200 feet wide connecting seven significant habitat nodes. Landscape connectivity

incorporating natural processes and native plant communities will help ensure wildlife species persistence as well as increase resistance to surrounding landscape disturbances. As JLT continues to acquire parcels within the corridor, each property should be assessed for the presence and condition of native vegetation, and restoration of this vegetation should be undertaken as needed.

- **Improve wildlife habitat quality.** A biological inventory of the QWC found that nearly all habitat within the corridor exhibits mild to severe disturbance (see Chapter Two). Improved habitat quality (e.g., plant species composition and structure, legacy structures, etc.) can benefit local wildlife populations and increase the presence and persistence of wildlife species.
- **Increase community stewardship.** Given the ongoing urbanization and associated human disturbance within and around the QWC, a critical management component should be the involvement of adjacent neighborhoods and broader community in restoration and maintenance activities in the corridor. Fostering stewardship through public involvement in restoration activities will help meet overall management goals of the corridor.

Overall Restoration Recommendations

This section provides overall restoration recommendations both in terms of geographic location and programmatic elements. These recommendations effectively prioritize where restoration should *generally* occur within the corridor and suggest a number of programs around which restoration projects should be developed. The recommendations are designed such that, if followed, future restoration projects will meet the restoration goals discussed above and achieve overall management goals of the corridor.

Recommended locations

The following general areas are recommended locations for restoration activities within the corridor:

- **JLT-owned property.** Restoration activities should focus on properties currently owned by the JLT. This will minimize coordination needs and ensure that JLT's goals set the primary direction of the restoration project. Additionally, focusing on JLT-owned properties will provide a good example to other property owners within and adjacent to the corridor.

- **Areas of invasive species infestation.** An inventory of invasive species within the corridor (see Chapter Five) indicates a number of locations of early to advanced infestation. These areas should serve as a focus for restoration activities as they are known disturbances within the corridor that can be managed with volunteer labor at minimal to moderate financial cost.
- **Former non-motorized trail routes.** An analysis of the City of Port Townsend Non-Motorized Transportation Plan highlights locations where trail routes cross areas of high habitat value and/or environmentally sensitive areas. In some cases, future trails are planned such that they are rerouted around these areas. Once these future trails are completed, restoration of the former trail routes should occur. Restoration could also focus on vacated road rights-of-way and abandoned utility easements if they arise.
- **Areas adjacent to existing roads and trails.** To increase the visibility and awareness of corridor management, restoration activities should focus in areas adjacent to existing roads and trails. It is likely that these areas are locations of relatively high disturbance; therefore, restoration activities would improve habitat quality in areas visible to both users of and visitors to the corridor.
- **Adjacent (non-isolated) parcels.** Habitat connectivity is an identified goal of the QWC. Therefore, restoration activities should focus on areas that will provide and/or improve connectedness among high-quality habitat blocks (or patches) within the corridor. Areas that are isolated (i.e., farther apart) from high-quality habitat should have a lower priority for restoration since they are less useful for wildlife species protection and persistence.

Recommended programs

The following topics are recommended programs around which restoration projects should be developed. These general prescriptions are applicable throughout the corridor and can be completed independently of one another or in parallel on a long-term basis.

- **Invasive species control.** Invasive plants threaten native plant and animal communities in the corridor. In general, recommendations are to remove invasive species, and attempt to reestablish native populations. Specific recommendations presented in Chapter Five should be implemented. An additional option may be to choose a level of infestation that does not interfere with other restoration goals.

- **Habitat improvement.** Overall habitat improvement is needed throughout the corridor. General guidelines for habitat management are provided in Chapter Two. These guidelines, along with current restoration recommendations (e.g., Washington Priority Habitats and Species Program Management Recommendations – see <http://www.wdfw.wa.gov/hab/phsrecs.htm>) for the principal native plant associations identified in the corridor, should be used to develop an overall habitat improvement program. Elements of this program could include canopy thinning, vegetation pruning, snag creation, and increasing plant species diversity. Evaluation of, and potential restoration of, natural hydrology in the Winona Wetland is recommended.
- **Restoration planting plan.** It is important that restoration within the QWC is comprehensive and coordinated, whether phased corridor-wide or completed as a series of single projects. A restoration planting plan for trees, shrubs, and herbaceous natives should be developed before beginning restoration work.
- **Interpretation and education.** As stated earlier, fostering stewardship through public involvement in restoration activities will help meet overall management goals of the corridor. An interpretation and education program should be developed to provide a framework for public outreach, volunteer coordination, neighbor collaboration, and specifics (e.g., funding, design) regarding signs, publications, and interpretive elements. A coordinated interpretation and education effort will ensure a consistent and comprehensive message.
- **Coordination with other land managers.** A significant amount of land within the QWC is owned and/or managed by other public entities. These include: Washington DNR, Washington State Parks and Recreation Commission (WSPRC), the City of Port Townsend, and Jefferson County. It is essential that the JLT work closely with these entities to establish a consistent management vision for the corridor. Coordination regarding restoration activities is particularly important given that these entities manage the largest habitat areas within the corridor.
- **Monitoring.** A monitoring program is needed to measure the relative success or failure of restoration projects. Monitoring results will provide data to improve subsequent restoration methods and potential for success. Monitoring will usually include measuring and recording elements such as vegetation survival, presence of wildlife species, water regime, and habitat structure.

Specific Restoration Opportunities and Methods

It is recognized that the specific location and strategy of future restoration projects will depend upon a number of variables such as funding mechanisms, volunteer availability, and occurrence of catastrophic disturbance (e.g., extreme flood or wind events). Evaluating relative importance of potential restoration projects should include considerations for connectivity between habitats, continuity of the corridors, and buffers. Lower priority restoration efforts should go towards severely infested areas that will require the greatest level of initial effort and follow-up care. Higher priority should be assigned to areas that are easily accessible and more easily remedied.

Locations of specific restoration opportunities listed in Table 8-1 are examples of areas within the corridor that are currently in need of restoration and/or rehabilitation of some sort. Recommended restoration methods are summarized and matched with potential restoration locations where the method(s) may be implemented.

Table 8-1: Restoration Opportunities and Methods

Location of Restoration Opportunity	Recommended Methods
North Beach Segment <ul style="list-style-type: none"> ▪ Private property ▪ 49th and 50th Street wetlands 	2,4,6,7
Quaking Aspen Wetland (Levinski)	2,3,4,8
Winona Wetland	3,4,6,7,8
Former trail routes <ul style="list-style-type: none"> ▪ 49th Street to E. Diamond ▪ 47th Street to 45th and Rosencrans ▪ Others as determined 	3,6,7,9
Winona-Tibbals Connector <ul style="list-style-type: none"> ▪ TeePee Wetland ▪ Elmira 	1,3,5,8,9
Middlepoint	2,3,6

Restoration through invasive plant eradication should be implemented as specified in Chapter Five. Additional recommended restoration methods include the following:

1. **Monitor legacy tree near the corner of 39th and Hall Street.** Mulch root area and minimize activity nearby to the extent possible. Consider a mycorrhizal application to improve soil health and stimulate fine root growth.
2. **Enhance corridor buffers.** Adequate buffers are critical in protecting the functions of the overall corridor as well as individual resources (e.g., wetlands) within the corridor. Perimeter invasive plant encroachments need to be eliminated. Working with adjacent landowners to encourage natural landscaping practices at the corridor edges will improve water quality, plant species diversity, and wildlife habitat.
3. **Selectively restore understory with appropriate native shrubs.** Understory plantings are needed mostly to reclaim areas where natives have been lost to invasive incursion or physical destruction. Matching on-site species should be attempted when replanting. Both shrub and herb layers should be reestablished.
4. **Restore and/or stabilize wetland hydrology.** Most of the wetlands within the corridor have altered hydroperiods due to road and utility construction and other human disturbance. This alteration has shifted the distribution of plant communities and resulted in the spread of invasive species. Volume and flow rates, impoundments, site topography, and grading should all be considered in wetland restoration efforts.
5. **Remove diseased trees.** Diseased trees (e.g., Western hemlock with root rot) should be removed as needed for the safety of corridor visitors and the overall health of the forest canopy. Early detection and removal will minimize tree loss from disease.
6. **Implement demonstration plant labeling/interpretation.** Providing information about natural resources in the corridor may foster visitor stewardship and encourage users to become involved in restoration projects.
7. **Amend soil throughout planting areas after invasives have been cleared and prior to planting.** Invasive weed removal will likely result in areas of bare ground. This is a good opportunity to amend the existing soil to improve nutrient uptake and water retention of existing and new plants. In addition, areas cleared of invasives and/or replanted must be well-mulched to suppress the return of invasives and to conserve soil moisture.

8. **Introduce habitat enhancement features.** Integrating appropriate habitat enhancement features in the corridor can provide valuable wildlife habitat and increase landscape diversity. Enhancement features include snags, nest boxes, and logs.
9. **Ensure forest canopy continuity.** Supplement existing tree population wherever opportunities to plant are possible, such as in spot openings, where invasives or diseased trees have been removed, or where blowdowns have occurred. Native conifers with complementary deciduous species plantings are recommended.

Action Plan	
Restoration	
Recommendation	Implementation Action
1. Control invasive species.	<ul style="list-style-type: none"> • Follow recommendations for invasive species control found in this plan.
2. Develop a comprehensive and coordinated plan for restoration throughout the corridor.	<ul style="list-style-type: none"> • Use Washington Priority Species restoration guidelines to identify habitat improvement practices. • Develop a planting plan of trees, shrubs, and herbaceous plants for use within various habitat types.
3. Prioritize areas for restoration.	<ul style="list-style-type: none"> • Work to restore JLT property first. • Work with the Port Townsend NMTAB to restore rerouted trails. • Restore areas along roads and trails. • Restore non-isolated areas.
4. Coordinate with other land managers.	<ul style="list-style-type: none"> • Work with other agencies to develop restoration plans for non-JLT-owned property. • Specifically, focus wetland restoration on Winona, Quaking Aspen/Levinski, and 49th Street wetlands.
5. Educate the public.	<ul style="list-style-type: none"> • Use restoration efforts as an opportunity to involve volunteers. • Use restoration efforts as an opportunity to provide additional signage or interpretive displays. • Inform neighbors and trail users of protection and restoration efforts via City Newsletter, brochures, mailings, etc.

CHAPTER NINE

ACTION PLAN

The purpose of this plan is to re-examine and refine the vision of the Quimper Wildlife Corridor Project (QWCP) and to provide recommendations for long-term management strategies for Jefferson Land Trust and its partners. This plan hopes to provide management tools for long-term protection between multiple property owners and governmental jurisdictions. A project of this nature requires an immense amount of cooperation and coordination among the partners. The following table summarizes the recommendations and implementation actions presented throughout the plan. It also names the organization(s) best suited to take the lead on action items. Where an agency has not adopted the plan, identification of tasks can only serve as suggestions. However, much has been accomplished for this project in the spirit of partnership. It is hoped that this summary will serve to re-invigorate all the project partners and motivate them to make meaningful contributions.

Summary Action Plan		
Recommendation	Implementation Action	Lead Partner(s)
Habitat Assessment		
1. Update acquisition and protection strategy incorporating new habitat assessment data.	<ul style="list-style-type: none"> Secure/protect the remaining larger habitat blocks including the Winona Basin (with its remnant mature growth), the DNR property, and the Levinski Property. Retain the basic 3-tier corridor concept, while broadening the search to include biologically significant habitats within 1 km. Secure protection for the Hall Street legacy tree, 	JLT City of PT

Summary Action Plan		
Recommendation	Implementation Action	Lead Partner(s)
	Ivy Street wetland (Frog Forest), and the 43 rd Street unit.	
2. Develop specific habitat and management goals.	<ul style="list-style-type: none"> • Delineate management units based on habitat type and/or location. • Designate a lead entity responsible for managing each management unit. 	JLT
3. Develop public outreach program.	<ul style="list-style-type: none"> • Expand enhancement program guidelines for planting with native vegetation and erecting nest boxes. • Produce educational materials on best practices for both landowners and small woodlot managers residing in the greater corridor area. • Implement docent program to involve and educate residents. 	JLT
4. Develop long-term monitoring program.	<ul style="list-style-type: none"> • Establish long-term monitoring programs, with particular emphasis on quantifying indicator species. Include “space for time” plots by sampling in residential areas. These plots will track conditions in different seasons over a period of several years. • Continue efforts to gain insight into the 	JLT

Summary Action Plan		
Recommendation	Implementation Action	Lead Partner(s)
	corridor's pre-settlement plant communities through tree ring data, photo archives, and vegetation analysis of analogous sites.	
Land Use and Regulatory Overview		
1. Develop an "active partnership" with the City of Port Townsend and Jefferson County.	<ul style="list-style-type: none"> • Request that a staff person be designated as a point of contact to better facilitate communication. • Conduct a two-way training seminar between agency staff and JLT staff. • Work with City staff to facilitate acquisitions/mitigation along the QWC as a viable off-site mitigation site in situations where on-site mitigation is determined to be infeasible or of minimal value. 	JLT City of PT Jefferson County
2. Develop compatibility between trail placement and design and the QWC.	<ul style="list-style-type: none"> • Ensure 2008 supplement to the Non-Motorized Transportation Plan addresses potential conflicts, as is currently proposed. • Work with Non-Motorized Transportation Advisory Board to ensure any new trails are compatible. 	JLT NMTAB City of PT

Summary Action Plan		
Recommendation	Implementation Action	Lead Partner(s)
Land Protection Strategy		
1. Coordinate with the City of Port Townsend on the use of city-owned property within the QWC.	<ul style="list-style-type: none"> • Form a study group with JLT and City of Port Townsend staff. • Form a study group with JLT and City of Port Townsend staff. • Ensure that the adopted natural drainage system approach is incorporated into the Stormwater Master Plan. • Request that the City designate a staff member to be a point of contact for issues involving the QWC to better facilitate communication. • Discuss possible rezoning of some protected parcels owned by the City or JLT. • Investigate possibility of transferring conservation easements on City-owned property to JLT. 	JLT City of PT
2. Transfer conservation easements to an eligible agency (likely the City of Port Townsend) for JLT properties.	<ul style="list-style-type: none"> • Investigate ownership alternatives with the above recommended study group. • Investigate mechanisms for placing conservation easements or transferring development rights. 	JLT City of PT

Summary Action Plan		
Recommendation	Implementation Action	Lead Partner(s)
3. Secure the long-term protection of the DNR School Lands parcel.	<ul style="list-style-type: none"> • Form a study group with Jefferson County staff to investigate how this parcel fits within the County's open space goals. • Follow up with potential 50-year lease by the County from DNR. 	JLT Jefferson County Washington DNR
4. Update acquisition strategy.	<ul style="list-style-type: none"> • Use the map provided in this plan to determine a new cost estimate for remaining acquisitions. • Develop a funding strategy to complete acquisitions. 	JLT
5. Pursue street vacations.	<ul style="list-style-type: none"> • Identify rights-of-way eligible for vacation. • Begin vacation applications with City of Port Townsend. • Begin quiet title process for those rights-of-way in Jefferson County jurisdiction as appropriate. 	JLT City of PT Jefferson County

Invasive Plant		
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Control		
1. Begin invasive species control program.	<ul style="list-style-type: none"> • Follow recommendations of this plan for species removal/control and revegetation with native species. • Incorporate this program into ongoing JLT stewardship program. • Consider forming a “Friends of the QWC” volunteer program. Trained stewards can be responsible for ongoing invasive species control in addition to organized work parties. 	JLT
2. Incorporate invasive species control into larger restoration programs.	<ul style="list-style-type: none"> • Winona Wetland and 49th Street Wetland invasive species control must be considered in the context of overall restoration. Consider partnerships to seek funding and implement comprehensive restoration activities at these two sites. 	JLT City of PT
3. Develop a local Backyard Wildlife Sanctuary Program and/or other owner outreach programs.	<ul style="list-style-type: none"> • Incorporate this program into on-going JLT stewardship activities. • Develop partnerships to implement this program, e.g., Jefferson Conservation District, Audubon Society, etc. 	JLT
Non-Motorized Trails, Signage, & Interpretive Displays		
1. Resolve existing and potential future trail	<ul style="list-style-type: none"> • Support the Port Townsend Non-Motorized Transportation Advisory Board in re-routing 	City of PT NMTAB

conflicts within the QWC.	trails as recommended. <ul style="list-style-type: none"> • Work with the Port Townsend NMTAB to update the plan to reflect new trail alignments as recommended. 	JLT
2. Provide signage and interpretive displays in the QWC.	<ul style="list-style-type: none"> • Work with the Port Townsend NMTAB to coordinate signage needs. • JLT has recently acquired funding to provide signage and interpretive display(s) in the QWC. 	JLT City of PT
3. Minimize impacts of trails to habitat.	<ul style="list-style-type: none"> • Work with Port Townsend NMTAB and others to develop trail maintenance schedule to prevent widening trail impact areas. • Follow restoration recommendations for rerouted trails and narrowing impact areas of trails. 	JLT City of PT
Utility Encroachment		

1. Mitigate impact of utility encroachment into wetlands.	<ul style="list-style-type: none"> Analyze impacts of utilities in the context of overall wetland restoration for Winona, Quaking Aspen/Levinski, and 49th Street wetlands. Consider impacts to wetland hydrology from utility encroachment. Follow recommendations for restoration. 	City of PT
2. Mitigate and minimize impact of utility access roads.	<ul style="list-style-type: none"> Work with City Public Works Department to develop minimum standards for utility access roads (Seaview sewer, Willamette Street). Follow restoration recommendations for narrowing impact areas of such roads and revegetate as appropriate. 	City of PT
3. Minimize impacts of stormwater to QWC.	<ul style="list-style-type: none"> Ensure that any future development of portions of the properties purchased with stormwater funds that are not specifically protected by this plan occurs in a manner that minimizes stormwater impacts to the QWC. The JLT should continue to work with city staff on revisions to the 1999 draft stormwater plan and urge adoption of the plan in the near future. Work to educate and update City and County development review staff regarding QWC. 	City of PT JLT Jefferson County
4. Minimize future impacts of utility development on the QWC.	<ul style="list-style-type: none"> Review utility comprehensive plans with the previously recommended study group. Recommend that both the City and County designate a staff person as a point of contact for QWC related issues. 	City of PT JLT Jefferson County

Restoration		
1. Control invasive species.	<ul style="list-style-type: none"> • Follow recommendations for invasive species control found in this plan. 	JLT
2. Develop a comprehensive and coordinated plan for restoration throughout the corridor.	<ul style="list-style-type: none"> • Use Washington Priority Species restoration guidelines to identify habitat improvement practices. • Develop a planting plan of trees, shrubs, and herbaceous plants for use within various habitat types. 	JLT
3. Prioritize areas for restoration.	<ul style="list-style-type: none"> • Work to restore JLT property first. • Work with the Port Townsend NMTAB to restore rerouted trails. • Restore areas along roads and trails. • Restore non-isolated areas. 	JLT
4. Coordinate with other land managers	<ul style="list-style-type: none"> • Work with other agencies to develop restoration plans for non-JLT-owned property. • Specifically, focus wetland restoration on Winona, Quaking Aspen/Levinski, and 49th Street wetlands. 	JLT City of PT Washington DNR
5. Educate the public	<ul style="list-style-type: none"> • Use restoration efforts as an opportunity to involve volunteers. • Use restoration efforts as an opportunity to provide additional signage or interpretive displays. • Inform neighbors and trail users of protection and restoration efforts via City Newsletter, brochures, mailings, etc. 	JLT

