



SWIF – VEGETATION MANAGEMENT CONCEPTS Proposed Levee Vegetation Maintenance Guidelines

Rev.: November 10, 2015 - DRAFT

Overview

The SWIF levee vegetation management strategy will represent our local preferred approach that will balance the needs of flood risk reduction with the habitat needs of salmonids and other aquatic species found within our river systems. Currently three of these species are listed as threatened under the Endangered Species Act. The strategy will acknowledge the agreement established by Court decree (Case No. C79-269T) entered into between Pierce County and the Puyallup Tribe of Indians relating to vegetation management along the Puyallup River System (Puyallup River Vegetation Management Program, PRVMP). The strategy will work within the constraints of that court ordered agreement and the Corps SWIF Interim Guidance Policy (Corps, 2014). The levee vegetation strategy will be driven by Pierce County's desire to ensure all PL 84-99 levees within the County's river system meet the Corps' inspection criteria to retain PL 84-99 program eligibility.

The strategy will provide basic guidelines to establish an appropriate balance between maintaining flood risk reduction structures and habitat considerations. The vegetation management strategy will be implemented annually and monitored for effectiveness and potential negative impacts to fish and wildlife. The program will be adaptively managed to make adjustments as identified through routine annual monitoring.

The SWIF vegetation management strategy will be performance driven, centered by three main performance considerations:

- **Risk** - Flood Risk Reduction
- **Habitat** - Retain Functional Habitat
- **Maintenance** - Maintenance Efficiency

Proposed Goal: The goal of this vegetation management strategy echoes the goal stated in the PRVMP, "...to provide for the riparian vegetation habitat requirements of the fish and wildlife resources in conjunction with the basic requirements entrusted to Pierce County of revetment (and levee) integrity and inspection, emergency revetment repairs, river channel capacity, and County road maintenance along tributary streams". (PRVMP, 1985)

Proposed Objectives:

- **Risk** - Vegetation management will be performed in a manner to minimize risk to both habitat and flood risk reduction structures.
- **Habitat** -Vegetation management will be performed in a manner that avoids or minimizes impacts upon fish and wildlife habitat.
- **Maintenance** -A vegetation management strategy will be developed that is cost-effective and practical to implement.

Proposed Strategy Deliverables

The following products (deliverables) will be incorporated into the levee vegetation management strategy:

- Riparian Vegetation Communities Mapping – Mapping of the current vegetation communities will be conducted using the County Geographic Information System, and field verified by crews. The mapping will be used to inform the development of a vegetation management strategy.
- Risk Analysis - The levee vegetation management strategy will consider the level of risk to levee structural integrity posed by the river as well as characteristics of the river. The risk analysis will consider:
 - Flood Risk Reduction Structures
 - River hydraulics
 - Previous damages
 - Hazard trees
 - Potential Benefits of Vegetation (erosion control, root structure, flood calming)
- Levee Structure Schematics – Five typical levee structure scenario’s that are encountered along the river system are listed below:
 - Schematic A – River Channel Adjacent to Levee
 - Schematic B – Silt Bench or Gravel Bar upon Levee
 - Schematic C – Concrete Panel Levee with Silt Bench and Unpaved Road
 - Schematic D – Concrete Panel Levee with Extended Silt Bench and Paved Trail
 - Schematic E - Levee Setback with Floodplain Bench
- Vegetation Maintenance Inspection Standards – Maintenance specifications will be developed for each levee structure type to help direct field personnel in the performance of levee vegetation maintenance.
- Vegetation Risk Matrix - A protocol will be developed to establish a methodology to manage vegetation that threatens the structural integrity of flood risk reduction structures, i.e. hazard trees.
- Planting Plan – A plan will be developed establishing standards, specifications and protocols for replanting vegetation removed associated with levee repairs.
- Invasive Species Management Plan – A plan will be developed addressing protocols and a strategy for managing specified invasive species.

Proposed General Guidelines

A “Vegetation Management Zone” will be provided across the levee structure prism, extending from the upland side of the levee down to the structural toe of the levee. This represents the area of vegetation management influence addressed in this strategy that will align with the following documents:

PRVMP: The provisions of the Inter-Governmental Agreement between Pierce County and the Puyallup Tribe of Indians, regarding the Puyallup River Vegetation Management Program (PRVMP) are incorporated within this interim vegetation management strategy.

USACE PL 84-99 Program: This interim strategy is provided in response to the United States Levee Rehabilitation Program, PL 84-99 Program Interim Policy for Establishing Eligibility Status for Flood Risk Management Projects.

It is understood that the vegetation management strategy developed may need to be revised as necessary to comply with the PL 84-99 program levee maintenance standards once the Corps releases a new Engineer Technical Letter on Vegetation Management (ETL 1110-2-583). Current understanding is that vegetation management strategies developed through the SWIF once approved will be honored through the lifetime of the plan necessary to implement.

USACE PL84-99 “Interim Policy”: The Corps has released an Interim Policy for determining eligibility Status of Flood Risk Management Projects for the Rehabilitation Program Pursuant to Public Law 84-99, dated March 21, 2014. The purpose of the interim policy is to allow eligibility determinations in the Rehabilitation Program to continue to be implemented while the new policy is developed, and to do so in a manner that avoids potentially incentivizing public sponsors to take actions that may negatively impact natural resources or tribal rights. Under this new Interim Policy, vegetation on levees is no longer directly a criterion for determining Program eligibility. Indirectly, vegetation may impact the ability to properly visually inspect the levee, provide adequate vehicular access, or may pose a hazard to the structural integrity or operation of the flood control structure facility.

Proposed General Vegetation Management Strategies

The following strategies will be applied as the basic protocols for all vegetation management applied across the levee prism:

- Vegetation Management Zones: A “Vegetation Management Zone” will be provided across the levee prism, extending from the upland side of the levee down to the structural toe of the levee. This represents the area of vegetation management influence addressed in this strategy. Levee vegetation management subzones will be established to reflect the various components of the levee structure relative to the adjacent river habitat.
- Levee Structure Schematics: Levee vegetation management strategies will be applied to various levee structure types, each that represent a unique consideration of levee construction and orientation to the adjacent river and habitat.

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- **Vegetation Removal:** Vegetation will be managed to meet the minimum requirements of the USACE for levee inspections and access. This will include specifications for levee vegetation management allowing visual and physical access onto the levee for inspection purposes.
 - Levee vegetation understory will be thinned to provide visibility and physical access for inspections, retaining clusters of native shrubs and saplings approximately 10-15 feet in diameter, for recruitment of future understory native vegetation and overstory trees. The cleared area around the native shrubs will be approximately 10-20 feet between clusters, depending on site conditions and character of vegetation.
 - Woody riparian vegetation will be preserved as feasible on the riverside levee slope in order to provide moderate riparian functions including bank stability, roughness, cover, shade, wood and nutrient contribution, water quality filtering and moderation of water temperature. Vegetation that provides for shading of adjacent waters will be retained to the fullest extent feasible. Vegetation maintenance work should be conducted in a way that does not kill or weaken the remaining trees, and retains saplings for continued growth of desirable species. Vegetation on silt benches formed upon levee structures will be preserved as feasible, unless site conditions indicate underlying structural concerns necessitate removal.
 - Major vegetation clearing to allow for levee repairs will follow the standards of the Puyallup Tribal Vegetation Management Program.
- **Targeted Invasive Species Removal:** Specified non-native Invasive species should be controlled through a programmatic approach of working with resource agencies, tribal biologists, and private property owners.
- **Mature Tree Preservation:** “Mature Trees” (to be defined) may exist in sections of the levee where the general maintenance schematics would suggest their removal. Often these trees are integral to the structural integrity of the levee. These special situations can be evaluated on a case-by-case basis using a Site Specific Levee Vegetation Risk Matrix. Recognizing the importance of retaining large trees within the riparian zone, Mature Trees will be retained to the furthest extent feasible.
- **Hazardous Trees:** Trees that pose a threat to levee structural integrity, nearby structures, public infrastructure and/or pose an elevated danger to the safety of maintenance personnel will be surveyed and monitored for degree of hazard based on level of risk (High, Medium, and Low). High Risk Hazard trees will be removed. Medium and Low Risk Hazard Trees will be monitored. Strategies for assessing and addressing potential hazard trees and reducing the impacts of vegetation removal will be developed.
- **Habitat Protection/Enhancement:** Riparian vegetation along the levees will be maintained and enhanced with native plantings and removal of invasive plants to support habitat functions critical to fish and wildlife resources. Riparian Plantings will be provided to offset the removal of hazardous trees and removal of vegetation necessary to perform levee repairs.
- **Long Term Tree Preservation/Conservation:** Long term riparian tree preservation will be directed to the area beyond the upland side of the levee. As opportunities are made available, land will be set aside in conservation easements where existing native trees will be preserved and the

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area enhanced with appropriate conifer trees. These efforts will likely be folded into the County effort to develop a “Habitat Conservation Plan” under the requirements of the Endangered Species Act (ESA), for the entire Puyallup River System to address effects of levee maintenance and repair work upon critical habitat associated with ESA listed endangered species.