

# **APPENDIX G**

## **SITE SPECIFIC MONITORING PLANS**

## MONITORING PLAN - MIDDLE WATERWAY (TRUSTEE/SIMPSON)

### PROJECT:

Simpson Tacoma Kraft / NRDA  
Middle Waterway Shore  
Habitat Restoration Project

### LOCATION:

Middle Waterway, Commencement Bay,  
Tacoma, Washington.

### DESIGN OBJECTIVES:

Enhance intertidal area for juvenile  
salmonid migration.  
Establish marsh vegetation.  
Protect the site for natural resources.



### CRITERIA:

PSC 1,2,4; BSC 1,2,4,6,7,8\*,9

\*BSC8 in monitoring years 1,5 and 10 if funding is available

### SITE SUMMARY:

In the spring of 1995, Champion International Corporation, the former owner of the Simpson Tacoma Kraft Mill, and Simpson Tacoma Kraft Company, its current owner, in cooperation with the Trustees, created the Middle Waterway Shore Restoration Project on a five-acre site owned by Simpson on the northeast bank of the Middle Waterway. The project was developed in connection with a settlement approved in court on April 1, 1996, that resolved Bay-wide claims for natural resource damages against the two companies. The Middle Waterway project re-establishes over three acres of intertidal, salt marsh, and riparian habitat along the Middle Waterway, a high priority location for restoration in the Bay ecosystem. The waterway had one of the largest remaining areas of original intertidal mudflats in the Bay (about 20 acres). Formerly filled land has been excavated and contoured to create a natural shoreline with hummocks and other natural marsh features, increasing the complexity, diversity and habitat value of Middle Waterway for shore birds, salmonids and marine fish, river otters and other wildlife in the area. The project provides a partial buffer between the mudflats and adjacent upland industrial uses.

### VOLUNTEER OPPORTUNITIES:

To be defined prior to conducting sampling activities.

**REFERENCE / COMPARISON SITES:** Based upon approval of the Trustee Council, appropriate reference sites will be selected for various sites and various criteria. For example: plant vigor (**BSC3**) would incorporate comparison data from a site adjacent to Squally Beach along the inner Hylebos mudflat, Elliott Bay monitoring data and data reported for Coastal America sites; Fish (**BSC7**) sampling results could be compared to historical data gathered by the Puyallup Tribe of Indians in Commencement Bay and the Muckleshoot Indian Tribe in the Duwamish and data gathered at Coastal America sites. Invertebrates (**BSC8**) inhabiting restored areas could be compared to the Outer Hylebos mudflat - provided that grain size is appropriate. Bird usage (**BSC9**) could be compared across all sites and include the Duwamish Waterway restoration projects.

## MONITORING PLAN - MIDDLE WATERWAY (TRUSTEE/SIMPSON)

### PROJECT:

Simpson Tacoma Kraft / NRDA  
Middle Waterway Shore  
Habitat Restoration Project

### LOCATION:

Middle Waterway, Commencement Bay,  
Tacoma, Washington.

### DESIGN OBJECTIVES:

Enhance intertidal area for juvenile  
salmonid migration.  
Establish marsh vegetation.  
Protect the site for natural resources.



### CRITERIA:

PSC 1,2,4; BSC 1,2,4,6,7,8\*,9  
\*BSC8 in monitoring years 1,5 and 10 if funding is available

### SITE SUMMARY:

In the spring of 1995, Champion International Corporation, the former owner of the Simpson Tacoma Kraft Mill, and Simpson Tacoma Kraft Company, its current owner, in cooperation with the Trustees, created the Middle Waterway Shore Restoration Project on a five-acre site owned by Simpson on the northeast bank of the Middle Waterway. The project was developed in connection with a settlement approved in court on April 1, 1996, that resolved Bay-wide claims for natural resource damages against the two companies. The Middle Waterway project re-establishes over three acres of intertidal, salt marsh, and riparian habitat along the Middle Waterway, a high priority location for restoration in the Bay ecosystem. The waterway had one of the largest remaining areas of original intertidal mudflats in the Bay (about 20 acres). Formerly filled land has been excavated and contoured to create a natural shoreline with hummocks and other natural marsh features, increasing the complexity, diversity and habitat value of Middle Waterway for shore birds, salmonids and marine fish, river otters and other wildlife in the area. The project provides a partial buffer between the mudflats and adjacent upland industrial uses.

### VOLUNTEER OPPORTUNITIES:

To be defined prior to conducting sampling activities.

**REFERENCE / COMPARISON SITES:** Based upon approval of the Trustee Council, appropriate reference sites will be selected for various sites and various criteria. For example: plant vigor (BSC3) would incorporate comparison data from a site adjacent to Squally Beach along the inner Hylebos mudflat, Elliott Bay monitoring data and data reported for Coastal America sites; Fish (BSC7) sampling results could be compared to historical data gathered by the Puyallup Tribe of Indians in Commencement Bay and the Muckleshoot Indian Tribe in the Duwamish and data gathered at Coastal America sites. Invertebrates (BSC8) inhabiting restored areas could be compared to the Outer Hylebos mudflat - provided that grain size is appropriate. Bird usage (BSC9) could be compared across all sites and include the Duwamish Waterway restoration projects.

## MONITORING PLAN - MIDDLE WATERWAY (TRUSTEE/CITY)

### PROJECT:

City of Tacoma / NRDA  
Middle Waterway  
Estuarine Resources  
Restoration Project

### LOCATION:

Middle Waterway, Commencement Bay,  
Tacoma, Washington.

### DESIGN OBJECTIVES:

Enhance intertidal area for juvenile salmonid  
migration.

Establish marsh vegetation.

Protect and preserve the site for natural resources.



### CRITERIA:

PSC 1, 2, 4; BSC 1,2,4,5,6,7,8\*

\*BSC8 in Years 1,5 & 10 if funding is available

### SITE SUMMARY:

The City of Tacoma, in coordination with the Trustees, has developed an estuarine shoreline wetland restoration project on the Middle Waterway within the City of Tacoma and Commencement Bay. Excavation or re-grading of the 1.65 acres vacant upland property, located adjacent to and within the southwest shore of the Waterway should facilitate the establishment of intertidal marsh and riparian buffer bordering one of the few remaining original mudflats within Commencement Bay. The project is intended to create new habitat, enhance existing habitat, buffer both new and existing habitat, and provide public access for education and passive recreation. The project goal is to establish estuarine marsh habitat for an assemblage of wetland dependent marine, bird and plant species. The project is across the head of Middle Waterway from and complements the Middle Waterway Shoreline Restoration Project developed earlier by Simpson Tacoma Kraft Co. in cooperation with the Trustees.

### VOLUNTEER OPPORTUNITIES:

To be defined prior to conducting sampling activities.

**REFERENCE / COMPARISON SITES:** Based upon approval of the Trustee Council, appropriate reference sites will be selected for various sites and various criteria. For example: plant vigor (BSC3) would incorporate comparison data from a site adjacent to Squally Beach along the inner Hylebos mudflat, Elliott Bay monitoring data and data reported for Coastal America sites; Fish (BSC7) sampling results could be compared to historical data gathered by the Puyallup Tribe of Indians in Commencement Bay and the Muckleshoot Indian Tribe in the Duwamish and data gathered at Coastal America sites. Invertebrates (BSC8) inhabiting restored areas could be compared to the Outer Hylebos mudflat - provided that grain size is appropriate. Bird usage (BSC9) could be compared across all sites and include the Duwamish Waterway restoration projects.

## MONITORING PLAN - SQUALLY BEACH

**PROJECT:**  
Squally Beach

**LOCATION:**  
Inner Turning Basin, Hylebos Waterway,  
Commencement Bay,  
Tacoma, Washington.

**DESIGN OBJECTIVES:**  
Enhance intertidal area for juvenile salmonid migration.  
Create interstices for invertebrates.  
Establish backwater ponds to increase intertidal saltmarsh area.  
Protect and preserve the site for natural resources.



**CRITERIA:** PSC 1,2,4; BSC 1-9

### **SITE SUMMARY:**

The project site is located waterward of Marine View Drive near the middle of the Hylebos Waterway on property owned by the Puyallup Tribe. The site is approximately 0.66 acres, and contained blackberry bushes, some hardwood trees, and a strip of intertidal marsh vegetation approximately three feet wide. The site supported a small fringe marsh and low-gradient mudflats that provide habitat for benthic, or bottom-dwelling organisms important to the food chain. These organisms are of particular importance to shorebirds and juvenile salmon. The project restores intertidal habitat by excavating about 2,000 cubic yards of material, grading an area north of the existing vegetation line, and planting intertidal vegetation. Runoff from the hillside on the north side of Marine View Drive, which forms the eastern project boundary, has been intercepted and routed through the project site in a dendritic channel pattern. Freshwater inputs would lower salinity and encourage growth of species that tolerate brackish conditions. Substrate enhancement is a component of the project depending on the nutrient availability of the existing materials.

### **VOLUNTEER OPPORTUNITIES:**

To be defined prior to conducting sampling activities.

**REFERENCE / COMPARISON SITES:** Based upon approval of the Trustee Council, appropriate reference sites will be selected for various sites and various criteria. For example: plant vigor (**BSC3**) would incorporate comparison data from a site adjacent to Squally Beach along the inner Hylebos mudflat, Elliott Bay monitoring data and data reported for Coastal America sites; Fish (**BSC7**) sampling results could be compared to historical data gathered by the Puyallup Tribe of Indians in Commencement Bay and the Muckleshoot Indian Tribe in the Duwamish and data gathered at Coastal America sites. Invertebrates (**BSC8**) inhabiting restored areas could be compared to the Outer Hylebos mudflat - provided that grain size is appropriate. Bird usage (**BSC9**) could be compared across all sites and include the Duwamish Waterway restoration projects.

## MONITORING PLAN - YOWKWALA

**PROJECT:**  
Yowkwala

**LOCATION:**  
Hylebos Waterway, Commencement Bay,  
Tacoma, Washington.

**DESIGN OBJECTIVES:**  
Enhance intertidal area for juvenile  
salmonid migration.  
Demolish and remove two derelict barges  
and a drydock and associated debris.  
Maintain and facilitate further development  
of marsh vegetation.  
Protect and preserve the site for natural resources.



**CRITERIA:** BSC 1,2,7

### **SITE SUMMARY:**

The project site, approximately 15 acres in size, is located between Browns Point and Tye Marina. Two derelict barges, a dilapidated drydock and other debris have been removed from the cobble beach. The barges had provided a sheltered area for a small fringe marsh which is anticipated will remain and may be facilitated through further restoration activities.

### **VOLUNTEER OPPORTUNITIES:**

To be defined prior to conducting sampling activities.

**REFERENCE / COMPARISON SITES:** Based upon approval of the Trustee Council, appropriate reference sites will be selected for various sites and various criteria. For example: plant vigor (**BSC3**) would incorporate comparison data from a site adjacent to Squally Beach along the inner Hylebos mudflat, Elliott Bay monitoring data and data reported for Coastal America sites; Fish (**BSC7**) sampling results could be compared to historical data gathered by the Puyallup Tribe of Indians in Commencement Bay and the Muckleshoot Indian Tribe in the Duwamish and data gathered at Coastal America sites. Invertebrates (**BSC8**) inhabiting restored areas could be compared to the Outer Hylebos mudflat - provided that grain size is appropriate. Bird usage (**BSC9**) could be compared across all sites and include the Duwamish Waterway restoration projects.

## MONITORING PLAN - SKOOKUM WULGE

### PROJECT:

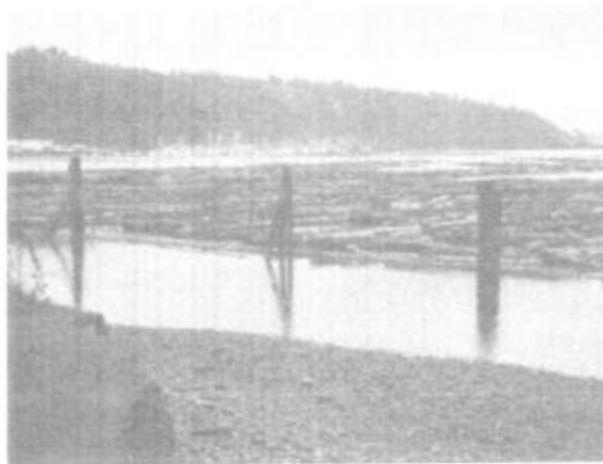
Skookum Wulge

### LOCATION:

Mouth of Hylebos Waterway,  
Commencement Bay,  
Tacoma, Washington.

### DESIGN OBJECTIVES:

Enhance intertidal area for juvenile  
salmonid migration.  
Monitor marsh vegetation and erosion.  
Protect and preserve the site for  
natural resources.



### CRITERIA:

PSC 1 - to be conducted in year 1 and once again if/when log booms are removed to observe beach effects.

### SITE SUMMARY:

The Skookum Wulge Beach site consists of 1.19 acres of uplands and tidelands with 418 linear feet of waterfront immediately inshore from a subtidal Trustee restoration site, formerly the Meeker Log Storage Lease. The site is a natural fill of unconsolidated glacial till which slid off of the hillside above into Commencement Bay in 1938; the shape of the riparian point of land extending onto the beach is the result of this slide and subsequent wave erosion from the Bay. The site is partially protected from major winter storm effects from the northwest by the Foss Maritime log storage area immediately offshore. The Trustees have requested that the protective outline of this log storage area be somewhat reconfigured to move the inshore footprint to water deeper than -10 feet (MLLW). The Trustees will hold this site for future restoration activities and will continue to monitor changes in offshore activities as well as perform routine maintenance and cleanup of the intertidal area.

### VOLUNTEER OPPORTUNITIES:

To be defined prior to conducting sampling activities.

**REFERENCE / COMPARISON SITES:** Based upon approval of the Trustee Council, appropriate reference sites will be selected for various sites and various criteria. For example: plant vigor (BSC3) would incorporate comparison data from a site adjacent to Squally Beach along the inner Hylebos mudflat, Elliott Bay monitoring data and data reported for Coastal America sites; Fish (BSC7) sampling results could be compared to historical data gathered by the Puyallup Tribe of Indians in Commencement Bay and the Muckleshoot Indian Tribe in the Duwamish and data gathered at Coastal America sites. Invertebrates (BSC8) inhabiting restored areas could be compared to the Outer Hylebos mudflat - provided that grain size is appropriate. Bird usage (BSC9) could be compared across all sites and include the Duwamish Waterway restoration projects.

## MONITORING PLAN - MOWITCH

**PROJECT:**

Mowitch

**LOCATION:**

Mouth of Hylebos Creek  
at the head of Hylebos Waterway,  
Commencement Bay,  
Tacoma, Washington.



**DESIGN OBJECTIVES:**

Enhance intertidal area for juvenile salmonid migration.  
Establish backwater sloughs.  
Establish salt marsh vegetation and riparian plants.  
Protect and preserve the site for natural resources.

**CRITERIA:** PSC 1,2,3(visual inspections),4; BSC 1-9

**SITE SUMMARY:**

The project site was filled to its pre-project elevation, channelized, and straightened in the early 1960's when the upper Hylebos Waterway Turning Basin was dredged to its current configuration. The character of the straight stream channel has been modified and diversity was added to the habitat. Three backwater pools with base elevations near Mean Low Water (MLW) were sculpted from the past upland. A secondary stream mouth was added in the area of the site that was an historical log ramp. The backwater will be flooded the majority of the year. The pools and adjacent terraces include large woody debris as habitat features. A minimum of 25 feet next to the fence is to remain vegetated. The planting designs are based upon plants native to Commencement Bay. The emergent plant species will be similar to those found elsewhere in Commencement Bay and will utilize the freshwater component from Hylebos Creek.

**VOLUNTEER OPPORTUNITIES:**

To be defined prior to conducting sampling activities.

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