WETLANDS MITIGATION PLAN FOR TEMPORAL LOSS

Geotechnical Investigation Access Clearing

Pacific International Terminals, Inc., Property

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CONTACT INFORMATION AND RESPONSIBLE PARTIES

Following are the name and addresses of the responsible parties and contact persons for the proposed.

Owner of site, contact for contract purposes, and party responsible for long-term maintenance and monitoring:

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Pacific International Terminals, Inc.

1.0 INTRODUCTION

This wetlands mitigation plan is being submitted to support the application for a 401 Water Quality Certification from the Washington Department of Ecology (Ecology) for after-the-fact permitting to authorize impacts to regulated freshwater wetlands associated with geotechnical investigation survey activities on Pacific International Terminals, Inc.'s property in the Cherry Point Industrial District in unincorporated Whatcom County. Pacific International Terminals received a letter from Ecology dated September 23, 2011 that explained that the clearing for the geotechnical investigation was in violation of state law RCW 90.48.080 that prohibits the discharge of pollutants into any waters of the state (including wetlands).

Due to the temporal loss of wetland habitat functions as a result of the clearing of wetlands vegetation, Ecology has requested compensatory mitigation in addition to the restoration of the temporarily impacted wetland areas. Restoration of the cleared areas is described in the *Critical Areas Study and Mitigation Plan, Revised* dated November 15, 2011.

Ecology recommended two options for compensatory mitigation: 1) create 1.4 acres of forested freshwater wetlands from existing uplands, or 2) enhance 2.9 acres of existing freshwater wetlands. The mitigation plan for temporal loss (mitigation plan) included herein is for the enhancement of 2.9 acres of wetlands on site in close proximity to the location of the geotechnical access clearing. The mitigation plan describes the removal of invasive vegetation communities and the planting of native trees and shrubs on the 2.9 acres of existing wetlands (mitigation site).

The mitigation plan has been prepared in accordance with Ecology's mitigation guidance documents that encourage ecosystem-based strategies and the watershed-based approach to site selection (Ecology et al. 2009).

2.0 PROJECT DESCRIPTION

The geotechnical investigation entails advancing approximately 50 boreholes and approximately 20 cone penetration tests (CPT) to evaluate subsurface soil and groundwater conditions. The investigation will provide information regarding subsurface conditions that will be critical for design of future development on the property. Geotechnical boreholes are generally about 8 inches in diameter and extend to depths of 80 to 130 feet. The CPTs push a 1.4-inch-diameter rod into the ground to

depths up to about 100 feet. Two shallow test pit excavations to depths of about 15 feet will be used to confirm near-surface soil profiles.

The boreholes and CPT explorations are advanced with track-mounted equipment, which is approximately 8 feet wide by 25 feet long. To allow equipment to access test locations in forested and shrub vegetated areas, access paths approximately 17 feet wide are required to accommodate the equipment and provide safe working clearance.

To prepare access paths in forest and shrub areas, a tracked excavator was used to knock over trees and to pick up smaller vegetation and push it to the perimeter of the access path. These access paths are temporary and no improvements were made to create roadways. Following initiation of clearing, data collection was begun and boreholes and CPT work initiated. Field work was halted on July 22, 2011. At that time, access to all borehole locations was completed while approximately half of the intended data was collected.

2.1 WORK PLAN DEVELOPMENT AND IMPLEMENTATION

To avoid wetlands, streams and buffers and minimize clearing disturbance, access routes were drawn onto base maps and evaluated. It is not practicable to locate the proposed geotechnical boreholes with complete avoidance of wetlands because much of the proposed terminal development area is wetland and geotechnical data is needed for subsurface conditions in those locations. However, to the extent feasible, proposed geotechnical boreholes were located outside of wetland and heavily vegetated areas in order to avoid direct vegetation impacts. When a boring hole was located within a wetland, existing roads and pastures and hay fields were used as access routes to the extent possible to minimize vegetation disturbance throughout the property. Only when no other alternative could be identified were access routes placed through forested or shrub vegetated wetland areas.

Clearing for access paths to the geotechnical boring locations was initiated on July 5, 2011, and was completed on July 22, 2011. In total, approximately 23,395 lineal feet of access paths were cleared in both uplands and in wetland forest and shrub areas. The average width of clearing was determined to be 17 feet and the total area cleared was approximately 9.1 acres. Of this total cleared area, approximately 2.9 acres (125,120 square feet) of vegetation and soil in forested and shrub wetlands and approximately 0.96 acres (41,818 square feet) of wetland buffers were disturbed. At this time, no additional access paths are anticipated to be necessary to complete the geotechnical investigation. As of July 22, 19 (of the 50 planned) boreholes and 19 (of the 20 planned) CPT explorations were completed. Several boreholes were in progress and are not completed. Two test pit explorations were also completed.

To reduce the risk of erosion or sedimentation from cleared areas, best management practices (BMPs), including stabilized construction entrances and covering bare soils, have been implemented. Bare soil areas have been covered by hydroseeding. Seed mixes included fast germinating grasses suitable for forest or shrub wetlands. Entrance areas have been stabilized with quarry spalls.

The proposed work to complete geotechnical testing includes advancing approximately 30 boreholes and 1 CPT, which would take approximately 6 work weeks.

Following completion of field testing, cleared areas will be restored. In wetland areas, side cast rootwads and some side cast root mats with soil will be moved to the clearings to reduce the size of adjacent piles. Plantings appropriate to forested wetlands or shrub areas will be installed. In upland areas, trees seedlings will be planted to accomplish reforestation at a stocking rate of 190 stems per acre in 3 years to meet the Department of Natural Resources (DNR) reforestation requirements.

3.0 MITIGATION SITE DESCRIPTION

3.1 LOCATION

The mitigation site is located 18 miles northwest of Bellingham and 10 miles west of Ferndale (Figure 1). The mitigation site covers a portion of Section 18 of Township 39 North, Range 1 East, in unincorporated Whatcom County. It is accessible from I-5 via Highway 548 (Grandview Road) west, left on Kickerville Road, and right on Henry Road beyond a closed security gate. Roughly rectangular in shape, the mitigation site is bound to the south Henry Road, and by forested or shrub uplands and wetlands to the west, north, and east.

The mitigation site is located in the same coastal watershed in which the impacts occurred. It drains to the Strait of Georgia via discharge from a seasonal stream that is located downgradient and east of the mitigation site. Land uses in the coastal watershed include private residences, agricultural pastures and hay fields, county roads, railroads, power and pipeline corridors, and historically logged forested areas. The BP Cherry Point oil refinery is located in the vicinity of the mitigation site to the north.

3.2 SITE OWNERSHIP

The mitigation site is owned in fee-simple by Pacific International Terminals, and is identified as tax parcel #390118117050 on the Whatcom County tax map. Pacific International Terminals, Inc. owns the adjoining parcels to the south, east, and north; while BP owns the adjoining parcel located northwest of the mitigation site.

3.3 HISTORICAL LAND USE

Beginning in the late 1800s, the vicinity was logged and homesteaded for farming by European settlers. Farming activities continued through the mid-1940s, when large portions of land in the vicinity were acquired for industrial use. Based on historical aerial photographs from 1950 to present, the mitigation site vegetation -- with open field partially surrounded by wooded areas -- appears to have been stable for at least the last 61 years.

The site historically functioned as a homestead with structures located at the corner of Henry Johnson Road and Jackson Pipeline Road, immediately west of the mitigation site. According to records, as early as 1925 this property was owned by W.R. Cloppen. Historic structures associated with the property are present on 1950 aerials as provided by Whatcom County Tax Assessors. Department of Natural Resources' aerial photographs of the property in 1977 show the historic structures no longer present. It is possible that these structures were demolished when the property was purchased by the Atlantic Richfield Company in the late 1960s.

A known prehistoric archaeological site is located approximately 700 meters (2,300 feet) from the mitigation site; however, no prehistoric sites have been identified within the mitigation site area.

3.4 EXISTING SITE CONDITIONS

The mitigation site slopes gently from west to east, and is an abandoned hayfield bordered by forested wetland to the north and east, and shrub areas to the west. Henry Road abuts the southern side of the site, and upland shrub and forest habitat types abut the western and northwestern areas of the site. An upland berm dominated by Himalayan blackberry (*Rubus armeniacus*, FACU) appears to follow the tax parcel property boundary northwest of the site. Wetland boundaries were confirmed with the US Army Corps of Engineers (USACE) via a Jurisdictional Determination issued in 2009 (Appendix A).

The central portion of the site supports native and non-native emergent wetland vegetation, including areas of reed canarygrass (*Phalaris arundinacea*, FACW). A north-south line of Nootka rose (*Rosa nutkana*, FAC) and Himalayan blackberry shrubs approximately 5 to 10 feet wide roughly divides the site. Sparse red alder (*Alnus rubra*, FAC) seedling and saplings are located amongst the emergent vegetation.

The eastern half of the site has a mixture of slough sedge (*Carex obnupta*, OBL), soft rush (*Juncus effusus*, FACW), dagger-leaf rush (*Juncus ensifolius*, FACW), red fescue (*Festuca rubra*, FAC), bentgrass (*Agrostis spp.*), and Nootka rose. A few red alder seedlings and saplings are present. The western-half supports horsetail (*Equisetum spp*.), red fescue, soft rush, and patches of slough sedge and reed canarygrass. Patches of Canada thistle (*Cirsium arvense*, FACU) are scattered throughout

the mitigation site. Stands of reed canarygrass are scattered through the site and are estimated to range in size from 100 to 3,000 square feet.

The forest to the north of the site is dominated red alder and black cottonwood (*Populus balsamifera*, FAC). A shrub line of Sitka willow (*Salix sitchensis*) and Himalayan blackberry immediately abuts the forest. To the south, west, and north, perimeter edges of the site support dense patches of Himalayan blackberry, intermixed with patches of Nootka rose and a few western crabapple (*Pyrus fusca*, FAC). The areas of Himalayan blackberry along the perimeter vary in width from 5 to 15 feet. Finally, Himalayan blackberry creates a hedgerow between Henry Road and the wet meadow, and dominates the upland area that abuts the western boundary. Overall reed canarygrass was estimated to cover approximately 25 to 30 percent, while blackberry covers approximately 15 to 20 percent of the site.

Soils on the mitigation site are mapped as Whitehorn silt loam with 0-2 percent slopes, and classified as poorly drained. Saturated soil conditions were evident during the 2006 wetland delineation field efforts.

The existing wetland includes palustrine scrub-shrub and emergent wetland habitat types in accordance with the Cowardin classification system, and is classified as a slope wetland in accordance with the hydrogeomorphic system. It is classified as a Category III wetland in accordance with the Washington State Wetlands Rating System for Western Washington (Hruby, 2004). As such, the mitigation plan is to increase wetland habitat functions in this formerly disturbed wetland area that is currently hindered by invasive plant species and a lack of canopy cover.

4.0 MITIGATION STRATEGY AND DESIGN

Compensation for the temporal loss of forested wetland functions associated with the geotechnical survey clearing activities will be compensated for by enhancing 2.91 acres of existing emergent wetlands that have been historically used for agriculture. Wetland functions impacted by the clearing activities will be offset by increasing wetland functions at the mitigation site. Invasive species communities will be minimized and replaced with native tree and shrub vegetation. The areas of native wetland meadow vegetation will be enhanced with native trees to accelerate succession into a forested wetland community. The goal of the mitigation project is to increase wetland function functional capability of area through the enhancement activities listed in the following sections. Mitigation site plans are included in Appendix B.

4.1 MITIGATION SITE DESIGN

Existing wetlands will be enhanced by removing the invasive communities of reed canarygrass and Himalayan blackberry, planting trees and shrubs in their place, planting native trees 10 foot-on-center

throughout the wet meadow, and inter-planting with conifer species three years following initiation of the mitigation project. Wetland functional capability of this 2.91-acre area will be increased by accelerating ecological succession towards a forested wetland community.

Wetland enhancement activities will occur in four general stages:

1) Reduction of invasive plant species biomass along with protection of native plant species and planting of native tree seedlings, preferably in fall 2012, but depending on timing of permits and approvals.

2) Planting of Pacific willow (*Salix lasiandra)* stakes in reed canarygrass areas in Year 2 after reed canarygrass vigor has been reduced by one year of management.

3) Inter-planting with conifer seedlings at Year 3 (2015); and,

4) Monitoring, maintenance, and adaptive management strategies are proposed throughout the 10-year monitoring period (2012 to 2022).

An essential goal of the mitigation project is to also preserve the existing native meadow vegetation and young red alders (*Alnus rubra*) currently growing on site. These communities will be protected by establishing work corridors via fencing, flagging, or staking within the area. The access paths developed will use the existing wildlife trails wherever possible. Superfluous trampling of native vegetation to access the targeted work areas will not be allowed.

4.2 WETLAND BUFFERS

A wetland buffer is proposed for the mitigation site because it is an existing wetland with a currently existing 60-foot wetland buffer per Whatcom County Code 16.16.630(D). The wetland complex in which the mitigation site is situated extends beyond the mitigation site boundary to the north and east. These wetland areas are already regulated by federal, state, and local agencies. The site protection instrument (conservation easement) will protect the mitigation site itself, as well as the 60-foot functioning, adjacent upland buffers to the southwest and west of the mitigation site. A 60-foot buffer is also proposed along the south side of the mitigation site that will extend across Henry Road and into the agricultural field to the south.

4.3 PLANTING SCHEME

Native trees and shrubs suitable for freshwater wetland conditions will be planted in the mitigation site following the removal and treatment of invasive species communities (reed canarygrass and Himalayan blackberry). The former Himalayan blackberry areas will be planted with the following

shrub species 4 feet-on-center: Nootka rose (*Rosa nutkana*), twinberry (*Lonicera involucrata*), and red-osier dogwood (*Cornus sericea).* Black cottonwood (*Populus balsamifera*) tree seedlings will also be planted in the former Himalayan blackberry areas, but spacing will be ten feet-on-center. Former reed canarygrass areas will be densely planted with live stakes of Pacific willow in Year 2 following the successful treatment and management of the invasive species.

In the wetland meadow areas with native emergent vegetation, black cottonwood seedlings will be planted 10 feet-on-center in fall 2012. These areas will be planted with cottonwoods following initial treatment of the invasive species communities to reduce the risk of trampling during treatment activities.

In Year 3, seedlings of native conifer species will be inter-planted across the entire site amongst the native vegetation and cleared invasive plant community areas. Conifer species will include Sitka spruce (*Picea sitchensis*) and Western red cedar (*Thuja plicata*).

Planted trees and shrubs will be protected from wildlife browsing through a combination of seedling protector tubes or tubex tree shelters.

Sheet 2 in Appendix A provides the plant list for the proposed wetland enhancement activities.

5.0 IMPLEMENTATION AND WORK PLAN

5.1 CONSTRUCTION METHODS—OBSERVATION

A qualified biologist will be present during stages in the implementation of this mitigation plan. The onsite biologist will identify wetland boundaries, establish access corridors, and assist in identifying invasive species communities to be controlled. The onsite biologist will also be present during planting to ensure that trees and shrubs receive the required protection from animal browse, and specific plant species are located in the appropriate places.

Trees and shrubs will be kept cool and moist during transport and storage prior to planting. During transport, storage, and planting, all trees and shrubs will be potted and therefore protected from moisture loss. Upon arrival at the site, trees and shrubs will be transported by hand to the target areas and removed from their containers before planting.

5.1.1 Construction Methods—Cultural Resources Protection

Cultural resource specialists have visually assessed the surface conditions within the mitigation site, and no culturally significant artifacts were found. However, due to the nearby locations of a former homestead and a prehistoric site, there is some likelihood that cultural artifacts may be encountered

during planting and treatment of the invasive species communities. A Cultural Resources specialist will be consulted if any kind of debris is uncovered during installation.

5.2 CONSTRUCTION SEQUENCE

Mitigation activities will commence immediately following the approval of this wetlands mitigation plan and the issuance of the 401 Water Quality Certification. Enhancement activities will occur in four general stages, including:

1) Year 1: Protection of existing vegetation and establishment of access corridors, reduction of invasive species biomass, and planting of native trees and shrubs;

2) Year 2: Continued treatment of reed canarygrass communities, and planting of live willow stakes amongst the black, geotextile fabric covering these areas;

3) Year 3: Inter-planting with conifer tree seedlings; and,

4) Year 0 – 10: Monitoring and maintenance of areas formerly dominated by invasive species.

5.2.1 Stage 1—Initial Enhancement

5.2.1.1 Native Vegetation Protection

Native vegetation will be protected by establishing work corridors via fencing, flagging, or staking within the area. The access paths developed will use the existing wildlife trails wherever possible. Superfluous trampling of native vegetation to access the targeted work areas will not be allowed.

5.2.1.2 Invasive Species Control

Himalayan Blackberry

Areas occupied by Himalayan blackberry will be manually cut and crowns will be grubbed out. Biomass will be disposed of at an offsite location.

Reed Canarygrass

There are several prescriptions that have been developed to reduce the prevalence of reed canarygrass in wetland areas. It is not the goal of this project to eliminate reed canarygrass entirely from the area, but to reduce its prevalence enough to allow an overstory of native plants to become established.

For this site, reed canarygrass areas will be mowed and covered with a black, geotextile cloth fabric that will be staked down to secure it in place for at least the first year. In fall 2012, an approved spray

herbicide containing glysophate (Rodeo) will be applied to these areas. This will be done when the reed canarygrass is most actively translocating carbohydrates (along with the herbicide) down to the root system. These areas will then be re-covered with the geotextile cloth 2-3 weeks following application of the herbicide.

Adaptive management approaches will be used in the subsequent years to evaluate appropriate techniques, if needed, to further reduce the reed canarygrass prevalence with assessment of the effectiveness of the previous treatments.

5.2.1.3 Tree and Shrub Planting

Black cottonwood seedlings will be planted throughout the wet meadow and former blackberry areas. Former blackberry areas will also be planted with native shrubs to discourage the re-establishment of the Himalayan blackberry in these areas. Native plants will include Nootka rose, twinberry, and red-osier dogwood. An 18” diameter compost layer will then be feathered around the base of the plants.

5.2.2 Stage 2—Live Willow Stakes

Willow has been shown to be an effective species at rapidly establishing and shading reed canarygrass communities. Areas with reduced reed canarygrass vigor will be planted with live Pacific willow stakes. This is best performed in late winter, and would likely occur in 2013 following one year of successful reed canarygrass management.

5.2.3 Stage 3—Inter-Planting Conifer Seedlings

By their nature, conifer trees offer specific functional capabilities to wetlands that are not duplicated by other species. Currently there are few conifer trees on the property that could provide natural seeding to the area. Once invasive plant species control appears adequate and other species are established, conifer tree seedlings will be planted. This is currently anticipated to occur in 2015, but the timing will be evaluated. Seedlings are proposed to include western red cedar and Sitka spruce. Seedlings will be planted by hand with minimum disruption to existing native plant species. A large circle enough to reduce adjacent competition will be hand cleared and seedling planted. An 18” diameter compost layer 3 inches deep will then be feathered around the base of the seedling to reduce local plant competition.

5.3 CONSTRUCTION SCHEDULE AND EXPECTED COMPLETION DATES

Work at the mitigation site is expected to begin in fall 2012, depending on the timing of permits and approvals. Table 1 below presents the construction schedule as described in Section 4.2 of this report. Completion dates will depend on the response of the invasive plant communities to the prescribed treatment, and overall site performance. Because the outcomes of the treatment and

management of the invasive species communities is difficult to predict, adaptive management strategies will be necessary throughout the ten year monitoring period.

Table 1 Construction Schedule and Expected Completion Dates

Year	Task	Anticipated Start	Anticipated End
1	Establish access corridors; reduce invasive species biomass; plant native trees and shrubs	Fall 2012	Fall 2012
	Additional reed canary grass treatment	Fall 2012	Fall 2012
2	Install live willow stakes	Winter 2013	Winter 2013
3	Inter-plant with conifer species	Winter 2015	
0 - 10	Adaptive management of areas formerly dominated by invasive species	Fall 2012	Fall 2022

6.0 OBJECTIVES AND PERFORMANCE STANDARDS

The overall goal of the mitigation plan is to increase the wetland functional capability of the 2.9-acre wetland area through enhancement measures. Enhancement measures include reducing the prevalence of invasive species and planting native trees and shrubs, while protecting existing native vegetation.

Restoration goals would be attained through achieving the following two objectives:

1. Reduce communities of reed canarygrass and Himalayan blackberry; and
2. Accelerate ecological succession towards a forested wetland habitat type.

Performance standards are established herein to ensure that the mitigation site is trending toward success. Performance standards for each mitigation site objective are listed below.

6.1 OBJECTIVE 1—REDUCE INVASIVE SPECIES COVER

6.1.1 Performance Standard 1.a—Himalayan Blackberry Areas

Cover by invasive species is expected to be maintained below a threshold throughout the 10-year mitigation monitoring period. Himalayan blackberry shall not cover more than 15 percent of any treated mitigation area in any given monitoring year. However, maintenance activities will occur if any new growth of Himalayan blackberry is identified. New Himalayan blackberry stems or bushes will be removed from the site the first time they are identified before the 15% cover threshold is reached. Maintenance will include grubbing to remove f blackberry plants, including the root crown.

In the treated blackberry areas, survival of planted native trees and shrubs will be 100 percent in Year 1. Absolute areal cover by these native species will be at least 10 percent by Year 2, and 50 percent by the end of the monitoring period in Year 10. See Table 2 below.

Table 2 Summary of Mitigation Site Performance Standard 1a—Himalayan Blackberry Areas

Stratum	Year 1	Year 2	Year 3	Year 5	Year 7	Year 10
Invasive Species	<15% absolute aerial cover	<15% absolute aerial cover	<15% absolute aerial cover	<15% absolute aerial cover	<15% absolute aerial cover	<15% absolute aerial cover
Trees and Shrubs	100% survival of planted	10% absolute aerial cover	20% absolute aerial cover	30% absolute aerial cover	40% absolute aerial cover	50% absolute aerial cover

Performance standards for invasive species and shrubs are for the targeted treatment areas, not for the entire 2.9-acre site.

6.1.2 Performance Standard 1.b—Reed Canarygrass Areas

Cover by invasive species is expected to be maintained below a threshold throughout the 10-year mitigation monitoring period. Reed canarygrass shall not cover more than 15 percent of any treated mitigation area in any given monitoring year. However, maintenance activities will occur if any new growth of reed canarygrass is identified, including cutting and removal of plant biomass. New reed canarygrass stems will be removed from the site the first time they are identified before the 15% cover threshold is reached.

In the treated reed canarygrass areas, planted willow stakes will provide at least 10 percent absolute aerial cover in Year 2 (the first year of planting in these areas). Planted, live willow stakes are known to have a high mortality rate, so 100 percent survival of these planted species is not practical and therefore not proposed as a performance standard. Absolute areal cover by these native species will be at least 20 percent by Year 3, 40 percent by Year 5, 50 percent by Year 7, and 60 percent at the end of the monitoring period in Year 10. See Table 3 below.

Table 3 Summary of Mitigation Site Performance Standard 1b—Reed Canarygrass Areas

Stratum	Year 1	Year 2	Year 3	Year 5	Year 7	Year 10
Invasive Species	-	<15% absolute aerial cover	<15% absolute aerial cover	<15% absolute aerial cover	<15% absolute aerial cover	<15% absolute aerial cover
Willow trees	-	10% absolute aerial cover	20% absolute aerial cover	40% absolute aerial cover	50% absolute aerial cover	60% absolute aerial cover

Performance standards for invasive species and trees are for the targeted treatment areas, not for the entire 2.9-acre site.

6.2 OBJECTIVE 2—ACCELERATE SUCCESSION TO A FORESTED WETLAND

6.2.1 Performance Standard 2.a—Establishment of Forest Canopy

The native wet meadow areas will be planted with deciduous trees at the start of the mitigation project. Survival of the planted tree seedlings will be 100 percent at Year 1 with dead individuals replaced at the end of year 1. Cover by deciduous trees should be no less than 10 percent at Year 2, and 20 percent at Year 3. Survival of planted conifer species should be 100 percent at Year 3 because they will be planted after the deciduous trees. As such, establishment of a forest canopy will be measured by absolute aerial cover by all planted and pioneer tree species in Years 5, 7, and 10, as shown in Table 3 below.

Table 4 Summary of Mitigation Site Performance Standard 2a—Canopy Cover

Stratum	Year 1	Year 2	Year 3	Year 5	Year 7	Year 10
Deciduous Trees	100% survival for planted	10% absolute aerial cover	20% absolute aerial cover	-	-	-
Coniferous Trees	-	-	100% survival for planted	-	-	-
Canopy Cover*	-	-	-	30% absolute aerial cover	40% absolute aerial cover	50% absolute aerial cover

Canopy cover includes cover by all native trees in the existing meadow, including planted species and pioneer species.

7.0 MONITORING PLAN

A monitoring program will be implemented to assess the performance of the mitigation site following construction. Monitoring results will be compared to the performance standards to judge the success of the restoration effort. An annual report describing the level of success will be written and submitted to Ecology for review and approval within 60 days of completion of each year's monitoring. Photo documentation will accompany the monitoring reports.

Monitoring would begin by providing as-built plans immediately following completion of the installation and completing an initial baseline compliance report within 30 days following construction. Subsequent monitoring would occur at 6, 12, and 24 months following installation, and annually thereafter. Parties responsible for monitoring and report submittal would be Pacific International Terminals and the consultant of their choice. Monitoring would be conducted and reported by a qualified wetland biologist.

7.1 AS-BUILT PLANS

As-built plans that detail typical final site conditions, changes made to the planting plan, or other potential mitigation plan alterations, will be made following construction. These as-built plans will be included in the report for each year of monitoring, and will be submitted to Ecology for review.

7.2 VEGETATION MONITORING PROCEDURE

Standardized procedures will be used to measure the survival and growth of plant material, and the success of the treated invasive plant species areas. The vegetation monitoring strategy will consider plant species composition, survivorship, and absolute areal cover.

Approximately 5 sampling plots will be established across the native meadow in the wetland mitigation site. Vegetation data for seedling and shrub survivorship will be collected from each plot. Native tree species within each plot will be listed. Non-native species will be listed and absolute coverage by these species estimated for each plot. The location of sampling plots will be established by the monitoring biologist during the first monitoring period (6 months after installation). The center of the plot will be marked with rebar and a tall polyvinyl chloride (PVC) pipe. This will identify the location of sample plots during subsequent monitoring periods. Photopoints would be established in conjunction with the sample plots and will be used to obtain representative photographs of the project at each monitoring event. Sampling plots will be 100 square feet (10 x 10 plots) of restored cleared access path, with the rebar and PVC pipe established in the middle of each plot.

Treated Himalayan blackberry and reed canarygrass polygon areas will be labeled with a letter, and monitored individually. Sampling plots will be established in the larger polygons, and smaller areas will be assessed in their entirety. These areas will established by the monitoring biologist during the first monitoring period.

7.3 MONITORING SCHEDULE

A proposed monitoring schedule is presented in Table 5. Monitoring in Years 6 through 10 will follow the schedule of monitoring plant growth in August, and submitting the monitoring report 60 days later in October.

8.0 MAINTENANCE PLAN

For any restoration site to succeed, control of invasive species year round is recommended until the desired vegetation on the site is completely established. Establishment is usually indicated by documented plant survival from one year to the next over the monitoring period and a low prevalence of invasive species.

Table 5 Proposed Monitoring Schedule for the First 5 Years Following Installation

Year	Anticipated Date	Action
Installation	Fall 2012	Prepare site and install
Year 0	March 15, 2013	Monitor site hydrology and plant growth
	August 15, 2013	Monitor plant growth
Year 1	August15, 2014	Monitor plant growth
	October15, 2014	Year 1 report
Year 2	August 15, 2015	Monitor plant growth
	October 15, 2015	Year 2 report
Year 3	August 15, 2016	Monitor plant growth
	October15, 2016	Year 3 report
Year 4	August 15, 2017	Monitor plant growth
	October 15, 2017	Year 4 report
Year 5	August 15, 2018	Monitor plant growth
	October 15, 2018	Year 5 report

8.1 Site Protection During Monitoring and Maintenance Period

The mitigation site is located behind a closed and locked gate on Henry Road that is monitored by onsite security personnel. The site boundaries will be marked with flagging to protect it against any property developments on adjacent parcels in the future. A jersey barrier and chain blocks entry to the site by any off-road vehicles that may skirt the aforementioned security fence.

8.2 Schedule for Maintenance

Site maintenance will be conducted monthly between March 15 and October 15 during the growing season during the first 2 years following installation. Site maintenance will be conducted semi-annually for years 3 through 5 pending plant survivorship and on the ground conditions. Maintenance activities will include the identification and removal of non-native species, and other tasks as needed.

8.3 Maintenance Activities—Non-Native Plant Control

To help facilitate the success of the mitigation project, maintenance is anticipated to include removing invasive species to decrease competition with native species. Removal of unwanted non-native plant species will initially be completed by hand. If specific areas become overrun by non-native species, the use of an herbicide by a qualified applicator will be necessary to ensure the success of the native vegetation community.

8.4 ADAPTIVE MANAGEMENT

Adaptive management is a systematic process in which modifications to a compensatory mitigation plan, including monitoring, maintenance, and contingency plans, are made based on what has or has not been effective. PIT or its consultant of choice will work with Ecology to discuss any problems and possible solutions or alternative approaches to achieving the site's objectives during the ten-year monitoring period.

9.0 CONTINGENCY PLAN

Depending on monitoring results, it may be necessary to implement contingency measures to ensure that the original goals of the mitigation project are met. Several factors, both artificial and natural, could have detrimental effects on the success of the restoration plantings.

Table 5 lists the components of the mitigation plan, related factors that may have an adverse effect on the mitigation areas, and contingencies for success of the project. No contingency plan can foresee all problems or their solutions. In all cases, if a more effective remedy is identified, it would be considered. Ecology will be consulted, and approval obtained, before any proposed contingency measures are implemented.

Table 6 Contingency Plan

Mitigation Component	Potential Factors	Contingency
Hydrologic Conditions	Insufficient	Drought, lack of runoff from adjacent uplands and wetlands, and incorrect soil elevations could result in insufficient hydrologic support. Contingency measures could include excavations to a deeper level, if necessary, or surface and subsurface runoff could be redirected to the area.
Hydrologic Conditions	Excessive	After identification of the cause, soil elevations could be modified or excess water could be directed away from the area.
Hydrologic Conditions	Pollution	The type and source of the pollutants would be determined and proper corrective measures established. These measures would include cleanup, biofiltration, or placement of erosion-control measures.
Soils	Erosion	Causes of erosion would be identified, and remedies could include use of erosion-control fabric and seeding of plant species with dense, strong root systems conducive to erosion control. Other appropriate BMPs would be considered.
Vegetation	Competition from Shrubs	Native and non-native graminoids and forbs are anticipated to compete with the planted tree seedlings. Non-natives would be identified and removed from the mitigation areas to ensure the success of the planted tree seedlings.
Vegetation	Competition from Invasive Species	Invasive species would be identified and eradicated or controlled during the monitoring period. If herbicides were determined to be necessary subsequent to the initial use, a detailed application plan would be developed in coordination with Ecology.

Mitigation Component	Potential Factors	Contingency
Disturbances	Wildlife	Excessive herbivory or grazing could have an adverse effect on the success of plant species. Depending on the disturbance, fencing could be installed or wire mesh cylinders could be placed around individual plants.
Disturbances	Human	Human intrusion could be controlled with fencing the mitigation sites and or signage.

10.0 SITE PROTECTION AND LONG-TERM MANAGEMENT

For site protection a deed restriction will be attached to the title of the property to ensure the mitigation site's long-term protection and management. It is anticipated that implementing and abiding by an agency-approved deed restriction will likely become a condition of the agreed order with Ecology.

11.0 REFERENCES

AMEC Earth & Environmental, Inc. (AMEC) (2011) Project Information Document, Gateway Pacific Terminal, Whatcom County, Washington. Prepared for Pacific International Terminals, Inc.

AMEC Earth & Environmental, Inc. (AMEC) (2008) Wetland Determination and Delineation, Gateway Pacific Terminal, Whatcom County, Washington. Prepared for Pacific International Terminals, Inc.

Environmental Laboratory. (1987) Corps of Engineers Wetlands Delineation Manual (Technical Report No. Y-87-1). Vicksburg, Mississippi: U.S. Army Corps of Engineers Waterways Experimental Station.

Hruby, T (2004) Washington State Wetland Rating System for Western Washington—Revised. #04-06-025. Olympia, Washington: Washington Department of Ecology

Markham, M.V. (1993) A Historic Euroamerican Fish Trap Camp at Cherry Point (45WH1). MS on file. Department of Anthropology, Western Washington University, Bellingham.

US Army Corps of Engineers (USACE) (2009) Letter from Matthew Bennett (USACE) to Skip Sahlin (Pacific International Terminals) confirming wetland boundaries and assuming jurisdiction of delineated wetlands. USACE Reference NWS-2008-260-NO. March 5, 2009.

Washington Department of Ecology (1997). Washington State wetlands identification and delineation manual. Publication No. 96-94. Olympia, Washington.

Washington Department of Ecology, US Army Corps of Engineers Seattle District, and US Environmental Protection Agency. (2006). Wetland mitigation in Washington State – part 2: developing mitigation plans (version 1). Publication No. 06-06-011b. Olympia, WA.

Washington Department of Fish and Wildlife (2009). Priority Habitat and Species – Whatcom County. Olympia. May 2009.

Whatcom County (2006) Critical Areas Ordinance Maps. Whatcom County Planning & Development Natural Resource Management. February 2006.

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FIGURES

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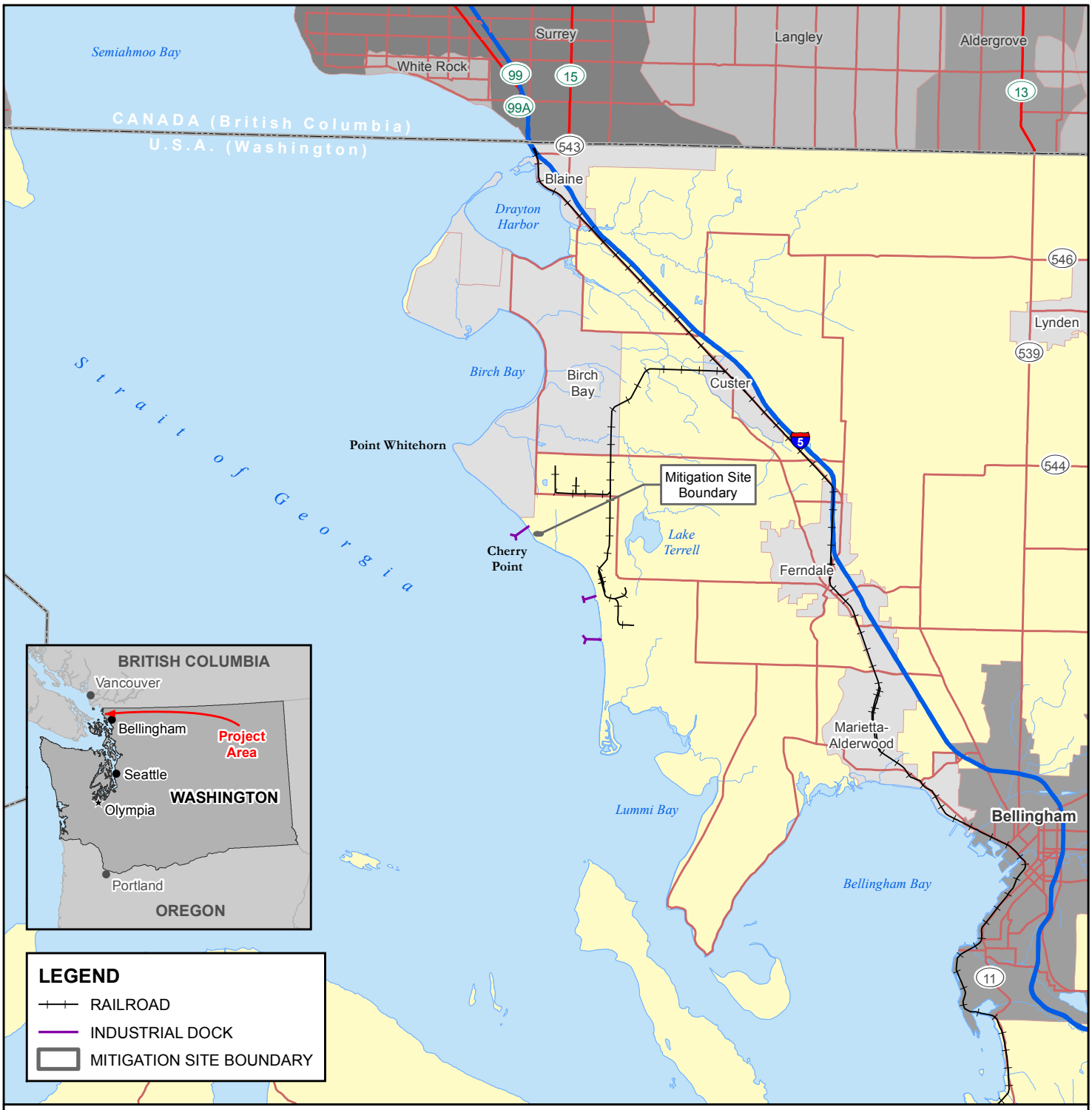

AMEC 11810 North Creek Parkway N Bothell, WA 98011	amec	Pacific International Terminals	CLIENT: PACIFIC INTERNATIONAL TERMINALS, INC.

PROJECT: WETLAND MITIGATION SITE FOR TEMPORAL LOSS	DWN BY: SD	DATUM: NAD83	DATE: NOVEMBER 2011
TITLE: VICINITY MAP	CHK'D BY: JG	REV. NO.: 1	PROJECT NO.: 091515338C-07-03
	PROJECTION: WA SP North, Ft.	SCALE: 1 inch=3 miles	FIGURE No.: FIGURE 1

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	Pacific International Terminals.	CLIENT: PACIFIC INTERNATIONAL TERMINALS, INC.	DWN BY: SD CHK'D BY: JG	PROJECT: WETLAND MITIGATION SITE FOR TEMPORAL LOSS	DATE: NOVEMBER 2011 PROJECT NO.: 091515338C-07-03
		AMEC 11810 North Creek Parkway N Bothell, WA 98011	DATUM: NAD83 PROJECTION: WA SP North, Ft. SCALE: 1 inch = 150 feet	TITLE: EXISTING CONDITIONS	REV. NO.: 1 FIGURE NO.: 2

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APPENDIX A

2009 USACE Jurisdictional Determination

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DEPARTMENT OF THE ARMY
SEATTLE DISTRICT, CORPS OF ENGINEERS
P.O. BOX 3755
SEATTLE, WASHINGTON 98124-3755

REPLY TO
ATTENTION OF

Regulatory Branch

MAR 5 2009

Pacific International Terminals
Mr. Skip Sahlin
1131 Southwest Klickitat Way
Seattle, Washington 98134

Reference: NWS-2008-260-NO
Pacific International
Terminals

Dear Mr. Sahlin:

On March 23 and 24, 2008 and November 6, 2008, Mr. Randel Perry and I conducted a site visit in response to your request for a jurisdictional determination for wetlands and streams on property located near Ferndale, Whatcom County, Washington. The information provided by your agent, AMEC Earth and Environmental, Inc., indicated that some of the wetlands may be "isolated" and outside the U.S. Army Corps of Engineers (Corps) jurisdiction.

We have confirmed that wetlands and jurisdictional streams exist on your property. After reviewing the submitted information and our office resources and after visiting the site, we have determined the all delineated on-site wetlands shown on the enclosed drawing dated April 2008 abut or are adjacent to unnamed tributaries of the Strait of Georgia, a navigable waterway used for interstate and foreign commerce. These wetlands have a significant nexus to down stream traditional navigable waters (the Strait of Georgia) and, as such, are regulated by the Corps under Section 404 of the Clean Water Act.

We have also confirmed that all waterbodies identified as "Streams" and "Drainages" on the enclosed drawing dated April 2008 are tributaries to down stream navigable waters (the Strait of Georgia) and/or have a significant nexus to down stream traditional navigable waters. These tributaries are jurisdictional waters of the U. S. and are regulated by the Corps under Section 404 of the Clean Water Act.

This approved jurisdictional determination is valid for a period of 5 years from the date of this letter unless new information warrants revisions of the determination. A copy of this jurisdictional determination can be found on our website at http://www.nws.usace.army.mil/ click on Regulatory, Regulatory/Permits, Recent Jurisdictional Determinations. If you object to this determination, you may request an administrative appeal under our regulations 33 CFR 331

as described in the enclosed *Appeal Process Fact Sheet* and the *Notification of Administrative Appeal Options and Process and Request for Appeal* form.

A copy of this correspondence with enclosure will be furnished to Ms. Kristie Dunkin of AMEC Earth and Environmental, Inc. at 11810 North Creek Parkway North, Bothell, Washington 98011. Because Department of the Army authorization may be necessary for work in jurisdictional wetlands and drainages, do not commence construction before written authorization is received.

If you have any questions, please contact Mr. Randel Perry at (206) 764-6985 or by email at randel.j.perry@usace.army.mil.

Sincerely,

Matthew Bennett
Senior Scientist
Regulatory Branch

Enclosures

APPENDIX B

Mitigation Plan Set

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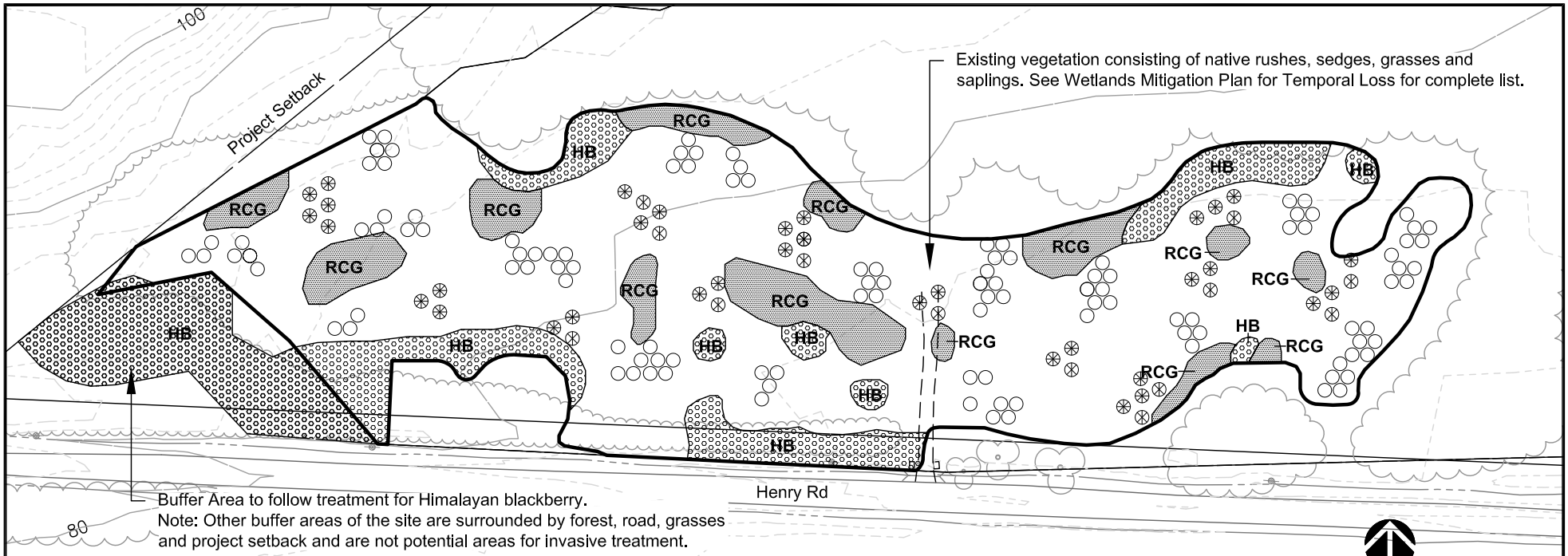

Treatment for RCG areas:
Year 1:
Cut and cover reed canarygrass.
Year 2:
Cut, spray and re-cover reed canarygrass.
Plant live willow stakes.*

Treatment for HB areas:
Year 1:
Clear and grub Himalayan blackberry
Plant native shrubs.*

Treatment for total Mitigation area:
Year 1:
Plant native tree seedlings.*
Year 3:
Plant native conifer tree seedlings.*

*See next sheet for plant species list. Actual planting density to be determined through evaluation of invasive plant species control

LEGEND
2' Contours
10' Contours
Mitigation Area (2.9 Acres)
RCG Reed canary grass areas
HB Himalayan blackberry areas
Vegetation Line
Edge of Pavement
Roadside Drainage
Wetland Boundary

CLIENT LOGO: Pacific International Terminals.	CLIENT: PACIFIC INTERNATIONAL TERMINALS, INC.	DWN BY: dp CHK'D BY: KD	PROJECT: WETLAND MITIGATION SITE FOR TEMPORAL LOSS	REV. NO.: 2 DATE: JANUARY 2012
AMEC Earth & Environmental 11810 North Creek Parkway North Bothell, WA, U.S.A. 98011-8201	amec	DATUM: NAD83 PROJECTION: WA SP North, Ft. SCALE: 1 inch = 100 feet	TITLE: MITIGATION PLAN	PROJECT NO: 091515338C-07-03 SHEET NO. 1

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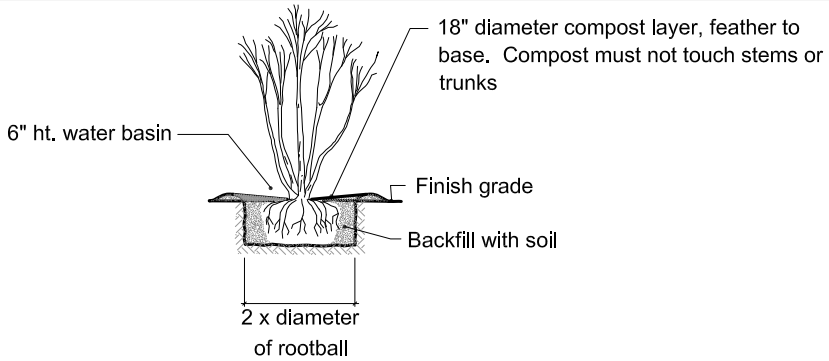
Plant List

Species		Size	Area	Spacing
Year 1:				
Populus balsamifera	Black Cottonwood	Seedling	Throughout site	10' o.c.
Cornus sericea	Red Twig Dogwood	1 gal.	HB removal sites	4' o.c.
Lonicera involucrata	Twinberry	1 gal.	HB removal sites	4' o.c.
Rosa nutkana	Nootka Rose	1 gal.	HB removal sites	4' o.c.
Year 2:				
Salix lasiandra	Pacific Willow	Live Stake	RCG removal sites	1' o.c.*
Year 3:				
Picea sitchensis	Sitka Spruce	Seedling	Throughout site	14' o.c.*
Thuja plicata	Western Red Cedar	Seedling	Throughout site	14' o.c.*

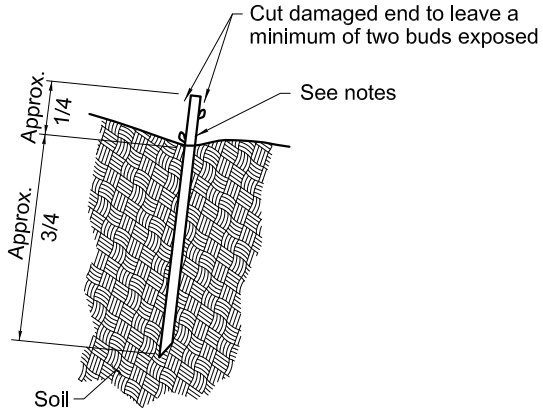
*Actual planting density to be determined through evaluation of invasive plant species control.
HB= Himalayan Blackberry
RCG= Reed Canarygrass



Shrub Notes:
1. Planting pit sizes will be a minimum of twice the root ball width and have their top true root no more than 1 inch above the soil surface.
2. Prior to planting, containers shall be completely removed and the roots loosened by appropriate pruning.
3. Planting pits will be backfilled with existing soils that are free of rocks over 2 inches, lumps, and other foreign materials. Backfilling around trunks or stems is not permitted.
4. The backfill material and root ball shall be thoroughly watered on the same day that planting occurs regardless of season.

SHRUB PLANTING DETAIL

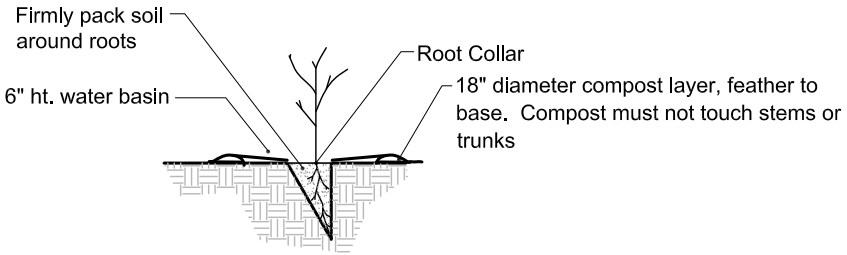
NTS



Live Stake Notes:
1. Do not use axe or sledge, or similar, for driving stakes.
2. In hard ground, use an iron bar or star drill to prepare the holes for the stake.
3. Place stakes so they are perpendicular to the slope of the ground surface.
4. Avoid stripping bark or bruising stakes during installation.
5. Fill void around cutting with soil so the stake cannot be moved or readily pulled out.
6. Base of stake may be cut at 45 degree angle to help drive the stake.

LIVE STAKE PLANTING DETAIL

NTS



Seedling Notes:
1. Planting slit shall be big enough for entire root spread of seedling.
2. Seedling roots shall be spread out and any twisting or J-shaped bends in the roots shall be avoided.
3. Root collar shall be at the soil line.
4. Soil shall be packed firmly around roots, avoiding any air pockets.

SEEDLING PLANTING DETAIL

NTS

CLIENT LOGO: Pacific International Terminals	CLIENT: PACIFIC INTERNATIONAL TERMINALS, INC.	DWN BY: dp	PROJECT: WETLAND MITIGATION SITE FOR TEMPORAL LOSS	REV. NO.: 2
		CHK'D BY: KD		DATE: JANUARY 2012
AMEC Earth & Environmental, 11810 North Creek Parkway North, Bothell, WA, U.S.A. 98011-8201		DATUM: NAD83	TITLE: PLANT LIST AND DETAILS	PROJECT NO: 091515338C-07-03
		PROJECTION: WA SP North, Ft.		SHEET NO. 2
		SCALE: 1 inch = 100 feet		

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