

ATTACHMENT C:

**WETLAND & BUFFER
ENHANCEMENT PLAN**

**SHORELINE TOWNHOMES
WETLAND AND BUFFER
ENHANCEMENT PLAN**

PREPARED FOR

**PRESCOTT HOMES
10613 NE 38TH PLACE, #17
KIRKLAND, WASHINGTON 98033**

FEBRUARY 2006

PREPARED BY:

**Adolfson Associates, Inc.
5309 Shilshole Ave NW, Ste 200
Seattle, Washington 98107
206.789.9658**



EXECUTIVE SUMMARY

At the request of the Prescott Homes, Adolfson Associates, Inc. (Adolfson) prepared this enhancement plan for the proposed Shoreline Townhomes project, located at 1145 North 199th Street in Shoreline, Washington (Figure 1). This enhancement plan has been prepared based on requirements in the Shoreline Municipal Code (SMC) Chapter 20.80 – Critical Areas.

Prescott Homes is proposing to construct 18 townhomes on an approximately 1.1-acre site immediately northwest of Echo Lake in the City of Shoreline. The site consists of two parcels (2227300070 and 2227300071) that are currently undeveloped.

Adolfson identified one wetland on the property, which occurs as a palustrine emergent lake-fringe wetland (Adolfson 2005). This wetland is a Type II wetland in the City of Shoreline because it is associated with Echo Lake. The wetland and wetland buffer on the site have been degraded by previous land use activities, and the dominant plant species are primarily non-native. Under current conditions, the on-site wetland and wetland buffer provide little value as wildlife habitat. In addition, the existing bulkhead disrupts the connectivity between the lake and the adjacent wetland.

As part of the proposed project, the wetland buffer will be reduced from 100 feet to 50 feet and enhanced as allowed under SMC 20.80.330.B and SMC 20.80.330.D.2. The primary goal of the enhancement plan is to increase the habitat value of the on-site portion of the Type II wetland and associated buffer for fish and wildlife. Another goal includes increasing the aesthetic value of wetland and wetland buffer for residents in the vicinity of the townhomes project. Finally, the dispersal trenches have been located in the wetland buffer to ensure that the wetland continues to receive water once the site is developed (SMC 20.80.330.G).

This enhancement plan identifies how the on-site wetland and wetland buffer will be enhanced to comply with SMC 20.80.330.D.2, and presents a planting plan with planting specifications.

TABLE OF CONTENTS

EXECUTIVE SUMMARY i

TABLE OF CONTENTS ii

1.0 PROJECT AUTHORIZATION 1

2.0 PROJECT DESCRIPTION 1

3.0 EXISTING CONDITIONS 1

4.0 BUFFER REDUCTION 2

5.0 ENHANCEMENT GOALS AND OBJECTIVES..... 2

6.0 ENHANCEMENT 3

 6.1 MINIMIZATION..... 3

 6.2 PLANTING PLAN 3

 6.3 GRADING/SOILS..... 5

 6.4 HABITAT FEATURES 5

7.0 PERFORMANCE STANDARDS..... 5

8.0 CONSTRUCTION PHASE..... 5

9.0 MONITORING 6

 9.1 DATA COLLECTION..... 6

 9.2 REPORTING 6

 9.3 MAINTENANCE 7

10.0 PERFORMANCE BOND 7

11.0 CONTINGENCY PLAN 7

12.0 LIMITATIONS 8

REFERENCES..... 9

FIGURES..... 10

Figure 1. Site Vicinity Map

Figure 2. Planting Plan

Figure 3. Planting Details

Figure 4. Planting Notes

1.0 PROJECT AUTHORIZATION

At the request of the Prescott Homes, Adolfson Associates, Inc. (Adolfson) prepared this enhancement plan for the proposed Shoreline Townhomes project, located at 1145 North 199th Street in Shoreline, Washington (Figure 1). This enhancement plan has been prepared based on requirements in the Shoreline Municipal Code (SMC) Chapter 20.80 – Critical Areas.

2.0 PROJECT DESCRIPTION

Prescott Homes is proposing to construct 18 townhomes on an approximately 1.1-acre site immediately northwest of Echo Lake in the City of Shoreline. The site consists of two parcels (2227300070 and 2227300071) that are currently undeveloped. Once the townhomes are constructed, vehicular access will be from North 198th Street and through an existing apartment complex that Prescott Homes is in the process of converting to condominiums. The drainage design incorporates low impact development.

As part of the proposed project, the wetland buffer will be reduced from 100 feet to 50 feet as allowed under SMC 20.80.330.B and SMC 20.80.330.D.2 and as described in this enhancement plan. An approximately three-foot-wide trail of beauty bark will be constructed in the outer edge of the wetland buffer as allowed under SMC 20.80.330.F. A boardwalk and platform will also be constructed within the wetland buffer to provide views of the lake. The intent of the boardwalk and platform is to limit pedestrian access to the wetland buffer, thereby reducing the potential for pedestrian intrusions into the planted wetland and wetland buffer areas. To maintain wetland hydrology, dispersion trenches will be constructed in the buffer as per SMC 20.80.330.G.

3.0 EXISTING CONDITIONS

Current access to the two parcels is from North 199th Street, a one-lane road that ends in the north-central portion of the site. There are no structures on the property, but cement walkways are present in the east-central portion of the site. The areas immediately north, west, and south of the site have been developed for residential and commercial uses, and the site is near the intersection of North 200th Street and Aurora Avenue.

The site is relatively flat, but slopes down from the west to Echo Lake. A cement bulkhead was previously constructed along the shoreline. Just beyond the bulkhead, discarded debris has been dumped into the lake. Much of the vegetation on the site consists of non-native shrubs and herbaceous plant species such as knotweed, Himalayan blackberry, Scot's broom, thistle, and Robert geranium. Some trees occur on the property. Along the western property line, red alder, big-leaf maple, horse chestnut, and black cottonwood are present and one large, non-native tree is present in the southeastern portion of the site. Several young native trees, such as Douglas-fir and red alder, are present on the eastern portion of the site.

Adolfson identified one wetland on the property, which occurs as a palustrine emergent lake-fringe wetland (Adolfson 2005). This wetland is a Type II wetland in the City of Shoreline because it is associated with Echo Lake. The wetland and wetland buffer on the site have been

degraded by previous land use activities, and the dominant plant species are primarily of non-native. Under current conditions, the on-site wetland and wetland buffer provide little value as wildlife habitat, and the aesthetic value is limited by debris left by people who have used the site. In addition, the existing bulkhead disrupts the connectivity between the lake and the adjacent wetland. This wetland is described in greater detail in the wetland delineation report prepared for the project.

4.0 BUFFER REDUCTION

The proposed project avoids wetland impacts. This enhancement plan has been prepared because the Prescott Homes is proposing to reduce the wetland buffer from the maximum buffer width of 100 feet to the minimum buffer width 50 feet for Type II wetlands (SMC 20.80.330.B). SMC 20.80.330.D.2 states that buffers can be reduced if:

2. *Wetland and buffer enhancement is implemented. This includes but is not limited to the following:*
 - a. *Enhancement of fish and wildlife habitat by incorporating structures that are likely to be used by wildlife, including wood duck houses, bat boxes, nesting platforms, snags, rootwads/stumps, birdhouses, and heron nesting areas.*
 - b. *Planting native vegetation that would increase value for fish and wildlife habitat, improve water quality, or provide aesthetic/recreational value.*

This enhancement plan is intended to show compliance with Code requirements for buffer reduction and enhancement.

5.0 ENHANCEMENT GOALS AND OBJECTIVES

The primary goal is to enhance the on-site portion of the Type II wetland and the associated 50-foot-wide reduced buffer as habitat for fish and wildlife. Enhancement includes removing non-native vegetation, removing the cement walkways that currently exist in much of the buffer, planting native species, and installing bird and bat boxes. The native plant species to be installed will provide habitat for wildlife and increase the overall habitat value of the area. Enhancement also includes removal of that portion of the existing concrete bulkhead that is above the mean high water mark. Removal of this portion of the bulkhead is intended to restore the connection between Echo Lake and the wetland. Another enhancement action intended to improve habitat for fish in the lake will be the removal of discarded debris in the lake within approximately 20 feet of the existing bulkhead.

A second goal includes increasing the aesthetic value of wetland and wetland buffer for residents in the vicinity of the townhomes project. For this reason, a pedestrian trail, boardwalk, and platform are proposed within the wetland buffer (Figure 2). Low impact uses, such as trails, are allowed in buffers under SMC 20.80.330.F. The pedestrian trail will be located in the outer edge of the wetland buffer, and the boardwalk and viewing platform will be designed to reduce the potential for human intrusion into the wetland. The boardwalk and platform will be constructed of non-deteriorating plastic-wood decking that will allow precipitation to infiltrate into the soils

below the structure. Enhancement also includes removing the impervious cement walkways that currently occur in much of the buffer.

A third goal is to maintain wetland hydrology after construction. This will be accomplished by placing the stormwater dispersal trenches in the wetland buffer is to ensure that the wetland continues to receive water once the site is developed. SMC 20.80.330.H allows stormwater facilities in the buffer if it will enhance the buffer and protect the wetland. Planting around the dispersal trenches will provide cover so that, over time, the structures are not obvious.

6.0 ENHANCEMENT

The proposed project avoids impacts to wetlands. The on-site wetland and wetland buffer will be enhanced for the proposed buffer reduction (Figure 2). As required under SMC 20.80.050.B, the wetland and wetland buffer will be placed in a separate critical areas tract to provide permanent protection.

6.1 Minimization

Impacts to the reduced wetland buffers will be minimized to the extent possible. The trail is limited to three feet in width and the viewing platform to 100 square feet. The area to be graded is the minimum necessary to install the dispersal trenches (Figure 2). Other measures to be implemented that will minimize impacts during construction include:

- A pre-construction meeting will be held on-site with the construction contractor and the project biologist to discuss the construction sequence.
- The limits of the construction area will be marked with orange barrier fencing. This type of barrier reduces the potential for heavy equipment to damage vegetation and soil outside the construction area.
- The temporary erosion and sedimentation control measures and best management practices (BMPs) established for this project will be used. This includes the use of silt fences, sediment rolls, and/or straw bales to prevent suspended particles from leaving the construction zone. The contractor will be responsible for inspection of all erosion control measures and will repair any damage to the erosion control structures, as required.
- The staging areas and stockpile sites will be located outside the wetlands and wetland buffers.
- The portion of the existing concrete bulkhead that is above the mean high water mark will be removed in such a way to avoid incidental backspill into the lake.
- The erosion control measures will be maintained until bare soils have been successfully vegetated and approved by a professional biologist.

6.2 Planting Plan

Wetland. Non-native shrubs and herbaceous vegetation will be removed from the wetland, and will be re-vegetated as shown on the planting plan (Figure 2). Table 1 lists the plant species to

be planted in the enhanced wetland. All of these plants are native to the area and will enhance the vegetative structure and diversity of the wetland. Trees and shrubs will be planted in the wetland with herbaceous vegetation planted along the wetland edge. A large non-native, deciduous tree that currently occurs in the wetland will be retained as it provides cover to the southern portion of the wetland and contributes organic matter to the wetland and lake.

Table 1. Planting List for Wetland

Scientific Name	Common Name	Layer	Quantity
<i>Malus fusca</i>	Western crabapple	tree	8
<i>Cornus stolonifera</i>	red-osier dogwood	tree	19
<i>Salix lasiandra</i>	Pacific willow	tree	10
<i>Rubus spectabilis</i>	salmonberry	shrub	12
<i>Carex lenticularis</i>	shore sedge	herbaceous	12
<i>Carex obnupta</i>	slough sedge	herbaceous	12
<i>Scirpus microcarpus</i>	small-fruited bulrush	herbaceous	12

Wetland Buffer. Non-native vegetation will be removed from the wetland buffer, most of which is non-native shrubs and herbaceous species. The plants to be used in re-planting the buffer are shown in Table 2, all of which are native to the area. The buffer areas to be re-planted are shown on Figure 2. The buffer plantings listed in Table 2 will increase the vegetative structure and diversity of the buffer and increase the overall habitat value of the wetland/wetland buffer/lake system. The rose and snowberry plants will be installed along the edge of the pedestrian trail, boardwalk, and platform. Over time, these plants will discourage pedestrians from going off the trail.

Table 2. Planting List for Wetland Buffer

Scientific Name	Common Name	Layer	Quantity
<i>Thuja plicata</i>	Western red cedar	tree	6
<i>Acer circinatum</i>	vine maple	shrub	28
<i>Corylus cornuta</i>	hazelnut	shrub	28
<i>Rosa gymnocarpa</i>	bald-hip rose	shrub	35
<i>Symphoricarpos albus</i>	snowberry	shrub	38
<i>Physocarpus capitatus</i>	Pacific ninebark	shrub	30
<i>Sambucus racemosa</i>	red elderberry	shrub	38
<i>Ribes sanguineum</i>	red-flowering currant	Shrub	38

Any areas that are disturbed will be seeded with a seed mix of *Alopecurus geniculatus* (water foxtail), *Agrostis stolonifera* (redtop), and *Festuca rubra* (red fescue) to stabilize soils and decrease the potential for non-native species to become established. The seed mix will be applied as stated on Figure 2.

Plants shown in Tables 1 and 2 will be installed between late October and early March, and will be installed based on details and notes presented on Figures 3 and 4. Plant substitutions are not

allowed unless approved by the project biologist and the City of Shoreline. Mulch will be placed to a depth of at least four inches around each installed plant.

6.3 Grading/Soils

To locate the dispersal trenches as far from the wetland as possible, approximately five to eight feet of buffer at the trench outlet (for the south trench) must be graded down to an elevation of 398 feet. The area to be graded for trench installation should be over-excavated by a depth of nine inches (as shown on Figure 2) to allow for nine inches of topsoil to be replaced. Topsoil from the site should be used in the over excavated area. The final grade adjacent to the trench should be to elevation 398.

The cement walkways currently on the site will be removed as part of buffer enhancement. Any compacted subgrade materials that may be present under the cement areas should be removed as well. Topsoil from the site should be backfilled into those areas where cement and subgrade materials are to be removed. Final grade of backfilled topsoil in these areas should match existing grades.

6.4 Habitat Features

To increase the habitat value of the enhanced wetland and wetland buffer, bird boxes and bat boxes will be installed. The location of these habitat features is shown on Figure 2. One bat box will be located in the southern portion of the wetland buffer. A cluster of two swallow boxes will be attached to a post, which will be installed in the central portion of the wetland buffer. In addition, two bird boxes with small holes will be installed to attract songbirds such as chickadees and wrens. One of these bird boxes will be located in the southwestern portion of the wetland and the other will be placed in the northwestern portion of the wetland buffer. The holes in the bird boxes will be sized to exclude starlings.

7.0 PERFORMANCE STANDARDS

Performance standards have been established to meet the enhancement goals. For this project, the restoration effort will be considered successful if the wetland buffer meets the following criteria:

- Installed plant survival of 100 percent through the first growing season;
- At least 80 percent survival of installed plants during the second through fifth monitoring years;
- At least 80 percent cover of planted species by Year 5; and
- Percent cover of non-native species less than 15 percent in each of the five monitoring years.

8.0 CONSTRUCTION PHASE

This enhancement plan will be implemented prior to or concurrent with site development. Plant installation will be between October and March. Project biologists will conduct periodic site

visits during construction and installation to verify that the plants are being installed as planned, and that sediment control devices are functioning properly. Once the plants have been installed and approved by the City, the landscape architect or project biologist will provide the City with an as-built, which will be used to determine plant survival during monitoring.

9.0 MONITORING

Monitoring will be conducted by a qualified biologist. Monitoring of the wetland and buffer enhancement areas will begin when construction is complete and will continue annually for five years post-construction. Specifically, monitoring will be conducted as follows:

- Upon completion of the wetland and buffer enhancement plantings;
- Approximately 30 days after plants have been installed;
- Twice annually during Monitoring Years 1 and 2, once early in the growing season (April) and later in the growing season (August); and
- Once annually during Monitoring Years 3 through 5, with monitoring data to be collected later in the growing season (August).

The main objective for mitigation monitoring is to document the level of success in meeting the performance standards. Survival data will be based on the as-built provided by the landscape contractor after the plants have been installed. Permanent sampling points will be established in the enhanced wetland and buffer to assess the success of the mitigation project and obtain percent cover data. In addition, permanent photo-points will be established that show an overview of the enhanced wetland and wetland buffer as well as vegetation conditions at the sampling points.

9.1 Data Collection

The following will be recorded each time the site is monitored:

- Survival rates of planted vegetation;
- General plant health assessment;
- Percent cover of planted vegetation;
- Percent cover of non-native species; and
- Photographs showing general overview of restored areas and monitoring points.

In addition, any wildlife that is observed using the replanted buffers will be noted.

9.2 Reporting

Monitoring reports will document the success in meeting the performance standards. The reports will recommend maintenance and plant species replacements, as necessary. Photographs will be included in the annual monitoring reports. Monitoring reports will be submitted by Prescott Homes to the City of Shoreline annually for five years no later than September 30 of each year.

To comply with SMC 20.80.350.G.3.d, monitoring reports will be prepared:

- Upon completion of the initial enhancement plantings;
- Within 30 days after plants are installed;
- Twice annually during Monitoring Years 1 and 2 (early spring and mid-summer); and
- Once annually during Monitoring Years 3 through 5 (mid-summer).

Monitoring reports will be finalized and submitted within 30 days of completing the monitoring. For early spring monitoring, the reports will be submitted by May 31 and mid-summer reports will be submitted by September 30.

9.3 Maintenance

Maintenance of the replanted wetland buffers will begin after completion of the project and continue for five years. The landscape contractor will be responsible for plant survival for a period of one year. After that, maintenance will be performed by a qualified professional contracted by Prescott Homes. Maintenance could include, but may not be limited to:

- Installing supplemental plantings as needed;
- Watering, as needed, to ensure that the planted areas receive at least one inch of water per week during the first year after plants are installed;
- Watering or providing irrigation during the second and third growing seasons if conditions are unseasonably dry;
- Manually removing non-native or invasive plant species if the percent cover exceeds 15 percent (herbicides shall not be used to control non-natives);
- Providing fencing around plants (where needed) to prevent animal damage; and
- Providing fencing to prevent vandalism or damage caused by humans.

10.0 PERFORMANCE BOND

The City of Shoreline will require a performance bond to ensure that enhancement of the wetland and wetland buffer are implemented as presented in this report. According to SMC 20.80.350.G.2, the performance bond shall equal 125 percent of the cost of the mitigation project for a minimum of five years. The bond may be reduced in proportion to the work successfully completed over the period of the bond.

11.0 CONTINGENCY PLAN

If any portion of the restoration effort is not successful, a contingency plan will be implemented. Such plans are prepared on a case-by-case basis to remedy any aspects of the effort that are not meeting the performance standards. The plan, if required, would be developed in cooperation with the Prescott Homes and the City of Shoreline.

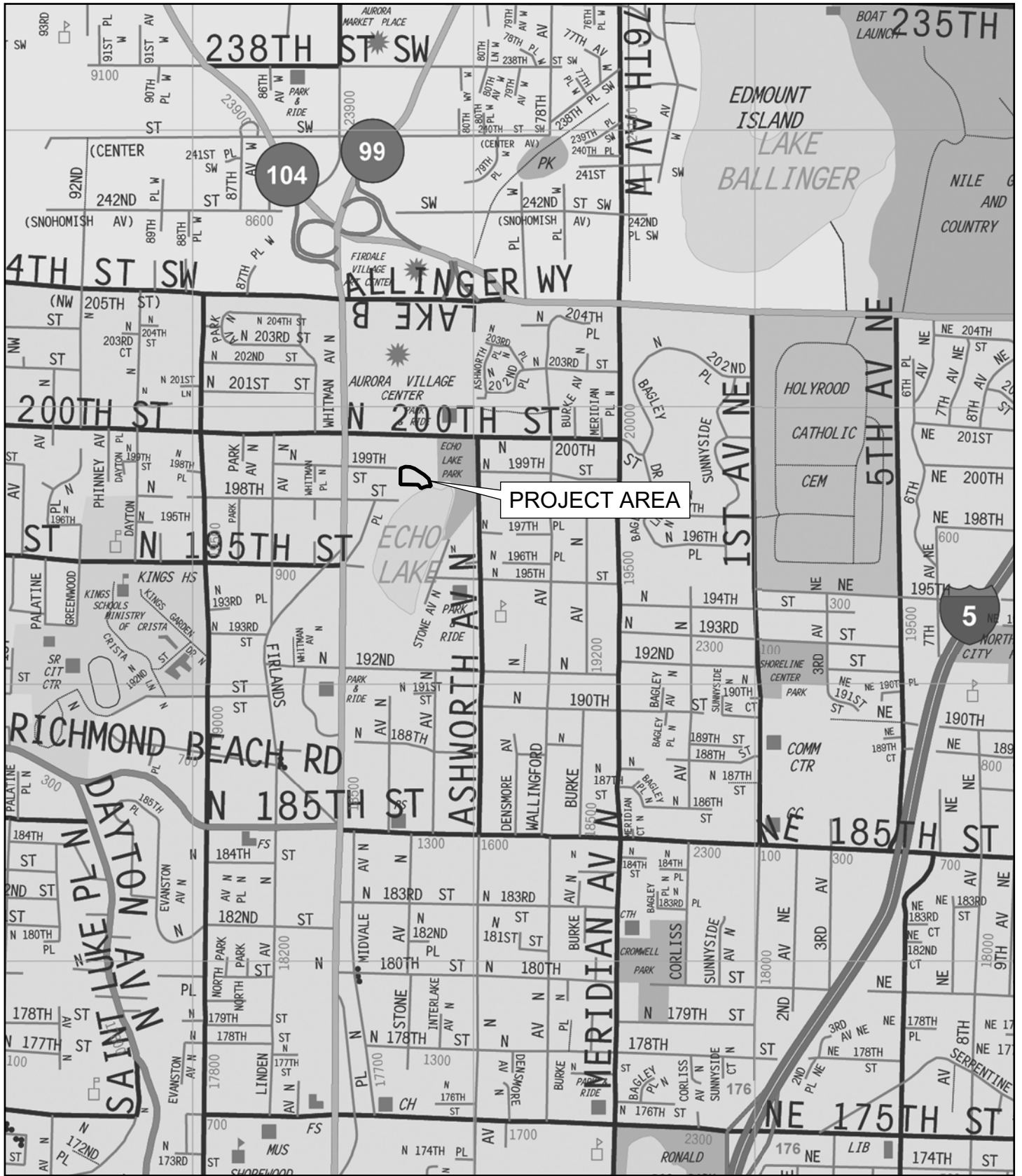
12.0 LIMITATIONS

Within the limitations of schedule, budget, and scope-of-work, we warrant that this work was conducted in accordance with generally accepted environmental science practices, including the technical guidelines and criteria in effect at the time this work was performed. The information provided in this report represents the authors' best professional judgment, based upon information provided by the project proponent in addition to that obtained during the course of conducting this work. No other warranty, expressed or implied, is made.

REFERENCES

Adolfson Associates, Inc. 2005. *Echo Lake Townhomes Wetland Delineation Report*. Prepared for Prescott Homes.

FIGURES



File name: Fig01_vicinity.ai
 Created/last edited by: JAB
 Date last updated: 02/22/06
 Reference: 25096



NOT TO SCALE

Map data are the property of the sources listed below.
 Inaccuracies may exist, and Adolfson Associates, Inc. implies no warranties or guarantees regarding any aspect of data depiction.
 SOURCE: Thomas Bros. Maps, 2004.

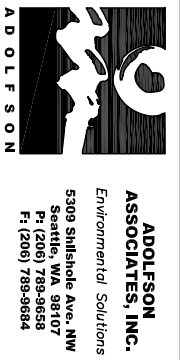
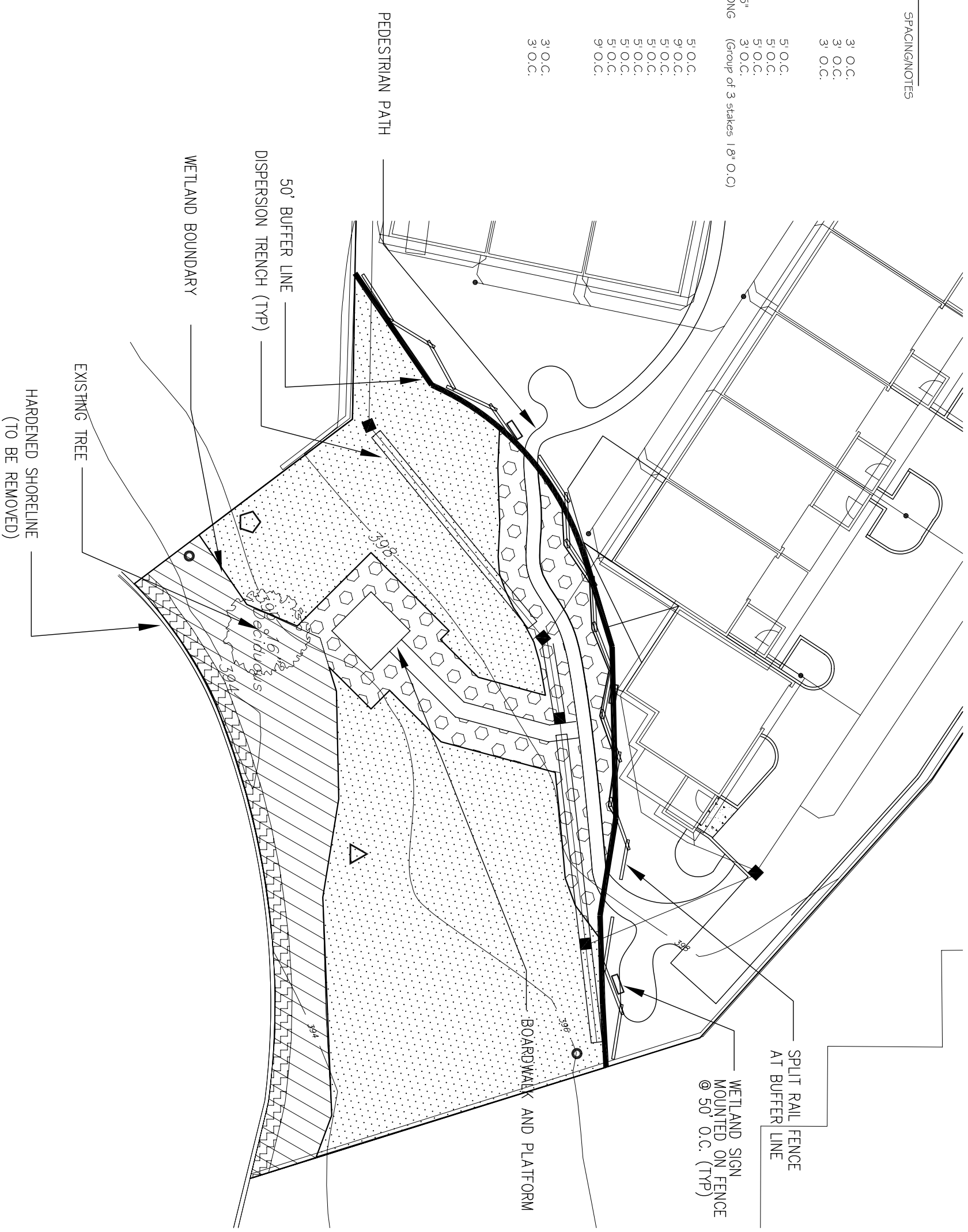
FIGURE 1

VICINITY MAP

SHORELINE TOWNHOMES

SHORELINE, WASHINGTON

PLANTING SCHEDULE				
SCIENTIFIC NAME	COMMON NAME	QTY	SIZE	SPACING/NOTES
EMERGENT WETLAND EDGE				
<i>Carex lenticularis</i>	Shore Sedge	12	10" PLUGS	3' O.C.
<i>Carex obovata</i>	Slough Sedge	12	10" PLUGS	3' O.C.
<i>Scirpus microcarpus</i>	Small-fruited Bulrush	12	10" PLUGS	3' O.C.
WETLAND ENHANCEMENT PLANTS				
<i>Cornus stolonifera</i>	Redtwig Dogwood	19	1 GAL.	5' O.C.
<i>Malus fusca</i>	Oregon Crabapple	8	2 GAL.	5' O.C.
<i>Rubus spectabilis</i>	Salmoberry	12	1 GAL.	5' O.C.
<i>Salix lasioandra</i>	Pacific Willow	10	L.5, 0.75-1.25" DIAM. X 18" LONG	3' O.C.
(Group of 3 stakes 18" O.C.)				
BUFFER CREATION/ENHANCEMENT PLANTS				
<i>Acer circinatum</i>	Vine Maple	28	2 GAL.	5' O.C.
<i>Corylus cornuta</i>	Hazelnut	28	2 GAL.	9' O.C.
<i>Physocarpus capitatus</i>	Pacific Ninebark	30	1 GAL.	5' O.C.
<i>Ribes sanguineum</i>	Red-flowering Currant	38	1 GAL.	5' O.C.
<i>Sambucus racemosa</i>	Red Elderberry	40	2 GAL.	5' O.C.
<i>Rosa gymnocarpa</i>	Baldhip Rose	35	1 GAL.	5' O.C.
<i>Symphoricarpos albus</i>	Snowberry	38	2 GAL.	5' O.C.
<i>Thuja plicata</i>	Western Redcedar	6	2 GAL.	9' O.C.
DENSE PATHWAY BUFFER PLANTS				
<i>Ribes sanguineum</i>	Red-flowering Currant	60	1 GAL.	3' O.C.
<i>Rosa gymnocarpa</i>	Baldhip Rose	66	1 GAL.	3' O.C.
Seed Mix				
Seed all areas of disturbed soil with the following mix:				
<i>Alopecurus geniculatus</i>	Water Foxtail	60%		
<i>Agrostis stolonifera</i>	Redtop	30%		
<i>Festuca rubra</i>	Red Fescue	10%		
Application rate: 45 lbs./acre				

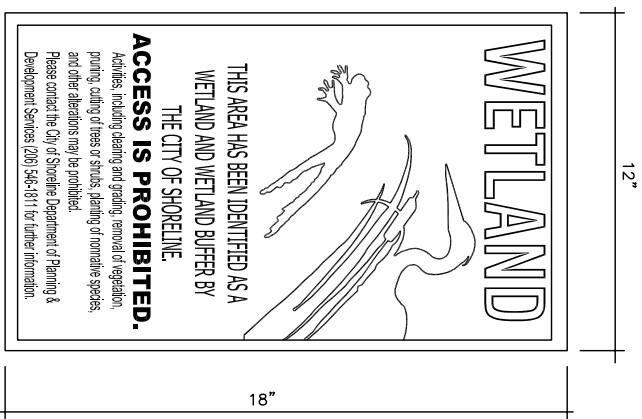


ADOLFSON ASSOCIATES, INC.
Environmental Solutions
5309 Smithdale Ave., NW
Seattle, WA 98107
P: (206) 789-9858
F: (206) 789-9884

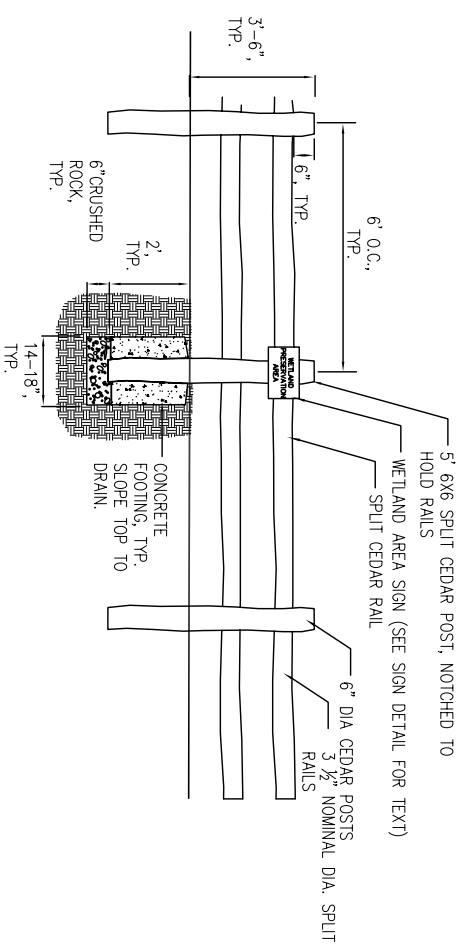
MAP DATA ARE THE PROPERTY OF THE SOURCES LISTED BELOW. INACCURACIES MAY EXIST, AND ADOLFSON ASSOCIATES, INC. MAKES NO WARRANTIES OR GUARANTEES REGARDING ANY ASPECT OF DATA DEFINITION.
SOURCE: CB Anderson Architects February, 2006

File name: 25096_MitConcept.dwg
Date: 10/31/05 mbe
Revised: 2/22/06 mbe

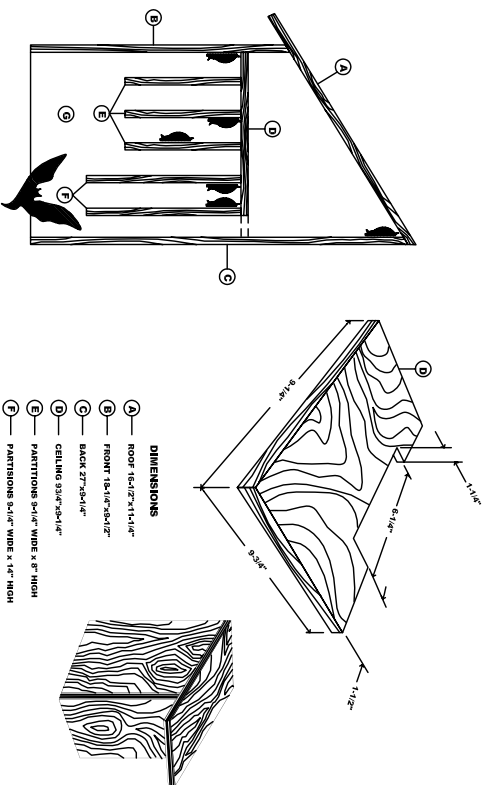
FIGURE 2 - PLANTING PLAN
SHORELINE TOWNHOMES
SHORELINE, WASHINGTON
PRESCOTT HOMES



WETLAND SIGN DETAIL
NOT TO SCALE

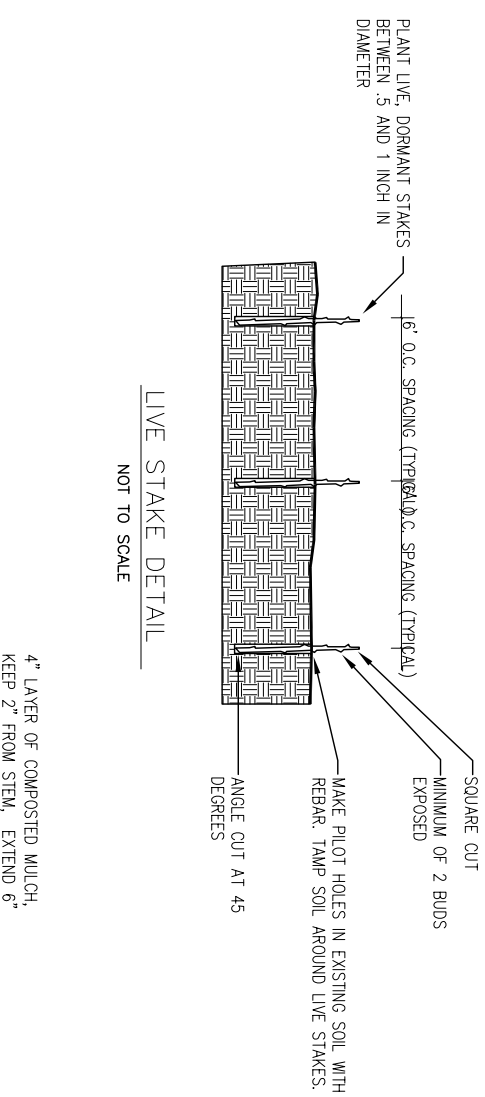
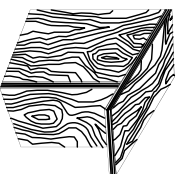


SPLIT RAIL FENCE DETAIL
NOT TO SCALE

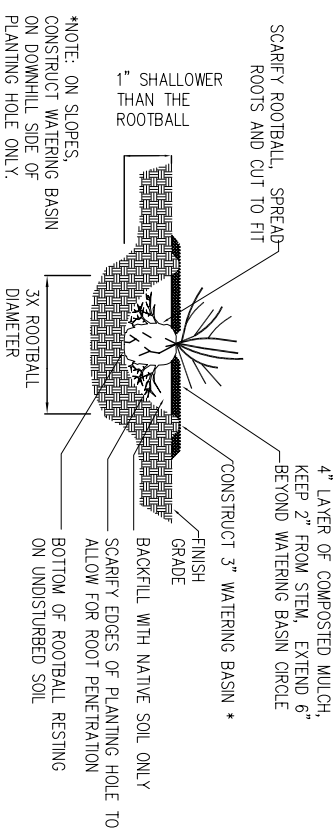


BAT BOX DETAIL
NOT TO SCALE

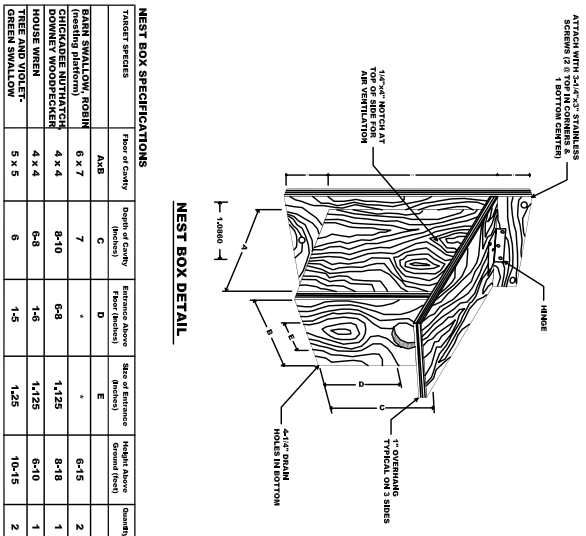
- DIMENSIONS**
- Ⓐ ROOF 14"X27"X1'-1/4"
 - Ⓑ FRONT 27"X34"
 - Ⓒ BACK 27"X34"
 - Ⓓ CEILING 34"X34"
 - Ⓔ PARTITIONS 34"X1" WIDE x 1'-1" HIGH
 - Ⓕ SIDES 1'-1/4" WIDE x 27" AT BACK, 14"X27" FRONT
- SPACING BETWEEN PARTITIONS**
- FRONT TO BACK 34" x 34" x 34" x 1" x 27" x 14"



LIVE STAKE DETAIL
NOT TO SCALE



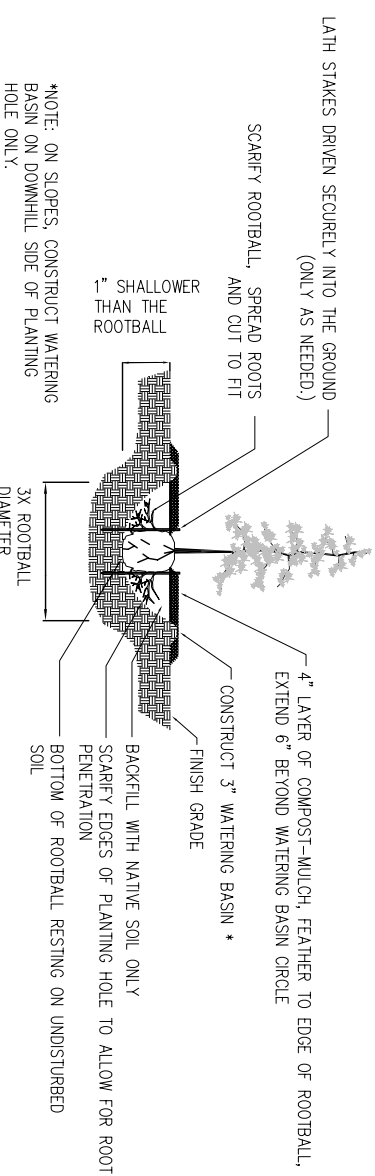
SHRUB PLANTING DETAIL
NOT TO SCALE



NEST BOX DETAIL

NEST BOX SPECIFICATIONS

Species	Type of Entry	Spacing of Entry (Feet Between)	Reference Above (Feet Below)	Start of Entrance (Feet Above)	Height Above (Feet Below)	Quantity
RAIN SWALLOW	ROBIN	6 x 7	7	-	-	2
CHICKADEE NUTCRACKER	DOWNY WOODPECKER	4 x 4	4 x 4	6-8	1, 1.25	1
HOUSE WREN	TREE TOAD VIOLET-BREASTED SWALLOW	4 x 4	4 x 4	1-5	1, 1.25	1
		5 x 5	6	1-5	1, 25	2



TREE PLANTING DETAIL
NOT TO SCALE



ADOLPHSON ASSOCIATES, INC.
Environmental Solutions
5309 Shilshole Ave., NW
Seattle, WA 98107
P: (206) 789-9858
F: (206) 789-9884

MAP DATA ARE THE PROPERTY OF THE SOURCES LISTED BELOW. INACCURACIES MAY EXIST. ADOLPHSON ASSOCIATES, INC. MAKES NO WARRANTIES OR GUARANTEES REGARDING ANY ASPECT OF DATA DEFLECTION.
SOURCE: CB Anderson Architects February, 2006

File name: 25096_MitConcept.dwg
Date: 10/31/05 mbe
Revised: 2/22/06 mbe

NOT TO SCALE

FIGURE 3 - PLANTING DETAILS
SHORELINE TOWNHOMES
SHORELINE, WASHINGTON
PRESCOTT HOMIES

NOTES

GENERAL

REFER TO ADOLFSON ASSOCIATES, INC. REPORT FOR DETAILED DESCRIPTIONS OF IMPACTS, PROPOSED MITIGATION, AND MONITORING METHODS.

WETLAND PROTECTION METHODS

BEST MANAGEMENT PRACTICES (BMP) SHALL BE EMPLOYED PRIOR TO AND DURING CONSTRUCTION AND SHALL INCLUDE: PRECONSTRUCTION MEETING WITH THE GENERAL CONTRACTOR, THE GRADING CONTRACTOR, THE LANDSCAPE CONTRACTOR'S ON-SITE FOREMAN, CITY OF SHORELINE PERSONNEL, AND PROJECT BIOLOGIST/LANDSCAPE ARCHITECT TO EXPLAIN THE GENERAL CONCEPT, PLANTING AND/OR CONSTRUCTION INSTURCTIONS. OTHER ATTENDEES MAY INCLUDE REPRESENTATIVES FROM THE PROJECT ENGINEER, AND THE PROJECT SUPERVISOR.

NO HEAVY EQUIPMENT SHALL CROSS WETLAND AREAS, ALL CLEARING AND BRUSHING IN WETLANDS SHALL BE DONE BY HAND. CLEARLY MARKING WITH BRIGHT FENCING THE LIMITS OF CLEARING AND GRADING. CONFIRMING ALL MACHINERY, TOOLS, MATERIALS, CONSTRUCTION ACTIVITY AND DEBRIS TO THE CONSTRUCTION AREAS. MINIMUM BUFFER ZONES SHALL BE MAINTAINED FROM THE WETLANDS. ALL PLANTING AND CONSTRUCTION ACTIVITY SHALL BE LIMITED TO THE PERMITTED MAINTENANCE EROSION CONTROL AREAS. THE BUFFER ZONE AREA HAS BEEN SUCCESSFULLY PLANTED AND CONSTRUCTION IS COMPLETED, AND THE CITY OF SHORELINE HAS ISSUED "FINAL APPROVAL" OF THE MITIGATION AREAS.

STAKING/MARKING MITIGATION AREAS

1. LIMITS OF CLEARING, GRADING, AND MITIGATION PLANTING AREAS MUST BE CLEARLY MARKED BY SURVEYING PRIOR TO AND DURING a) SITE CLEARING AND GRADING ACTIVITIES, AND b) ENHANCEMENT PLANTINGS.

2. THE ENHANCEMENT AREA SHALL BE LOCATED BY A PROFESSIONAL SURVEYOR TO ENSURE PROPER SIZE, WIDTH, LOCATION AND ELEVATION OF ALL MITIGATION FEATURES.

SITE PREPARATION

1. REMOVE NON-NATIVE SPECIES (SEE MAINTENANCE ACTIVITIES BELOW) FROM ALL PROPOSED PLANTING AREAS.
2. OVER-EXCAVATE 9" MINIMUM AND LOOSEN COMPACTED SUBGRADE 6'-12".
3. INSTALL 9" SALVAGED ON-SITE TOPSOIL. REPLACED SOILS SHALL CONTAIN AT LEAST 30% ORGANIC MATTER BY BULK DENSITY. SOIL AMENDMENTS IF NEEDED TO BE APPROVED BY PROJECT BIOLOGIST. MECHANICALLY TILL INTO SUBSOIL. NO MORE THAN 6" AT A TIME. FINISHED GRADE SHALL MATCH EXISTING GRADE EXCEPT AT THE OUTLET OF THE SOUTH DISPERSAL TRENCH, WHERE FINISHED GRADE SHALL BE 395."

MAINTENANCE

IN ORDER TO ACHIEVE PERFORMANCE STANDARDS, THE PERMITTEE SHALL HAVE THE ENHANCEMENT AREA MAINTAINED FOR THE DURATION OF THE PERFORMING PERIOD. THE PERMITTEE SHALL PROVIDE AT LEAST ONE MAINTENANCE VISIT PER GROWING SEASON THROUGHOUT FIVE YEAR MONITORING PERIOD WITH ADDITIONAL VISITS AS DETERMINED NECESSARY BY PROJECT BIOLOGIST. REMOVAL OF ALL NON-NATIVE SPECIES SUCH AS HIMALAYAN AND EVERGREEN BLACKBERRY, KNOTWEED AND SCOTS BROOM, YOUNG PINE AND ALDER AND BLACK COTTONWOOD SEEDLINGS/PLANTS WITHIN THE MITIGATION AREA WILL BE THINNED TO A MINIMUM OF 12-FOOT CENTERS THROUGHOUT THE MONITORING PERIOD. REMOVE ALL NON-NATIVE VEGETATION DEBRIS. WATER IF PLANTS APPEAR EXCESSIVELY DRY. WATER ALL PROPOSED PLANTING AREAS AT A RATE OF AT LEAST 1" INCH OF WATER PER WEEK WITH RAINFALL FROM JUNE 15 THROUGH SEPTEMBER 15 FOR AT LEAST THE FIRST TWO YEARS OF THE FIVE YEAR MONITORING PERIOD.

SUCCESS CRITERIA

1. 100% SURVIVAL OF ALL PLANTED TREES AND SHRUBS AFTER THE FIRST YEAR; AND AT LEAST 90% NATIVE VEGETATIVE COVER THEREAFTER.
2. AT LEAST 90% COVER BY YEAR FIVE.
3. ALL DEBRIS SUCH AS TRASH AND TIRES SHALL BE REMOVED ANNUALLY. NON-NATIVE PLANT SPECIES COVER SHALL NOT EXCEED FIFTEEN PERCENT.
4. IF FAILURE TO MEET THE SUCCESS CRITERIA DURING THE MONITORING PERIOD RESULTS IN ADDITIONAL MITIGATION WORK, THE ADDITIONAL WORK SHALL BE PERFORMED WITHIN FOUR (4) MONTHS OF THE DATE OF THE MONITORING REPORT THAT NOTED THE FAILURE.

MONITORING

1. MONITORING SCHEDULE (ADJUST YEAR ACCORDING TO ACTUAL CONSTRUCTION SCHEDULE):

1ST MONITORING SITE VISIT	UPON COMPLETION OF PLANTING
2ND MONITORING SITE VISIT	WITHIN 30 DAYS
1ST YEAR MONITORING VISITS	SPRING
2ND YEAR MONITORING VISITS	SPRING
3RD YEAR MONITORING VISITS	SPRING
4TH YEAR MONITORING VISITS	SPRING
5TH YEAR MONITORING VISITS	SPRING

2. MONITORING PROTOCOL
1ST YEAR: ESTABLISH PERMANENT MONITORING PLOT AND PHOTO POINT LOCATIONS THROUGHOUT MITIGATION AREA.
2ND THRU 5TH YEAR: DETERMINE SURVIVAL AND/OR PERCENT COVER/COMPOSITION BY SPECIES. RECOMMEND MAINTENANCE OR CONTINGENCY ACTIVITIES.

3. MONITORING REPORT
FOLLOWING EACH YEAR'S MONITORING VISIT, PROVIDE A REPORT DETAILING THE FINDINGS OF THE VISIT. REPORT SHALL INCLUDE PHOTOGRAPHS AND VIDEO RECORDING OF EACH MONITORING PLOT AND PHOTO POINT. PHOTOGRAPHS AND VIDEO RECORDING SHALL INCLUDE PHOTOGRAPHS FROM ESTABLISHED PHOTO POINTS, AND ANY RECOMMENDATIONS FOR MAINTENANCE AND REPAIRS. THIS REPORT SHOULD BE SUBMITTED TO THE CITY OF SHORELINE AND TO THE RESPONSIBLE PARTY OR OWNER BY DATES SPECIFIED IN SECTION 9.2 OF THIS REPORT. THE RESPONSIBLE PARTY OR OWNER SHOULD ADDRESS ALL MAINTENANCE AND REPAIR RECOMMENDATIONS WITHIN 4 MONTHS OF RECEIVING EACH MONITORING REPORT, AND SHOULD FORWARD A MEMO TO THE CITY DETAILING ANY ACTIONS THAT WERE TAKEN.

CONTINGENCY PLANS

APPROPRIATE CONTINGENCY PLANS WILL BE DEVELOPED AS NECESSARY DURING THE 5-YEAR MONITORING PERIOD TO CORRECT PROBLEMS IDENTIFIED DURING MONITORING. IF NECESSARY, REPLANTING WILL BE CONDUCTED AFTER THE REASON FOR FAILURE HAS BEEN DETERMINED (E.G., POOR PLANTING STOCK, MOISTURE REGIME, HERBIVORY, INSEST, SHADY/SUN CONDITIONS, HYDROLOGIC CHANGES, ETC.). THE RESPONSIBLE PARTY SHALL HAVE THE RESPONSIBILITY OF PRESORTING HOMES TO HAVE THE PLANTS REINSTALLED AFTER THE 1-YEAR CONTRACTOR GUARANTEE PERIOD.

ALL CONTINGENCY PLANS WILL BE SUBMITTED TO THE CITY OF SHORELINE FOR APPROVAL PRIOR TO IMPLEMENTATION.

RECORD DRAWINGS

AN AS-BUILT DRAWING WILL BE PROVIDED IMMEDIATELY AFTER COMPLETION OF PLANTING AND WILL INCLUDE A DIRECT COUNT OF PLANT SPECIES IN EACH PLANTING ZONE, AS WELL AS THE ESTABLISHMENT OF PERMANENT PHOTO POINTS. THE AS-BUILT DRAWING SHALL BE SUBMITTED TO THE CITY OF SHORELINE WITHIN 30 DAYS OF INSTALLATION AND BEFORE THE ACCEPTANCE OF THE MITIGATION INSTALLATION.

PLANTING

ORIGIN

1. PLANT MATERIALS SHALL BE NATIVE PLANTS, NURSERY GROWN IN THE PUGET SOUND AREA OF WASHINGTON.

HANDLING

1. PLANTS SHALL BE HANDLED SO AS TO AVOID ALL DAMAGE, INCLUDING BREAKING, BRUISING, ROOT DAMAGE, SUNBURN, DRYING, FREEZING OR OTHER INJURY. PLANTS MUST BE COVERED DURING TRANSPORT. PLANTS SHALL NOT BE BOUND WITH WIRE OR ROPE IN A MANNER THAT COULD DAMAGE BRANCHES. PROTECT PLANT ROOTS WITH SHAD AND WET SOIL IN THE TIME PERIOD BETWEEN DELIVERY AND INSTALLATION. DO NOT LET PLANTS DRY OUT. PLANTS SHOULD BE STORED IN A COOL, SHADY AREA WITH MOISTURE TO PREVENT DRYING. PLANTS SHOULD BE STORED IN A COOL, SHADY AREA WITH MOISTURE LEVELS APPROPRIATE TO THE SPECIES. HORTICULTURAL REQUIREMENTS. PLANTS SHALL NOT BE ALLOWED TO DRY OUT. ALL PLANTS SHALL BE WATERED THOROUGHLY IMMEDIATELY UPON INSTALLATION. SOAK ALL CONTAINERIZED PLANTS THOROUGHLY PRIOR TO INSTALLATION. PLANTS WHOSE ROOTS HAVE DRIED OUT FROM EXPOSURE WILL NOT BE ACCEPTED AT INSTALLATION INSPECTION.

DAMAGED PLANTS

1. DAMAGED DRIED OUT, OR OTHERWISE MISHANDLED PLANTS WILL BE REJECTED AT INSTALLATION INSPECTION. ALL REJECTED PLANTS SHALL BE IMMEDIATELY REMOVED FROM THE SITE.

PLANT NAMES

1. PLANT NAMES SHALL COMPLY WITH THOSE GENERALLY ACCEPTED IN THE NATIVE PLANT NURSERY TRADE. ANY QUESTION REGARDING PLANT NAMES OR VARIETY SHALL BE REFERRED TO THE PROJECT BIOLOGIST OR LANDSCAPE ARCHITECT.

PLANT SUBSTITUTIONS

PLANT SUBSTITUTIONS ARE NOT PERMITTED WITHOUT THE PERMISSION OF THE PROJECT BIOLOGIST OR LANDSCAPE ARCHITECT. SAME SPECIES SUBSTITUTIONS OF LARGER SIZE DO NOT REQUIRE SPECIAL PERMISSION. HOWEVER, SMALL PLANTS OFTEN EXPERIENCE LESS TRANSPLANT SHOCK AND ADAPT MORE QUICKLY TO SITE CONDITIONS, RESULTING IN A HIGHER SUCCESS RATE. AS SUCH, SMALLER PLANTS WILL BE APPROVED AS SUBSTITUTIONS BASED ON CERTAIN SITE-SPECIFIC CONDITIONS (TREES NOT LESS THAN 1 GALLON SIZE HOWEVER).

QUALITY AND CONDITION

1. PLANTS SHALL BE NORMAL IN PATTERN OF GROWTH, HEALTHY, WELL BRANCHED, VIGOROUS, WITH WELL-DEVELOPED ROOT SYSTEMS, AND FREE OF PESTS AND DISEASES. DAMAGED, INSECT, RES-IMPACTED, SCALDED, BRUISED, DRIED OUT, BURNED, BROKEN, OR DEFECTIVE PLANTS WILL BE REJECTED. PLANTS WITH PRUNING WOUNDS OVER 1" IN DIAMETER WILL BE REJECTED.

ROOTS

1. ALL PLANTS SHALL BE CONTAINERIZED OR BALLED AND BURGLAPPED, UNLESS EXPLICITLY AUTHORIZED BY THE PROJECT BIOLOGIST OR LANDSCAPE ARCHITECT. ROOTBOUND PLANTS OR B&B PLANTS WITH DAMAGED, CRACKED OR LOOSE ROOTBALLS (MAJOR DAMAGE) WILL BE REJECTED. IMMEDIATELY BEFORE INSTALLATION, PLANTS WITH MINOR ROOT DAMAGE (SOME BROKEN AND/OR TWISTED ROOTS) MUST BE ROOT-PRUNED, WATERED OR CIRCLING ROOTS OF CONTAINERIZED PLANTS MUST BE PRUNED OR STRAIGHTENED AND THE SIDES OF THE ROOT BALL MUST BE ROUGHENED FROM TOP TO BOTTOM TO A DEPTH OF APPROXIMATELY HALF AN INCH IN TWO TO FOUR PLACES.

THINING

1. PLANTINGS SHALL BE INSTALLED IN THE FALL-WINTER SEASON TO ENSURE ADEQUATE MOISTURE DURING PLANT ESTABLISHMENT.

PLANTING SPECIFICATIONS

1. THIS PLANTING PLAN IS DESIGNED TO REPLICATE NATURAL PLANT COMMUNITIES IN SPECIES COMPOSITION AND ARRANGEMENT. EVEN SPACING AND STRAIGHT-ROW PLANTING ARE NOT DESIRED WITH THE EXCEPTION OF PLANTING ALONG THE TRAIL THROUGH THE BUFFER.
2. ACTUAL PLANTING LOCATION TO BE DETERMINED BY FIELD CONDITIONS. WEAK OR DAMAGED PLANTS WILL BE REJECTED BY THE PROJECT BIOLOGIST OR LANDSCAPE ARCHITECT. PLANTS SHALL BE HEALTHY, NONSEN-DOWN-SHIFT STOCK. WEAK OR DAMAGED PLANTS WILL BE REJECTED BY THE PROJECT BIOLOGIST OR LANDSCAPE ARCHITECT.
4. DEPENDING ON THE AVAILABILITY OF NATURAL RAINFALL, THE LANDSCAPE CONTRACTOR MAY NEED TO PROVIDE SUPPLEMENTAL WATERING TO ENSURE PLANT SURVIVAL.
5. PLANT PROCUREMENT, TRANSPORT, STORAGE, HANDLING, PLANTING TECHNIQUES, CARE OF EXISTING SOIL AND VEGETATION, AND WATERING ARE TO BE DETERMINED BY THE PROJECT BIOLOGIST OR LANDSCAPE ARCHITECT.
6. THE LANDSCAPE CONTRACTOR SHALL GUARANTEE 100% PLANT SURVIVAL FOR ONE YEAR AFTER PROVISIONAL ACCEPTANCE BY KING COUNTY. ALL DEAD OR DYING PLANT MATERIAL SHALL BE REPLACED BY THE PROJECT BIOLOGIST OR LANDSCAPE ARCHITECT OF ANY CONDITIONS THAT ARE JUDGED TO IMPAIR PLANT SURVIVAL. ALTERNATIVES WILL BE APPROVED BY THE PROJECT BIOLOGIST OR LANDSCAPE ARCHITECT PRIOR TO PLANT SUBSTITUTION.

PERCENT COVER
PLANTING: 100% WITH GRASS SEED GERMINATED, ANY NON-MULCHED OR BARE AREA GREATER THAN 1 SQUARE FOOT SHALL BE RESEEDER OR PLANTED.

STAKING

MOST SHRUBS AND TREES DO NOT REQUIRE ANY STAKING. IF THE PLANT CAN STAND ALONE WITHOUT STAKING IN A MODERATE WIND, DO NOT USE A STAKE. HOWEVER, IF THE PLANT NEEDS SUPPORT, THEN USE A STAKE WITH STRAPPING OR WEBBING PLACED AS LOW AS POSSIBLE ON THE TRUNK TO LOOSELY BRACE THE TREE WITH TWO STAKES (SEE PLANTING DETAIL). DO NOT BRACE THE PLANT TIGHTLY OR TOO HIGH ON THE STEM. IF THE PLANTS IS UNABLE TO SHAKE IT WILL, FURTHER USE THE BRACE TO SUPPORT TRUNK. IF PLANTS FALL OVER FOR ANY REASON, THEY WILL BE REJECTED. PLANTS SHALL BE STAKED WITH TWO STAKES PER PLANT. STAKES SHALL BE PLACED AT AN ANGLE TO THE TRUNK AND THE BARK. AS SOON AS SUPPORTING THE PLANT BECOMES UNNECESSARY, REMOVE THE STAKES. ALL STAKES MUST BE REMOVED WITHIN TWO (2) YEARS OF INSTALLATION.

MULCHING

1. ALL TREES, SHRUBS, GROUNDCOVERS AND EMERGENTS TO RECEIVE 4" OF FULLY AGED CEDAR GROVE COMPOST OR EQUAL (TO BE APPROVED BY PROJECT BIOLOGIST OR LANDSCAPE ARCHITECT PRIOR TO INSTALLATION) TO ASSIST PLANT SURVIVAL. (SEE DETAIL THIS SHEET). COMPOST SHALL BE KEPT WELL AWAY (AT LEAST 2") FROM THE TRUNKS AND STEMS OF ALL PLANTS. NO BARK PRODUCTS OR SAND/UST WILL BE PERMITTED. MULCH SHALL BE FREE OF WEED SEEDS.

SEEDING

1. HYDROSEED OR HAND SEED ALL AREAS OF DISTURBED SOIL WITHIN THE MITIGATION AND TRAIL RESTORATION AREAS EXCLUDING MULCHED PLANT PITS. SEE THE PLANT SCHEDULE FOR SEED MIX AND APPLICATION RATES. HYDROSEED TO INCLUDE TACKIFIER, MULCH AND FERTILIZER COMPONENTS. PROJECT BIOLOGIST TO APPROVE FINAL MIX.
2. THINNING, SEEDING SHALL NOT TAKE PLACE UNTIL MULCH HAS BEEN APPLIED. CONTRACTOR SHALL INSURE THAT AREAS TO RECEIVE SEED ARE CLEAN OF DEBRIS AND THAT FINAL GRADERS ARE CORRECT. SEEDING SHALL BE PERFORMED AFTER OTHER PLANT INSTALLATION IS COMPLETE. SEEDING IS THE FINAL STEP OF THE INITIAL INSTALLATION. SITE SHALL BE CLOSED TO ALL VEHICLES AND FOOT TRAFFIC. SEEDING SHALL BE MINIMIZED AFTER SEEDING IS COMPLETE. SEEDING SHALL NOT TAKE PLACE WHEN THE GROUND IS FROZEN OR IN WINDY WEATHER. SEEDS SHALL BE HAND BROADCAST OR BY MECHANICAL HAND POWERED SPREADER, WITH AS EVEN DISTRIBUTION AS FEASIBLE. AREAS WITHIN 12" OF STEMS OF INSTALLED PLANTS SHALL NOT BE SEEDED.
3. PERCENT WEED SEED SHALL BE 0.005% BY WEIGHT MAXIMUM. CONTRACTOR SHALL PROVIDE TO THE PROJECT BIOLOGIST OR LANDSCAPE ARCHITECT A COPY OF SEED ANALYSIS TAG, PROOF OF PROVENANCE, AND SUPPLIER GUARANTEE OF CONTENTS AND PURITY.

TEMPORARY EROSION AND SEDIMENTATION CONTROL (TESC)

PRIOR TO INITIATION OF CONSTRUCTION ACTIVITIES, SILT FENCING SHALL BE PLACED AROUND THE PERIMETER AREAS OF PROPOSED CONSTRUCTION. SEDIMENTATION CONTROL STRUCTURES SHALL BE PLACED AT THE END OF THE CONSTRUCTION STAGING AREAS. ALL SEDIMENTATION CONTROL STRUCTURES SHALL BE KEPT IN PLACE AND FUNCTIONING UNTIL THE GROUND VEGETATION IS FULLY ESTABLISHED. REFER TO THE SITE ENGINEER'S TESC PLAN FOR ALL DETAILS.

HERBICIDES/PESTICIDES

CHEMICAL CONTROLS SHALL NOT BE USED IN THE MITIGATION/RESTORATION AREA, SENSITIVE AREAS, OR THEIR BUFFERS, HOWEVER, LIMITED USE OF HERBICIDES MAY BE APPROVED DEPENDING ON SITE-SPECIFIC CONDITIONS, ONLY IF APPROVED BY CITY OF SHORELINE STAFF.



ADOLFSON ASSOCIATES, INC.
Environmental Solutions
5309 Shiloh Ave., NW
Seattle, WA 98107
P: (206) 789-9858
F: (206) 789-9884

MAP DATA ARE THE PROPERTY OF THE SOURCES LISTED BELOW.
MAPS/FILES MAY EXIST AND ADOLFSON ASSOCIATES, INC. INCURS NO WARRANTIES OR GUARANTEES REGARDING ANY ASPECT OF DATA DEFINITION.
SOURCE: CB Anderson Architects February, 2006

NOT TO SCALE

File name: 25096_MitConcept.dwg
Date: 10/31/05 mbe
Revised: 2/22/06 mbe