

APPENDIX C

**REVEGETATION GUIDELINES
AND
GUIDELINES FOR REMOVAL OF INVASIVE, NON-NATIVE SPECIES**

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REVEGETATION GUIDELINES AND GUIDELINES FOR REMOVAL OF INVASIVE, NON-NATIVE SPECIES

C.1 INTRODUCTION

A major goal for the habitat enhancement and restoration component of the *Management Plan* is to restore and manage native wetland and riparian habitats so they provide suitable and sustainable habitat for native plant and animal species and require little maintenance in the long-term. Several other goals for the project involve minimizing maintenance efforts and minimizing opportunities for establishment of invasive, non-native plant species. Habitat restoration should be conducted in consultation with qualified individuals and is subject to any required permitting.

C.2 PLANT MATERIALS

Plant materials used for revegetation of native habitats within the watercourse and wetland areas should utilize locally obtained native plants for the revegetation. Table C-1 provides a list of suitable plant species for revegetation. There are several local sources that can provide contract-growing services, wherein plant materials are collected from the watershed and immediate vicinity and grown into stock suitable for installation. A landowner or agency will need to allow time for plant species to be collected and grown at a nursery prior to their installation. Some species, such as willow, cottonwood and mulefat, can be obtained as live cuttings from the watershed. These plants can be installed as dormant cuttings.

C.2.1 Sources of Container Stock Plants. Many local nurseries and growers supply native riparian and wetland plant species. These sources are also available to collect and propagate plant material from a local area. Some available sources include:

CENTRAL COAST WILDS
Santa Cruz, CA
(831) 459-0656

UCSC ARBORETUM
Santa Cruz, CA
(831) 427-2998

NATIVE REVIVAL NURSERY
Aptos, CA
(831) 684-1811

CABRILLO COLLEGE
HORTICULTURE DEPARTMENT
Aptos, CA
(831) 479-6241

ELKHORN NATIVE PLANT NURSERY
Moss Landing, CA
(831) 763-1207

Table C-1. Principal Plant Species Suitable for Riparian and Wetland Revegetation

Common Name	Scientific Name	Propagule Collection Period	Typical Spacing (feet, on center)	Recommended Application
Coast Live Oak Riparian Woodland				
Coast live oak	<i>Quercus agrifolia</i>	Sept.-Oct.	15-20 feet	Tree pot or one gallon
Hazel nut	<i>Corylus cornuta</i>	July – Aug	15-20 feet	Tree pot or one gallon
California rose	<i>Rosa californica</i>	Sept.-Oct.	6 feet	Dee Pot
Blue blossom	<i>Ceanothus thyrsiflorus</i>	June-July	6 feet	Dee Pot
Coffee berry	<i>Rhamnus californica</i>	July-Aug.	6 feet	Dee Pot
Flowering Currant	<i>Ribes californicum</i>	July- Aug.	6 feet	Dee Pot
Sticky monkey flower	<i>Mimulus aurantiacus</i>	July-Aug	6 feet	Dee Pot
California blackberry	<i>Rubus ursinus</i>	July-Aug.	6 feet	Rooted Cutting or Dee Pot
Bracken Fern	<i>Pteridium aquilinum</i>	Oct.	6 feet	Root Division or Dee Pot
Wood fern	<i>Dryopteris arguta</i>	Oct.	6 feet	One gallon
Mugwort	<i>Artemisia douglasiana</i>	Sept.-Oct.	6 feet	One gallon
Willow and Mixed Riparian Woodland				
Willow	<i>Salix</i> spp.	Winter	10 feet	Dormant Cutting
Black Cottonwood	<i>Populus trichocarpa</i>	Winter	10 feet	Dormant Cutting
Mule Fat	<i>Baccharis salicifolius</i>	Winter	10 feet	Dormant Cutting
California rose	<i>Rosa californica</i>	Sept.-Oct.	6 feet	Dee Pot
Flowering Currant	<i>Ribes californicum</i>	July- Aug.	6 feet	Dee Pot
California blackberry	<i>Rubus ursinus</i>	July-Aug.	6 feet	Rooted Cutting or Dee Pot
Freshwater Marsh				
Cattail	<i>Typha</i> spp.	Spring	10 feet	Root Division
Bulrush/Tule	<i>Scirpus</i> spp.	Spring	10 feet	Root Division
Bog Rush	<i>Juncus patens</i>	Spring	10 feet	Root Division
Brown-headed Rush	<i>Juncus pynoccephalus</i>	Spring	10 feet	Root Division
Water smartweed	<i>Polygonum</i> spp.	Spring	10 feet	Dee pot
Brackish/Salt Water Marsh				
Pickleweed	<i>Salicornia virginica</i>	Summer	3 feet	Seed or Dee Pot
Salt Grass	<i>Distichlis spicata</i>	Summer	3 feet	Root Division
Alkali Heath	<i>Frankenia grandiflora</i>	Summer	3 feet	Seed or Dee Pot
Jaumea	<i>Jaumea carnosa</i>	Summer	3 feet	Seed or Dee Pot
Upland Grassland				
Purple Needlegrass	<i>Nassella pulchra</i>	Summer	3 feet	Plug
Blue Wildrye	<i>Elymus glaucus</i>	Summer	3 feet	Plug
California Brome	<i>Bromus carinatus</i>	Summer	3 feet	Plug
California poppy	<i>Eshscholzia californica</i>	Summer	Not applicable	Seed
Blue-eyed grass	<i>Sisyrinchium bellum</i>	Summer	Not applicable	Seed
Bi-colored Lupine	<i>Lupinus bicolor</i>	Summer	Not applicable	Seed

Table C-1. Principal Plant Species Suitable for Riparian and Wetland Revegetation, continued.

Common Name	Scientific Name	Propagule Collection Period	Typical Spacing (feet, on center)	Recommended Application
Common Yarrow	<i>Achillea millefolium</i>	Summer	Not applicable	Seed
Meadow Barley *	<i>Hordeum brachyantherum</i>	Summer	3 feet	Plug
California Oatgrass	<i>Danthonia californica</i>	Summer	3 feet	Plug
Eucalyptus and Monterey Pine Tree Groves				
Coast live oak	<i>Quercus agrifolia</i>	Sept.-Oct.	15-20 feet	Tree pot or One gallon
Blue blossom	<i>Ceanothus thyrsiflorus</i>	June-July	6 feet	Dee Pot
Coffee berry	<i>Rhamnus californica</i>	July-Aug.	6 feet	Dee Pot
Sticky monkey flower	<i>Mimulus aurantiacus</i>	July-Aug.	6 feet	Dee Pot
California blackberry	<i>Rubus ursinus</i>	July-Aug.	6 feet	Rooted Cutting or Dee Pot
Bracken Fern	<i>Pteridium aquilinum</i>	Oct.	6 feet	Root Division or Dee Pot
Mugwort	<i>Artemisia douglasiana</i>	Sept.-Oct.	6 feet	One gallon
Toyon	<i>Heteromeles arbutifolia</i>	Nov.-Dec.	6 feet	One gallon

Source: Biotic Resources Group, 2001

* Note: Meadow barley is suitable for moist and seasonally wet areas.

C.2.2 Sources of Seed for Erosion Control and Revegetation. Regional and local nurseries and growers can supply native seed for erosion control and revegetation. These sources are also available to collect native seed from a local area. Some available sources include:

PACIFIC COAST SEED SUPPLY
(925) 373-4417

TRI-COUNTY LANDSCAPE
(831) 728-0111

CENTRAL COAST WILDS
(831) 459-0656

GENERAL FEED AND SEED CO.
(831) 476-5344

ELKHORN NATIVE PLANT NURSERY
(831) 763-1207

SCOTTS VALLEY SPRINKLER AND PIPE SUPPLY
(831) 438-6450

C.3 REVEGETATION TECHNIQUES

C.3.1 Planting Locations. Most riparian and wetland plant species are adapted to growing in distinct zones along a creek channel. Some species, such as willow, cottonwood, alder and mulefat, typically grow along the toe of the channel and along the lower-mid bank. Plant species tolerant of drier conditions, such as buckeye, California sycamore and coast live oak, are more appropriately planted along the upper slope and top-of-bank areas. Grassland revegetation can include upland dry areas adjacent to the riparian corridor as well as in seasonally wet depressions.

Refer to Table C-1 for a listing of the primary plant species suitable for revegetation within various riparian and wetland habitats in the City. It should be noted, however, that other plant species that occur in these habitats may also be suitable. The table also identifies typical periods for the collection of plant materials and the appropriate planting location for riparian species.

C.3.2 Revegetation Techniques and Guidelines. Planting of container stock and live cuttings (i.e., willow and cottonwood pole stakes) should occur in the fall months after rain has moistened the ground to a minimum depth of eight inches and more rain is in the forecast (typically November through January). Once the planting stock is delivered to the revegetation site, they can be installed, as described below and depicted on the plant installation detail (Figure C-1).

Plants should be installed by excavating a planting hole large enough to receive the rootball. All planting holes should be backfilled with native soil and tamped. Plantings should be watered such that the root crown is even with the surrounding grade. A three-inch high hand-packed soil berm should be constructed around the plant (or just along the downslope edge for creek bank plantings) to create a watering basin. If soil is not moist to 14 inches from natural rainfall, the plant should be hand-watered immediately following installation. After planting is complete, shredded mulch should be spread in the planting basin, as shown on Figure C-1.

For many areas, a root protector may be desirable if gopher activity is observed. Additionally, a foliage browse protector (metal cage) for deer and rabbit browsing may also be necessary.

Willows and cottonwoods can be installed by live cuttings, as depicted on Figure C-2. Many wetland plants can be installed by divisions of rhizomes, as depicted on Figure C-2.

C.3.3 Irrigation of Installed Plants. Plants, when installed as container stock (i.e., one-gallon pots, or other sizes), will require supplemental irrigation for the first two-three years after installation. In some areas of the watershed, such as residences or other facilities, the revegetation areas can be served by a drip-type irrigation system. In less-accessible areas, the plants may need a temporary water tank that provides gravity feeding or the plants should be hand-watered.

Supplemental watering should be implemented for container stock plantings no less than three times a month during June, July, August and September of the first two years after planting. Approximately five gallons of water should be applied to each container stock planting during each watering event. Each watering should be of such a quantity as to provide optimum growth

conditions. If drought stress is noted on any of the plantings, the quantity and interval of watering should be increased.

If an unusual drought occurs in other months (i.e., less than 70 percent of normal rainfall between October and May) such that soil moisture drops to a level where plant survival is compromised, supplemental irrigation should be initiated. Supplemental irrigation should be continued until natural rainfall levels replenish soil moisture.

C.3.4 Grassland and Herbaceous Wetland Seeding Techniques and Guidelines. For upland areas adjacent to the riparian corridor, seasonal wetland areas that are determined to be in need of grassland restoration and understory seeding for habitat restoration or erosion control, seeding should consist of native grasses and forbs. A suggested seeding list is depicted on Table C-2.

Table C-2. Recommended Seeding List for Grassland and Erosion Control

Common Name	Scientific Name	Application Rate (lbs./acre)	Purity (Minimum)
Purple Needlegrass	<i>Nassella pulchra</i>	10	95
Blue Wildrye	<i>Elymus glaucus</i>	10	95
California Brome	<i>Bromus carinatus</i>	10	95
Meadow Barley *	<i>Hordeum brachyantherum</i>	10	95
Baby Blue Eyes	<i>Nemophila menziesii</i>	6	95
Lupine	<i>Lupinus nanus</i>	3	95
Checkerbloom	<i>Sidalcea malvaeflora</i>	3	95
Fertilizer, 6-20-20	Not Applicable	450	Not Applicable
Agri-Fiber Mulch	Not Applicable	2000	Not Applicable
M-binder Mulch Tackifier	Not Applicable	100	Not Applicable

Source: Biotic Resources Group, 2001

* Note: Meadow barley is suitable for moist and seasonally wet areas.

Prior to seeding, any existing tall invasive or non-invasive weedy vegetation should be removed or cut down, as detailed in later sections of this Appendix. Next, the area should be raked clean of vegetation and the soil surface should be scarified with a rake (small areas) or heavy equipment (large areas).

Seeding should occur in late fall or early winter, in order to coincide with the natural rainfall period. However, supplemental seeding can be accomplished earlier in the fall if overhead irrigation is provided. In this case, the area should be overhead irrigated for approximately one hour in order to moisten the top half-inch of soil.

If seed is hand broadcast, the seed should be lightly raked in order to cover the seed with a quarter inch of soil (refer to Table C-2 for seeding rate). The seedbed should be kept evenly moist until the seeds germinate or until a steady natural rainfall pattern develops.

If the site is to be hydroseeded, seeding should consist of a two-step hydroseeding process, applied by a professional hydroseeder. Seed, fertilizer, mulch, and tackifier should be sown at the rate specified on Table C-2. Prior to hydroseeding, the seed mixture should be pre-mixed by a mechanical mixer. Prior to application of the hydroseed/mulch mixture, the applicator should clean and rinse all equipment to preclude the application of weeds or other species not intended for the site. The hydroseeding application should follow a two-step process: 1) Hydro-spray seed and 500 lbs. per acre of hydraulic fiber mulch and 2) Apply 1,500 lbs. per acre of hydraulic fiber mulch, fertilizer and tackifier.

C.4 REMOVAL AND CONTROL OF INVASIVE, NON-NATIVE PLANT SPECIES

Table C-3 lists the invasive, non-native plant species recommended for removal for the *management area*. These plants can be eradicated by hand or mechanical methods, as described below. Removal should include the entire plant including the roots that are subject to re-rooting (see descriptions of specific methods, below), except for the roots of eucalyptus, acacia and pine trees. A tree removal permit may be required; tree removal may not be allowed in areas providing Monarch butterfly over-wintering habitat.

C.4.1 Milk Thistle. Milk thistle is a non-native annual species. This thistle is fast growing and rapidly colonizes disturbed soils. Due to the invasive and aggressive growth of the milk thistle, it is necessary to control this species to ensure successful enhancement or revegetation of riparian and oak areas. Recommended control measures include seasonal mowing, hoeing and/or weed whipping. If the plant is hoed, the plant should be removed a minimum of two inches below the ground surface. Flowering plants should be removed from the site as immature flowers ripen and set seeds after the plant is cut.

C.4.2 Poison Hemlock. Poison hemlock is a non-native biennial species, with a long taproot. This plant species is fast growing and rapidly colonizes disturbed soils. Within City watercourses and wetland areas, poison hemlock can form dense thickets. Due to the invasive and aggressive growth of the poison hemlock, it is necessary to control this species to ensure successful enhancement or revegetation of the riparian woodland and wetland areas. Recommended control measures include seasonal mowing, hoeing and/or hand pulling. If the plant is hoed, the plant should be removed a minimum of two inches below the ground surface, before flowering. All plant parts contain poisonous alkaloids; workers should wear gloves when handling the plant.

C.4.3 Wild Mustard. Wild mustard is a non-native biennial species. Mustards are fast growing and rapidly colonize disturbed soils. Within City watercourses and wetland areas, mustard thickets occur in and adjacent to riparian areas, on adjacent hillsides and on level grasslands. Due to the invasive and aggressive growth of mustard, it is necessary to control this species to ensure successful enhancement or revegetation of the riparian and wetland areas. Recommended control measures include seasonal mowing, hoeing and/or hand pulling. If the plant is hoed, the plant should be removed a minimum of two inches below the ground surface, before flowering. If mature or nearly mature seed heads are present, remove the plants from the site.

Table C-3. Invasive, Non-Native Plant Species for Removal in Management Area

Common Name	Scientific Name
Trees	
Acacia (all types)	<i>Acacia</i> spp.
Eucalyptus (all types)**	<i>Eucalyptus</i> spp.
Tree-of-Heaven	<i>Ailanthus altissima</i>
Myoporum	<i>Myoporum laetum</i>
English hawthorn	<i>Crataegus monogyna</i>
Edible fig	<i>Ficus carica</i>
Cherry plum, wild plum	<i>Prunus cerasifera</i>
Black locust	<i>Robinia pseudoacacia</i>
Shrubs	
French Broom	<i>Genista monspessulanus</i>
Scotch Broom	<i>Cytisus scoparius</i>
Spanish Broom	<i>Spartium junceum</i>
Cotoneaster	<i>Cotoneaster</i> sp.
Pyracantha	<i>Pyracantha</i> sp.
Perennial sweet pea	<i>Lathyrus latifolius</i>
English holly	<i>Ilex aquifolium</i>
Smallflower tamarisk	<i>Tamarix parviflora</i>
Saltcedar, tamarisk	<i>Tamarix ramosissima</i>
Other Perennials, Biennials and Annuals	
Iceplant or Seafig	<i>Carpobrotus</i> sp. and <i>Mesembryanthemum</i> sp.
Periwinkle	<i>Vinca major</i> and <i>Vinca minor</i>
English ivy and Algerian Ivy	<i>Hedera helix</i> and <i>Hedera</i> sp
Cape ivy	<i>Delairea odorata</i>
Honeysuckle	<i>Lonicera</i> sp.
Pampas grass	<i>Cortaderia selloana</i> and <i>C. jubata</i>
Morning glory	<i>Calystegia</i> sp., <i>Convolvulus</i> sp. and <i>Ipomea</i> sp.
Vetch	<i>Vicia</i> sp.
Himalayan blackberry	<i>Rubus procerus</i> or <i>R. discolor</i>
Sticky Ageratina (Mexican Eupatory)	<i>Ageratina adenophora</i>
Giant reed	<i>Arundo donax</i>
Russian knapweed	<i>Acroptilon repens</i>
Pacific bentgrass	<i>Agrostis avenacea</i>
Creeping bentgrass	<i>Agrostis stolonifera</i>
Bridal creeper	<i>Asparagus asparagoides</i>
Birdsrape mustard, field mustard	<i>Brassica rapa</i>
Hoary cress	<i>Cardaria draba</i>
Spotted knapweed	<i>Centaurea maculosa</i> (= <i>C. biebersteinii</i>)
Yellow starthistle	<i>Centaurea solstitialis</i>
Canada thistle	<i>Cirsium arvense</i>
Bull thistle	<i>Cirsium vulgare</i>
Poison hemlock	<i>Conium maculatum</i>
Brass buttons	<i>Cotula coronopifolia</i>
Common teasel	<i>Dipsacus fullonum</i>
Fuller's teasel	<i>Dipsacus sativus</i>
Stinkwort	<i>Dittrichia graveolens</i>
Common velvetgrass	<i>Holcus lanatus</i>
Yellowflag iris	<i>Iris pseudacorus</i>
Perennial pepperweed, tall whitetop	<i>Lepidium latifolium</i>

Common Name	Scientific Name
Sweet alyssum	<i>Lobularia maritima</i>
Creeping water-primrose	<i>Ludwigia peploides</i> ssp. <i>Montevidensis</i>
Uruguay water-primrose	<i>Ludwigia hexapetala</i> (= <i>L. uruguayensis</i>)
Hyssop loosestrife	<i>Lythrum hyssopifolium</i>
White horehound	<i>Marrubium vulgare</i>
Pennyroyal	<i>Mentha pulegium</i>
Common forget-me-not	<i>Myosotis latifolia</i>
Parrotfeather	<i>Myriophyllum aquaticum</i>
Eurasian watermilfoil	<i>Myriophyllum spicatum</i>
Scotch thistle	<i>Onopordum acanthium</i>
Bristly oxtongue	<i>Picris echioides</i>
Smilgrass	<i>Piptatherum miliaceum</i>
Kentucky bluegrass	<i>Poa pratensis</i>
Japanese knotweed	<i>Polygonum cuspidatum</i> (= <i>Fallopia japonica</i>)
Sakhalin knotweed	<i>Polygonum sachalinense</i>
Rabbitfoot, polypogon, rabbitgoot grass	<i>Polypogon monspeliensis</i> and subspp.
Curlyleaf pondweed	<i>Potamogeton crispus</i>
Creeping buttercup	<i>Ranunculus repens</i>
Castorbean	<i>Ricinus communis</i>
Red sorrel, sheep sorrel	<i>Rumex acetosella</i>
Curly dock	<i>Rumex crispus</i>
Giant salvinia	<i>Salvinia molesta</i>
Bouncingbet	<i>Saponaria officinalis</i>
Peruvian peppertree	<i>Schinus molle</i>
Tansy ragwort	<i>Senecio jacobaea</i>
Blessed milkthistle	<i>Silybum marianum</i>
Hedgeparsley	<i>Torilis arvensis</i>
Calla lily	<i>Zantedeschia aethiopica</i>
** Removal of mature eucalyptus trees, as defined by the Heritage Tree Ordinance, is not encouraged in known Monarch butterfly habitat due to importance of protection of this habitat. This list shall be updated based on the <i>California Invasive Plant Council</i> list concurrent with periodic review of the plan by the Planning Commission.	

C.4.4 Bristly Ox-Tongue. This plant is in the composite family and is a non-native annual species. This plant is fast growing and rapidly colonizes disturbed soils. Within City watercourses and wetland areas, bristly ox-tongue occurs in and adjacent to riparian areas and on upland grasslands. Due to the invasive and aggressive growth of this plant species, it is necessary to control this species to ensure successful establishment of riparian and wetland areas. Recommended control measures include seasonal mowing, hoeing and/or weed whipping. If the plant is hoed, the plant should be removed a minimum of two inches below the ground surface. Flowering plants should be removed from the site as immature flowers ripen and set seeds after the plant is cut.

C.4.5 Periwinkle. This plant (also known by its Genus name of *Vinca*) is a fast-growing, perennial species. This plant grows by underground runners and has covered many of the creek banks and moist hillsides in the City watercourses. Due to the invasive and aggressive growth of this plant species and its ability to choke out all other understory plants, it is necessary to

control this species to ensure successful restoration of native riparian and wetland areas. For small infestations that contain some native plant growth, the vines can be removed by hand, although repeated efforts will be necessary to eliminate the species from a site. For a large infestation with little native plant cover, the currently recommended method of control is to hand grub the ground to remove all above-ground plants as well as underground runners. The grubbed areas should be seeded with native perennial grasses to provide erosion control. Due to the persistence of this species, repeated efforts will be required to remove above and below ground plant parts. Once the infestation has been significantly decreased, the site should be revegetated with native riparian shrubs and trees.

C.4.6 English Ivy, Cape Ivy and Algerian Ivy. These species are very fast growing and perennial ivy's. These plants grow by underground runners and, although currently it appears to be found in native habitats near urban and rural developed areas, the species have the potential to spread into other areas of the City's watercourses. Due to the invasive and aggressive growth of these two plant species, their ability to choke out all other understory plants, and climb up tree trunks into the overstory, it is necessary to control this species to ensure successful restoration of the riparian and wetland areas. For small infestations that contain some native plant growth, the vines can be removed by hand, although repeated efforts will be necessary to eliminate the species from a site. For a large infestation with little native plant cover, the recommended method of control is to hand grub the ground to remove all above-ground plants as well as underground runners. The grubbed areas should be seeded with native perennial grasses to provide erosion control. Due to the persistence of this species, repeated efforts will be required to remove above and below ground plant parts. Once the infestation has been significantly decreased, the site should be revegetated with native riparian shrubs and trees.

C.4.7 Acacia. Acacias are medium-sized trees in the Pea Family. There are several types of acacia; most commonly observed are blackwood and green wattle acacia. The tree is fast growing and reproduces through root suckers and by seed. Control measures for the site include cutting the trees and/or root sprouts flush with the ground surface. As stump sprouting often occurs, apply a topical application of an herbicide (e.g., Round-up or Garlon) to the cut stumps. Young tree sprouts can be hand-pulled. All felled trees and associated plant material, particularly mature seed heads, should be removed from the site.

C.4.8 Eucalyptus. The majority of eucalyptus trees along City watercourses are blue gum eucalyptus. The tree is fast growing and reproduces through trunk sprouts and by seed. Control measures for the site include cutting the trees and/or trunk sprouts flush with the ground surface and the immediate topical application of an herbicide (e.g., Round-up or Garlon at full strength) to the cut stumps. Re-application may be necessary for large stumps with substantial root mass. Young seedlings can be hand-pulled. All felled trees and associated plant material, particularly bark peels and mature seed heads, should be removed from the site.

C.4.9 French Broom. French broom occurs throughout previously disturbed areas of the City watercourses and wetland areas. French broom reproduces primarily by seed, although vegetative reproduction and stump sprouting also occur. Seeds are thought to be viable for as long as 80 years. Control measures for the site include hand pulling of all plants in winter when soil moisture is highest. A weed wrench may be needed to remove the larger individuals. Cutting, mowing or weed-whacking broom plants are not recommended. Soil disturbance should be minimized since bare soil fosters broom seed germination. All pulled plant material, particularly plants with flowers and seeds, should be removed from the site.

C.4.10 Pampas Grass. This non-native perennial grass is well known by its large tussock of leaves and tall white-cream flowering plumes. Reproduction is mainly by seed and seedlings can germinate in a variety of soil types. Pampas grass is highly invasive, especially in the coastal fog belt where freezing temperatures do not occur. Well-established plants should be removed implementing the following measures:

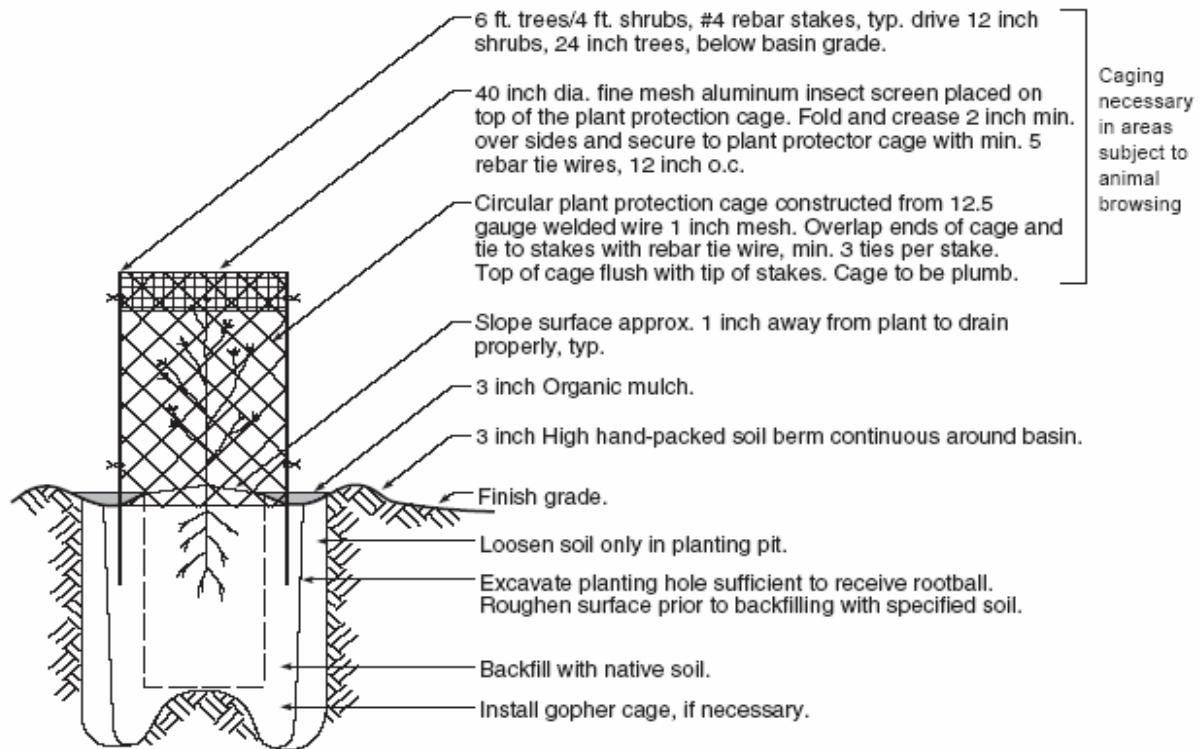
- Remove all flowering plumes prior to opening (before July) and place flower plumes into sturdy bags to prevent seed release.
- Chop the leaf clumps with a Pulaski and shovel; entire crown should be removed so that crown sprouting is prevented. A chain saw or weed eater with a rotary blade can be used to remove leaves in order to reach the base of the crown.
- All plant parts, including the root crown, should be removed from the site.
- The crown can be cut in quarters and removed; the crown should be turned up side down to expose the roots to the air.
- Workers should wear gloves, long sleeves and long pants as the leaves can cut skin.

C.4.11 Italian Thistle and Bull Thistle. These thistles are biennial herbs. They are characterized by thistle-like pink flowers and spiny leaves. Thistles reproduce by seed; the seed is wind-dispersed. Control measures include hoeing or hand pulling. If the plant is hoed, the plant should be removed a minimum of two inches below the ground surface, before flowering. All removed plant material, including immature flowers, should be removed from the site.

C.5 CONTROL OF NON-NATIVE ANIMAL SPECIES

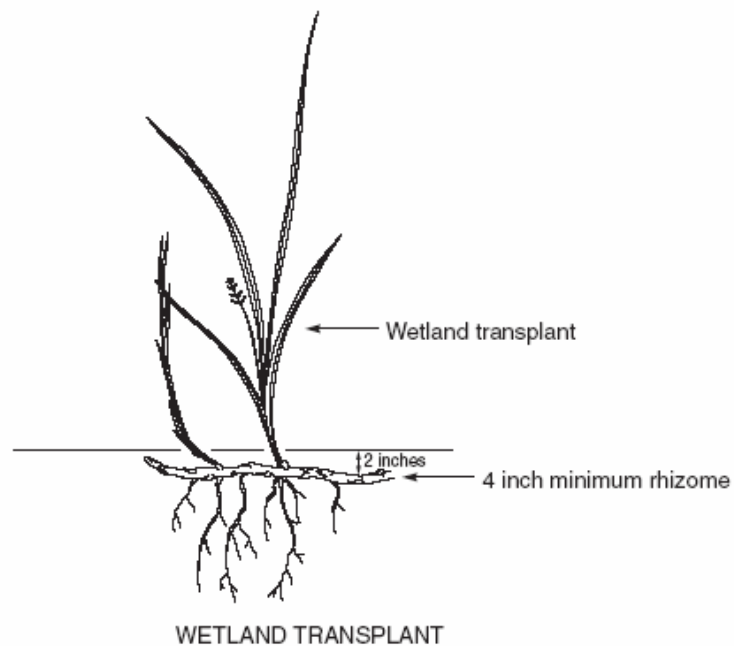
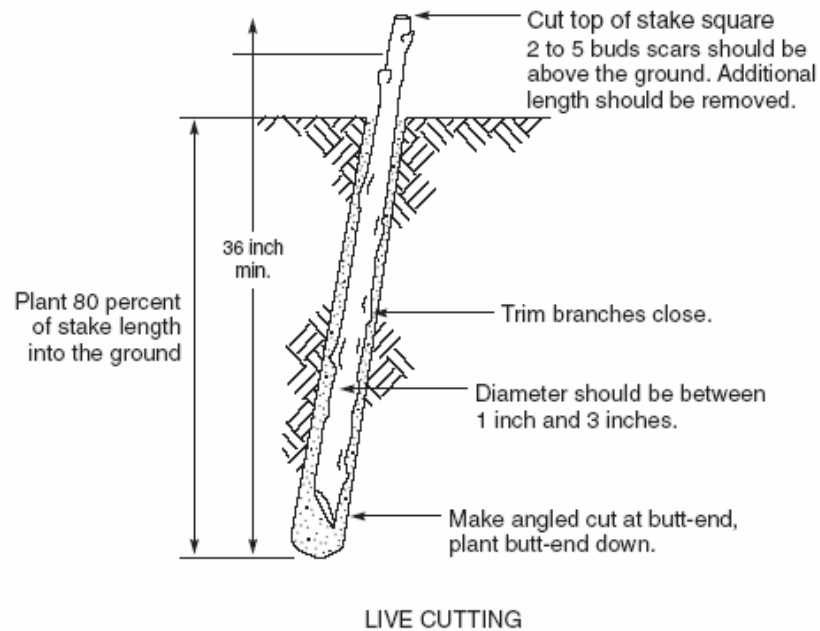
Efforts to remove non-native animal species are recommended. Unlike non-native plant removal, private land owners should not be encouraged to undertake removal of non-native wildlife because of the substantial risk of injury or transmission of disease if animals are handled improperly. Control of non-native animals could be organized and monitored by an oversight committee, or possibly an existing organization. Biologists knowledgeable about the target species to be controlled (e.g., ornithologist for brown-headed cowbird, etc.) should be consulted to develop an overall control plan for City creeks and wetlands. The County of Santa Cruz's Mosquito Abatement District could be consulted regarding information on their on-going programs and methods that are least impact to native wildlife. A control plan should focus efforts on areas that are "sources" of non-native animals (i.e., known breeding sites), particularly when these source sites are adjacent or contiguous with riparian corridors that may aid in the dispersal of non-native animals to other sites.

Figure C-1. Typical Detail for Container Stock Installation



SOURCE: Biotic Resources Group, 2001

Figure C-2. Typical Live Cutting and Wetland Transplant Detail



SOURCE: Biotic Resources Group, 2001