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STOPWASTE.ORG
Reducing the Waste Stream for Alameda County

October 15, 2012

Mr. Michael L. Nearman
Deputy Executive Director
California Building Standards Commission
2525 Natomas Park Drive, Suite 130
Sacramento, CA 95833

Re: Avoiding Invasive Plants in CALGreen

Please accept these comments for the 45-day public comment period pertaining to code changes intended for the 2013 California Building Standards Code. Our comments apply to the proposed 2013 edition of the California Green Building Standards Code (CGBC), Title 24 Part 11, also known as CALGreen. Our comments are in reference to both the Residential and Non-Residential new construction and additions/alterations portions of the code.

StopWaste.Org is the Alameda County Waste Management Authority and Recycling Board, a joint-powers authority of Alameda County, representing 14 cities, two sanitary districts and the county itself on waste-related issues. Our county is at the forefront of many policies surrounding green building, sustainable landscaping, waste prevention, recycling, construction and demolition debris, and other programs and policies for the built environment. We strongly support the green building code and are working to ensure that implementation at the local level is successful.

Our agency is generally supportive of the proposed code changes in the 45-day Express Terms documents. However, during earlier rounds of public comments, we submitted a recommendation for the ***avoidance of invasive plants*** within CALGreen as a mandatory measure. We do not see proposed in the Express Terms documents any mention of invasive plants except in the voluntary portions of the code (i.e. Tiers), nor have changes we suggested in the first public comment period been incorporated into the current draft. *Once again, we strongly urge the CBSC, HCD and other adopting agencies to include a new mandatory code provision to avoid invasive plants for permitted construction projects covered by CALGreen code, and to clarify the definition of the term "invasive plants" in the code*.

There are compelling reasons to avoid invasive plants in the mandatory section of the code.

- ***Invasive plants produce greater amounts of waste.*** Invasive plants tend to grow faster, spread beyond their original planting areas, and result in greater amounts of green waste than non-invasive species. Additionally, effective eradication of invasive plants often requires the use of herbicides which are classified as hazardous waste and must be disposed of properly at end of life. Avoiding invasive plants is a waste prevention measure for California's cities and counties who regulate and operate hazardous waste facilities and landfills.
- ***Invasive plants have serious environmental impacts throughout the state,*** including increased frequency and intensity of fire regimes in California, altered soil composition, lack of dissolved oxygen in waterways, changes to natural hydrologic cycles, and threaten wildlife. While the effects of invasive plants are most severely felt in the rural areas and wildlands of California, evidence is that most invasive plants currently causing havoc in California started as horticultural plantings in urban areas. Therefore, land development in urban and suburban California has a direct correlation with invasive plant exposure throughout the state.

(Continued)

StopWaste.Org is the Alameda County Waste Management Authority and the Alameda County Source Reduction and Recycling Board operating as one public agency.

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Alameda
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StopWaste Business Partnership
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Environmentally Preferable Purchasing
Food Scrap Recycling
Grants to Non-Profits
Household Hazardous Waste Recycling
Multifamily Recycling
Recycling Information Hotline

- ***Management of invasive plants is expensive.*** In California, the cost of control, monitoring, and outreach is conservatively estimated to be $82 million a year (not including indirect costs associated with lost agricultural yields, increased severity of wildfires and floods, loss of productive range and timber lands, reduced land values, damage to infrastructure, and degraded recreational opportunities).
- ***Avoiding invasive plants via the building code is effective and low-cost.*** Experts agree that prevention is the most effective and resource-efficient way to combat the spread of invasive plants. By requiring construction projects to avoid invasive plant species, demand for invasive plants from nurseries and suppliers will diminish over time. Further, a wide variety of alternatives to invasive plants is easily available with no cost difference, resulting in no cost increase for the design and construction industry.
- ***There is precedent for avoiding invasive plants in building codes.*** A similar provision is provided in the International Green Construction Code (IgCC) and its compliance option, ASHRAE standard 189.1.

To effectively avoid invasive plants from becoming established or spreading in California, the building code can include a Mandatory Measure that does not allow the planting of invasive species. Though several listings of invasive plants are available, we recommend the industry-leading California Invasive Plant Inventory Database, which is hosted and maintained by the California Invasive Plant Council (Cal-IPC). The Invasive Plant Inventory Database is developed by Cal-IPC (a 501c3 tax-exempt nonprofit educational charity) with input from leading experts from academia, scientists, California State Parks, the US Geological Survey, and environmental nonprofits. The Cal-IPC Inventory Database is free, publicly available, and includes a list of the state's most problematic invasive plant species based on risk factor and habitat region. The database is online at: www.cal-ipc.org.

Our request to add a mandatory provision for the avoidance of invasive plant species in CALGreen fits within the scope statement of Title 24, Part 11, Sections 4.101 and 5.101: "…to protect, restore and enhance the environmental quality of the site and *respect the integrity of adjacent properties*." Further, our request to prevent the spread of invasive plants and to lessen impacts and remediation costs via the CALGreen code meet numerous criteria of the Health and Safety Code. Please see our enclosed documents for further reasoning and proposed code language revisions.

In Alameda County, 11 of our cities have passed resolutions or ordinances that avoid invasive plants for permitted landscape projects. We believe invasive plants can be avoided for all newly constructed landscape areas, and that implementation can be effective and successful via building codes. The Green Build Standards portion of the building code is the correct place to avoid invasive plants for newly permitted projects. By making the avoidance of invasive plant species a mandatory measure, California can prevent waste, lessen environmental degradation, and lower costs for invasive plant remediation.

Respectfully yours,

Gary Wolff, Executive Director

StopWaste.Org of Alameda County
1537 Webster Street, Oakland, CA 94612
510-891-6500

Enclosures

CC: Russ Frank, BSC; Kyle Krause, & Shawn Huff, HCD

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STATE AND CONSUMER SERVICES AGENCY
CALIFORNIA BUILDING STANDARDS COMMISSION
2525 NATOMAS PARK DR., SUITE 130
SACRAMENTO, CA 95833
(916) 263-0916 Phone
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Office Use Item No. _____

PARTICIPATION COMMENTS FOR THE NOTICE DATED AUGUST 31, 2012
Written comments are to be sent to the above address.

WRITTEN COMMENT DEADLINE: OCTOBER 15, 2012

Date: October 15, 2012

From: Wesley Sullens

Name (Print or type)

StopWaste.Org – Alameda County Waste Management Authority and Source Reduction and Recycling Board
Agency, jurisdiction, chapter, company, association, individual, etc.

1537 Webster Street, Oakland, CA 94612
Street City State Zip

I/We do not agree with:

[**X**] The Agency proposed modifications As Submitted on Section No. **A4.106.7 and A4.106.3**

and request that this section or reference provision be recommended:

[ ] Approved [ ] Disapproved [ ] Held for Further Study [**X**] Approved as Amended

Suggested Revisions to the Text of the Regulations:

We propose the following revisions to the language in Section A4.106.3:

~~Note:~~ Invasive plant species ~~as determined by the local enforcing agency should~~ shall not be planted on a building site. ~~Information on invasive species is also available from the University of California, the California Invasive Plans Council, and other sources.~~ Construction documents shall include a plant list indicating botanical name and common name and shall be approved by the landscape architect or architect of record.

DEFINITIONS
Cal-IPC. The California Invasive Plant Council is a nonprofit organization that defines criteria for invasive plant species and maintains the Invasive Plant Inventory Database in California.

INVASIVE PLANT SPECIES. Species that are not historically found in California that spread outside cultivated areas and can damage environmental or economic resources. Invasive species shall include those plants listed on approved city, county or regional lists. In the absence of an approved list, invasive species shall include those plants on the Cal-IPC Invasive Plant Inventory Database classified as invasive within the region of the project.

In addition to section A4.106.3, section A4.106.7 “Reduction of heat island effect for nonroof areas” could benefit from the same definitions of invasive plants and Cal-IPC as shown above. Further, we propose the following edits to the section language:

> *Trees or other plantings to provide shade and that mature within 15 years of planting. Trees ~~should~~ shall be native or adaptive to the region and climate zones and non-invasive; hardy and resistant to drought, insects and disease; easy to maintain (no frequent shedding of twigs, branches, unwanted fruit or seed pods); and suitable in mature size and environmental requirements for the site. Tree selection and placement should consider location and size of areas to be shaded, location of utilities, views from the structure, distance to sidewalks and foundations, overhangs onto adjacent properties and streets; other infrastructure and adjacent to landscaping. In addition, shading shall not cast a shadow, as specified, on any neighboring solar collectors pursuant to Public Resources Code Section 25981, et seq. (Solar Shade Control Act).*

Reason: [The reason should be concise if the request is for “Disapproval,” “Further Study,” or “Approve As Amend” and identify at least one of the 9-point criteria (following) of Health and Safety Code §18930.]

(1) The proposed building standards do not conflict with, overlap, or duplicate other building standards.
(2) The proposed building standard is within the parameters established by enabling legislation and is not expressly within the exclusive jurisdiction of another agency.
(3) The public interest requires the adoption of the building standards.
(4) The proposed building standard is not unreasonable, arbitrary, unfair, or capricious, in whole or in part.
(5) The cost to the public is reasonable, based on the overall benefit to be derived from the building standards.
(6) The proposed building standard is not unnecessarily ambiguous or vague, in whole or in part.
(8) The format of the proposed building standards is consistent with that adopted by the commission.

Please see attached letter.

STATE OF CALIFORNIA
STATE AND CONSUMER SERVICES AGENCY
CALIFORNIA BUILDING STANDARDS COMMISSION
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Office Use Item No. _____

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StopWaste.Org – the Alameda County Waste Management Authority and Source Reduction and Recycling Board
Agency, jurisdiction, chapter, company, association, individual, etc.

1537 Webster Street, Oakland, CA 94612
Street City State Zip

I/We do not agree with:

[**X**] The Agency proposed modifications As Submitted on Section No. **4.106 and 5.106**

and request that this section or reference provision be recommended:

[ ] Approved [ ] Disapproved [**X**] Held for Further Study [ ] Approved as Amended

Suggested Revisions to the Text of the Regulations:

While we support our proposed and amended revision to Section A4.106.3, we also recommend that this section be moved to the mandatory portion of the code with the creation of additional measures under new sections, such as sections 4.106 and 5.106.

Proposed Language:

4.106.4 & 5.106.4: Invasive plant species as shall not be planted on a building site. Construction documents shall include a plant list indicating botanical name and common name and shall be approved by the landscape architect or architect of record.

DEFINITIONS
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areas and can damage environmental or economic resources. Invasive species shall include those plants listed on approved city, county or regional lists. In the absence of an approved list, invasive species shall include those plants on the Cal-IPC Invasive Plant Inventory Database classified as invasive within the region of the project.

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(8) The format of the proposed building standards is consistent with that adopted by the commission.

Please see attached letter.

Attachment:

A Sample of Invasive Plants Resources

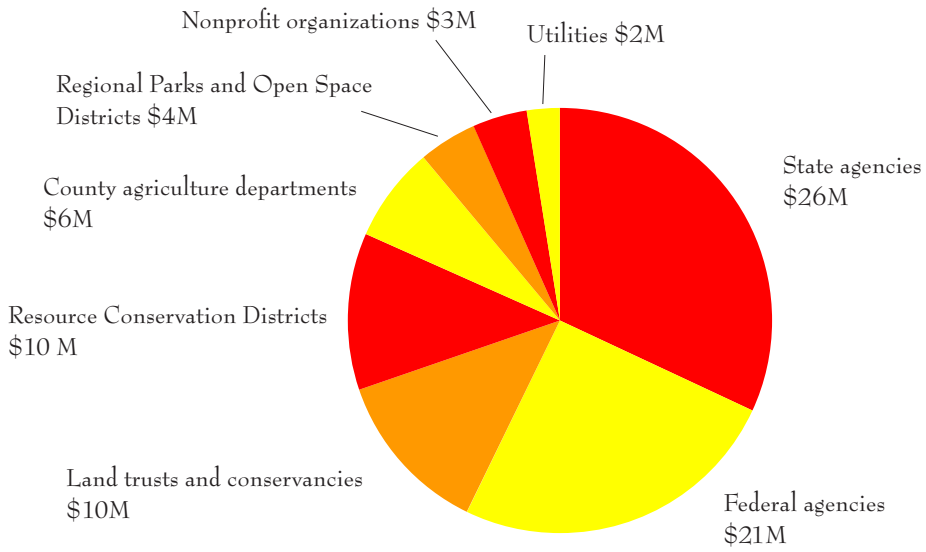
Invasive Plants Cost California $82 Million Every Year.

At least. Estimates of actual impacts reach into the $ billions. $82 million represents current costs of control, monitoring, and outreach. This investment repays itself many times over by addressing major impacts. Invasive plants:

Increase wildfire potential • Reduce water resources • Accelerate erosion and flooding

Threaten wildlife • Degrade range-, crop- and timberland • Diminish outdoor recreation opportunities

Estimated Annual Cost of Invasive Plant Work in California



Plants are being moved around the globe like never before. A few will become invasive in their new environments, harming the environment and economy. Climate change increases the challenge of stopping the spread of invasive plants. Now is the time to support strategies aimed at addressing invasive plants. Protect California's biologically rich landscapes and provide jobs in the "green" economy to restore ecosystems.

Chart based on survey conducted in 2008 by Cal-IPC and Sustainable Conservation. Photos (top to bottom): yellow starthistle (Sally Childs); Conservation Corps cuts giant reed in Santa Barbara County (David Chang); boat trapped in water hyacinth in the Delta (Bob Case); controlling tamarisk at Fort Irwin (Brian Shomo); Cape ivy covers woodland in San Diego County (Carolyn Martus).

www.cal-ipc.org
California Invasive Plant Council

1442-A Walnut St. #462, Berkeley, CA 94709
(510) 843-3902 info@cal-ipc.org

UNIVERSITY OF CALIFORNIA AGRICULTURE & NATURAL RESOURCES
UC IPM Online
Statewide Integrated Pest Management Program

How to Manage Pests

Pests in Gardens and Landscapes

Invasive Plants

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Published 11/07

In this Guideline:

- Introduction
- Definitions and classification
- Invasive plants of California
- What can be done about invasive plants?
- About Pest Notes
- Publication
- Glossary

INTRODUCTION

Invasive plants are a distinct group of weeds that occur in natural habitats. The purpose of this Pest Note is to clarify how invasive plants differ from common garden and agricultural weeds, to describe the occurrence and impact of invasives in California, to discuss how invasives can be spread through sales or movement of ornamental plants, and to identify approaches for managing invasive plants.

DEFINITIONS AND CLASSIFICATION

In most cases we think of weeds as native and non-native plants that impact crop production, either in commercial settings or in home fruit and vegetable gardens; cause health problems in livestock, pets, and humans; or are aesthetically unpleasing in turf and urban landscapes. In contrast, invasive plants are generally non-natives that infest natural ecosystems, including wildlands, rangelands, and pastures. Table 1 shows the differences between agricultural or garden weeds and invasive plants.

Table 1. Comparison of common weedy plants and invasive plants.

	Agricultural or garden weeds	Invasive plants
Introduction	Usually accidental by people, animals, equipment, or seed contamination.	Can be accidental, but more often the original intention was for ornamental or aquarium use, or for forage, food, fiber, medicinal, or soil stabilization purposes.
Disturbance	Require human disturbance to establish and persist.	Benefit from human disturbance, but disturbance not required.
Persistence	Will not persist without human disturbance, usually soil tillage or irrigation.	Once introduced, plants survive and spread on their own without further human assistance.
Life form	Primarily terrestrial annuals or herbaceous perennial species.	All growth forms, including aquatic, climbing vines, parasitic, herbaceous, or woody plants. Can have annual, biennial, or perennial life cycles.

Mature plant of yellow starthistle.

Pampasgrass, *Cortaderia selloana*, male plant.

Hottentot fig, *Carpobrotus edulis*, infestation in a sand dune.

The important biological difference between invasive plants and garden weeds is the ability of invasive plants to

disperse, establish, and spread without human assistance or disturbance. Because of this, they are much more problematic in natural environments than are typical weeds.

A flowering fennel plant, *Foeniculum vulgare*.

Naturalized Defined

"Invasive" and "naturalized" are terms used frequently in reference to both non-native plants in wildland areas and to garden plants. The term"naturalized" is used to describe a non-native plant that is capable of surviving and reproducing without human intervention for an indefinite period. Naturalized plants that do not spread away from where they were introduced are not generally a significant problem either in a garden or in a natural habitat. However, naturalized species that do spread and survive in new areas are called invasive plants.

Invasive Defined

Invasive plants cause ecological disruption to natural ecosystems, but the severity of the impact varies considerably based upon the plant species and the area being invaded. The worst invasive species, such as saltcedar (*Tamarix ramosissima*) or yellow starthistle (*Centaurea solstitialis*), have caused substantial changes to the character, condition, form, and nature of the invaded habitat. In scientific literature, these species are sometimes referred to as landscape transformers.

Noxious Defined

"Noxious" is a legal term, used by regulatory agencies, such as the California Department of Food and Agriculture (CDFA) and the U. S. Department of Agriculture Animal Plant Health Inspection Service (USDA-APHIS). To be considered noxious, a plant has to be listed on a noxious weed list maintained by one or both of these agencies. Listing is typically based upon the threat of this weed to agriculture or noncrop areas and allows these agencies, along with the county agricultural commissioner, to ban, quarantine, or eradicate these plants. In California, CDFA has started to list invasive plants based on their threat or impact to wildlands.

INVASIVE PLANTS OF CALIFORNIA

California boasts the greatest amount of natural botanical diversity of any state in the U.S., with nearly 5000 native plant species. In addition to native species, there are about 1300 non-native species that have become established in the state. About 200 to 300 of these are weeds of agricultural crops, turf, or gardens. The remaining 1000 or so are naturalized plants of wildlands or disturbed non-crop areas, some of which are important invasive plants.

The California Invasive Plant Council (Cal-IPC), a nonprofit organization, has created a useful inventory of invasive plants. Using a process based upon 13 criteria, they have listed about 200 species as threats to California's wildlands. These 13 criteria fall into three groups:

- ecological impact
- invasive potential
- current distribution

This list does not have legal standing, but is based upon the best available published literature and knowledge of invasive plant experts from California. It is a good guide to the invasive plants that can cause the greatest amount of damage to the environment and provides a wealth of background information on each plant on the list. The list notes the types of ecosystems invaded, the regions of the state invaded, and a general ranking (High, Moderate, or Limited) of the plants according to their statewide ecological impact. This ranking is a useful guide to the overall severity of a species, but it does not mean that a plant listed as Limited is not a significant problem in only one area of the state or that a High ranking means the plant is present everywhere in California.

Impacts

Invasive plants can cause significant economic and ecological damage in natural areas. From an economic standpoint, invasive species can reduce livestock forage quality and quantity, jeopardize animal and human health, increase the threat of fire or flooding, interfere with recreational activities, or lower land value. In addition, aquatic weeds can also impact the movement and navigation of private and commercial vessels, block irrigation systems, and impede livestock access to water.

Ecological Change

Invasive plants can also cause dramatic ecological changes that impact both plant and animal communities. This is often due to landscape transformations that reduce the adaptability and competitiveness of more desired native species. Such transformation can be caused by the excessive use of resources by invasive plants. This includes an increased ability to capture light, consume water or nutrients, or deplete gases (oxygen and carbon dioxide) in aquatic systems. For example, a 10,000 acre infestation of giant reed (*Arundo donax*) on the Santa Ana River in

Orange County is estimated to use 57,000 acre feet more water per year than native vegetation.

Invasive plants can also transform environments in many ways:

- Changing the soil fertility of the ecosystem.
- Promoting a shorter interval (or in some cases longer) fire frequency that is not conducive to the survival of native species.
- Stabilizing sand dunes in areas adapted to constant fluxes.
- Promoting soil erosion by increasing water runoff down slopes.
- Colonizing intertidal mudflats used for shorebird feeding grounds.
- Accumulating leaf litter that acts as a suppressive mulch, which prevents the establishment of more desirable species.
- Creating a saline environment as roots absorb salts from deep in the soil and redistribute them from the foliage to the soil surface.

These mechanisms create a more suitable environment for invasive species, at the expense of native plants, leading to a reduction in desirable plant diversity. Such impacts change the biological structure and relationships with other organisms in an area. For example, insects are often the source of nutrition for birds and reptiles. Many native insects are able to feed only on specific native plant species. If their preferred plants are crowded out by invasive plants, insect numbers can be dramatically reduced by the lack of sufficient food. This can subsequently cause a decrease in the animals that feed on them.

It has been reported that sections of rivers heavily infested with giant reed plants are nearly devoid of songbirds due to a lack of food. Often native birds do not nest in the branching pattern that is characterized by many invasive plants.

In addition, dense stands of invading saltcedar near desert rivers and oases cause another situation with unforeseen consequences, creating ideal cover for large carnivores such as cougars and coyotes. This makes it very risky for deer, bighorn sheep, and other prey animals to approach these water sources.

California has limited and diminishing untouched natural habitats, especially in regions of the state highly populated by humans. Infestations of invasive plants severely degrade the value of these sensitive sites. Many of these remaining natural areas are home to plants and animals listed as "Threatened and Endangered" by the U. S. Fish and Wildlife Service or the California Department of Fish and Game. Based on data from the California Natural Diversity Database, the California Department of Fish and Game estimates that 181 rare plant species are currently threatened by invasive plants.

Invasive Plants Originating from the Horticultural Industry

Of the species listed on the California Invasive Plant Council Inventory, about 37% were accidentally introduced to the state as contaminants of seed, clothing, equipment, vehicles, soil, ballast, animals, or packing materials. The remaining 63%, however, were intentionally introduced as landscape, pond or indoor ornamentals, aquarium plants, soil stabilization species, animal forage species, or human food, fiber, or medicinal plants. The majority of these intentionally introduced plant species came through the nursery industry as ornamental landscape species. Fourteen of these plants are listed on the California Department of Food and Agriculture noxious weed list, allowing them to be regulated by this agency and the local agricultural commissioner. The rest of the invasive plants that came from nursery introductions can still be imported and traded in California without restriction.

UC Master Gardener volunteers visited 125 nurseries in 19 California counties in 2003 to conduct a survey of the retail availability of a selection of landscape ornamentals that are also described as invasive species (Table 2). The results indicate that a few species are available in the majority of garden centers and other retail outlets, many are readily available, and some are uncommon. Additional species that were introduced to California through the nursery industry and are on the California Invasive Plant Council Inventory are listed in Table 3. Some of these species are also common in the nursery trade, while others may be hard to find. However, even though some of these species may be difficult to find locally, virtually any plant can be purchased interstate via catalogs and the Internet.

Key to regions invaded

Information for regions invaded adapted from the Cal-IPC Inventory. These designations are simplified versions of the designations used in the Cal-IPC Inventory.

- CAL = all of the state except the deserts
- NC = north coast
- CC = central coast
- SC = south coast
- CV = Central Valley
- SN = Sierra Nevada and Cascade mountains
- D = Great Basin and Sonoran deserts

Table 2. Example invasive plant species available at 125 retail nurseries in 2003 in California, frequencies, and the regions invaded in the state.*

Species	Common name	Number of nurseries	% of nurseries	Number of counties	Regions invaded
Arctotheca calendula	capeweed	9	7	4	NC,CC
Carpobrotus edulis	Hottentot fig, iceplant	15	12	9	NC,CC,SC
Cortaderia selloana	pampasgrass	35	28	9	CC, SC
Cotoneaster spp.	cotoneasters	58	46	13	NC,CC
Crateagus monogyna	English hawthorn	2	2	2	NC,CC,SC
Cytisus scoparius	Scotch broom	38	30	9	CAL
Cytisus striatus	Portuguese broom	4	3	2	NC,CC,SC
Delairea odorata	Cape-ivy	1	1	1	CC,SC
Elaeagnus angustifolia	Russian-olive	13	10	4	CV,CC,D
Eucalyptus globulus	Tasmanian blue gum	12	10	6	NC,CC,SC,CV
Ficus carica	edible fig	48	38	11	CC,SC, CV
Foeniculum vulgare	fennel	34	27	10	CAL
Genista monspessulana	French broom	15	12	6	NC,CC,SC
Hedera helix	English ivy	88	70	16	CAL
Helichrysum petiolare	licoriceplant	47	38	11	NC,CC
Leucanthemum vulgare	ox-eye daisy	10	8	7	NC,CC,SC,SN
Mesembryanthemum crystallinum	crystalline iceplant	13	10	6	NC,CC,SC
Myoporum laetum	myoporum	44	35	9	CC,SC
Pennisetum setaceum	crimson fountaingrass	81	65	16	NC,CC,SC,SN
Ricinus communis	castorbean	3	2	2	CC,SC,CV
Robinia pseudoacacia	black locust	12	10	7	CAL,D

Schinus terebinthifolius	Brazilian peppertree	11	9	5	SC
Spartium junceum	Spanish broom	5	4	2	NC,CC,SC
Vinca major	Big periwinkle	92	74	16	SC,CV,SN

*Data from UC Master Gardener survey conducted in 2003.

Table 3. Other invasive plant species of horticultural origin listed in the Cal-IPC Invasive Plant Inventory.

Species	Common name	Regions invaded (Key)
Acacia melanoxylon	Black acacia	NC,CC,SC
Ageratina adenophora	Croftonweed	CC,SC
Agrostis stolonifera	Creeping bentgrass	NC,CC,SC,CV,SN
Ailanthus altissima	Tree-of-heaven	CAL
Asparagus asparagoides	Bridal creeper	CC,SC
Chrysanthemum coronarium	Crown daisy	CC,SC
Conicosia pugioniformis	Narrowleaf iceplant	CC
Cordyline australis	Giant dracaena	NC,CC
Cynodon dactylon	Bermudagrass	SC,D
Digitalis purpurea	Foxglove	NC,CC,SN
Echium candicans	Pride-of-Madeira	NC,CC,SC
Eichhornia crassipes	Water hyacinth	CC,SC,CV
Eucalyptus camaldulensis	Red gum	NC,CC,SC,CV
Festuca arundinacea	Tall fescue	CAL
Hypericum canariense	Canary Island hypericum	CC,SC
Ilex aquifolium	English holly	NC,CC
Iris pseudacorus	Yellowflag iris	CC,SC,CV,SN
Linaria genistifolia ssp. *dalmatica*	Dalmatian toadflax	CAL
Lobularia maritima	Sweet alyssum	NC,CC,SC
Lythrum salicaria	Purple loosestrife	NC,CV,D
Myosotis latifolia	Common forget-me-not	CAL
Myriophyllum aquaticum	Parrotfeather	NC,CC,SC,SN
Olea europaea	Olive	NC,CC,SC,CV
Oxalis pes-caprae	Buttercup oxalis	NC,CC,SC
Pennisetum clandestinum	Kikuyugrass	NC,CC,SC
Phoenix canariensis	Canary Island date palm	CC,SC
Poa pratensis	Kentucky bluegrass	CAL,D

Prunus cerasifera	Cherry plum	NC,CC
Pyracantha spp.	ZPyracantha	NC,CC,SC
Retama monosperma	Bridal broom	SC
Salvinia auriculata complex (including *S. molesta*)	Giant salvinia	CC,D
Sapium sebiferum	Chinese tallowtree	CV
Saponaria officinalis	Bouncingbet	NC,CC,SC,CV,D
Schinus molle	Peruvian peppertree	CC,SC,CV,SN
Sesbania punicea	Red sesbania	CV
Tamarix aphylla	Athel tamarix	CV,SC,D
Tanacetum vulgare	Common tansy	NC,SN
Washingtonia robusta	Mexican fan palm	SC
Watsonia meriana	Bulbil watsonia	NC
Zantedeschia aethiopica	Calla lily	NC,CC,SC

What makes nursery species more invasive than other introduced species?

Many of the characteristics required for a plant species to be successful as a landscape ornamental are also qualities that can lead to invasiveness in natural settings (Table 4). These shared characteristics are the reasons that 48% of the invasive plant species had their origins in the horticultural trade.

Table 4. Characteristics that make nursery and invasive species successful.

Characteristic	Horticultural plants	Invasive plants
Germination and planting	Easy to propagate and establish	Few germination requirements and easy to establish
Growth	Grow rapidly	Grow rapidly
Reproduction	Produce abundant flowers	Prolific seed producer with successful dispersal mechanism
Environmental fitness	Ability to grow in many regions and remain hardy	Ability to adapt to a variety of environmental conditions, including drought and salt stress, and able to spread to many regions in the state
Pest resistance	Free of insect pests and diseases	Free of natural enemies and diseases

WHAT CAN BE DONE ABOUT INVASIVE PLANTS?

There are three basic aspects of weed control that also apply to invasive plants: prevention, eradication, and management. Each of these is discussed below.

Prevention

Rather than waiting for an invasive plant to become a problem, it is always better to prevent potential invasives from entering an area and becoming established or naturalized. With accidentally introduced invasive plants, such as yellow starthistle, prevention includes many familiar principles used to prevent or manage agricultural weeds. Yellow starthistle seed, for example, typically arrives in a new area as a contaminant in soil or a crop, particularly forage or hay; on or in a grazing animal; or on a vehicle or piece of equipment. When leaving an area where there are invasive plants, it is important not to transport any reproductive structures to areas where that plant has not established.

Managing the spread of invasive plants introduced through the horticultural trade is more challenging. Gardeners, as well as others in the landscape and nursery profession, often prefer "exotic" plants because they add new and different species to landscapes and gardens. Therefore, new non-native plant species are constantly being sought and introduced to California, but only a small percentage is likely to become invasive. Because the undesirable impacts of invasive plants on natural habitats is becoming more widely recognized, especially by conservation

organizations and government agencies, the nursery industry has begun to understand the need to manage new plant introductions to minimize this problem. Some nurseries and botanic gardens have instituted voluntary programs to eliminate known invasive plants and to recommend non-invasive alternatives.

A series of regional brochures called *Keep It in the Garden* are available that highlight invasive horticultural plants established in wildlands in each region of the state. The brochures also include a general discussion of the issue and the important role that the gardening public can play in preventing new invasive plant problems. *Keep It in the Garden* brochures are available from the UC Master Gardener volunteers in most counties in California. Cal-IPC also has promoted horticultural alternatives to invasive plants in a series of brochures entitled *Don't Plant a Pest*. These brochures target specific regions of the state or growth forms of invasive plants (e. g., woody plants, aquatic plants) and recommend native and non-native plants that have the same form or function as the undesirable species, but are not invasive in wildland or natural areas. These brochures can be obtained via the Cal-IPC website, along with more information on the plants listed in Tables 2 and 3.

The key element is to know what horticultural plants are invasive in your area of the state and to avoid planting them in your garden. If a plant listed in these two tables is invasive in your region of the state, it should be avoided for landscape use, especially for locations near natural areas. It may be safe to use in other regions, but sometimes the plant is not listed as invasive in an area merely because it has not yet become a presence.

If the plant already exists in your garden, what is the best thing to do? Again, if your garden is near natural habitat areas, or near roads, flood channels, or waterways that might be corridors that these plants can use to get to open space, then removal should be considered. At the very least, the plant should be kept in a vegetative state so it does not reproduce. If you choose to remove these plants, please dispose of them carefully. Make sure any reproductive parts, such as fruit, seed, or root pieces, do not escape during the removal process. In locations that have mandatory green-waste programs, cut off any reproductive parts and bag them separately for disposal, then send or take the rest of the green waste to the compost system.

Eradication: Early Detection and Rapid Response

Eradication refers to the complete elimination of a pest. The principle behind eradication is to kill the plant before it reproduces or spreads. After prevention, eradicating a small population of an invasive plant is the most cost effective pest control tactic. The California Department of Food and Agriculture, assisted locally by the county agriculture commissioner, has a long history of eradicating noxious weeds throughout the state. Many of their eradication efforts have been very successful and have kept small weed incursions from becoming widespread problems. Eradication has two components: early detection and rapid response. The gardening public can assist by learning to recognize when a new plant is expanding beyond where it was planted and either remove it right away or report it to the local county agriculture commissioner.

Invasive Plant Management

The control of invasive plants uses many of the same tools and tactics used for control of other weeds, including mechanical, chemical, cultural, and biological controls. Some management options used to control invasive species in rangelands or wildlands are not generally available in urban or agricultural landscapes. Examples are prescribed burning, grazing, revegetation programs, and much more extensive use of biological control agents. In most cases, integrated approaches using combinations of these methods are more effective for long-term suppression of invasive species and for recovery of the land to a more functional and productive ecosystem.

Invasive plants are those that can invade natural areas, particularly when those areas are surrounded or adjacent to urban environments. These natural areas are typically owned by a public entity, including parks and open space districts or privately by a non-profit organization, such as The Nature Conservancy. It is the responsibility of these organizations to manage invasive plants on their property. Many of these organizations have volunteer programs to remove invasive plants and can always use more help. Often these agencies or non-profit organizations have information on their invasive plant programs at their visitor centers or on their Web sites. Most state and federal agencies that manage land, such as California Department of Fish and Game, State Parks, the National Park Service, the U. S. Bureau of Land Management, have extensive information on invasive plants and animals on their Web sites. A good place to start is at the USDA Agricultural Library National Invasive Species Information Center. It is also important to recognize that management of invasive plants needs to consider sensitive plants and animals. For example, in southern California, public agencies that manage or regulate rivers and streams restrict invasive plant control activities during spring to fall because threatened and endangered birds, such as the Least Bell's Vireo or Southwestern Willow Flycatcher, nest during this period. There are often rare species of native plants that also need to be protected in many of these infested sites.

WARNING ON THE USE OF CHEMICALS

REFERENCES

Bell, C. E., C. A. Wilen, and A. E. Stanton. 2003. Invasive plants of horticultural origin. *HortScience* 38(1).

Bossard, C. C., J. M. Randall, and M. C. Hoshovsky. 2000. *Invasive Plants of California's Wildlands*. UC Press, Berkeley,

CA.

California Invasive Plant Council (Cal-IPC). 2006. California Invasive Plant Inventory. Cal-IPC Publ. 2006-02, Berkeley, CA.

DiTomaso, J. M. and E. A. Healy. 2003. *Aquatic and Riparian Weeds of the West*. Oakland: Univ. Calif. Agric. Nat. Res. Publ. 3421.

DiTomaso, J. M. and E. A. Healy. 2007. *Weeds of California and other Western States*. Oakland: Univ. Calif. Agric. Nat. Res. Publ. 3488.

Hickman, J. C. (Ed.). 1993. *The Jepson Manual. Higher Plants of California*. UC Press, Berkeley, CA.

Richardson, D. M., P. Pysek, M. Rejmanek, M. G. Barbour, F. D. Panetta, C. J. West. 2000. Naturalization and invasion of alien plants: concepts and definitions. *Diversity and Distributions* 6:93-107.

PUBLICATION INFORMATION

Pest Notes: Invasive Plants
UC ANR Publication 74139

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Produced by UC Statewide IPM Program, University of California, Davis

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Top of page

Grower Survey: Summary of Findings

Nurseries and Invasive Plants
Cal-IPC, June 2004

What we did

Cal-IPC surveyed catalogs and recent availability lists from 25 wholesale nurseries. These covered a broad range in size. The survey looked for 52 plant species, a subset from the Cal-IPC list of known invaders in California's wildlands selected as the most likely to be found in the trade. We also looked for horticultural varieties of these species, but tracked them separately. There were 13 species with horticultural varieties.

Results

Of 25 nurseries, 18 carried at least one of the species, and of the 7 that did not, 4 carried at least one variety. Thus, there were 3 nurseries that did not sell any of the species or their hybrids.

The average number of invasive plant species sold by a nursery was 3.2 (out of 52 species), and the average number of species whose varieties are sold by a nursery was 2.3 (out of 13 species with varieties). The highest number of invasive plants sold by any one nursery was 14. The highest number of species whose varieties are sold was 9.

Of the 52 plants, 20 were not sold in any of the nurseries. The average number of nurseries carrying each of the other 32 plants was 2.5 (out of 25 nurseries). All 13 species with varieties were sold by at least one nursery. The average number of nurseries carrying a given species with varieties was 4.5. The highest number of nurseries selling any plant was 7 for *Hedera helix*, followed by 5 for *Cortaderia selloana*, *Cotoneaster pannosa*, and *Schinus molle*. The highest number of nurseries selling any variety was 12 for *Pennisetum setaceum*, followed by 9 for *Hedera helix*, and 7 for *Cortaderia selloana* and *Vinca major*.

The 32 plants found for sale are listed below. Following this list is a list of the species with varieties for sale. Percentage figures represent the portion of nurseries selling each plant or its varieties.

Invasive plants for sale in nurseries:
Hedera helix (English ivy) 28%
Cortaderia selloana (pampasgrass) 20%
Cotoneaster lacteus (cotoneaster) 20%
Schinus molle (California pepper tree, Peruvian pepper tree) 20%
Helichrysum petiolare (licorice plant) 16%
Ilex aquifolium (English holly) 16%
Lupinus arboreus (bush lupine) 16%
Pennisetum setaceum (fountain grass) 16%
Sapium sebiferum (Chinese tallow tree) 16%

Schinus terebinthifolius (Brazilina pepper tree) 16%
Vinca major (periwinkle) 16%
Elaeagnus angustifolia (Russian olive) 12%
Iris pseudacorus (yellow flag iris) 12%
Arctotheca calendula (cape weed) 8%
Cytisus scoparius (Scotch broom) 8%
Hypericum perforatum (St. John's wort) 8%
Mentha pulegium (pennyroyal) 8%
Olea europaea (olive) 8%
Arundo donax (giant reed) 4%
Cotoneaster pannosa 4%
Crataegus monogyna (hawthorn) 4%
Eichhornia crassipes (water hyacinth) 4%
Ficus carica (edible fig) 4%
Foeniculum vulgare (fennel) 4%
Myoporum laetum (myoporum) 4%
Myriophyllum aquaticum (Eurasian watermilfoil) 4%
Retama monosperma (bridal broom) 4%
Ricinus communis (castor bean) 4%
Robinia pseudoacacia (black locust) 4%
Sesbania punicea (scarlet wisteria tree) 4%
Spartium junceum (Spanish broom) 4%
Tamarix ramosissima (salt cedar) 4%

Varieties of invasive plants for sale in nurseries:
Pennisetum setaceum varieties 48%
Hedera helix varieties 36%
Cortaderia selloana varieties 28%
Vinca major varieties 28%
Olea europaea varieties 20%
Robinia pseudoacacia varieties 16%
Myoporum laetum varieties 12%
Helichrysum petiolare varieties 12%
Ficus carica varieties 12%
Ilex aquifolium varieties 8%
Foeniculum vulgare varieties 4%
Cytisus scoparius varieties 4%
Arundo donax varieties 4%

LANDSCAPING

LANDSCAPING AND IRRIGATION

Drought tolerant (water-efficient) plants and gardens reduce water use, lower your utility bills and protect the ocean and health. Irrigation water that runs off your property can travel to storm drains and the ocean where it causes pollution that affects beach and ocean goers and marine life.

City of Hermosa Beach Landscaping Ordinance:

The City has adopted a 'Water Efficient Landscaping Ordinance' that applies to all development projects that install or modify landscaping of any size, or that install any irrigation system. A plumbing permit is required to install an irrigation system.

- *City of Hermosa Beach, Water Efficient Landscaping Ordinance, Municipal Code, Chapter 8.60*
- *City of Hermosa Beach, Water Conservation Ordinance (see irrigation provisions), Municipal Code, Chapter 8.56*
- *Invasive plants are not allowed: California Invasive Plant Council Inventory : http://www.cal-ipc.org/ip/inventory/*
- *Projects with more than 2,500 square feet of landscape: Reference the Water Use Classification of Landscape Species ("WUCOLS"): . http://www.water.ca.gov/wateruseefficiency/docs/wucols00.pdf Forms: http://www.water.ca.gov/wateruseefficiency/landscapeordinance/*
- *The City bans leaf blowers, Municipal Code 8.24.040(H)*

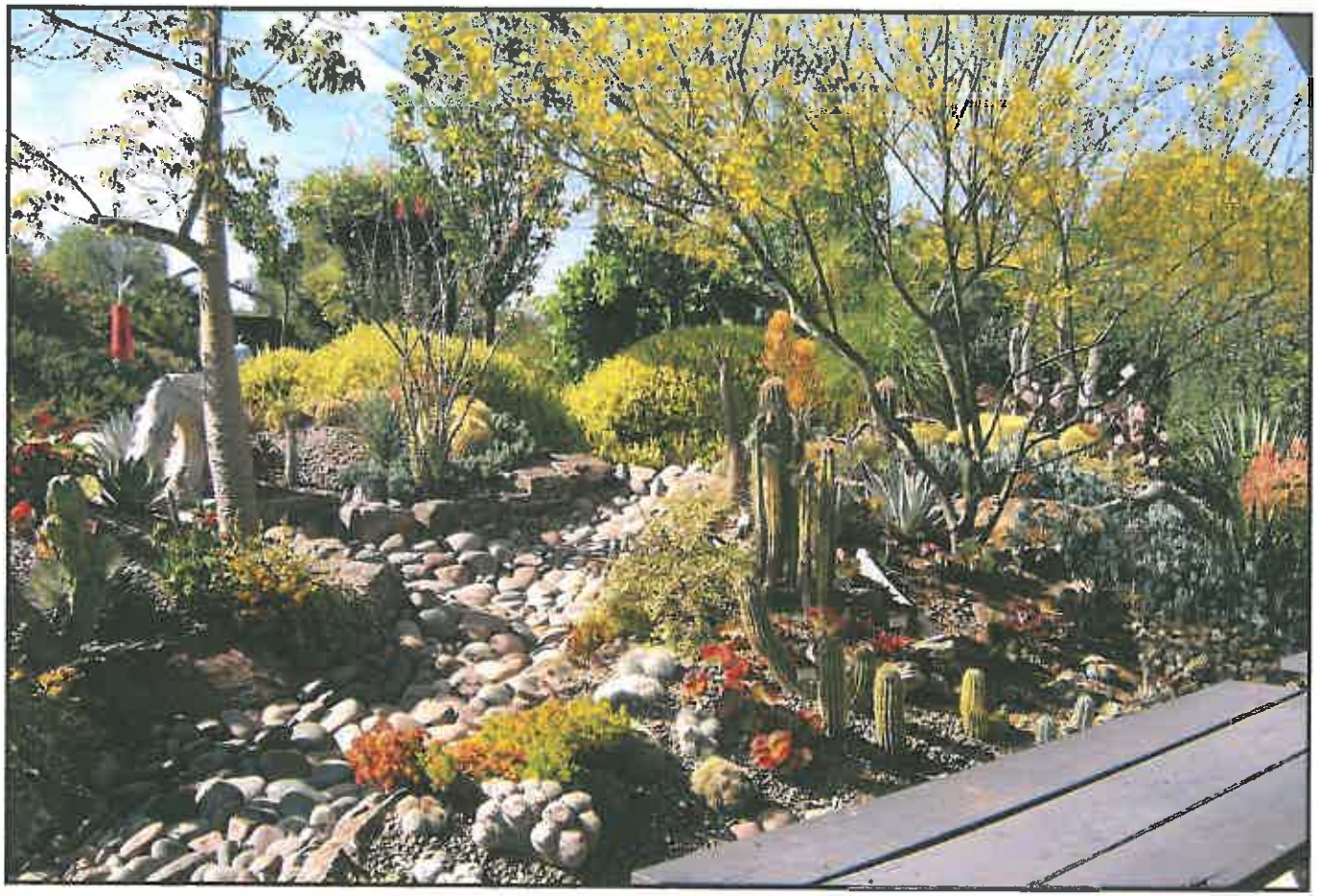
Links:

- *Be Water Wise: http://www.bewaterwise.com/knowledge01.html*
- *Smart Gardening- LA County: http://dpw.lacounty.gov/epd/sg/index.cfm*
- *Los Angeles Coast Water Wise Gardening: http://www.sm.watersavingplants.com/sm.php*
- *Ocean Friendly Gardens (Surfrider): http://www.surfrider.org/programs/entry/ocean-friendly-gardens*
- *Manhattan Beach Botanical Garden: http://www.manhattanbeachbotanicalgarden.org/*
- *South Coast Botanic Garden: http://www.southcoastbotanicgarden.org/highlights*
- *Native Plant Society: http://www.cnps.org/*
- *California Invasive Plant Council: http://www.cal-ipc.org/ip/index.php*
- *City of Santa Monica, Landscaping: http://www.smgov.net/Departments/OSE/categories/landscape.aspx*
- *Irrigating with Gray Water: Information. Plumbing permits are required in conjunction with these systems. Contact Bob Rollins (310)318-0235.*

- *Storm and urban water runoff, including over-irrigation: http://southbaystormwaterprogram.com/*

WATER EFFICIENT LANDSCAPE DESIGN MANUAL

COUNTY OF SAN DIEGO



DEPARTMENT OF PLANNING AND LAND USE

DPLU (02/10)

APPROVAL

I hereby certify that this **Water Efficient Landscape Design Manual** has been considered and approved by the Director of Planning and Land Use on this 16th day of February, 2010, to be used in conjunction with the County's Water Conservation in Landscaping Ordinance, County Code, Title 8, Division 6, Chapter 7.

ERIC GIBSON
Director of Planning and Land Use

the project site. Low-water use, deep-rooted plants and native species are highly recommended, as well as plants that are well-suited for the soil type that exists on site.

c. Plants shall be grouped into hydrozones with plant species having similar water demands and by their soil, sun, shade, and maintenance requirements.

d. Within hazardous fire areas, highly flammable plant materials and mulches, such as straw or small wood chips, should be avoided. Refer to the plant list in Appendix G for plants that are both ignition resistive and low water use. Also see Section 2.D.7.

e. Plant material used in landscapes within the wildland/urban interface should design and maintain a defensible, ignition resistive landscape. Projects are encouraged to use ignition-resistive, low water use plants that reduce the chance for embers from the plants to spread to either urban areas or wildlands.

f. Plantings in transitional areas must consist of site adaptive and compatible native species and may also be combined with site adaptive and compatible non-native species. Invasive plant species must not be planted in transitional areas and must be eradicated when and where they occur. See Section 2.D.6. and Appendix I.

Once a year, groom ornamental grasses. Do not mow.

Buffalo Grass

California Meadow Sedge

4. Turf Areas

a. Turf must be efficiently irrigated so as to avoid runoff or overspray.

b. Turf shall not be allowed in an area that is less than eight feet wide in any direction unless low volume or subsurface irrigation is utilized.

c. Turf shall not be allowed within 24 inches of impermeable surfaces unless it is irrigated with low volume or subsurface irrigation or unless the adjacent impermeable surfaces are designed and constructed to cause water to drain entirely into a landscaped area.

Illustration of a Transitional Landscape

d. If groundwater resources are proposed to be used, long term availability of this resource and the water quality must be approved to the satisfaction of the Director of Planning and Land Use.

6. Transitional Landscapes

a. Transitional landscape areas are the areas between non-native landscapes and undeveloped areas. The plants specified for transitional landscapes, including slopes and other disturbed areas typically consist of a combination of site adaptive and compatible native and non-native species. The mix of native and non-native plant materials should generally vary, with areas contiguous to existing native vegetation being planned with predominantly native material.

b. Invasive (i.e., those capable of reproducing and spreading into native, non-irrigated areas and displacing those communities) non-native plant species are prohibited in all transitional landscapes. Invasive plants that sprout in transition areas shall be promptly abated. The irrigation in a transitional area shall not influence adjacent vegetation.

7. Fuel Management

a. Combustible vegetation must be cleared in a 100-foot radius from any structure. Combustible vegetation is any material that left in its natural state will readily ignite, burn and cause fire to move to any structure or other vegetation. Examples are dry grass, brush, weeds, litter, waste and dead and dying vegetation. See the Undesirable Plant List in Appendix H for plants to avoid.

i. The first 50 feet from the structure may be permanently irrigated and planted with ignition resistive plants which must be maintained all year around.

ii. Within the remaining 50 feet of the 100-foot area, all dead and dying vegetation must be removed and the remaining vegetation must be thinned by 50 percent.

APPENDIX I
INVASIVE SPECIES

BOTANICAL NAME	COMMON NAME
Acacia baileyana	Bailey Acacia
Acacia cyclops	Coastal Wattle
Acacia dealbata	Silver Wattle
Acacia longifolia (A. latifolia)	Golden Wattle
Ailanthus altissima	Tree of Heaven
Anthemis cotula	Mayweed
Aptenia cordifolia	Red Apple Iceplant
Arctotheca calendula	Cape Weed
Arundo donax	Giant Cane
Asparagas asparagoides	Bridal Creeper
Asparagus densiflorus & all varieties	Asparagus Fern
Asparagus setaceus	Fern Asparagus
Asphodelus fistulosa	Onionweed
Atriplex semibaccata	Australian Saltbush
Brassica nigra	Black Mustard
Brassica rapa	Field Mustard
Brassica tournefortii	Asian Mustard, Sahara Mustard

BOTANICAL NAME	COMMON NAME
Callistemon viminalis	Weeping Bottlebrush
Carpobrotus chilensis	Sea Fig, Highway Ice Plant
Carpobrotus edulis	Ice Plant
Centaurea solstitialis	Yellow Starthistle
Centranthus ruber	Red Valerian, Jupiter's Beard
Chrysanthemum coronarium	Garland or Crown Daisy
*Cirsium vulgare**	Wild Artichoke
Conium maculatum	Poison Hemlock
Cortaderia jubata & all varieties	Jubata Grass & all varieties
Cortaderia selloana & all varieties	Pampas Grass & all varieties
Cotoneaster lacteus	Cotoneaster
Cotoneaster pannosus	Silverleaf Cotoneaster
Crassula ovata (C. argentea)	Jade Plant
Cupaniopsis anacardioides	Carrot Wood
*Cynara cardunculus**	Artichoke Thistle
Cyperus involucratus (C. alternifolius)	African Umbrella Plant
Echium candicans (E. fastuosum)	Pride of Madeira

APPENDIX I
INVASIVE SPECIES

BOTANICAL NAME	COMMON NAME
Ehrharta longiflora	Long-flowered/Annual Veldt Grass
Eucalyptus camaldulensis (E. rostrata)	Red Gum, River Red Gum
Eucalyptus globulus	Eucalyptus Blue Gum
Ficus carica	Edible Fig
Foeniculum vulgare	Sweet Fennel, Wild Fennel
Fraxinus uhdei	Evergreen/Shamel/ Mexican/Tropical Ash
Gazania linearis (Gazania longiscapa)	Gazania, Gazania Daisy, Colorado Gold
Genista monspessulana	French Broom
Hedera canariensis	Algerian Ivy
Hedera helix	English Ivy
Hypericum canariense	Canary Island Hypericum
Hypericum perforatum	St. John's Wort
Ipomoea purpurea	Common Morning Glory
Iris pseudacorus	Yellow Iris

BOTANICAL NAME	COMMON NAME
Koelreuteria paniculata	Goldenrain Tree
*Lactuca serriola**	Prickly Lettuce
Lepidium latifolium	Perennial Pepperweed
Limonium perezii	Perez's Marsh-rosemary, Sea Lavender
Limonium ramosissimum	Algerian Sea Lavender
Limonium sinuatum	Wavy Leaf Sea Lavender, Statice
Lobularia maritima	Sweet Allyssum
Lonicera japonica & all varieties	Japanese Honeysuckle & all varieties
Lotus corniculatus	Birdfoot Trefoil
Ludwigia hexapetala (L. uruguayensis)	Uruguay Marsh-Purslane, Water Primrose
Lythrum salicaria	Purple Loosestrife
Malephora crocea	Red-flowered Ice Plant, Croceum Ice Plant
Melinus repens (Rhynchelytrum repens)	Natal Grass, Natal Ruby Grass, Red Top
Mentha pulegium	Pennyroyal

APPENDIX I
INVASIVE SPECIES

BOTANICAL NAME	COMMON NAME
Ehrharta calycina	Perennial Veldt Grass
Ehrharta erecta	Panic Veldt Grass
Mentha spicata	Spearmint
Mesembryanthemum crystallinum	Crystalline Ice Plant
Mesembryanthemum nodiflorum	Slender-leaved Ice Plant
Mirabilis jalapa (M. lindheimeri)	Four O-Clock, Marvel of Peru
Myoporum laetum	Ngaio Tree, Myoporum
Myriophyllum aquaticum	Parrotfeather
Myriophyllum spicatum	Eurasian Watermilfoil
Nassella tenuissima	Finestem Needlegrass, Mexican Feather Grass
Nerium oleanader	Oleander
Nicotiana glauca	Tree Tobacco
Oenothera speciosa	Mexican Evening Primose
Olea europaea (fruiting varieties)	Olive Tree
Opuntia ficus-indica	Mission Prickly-Pear, Indian Fig, Tuna Cactus
Osteospermum fruticosum (Dimorphotheca fruticosa)	Trailing African Daisy, Freeway Daisy
Parkinsonia aculeata	Mexican Palo Verde, Jerusalem Thorn
Pennisetum villosum (Cenchrus villosus)	Feathertop Fountain Grass
Pennisetum ciliare (Cenchrus ciliare)	Buffelgrass
Pennisetum clandestinum (Cenchrus clandestinum)	Kikuyu Grass
Pennisetum setaceum (Cenchrus setaceum) & all varieties except 'Rubrum'/'Cupreum'	Fountain Grass
Phoenix canariensis	Canary Island Date Palm
Pittosporum undulatum	Victorian Box
Platanus x acerifolia	London Plane Tree
Prunus lyonii (Prunus ilicifolia ssp. lyonii)	Catalina Cherry
Retama monosperma (Genista monosperma)	Bridal Veil Broom
Ricinus communis	Castor Bean
Robinia pseudoacacia	Black Locust

APPENDIX I
INVASIVE SPECIES

BOTANICAL NAME	COMMON NAME
Salsola tragus	Russian Thistle
Schinus molle	California Pepper
Schinus terebinthifolius	Brazilian Pepper
Senna didymobotrya (Cassia didymobotrya)	Popcorn Senna, Popcorn Cassia, African Senna
Silybum marianum	Milk Thistle
Spartium junceum	Spanish Broom

BOTANICAL NAME	COMMON NAME
Tamarix species	Tamarisk
Tropaeolum majus	Garden Nasturtium
Ulmus parvifolia	Chinese Elm Tree
Vinca major	Periwinkle
Washington robusta	Mexican Fan Palm
Zantedeschia aethiopica (Calla aethiopica)	Calla-lily

The following references were used:

Los Angeles Regional Guide to Invasive Plants http://weedwatch.lasgrwc.org/Matrix_Master_20071022.pdf.

California Invasive Plant Council Inventory of California Invasive Plants http://www.cal-ipc.org/ip/inventory/index.php.

American Society of Landscape Architects, San Diego Chapter: Invasive Ornamental Plant Guide http://www.asla-sandiego.org/Download/PG_08_mod.pdf.