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Plant List and Planting Guidance for Landscape- Based Stormwater Measures

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D.1 Introduction

The purpose of the Plant List for Stormwater Measures is to provide guidance on the planting techniques and selection of appropriate plant materials for implementing stormwater measures. In selecting plant materials, it is important to consider factors that influence plant establishment and success, such as microclimate, type of soil, water availability, proximity to saltwater, and exposure to sun. The list has integrated specifications for each plant to improve the use and function of the list. Categories such as Sunset Zoning and Santa Clara Regions are listed to aid in proper plant selection for environmental conditions. The list has also been cross-referenced with the Santa Clara Valley Water District's *Approved Plant List* which

identifies low water use plants that qualify for their Landscape Rebate Program (for more information: www.valleywater.org/Programs/LandscapeRebateProgram.aspx). In addition, the list identifies water needs for plants using the Water Use Classifications of Landscape Species (WUCOLS) in region # 1 for the north central coastal of California.

In addition, the function of the individual stormwater measure should be carefully considered when selecting plant materials. Factors to be considered include inundation period, expected flow of water, and access and maintenance requirements.

Numerous resources are available to assist in selecting appropriate plant species in Santa Clara County, including Sunset's *Western Garden Book*, the Santa Clara Valley Water District's *Approved Plant List*, and East Bay M.U.D.'s *Landscapes for Summer-Dry Climates of the San Francisco Bay Region*. There is also a list near the end of this document from the California Native Plant Society of local nurseries that offer native plants.

D.2 General Recommendations

Avoid the use of invasive species. In selecting plants for stormwater measures, the use of invasive species should be avoided. A complete list of invasive plants can be found at www.cal-ipc.org, the California Invasive Plant Council's Invasive Plant Inventory.

Minimize or eliminate the use of irrigated turf. Effort should be made to minimize the use of irrigated turf, which has higher maintenance requirements and greater potential for polluted runoff.

Select California natives and/or drought tolerant plants. Planting appropriate, drought tolerant California natives or Mediterranean plants reduces water consumption for irrigations, and reduces mowing, fertilizing, and spraying. For the purposes of the plant list on the following pages, "drought tolerant" refers to plants that meet the following criteria:

- Are identified as drought tolerant as follows: *California Native Plants for the Garden* (Borstein, et al.).
- Are identified as requiring occasional or infrequent irrigation in Borstein, et al., or *Plants and Landscapes for Summer Dry Climates* (EBMUD).
- Are identified as requiring no summer water in EBMUD.
- Are identified as requiring little or no water in the *Sunset Western Garden Book*.
- Are identified as requiring low or very low irrigation in the *Guide to Estimating Irrigation Water Needs of Landscape Plantings in California* (University of California Cooperative Extension).

Plants not listed in any of the above references will require that the design professional base selection upon successful experience with species on previous projects under similar horticultural conditions.

SITE-SPECIFIC FACTORS

Given Santa Clara County spans several Sunset climate zones, with variable humidity, heat, frost, and wind factors, as well as varying soil characteristics, plants need to be selected with an understanding of specific climate and microclimate conditions, and grouped in appropriate hydrozones.

SUPPLEMENTAL WATERING NEEDS

Many plants listed as drought tolerant per the above references may require more supplemental watering in fast-draining, engineered soils.

D.3 Plants for Stormwater Measures

Plants play an important role in the function of landscape-based stormwater treatment measures:

- Infiltration and evapotranspiration. Plants aid in the reduction of stormwater runoff by both increasing infiltration, and by returning water to the atmosphere through evapotranspiration.
- Sedimentation. Some stormwater treatment measures, such as vegetated swales and vegetated buffer strips, are designed to remove coarse solids through sedimentation that is aided by dense, low-growing vegetation.
- Pollutant trapping. Vegetation helps to prevent the resuspension of pollutants associated with sediment particles. It is essential that pollutants removed during small storms are not remobilized during large storms.
- Phytoremediation. Plants for stormwater treatment measures are important for their role in phytoremediation, the uptake of nutrients and the ability to neutralize pollutants.
- Soil stabilization. As in any landscaped area, established plantings help control soil erosion. This is important both to keep sediment out of stormwater and to retain the surface soils, which help to remove pollutants from infiltrated runoff.
- Aesthetic benefits. Plants within or adjacent to stormwater facilities provide an aesthetic benefit.

Plants suitable for use in stormwater treatment measures are organized according to the following categories:

- Emergent refers to those species which occur on saturated soils or on soils covered with water for most of the growing season. The foliage of emergent aquatics is partly or entirely borne above the water surface.
- Grasses refer to those species that are monocotyledonous plants with slender-leaved herbage found in the in the Family Poaceae.
- Herbaceous refers to those species with soft upper growth rather than woody growth. Some species will die back to the roots at the end of the growing season and grow again at the start of the next season. Annuals, biennials and perennials may be herbaceous.

- Shrub is a horticultural distinction that refers to those species of woody plants which are distinguished from trees by their multiple stems and lower height. A large number of plants can be either shrubs or trees, depending on the growing conditions they experience.
- Tree refers to those species of woody plants with one main trunk and a rather distinct and elevated head.

Plants suitable for use in stormwater treatment measures in the Santa Clara Valley are listed in Table D-1, below, which lists the plants in alphabetical order by Latin name, in the categories described above. The columns in the table indicate stormwater treatment measures for which each plant species may be suitable.

INVASIVE SPECIES

Under no circumstances shall any plants listed as invasive by the California Invasive Plant Council's Invasive Plant Inventory be specified (www.cal-ipc.org/ip/inventory/weedlist.php).

Table D-1: Plant List for Stormwater Measures

Green Roof - extensive	Green Roof - intensive	Turf Block Pavers	Vegetated Swale	Vegetated Buffer Strip	Tree Well Filter ²	Flow-Through Planter	Bioretention Area	Infiltration Trench	Extended Detention Basin (3 Days non-bio-treatment soil)	Extended Detention Basin (6 Days bio-treatment soil)	California Native	Drought Tolerant	Sunset Zone OR Santa Clara Region: Numbers denote the Sunset Zone - When Sunset Zone not available, general environment preferred is listed using letters (H=Highland Riparian Habitat, M=Moderate). When only genus is listed, can vary for different species.	Santa Clara Valley Water District	Approved Plant List ³	Water Needs for WUCOLS ⁴ Region #1: H=High, M=Moderate, L=Low, V=Very Low
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Emergent Species

<i>Artemisia douglasiana</i>	mugwort													W			
<i>Carex barbara</i>	Santa Barbara sedge	✓	✓							✓	✓	✓	✓	4-8, 14-24			M
<i>Carex densa</i>	dense sedge									✓	✓	✓		W			M
<i>Carex obnupta</i>	slough sedge									✓	✓	✓		W			M
<i>Eleocharis macrostachya</i>	creeping spikerush									✓	✓	✓		W			
<i>Iris douglasiana</i>	Pacific coast iris		✓		✓	✓		✓	✓				✓	4-9, 14-24	✓		L
<i>Juncus balticus</i> ¹	baltic rush									✓	✓	✓		W			H
<i>Juncus bufonius</i>	toad rush									✓	✓	✓		W			H
<i>Juncus effusus</i> ¹	Pacific rush									✓	✓	✓		1-24,			H
<i>Juncus leseurii</i>	common rush									✓	✓	✓		W			H
<i>Juncus mexicanus</i>	Mexican rush									✓	✓	✓		W			H
<i>Juncus patens</i>	blue rush		✓		✓	✓		✓	✓	✓	✓	✓		4-9, 14-24			H
<i>Juncus xiphioides</i>	iris-leaved rush									✓	✓	✓		W			H
<i>Limonium californicum</i>	marsh rosemary									✓	✓	✓	✓	W			L
<i>Phragmites</i> spp.	common reeds									✓	✓			W			
<i>Scirpus actutus</i>	tule									✓	✓	✓		W			
<i>Scirpus americanus</i> ¹	three square									✓	✓	✓		W			
<i>Scirpus californicus</i> ¹	California bulrush									✓	✓	✓		W			
<i>Spartina foliosa</i>	California cordgrass									✓	✓	✓		W			
<i>Typha angustifolia</i>	narrowleaf cattail									✓	✓	✓		W			
<i>Typha latifolia</i>	cattail									✓	✓	✓		W			

Grass Species

<i>Agrostis exarata</i>	spike bentgrass			✓							✓	✓	✓	W			
<i>Alopecurus aequalis</i>	shortawn foxtail										✓	✓	✓	W			
<i>Alopecurus saccatus</i>	Pacific foxtail										✓	✓	✓	W			
<i>Aristida purpurea</i>	purple three-awn		✓		✓	✓		✓	✓				✓	I	✓		
<i>Bouteloua gracilis</i>	blue grama	✓	✓	✓	✓	✓	✓	✓					✓	1-3, 7-11, 14, 18-21	✓		L
<i>Calamagrostis X acutiflora</i>	reed grass		✓		✓	✓		✓						2B-24		✓	L
<i>Carex pansa</i>	California meadow sedge	✓	✓	✓	✓	✓	✓	✓			✓	✓	✓	M			M
<i>Carex praegracilis</i>	clustered field sedge										✓	✓	✓	W			M
<i>Carex (divulsa) tumulicola</i>	Berkeley sedge										✓	✓		M			M
<i>Chondropetalum tectorum</i>	cape rush		✓		✓	✓		✓	✓				✓	8, 9, 14-24			H
<i>Danthonia californica</i>	California oatgrass										✓	✓	✓	W			
<i>Deschampsia cespitosa</i> ¹	tufted hairgrass		✓		✓	✓		✓	✓		✓	✓	✓	2-24,			L

¹ Denotes riparian species with limited drought tolerance

² Denotes species with phytoremediation capabilities

³ Non-tree species to be used only with adequate planting surface and when infiltration rates are 5-10 inches/hour

⁴ Sunset Zones are courtesy of Sunset Magazine, www.sunset.com/garden/climate-zones

⁵ SCWWD Approved Plant List identifies low water use plants that qualify for their Landscape Rebate Program

⁶ Water Use Classification of Landscape Species (WUCOLS) from A Guide to Estimating Irrigation Water Needs of Landscape Plantings in California: The Landscape Coefficient Method and WUCOLS III, University of California Cooperative Extension and the California Department of Water Resources, 2000, http://www.water.ca.gov/pubs/planning/guide_to_estimating_irrigation_water_needs_of_landscape_plantings_in_ca/wucols.pdf.

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Grass Species cont'd

<i>Deschampsia cespitosa</i> ssp. <i>holciformis</i>	Pacific hairgrass		✓					✓	✓	✓	✓	✓	4-9, 14-24		
<i>Deschampsia danthonioides</i>	annual hairgrass									✓	✓	✓	M		
<i>Distichlis spicata</i>	salt grass									✓	✓	✓	W		
<i>Eleocharis palustris</i>	creeping spikerush									✓	✓	✓	W		
<i>Elymus glaucus</i>	blue wild rye	✓	✓		✓	✓		✓	✓	✓		✓	M		L
<i>Festuca californica</i>	California fescue		✓			✓	✓	✓				✓	4-9, 14-24	✓	L
<i>Festuca idahoensis</i>	Idaho fescue		✓	✓	✓	✓	✓	✓				✓	1-10, 14-24	✓	VL
<i>Festuca rubra</i> ¹	red fescue		✓	✓	✓	✓	✓	✓				✓	A2, A3; 1-10, 14-24	✓	L
<i>Festuca rubra</i> 'molate'	Molate fescue		✓	✓	✓	✓	✓	✓				✓	M		
<i>Leymus triticoides</i>	creeping wildrye		✓		✓	✓		✓	✓	✓		✓	M		VL
<i>Linum usitatissimum</i> ¹	flax						✓	✓				✓	M	✓	VL
<i>Melica californica</i>	California melic			✓	✓							✓	M		
<i>Melica imperfecta</i>	coast range melic				✓	✓		✓	✓			✓	I		✓
<i>Muhlenbergia rigens</i>	deerglass		✓		✓	✓	✓	✓	✓	✓		✓	4-24,	✓	L
<i>Nassella pulchra</i>	purple needlegrass		✓		✓	✓	✓	✓				✓	4-9, 11, 14-24		VL
<i>Nassella lepida</i>	foothill needlegrass		✓		✓	✓	✓	✓				✓	7-9, 11, 14-24		VL
<i>Sisyrinchium bellum</i>	blue-eyed grass	✓			✓	✓		✓				✓	M	✓	VL

Herbaceous Species

<i>Achillea millefolium</i> ¹	common yarrow	✓	✓			✓	✓	✓				✓	✓	A1-A3; 1-24	✓	L
<i>Allium</i> spp.	wild onion	✓	✓		✓	✓		✓	✓			✓	✓	VARIABLES	✓	M
<i>Anthemis nobilis</i> (<i>Chamaemelum nobile</i>)	chamomile			✓	✓		✓					✓	✓	2-24,		L
<i>Armeria maritima</i>	sea pink	✓	✓			✓	✓	✓				✓	✓	A2, A3; 1-9, 14-24	✓	M
<i>Clarkia</i> spp.	Clarkia	✓	✓		✓	✓		✓	✓			✓	✓	A2, A3; 1-24	✓	
<i>Epilobium densiflorum</i>	dense spike-primrose				✓	✓		✓	✓	✓		✓	✓	M		L
<i>Eriogonum latifolium</i>	coast buckwheat					✓	✓					✓	✓	M	✓	L
<i>Eriogonum fasciculatum</i>	flattop buckwheat					✓	✓					✓	✓	7-9, 12-24	✓	L
<i>Eschscholzia californica</i>	California poppy	✓	✓	✓		✓		✓	✓			✓	✓	1-24; H1	✓	VL
<i>Layia platyglossa</i>	tidy tips	✓	✓			✓						✓	✓	1-10, 14-24	✓	
<i>Limonium californicum</i>	marsh rosemary				✓	✓		✓	✓	✓	✓	✓	✓	W		L
<i>Linanthus</i> spp.	linanthus	✓	✓		✓	✓						✓	✓	1-9, 14-24	✓	
<i>Lotus scoparius</i>	deerweed	✓	✓			✓		✓				✓	✓	M (I)		VL
<i>Mimulus aurantiacus</i>	common monkeyflower		✓		✓	✓		✓	✓			✓	✓	7-9, 14-24	✓	L
<i>Mimulus cardinalis</i> *	scarlet monkeyflower		✓		✓	✓	✓	✓		✓		✓	✓	2-24,		L
<i>Monardella</i> spp.	coyote mint					✓		✓				✓	✓	VARIABLES	✓	L

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Herbaceous Species cont'd

<i>Nepeta</i> spp.	catmint		✓		✓	✓	✓					✓	VARIABLES	✓	L
<i>Penstemon</i> spp.	bearded tongue		✓		✓	✓	✓					✓	VARIABLES	✓	L-M
<i>Sedum</i> spp.	stonecrop	✓	✓			✓						✓	VARIABLES	✓	L
<i>Sempervivum</i> spp.	hen and chicks	✓	✓			✓						✓	2-24,	✓	L
<i>Thymus pseudolanuginosus</i>	woolly thyme	✓	✓	✓	✓	✓	✓	✓				✓	A1-A3; 1-24	✓	M

Shrub Species

<i>Adenostoma fasciculatum</i>	chamise		✓		✓							✓	6-9, 14-24		VL
<i>Agave filifera</i>	thread-leaf agave		✓		✓	✓		✓				✓	12-24,	✓	L
<i>Agave parryi</i>	Parry's agave		✓		✓	✓		✓				✓	I	✓	L
<i>Agave victoriae-reginae</i>	Queen Victoria Agave		✓		✓	✓		✓				✓	10, 12, 13, 15-17, 21-24	✓	L
<i>Arctostaphylos densiflora</i> 'McMinn'	manzanita 'McMinn'		✓		✓	✓	✓					✓	7-9, 14-21	✓	VL
<i>Arctostaphylos manzanita</i>	common manzanita		✓		✓	✓						✓	4-9, 14-24	✓	VL
<i>Arctostaphylos uva-ursi</i> 'Emerald Carpet'	manzanita 'Emerald Carpet'		✓		✓	✓	✓	✓				✓	6-9, 14-24	✓	VL
<i>Baccharis pilularis</i> 'Twin Peaks'	coyote brush prostrate		✓		✓	✓	✓	✓				✓	5-11, 14-24	✓	L
<i>Baccharis salicifolia</i>	mulefat								✓	✓	✓		W		
<i>Berberis thunbergii</i>	Japanese barberry		✓		✓	✓						✓	A3; 2B-24	✓	L
<i>Buddleia</i> spp.	butterfly bush				✓			✓				✓	VARIABLES	✓	L
<i>Calycanthus occidentalis</i>	spicebush				✓	✓	✓					✓	4-9, 14-24		L
<i>Carpenteria californica</i>	bush anemone				✓	✓	✓					✓	5-9, 14-24	✓	L
<i>Ceanothus hearstiorum</i>	ceanothus		✓		✓			✓				✓	5-9, 14-24	✓	VL
<i>Ceanothus</i> spp.	ceanothus		✓		✓			✓				✓	5-9, 14-24	✓	VL
<i>Cephalanthus occidentalis</i>	buttonbush				✓	✓	✓	✓		✓	✓		2-10, 14-21	✓	
<i>Cercocarpus betuloides</i>	mountain mahogany				✓							✓	3, 5, 7-10, 14-24		VL
<i>Cistus</i> spp.	rockrose				✓							✓	6-9, 14-24	✓	L
<i>Cornus stolonifera</i> (same as <i>C. sericea</i>)	redtwig dogwood				✓	✓	✓	✓	✓	✓	✓		A1-A3; 1-9, 14-21		H
<i>Diets</i> spp.	fortnight lily				✓	✓	✓					✓	8, 9, 12-24; H1, H2	✓	L
<i>Echium candicans</i>	pride-of-padeira		✓		✓	✓	✓					✓	14-24	✓	L
<i>Garrya elliptica</i>	coast silk tassel		✓		✓	✓	✓					✓	4-9, 14-24	✓	L
<i>Heteromeles arbutifolia</i>	toyon		✓		✓	✓	✓					✓	5-9, 14-24	✓	VL
<i>Holodiscus</i> sp.	oceanspray				✓			✓				✓	VARIABLES	✓	L
<i>Lavandula</i> spp.	lavender		✓		✓	✓	✓					✓	VARIABLES	✓	L
<i>Lavatera assurgentiflora</i>	tree mallow				✓							✓	VARIABLES	✓	L
<i>Lepechinia calycina</i>	pitcher sage				✓							✓	7-9, 14-24	✓	
<i>Lupinus albitrinos</i>	silver lupine				✓							✓	M	✓	VL

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Shrub Species cont'd

<i>Mahonia aquifolium</i>	Oregon grape		✓			✓	✓				✓	✓	2-12, 14-24	✓	M
<i>Mahonia repens</i>	creeping Oregon grape		✓		✓	✓	✓				✓	✓	2B-9, 14-24		L
<i>Myrica californica</i>	Pacific wax myrtle		✓								✓	✓	4-9, 14-24	✓	L
<i>Physocarpus capitatus</i>	Pacific ninebark					✓			✓	✓			2B, 3-9, 14-19		
<i>Pittosporum tobira</i>	mock orange					✓						✓	8-24; H1, H2	✓	L
<i>Prunus ilicifolia</i>	hollyleaf cherry			✓	✓						✓	✓	VARIES	✓	L
<i>Rhamnus Californica</i>	coffeeberry		✓			✓	✓				✓	✓	3A-10, 14-24; H1, H2	✓	L
<i>Rhus integrifolia</i>	lemonade berry					✓						✓	8, 9, 14-17, 19-24	✓	L
<i>Ribes aureum</i>	golden currant			✓	✓		✓	✓			✓	✓	A2, A3, 1-12, 14-23	✓	VL
<i>Ribes malvaceum</i>	chaparral currant					✓					✓	✓	6-9, 14-24	✓	VL
<i>Ribes sanguineum</i>	Red-flowering currant					✓					✓	✓	A3, 4-9, 14-24	✓	L
<i>Ribes speciosum</i>	fuchsia-flowered currant			✓	✓		✓				✓	✓	7-9, 14-24	✓	L
<i>Rosa californica</i>	California wild rose			✓	✓		✓	✓			✓	✓	M	✓	L
<i>Rubus ursinus</i>	California blackberry					✓					✓	✓	M	✓	L
<i>Salvia brandegii</i>	black sage					✓					✓	✓	15-17, 19-24	✓	
<i>Salvia clevelandii</i>	Cleveland sage					✓					✓	✓	8,9,12-24	✓	L
<i>Salvia leucophylla</i>	purple sage					✓					✓	✓	8, 9, 14-17, 19-24	✓	L
<i>Salvia melifera</i>	black sage					✓					✓	✓	7-9, 14-24	✓	L
<i>Salvia sonomensis</i>	creeping sage			✓	✓	✓					✓	✓	7,9,14-24	✓	L
<i>Sambucus mexicana</i>	elderberry					✓	✓	✓			✓	✓	2-24, H1	✓	L
<i>Santolina spp.</i>	santolina			✓	✓		✓	✓				✓	VARIES	✓	L
<i>Symphoricarpos albus</i>	snowberry							✓			✓	✓	A3; 1-11, 14-21	✓	L
<i>Stachys spp.</i>	lamb's ear	✓	✓			✓	✓	✓				✓	VARIES	✓	L
<i>Styrax officinalis redivivus</i>	California snowdrop					✓					✓	✓	6-10, 14-24 BEST IN 14-16, 18-24	✓	L
<i>Trichostema spp.</i>	wooly blue curls		✓			✓					✓	✓	14-24	✓	VL
<i>Yucca whipplei</i>	our lord's candle					✓	✓					✓	2-24,	✓	L
<i>Zauschneria californica (Epilobium c.)</i>	California fuchsia		✓			✓	✓				✓	✓	2-11, 14-24	✓	L

Tree Species

<i>Acer circinatum</i>	vine maple		✓		✓	✓		✓	✓			✓	A3; 2B-6, 14-17		M
<i>Acer macrophyllum</i> *	big leaf maple				✓	✓		✓				✓	2-9, 14-24		M
<i>Acer negundo</i> * v. <i>Californicum</i>	box elder				✓	✓	✓	✓	✓	✓		✓	A2, A3; 1-10, 12-24		M
<i>Aesculus californica</i>	buckeye					✓					✓	✓	3-10, 14-24	✓	VL
<i>Alnus rhombifolia</i> *	white alder				✓	✓	✓		✓	✓	✓	✓	1B-10, 14-21		H
<i>Alnus rubra</i> *	red alder				✓	✓	✓	✓	✓	✓	✓	✓	3-7, 14-17		

* Denotes riparian species with limited drought tolerance

¹ Denotes species with phytoremediation capabilities

² Non-tree species to be used only with adequate planting surface and when infiltration rates are 5-10 inches/hour

³ Sunset Zones are courtesy of Sunset Magazine, www.sunset.com/garden/climate-zones

⁴ SCWWD Approved Plant List identifies low water use plants that qualify for their Landscape Rebate Program

⁵ Water Use Classification of Landscape Species (WUCOLS) from A Guide to Estimating Irrigation Water Needs of Landscape Plantings in California: The Landscape Coefficient Method and WUCOLS III, University of California Cooperative Extension and the California Department of Water Resources, 2000, http://www.water.ca.gov/pubs/planning/guide_to_estimating_irrigation_water_needs_of_landscape_plantings_in_ca/wucols.pdf.

Table D-1: Plant List for Stormwater Measures

Green Roof - extensive	Green Roof - intensive	Turf Block Pavers	Vegetated Swale	Vegetated Buffer Strip	Tree Well Filter ²	Flow-Through Planter	Bioretention Area	Infiltration Trench	Extended Detention Basin (3 Days non-bio-treatment soil)	Extended Detention Basin (5 Days bio-treatment soil)	California Native	Drought Tolerant	Sunset Zone OR Santa Clara Region: Numbers denote the Sunset Zone - When Sunset Zone not available, general environment preferred is listed using letters (H=Highland Riparian, L=Low, VL=Very Lowland, M=Moderate). When only genus is listed, can vary for different species.	Santa Clara Valley Water District Approved Plant List ⁴	Water Needs for WUCOLS ⁵ Region #1: H=High, M=Moderate, L=Low, VL=Very Lowland
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Tree Species cont'd

<i>Arbutus menziesii</i>	madrone													4-7, 14-19		L
<i>Arbutus unedo</i>	strawberry tree	✓												4-24,	✓	L
<i>Betula nigra</i>	river birch		✓	✓	✓		✓	✓						1-24,		H
<i>Calocedrus decurrens</i>	incense cedar												✓	2-12, 14-24	✓	M
<i>Celtis occidentalis</i>	common hackberry												✓	1-24,	✓	L
<i>Cercidium floridum</i>	blue palo verde												✓	8-14, 18-20		VL
<i>Cercis occidentalis</i>	redbud	✓											✓	2-24,	✓	VL
<i>Chilopsis sp.</i>	desert willow	✓											✓	3B, -14, 18-23	✓	VL
<i>Chionanthus retusus</i>	Chinese fringe tree													3-9, 14-24		M
<i>Corylia cornuta v. Californica</i>	California hazelnut		✓	✓	✓		✓						✓	2-9, 14-20		L
<i>Crataegus</i>	hawthorn	✓											✓	VARIES	✓	M
<i>Fraxinus latifolia</i>	Oregon ash		✓	✓	✓		✓	✓	✓	✓				3-9, 14-24		H
<i>Geijera parviflora</i>	Australian willow													8, 9, 12-24		M
<i>Gleditsia triacanthos</i> ¹	honey locust		✓	✓	✓		✓	✓	✓	✓			✓	1-16, 18-20		L
<i>Lagerstroemia spp.</i>	crepe myrtle	✓											✓	VARIES	✓	L
<i>Lyonothamnus floribundus asplendifolius</i>	Catalina ironwood												✓	14-17, 19-24	✓	L
<i>Morus alba (fruitless var.)</i> ¹	white mulberry													2-24; H1, H2		M
<i>Platanus X acerifolia</i>	london plane tree		✓	✓	✓								✓	2-24,	✓	L
<i>Platanus racemosa</i> *	western sycamore		✓	✓	✓		✓		✓	✓				4-24,	✓	M
<i>Populus fremontii</i> * ¹	Fremont's cottonwood		✓	✓	✓		✓	✓	✓	✓				1-12, 14-21		M
<i>Prunus, spp.</i>	plum		✓	✓									✓	VARIES		M/L
<i>Quercus agrifolia</i>	coast live oak												✓	7-9, 14-24	✓	VL
<i>Quercus kelloggii</i>	California black oak												✓	6, 7, 9, 14-21		L
<i>Quercus lobata</i>	valley oak												✓	3B-9, 11-24	✓	L
<i>Quercus palustris</i>	pin oak													2-10, 14-24		M
<i>Quercus virginiana</i>	southern live oak													2-24,		M
<i>Salix laevigata</i> **	red willow		✓	✓			✓	✓	✓	✓				W		H
<i>Salix lasiolepis</i> **	arroyo willow		✓	✓			✓	✓	✓	✓				W		H
<i>Salix lucida ssp. lasiandra</i> **	shining willow		✓	✓			✓	✓	✓	✓				W		H
<i>Sequoia sempervirens</i> *	coast redwood		✓	✓					✓	✓	✓			4-9, 14-24		H
<i>Umbellularia californica</i>	California bay		✓	✓									✓	4-9, 14-24		M

¹ Denotes riparian species with limited drought tolerance

² Denotes species with phytoremediation capabilities

³ Non-tree species to be used only with adequate planting surface and when infiltration rates are 5-10 inches/hour

⁴ Sunset Zones are courtesy of Sunset Magazine, www.sunset.com/garden/climate-zones

⁵ SCVWD Approved Plant List identifies low water use plants that qualify for their Landscape Rebate Program

⁶ Water Use Classification of Landscape Species (WUCOLS) from A Guide to Estimating Irrigation Water Needs of Landscape Plantings in California: The Landscape Coefficient Method and WUCOLS III, University of California Cooperative Extension and the California Department of Water Resources, 2000, http://www.water.ca.gov/pubs/planning/guide_to_estimating_irrigation_water_needs_of_landscape_plantings_in_ca/wucols.pdf.

D.4 Stormwater Measures

For each of the stormwater measures offered in the Plant List for Stormwater Measures there is a brief description of each, including the key factors that should influence planting techniques and plant selection.

GREEN ROOF

A green roof is intended to capture precipitation and roof runoff. Green roofs utilize a lightweight, porous planting substrate as a medium for plant growth. The depth and composition of this substrate is extremely important in determining types of plants that will be successful as part of a green roof system. Intensive green roofs, which can have up to 48" of substrate, can support a wider variety of plant types. Look for plants with check marks in the Green Roof sections of the list. *Extensive* green roofs, which have a depth of 3" to 7" of planting medium, are suitable for a limited number of grass and herbaceous species. These roofs generally require little maintenance and should be designed to succeed with minimal irrigation. In addition to the species listed, pre-vegetated mats can be utilized on extensive green roofs. Information can be found at www.thehenryford.org/rouge/leedlivingroof.aspx.

TURF BLOCK PAVERS: PERVIOUS PAVING

Some pervious paving systems can be planted with grass or herbaceous species in order to assist with erosion prevention as well as promote infiltration and pollutant uptake. Plant species should be tolerant of compaction, have the ability to neutralize contaminants, and should not interfere with maintenance and use of the paved surface. Most plant species cannot tolerate frequent vehicular compaction. Therefore, turf block pavers are best suited for areas requiring infrequent access, such as emergency vehicle access routes. Paver manufacturer should be consulted regarding recommended and acceptable plant species.

VEGETATED SWALE

Plants in a vegetated swale slow water movement, which assists with the sedimentation of coarse solids and increases infiltration through a layer of topsoil. Therefore, a vegetated swale should be planted with the intent of slowing water flow, retaining pollutants associated with solids that settle out, and stabilizing the topsoil. Plantings can include grass and herbaceous species. All plants should be tolerant of extended periods of dry conditions. However, species tolerant to periodic inundation should be concentrated within the center of the swale where the soil would be saturated for a greater duration.

VEGETATED BUFFER STRIP

Vegetated buffer strips should be designed to function and appear as natural vegetated areas adjacent to development. They treat surface runoff from adjacent impervious areas so a variety of trees, shrubs, grass, and herbaceous species should be included in order to maximize water and nutrient uptake, as well as to retain sediment.

TREE WELL FILTER

Trees and shrubs planted in tree well filters should be an appropriate size for the space provided. Plant roots are confined to the container, and therefore it is recommended that small trees and shrubs with shallow, fibrous roots be planted in the tree well filter. Provided that site conditions allow, it may be possible to work with the manufacturer to design a container that

would allow for the planting of larger trees or shrubs. Plants for tree well filters should be tolerant of frequent, but temporary periods of inundation as well as adapted to extremely well-drained soils. Species with the ability to neutralize contaminants are preferred.

FLOW-THROUGH PLANTER

Plant species for flow-through planters will depend on the size of the planter. Shrubs and trees should be placed in planters only when there is sufficient space. Recommended minimum soil depth for shrubs is 18", and for small trees is 36". Plant species should be adapted to well-drained soils. Irrigation is typically required, but selecting plants adapted to extended dry periods can reduce irrigation requirements.

BIORETENTION AREA

Bioretention areas are intended to act as filters with plants. Plants in bioretention areas help with phytoremediation and infiltration. Therefore, nutrient uptake and the ability to neutralize pollutants are priorities for species selection. Plants for these areas should be able to withstand periods of inundation as well as extended periods of drought. Emergent, grass and herbaceous species can be planted in the bioretention area, while shrub and tree species should be concentrated on the outer edges. Grasses can also be planted along the exterior to slow the velocity of flow and allow the sedimentation of coarse solids, which helps minimize clogging of the bioretention area. Supplemental irrigation will be necessary to maintain emergent species during extremely dry conditions.

INFILTRATION TRENCH

An infiltration trench is an aggregate filled trench that receives and stores stormwater runoff in the void spaces between the aggregate and allows it to infiltrate into the surrounding soil. Vegetated filter strips of grass species on either side of the trench can slow and pre-treat the runoff while the trench can physically remove fine sediment and other suspended solids.

EXTENDED DETENTION BASIN

Extended detention basins are intended to capture and detain water for much longer periods (up to 72 hours) than bioretention areas. They are designed to drain completely between storms. Plants in extended detention basins increase pollutant removal and assist with soil stabilization, therefore nutrient uptake and the ability to neutralize pollutants are priorities for species selection. Because extended detention basins are intended to capture and move large quantities of water, trees should not be planted in the basins. Shrubs are typically not specified for extended detention basins, but may be included only on the outer perimeter (top of bank) so that they do not interfere with detention. Species should be adapted to periodic inundation, saturation, and extended periods of dry conditions. Emergent, grass and herbaceous species for extended detention basins should consist of species that are able to withstand extended periods of inundation. Supplemental irrigation will be necessary to maintain emergent species during extremely dry conditions.

D.5 Planting Specifications

Planting plans and specifications must be prepared by a qualified professional and coordinated with other site development details and specifications including earthwork, soil preparation and irrigation (if used). Plans indicating a planting layout, with species composition and density, should be prepared on a site-specific basis. Reference Bay Friendly Landscaping Guidelines

prepared by StopWaste.org (available at www.BayFriendly.org), which outline principles and practices to minimize waste, protect air and water quality, conserve energy and water, and protect natural ecosystems, including:

- Evaluate site and assess the soil;
- Consider potential for fire;
- Select plants for appropriate size upon maturity, do not over-plant;
- Irrigation, if required, should be designed as a high efficiency, water conserving system; and
- Utilize compost (see the specification in the Bay-Friendly Landscaping Guidelines) and mulch to build healthy soils and increase the water holding capacity of the soil.

PROPAGATION AND PLANTING METHODS

The propagation methods for different species will vary, depending upon type of plant and stormwater adaptation. In general, container stock will be utilized most commonly for green roofs, flow-through planters, tree well filters, vegetated swales and buffer strips and infiltration trenches. Bioretention areas and extended detention basins will generally utilize native plants available as transplants (plugs), pole cuttings and seed mixes.

CONTAINER STOCK. Planting holes for container stock should be twice as wide and only as deep as the container size. Plant spacing should be determined on a site-specific basis. When planting, the root collar and base of the stem should be 1" above the adjacent soil surface. Soils should be backfilled and tamped down to assure contact with the roots. The planting should be watered-in promptly to promote the settling of soil. If appropriate, container plantings may receive a balanced time-released fertilizer tablet, quantity and placement per manufacturer's recommendation, placed in the planting hole prior to installation of the plant. Planting berms for water retention and mulch shall be used to enhance plant establishment. Trees shall be staked or guyed to provide interim support until established.

TRANSPLANTS (PLUGS). Transplanted plant divisions, referred to here as "plugs", should be planted during the fall dormant period, preferably between October 1 and November 15 after first soaking rain. Plugs should be collected from a suitable collection site in the vicinity of the constructed basins. Plugs are clumps of plant roots, rhizomes or tubers combined with associated soil that can be manually removed, or salvaged with an excavator or backhoe. The maximum recommended size is 1 foot x 1 foot. Whole plants or plant divisions can be utilized. The plugs should be from healthy specimens free of insects, weeds and disease. The plugs should be spaced from 1 foot to 6 feet apart, depending on the size of the plug. Smaller plugs can be planted at the minimum distance to promote faster spreading and cover. Larger plugs from cattail and bulrush species should be planted at 3-foot to 6-foot intervals. To plant a plug, a hole slightly wider than the diameter of the plug should be prepared and the roots system of the plug placed in the hole. Do not over-excavate the hole depth or the plant will settle below grade. A shovel could be used to create the planting hole. Manual planting with a spade is recommended for wet soils. Power augers can be used for creating holes in dry soils. Alternatively, a trench could be created along the narrow axis of the extended detention basin, and planting material manually placed at specified elevations in relation to the proximity of permanently saturated soils. To plant a plug with an established root system, the base of the

stem and top of the root collar should be level with the ground surface. Tubers should be secured to prevent floating. Rhizomes should be placed in the soil with a slight upward angle. The hole or trench containing the plug(s) should be backfilled with soil and the soil tamped down to assure good soil contact and secure the plug. The vegetative portion of the plant should be cut back to prevent water loss and wilting, and encourage the growth of roots and new shoots. Plugs of wetland plants should be grown in saturated soil. The soil should not be allowed to dry out after planting. Plugs should be planted immediately, when possible. When necessary, plugs can be stored in a cool, moist, shaded location for a maximum of one day. Plants must be thoroughly watered.

POLE CUTTINGS. Pole cuttings should be collected from the 1-year old wood of dormant trees and have a minimum of 5 viable nodes. The parent material should be healthy and free of diseases. The basal area of the pole cutting should be a minimum of one to two inches in diameter; however, the diameter at the base should not exceed 2 inches. The optimum diameter width of the base is 1 inch. The length of the cutting should be a minimum of 2 feet and should not exceed a maximum of 4 feet in length. Generally, 75 percent of the length of the cutting should be planted beneath the soil surface.

Pole cuttings should be collected no more than 2 days prior to planting. Cuttings should be placed in cool water to promote swelling of the nodes. Water should be kept fresh by aeration and/or by daily replacement. The pole cuttings should be placed in a hole approximately 3 feet deep (as determined by the length of the cutting) and backfilled with native soil, or a rich organic medium mixed with native soil. Soil should be tamped down to remove air pockets and assure soil contact with the cutting.

SEEDING. Seeding should be conducted after plugs, container stock and pole cuttings are installed. Hydroseeding or broadcast method shall be utilized as appropriate for the size and accessibility of the area. The soil surface should be scarified prior to seeding. Do not damage previously planted vegetation. The seeds should be planted in fall, ideally in October. Seeds should be broadcast or hydroseeded over the specified planting area. With broadcast seeding, the seed should be applied with hand-held spreaders to scarified soil. The soil surface should then be raked to cover the seeds with about one-eighth to one-quarter inch of soil to discourage predation, and tamped or rolled to firm soil surface. Seeds should be planted at the ratios and rates specified by the supplier. The seed should be free of weeds and diseases. The certified germination percentage should be provided by the supplier.

WATER LEVEL MANAGEMENT AND IRRIGATION FOR PLANT ESTABLISHMENT

All newly planted material will need careful attention to watering requirements to ensure proper establishment. As mentioned in the introduction, it is important to select plants based on specific site conditions, which will affect the availability of water for plant use. In addition, grouping plants with similar water requirements can help reduce irrigation needs. The specific approach will vary for irrigated and non-irrigated conditions, and for each stormwater application. In most cases, stormwater applications will require a permanent irrigation system which shall be designed to maximize water conservation. Irrigation specifications and design plans shall be provided.

Plants such as shrubs and trees grown in naturalized areas that are not saturated to the surface or inundated shall be irrigated with drip irrigation. The irrigation system shall remain in place for a minimum of three years, and should continue until it is demonstrated that the plantings can survive on annual rainfall and/or groundwater. Seeded areas do not need irrigation in years of normal rainfall. If a period of drought occurs after seeding, supplemental watering may be needed for germination in the first year.

The plants on the bottom and edge of the constructed basins should be allowed to become established for one growing season prior to the onset of significant flooding that will inundate the plantings for extended periods. The types of plants recommended for these locations are rushes, sedges, grasses and herbaceous species. Initially, saturated soils are required for the bioretention areas and extended detention basins during the establishment period of the plantings. After the plants have become established, inundation with a surface depth of 1 cm to 2 cm alternating with short dry periods is recommended for the basins during the first year. Periodic shallow flooding of these basins can slow the growth of non-native weedy terrestrial species in the wetland system; however, the water depth should not be greater than the height of the plants. This initial irrigation regime will prevent plant mortality from dry periods or excessive flooding in the first year, and reduce the growth of non-native weedy species. Emergent species should be planted in saturated soil so the plants will become established. For emergent species, the water level in the first year should be maintained to allow for soil saturation or shallow inundation around the base of the plants. Significant flooding and inundation of stems and leaves of the plants should be avoided the first year. Tall plugs and plantings can tolerate greater depths of inundation if a significant portion of the stems and leaves of the plantings remain above the water surface.

D.6 Monitoring and Maintenance

GENERAL REQUIREMENTS

All planted areas shall be monitored and maintained as required to ensure proper establishment by a Contractor with a valid California C-27 contractor's license. Frequency of site visits and required maintenance practices will vary depending upon the stormwater measure and plant selection. Maintenance shall include watering, cultivation, weeding and pruning as necessary to maintain optimum growth conditions and, as appropriate to the specific stormwater measure, to keep the planted areas neat and attractive in appearance. In all instances, controlling weeds and unwanted growth with chemical applications is prohibited.

The contractor shall be familiar with the design and function of the specific stormwater measure(s) to ensure that the plantings are maintained appropriately and do not interfere with the efficient runoff drainage and filtration.

Ongoing management of invasive weed species will be required in all applications. Monthly hand weeding will allow the naturalized vegetation to take hold, and will ultimately be less costly than less frequent, and more intensive clearing. Regular application of arbor chip mulch, or other mulch material that will knit together and resist floating with surface runoff, will also help control weed growth.

EROSION CONTROL

Particularly with landscapes that are not fully established, contractors will need to monitor and evaluate potential for erosion and sediment accumulation in the runoff, which will influence irrigation scheduling and as well as determine the need for additional erosion control measures. Soil can be protected from erosion by a number of methods including:

Keep the soil covered with vegetation to the extent possible;

Slow water runoff by using compost berms, blanket, socks or tubes along slopes;

Cover bare soil with a minimum of 2" mulch cover;

Minimize the use of blowers in planting beds and on turf;

On slopes use coarse shredded mulch that is not prone to washing into storms drains; and

Store leaf litter as additional mulch in planting beds as appropriate.

IRRIGATION SYSTEMS

Where irrigation systems have been installed for temporary or permanent irrigation, the contractor shall maintain the irrigation system for optimum performance, as per manufacturer's specifications. Contractor shall inspect the entire system on an ongoing basis, including cleaning and adjusting all sprinkler and bubbler heads, drip emitters and valves for proper coverage. Contractor shall monitor the irrigation system while operating to identify and correct problems with water runoff or standing water.

Monitor soil moisture within plant root zones using a soil probe or shovel and adjust irrigation schedules accordingly if a soil moisture sensor is not being utilized to signal the irrigation controller. If a Weather-Based Irrigation Controller (WBIC), otherwise known as a "Smart" Controller is not utilized on the project, irrigation shall be scheduled using a water budget approach, basing irrigation frequency on evapotranspiration data (ET) to avoid over-irrigation of plant material. Adjust irrigation frequency within each hydrozone area a minimum of every four weeks to respond to expected adjustments in ET data.

If a standard turf mix is used in lieu of a no-mow variety, implement grasscycling, where appropriate to the stormwater treatment measure. Grass clippings shall not be carried into the drainage structures. Refer to A Landscaper's Guide to Grasscycling available from StopWaste.org at www.BayFriendly.org.

BIORETENTION AND EXTENDED DETENTION BASINS

In bioretention and extended detention basins, in particular, non-native invasive plant species should be carefully monitored and controlled to reduce competition with the native plantings and to assure the success of the revegetation activities. The establishment of weeds and invasive species in the bottom of the basins can be partially controlled during the establishment period by implementing the watering schedule of initial saturation followed by alternating periods of shallow inundation and dry soil. Manual methods of weed removal should be conducted on the bottom, edge and side of the basins when these areas are not inundated. Areas with hydroseeding on the banks of the basins should be weeded carefully to avoid removal of the native species.

Weeding should be conducted regularly the first two years to prevent the growth, flowering, and seed set of non-native weeds and invasive species. After the first two years, weeding frequency will be determined on a site-specific basis as determined by the type of weeds and seasonal growth cycle of the weed species. In general, weeding once a month will be necessary to avoid more extensive and costly eradication in the future.

Long-term maintenance tasks on the banks of the basins will include continued control of nonnative weeds and invasive plants, and control of erosion. Erosion could include gullies, rills and sheet erosion. Actions to control erosion should include redirecting or dissipating the water source. Recontouring and subsequent mulching and/or reseeding with erosion control species may be required in bare areas. In the event of extensive die-off of the native plant species, the bare areas should be replanted. Where the event that caused plant mortality was not a natural catastrophic occurrence, the site condition that resulted in the die-off should be investigated and remedial action to correct the problem should be undertaken prior to replanting.

D.7 Bay-Friendly Landscaping and Integrated Pest Management (IPM)

This section provides a summary of Bay-Friendly landscaping and integrated pest management techniques, based on landscaping guidelines prepared by StopWaste.org (available at www.BayFriendly.org).

BAY FRIENDLY LANDSCAPING

Bay-Friendly landscaping is a whole systems approach to the design, construction and maintenance of the landscape in order to support the integrity of the San Francisco Bay watershed. Project sponsors are encouraged to use landscape professionals who are familiar with and committed to implementing Bay-Friendly landscaping practices from the initial plant selection through the long-term maintenance of the site. This section summarizes Bay-Friendly Landscaping practices that may be implemented information that project sponsors need about how these practices can benefit water quality of the Bay and its tributaries.

Bay-Friendly landscaping is based on 7 principles of sustainable landscaping and features the following practices

- Landscape Locally
- Less to the Landfill
- Nurture the Soil
- Conserve Water
- Conserve Energy
- Protect Water and Air Quality
- Create and Protect Wildlife Habitat

INTEGRATED PEST MANAGEMENT

All creeks in the San Francisco Bay Area exceed water quality toxicity limits, primarily due to the pesticide Diazinon entering urban runoff. Although the residential use of Diazinon is currently being phased out, the use of a group of highly toxic chemicals, called pyrethroids, is increasing. Because all pesticides are toxins, an integrated pest management (IPM) places a priority on avoiding their use. IPM is a holistic approach to mitigating insects, plant diseases, weeds, and other pests. Each agency has a Source Control Measures List that includes provisions for using IPM in the landscaping plans of development projects. Contact the local agency to learn about the IPM requirements that may apply to your projects. Remember that avoiding pesticides and quick release synthetic fertilizers are particularly important in your project's stormwater treatment measures, to protect water quality.

IPM encourages the use of many strategies for first preventing, and then controlling, but not eliminating, pests. It places a priority on fostering a healthy environment in which plants have the strength to resist diseases and insect infestations, and out-compete weeds. Using IPM requires an understanding of the life cycles of pests and beneficial organisms, as well as regular monitoring of their populations. When pest problems are identified, IPM considers all viable solutions and uses a combination of strategies to control pests, rather than relying on pesticides alone. The least toxic pesticides are used only as a last resort. IPM features the following practices:

- Prevent Pest Problems
- Watch for and Monitor Problems
- Education is Key
- Use Physical and Mechanical Controls
- Use Biological Controls
- Least Toxic Pesticides are a Last Resort

For more information about sustainable landscaping and integrated pest management practices or to download a copy of the Bay-Friendly Landscaping Guidelines: Sustainable Practices for the Landscape Professional, visit www.BayFriendly.org.

D.8 Nursery Sources for Native Plants

It is recommended that the native plants used in treatment controls be grown by a qualified nursery. Seed collection should be conducted by a qualified botanist and/or nursery staff. Seed should be collected locally from selected sites to maintain the genetic integrity of the native plant species. The seeds shall be propagated by the nursery for planting during the fall dormant season. The appropriate container size for each species shall be used by the nursery.

The following are local nurseries that the California Native Plant Society acknowledges as locations to buy native plants:

<p>Acterra Wholesale Native Nursery Foothills Park Palo Alto 650-949-3158 http://www.acterra.org A wholesale nursery growing local native stock. Open to professionals by appointment.</p>	<p>Capitol Wholesale Nursery, Inc. 2938 Everdale Drive San Jose, CA 95148 408-239-0589 cwnsales@sbcglobal.net Wholesale, retail and broker nursery that emphasizes sustainable landscapes.</p>
<p>Baylands Nursery 965 Weeks Street East Palo Alto, CA 94303 www.baylands.com Wholesale & retail plants, about one-third native.</p>	<p>Middlebrook Gardens 76 Race Street San Jose, CA 95126 408-292-9993 www.middlebrook-gardens.com California Native plants nursery organized by plant community, open the first and third weekends of the month throughout the summer.</p>
<p>C. H. Baccus 900 Boynton Avenue San Jose, CA 95117 408-244-2923 Mail order bulbs.</p>	<p>Yerba Buena Nursery 19500 Skyline Boulevard Woodside, CA 94062 650-851-1668 www.yerbabuenanursery.com Retail plants and some seed, large demonstration garden with mature examples of many cultivar and species natives. Except for ferns, all native.</p>

D.9 References

A Field Guide to Compost Use, The Composting Council, Alexandria, VA.
<http://www.compostingcouncil.org/index.cfm>.

A Guide to Estimating Irrigation Water Needs of Landscape Plantings in California: The Landscape Coefficient Method and WUCOLS III, University of California Cooperative Extension and the California Department of Water Resources, 2000,
http://www.water.ca.gov/pubs/planning/guide_to_estimating_irrigation_water_needs_of_landscape_plantings_in_ca/wucols.pdf.

Bornstein, Carol, David Fross and Bart O'Brien, California Native Plants for the Garden.

California Irrigation Management Information System, www.cimis.water.ca.gov, Waste management and recycling, www.ciwmb.ca.gov.

California Stormwater Quality Association (CASQA). Stormwater BMP Handbook: New Development and Redevelopment. January 2003.

City of Santa Rosa. 2005. Appendix A. Landscaping and Vegetation for Storm Water Best Management Practices in New Development and Redevelopment in the Santa Rosa Area.

East Bay Municipal Utility District (EBMUD), Plants and Landscapes for Summer Dry Climates.

Hogan, E.L., Ed. 1994. Sunset Western Garden Book, Sunset Publishing Corporation, Menlo Park, CA.

Irrigation water audits, Irrigation Association, www.irrigation.org, and the Irrigation Technology Research Center, www.itrc.org.

Pests of Landscape Trees and Shrubs: An Integrated Pest Management Guide, 2nd ed., UC Publication 3359, <http://www.ipm.ucdavis.edu>.

Santa Clara Valley Water District Approved Plant List for Landscape Rebate Program, <http://www.valleywater.org/Programs/Landscaping.aspx>.

StopWaste.org www.bayfriendly.org

Bay-Friendly Landscape Guidelines

A Landscaper's Guide to Grasscycling

A Landscaper's Guide to Mulch

Sunset Magazine, www.sunset.com/garden/climate-zones

The Weed Worker's Handbook, A Guide to Techniques for Removing Bay Area Invasive Plants, The Watershed Council (510) 231-5655 and the California Invasive Plant Council (510) 843-3902.

University of California Cooperative Extension, Guide to Estimating Irrigation Water Needs of Landscape Plantings in CA.

D.10 Credits

This guidance is based on planting guidance prepared by Design, Community and Environment for the Alameda Countywide Clean Water Program's C.3 Technical Guidance. The plant list included in Section D.3 was prepared by Design, Community and Environment specifically for the Santa Clara Valley Urban Runoff Pollution Prevention Program to identify species appropriate for local climate conditions.