



Landscape Irrigation Best Management Practices

California Energy Commission's
Irrigation Equipment Workshop

Sacramento, CA

April 1, 2009

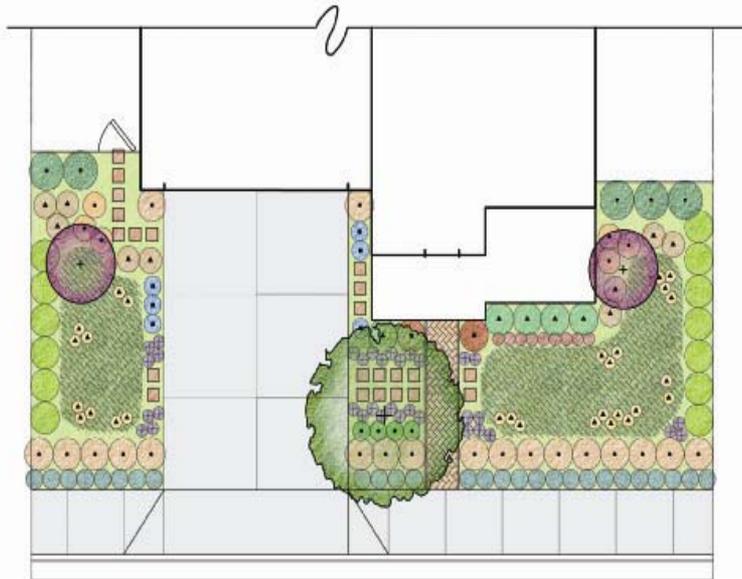


Landscape BMP supports Five Basic Elements of Water Efficient Landscapes

- Design
- Installation
- Operations and maintenance
- Management
- Equipment

"TYPICAL" SIZED LOT HOUSE
SOUTH FACING FRONT GARDEN, TYPICAL

60'x80' LOT



Plant Count
TREES 3
SHRUBS 167

GROUNDCOVER 250 SF

PAVING:

ENTRY AND SIDE WALKWAY TO BE SAND-SET PERMEABLE UNIT PAVERS, DECOMPOSED GRANITE, PEBBLES OR OTHER SURFACE LIGHT IN COLOR FOR LOW HEAT EMISSION. DRIVEWAY TO BE PERMEABLE CONCRETE, PERMEABLE ASPHALT OR UPGRADED TO SAND-SET PERMEABLE PAVER UNITS. IMPERVIOUS SURFACE SHOULD BE MINIMIZED.

MULCH:

3 INCHES OF MULCH IN ALL AREAS. SHEET MULCHING AND RECYCLED GREEN WASTE MULCH ARE RECOMMENDED.

FIRE:

TEMPLATES ARE BASED ON INDIVIDUAL LOTS WITHIN A SUBDIVISION. WHEN DEVELOPING UP AGAINST MIDLANDS OR OTHER FIRE SENSITIVE AREAS FOR AN INDIVIDUAL PARCEL OR A PROJECT, A FIRE MANAGEMENT PLAN SHOULD BE CREATED.

DRAINAGE:

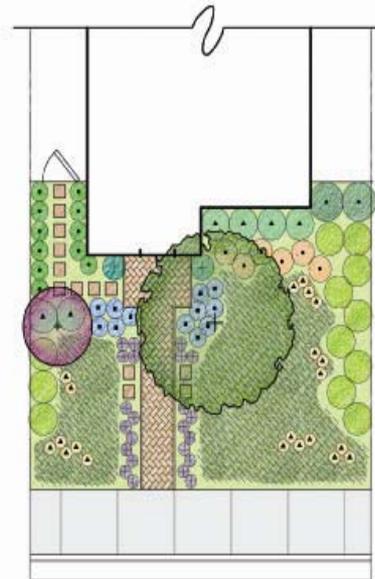
DOWNSPOUTS SHOULD BE DIRECTED INTO LANDSCAPE WITH GRADING FOR PROPER DRAINAGE AWAY FROM HOUSE. RUNOFF DURING PLANT ESTABLISHMENT MUST BE ACCOMMODATED ON-SITE.

PLANT RESOURCES:

THE SAMPLE PLANT LEGEND ABOVE PROVIDES GUIDANCE FOR APPROPRIATE PLANT SELECTION. SELECTIONS SHOULD BE MODIFIED TO ADDRESS DIFFERENT SOLAR ORIENTATIONS, SOIL CONDITIONS, AND OTHER MICRO-CLIMATIC FACTORS OF A PARTICULAR BUILDING SITE. RESOURCES FOR ADDITIONAL PLANT SELECTIONS AND SUBSTITUTIONS INCLUDE SUNSET'S WESTERN GARDEN BOOK, EDITED BY KATHLEEN NORRIS BRENZEL; WATER USE CLASSIFICATION OF LANDSCAPE SPECIES (WUCOLS). <http://www-facilities.stanford.edu/environment/landscape.pdf> AND YOUR LOCAL CHAPTER OF THE CALIFORNIA NATIVE PLANT SOCIETY (www.cnps.org)

ZERO-LOT LINE HOUSE
SOUTH FACING FRONT GARDEN, TYPICAL

30'x80' LOT



Plant Count
TREES 2
SHRUBS 95

GROUNDCOVER 250 SF

PLANT CLIMATE:

BAY AREA SUMMERS ARE HOT AND DRY INLAND WITH MINIMAL MARINE LAYER INFLUENCE AND MOSTLY COOL AND FOGGY NEAR THE COAST. WINTERS ARE MILD AT THE COAST AND SOME FREEZE OCCURS IN THE INLAND VALLEYS.

BAY AREA FRONT YARD PRODUCTION
SAMPLE

SAMPLE PLANT LEGEND

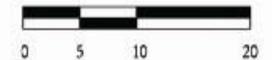
SYMBOL	BOTANICAL NAME	COMMON NAME
LARGE TREES		
	xChitalpa T. 'Morning Cloud'	NCN
	Quercus agrifolia	Live Oak
	Quercus suber	Cork Oak
SMALL TREES		
	Arbutus unedo 'Elfin King'	Dwarf Strawberry Tree
	Cotinus cogzygria	Smoke Tree
	Lagerstroemia 'Natchez'	Crape Myrtle
	Leptospermum l. 'Compacta'	Dwarf Tea Tree
	Luma apiculata	NCN
LARGE SHRUBS		
	Myrtus communis	Myrtle
	Rozmarinus 'Collingwood Ingram'	Rosemary
	Barberis l. 'Maria'	Gold Pillar
	Myrsine africana**	African Boxwood
	Rhamnus C. 'MSB'	Dwarf Coffeeberry
	Ribes sanguineum**	Currant
MEDIUM SHRUBS		
	Arctostaphylos purissima	Lompoc Manzanita
	Santolina C. 'Nana'	Dwarf Lavender Cotton
SMALL SHRUBS & PERRENIALS		
	Polystichum californicum**	Sword fern
	Helictotrichon sempervirens	Blue Oat Grass
	Lavandula a. 'Munsiead'	Lavender
	Nassella tenuissima	Mexican Feather Grass
	Armeria maritima	Common Thrift
	Penstemon h. 'Purdy'	Purple Beard Tongue
GROUNDCOVER		
	Arctostaphylos 'Emerald Carpet'	Emerald Carpet
	Thymus serpyllum*	Creeping Thyme*
	Rubus pentalobus*	Bramble*

* Can tolerate light traffic
** Can tolerate shade

SUNSET ZONES - 15, 16, 17

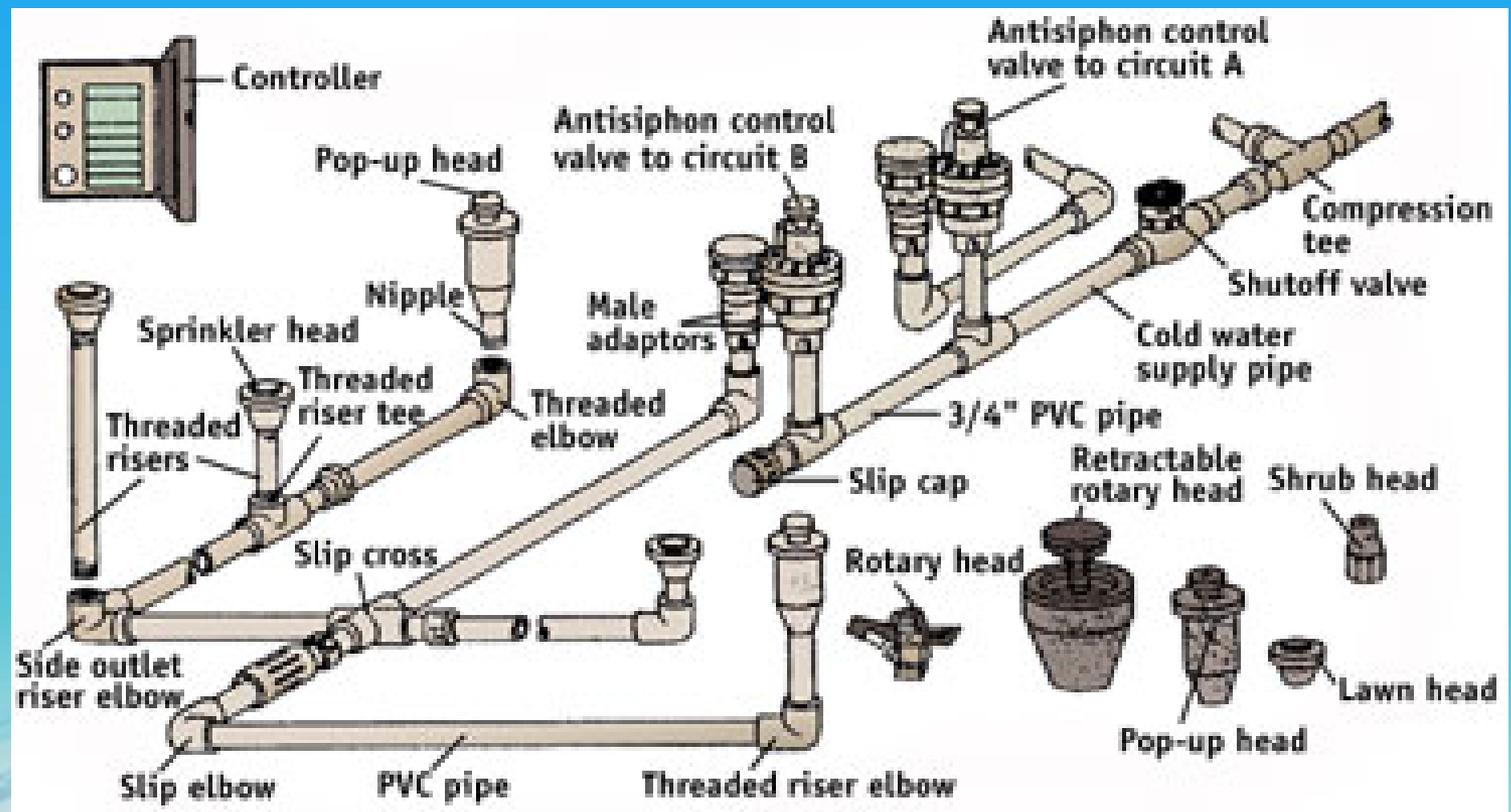


NORTH



1" = 10'-0"

Installation





California
Urban Water
Conservation
Council

Operations



PARTNERS FOR A WATER-EFFICIENT CALIFORNIA



Maintenance





Equipment





Landscape BMP

- 90% of dedicated CII landscape meters
- 15% of mixed and unmetered CII connections
- Parallels Model Landscape Ordinance
- Extensive Flex Menu



Landscape Flex Items

- Monitor & report on landscape water use
 - Water budgets & use reports
 - Agency-wide water budgets
- Technical landscape resources & training
 - Provide design assistance
 - Perform landscape & irrigation audits
 - Landscape workshops, training, & presentations



Landscape Flex Items (Con't)

- Provide Incentives:
 - Budget-based rate structures
 - Conversions to dedicated landscape meters
 - Irrigation system upgrades
 - Reduction in irrigation water use demand
 - Landscape design
 - Turf reduction
 - Conversion to recycled water or Alternative sources of water (graywater, rainwater, cisterns, etc.)

Implementation

The logo for the California Urban Water Conservation Council. It features a dark blue vertical rectangle. At the top, there is a white silhouette of a city skyline with two fish swimming below it. Below the graphic, the text "California Urban Water Conservation Council" is written in white, stacked in four lines.

California
Urban Water
Conservation
Council

Council is developing a Guidebook for supplemental implementation information:

- Mentoring
- Continuing educational opportunities
- Useful research, case studies and examples
- Step by step how's & why's



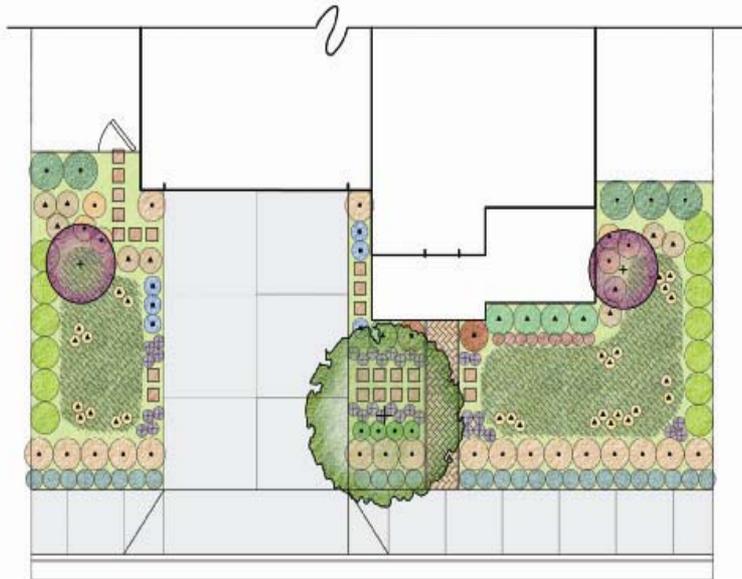
Smart Urban Landscapes

**Landscape Design Guidelines
incorporating the best ideas from
existing standards for new residential
construction**

**Six residential landscape design
templates that incorporate Landscape
Design Guidelines**

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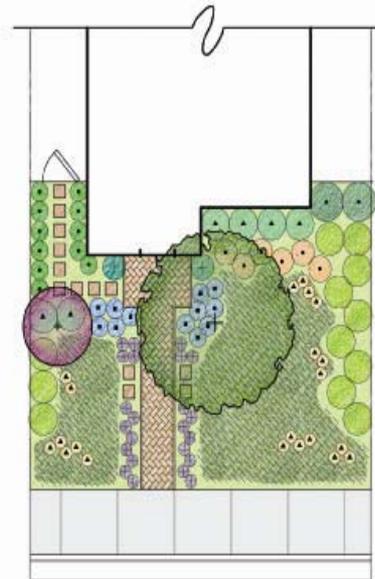
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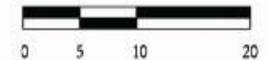
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Landscape Templates

- For “typical” and “zero-lot line” homes
- Bay Area; Central Valley; Sierra Foothills; Southern Coastal, Inland, and Foothills
- Landscape design with plant list; irrigation design with schedule & water budget



Status of Smart Urban Landscape Project

- Materials will be posted on Council website by April 15, 2009
- Materials will be available to members soon thereafter



The California Water Smart Irrigation Controller Project

Results and Perspective on a Large Field Study of an Important Emerging Technology



Project Funding Provided by California Department of Water Resources

PARTNERS FOR A WATER-EFFICIENT CALIFORNIA

Preliminary Results



Location	N	Mean %	Mean Kgal
All Sites	2294	-14.5	137.9
North	411	-4.7	363.5
South	1883	-16.6	88.7

Preliminary Results



Statistically Significant Change in Water Use?	# of Sites	%
Increase	959	41.8
No Change (+ or – 6%)	35	1.5
Decrease	1300	56.7



Questions?

- Chris Brown, chris@cuwcc.org
- Marsha Prillwitz, marsha@cuwcc.org
- (916) 552-5885