



County of Riverside Guide to California Friendly Landscaping



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See also: <http://www.rctlma.org/planning/content/devproc/landsape/landscape.html>



TABLE OF CONTENTS **PAGE**

1. Why Do We Need This Guide? 1

2. Who Does Ordinance No. 859 Apply To? 1

3. What Are The County’s General Landscaping Design Guidelines? 2

4. What is the Required Landscape Documentation Package And
When Does It Get Submitted? 7

5. What Should My Planting Plan Include? 8

6. What Should My Irrigation Plan Include?11

7. What Is Required In A Soils Management Plan? 16

8. How Do My Grading Plans Relate to My Landscape Requirements?..... 19

9. What Is A Water Budget And How Is It Calculated? 19

10. What Are The County's Installation And Maintenance
Requirements? 21

11. How Is Recycled Water Used?22

Figures and Tables

Figure 1 - Sunset Climate Zone Map 17

Table 1 - Reference ETo20

Table 2 - Plant Factors20

Table 3 - WUCOLS and Sunset Zones21

Attachments

Attachment A - Riverside County California Friendly Plant List25



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California Friendly® is a registered trademark of the Metropolitan Water District of Southern California. Learn more about water conservation and landscape rebate programs at: www.bewaterwise.com

1. Why Do We Need This Guide?

The purpose of the Riverside County Guide to California Friendly Landscaping (Landscaping Guide) is to present practical standards for landscape and irrigation design for projects within Riverside County. Additionally, the Landscaping Guide is designed to assist landscape architects, irrigation designers, contractors, planners, and the public in the selection of plant materials and irrigation methods that meet the objectives of County Ordinance No. 859 and Ordinance No. 348. In order to conserve water in the drought prone state of California, legislation such as AB 325 and AB 1881 mandates the practice of water conservation.

Riverside County's commitment to water conservation is exemplified in the adoption of standards and the implementation of guidelines which result in a reduction of landscape related water usage County-wide. It is the County's goal to reduce landscape related water usage by approximately thirty percent (30%) per site, through implementation of this Landscaping Guide. To meet this goal, Planting Plans and Irrigation Plans shall be prepared using the Water Budget Formula described in Section 9 of this document.



Water Efficient Landscapes can be inviting and attractive

2. Who Does Ordinance No. 859 Apply To?

- A. On December 2006, the Riverside County Board of Supervisors adopted Ordinance No. 859. In October 2009 the County adopted revisions to Ordinance No. 859 to ensure that it was consistent with AB1881.

Ordinance No. 859 applies to all new and rehabilitated landscapes associated with residential uses with a total landscape area equal to or greater than 2,500 square feet and all new and rehabilitated landscapes associated with commercial or industrial uses. This includes:

1. Commercial development.
2. Industrial development.
3. Residential development:
 - Multi-family development
 - Single family common areas
 - Single family homes
 - Erosion control landscaping (slopes over 3 feet in vertical height)
 - Model homes
4. Road rights-of-way.
5. Parks and public lands.
6. Landscaping associated with entry sign monuments.



Photo Credit: Eastern Municipal Water District



Invasive plants are prohibited near MSHCP conservation areas.



*Ceanothus griseus—Louis Edmunds
Photo Credit: Tree of Life Nursery*



*KB Homes Martha Stewart Collection
Photo Credit: Moises Lopez*

7. Fuel modification areas - applicants are encouraged to consult with the County Fire Department, determine their fuel modification requirements, and select fire-resistant plant material.
8. Flood control areas including retention/detention basins and water quality swales ('bioswales')
9. Development adjacent to Multiple Species Habitat Conservation Plan (MSHCP) and other conservation areas — applicants are required to consult with the Environmental Programs Department (EPD) to determine acceptable plant species that may be planted within the vicinity of MSHCP conserved lands.

B. In the event that the water purveyor for a proposed project has adopted more stringent water-efficient landscape requirements, the more stringent guidelines shall be taken into consideration during the County's landscape review process.

3. What Are The County's General Landscaping Design Guidelines?

Landscaping and proper irrigation is a critical component of any successful development project. Landscaping should define a sense of space by making a statement, ensuring community continuity, complementing good architectural design, and creating a cohesive finished product. Emphasis on California Friendly® design elements can achieve aesthetic objectives while acknowledging the practical water constraints of our unique geographic environment.

Design guidelines have been adopted for a number of communities throughout the County. Many of these guidelines contain specific landscape requirements that must be reflected in landscape plans for these areas. For more information, please see the Riverside County Planning Department's web page for design guidelines.

Conceptual Landscape Plans and/or Landscaping Minor Plot Plans shall incorporate the following design guidelines relative to their respective product type(s). Such plans shall also follow Section 5 of this Landscaping Guide and incorporate the use of drought-tolerant/water-efficient plants to reduce water demand. A rich variety of plantings and hardscape should be selected and integrated appropriately into the landscape design based on their intended uses. Landscaping Plans shall be prepared by a Landscape Architect licensed by the State of California and shall consist of plants found in the Riverside County California Friendly Plant List (Plant List) included in this Guide as Attachment A.

A. Single Family Residential Design Guidelines:

1. Turf areas shall be used sparingly in response to functional recreational needs and shall be in compliance with the Water Budget Formula (Section 9 of this Guide).



Hesperaloe parviflora



California Friendly® Model Home.
Photo Credit: Eastern Municipal Water



Osteospermum fruticosum

2. Trees, shrubs, and groundcover shall be incorporated within single-family development projects to create a comfortable and aesthetically pleasing environment for residents and those viewing from public areas.

County-Wide Guidelines	Minimum Shrubs ¹ , Groundcover, and Mulch	Minimum Trees		Automatic Irrigation
		15 gal. ³	24" box ³	
All	50% ²	1	1	With smart controller
Corner Lot Returns	50% ²	1	3	With smart controller

The following minimum standard shall be applied to front-yard typical landscaping plans:

Minimum Front Yard Landscaping Standard

Notes: ¹ Of this amount, 60% shall be 5 gal. foundation shrubs and 40% shall be 1 gal.

shrubs. 50% of the area underneath the shrubs shall be covered by a vegetative, drought-tolerant groundcover, and/or mulch.

² Calculating number of shrubs: Area for shrubs to be divided by 25 sq. ft. The resulting number is the total number of shrubs that must be planted to achieve full coverage.

³ The 24" box tree shall be a minimum 2" caliper and the 15 gal. tree shall be a minimum 1" caliper.

3. Landscape architects are strongly encouraged to use clinging vines, espaliers, trellises, and shrubs to enhance the architecture and define attractive private open spaces.
4. Front yard areas should be designed using landscape elements pertaining to the form, horizontal and vertical lines, hardscape and softscape, and ornate qualities that are compatible with the primary structure. Visual openness and water efficiency should be maintained. Special attention shall be given to selecting appropriate trees and plants that, at their maturity, will be in scale with the house and yard.
5. Landscape architects are encouraged to use visual focal points such as boulders, landscape mounds, planter beds, etc.
6. To the extent feasible, existing mature trees and shrubs that represent the existing significant landscaping elements shall be preserved.
7. Vegetative ground cover that will absorb rainwater and reduce runoff shall be used. Permeable surfaces should be used wherever possible to reduce paving.



Lavatera assurgentiflora

8. Air conditioning, mechanical equipment, and trash enclosures shall be screened from the public right-of-way with suitable plantings.
9. Landscaping shall be included as part of the design for a fence or wall. It should be used to soften and screen large masses of blank wall surface area and deter graffiti.
10. Model homes shall display a sign indicating that the home features water efficient planting and irrigation. The sign shall be displayed in the front yard and be clearly visible to home buyers.
11. Check with local water purveyors' and Metropolitan Water District's web sites for rebate programs that incentivize California Friendly® landscaping and irrigation systems.

B. Multi-Family Residential Design Guidelines:



Chitalpa tashkentensis

1. Turf areas shall be used sparingly in response to functional needs and shall be in compliance with the Water Budget Formula (Section 6 of this Guide).
2. Trees, shrubs, and groundcover should be incorporated within multi-family development projects to create a comfortable and aesthetically pleasing environment for residents and those viewing from public areas.
3. Landscape architects shall use clinging vines, espaliers, trellises, and shrubs to enhance the architecture and define useful public and private spaces.
4. Landscape architects shall integrate visual focal points such as boulders, landscaped mounds or berms, sculpture, and public art into their planting design.
5. Planting plans shall utilize hardy native or drought tolerant trees, shrubs, and groundcover that are easy to water and maintain.
6. Paved areas, especially parking lots, must incorporate adequate shading. Off-street parking and shading plans shall comply with provisions in Section 18.12 of Ordinance No. 348.
7. Seating options in landscaped areas should be provided. They shall be constructed of durable, easy-care material such and treated with a graffiti resistant coating.
8. Entrances to alleys must be landscaped. Walls in alleys abutting residential uses shall be screened with landscaping such as clinging vines. Landscape areas



Photo: Courtesy of Tree of Life Nursery
www.treeoflifenuresery.com



adjacent and between garages in alley-loaded residential areas are encouraged.

9. Pedestrian walkways should be safe, visually attractive, and well defined by landscaping and lighting.
10. Landscaping shall be included as part of the design for the fence or wall. It should be used to soften and screen large masses of blank wall surface area and to deter graffiti.
11. Planting plans shall complement the landscape elements between the proposed project, surrounding streetscapes, and adjacent publicly maintained landscaping to ensure community continuity and character.
12. Model homes shall display a sign indicating that the home features water efficient planting and irrigation. The sign shall be displayed in the front yard and be clearly visible to home buyers.



Photo Credit: Tree of Life Nursery

C. Commercial, Mixed Use, and Industrial Design Guidelines:

1. Landscaping is required to be in scale with adjacent buildings and be of appropriate size at maturity to accomplish its intended goals. A balance of deciduous and evergreen trees should be used.
2. Landscaping shall be incorporated around the base of buildings (except loading or service areas) to soften the edge between the parking lot, structure(s), and street. Such landscaping should be accentuated at entrances to provide a focal point.
3. New projects proposed adjacent to existing residential land uses shall incorporate adequate landscape screening/buffering.
4. Berming in conjunction with landscaping should be used at the building edge to reduce structure mass and height along façades.
5. Evergreen trees and shrubs shall be used whenever a landscape screen or buffer is required.
6. Service areas, equipment, and solid enclosures must be screened using landscaping such as tall shrubs and clinging vines especially those properties whose side yard fronts a primary street or abuts a residential property.
7. Design and locate perimeter planters and plantings for the purpose of creating a physical barrier, providing a visual screen, and shading the parking area. The parking lot and perimeter landscape shall also be designed



Photo Credit: Arid Zone Trees



Vines soften fences and walls and deter graffiti. They shall have designated valves for irrigation.



This recreation center is themed after the local wine country.



Park Master Plan and Photo



for safe and convenient pedestrian circulation throughout, including designated paths across perimeter planters.

8. Plans shall comply with provisions in Section 18.12 of Ordinance No. 348.
9. Landscaping shall be included as part of the design for the fence or wall. It should be used to soften and screen large masses of blank wall surface area and to deter graffiti.
10. Hardscape amenities such as benches, seating areas, and trellises, shall be included and designed to be consistent with the landscaping.
11. Landscaping plans shall complement the landscape and hardscape elements between the proposed project, surrounding streetscapes, and adjacent publicly maintained landscaping to ensure community continuity and character.
12. Turf areas shall be used sparingly in response to functional needs and shall be in compliance with the Water Budget Formula (Section 9 of this Guide).

D. Park Design Guidelines:

1. A balance of deciduous and evergreen trees shall be used.
2. Landscaping shall be included as part of the design for the fence or wall. It should be used to soften and screen large masses of blank wall surface area and to deter graffiti.
3. Landscaping shall complement the landscape and hardscape elements between the proposed project, surrounding streetscapes, and adjacent publicly maintained landscaping to ensure community continuity and character.
4. Plans shall comply with provisions of Section 18.12 of Ordinance No. 348.
5. Seating options and drinking fountains in landscaped areas should be provided. Seating and drinking fountains should be constructed of durable, easy-care material such as concrete and shall be treated with a graffiti resistant coating.
6. Adequate lighting shall be incorporated into the landscape design pursuant to the prevailing local or state standards.



Anigozanthos flavidus - red cultivar

7. Sprinklers or other emitters shall be positioned so that no irrigation water shall come in contact with drinking fountains, picnic tables, benches, playground equipment, buildings, or other hardscape features.
8. Plans shall conform to the standards and be approved by the maintenance district responsible for perpetual maintenance.

D. Entry Monument Guidelines:

1. Monuments shall define a sense of space, individuality, and arrival. Each monument should be different from adjacent tracts and hold their own style.
2. To define a sense of arrival and place, entry monument shall incorporate 5 gallon or greater size shrubs, and boulders, annual color plants, lighting or other distinct visual focal points.
3. Monuments shall incorporate signature trees that complement the community theme. A minimum 36 inch box or larger shall be used. Where only one signature tree is incorporated in the monument landscaping plan, such a tree shall be a 42 inch box size or greater. Entry lighting shall be used on signature trees.



Photo: Courtesy of Arid Zone Trees

4. What Is the Required Landscape Documentation Package and When Does it Get Submitted?

Most projects that require discretionary permits are required to prepare a Conceptual Landscape Plan. This is done early in the land use development process to ensure compliance with Ordinance No. 859, applicable community design guidelines/standards, and other important planning concepts. It also allows decision makers the opportunity to review and approve landscape commitments made by the land developer. The Conceptual Landscape Plans shall include the elements of the Planting Plan identified with a red asterisk (*) in Chapter 5.

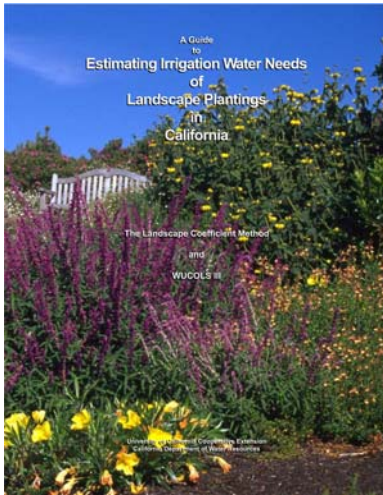
Prior to receiving a building permit, new or rehabilitated landscapes subject to Ordinance No. 859 must prepare and submit a Landscape Documentation Package to the County Planning Department for review and approval. The package shall include the following elements:

1. Project Information
2. Planting Plan
3. Irrigation Design Plan
4. Soil Management Plan
5. Grading Design Plan



*Rendering of Fossanova Vineyards
Courtesy Tim Jachlewski, In-Site Landscape Architecture*

Items 1, 2, 3, and 5 above are submitted as a Minor Plot Plan. Item 4 shall be completed and submitted prior building final inspection. The following pages describe the specific requirements for each of the



The WUCOLS III guide provides estimated water uses for landscape plants. It can be downloaded from: www.owue.water.ca.gov/docs/wucols00.pdf

forementioned Landscape Documentation Package elements. Each landscape package must be submitted with applicant’s signature, date, and a statement indicating, “I agree to comply with the requirements of Ordinance No. 859 and submit a complete Landscape Documentation Package.”

5. What Should My Planting Plan Include?

Landscape plans for permits and/or approvals described in Section 2 shall be prepared by a landscape architect licensed by the State of California. Plant species must be selected from the Plant List found in Attachment A of this Landscaping Guide. The species listed are not guaranteed for all situations. Consultation with a landscape architect, arborist, the proposed maintenance entity, or a local plant nursery is recommended. In order to incorporate plant species other than those listed, the project applicant must provide the Planning Director with the following:

1. Water use requirements per Water Use Classification of Landscape Species (WUCOLS III) or field data verifying the plant’s landscape (crop) coefficient.
2. Plant species description from Sunset Western Garden Book or other comparable source.
3. Comparison to a similar species included in the plant list.

The following minimum design standards identified with an asterisk (*), together with the appropriate elements of Section 3 of this Landscaping Guide, shall be incorporated into Conceptual Landscape Plans. Conceptual plans are also required to provide an estimate of the landscape’s Maximum Annual Water Use (see Section 9). All of the following standards are required as part of the Landscape Documentation Package Submitted as a Minor Plot Plan:

- A. Plants shall be selected based on their level of maintenance, durability, mature widths and heights, aesthetic appeal, and thematic qualities. A greater percentage of “low” or “very low” water use plant species is strongly encouraged.*
- B. Shade trees shall be provided for residential, commercial and industrial building parking lot and open space areas. They shall be incorporated to provide natural cooling opportunities and for the purpose of energy and water conservation. Plants shall be placed in a manner to maximize summer shade.*
- C. Plant species must be selected based on their appropriate plant hardiness climate zones as defined by Sunset Western Garden Book. The climate zones are also depicted in Figure 1 and are noted on the Plant List included as Attachment A of this Landscaping Guide.*
- D. All non-turf planting areas (except hydroseeded areas) must be mulched on a regular basis to retain moisture, suppress weeds,



Inland Empire Utilities Agency—LEED Platinum Certified Building
Photo Credit: IEUD



Regular application of mulch retains moisture and suppresses weeds.
Photo Credit: R Cedar, LLC

and moderate soil temperature. Mulch depth, type, and maintenance replenishment frequency must be noted on plans.*

1. Planting areas shall be mulched with a three inch (3") minimum layer of organic wood mulch. Areas of groundcover planted from flats shall be mulched with a one and one half inch (1 1/2") minimum layer of organic mulch.
2. Some maintenance districts require differing mulch thicknesses. The more stringent (thicker) requirement shall prevail.
3. Color enhanced mulches are discouraged.
4. Mulch may be omitted for native revegetation projects upon the recommendation of the project biologist.
5. Planting areas in the desert regions (Sunset Climate Zones 11 and 13) shall be mulched with a two inch (2") layer of decomposed granite (DG) /gravel mulch.



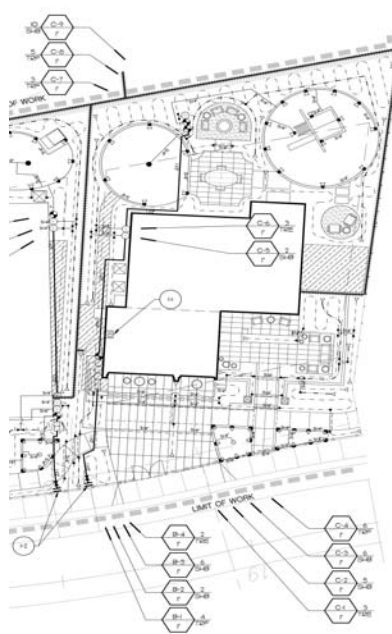
Decomposed granite mulch

- One inch (1") minus granite mulch is suggested for aesthetic purposes.

- E. Turf shall be used as a functional recreational element and not solely for aesthetic purposes.*
1. Small, irregularly shaped turf areas shall be avoided.
 2. Turf areas shall be sized and shaped to minimize overspray and runoff.



Planting Plan



Irrigation Plan



Hydrozones - Plants grouped and irrigated based on water use requirements



Turf to serve as a functional recreational component.



*Space plants appropriately so that their mature width does not require excessive pruning.
Photo Credit: Greg Rubin, California's Own Nursery*



*Maintaining community cohesiveness is essential to establishing a sense of "place" and "destination."
Photo Credit: Arid Zone Trees*

3. Lower water use, warm season turf grasses are encouraged. Grasses such as Bermuda, which are dormant (brown) in the winter, are acceptable if the maintenance entity over-seeds with perennial rye on an annual basis during the dormancy period.
 4. Turf is prohibited within County road rights-of-way, unless the turf areas are contiguous to turf areas within parks, residential front yards, cemeteries or golf courses.
 5. Turf is prohibited on slopes greater than 4:1.
 6. Turf areas less than eight feet (8') in width shall be irrigated with subsurface irrigation or other low volume irrigation technology.
- F. Plants must be grouped and irrigated on separate valve zones (hydrozones) based on their water use requirements, slope aspect, and sun/shade microclimate.*
 - G. If low water use plants (those that can also survive/flourish with medium water application) are used in a medium water use hydrozone, they must be counted as medium water use in the irrigation calculations.*
 - H. Shrub planting/spacing shall be designed so that their mature width will not require excessive pruning. Excessive pruning is discouraged.*
 - I. The contractor shall tag one plant of each variety with the plant's scientific name, and cultivar or variety if applicable, and common name. This is to ensure that accurate replacement plants are installed if necessary.
 - J. To prevent graffiti, self-clinging vines shall be planted to ensure full coverage of the public facing side of all walls.*
 - K. The Planting Plan shall be prepared at the same scale as the Irrigation Plan and, at a minimum, shall identify the following:
 1. Proposed and existing trees, shrubs, ground covers, vines and turf areas indicated within the developed landscape area and within publicly maintained landscape areas within 200 feet (200') of proposed project site. Where appropriate, plans should incorporate the surrounding elements of surrounding landscape components to ensure community cohesiveness.*
 2. Individual trees, shrubs, and groundcover plants drawn at their average growth size to ensure coverage of the area to be landscaped.*
 3. Legend including plant symbol, genus, species, common name, spacing, size, quantity of each type of plant by container size, water use per applicable WUCOLS III Zone, and detail call-out (i.e.: P-1, P-2, P-3, etc.).*
 4. Any special landscape area(s).*



Model home reduces front yard turf area by planting low- water use shrubs



Photo: Courtesy of Steve Morgan Landscaping



A Weather Based Irrigation Controller (WBIC) is a sprinkler control device that automatically adjusts irrigation schedules in response to changing weather or environmental conditions.

5. Location of each hydrozone, area (in square feet) devoted to landscaping, and a break down of the total area by landscape hydrozones.*
6. Existing trees, shrubs, groundcovers, turf areas that are to remain and any existing landscape elements that are to be removed. *
7. Type of mulch and application depth.
8. Stabilizing products to be used on slopes.*
9. Type and surface area of any water features.*
10. Location of street lights. Trees shall be located so that there is a minimum of ten feet (10') of clearance with respect to the lights.
11. Root barrier noted for trees within six feet of hardscape.
12. Property lines, limit-of-work lines, streets, and street names.*
13. Building locations, driveways, sidewalks, and other hardscape features.*
14. Appropriate four inch (4") graphic scale, title block, page numbers, and north arrow, notes, details, and specifications.*
15. Estimated Maximum Annual Water Use (MAWA).*
16. Existing land uses adjacent to the boundaries of the project site including residential development, individual homes, commercial development, fuel modification zones and any MSHCP regulated open space.*
17. Defensible space or zone around building or structure(s) is required per Public Resources Code Section 429(a) and (b). Fire-prone plant material and highly flammable mulches shall be avoided.*
18. Avoidance of invasive plant species near parks, buffers, greenbelts, water bodies, and open spaces.*
19. Type and installation details of any applicable storm-water best management practices.

6. What Should My Irrigation Plan Include?

Irrigation systems shall be designed, constructed, managed, and maintained to achieve the highest overall efficiency possible. Efficiency is measured by the amount of water beneficially used to sustain plant life divided by the amount of water applied. Efficiency is affected by the attributes of the controller, method of irrigation, irrigation equipment, proper hydrozoning, site topography, condition and size of plants, and weather conditions.

Although an irrigation plan is not required at the conceptual stage of a land use project, it is required as one of four key components of



MP Rotator sprinklers are 15% more efficient than conventional spray applica-



Standard low-emission hub.



One of many "smart controller" options.

a Landscape Documentation Package submitted as a Minor Plot Plan prior to an applicant pulling a building permit. Other key components of the Landscape Documentation Package include the Planting Plan (Section 5 of this Guide), Soils Management Plan (Section 7), and the Grading Design Plan (Section 8). If the water purveyor for a proposed project has adopted more rigorous irrigation efficiency standards, then the more rigorous standard would prevail.

Landscape Minor Plot Plans shall be prepared by a landscape architect licensed to work in the State of California. Irrigation plans shall include the following minimum irrigation design standards:

- A. Irrigation systems shall be designed, maintained, and managed to meet or exceed an average irrigation efficiency of 0.71. High efficiency irrigation methods (e.g. drip, MP rotators, micro-sprays) shall be utilized.
- B. All irrigation systems shall be designed to prevent runoff, overspray, low head drainage, and other similar conditions where water flows off-site on to adjacent property, non-irrigated areas, walkways, roadways, or structures. Check valves are recommended.
- C. Optimally, overhead irrigation should occur between the hours of 8 p.m. to 9 a.m. Check with local water purveyor to determine the correct watering window for your project and schedule accordingly.
- D. Overhead irrigation shall not be permitted within 24 inches of any non-permeable surface. There are no restrictions on the irrigation system type if the landscape area is adjacent to permeable surfacing and no overspray and run off occurs.
- E. Irrigation systems shall be designed, constructed, managed, and maintained to achieve as high an overall efficiency as possible. The irrigation system shall be designed to ensure that the dynamic pressure at each emission device is within the manufacturer's recommended pressure range for optimal performance.
- F. Rotors and spray heads shall be designed and installed with minimized overspray onto paved surfaces, structures, and non-vegetated areas. The design shall be head-to-head coverage with matched precipitation heads and a maximum of fifty percent (50%) diameter overlap. Rotors and spray heads shall be zoned separately. Half rotors and full rotors shall be zoned separately unless matched precipitation nozzles are used.
- G. For drip line installations, in-line pressure regulators shall be used per factory recommendations for the specific irrigation products being used. If drip line is being installed, it must be filtered at the valve along with any other necessary equipment.
- H. Irrigation systems shall be zoned according to plant water use, slope aspect, and sun/shade microclimate. If low water use plants (that can also survive/flourish with medium water application) are used within a medium water use hydrozone, they must be counted as medium water use in the irrigation calculations.



How Can I Find A “Smart” Controller?

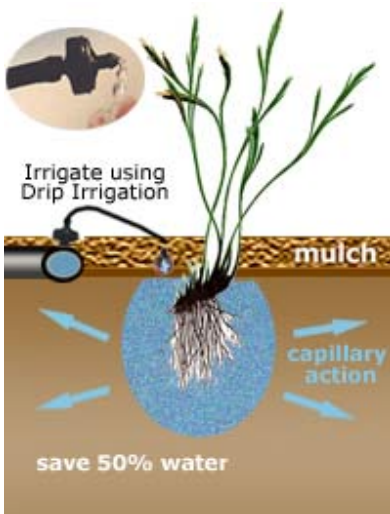
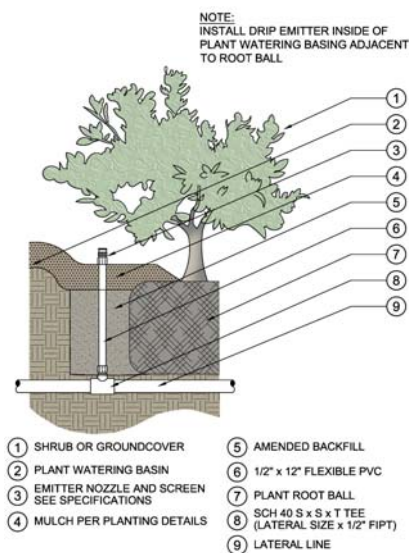
The Irrigation Association regularly tests “smart” controllers and provides a list of recommended controllers for commercial or private use. Below are the tested and recommended smart controllers from the Association’s 2009 list.. For more information and a current list of controllers, see the Irrigation Association’s web site located at: <http://www.irrigation.org/SWAT/Industry/ia-tested.asp>

- Alex-Tronix Enercon Plus
- Alex-Tronix Smart Clock
- Aqua Conserve Aqua ET-9
- Calsense ET2000e
- Cyber-Rain XCI
- ETwater Smart Controller
- Hunter ET System
- Hunter Solar Sync
- Hydrosaver ETIC
- Irritrol Smart Dial
- Rain Bird ESP: LX & SMT
- Rain Bird ET Manager
- Rain Master RME Eagle
- SMG Superior Controls Sterling 8
- Toro Intelli-Sense
- Toro RKS w/Tipping Rain Bucket
- WaterOptimizer
- Weathermatic SL1600
- WeatherTRAK

- I. Water systems for common open space areas shall use non-potable water if approved facilities are made available by the water purveyor. Provisions for the conversion to a non-potable water system shall be provided within the landscape plan. Systems designed to use non-potable water shall be designed to meet all applicable standards of the California Regional Water Quality Control Board and the Riverside County Health Department. With the exception of single family residential units, all irrigation plans shall be designed for recycled water in areas that are scheduled for recycled water in the future.
- J. All irrigation systems shall be equipped with the following:
 1. A smart irrigation controller which automatically adjusts the frequency and/or duration of irrigation events in response to changing weather conditions.
 2. A rain sensing device to prevent irrigation during rainy weather;
 3. Anti-drain check valves installed at strategic points to prevent low-head drainage.
 4. A manual shut-off valve as close as possible to the point of connection of the water supply to minimize water loss in case of an emergency or routine repair.
 5. A pressure regulator when the static water pressure is above or below the recommended operating pressure of the irrigation system.
 6. Backflow prevention devices.
 7. Riser protection components for all risers in high traffic areas.
- K. Irrigation systems shall be scheduled so that the irrigation precipitation rate does not exceed the infiltration rate of the soil. The irrigation schedules shall include the recommended irrigation days per week, number of cycles per day, minutes of run times per cycle, and estimated amount of applied irrigation water, expressed in gallons per month and gallons per year.
- L. A baseline irrigation schedule shall be provided on the plans for the six-month initial plant establishment period. The contractor shall adjust the schedule to meet site specific requirements and use the baseline schedule to set the weather-based controller. The schedule currently in effect shall be posted in the controller.
- M. A second baseline irrigation schedule shall be provided on the plans which incorporates the specific water needs of the plants throughout the post-establishment calendar year. The contractor shall adjust the schedule to meet site specific requirements and use the baseline schedule to set the weather-based controller. The schedule currently in effect shall be posted in the controller.

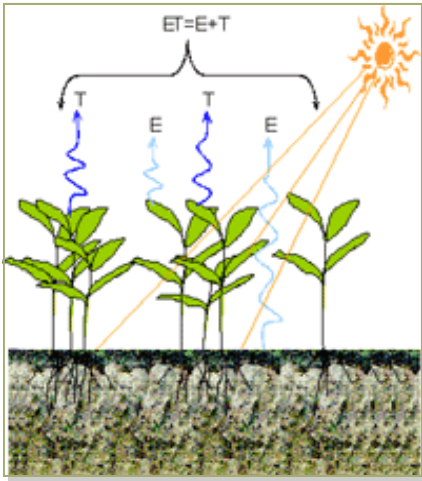


Standard low-emission bubbler.



Drip irrigation is 30% more efficient than conventional spray applications.

- N. The irrigation schedules shall include the recommended irrigation days per week, number of cycles per day, minutes of run times per cycle, and estimated amount of applied irrigation water, expressed in gallons per month and gallons per year.
- O. The controller shall be operational and set to real-time weather prior to the completion of the 90-day maintenance period of the installing contractor.
- P. Commercial projects shall include a Central Controller programmed to distinguish irregular flows (e.g. broken valve, line, spray head, etc.), temporarily shut off the affected branch or the entire system, and send an immediate electronic message to the maintenance entity.
- Q. Residential Front Yard Typical Irrigation Plans must demonstrate that sufficient capacity exists on the specified irrigation controller to supply adequate additional zones for future side and backyard landscaping. More than one controller per residential unit shall be avoided.
- R. Dedicated landscape meters are required for all projects greater than 2,500 square feet except single family homes.
- S. Separate valves shall be provided for separate water use planting areas so that plants with similar water needs are irrigated by the same irrigation valve. All installations shall rely on highly efficient state of the art irrigation systems to eliminate runoff and maximize irrigation efficiency as required by this Landscaping Guide.
- T. Static water pressure, dynamic or operating pressure and flow reading of the water supply shall be measured. These pressure and flow measurements shall be conducted at the design stage. If the measurements are not available at the design stage, the measurements shall be conducted at the installation.
- U. The capacity of the irrigation system shall not exceed the capacity required for peak water demand based on water budget calculations, meter capacity, or backflow preventer type and device capacity.
- V. Sprinkler heads and other emission devices shall have matched precipitation rates unless otherwise directed by the manufacturer.
- W. In mulched planting areas, the use of low volume irrigation is required to maximize water infiltration into the root zone.
- X. Non-turf areas on slopes greater than 25% shall be irrigated with drip irrigation or other low volume irrigation technology unless an alternate design or technology can demonstrate adequate irrigation with no runoff or erosion.
- Y. Long, narrow, or irregularly shaped areas including turf less than eight feet in width in any direction shall be irrigated with subsurface irrigation or low-volume irrigation technology.



Evapotranspiration = the loss of water to the atmosphere from plants and soil.



Photo: Courtesy of Greg Rubin, California's Own Nursery.

Z. The Irrigation Plan shall be prepared at the same scale as the Planting Plan and, at a minimum, shall identify the following:

1. Location and size of service lateral(s) and water meter(s).
2. Point of connection (POC) location and static pressure at POC.
3. Total flow rate (gallons per minute) and designed operating pressure (psi) for each overhead spray and bubbler circuit, and total flow rate (gallons per hour) and design operating pressure (psi) for each drip and low volume irrigation circuit.
4. Precipitation rate (inches per hour) for each overhead spray circuit.
5. Pressure loss calculations for valve with worse condition.
6. Location, size, and type of all irrigation components including, but not limited to, smart controller, central controller (backflow prevention device, ball valves, anti-drain check valves, pressure supply (main) line, lateral lines, pipe sizing, valves, spray heads, rotors, drip, low volume irrigation equipment, gallons per minute, pressure regulators, and pumps. Water sense components are strongly recommended.
7. Hydraulic Calculation worksheet including flow rate (gallons per minute) and design operating pressure.
8. Precipitation rate (inches per hour) for each spray type circuit.
9. Irrigation legend with the symbol, manufacturer name, model number (or non-proprietary description for publicly funded projects), separate symbols for irrigation equipment with different spray patterns, spray radius, and precipitation rate.
10. Location, size, and type (high, medium, low) of each hydrozone.
11. Topographic elevation lines to determine slope.
12. Irrigation system details for assembly and installation. Calculation for the project's landscape Water Budget. (Section 10 of this Landscaping Guide).
13. Irrigation design plans shall contain the following statement, "I agree to comply with the criteria of Ordinance No. 859 and to apply the criteria for the efficient use of water in the irrigation design plan."



7. What Is Required In A Soil Management Plan?



Soil sampling is performed after mass grading. A laboratory analyzes the soil and recommends necessary amendments for remediating the limiting soil characteristics.

Soil amendments improve the water holding capacity of the soil, adjust soil pH, provide nutrients, and improve drainage. Agronomic soil tests are required to determine the recommended types, rates, and application methods of soil amendments. Implementation of the recommendations is required to help ensure optimum soil conditions for the specified plants.

A Soils Management Plan is required as a component of the Landscape Documentation Package and must be completed and inspected (see Section 10) by the County Landscape Inspector prior to receiving a Certificate of Completion. The following information is intended to guide applicants through the development and implementation of the soils management component of the Landscape Documentation Package.

A. Prior to Building Final Inspection, the project applicant or his/her designee shall:

1. Perform a preliminary site inspection;
2. Determine the appropriate level of soil sampling and sampling method needed to obtain representative soil sample(s);
3. Conduct a soil probe test to determine if the soil in the landscape area has sufficient depth to support the intended plants; and
4. Obtain appropriate soil sample(s).



Soil sampling tools.

B. The project applicant shall submit soil sample(s) to the appropriate laboratory for analysis and recommendation. At a minimum, the soil analysis should include soil texture; infiltration rate determined by lab test or soil texture infiltration rate tables; pH; total soluble salts; sodium; and recommendations.

C. Prior to the Pre-Installation Inspection, the Soils Management Plan shall be submitted electronically to the County Landscape Division to be included as part of the Landscape Documentation Package and shall include the following:

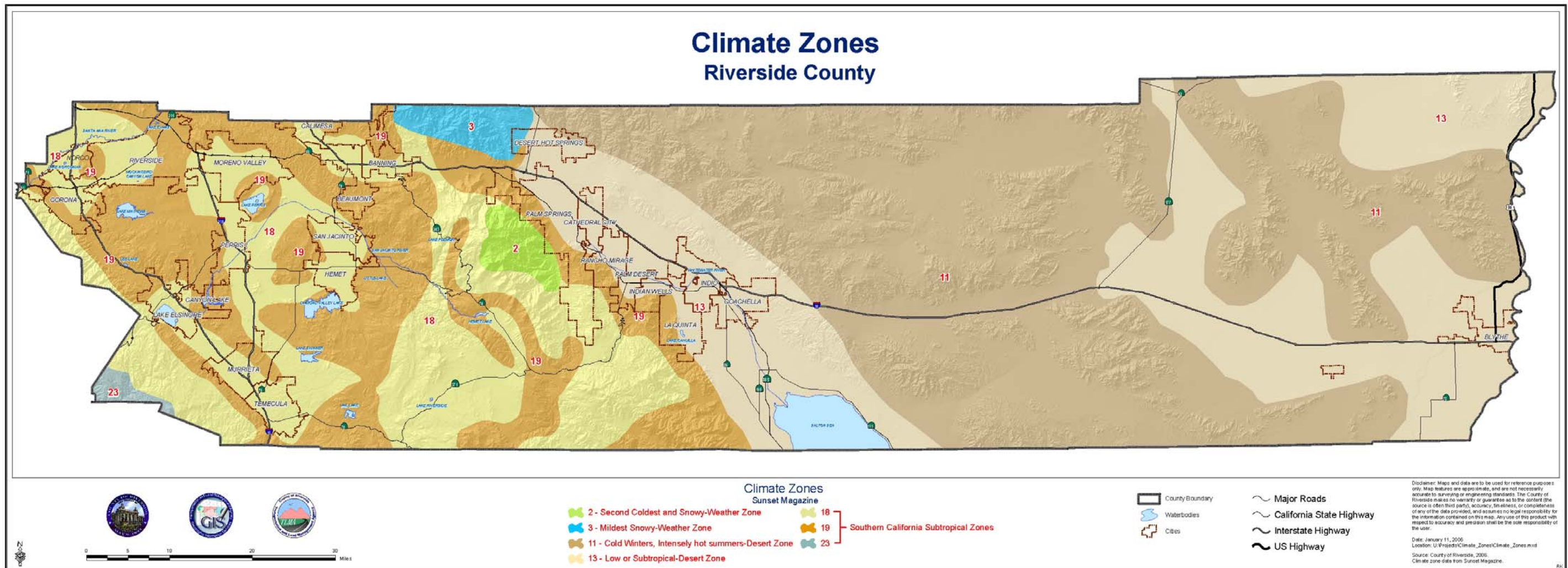
1. Soil type;
2. Identification of limiting soil characteristics; and
3. Identification of planned soil management actions to remediate limiting soil characteristics.
4. Documentation verifying implementation of the soils analysis report recommendations.



Soil is prepped for better plant growing conditions



FIGURE 1

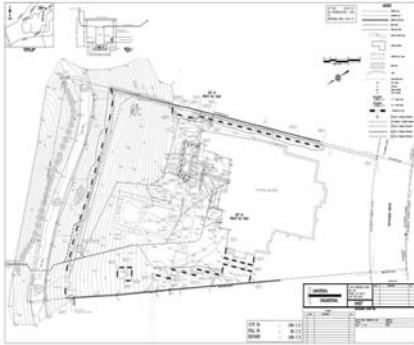




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8. How Do My Grading Plans Relate to My Landscape Design Requirements?



For the efficient use of water, grading of a project shall be designed to minimize soil erosion, runoff, and water waste. To ensure that this occurs, the Landscape Documentation Package shall include rough or precise grade elevations prepared for the project by a licensed civil engineer. The County Planning Department recognizes that rough grading plans may be reviewed by another department on a parallel track with the Landscaping Package. Therefore, the applicant shall provide the most current version of the rough grading plans with each subsequent landscape plan check review.

9. What Is A Water Budget And How Is It Calculated?



Water budgets are used to assist designers and governing authorities to verify compliance with the State and local requirements for water conservation. Water budgets also assist with water demand management. A water budget determines how much water a particular landscape needs over a specified period of time. The Maximum Annual Water Allowance (MAWA) is calculated and compared to the Estimated Annual Water Use (EAWU) to verify that the project landscaping is not exceeding the allowed water use. It is important to note that AB1881 requires water budgets to account for the surface area of water features.

If the water purveyor for a proposed project has adopted more rigorous irrigation efficiency standards, then the more rigorous standard would prevail and must be reflected in the water budget for the proposed project.

A. Maximum Annual Water Allowance and Evapotranspiration Rate (ET_o).

ET_o, or Annual Reference Evapotranspiration Rate, is the quantity of water evaporated from adjacent soil surfaces and transpired by plants in terms of inches for a particular climate zone. Your total square footage of landscape and ET_o are essential components of the MAWA formula (below).

$$\text{MAWA (in gallons)} = (\text{ET}_o)(0.62)[0.7 \times \text{LA} + 0.3 \times \text{SLA}]$$

Where:

ET_o is reference evapotranspiration

SLA is the amount of special landscape area in square feet

LA is total landscape area (incl. SLA) in square feet



Photo Credit: Sunset Magazine on-line blog "Fresh Dirt"

ET_o rates vary according to climate, the ET_o rate must be identified for your project in order to calculate MAWA. ET_o data is taken from the California Irrigation Management Information



TABLE 1

CIMIS Station	Location	Reference ETo
24	Thermal	73.03
25	Rancho Mirage	71.40
34	Rancho California	49.54
36	Blythe	71.40
44	UC Riverside (Riverside)	56.37
55	Palm Desert	72.77
62	Temecula	66.14
118	Cathedral City	57.06
130	Temecula East	49.54
135	Blythe Northeast	70.80
136	Oasis	71.40
141	Mecca	62.68
151	Ripley	71.40
154	Salton Sea North	71.65
162	Indio	71.40
176	La Quinta	71.40
179	Winchester	57.33

System (CIMIS). Table 1 will help you find your ETo. If your project is not within one of the weather station areas listed, use the closest representative station.

To ensure the attainment of water-efficient landscape goals, the County requires that landscapes not exceed a maximum water demand of 70% of its referenced ETo. However, applicants are advised that local water purveyors may impose a stricter conservation standard for calculating the maximum allowable percentage of ETo allotted to projects within their service area. Therefore, landscape plans and MAWA calculations must comply with the standard that is stricter and adjust the aforementioned formula accordingly. Early consultation with the prevailing water agency is encouraged.

B. Estimated Annual Water Use (EAWU).

EAWU for water budgets shall be calculated using the following formula. Please note that a separate EAWU calculation must be performed for each hydrozone within the proposed project.

$$EAWU \text{ (in gallons)} = (ETo)(0.62)[((PF \times HA)/IE) + SLA]$$

Where:

ETo is reference evapotranspiration

PF is Plant Factor

HA is hydrozone area in square feet

IE is irrigation efficiency (minimum 0.71)

SLA is the amount of special landscape area in square feet

For purposes of the water budget formula:

1. Turf and the surface area of water features are considered to have a *high* water requirement.
2. Temporarily irrigated areas are considered to have a *low* water requirement. Refer to Table 2 to establish your PF for each hydrozone.
3. The average Plant Factor (PF) is established by the WUCOLS III for plants that are considered high, medium, low, and very low based on their water requirements. The WUCOLS plant category designation for any given plant can differ depending on the region in which the plant is used. For more information, see California Friendly Plant List (Attachment A).
4. For the purpose of determining the EAWU, average irrigation efficiency (IE) is assumed to be 0.71 because all irrigation systems must be designed to meet or exceed an average irrigation efficiency of 0.71.
5. Special landscape area is defined as an area of the landscape dedicated to edible plants, areas irrigated with recycled water, and publicly accessible areas dedicated to active play such as parks, sports fields, golf courses, where turf provides a playing field or where turf is needed for high traffic activities.

TABLE 2

Plant Category	Average PF
High	0.8
Medium	0.5
Low	0.2
Very Low	0.1



WUCOLS III Region	Corresponding Sunset Zones
1	2,3,14,15,16,17
2	8,9
3	22,23,24
4	18,19,20,21
5	11
6	13

Plant water use requirements can vary according to regional climate zones. The PF figure used in the EAWU calculation above is derived from the plant category designation identified by WUCOLS for the region in which a given plant is used in a landscape. For example: Albizia julibrissin is a low water using tree in WUCOLS Regions 1 and 2 with an average PF of 0.2 but a medium water using tree in WUCOLS Regions 3-6 (see WUCOLS columns in Plant List included as Attachment A) with an average PF of 0.5.

Since many plants are identified by their associated Sunset Zone, Table 3 illustrates the relationships between the Sunset Zones and WUCOLS regions. Sunset Zones are also displayed geographically in Figure 1.

C. Finalizing the Water Budget Calculations.

Add together the EAWU subtotals for each hydrozone within the proposed project, this will be the Sub-Total EAWU. Now, divide that number by 0.85. The resulting number will be the Total EAWU. Subtract the Total EAWU number from the MAWA. The resulting number must be positive. If the number is negative, then adjustments will need to be made to the Planting Plan (e.g. use more vegetation types that consume less water) and/or the Irrigation Plan (e.g. use more efficient application methods).



Inspectors will confirm that plants are installed per approved plans and are thriving.

10. What Are the County’s Installation and Maintenance Requirements?

Correct installation and consistent landscape maintenance is paramount to water efficient landscaping and water conservation. Regardless of the efficiency of the irrigation design and installation, a landscape can quickly lose its efficiency and aesthetic appeal without proper maintenance. To ensure that the soils management plan is prepared and executed, planting and irrigation components are installed properly, and landscape is maintained throughout a minimum plant establishment period, the County Planning Department will conduct the following series of site visits:

A. Pre-Installation Inspection

After the Soils Management Plan is transmitted to the County and the soil preparation measures are implemented by the applicant at the project site, then the applicant shall contact the County Landscape Inspector to arrange for the Pre-Installation Inspection. The County Landscape Inspector will confirm that the soils management plan recommendations are properly executed and the subsurface irrigation system is properly installed and connected prior to the installation of the plants and top dressing.

B. Landscape Installation Inspection

The County Landscape Inspector will, at a minimum, confirm that the landscaping has been installed in conformance with the approved planting and irrigation design plans; perform an





Photo: Courtesy of Michael Payne

irrigation audit; verify that the smart controller is set according to the irrigation schedule identified on the irrigation plans; verify that the irrigation system is adjusted to maximize efficiency and eliminate overspray and runoff; ensure that the project meets all other conditions of its landscape approval, verify that the performance security has been approved and executed. Upon successful completion of the Landscape Installation Inspection, a Certificate of Completion will be issued to the project applicant.

C. One Year Post-Establishment Inspection

Personnel will, at a minimum, verify that plants are established and thriving, and ensure that the post-establishment irrigation schedule is programmed and posted in the controller, and confirm that any remaining Conditions of Approval are met. If components of either the irrigation system or the landscape have been replaced, personnel will confirm that their replacement components reflect the original approved Irrigation and Planting Plans.

Upon successful completion of the Post-Establishment Inspection, the landscaping/irrigation component of the performance bond will be deemed complete. Post-Establishment Inspections are not required for residential or model homes.

D. At the Planning Director's discretion, projects may be required to maintain an annual maintenance inspection schedule to ensure that the following obligations are met:

1. Smart controllers are monitored and adjusted for maximum operating efficiency and irrigation application equipment is calibrated to provide maximum efficiency.
2. Non-functioning irrigation and hardscape components are replaced with identical or better components.
3. Plant materials that fail to thrive are replaced with identical plant materials or those with similar water requirements.
4. Minimum mulching levels are maintained.
5. Plants are pruned to eliminate irrigation application interference.



Photo: Courtesy of Toyon Designs



Photo Credit: Eastern Municipal Water District.

11. How is Recycled Water Used?

Recycled water determined to be available pursuant to Section 13550 of the California State Water Code shall be used for appropriate non-potable uses whenever it: a) provides a beneficial use to the customer, b) is economically and technically feasible, c) is consistent with applicable regulatory requirements, and d) is in the best interests of public health, safety, and welfare. With the exception



Photo Credit: Eastern Municipal Water District.

of non-common areas of single-family home residential developments, irrigation systems must be designed and installed to accommodate the current or future use of recycled water for irrigation. When recycled water is not available, landscape irrigation plans shall provide for below ground installation of purple pipe components to minimize the cost of a retrofit at a later date.

Applicants proposing landscaping that is designated for recycled water use shall consult with the appropriate water purveyor early in the development review process (Conceptual Landscape Plan or prior to a County discretionary action). This will ensure that future recycled water facilities meet the projected demand and that subsequent landscape plans comply with the applicable standards, approvals, and implementation requirements of the local water purveyor, land use agency, and maintenance entity.

Recycled water plans shall be developed in accordance with standards and policies of the applicable recycled water purveyor. Recycled water systems shall be designed to meet regulatory requirements of the California Department of Public Health, California Regional Water Quality Control Board, and the local recycled water purveyor.

<END>



KB Homes Martha Stewart Collection, City of Perris
Photo Credit: Moises Lopez

We Invite You to Visit the Following Web Sites for More Information or Contact Your Local Water Purveyor to Learn More About Their Respective Water Efficiency Programs:

Riverside County Planning Department—Landscape Section
<http://www.rctlma.org/planning/content/devproc/landscape/landscape.html>

Riverside County Water Task Force
<http://www.h2oriversidecounty.org/>

California Friendly/Drought Tolerant Gardens
<http://www.bewaterwise.com/knowledge01.html>

California Department of Water Resources
<http://www.owue.water.ca.gov/index.cfm>

California Friendly Developments
<http://www.bewaterwise.com/home03.html>

California Plant Nurseries
http://www.rctlma.org/planning/content/devproc/landscape/drought_tolerant_plant_nurseries.pdf



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Attachment A

County of Riverside California Friendly Plant List