



# CITY OF SANTEE

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December 21, 2009

Mr. Simon Eching  
California Department of Water Resource  
Water Use and Efficiency Branch  
Post Office Box 942836  
Sacramento, CA 94236-0001

SUBJECT: ADOPTION OF CITY OF SANTEE WATER EFFICIENT  
LANDSCAPE ORDINANCE

On December 9<sup>th</sup>, 2009 the City of Santee City Council adopted a Water Efficient Landscape Ordinance that is at least as effective as the California Model Water Efficient Landscape Ordinance. The City's ordinance also includes a Landscape Guidelines component which addresses the submittal requirements in the State Model Ordinance.

The City of Santee ordinance contains findings which demonstrate why the City's ordinance is at least as effective as the California Model Ordinance. Essentially the City of Santee Ordinance incorporates the State language with minor changes to fit local conditions and needs. The City's Ordinance uses the same applicability thresholds and submittal requirements for the Landscape Documentation and Certificate of Completion Packages. If you have any questions, please contact me at (619) 258-4100 ext. 158 or [mbrunette@ci.santee.ca.us](mailto:mbrunette@ci.santee.ca.us).

Sincerely,

Mark Brunette  
Senior Planner

Enclosures: City of Santee Water Efficient Landscape Ordinance and  
Landscape Guidelines



**ORDINANCE NO. 491**

**AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF SANTEE, CALIFORNIA, APPROVING ZONING ORDINANCE AMENDMENT ZA09-01 AMENDING CHAPTER 17.10 "RESIDENTIAL DISTRICTS, 17.24 "PARKING REGULATIONS," AND CHAPTER 17.30 "GENERAL DEVELOPMENT AND PERFORMANCE STANDARDS" OF THE ZONING ORDINANCE, ADDING CHAPTER 17.36 "LANDSCAPE AND IRRIGATION REGULATIONS" TO THE ZONING ORDINANCE, AND AMENDING CHAPTER 15.58 OF TITLE 15 OF THE MUNICIPAL CODE, ENTITLED "BUILDINGS AND CONSTRUCTION" TO ESTABLISH A WATER EFFICIENT LANDSCAPE ORDINANCE**

**WHEREAS**, the new Zoning Ordinance Chapter, 17.36, entitled Landscape and Irrigation Regulations, will improve existing City of Santee Landscape Standards that already encourage the use of drought tolerant landscaping and the use of recycled water, by encouraging greater water conservation through greater use of recycled water, the use of lower water use plants, prevention of water waste, and the use of more efficient irrigation technologies; and

**WHEREAS**, Landscape Guidelines have been drafted to provide further information for project applicants in the implementation of the ordinance; and

**WHEREAS**, Policy 3.2 of the Land Use Element of the Santee General Plan states that the City should encourage the development and use of recycled water for appropriate land uses to encourage the conservation of, and reduce demand for, potable water; and

**WHEREAS**, Policy 11.2 of the Land Use Element of the Santee General Plan states that the City should maintain, and update as needed, the design standards for landscaping and site planning to provide guidelines for future developments; and

**WHEREAS**, Policy 3.1 of the Conservation Element of the General Plan states that the City should encourage the use of drought-resistant vegetation and encourage the use of recycled water for irrigation for both private development as well as public projects and facilities; and

**WHEREAS**, Section 8.5(9) of the Conservation Element of the General Plan states that the City shall actively support programs that promote water conservation throughout the City; and

**WHEREAS**, California Assembly Bill 1881 requires that the City of Santee adopt a Water Efficient Landscape Ordinance by January 1, 2010 that is equal or better at conserving water than the State Model Water Efficient Landscape Ordinance; and

**WHEREAS**, the City of Santee Water Efficient Landscape Ordinance is at least as effective at conserving water as the State Model Water Efficient Landscape Ordinance because it: (1) is applicable to all landscapes identified in the State Model Ordinance, (2) requires the most efficient and appropriate irrigation equipment, (3) requires submittal of Landscape Documentation and Certificate of Completion Packages consistent with the State Model Ordinance, (4) requires irrigation scheduling

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based on evapotranspiration data or soil moisture sensors, (5) establishes a Maximum Applied Water Allowance (MAWA) consistent with the State Ordinance MAWA formula, (6) prohibits overspray and runoff, (7) requires the use of recycled water where it is available, (8) requires soil assessment, and (9) incorporates monitoring and enforcement mechanisms such as a tiered rate structure, penalties for water waste, water use analysis, and water audits that are implemented by the local water purveyors; and

**WHEREAS**, the amendment to Chapter 15.58 of Title 15, Buildings and Construction, and the amendment of Chapter 17.10 "Residential Districts", Chapter 17.24 "Parking Regulations", and Chapter 17.30 "General Development and Performance Standards", and the addition of Chapter 17.36 "Landscape and Irrigation Regulations" to Title 17, the Zoning Ordinance, is exempt from the California Environmental Quality Act (CEQA) pursuant to Section 15308 of State CEQA Guidelines, because the Santee Water Efficient Landscape Ordinance will assure the maintenance, restoration, enhancement, or protection of the environment by conserving water through an ordinance that establishes water budgets for most new development, encourages the use of water saving technologies, and prohibits runoff and overspray for existing and new development consistent with the State Model Water Efficient Landscape Ordinance.

The City Council of the City of Santee, California, does ordain as follows:

**SECTION 1.** Section 17.10.40, entitled "Site Development Criteria", of Title 17, the Zoning Ordinance, is hereby amended by deleting Subsections E and F in their entirety, as shown below, and re-lettering subsequent Subsections G through L accordingly.

E. Front Yard Landscaping. Front yard landscaping for all new single-family and duplex development shall include, at a minimum, one fifteen-gallon size tree, one five-gallon size tree, seeded ground cover, and a permanent irrigation system to be installed by the developer prior to occupancy.

F. Landscaping. Trees perform many essential functions for the community: beauty, shading, wind protection, screening, noise buffering and air filtering. Plant material shall be selected to achieve these purposes, while tolerant to factors such as wind, heat and low water.

**SECTION 2.** Section 17.24.030, entitled "Design Standards", of Title 17, the Zoning Ordinance, is hereby amended by deleting Subsection A.10, as shown below, and re-numbering subsequent Subsections 11 and 12 accordingly:

10. Landscaping. The following basic standards shall be observed.

a. A minimum of ten percent of the total off-street parking area shall be landscaped with at least one fifteen-gallon minimum size tree per each three parking stalls and appropriate ground cover. The parking area shall be computed by adding the areas used for access drives, aisles, stalls, maneuvering, and landscaping within that portion of the premises that is devoted to vehicular parking and circulation.

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b. Each unenclosed parking facility shall provide a perimeter landscaped strip at least five feet wide (inside dimension) where the facility adjoins a side property line, unless specifically waived by the director. The perimeter landscaped strip may include any landscaped yard or landscaped area otherwise required, and shall be continuous, except for required access to the site or to the parking facility.

c. All landscaping shall be protected with curbs or equivalent barriers.

d. All landscaping shall be continuously maintained free of weeds, debris or litter.

e. Planters shall be separated from maneuvering and parking areas by a six-inch raised curb or equivalent barriers.

f. Where feasible, infiltration BMPs shall be integrated into the landscape design to reduce the quantity and velocity of storm water discharging to the MS4 from the parking or loading facility.

**SECTION 3.** Section 17.30.020, entitled "General Development Standards", of Title 17, the Zoning Ordinance, is hereby amended by deleting Subsection A, as shown below, and re-lettering subsequent subsections accordingly.

A. Landscaping, Maintenance and Screening Standards.

1. All setbacks, parkways, and non-work areas shall be landscaped.

2. Within parking lots, refer to Section 17.24.030(A)(9) and (10).

3. All landscaped areas that are required by a discretionary permit for new construction shall be served by an automatic irrigation system, approved by the city that meets the minimum standards identified in this subsection. These standards shall not apply to homeowner-provided landscaping at single family and duplex developments, cemeteries or registered historical sites.

a. Irrigation systems shall be designed so that valves and watering circuits are separated based on water usage of different plants. Turf shall be on a separate circuit from shrubs/tree circuits. Low volume systems including low volume nozzles in sprinkler heads, low volume bubblers and/or drip emitters will be required.

b. The design of the irrigation systems shall include proposed run times of each circuit so that precipitation rates do not exceed soil absorption rates.

c. All sprinkler heads shall have serviceable check valves or be designed with the valve-in-head where differences in elevation may cause low head drainage.

d. Spacing of sprinkler heads shall be designed for head-to-head coverage and the system should be designed to avoid runoff and eliminate overspray into non-landscaped areas.

e. For landscaped areas over one thousand square feet in area, it is recommended that the automatic controller(s) be equipped with a water budget feature and automatic moisture sensors.

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f. All irrigation systems shall be equipped with an automatic controller capable of dual or multiple programming, and a rain shutoff device and backflow prevention device. Controllers shall have multiple cycle start capacity and a flexible calendar program.

4. All landscaped areas that are required by a discretionary permit for new construction shall be designed to consider such elements as its function, consistency with the building compatibility to the area, mounding, special features, and the use of hardscape and drought tolerant plant materials that meet the minimum design standards listed below. These standards shall not apply to homeowners supplied landscaping at single family and duplex developments, cemeteries or registered historical sites.

a. At least ninety percent of the plant materials selected in non-turf areas shall be drought tolerant in that they are well suited to the climate of the region, as suggested by the Sunset Western Garden Book or equivalent publication, and require minimal water once established. A higher percentage of non-drought tolerant plant materials may be approved by the director of planning and community development on those projects which utilize reclaimed water for irrigation.

b. Plant materials shall be grouped together according to water requirements and shall be irrigated on separate circuits.

c. A maximum of twenty-five percent of the total landscaped area is permitted to be planted in turf. All turf shall be warm season turf or a drought tolerant turf adaptable to the Santee region. The surface area of a water body will be counted as turf in the calculations for percentage of allowable turf area unless reclaimed water is used. Public parks and public or private recreation facilities in which turf is an essential part of the development are exempt from this requirement; however, such uses should be designed with an emphasis on elimination of turf in areas non-essential to its operation.

d. Landscaped areas planted with only trees and/or shrubs that are not also planted with turf grass or groundcovers shall be mulched on the soil surface to a minimum depth of four inches.

e. The use of decorative water features, including but not limited to, ponds, decorative fountains, basins, reflective pools, and spray/mist fountains should be maximized by confining them to areas of high visibility and high use. Re-circulating water shall be used for all decorative water features. All such features shall be designed such that they present a positive visual statement when water is not available.

5. In the event of a water shortage, as declared by the water purveyors with the responsibility to provide water to the City of Santee, the installation of all or some landscape plant materials approved and required pursuant to this section may be deferred, subject to the approval of the director and all irrigation practices shall comply with the requirements of the water purveyors. The property owner or the holder of the permit or entitlement shall post and maintain a bond or other security in an amount and in a form subject to the approval of the city, guaranteeing the landscape installation in accordance with the approved plans and the approved landscape plan, upon a

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determination by the local water agency that the water shortage has sufficiently subsided to permit such landscape installation.

6. The permit approval authority may administratively waive or modify one or more requirements related to water conservation when practical difficulties make their strict application infeasible, and upon a finding that the waiver or modification is consistent with the purpose and intent of this section. Application of all or part of these water conservation requirements approved by the approval authority may be modified by the director or a designated representative if it is determined that the nature of the approved project is such that subjecting it to compliance with all such requirements would not materially contribute to the objectives of water conservation.

7. Landscape plans which are required pursuant to a development review permit or a conditional use permit may be required to be prepared and signed by a registered landscape architect. This condition will be required when it is determined by the city that a development project will require either large, difficult or significant areas to be landscaped.

8. All groundcover installed pursuant to an approved landscape plan shall provide one hundred percent coverage within nine months of planting or additional landscaping, to be approved by the director, shall be required in order to meet this standard.

9. A bond, equal to the cost of full landscape installation, will be required for a minimum of one year for any project requiring a development review permit or conditional use permit, with the exception of projects for single family homes. The planning director may waive this requirement provided special circumstances exist which alleviate the need for a bond.

10. Property owners are responsible for the continual maintenance of all landscaped areas on-site and between the property line and the curb. All landscaped areas shall be kept free from weeds and debris and maintained in a healthy, growing condition, and shall receive regular pruning, fertilizing, mowing and trimming. Any damaged, dead, diseased or decaying plant material shall be replaced within thirty days from the date of damage.

11. The director shall prepare, and revise as required, a landscape design manual to assist residents and property owners in understanding the requirements and objectives of the zoning ordinance landscape standards.

12. The use or combination of berming, landscape materials, low level walls and buildings, shall be used to screen parking areas, loading areas, trash enclosures, and utilities from public view.

13. Walls for the purpose of screening activities from more sensitive land uses and for sound attenuation shall be required. Height, placement and design of walls shall be considered as it relates to the surrounding area.

14. Unless otherwise specified within this code, or by conditional use permit all activities, work and storage of materials shall be entirely be within an enclosed building. Normal customer or employee parking and temporary provisions are excepted.

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**SECTION 4.** Title 17 of the Santee Municipal Code, the Zoning Ordinance, is hereby amended by adding new Chapter 17.36, entitled "Landscape and Irrigation Regulations", to read as follows:

**Chapter 17.36**

**LANDSCAPE AND IRRIGATION REGULATIONS**

**Sections:**

- 17.36.010 Purpose and General Plan Consistency.**
- 17.36.020 Applicability.**
- 17.36.030 Definitions.**
- 17.36.040 Provisions for New Construction or Rehabilitated Landscapes.**
- 17.36.050 Provisions for Existing Landscapes.**
- 17.36.060 Recycled Water.**
- 17.36.070 Stormwater Management.**
- 17.36.080 Water Waste Prevention.**
- 17.36.090 Penalties.**
- 17.36.100 General Landscape Standards.**
- 17.36.110 Public Education.**

**17.36.010 Purpose and General Plan Consistency**

**A. The City of Santee has found:**

1. that the City of Santee is required by California Assembly Bill 1881 to adopt a water efficient landscape ordinance that is at least as effective at conserving water as the California Model Water Efficient Landscape Ordinance.
2. that some areas of the City of Santee has an established reclaimed water infrastructure;
3. that water purveyors with service areas within the City of Santee with water budget-based allocations and tiered rate structures allow the City of Santee to document water use in landscapes;
4. that current local design practices in new landscapes typically already achieve the State Model Water Efficient Landscape Ordinance water use goals in many cases;
5. that most city services are metered and all new construction will be metered where service is available from local water purveyors.
6. that landscape plan submittal and review has been a long standing practice in the City of Santee;
7. that the local water purveyors are implementing tiered-rate billing, water budgeting, public education programs, and enforcement of water waste prohibitions for all existing and new metered landscape areas throughout their service areas, which include the majority of the City of Santee;
8. Implementation of tiered rate structures by the local water purveyors have resulted in a reduction in water use that exceeds the target reduction established by the San Diego County Water Authority;

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9. that those areas of the City of Santee that are not located within the service areas of the local water purveyors obtain water service through existing groundwater supplies;
10. Over irrigating landscaping can potentially wash pollutants into the storm drain system. By contrast appropriately designed and managed landscaping can be used to treat and/or infiltrate stormwater before it is discharged to the storm drain system.
11. that this ordinance is consistent with the policies established by the Land Use Element of the General Plan in that it encourages the use of recycled water and is an update of the landscape design standards for future development;
12. that this ordinance is consistent with the policies established by the Conservation Element of the General Plan in that it encourages the use of drought-resistant vegetation and recycled water for irrigation for private development as well as public projects and facilities.
13. that this ordinance is at least as effective at conserving water as the State Model Water Efficient Landscape Ordinance because:
  - a. This ordinance is applicable to all landscapes identified in the applicability section of the State Model Ordinance;
  - b. This ordinance requires the most efficient and appropriate irrigation equipment and the irrigation design plan encourages the use of improved technology;
  - c. This ordinance requires that irrigation scheduling shall be based on reliable  $ET_0$  data or soil moisture sensors;
  - d. This ordinance establishes a Maximum Applied Water Allowance (MAWA) based on an ETAF of 0.7 for new and rehabilitated landscapes and establishes a water budget that can support an average 0.5 plant factor palette without wasting or overusing water;
  - e. This ordinance prohibits overspray and runoff and the audit and maintenance sections of this ordinance meet the minimum requirements of the State Model Ordinance;
  - f. This ordinance requires a Landscape Documentation Package that complies with State Model Ordinance requirements and as part of this package plants are grouped into hydrozones;
  - g. This ordinance requires the use of recycled water where it is available and stormwater retention is required to be incorporated into the landscape design where opportunities are available;
  - h. This ordinance requires a minimum of 2 inches of mulch in all landscape areas except for those which contain turf or creeping or rooting groundcovers as specified in the State Model Ordinance;
  - i. This ordinance requires that the soil be assessed and amended if necessary prior to planting;
  - j. This ordinance incorporates mechanisms such as a tiered rate structure by local water purveyors, penalties for water waste, and allows irrigation surveys and audits, and water use analyses to ensure compliance with requirements of this ordinance.
  - k. Landscape Guidelines have been drafted to provide further information for project applicants in the implementation of the ordinance.

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### B. The State Legislature has found:

1. that the waters of the State of California are of limited supply and are subject to ever increasing demands;
2. that continuation of California's economic prosperity is dependent on the availability of adequate supplies of water for future uses;
3. that it is the policy of the State to promote the conservation and efficient use of water and to prevent the waste of this valuable resource;
4. that landscapes are essential to the quality of life in the City of Santee by providing areas for active and passive recreation and as an enhancement to the environment by cleaning air and water, preventing erosion, offering fire protection, and replacing ecosystems lost to development;
5. that landscape design, installation, maintenance and management can and should be water efficient;
6. that Section 2 of Article X of the California Constitution specifies that the right to use water is limited to the amount reasonably required for the beneficial use to be served and the right does not and shall not extend to waste or unreasonable method of use.

### C. Consistent with these findings, the purpose of the City Water Efficient Landscape Ordinance is to establish an alternative ordinance acceptable under AB 1881 as being at least as effective as the State Model Ordinance in the context of conditions in the City of Santee, in order to:

1. Promote the values and benefits of landscapes while recognizing the need to invest water and other resources as efficiently as possible.
2. Establish a structure for planning, designing, installing, maintaining and managing water efficient landscapes in new construction and rehabilitated projects.
3. Establish provisions for water management practices and water waste prevention for existing landscapes.
4. Use water efficiently without waste by setting a Maximum Applied Water Allowance as an upper limit for water use and reduce water use to the lowest practical amount.
5. Promote the benefits of consistent landscape ordinances with neighboring local and regional agencies.
6. Encourage the use of economic incentives that promote the efficient use of water, such as implementing a tiered-rate structure.

### **17.36.020 Applicability**

#### A. This ordinance shall apply to all of the following landscape projects:

1. New construction and rehabilitated landscapes for public agency projects and private development projects with a landscape area equal to or greater than 2,500 square feet requiring a building or grading permit, plan check or design review.

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2. New construction and rehabilitated landscapes which are developer-installed in single-family and multi-family projects with a landscape area equal to or greater than 2,500 square feet, and which are otherwise subject to a requirement for a building or grading permit, plan check, or design review;
3. New construction landscapes which are homeowner-provided and/or homeowner-hired in single-family and multi-family residential projects with a total project landscape area equal to or greater than 5,000 square feet, and which are otherwise subject to a requirement for a building or grading permit, plan check or design review;
4. Existing landscapes limited to Sections 17.36.050 of this chapter;
5. Cemeteries. Recognizing the special landscape management needs of cemeteries, new and rehabilitated cemeteries are limited to Sections 17.36.040 of this chapter; and existing cemeteries are limited to Sections 17.36.050 of this chapter.

### B. This ordinance does not apply to:

1. Registered local, state or federal historical sites;
2. Ecological restoration projects that do not require a permanent irrigation system;
3. Mined-land reclamation projects that do not require a permanent irrigation system; or
4. Plant collections, as part of botanical gardens and arboretums open to the public.

### 17.36.030 Definitions.

The following are definitions of terms contained in this chapter:

**"APPLIED WATER"** means the portion of water supplied by the irrigation system to the landscape.

**"AUTOMATIC IRRIGATION CONTROLLER"** means an automatic timing device used to remotely control valves that operate an irrigation system. Automatic irrigation controllers schedule irrigation events using either evapotranspiration (weather-based) or soil moisture data.

**"CERTIFICATE OF COMPLETION"** means the document required under Section 17.36.130.

**"CERTIFIED LANDSCAPE IRRIGATION AUDITOR"** means a person certified to perform landscape irrigation audits by an accredited academic institution, a professional trade organization or other program such as the US Environmental Protection Agency's WaterSense irrigation auditor certification program and Irrigation Association's Certified Landscape Irrigation Auditor program.

**"CITY"** means the City of Santee.

**"ECOLOGICAL RESTORATION PROJECT"** means a project where the site is intentionally altered to establish a defined, indigenous, historic ecosystem.

**"ESTABLISHED LANDSCAPE"** means the point at which plants in the landscape have developed significant root growth into the soil. Typically, most plants are established after one or two years of growth.

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**"ESTABLISHMENT PERIOD OF THE PLANTS"** means the first year after installing the plant in the landscape or the first two years if irrigation will be terminated after establishment. Typically, most plants are established after one or two years of growth.

**"ET ADJUSTMENT FACTOR"** (ETAF) means a factor of 0.7, that, when applied to reference evapotranspiration, adjusts for plant factors and irrigation efficiency, two major influences upon the amount of water that needs to be applied to the landscape.

A combined plant mix with a site-wide average of 0.5 is the basis of the plant factor portion of this calculation. For purposes of the ETAF, the average irrigation efficiency is 0.71. Therefore, the ET Adjustment Factor is  $(0.7) = (0.5/0.71)$ . ETAF for a Special Landscape Area shall not exceed 1.0. ETAF for existing non-rehabilitated landscapes is 0.8.

**"EVAPOTRANSPIRATION RATE"** means the quantity of water evaporated from adjacent soil and other surfaces and transpired by plants during a specified time.

**"HARDSCAPES"** means any durable material (pervious and non-pervious).

**"HOMEOWNER-PROVIDED LANDSCAPING"** means any landscaping either installed by a private individual for a single family residence or installed by a licensed contractor hired by a homeowner. A homeowner, for purposes of this ordinance, is a person who occupies the dwelling he or she owns. This excludes speculative homes, which are not owner-occupied dwellings.

**"HYDROZONE"** means a portion of the landscaped area having plants with similar water needs. A hydrozone may be irrigated or non-irrigated.

**"IRRIGATION AUDIT"** means an in-depth evaluation of the performance of an irrigation system conducted by a Certified Landscape Irrigation Auditor. An irrigation audit includes, but is not limited to: inspection, system tune-up, system test with distribution uniformity or emission uniformity, reporting overspray or runoff that causes overland flow, and preparation of an irrigation schedule.

**"IRRIGATION EFFICIENCY"** (IE) means the measurement of the amount of water beneficially used divided by the amount of water applied. Irrigation efficiency is derived from measurements and estimates of irrigation system characteristics and management practices. The minimum average irrigation efficiency for purposes of this ordinance is 0.71. Greater irrigation efficiency can be expected from well designed and maintained systems.

**"IRRIGATION SURVEY"** means an evaluation of an irrigation system that is less detailed than an irrigation audit. An irrigation survey includes, but is not limited to: inspection, system test, and written recommendations to improve performance of the irrigation system.

**"IRRIGATION WATER USE ANALYSIS"** means an analysis of water use data based on meter readings and billing data.

**"LANDSCAPE AREA"** means all the planting areas, turf areas, and water features in a landscape design plan subject to the Maximum Applied Water Allowance calculation. The landscape area does not include footprints of buildings or structures, sidewalks, driveways, parking lots, decks, patios, gravel or stone walks, other pervious or non-pervious hardscapes, and other non-irrigated areas designated for non-development (e.g., open spaces and existing native vegetation).

**"LANDSCAPE CONTRACTOR"** means a person licensed by the state of California to construct, maintain, repair, install, or subcontract the development of landscape systems.

**"LANDSCAPE DOCUMENTATION PACKAGE"** means the documents required under Section 17.36.040.

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**"LANDSCAPE GUIDELINES"** means the City of Santee Landscape Guidelines for Implementation of the City of Santee Water Efficient Landscape Ordinance.

**"LANDSCAPE PROJECT"** means total area of landscape in a project as defined in **"LANDSCAPE AREA"** for the purposes of this ordinance, meeting requirements under Section 17.36.020.

**"LOCAL WATER PURVEYOR"** means any entity, including a public agency, city, county, or private water company that provides retail water service.

**"MAXIMUM APPLIED WATER ALLOWANCE"** (MAWA) means the upper limit of annual applied water for the established landscaped area as specified in Section 3.B of the Guidelines for implementation of the City of Santee Water Efficient Landscape Ordinance. It is based upon the area's reference evapotranspiration, the ET Adjustment Factor, and the size of the landscape area. The Estimated Total Water Use shall not exceed the Maximum Applied Water Allowance. Special Landscape Areas, including recreation areas, areas permanently and solely dedicated to edible plants such as orchards and vegetable gardens, and areas irrigated with recycled water are subject to the MAWA with an ETAF not to exceed 1.0.

**"MINED-LAND RECLAMATION PROJECTS"** means any surface mining operation with a reclamation plan approved in accordance with the Surface Mining and Reclamation Act of 1975.

**"NEW CONSTRUCTION"** means, for the purposes of this ordinance, a new building with a landscape or other new landscape, such as a park, playground, or greenbelt without an associated building.

**"PERMIT"** means an authorizing document issued by local agencies for new construction or rehabilitated landscapes.

**"PERVIOUS"** means any surface or material that allows the passage of water through the material and into the underlying soil.

**"PLANT FACTOR"** or "plant water use factor" is a factor, when multiplied by ETo, that estimates the amount of water needed by plants. For purposes of this ordinance, the plant factor range for low water use plants is 0 to 0.3, the plant factor range for moderate water use plants is 0.4 to 0.6, and the plant factor range for high water use plants is 0.7 to 1.0. Plant factors cited in this ordinance are derived from the Department of Water Resources 2000 publication "Water Use Classification of Landscape Species".

**"PROJECT APPLICANT"** means the individual or entity submitting a Landscape Documentation Package required under Section 3 of the Landscape Guidelines, to request a permit, plan check, or design review from the City. A project applicant may be the property owner or his or her designee.

**"RECORD DRAWING"** or "as-builts" means a set of reproducible drawings which show significant changes in the work made during construction and which are usually based on drawings marked up in the field and other data furnished by the contractor.

**"RECYCLED WATER"**, "reclaimed water", or "treated sewage effluent water" means treated or recycled waste water of a quality suitable for non-potable uses such as landscape irrigation and water features. This water is not intended for human consumption.

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**“REFERENCE EVAPOTRANSPIRATION”** or “ET<sub>o</sub>” means a standard measurement of environmental parameters which affect the water use of plants. ET<sub>o</sub> is expressed in inches per day, month, or year as represented in Appendix A of the Landscape Guidelines, and is an estimate of the evapotranspiration of a large field of four- to seven-inch tall, cool-season grass that is well watered. Reference evapotranspiration is used as the basis of determining the Maximum Applied Water Allowance so that regional differences in climate can be accommodated.

**“REHABILITATED LANDSCAPE”** means any re-landscaping project that requires a permit, plan check, or design review, meets the requirements of Section 17.36.020, and the modified landscape area is equal to or greater than 2,500 square feet, is 50% of the total landscape area, and the modifications are completed within one year.

**“RUNOFF”** means water which is not absorbed by the soil or landscape to which it is applied and flows from the landscape area. For example, runoff may result from water that is applied at too great a rate (application rate exceeds infiltration rate) or when there is a slope.

**“SPECIAL LANDSCAPE AREA”** (SLA) means an area of the landscape dedicated solely to edible plants, areas irrigated with recycled water, water features using recycled water and areas dedicated to active play such as parks, sports fields, golf courses, and where turf provides a playing surface.

**“TURF”** means a ground cover surface of mowed grass. Annual bluegrass, Kentucky bluegrass, Perennial ryegrass, Red fescue, and Tall fescue are cool-season grasses. Bermudagrass, Kikuyugrass, Seashore Paspalum, St. Augustinegrass, Zoysiagrass, and Buffalo grass are warm-season grasses.

**“VALVE”** means a device used to control the flow of water in the irrigation system.

**“WATER FEATURE”** means a design element where open water performs an aesthetic or recreational function. Water features include ponds, lakes, waterfalls, fountains, artificial streams, spas, and swimming pools (where water is artificially supplied). The surface area of water features is included in the high water use hydrozone of the landscape area. Constructed wetlands used for on-site wastewater treatment or stormwater best management practices that are not irrigated and used solely for water treatment or stormwater retention are not water features and, therefore, are not subject to the water budget calculation.

### **17.36.040 Provisions for New Construction or Rehabilitated Landscapes.**

- A. The City will collaborate with the water purveyors that provide water to Santee to define each entity’s specific responsibilities relating to this ordinance.
- B. The Landscape Documentation Package shall be submitted by the Project Applicant to the City for review and approval with appropriate water use calculations. Water use calculations shall be consistent with calculations contained in the Landscape Guidelines and shall be provided to the local water purveyors as appropriate, under procedures determined by the City. Submittal requirements for a Landscape Documentation Package include the Water Efficient Landscape Worksheet, Soil Management Report, Landscape Design Plan, Irrigation Design Plan, and Grading Design Plan, if applicable. Further information on the Landscape Documentation Package can be found in the Landscape Guidelines.

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- C. A Certificate of Completion Package and supporting documentation as specified in the Landscape Guidelines shall be submitted by the Project Applicant to the City for review and copy of the approved Certificate of Completion shall be provided to the local water purveyor. The City shall approve or deny the Certificate of Completion prior to final inspection and permit closure. If the Certificate of Completion is denied, the City shall provide information to the project applicant regarding reapplication, appeal, or other assistance. Submittal requirements for the Certificate of Completion Package include the Certificate of Completion, irrigation schedule, landscape and irrigation maintenance schedule, irrigation survey, and as-built drawings, if applicable. Further information on the Certificate of Completion Package can be found in the Landscape Guidelines.

### **17.36.050 Provisions for Existing Landscapes.**

- A. The City will collaborate with the water purveyors that provide water to Santee to define each entity's specific responsibilities relating to this ordinance.
- B. Irrigation Audit, Irrigation Survey, and Irrigation Water Use Analysis.

This section, 17.36.050.B, shall apply to all existing landscapes that were installed before January 1, 2010 and are over one acre in size.

1. For all landscapes in 17.36.050.B that have a water meter, the City shall administer programs that may include, but not be limited to, irrigation water use analyses, irrigation surveys, and irrigation audits to evaluate water use and provide recommendations as necessary to reduce landscape water use to a level that does not exceed the Maximum Applied Water Allowance for existing landscapes. The Maximum Applied Water Allowance for existing landscapes shall be calculated as:  $MAWA = (0.8)(ET_o)(LA)(0.62)$ . The local water purveyor may require a lower ETAF for calculating the MAWA of existing landscapes. The stricter of the two ETAF requirements shall be used in the MAWA calculation.
  2. For all landscapes in 17.36.050.B that do not have a meter, the City shall administer programs that may include, but not be limited to, irrigation surveys and irrigation audits to evaluate water use and provide recommendations as necessary in order to prevent water waste.
- C. All landscape irrigation audits shall be conducted by a certified landscape irrigation auditor.

### **17.36.060 Recycled Water.**

- A. The installation of recycled water irrigation systems shall allow for the current and future use of recycled water, unless a written exemption has been granted as described in Section 17.36.060.B.

## **ORDINANCE NO. 491**

- B. Irrigation systems and decorative water features shall use recycled water unless a written exemption has been granted by the local water purveyor stating that recycled water meeting all public health codes and standards is not available and will not be available for the foreseeable future.
- C. All recycled water irrigation systems shall be designed and operated in accordance with all applicable local and State laws.
- D. Landscapes using recycled water are considered Special Landscape Areas. The ET Adjustment Factor for Special Landscape Areas shall not exceed 1.0.

### **17.36.070 Stormwater Management.**

- A. Stormwater management practices minimize runoff and increase infiltration which recharges groundwater and improves water quality. Implementing stormwater best management practices into the landscape and grading design plans to minimize runoff and to increase on-site retention and infiltration are required.
- B. Rain gardens, cisterns, and other landscape features and practices that increase rainwater capture and create opportunities for infiltration and/or onsite storage are recommended.
- C. All landscape and irrigation shall comply with the requirements of the current City of Santee Municipal Stormwater Permit issued by the San Diego Regional Water Quality Control Board.
- D. Appropriate Stormwater Best Management Practices (BMPs) shall be used during the installation of landscape and irrigation projects.

### **17.36.080 Water Waste Prevention.**

- A. Water waste resulting from inefficient landscape irrigation runoff should be prevented. Therefore, runoff is prohibited from leaving the target landscape due to low head drainage, overspray, or other similar conditions where water flows onto adjacent property, non-irrigated areas, walks, roadways, parking lots, or structures. Penalties for violation of these prohibitions may apply as identified under Section 17.36.090 of this chapter.
- B. Restrictions regarding overspray and runoff may be modified if:
  - 1. The landscape area is adjacent to permeable surfacing and no runoff occurs; or
  - 2. The adjacent non-permeable surfaces are designed and constructed to drain entirely to landscaping.

### **17.36.090 Penalties.**

## ORDINANCE NO. 491

The City may establish and administer penalties to the project applicant, property owner, or property resident for non-compliance with the ordinance to the extent permitted by law and as stated in Chapter 1.08 of the Santee Municipal Code.

### **17.36.100 General Landscape Development Standards**

#### **A. Residential Landscape Standards**

The following site development criteria are intended to provide minimum standards for residential development. These site development standards should be used in conjunction with the landscape design guidelines, which are set forth in the Guidelines for Implementation of the City of Santee Water Efficient Landscape Ordinance.

1. **Front Yard Landscaping.** Front yard landscaping for all new single-family and duplex development shall include, at a minimum, one fifteen-gallon size tree, one five-gallon size tree, seeded ground cover, and a permanent irrigation system to be installed by the developer prior to occupancy.

#### **B. Parking Landscape Standards**

The following standards shall apply to landscaping for parking areas within the residential, commercial and industrial districts:

1. A minimum of ten percent of the total off-street parking area shall be landscaped with at least one fifteen-gallon minimum size tree per each three parking stalls and appropriate ground cover. The parking area shall be computed by adding the areas used for access drives, aisles, stalls, maneuvering, and landscaping within that portion of the premises that is devoted to vehicular parking and circulation.
2. Each unenclosed parking facility shall provide a perimeter landscaped strip at least five feet wide (inside dimension) where the facility adjoins a side property line, unless specifically waived by the director. The perimeter landscaped strip may include any landscaped yard or landscaped area otherwise required, and shall be continuous, except for required access to the site or to the parking facility.
3. All landscaping shall be protected with curbs or equivalent barriers while providing breaks in the barriers to allow for parking drainage to flow into landscape areas where the landscaping functions as an infiltration BMP stormwater design measure.
4. All landscaping shall be continuously maintained free of weeds, debris or litter.
5. Where feasible, infiltration BMPs shall be integrated into the landscape design to reduce the quantity and velocity of storm water discharging to the MS4 from the parking or loading facility.

## ORDINANCE NO. 491

### C. General Landscape Standards.

Unless stated otherwise within this code, the following landscape standards shall be met for all developments:

1. All setbacks, parkways, and non-work areas shall be landscaped.
2. The visibility of decorative water features, including but not limited to, ponds, decorative fountains, basins, reflective pools, and spray/mist fountains should be maximized by confining them to areas of high visibility and high use. Re-circulating water shall be used for all decorative water features. All such features shall be designed such that they present a positive visual statement when water is not available.
3. Landscape plans which are required pursuant to a development review permit or a conditional use permit shall be required to be prepared and signed by a registered landscape architect unless waived by the Director.
4. All groundcover installed pursuant to an approved landscape plan shall provide one hundred percent coverage within nine months of planting or additional landscaping, to be approved by the Director, shall be required in order to meet this standard.
5. A bond, equal to the cost of full landscape installation, will be required for a minimum of one year for any project requiring a development review permit or conditional use permit, with the exception of projects for single family homes. The planning director may waive this requirement provided special circumstances exist which alleviate the need for a bond.
6. Property owners are responsible for the continual maintenance of all landscaped areas on-site and between the property line and the curb. All landscaped areas shall be kept free from weeds and debris and maintained in a healthy, growing condition, and shall receive regular pruning, fertilizing, mowing and trimming. Any damaged, dead, diseased or decaying plant material shall be replaced within thirty days from the date of damage.
7. The Director shall prepare, and revise as required, a landscape design manual to assist residents and property owners in understanding the requirements and objectives of the zoning ordinance landscape standards.
8. A combination of berming, landscape materials, low level walls and buildings, shall be used to screen parking areas, loading areas, trash enclosures, and utilities from public view.
9. Walls may be required in landscape areas where they are necessary to screen sensitive uses from adjacent development or provide sound attenuation. Height, placement and design of walls shall be considered as it relates to the surrounding area.
10. Unless otherwise specified within this code, or by conditional use permit all activities, work and storage of materials shall be entirely within an enclosed building. Normal customer or employee parking and temporary provisions are excepted.

#### **17.36.110 Public Education**

Education is a critical component to promote the efficient use of water in landscapes. The use of appropriate principles of design, installation, management and maintenance that save water is encouraged in the community.

**ORDINANCE NO. 491**

**SECTION 5.** Chapter 15.58.130, entitled "Landscape and Irrigation Plans", of Title 15, "Buildings and Construction", is hereby amended by adding Subsection C to read as follows:

C. Landscape and irrigation plans shall comply with Chapter 17.36 of the Santee Municipal Code.

**INTRODUCED AND FIRST READ** at a Regular Meeting of the City Council of the City of Santee, California, on the 18<sup>th</sup> day of November 2009, and thereafter **ADOPTED** at a Regular Meeting of said City Council held on the 9<sup>th</sup> day of December, 2009, by the following vote to wit:

**AYES: JONES, DALE, RYAN, VOEPEL**

**NOES: MINTO**

**ABSENT: NONE**

**APPROVED.**

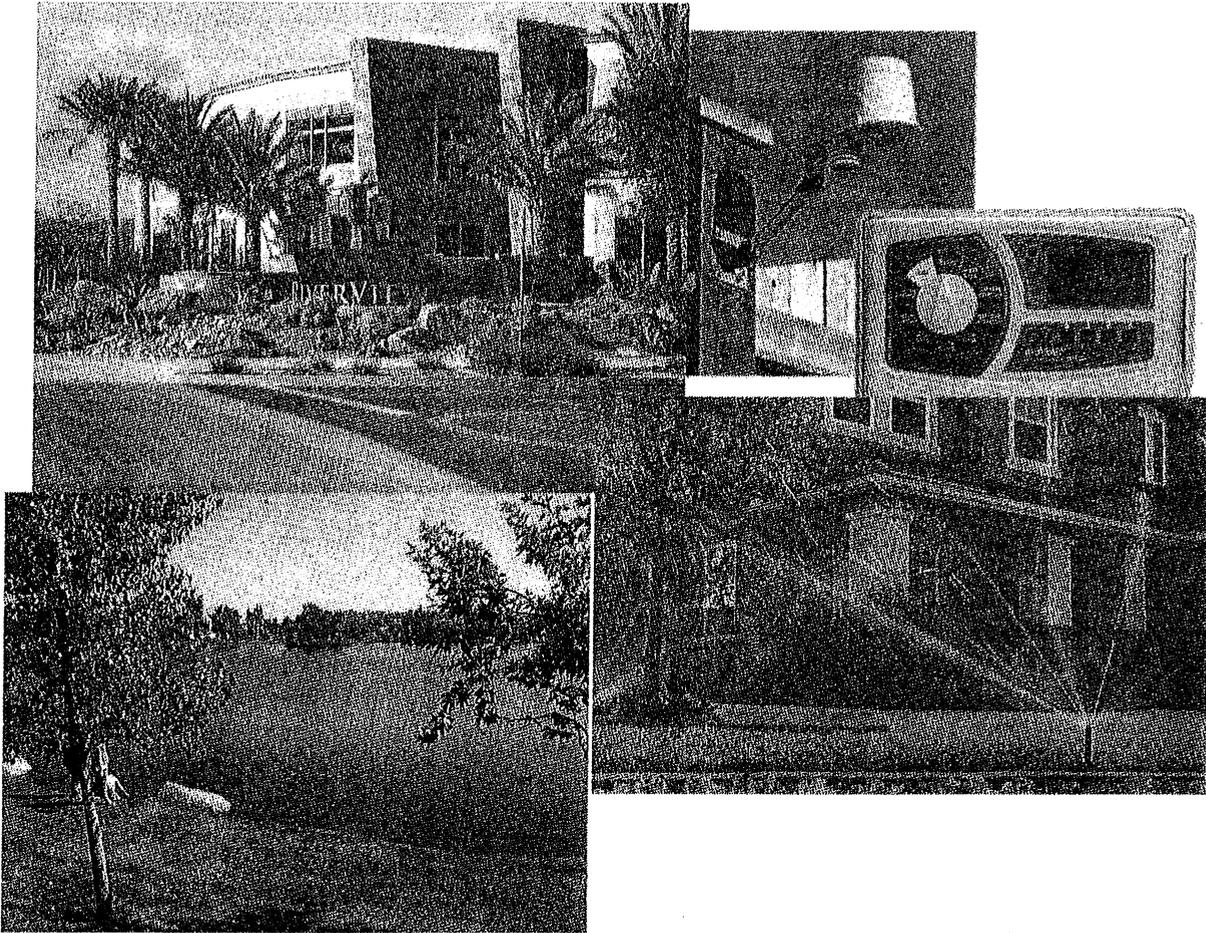
  
**RANDY VOEPEL, MAYOR**

**ATTEST:**

  
**PATSY BELL, CMC, INTERIM CITY CLERK**

|   |                                       |
|---|---------------------------------------|
| State of California }<br>County of San Diego } ss.<br>City of Santee }  | <b>AFFIDAVIT OF POSTING ORDINANCE</b> |
| I, <u>Patsy Bell, CMC, Interim City Clerk</u> of the City of Santee, hereby declare, under penalty of perjury, that a certified copy of this Ordinance was posted in accordance with Resolution 61-2003 on <u>December 10, 2009</u> at <u>3:00 p.m.</u> |                                       |
| <u>Patsy Bell</u><br>Signature  | <u>12/10/09</u><br>Date               |





# GUIDELINES FOR IMPLEMENTATION OF THE CITY OF SANTEE WATER EFFICIENT LANDSCAPE ORDINANCE



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## **SECTION 1 – Purpose and Applicability**

### **A. Purpose**

The purpose of these landscape guidelines is to implement the City of Santee Water Efficient Landscape Ordinance, in order to:

1. Promote the values and benefits of landscapes while recognizing the need to invest water and other resources as efficiently as possible.
2. Establish a structure for planning, designing, installing, maintaining and managing water efficient landscapes in new construction and rehabilitated projects.
3. Establish provisions for water management practices and water waste prevention for existing landscapes.
4. Use water efficiently without waste by setting a Maximum Applied Water Allowance as an upper limit for water use and reduce water use to the lowest practical amount.
5. Promote the benefits of consistent landscape ordinances with neighboring local and regional agencies.
6. Encourage the use of economic incentives that promote the efficient use of water, such as implementing a tiered-rate structure.

### **B. Applicability**

These guidelines shall apply to all of the following landscape projects:

1. New construction and rehabilitated landscapes for public agency projects and private development projects with a landscape area equal to or greater than 2,500 square feet requiring a building or grading permit, plan check or design review.
2. New construction and rehabilitated landscapes which are developer-installed in single-family and multi-family projects with a landscape area equal to or greater than 2,500 square feet, and which are otherwise subject to a requirement for a building or grading permit, plan check, or design review;
3. New construction landscapes which are homeowner-provided and/or homeowner-hired in single-family and multi-family residential projects with a total project landscape area equal to or greater than 5,000 square feet, and which are otherwise subject to a requirement for a building or grading permit, plan check or design review;
4. Existing landscapes limited to Section 6 of these guidelines for Implementation of the City of Santee Water Efficient Landscape Ordinance;
5. Cemeteries. Recognizing the special landscape management needs of cemeteries, new and rehabilitated cemeteries are limited to Section 2 of these guidelines; and existing cemeteries are limited to Section 6 of these guidelines.

These guidelines do not apply to:

1. Registered local, state or federal historical sites;
2. Ecological restoration projects that do not require a permanent irrigation system;
3. Mined-land reclamation projects that do not require a permanent irrigation system; or
4. Plant collections, as part of botanical gardens and arboretums open to the public.

**SECTION 2 – Provisions for New Construction or Rehabilitated Landscapes**

- A. Prior to installation of any new or rehabilitated landscape that is subject to the City of Santee Water Efficient Landscape Ordinance, the project applicant shall Submit a Landscape Documentation Package to the City.
- B. Upon approval of the Landscape Documentation Package by the City, the project applicant shall:
  - 1. Receive a permit or approval of the plan check or design review and record the date the permit in the Certificate of Completion.
  - 2. Submit a copy of the approved Landscape Documentation Package along with the record drawings, and any other information to the property owner or his/her designee.
  - 3. Submit a copy of the Water Efficient Landscape Worksheet to the local water purveyor.

## SECTION 3 – Landscape Documentation Package

### A. Elements of the Landscape Documentation Package

The Landscape Documentation Package shall include the following five (5) elements:

1. Water Efficient Landscape Worksheet (See Appendix B);
2. Soil management report;
3. Landscape design plan;
4. Irrigation design plan; and
5. Grading design plan.

### B. Water Efficient Landscape Worksheet.

1. A project applicant shall complete the Water Efficient Landscape Worksheet which contains two sections (see sample worksheet in Appendix B):
  - a. Project Information
  - b. A hydrozone information table for the landscape project; and
  - c. A water budget calculation for the landscape project. For the calculation of the Maximum Applied Water Allowance and Estimated Total Water Use, a project applicant shall use the ETo values from the Reference Evapotranspiration Table in Appendix A.
2. Water budget calculations shall adhere to the following requirements:
  - a. The plant factor used shall be from WUCOLS. The plant factor ranges from 0 to 0.1 for very low water use plants, from 0.1 to 0.3 for low water use plants, from 0.4 to 0.6 for moderate water use plants, and from 0.7 to 1.0 for high water use plants.
  - b. All water features shall be included in the high water use hydrozone and temporarily irrigated areas shall be included in the low water use hydrozone.
  - c. All Special Landscape Areas shall be identified and their water use calculated as described below.
  - d. ETAF for Special Landscape Areas shall not exceed 1.0.
  - e. For the purpose of determining Maximum Applied Water Allowance, average irrigation efficiency is assumed to be 0.71
3. Maximum Applied Water Allowance

The Maximum Applied Water Allowance shall be calculated using the equation:

$$\text{MAWA} = [(\text{ETo}) (0.62) [(0.7 \times \text{LA})] + [(\text{ETo}) (0.62) [(1.0 \times \text{SLA})]$$

#### 4. Estimated Total Water Use.

The Estimated Total Water Use shall be calculated using the equation below. The sum of the Estimated Total Water Use calculated for all hydrozones shall not exceed MAWA.

$$\text{ETWU} = [(\text{ET0})(0.62)(\text{PF X HA})]/\text{IE}$$

### **C. Soil Management Report**

In order to reduce runoff and encourage healthy plant growth, a soil management report shall be completed by the project applicant, or his/her designee, as follows:

1. Submit soil samples to a laboratory for analysis and recommendations.
  - a. Soil sampling shall be conducted in accordance with laboratory protocol, including protocols regarding adequate sampling depth for the intended plants.
  - b. The soil analysis may include:
    - (1) Soil texture;
    - (2) Infiltration rate determined by laboratory test or soil texture infiltration rate table;
    - (3) pH;
    - (4) Total soluble salts;
    - (5) Sodium;
    - (6) Percent organic matter; and
    - (7) Recommendations.
2. The project applicant, or his/her designee, shall comply with one of the following:
  - a. If significant mass grading is not planned, the soil analysis report shall be submitted to the City as part of the Landscape Documentation Package; or
  - b. If significant mass grading is planned, the soil analysis report shall be submitted to the City as part of the Certificate of Completion.
3. The soil analysis report shall be made available, in a timely manner, to the professionals preparing the landscape design plans and irrigation design plans to make any necessary adjustments to the design plans.
4. The project applicant, or his/her designee, shall submit documentation verifying implementation of soil analysis report recommendations to the City with the Certificate of Completion.

### **D. Landscape Design Plan**

1. For the efficient use of water, a landscape shall be carefully designed and planned for the intended function of the project. A landscape design plan meeting the following design criteria shall be submitted as part of the Landscape Documentation Package.
  - a. Plant Material
    - (1) Any plant may be selected for the landscape, providing the Estimated Total Water Use in the landscape area does not exceed the Maximum Applied Water Allowance. To encourage the efficient use of water, the following is highly recommended:
      - Protection and preservation of native species and natural vegetation;
      - Selection of water-conserving plant and turf species;
      - Selection of plants based on disease and pest resistance;
      - Selection of trees based on applicable local tree ordinances or tree shading guidelines; and

- Selection of plants from local and regional landscape program plant lists.
- (2) Each hydrozone shall have plant materials with similar water use, with the exception of hydrozones with plants of mixed water use, as specified in Section 3.E.b.(4).
- (3) Plants shall be selected and planted appropriately based upon their adaptability to the climatic, geologic, and topographical conditions of the project site. To encourage the efficient use of water, the following is highly recommended:
  - Use the Sunset Western Climate Zone System which takes into account temperature, humidity, elevation, terrain, latitude, and varying degrees of continental and marine influence on local climate;
  - Recognize the horticultural attributes of plants (i.e., mature plant size, invasive surface roots) to minimize damage to property or infrastructure [e.g., buildings, sidewalks, power lines]; and
  - Consider the solar orientation for plant placement to maximize summer shade and winter solar gain.
- (4) Turf is not allowed on slopes greater than 25% where the toe of the slope is adjacent to an impermeable hardscape and where 25% means 1 foot of vertical elevation change for every 4 feet of horizontal length (rise divided by run x 100 = slope percent).
- (5) A landscape design plan for projects in fire-prone areas shall address fire safety and prevention. A defensible space or zone around a building or structure is required per Public Resources Code Section 4291(a) and (b). Avoid fire-prone plant materials and highly flammable mulches.
- (6) The use of invasive and/or noxious plant species is strongly discouraged.
- (7) The architectural guidelines of a common interest development, which include community apartment projects, condominiums, planned developments, and stock cooperatives, shall not prohibit or include conditions that have the effect of prohibiting the use of low-water use plants as a group.

b. Water Features

- (1) Recirculating water systems shall be used for water features.
- (2) Where available, recycled water shall be used as a source for decorative water features.
- (3) Surface area of a water feature shall be included in the high water use hydrozone area of the water budget calculation.
- (4) Pool and spa covers are highly recommended.

c. Mulch and Amendments

- (1) A minimum two inch (2") layer of mulch shall be applied on all exposed soil surfaces of planting areas except in turf areas, creeping or rooting groundcovers, or direct seeding applications where mulch is contraindicated.
- (2) Stabilizing mulching products shall be used on slopes.
- (3) The mulching portion of the seed/mulch slurry in hydro-seeded applications shall meet the mulching requirement.

- (4) Soil amendments shall be incorporated according to recommendations of the soil report and what is appropriate for the plants selected (see Section 3.C).
2. The landscape design plan, at a minimum, shall:
    - a. Delineate and label each hydrozone by number, letter, or other method;
    - b. Identify each hydrozone as low, moderate, high water, or mixed water use. Temporarily irrigated areas of the landscape shall be included in the low water use hydrozone for the water budget calculation;
    - c. Identify recreational areas;
    - d. Identify areas permanently and solely dedicated to edible plants;
    - e. Identify areas irrigated with recycled water;
    - f. Identify type of mulch and application depth;
    - g. Identify soil amendments, type, and quantity;
    - h. Identify type and surface area of water features;
    - i. Identify hardscapes (pervious and non-pervious);
    - j. Identify location and installation details of any applicable stormwater best management practices that encourage on-site retention and infiltration of stormwater. Stormwater best management practices are encouraged in the landscape design plan and examples include, but are not limited to:
      - (1) Infiltration beds, swales, and basins that allow water to collect and soak into the ground;
      - (2) Constructed wetlands and retention ponds that retain water, handle excess flow, and filter pollutants; and
      - (3) Pervious or porous surfaces (e.g., permeable pavers or blocks, pervious or porous concrete, etc.) that minimize runoff.
    - k. Identify any applicable rain harvesting or catchment technologies (e.g., rain gardens, cisterns, etc.);
    - l. Contain the following statement: "I have complied with the criteria of the ordinance and applied them for the efficient use of water in the landscape design plan"; and
    - m. Bear the signature of a licensed landscape architect, licensed landscape contractor, or any other person authorized to design a landscape. (See Sections 5500.1, 5615, 5641, 5641.1, 5641.2, 5641.3, 5641.4, 5641.5, 5641.6, 6701, 7027.5 of the Business and Professions Code, Section 832.27 of Title 16 of the California Code of Regulations, and Section 6721 of the Food and Agriculture Code.)

#### **E. Irrigation Design Plan.**

1. For the efficient use of water, an irrigation system shall meet all the requirements listed in this section and the manufacturers' recommendations. The irrigation system and its related components shall be planned and designed to allow for proper installation, management, and maintenance. An irrigation design plan meeting the following design criteria shall be submitted as part of the Landscape Documentation Package.
  - a. System
    - (1) Dedicated landscape water meters are highly recommended on landscape areas smaller than 5,000 square feet to facilitate water management.

- (2) Automatic irrigation controllers utilizing either evapotranspiration or soil moisture sensor data shall be required for irrigation scheduling in all irrigation systems.
- (3) 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.
  - i. If the static pressure is above or below the required dynamic pressure of the irrigation system, pressure-regulating devices such as inline pressure regulators, booster pumps, or other devices shall be installed to meet the required dynamic pressure of the irrigation system.
  - ii. Static water pressure, dynamic or operating pressure, and flow reading of the water supply shall be measured at the point of connection. 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 installation.
- (4) Sensors (rain, freeze, wind, etc.), either integral or auxiliary, that suspend or alter irrigation operation during unfavorable weather conditions shall be required on all irrigation systems, as appropriate for local climatic conditions. Irrigation should be avoided during windy or freezing weather or during rain.
- (5) Manual shut-off valves (such as a gate valve, ball valve, or butterfly valve) shall be required, as close as possible to the point of connection of the water supply, to minimize water loss in case of an emergency (such as a main line break) or routine repair.
- (6) Backflow prevention devices shall be required to protect the water supply from contamination by the irrigation system. A project applicant shall refer to the applicable City code (i.e., public health) for additional backflow prevention requirements.
- (7) High flow sensors that detect and report high flow conditions created by system damage or malfunction are recommended.
- (8) The irrigation system shall be designed to prevent runoff, low head drainage, overspray, or other similar conditions where irrigation water flows onto non-targeted areas, such as adjacent property, non-irrigated areas, hardscapes, roadways, or structures.
- (9) Relevant information from the soil management plan, such as soil type and infiltration rate, shall be utilized when designing irrigation systems.
- (10) The design of the irrigation system shall conform to the hydrozones of the landscape design plan.
- (11) The irrigation system must be designed and installed to meet, at a minimum, the irrigation efficiency criteria as described in Section 3.B.(3) regarding the Maximum Applied Water Allowance.
- (12) It is highly recommended that the project applicant or City inquire with the local water purveyor about peak water operating demands (on the water supply system) or water restrictions that may impact the effectiveness of the irrigation system.
- (13) In mulched planting areas, the use of low volume irrigation is required to maximize water infiltration into the root zone.
- (14) Sprinkler heads and other emission devices shall have matched precipitation rates, unless otherwise directed by the manufacturer's recommendations.

- (15) Head to head coverage is recommended. However, sprinkler spacing shall be designed to achieve the highest possible distribution uniformity using the manufacturer's recommendations.
- (16) Swing joints or other riser-protection components are required on all risers subject to damage that are adjacent to high traffic areas.
- (17) Check valves or anti-drain valves are required for all irrigation systems.
- (18) Narrow or irregularly shaped areas, including turf, less than eight (8) feet in width in any direction shall be irrigated with subsurface irrigation or low volume irrigation system.
- (19) Overhead irrigation shall not be permitted within 24 inches of any non-permeable surface. Allowable irrigation within the setback from non-permeable surfaces may include drip, drip line, or other low flow non-spray technology. The setback area may be planted or unplanted. The surfacing of the setback may be mulch, gravel, or other porous material. These restrictions may be modified if:
  - i. The landscape area is adjacent to permeable surfacing and no runoff occurs; or
  - ii. The adjacent non-permeable surfaces are designed and constructed to drain entirely to landscaping; or
  - iii. The irrigation designer specifies an alternative design or technology, as part of the Landscape Documentation Package and clearly demonstrates strict adherence to irrigation system design criteria in Section 3.E.1.a.(8). Prevention of overspray and runoff must be confirmed during the irrigation survey.
- (20) Slopes greater than 25% shall not be irrigated with an irrigation system with a precipitation rate exceeding 0.75 inches per hour. This restriction may be modified if the landscape designer specifies an alternative design or technology, as part of the Landscape Documentation Package, and clearly demonstrates no runoff or erosion will occur. Prevention of runoff and erosion must be confirmed during the irrigation audit.

b. Hydrozone

- (1) Each valve shall irrigate a hydrozone with similar site, slope, sun exposure, soil conditions, and plant materials with similar water use.
- (2) Sprinkler heads and other emission devices shall be selected based on what is appropriate for the plant type within that hydrozone.
- (3) Where feasible, trees shall be placed on separate valves from shrubs, groundcovers, and turf.
- (4) Individual hydrozones that mix plants of moderate and low water use, or moderate and high water use, may be allowed if:
  - i. Plant factor calculation is based on the proportions of the respective plant water uses and their plant factor; or
  - ii. The plant factor of the higher water using plant is used for calculations.
- (5) Individual hydrozones that mix high and low water use plants shall not be permitted.
- (6) On the landscape design plan and irrigation design plan, hydrozone areas shall be designated by number, letter, or other designation. On the irrigation design plan, designate the areas irrigated by each valve, and assign a number to each valve. Use this valve number in the Hydrozone Information

Table (see Appendix B Section A). This table can also assist with the irrigation audit and programming the controller.

2. The irrigation design plan, at a minimum, shall contain:
  - a. Location and size of separate water meters for landscape;
  - b. Location, type and size of all components of the irrigation system, including controllers, main and lateral lines, valves, sprinkler heads, moisture sensing devices, rain switches, quick couplers, pressure regulators, and backflow prevention devices;
  - c. Static water pressure at the point of connection to the public water supply;
  - d. Flow rate (gallons per minute), application rate (inches per hour), and design operating pressure (pressure per square inch) for each station;
  - e. Recycled water irrigation systems as specified in Section 17.36.070 of the SMC;
  - f. The following statement: "I have complied with the criteria of the ordinance and applied them accordingly for the efficient use of water in the irrigation design plan"; and
  - g. The signature of a licensed landscape architect, certified irrigation designer, licensed landscape contractor, or any other person authorized to design an irrigation system. (See Sections 5500.1, 5615, 5641, 5641.1, 5641.2, 5641.3, 5641.4, 5641.5, 5641.6, 6701, 7027.5 of the Business and Professions Code, Section 832.27 of Title 16 of the California Code of Regulations, and Section 6721 of the Food and Agricultural Code.)

## **F. Grading Design Plan**

1. For the efficient use of water, grading of a project site shall be designed to minimize soil erosion, runoff, and water waste. A grading plan shall be submitted as part of the Landscape Documentation Package if required by Chapter 15.58 of the Santee Municipal Code. A comprehensive grading plan prepared by a civil engineer for other City permits satisfies this requirement.
  - a. The project applicant shall submit a landscape grading plan that indicates finished configurations and elevations of the landscape area including:
    - (1) Height of graded slopes;
    - (2) Drainage patterns;
    - (3) Pad elevations;
    - (4) Finish grade; and
    - (5) Stormwater retention improvements, if applicable.
  - b. To prevent excessive erosion and runoff, it is highly recommended that project applicants:
    - (1) Grade so that all irrigation and normal rainfall remains within property lines and does not drain on to non-permeable hardscapes;
    - (2) Avoid disruption of natural drainage patterns and undisturbed soil; and
    - (3) Avoid soil compaction in landscape areas.
  - c. The grading design plan shall contain the following statement: "I have complied with the criteria of the ordinance and applied them accordingly for the efficient use of water in the grading design plan" and shall bear the signature of a licensed professional as authorized by law.

## **SECTION 4 – Certificate of Completion Package**

### **A. Elements of the Certificate of Completion Package**

The Certificate of Completion Package shall include the following six (6) elements:

1. Signed and completed Certificate of Completion (See Appendix C);
2. Where there have been significant changes made in the field during construction, these “as-built” or record drawings shall be included with the certification;
3. Irrigation scheduling parameters used to set the controller (see Section 4.B. of the Landscape Guidelines);
4. Landscape and irrigation maintenance schedule (see Section 4.C.);
5. Irrigation survey (see Section 4.D.); and
6. Soil management report, if not submitted with Landscape Documentation Package, and documentation verifying implementation of soil report recommendations (see Section 3.C.).

### **B. Irrigation Scheduling**

For the efficient use of water, all irrigation schedules shall be developed, managed, and evaluated to utilize the minimum amount of water required to maintain plant health.

Irrigation schedules shall meet the following criteria:

1. Irrigation scheduling shall be regulated by automatic irrigation controllers.
2. Overhead irrigation shall be scheduled between 8:00 p.m. and 10:00 a.m. unless weather conditions prevent it. If allowable hours of irrigation differ from the local water purveyor, the stricter of the two shall apply. Operation of the irrigation system outside the normal watering window is allowed for auditing and system maintenance.
3. Landscaping irrigation should be avoided up to a week after a rain event in order to prevent irrigation runoff.
4. For implementation of the irrigation schedule, particular attention must be paid to irrigation run times, emission device, flow rate, and current reference evapotranspiration, so that applied water meets the Estimated Total Water Use. Total annual applied water shall be less than or equal to Maximum Applied Water Allowance (MAWA). Actual irrigation schedules shall be regulated by automatic irrigation controllers using current reference evapotranspiration data (e.g., CIMIS) or soil moisture sensor data.
5. Parameters used to set the automatic controller shall be developed and submitted for each of the following:
  - a. The plant establishment period;
  - b. The established landscape; and
  - c. Temporarily irrigated areas.
6. Each irrigation schedule shall consider for each station all of the following that apply:
  - a. Irrigation interval (days between irrigation);
  - b. Irrigation run times (hours or minutes per irrigation event to avoid runoff);
  - c. Number of cycle starts required for each irrigation event to avoid runoff;
  - d. Amount of applied water scheduled to be applied on a monthly basis;
  - e. Application rate setting;
  - f. Root depth setting;
  - g. Plant type setting;

- h. Soil type;
- i. Slope factor setting;
- j. Shade factor setting; and
- k. Irrigation uniformity or efficiency setting.

### **C. Landscape and Irrigation Maintenance Schedule**

1. Landscapes shall be maintained to ensure water use efficiency. A regular maintenance schedule shall be submitted with the Certificate of Completion.
2. A regular maintenance schedule shall include, but not be limited to, routine inspection; adjustment and repair of the irrigation system and its components; aerating and dethatching turf areas; replenishing mulch; fertilizing; pruning; weeding in all landscape areas, and removing and obstruction to emission devices. Operation of the irrigation system outside the normal watering window is allowed for auditing and system maintenance.
3. Repair of all irrigation equipment shall be done with the originally installed components or their equivalents.
4. A project applicant is encouraged to implement sustainable or environmentally-friendly practices for overall landscape maintenance.

### **D. Irrigation Audit, Irrigation Survey, and Irrigation Water Use Analysis**

1. All landscape irrigation audits shall be conducted by a certified landscape irrigation auditor.
2. For new construction and rehabilitated landscape projects, as described in Section 1.B. of the Landscape Guidelines:
  - a. The project applicant shall submit an irrigation audit report with the Certificate of Completion to the City that may include, but is not limited to: inspection, system tune-up, system test with distribution uniformity, reporting overspray or run off that causes overland flow, and preparation of an irrigation schedule;
  - b. The City shall administer programs that may include, but not be limited to, irrigation water use analysis, irrigation audits, and irrigation surveys for compliance with the Maximum Applied Water Allowance.

### **E. Irrigation Efficiency**

For the purpose of determining Maximum Applied Water Allowance, average irrigation efficiency is assumed to be 0.71. Irrigation systems shall be designed, maintained, and managed to meet or exceed an average landscape irrigation efficiency of 0.71.

## SECTION 5 Public Education

### **A. Publications.**

Education is a critical component to promote the efficient use of water in landscapes. The use of appropriate principles of design, installation, management and maintenance that save water is encouraged in the community.

The following publications provide information regarding the design, installation, management, and maintenance of water efficient landscapes and are available for review at the Department of Development Services public counter:

1. Western Garden Book
2. WUCOLS 2000
3. Sustainable Landscape Construction – A Guide to Green Building Outdoors by J. Willima Thomson and Kim Sorvig.
4. San Diego County Department of Environmental Health regulations on the use of recycled water in water features.
5. County of San Diego Water Conservation Landscape Design Manual
6. A Better Way to Beautiful – HOA “How-To” Landscape Guide

### **B. Websites.**

The following websites are available for information regarding the design, installation, management, and maintenance of water efficient landscapes:

1. Metropolitan Water District of Southern California: [www.bewaterwise.com](http://www.bewaterwise.com)
2. Cuyamaca College Water Conservation Garden: [www.thegarden.org](http://www.thegarden.org)
3. California Native Plant Society: [www.cnps.org](http://www.cnps.org)
4. [www.saveourH2O.com](http://www.saveourH2O.com)
5. State of California Dept. of Water Resources:  
<http://www.water.ca.gov/wateruseefficiency/publications/>
6. Sample Landscape and Irrigation Plans: <http://www.h2ouse.org>
7. Padre Dam Municipal Water District: [www.padredam.org](http://www.padredam.org)
8. Helix Water District: [www.hwd.com](http://www.hwd.com)
9. City of Santee: <http://www.ci.santee.ca.us/>
10. San Diego County Water Authority: [www.sdcwa.org](http://www.sdcwa.org)

### **C. Model Homes.**

All model homes that are landscaped shall use signs and written information to demonstrate the principles of water efficient landscapes described in this ordinance.

1. Signs shall be used to identify the model as an example of a water efficient landscape featuring elements such as hydrozones, irrigation equipment, and others that contribute to the overall water efficient theme.
2. Information shall be provided about designing, installing, managing, and maintaining water efficient landscapes.

## **SECTION 6 Provisions for Existing Landscapes**

A. The City will collaborate with the water purveyors that provide water to Santee to define each entity's specific responsibilities relating to this ordinance.

### **A. Irrigation Audit, Irrigation Survey, and Irrigation Water Use Analysis.**

1. This section, Section 6.B., shall apply to all existing landscapes that were installed before January 1, 2010 and are over one acre in size.
  - a. For all landscapes in Section 6.B. that have a water meter, the City shall administer programs that may include, but not be limited to, irrigation water use analyses, irrigation surveys, and irrigation audits to evaluate water use and provide recommendations as necessary to reduce landscape water use to a level that does not exceed the Maximum Applied Water Allowance for existing landscapes. The Maximum Applied Water Allowance for existing landscapes shall be calculated as:  $MAWA = (0.8) (ET_o)(LA)(0.62)$ .
  - b. For all landscapes in Section 6.B. that do not have a meter, the City shall administer programs that may include, but not be limited to, irrigation surveys and irrigation audits to evaluate water use and provide recommendations as necessary in order to prevent water waste.
2. All landscape irrigation audits shall be conducted by a certified landscape irrigation auditor.

## **SECTION 7 Water Waste Prevention.**

- A. In order to prevent water waste resulting from inefficient landscape irrigation runoff is prohibited from leaving the target landscape due to low head drainage, overspray, or other similar conditions where water flows onto adjacent property, non-irrigated areas, walks, roadways, parking lots, or structures. Penalties for violation of these prohibitions may apply as identified under Section C of this section.
- B. Restrictions regarding overspray and runoff may be modified if:
1. The landscape area is adjacent to permeable surfacing and no runoff occurs; or
  2. The adjacent non-permeable surfaces are designed and constructed to drain entirely to landscaping.

### **C. Penalties.**

The City may establish and administer penalties to the project applicant, property owner, or property resident for non-compliance with the ordinance to the extent permitted by law.

## SECTION 8 Definitions

**“APPLIED WATER”** means the portion of water supplied by the irrigation system to the landscape.

**“AUTOMATIC IRRIGATION CONTROLLER”** means an automatic timing device used to remotely control valves that operate an irrigation system. Automatic irrigation controllers schedule irrigation events using either evapotranspiration (weather-based) or soil moisture data.

**“BACKFLOW PREVENTION DEVICE”** means a safety device used to prevent pollution or contamination of the water supply due to the reverse flow of water from the irrigation system.

**“CERTIFICATE OF COMPLETION”** means the document require under Section 4 of the Landscape Guidelines.

**“CERTIFIED IRRIGATION DESIGNER”** means a person certified to design irrigation systems by an accredited academic institution a professional trade organization or other program such as the US Environmental Protection Agency’s WaterSense irrigation designer certification program and Irrigation Association’s Certified Irrigation Designer program.

**“CERTIFIED LANDSCAPE IRRIGATION AUDITOR”** means a person certified to perform landscape irrigation audits by an accredited academic institution, a professional trade organization or other program such as the US Environmental Protection Agency’s WaterSense irrigation auditor certification program and Irrigation Association’s Certified Landscape Irrigation Auditor program.

**“CHECK VALVE”** or **“anti-drain valve”** means a valve located under a sprinkler head, or other location in the irrigation system, to hold water in the system to prevent drainage from sprinkler heads when the sprinkler is off.

**“CITY”** means the City of Santee.

**“COMMON INTEREST DEVELOPMENTS”** means community apartment projects, condominium projects, planned developments, and stock cooperatives per Civil Code Section 1351.

**“CONVERSION FACTOR (0.62)”** means the number that converts acre-inches per acre per year to gallons per square foot per year

**“DRIP IRRIGATION”** means any non-spray low volume irrigation system utilizing emission devices with a flow rate measured in gallons per hour. Low volume irrigation systems are specifically designed to apply small volumes of water slowly at or near the root zone of plants.

**“ECOLOGICAL RESTORATION PROJECT”** means a project where the site is intentionally altered to establish a defined, indigenous, historic ecosystem.

**“EMITTER”** means a drip irrigation emission device that delivers water slowly from the system to the soil.

**“ESTABLISHED LANDSCAPE”** means the point at which plants in the landscape have developed significant root growth into the soil. Typically, most plants are established after one or two years of growth.

**“ESTIMATED TOTAL WATER USE”** (ETWU) means the total water used for the landscape as described in Section 17.36.080.

**“ET ADJUSTMENT FACTOR”** (ETAF) means a factor of 0.7, that, when applied to reference evapotranspiration, adjusts for plant factors and irrigation efficiency, two major influences upon the amount of water that needs to be applied to the landscape.

A combined plant mix with a site-wide average of 0.5 is the basis of the plant factor portion of this calculation. For purposes of the ETAF, the average irrigation efficiency is 0.71.

Therefore, the ET Adjustment Factor is  $(0.7)=(0.5/0.71)$ . ETAF for a Special Landscape Area shall not exceed 1.0. ETAF for existing non-rehabilitated landscapes is 0.8.

**“EVAPOTRANSPIRATION RATE”** means the quantity of water evaporated from adjacent soil and other surfaces and transpired by plants during a specified time.

**“FLOW RATE”** means the rate at which water flows through pipes, valves and emission devices, measured in gallons per minute, gallons per hour, or cubic feet per second.

**“HARDSCAPES”** means any durable material (pervious and non-pervious).

**“HOMEOWNER-PROVIDED LANDSCAPING”** means any landscaping either installed by a private individual for a single family residence or installed by a licensed contractor hired by a homeowner. A homeowner, for purposes of this ordinance, is a person who occupies the dwelling he or she owns. This excludes speculative homes, which are not owner-occupied dwellings.

**“HYDROZONE”** means a portion of the landscaped area having plants with similar water needs. A hydrozone may be irrigated or non-irrigated.

**“INFILTRATION RATE”** means the rate of water entry into the soil expressed as a depth of water per unit of time (e.g., inches per hour).

**“INVASIVE PLANT SPECIES”** means species of plants not historically found in California that spread outside cultivated areas and can damage environmental or economic resources. Invasive species may be regulated by county agricultural agencies as noxious species.

**“Noxious weeds”** means any weed designated by the Weed Control Regulations in the Weed Control Act and identified on a Regional District noxious weed control list. Lists of invasive plants are maintained at the California Invasive Plant Inventory and USDA invasive and noxious weeds database.

**“IRRIGATION AUDIT”** means an in-depth evaluation of the performance of an irrigation system conducted by a Certified Landscape Irrigation Auditor. An irrigation audit includes, but is not limited to: inspection, system tune-up, system test with distribution uniformity or emission uniformity, reporting overspray or runoff that causes overland flow, and preparation of an irrigation schedule.

**“IRRIGATION EFFICIENCY” (IE)** means the measurement of the amount of water beneficially used divided by the amount of water applied. Irrigation efficiency is derived from measurements and estimates of irrigation system characteristics and management practices. The minimum average irrigation efficiency for purposes of this ordinance is 0.71. Greater irrigation efficiency can be expected from well designed and maintained systems.

**“IRRIGATION SURVEY”** means an evaluation of an irrigation system that is less detailed than an irrigation audit. An irrigation survey includes, but is not limited to: inspection, system test, and written recommendations to improve performance of the irrigation system.

**“IRRIGATION WATER USE ANALYSIS”** means an analysis of water use data based on meter readings and billing data.

**“LANDSCAPE ARCHITECT”** means a person who holds a license to practice landscape architecture in the state of California Business and Professions Code, Section 5615.

**“LANDSCAPE AREA”** means all the planting areas, turf areas, and water features in a landscape design plan subject to the Maximum Applied Water Allowance calculation, exclusive of Special Landscape Area. The landscape area does not include footprints of buildings or structures, sidewalks, driveways, parking lots, decks, patios, gravel or stone walks, other pervious or non-pervious hardscapes, and other non-irrigated areas designated for non-development (e.g., open spaces and existing native vegetation).

**“LANDSCAPE CONTRACTOR”** means a person licensed by the state of California to construct, maintain, repair, install, or subcontract the development of landscape systems.

**“LANDSCAPE DOCUMENTATION PACKAGE”** means the documents required under Section 3 of the Landscape Guidelines.

**“LANDSCAPE GUIDELINES”** means the Guidelines for Implementation of the City of Santee Water Efficient Landscape Ordinance.

**“LANDSCAPE PROJECT”** means total area of landscape in a project as defined in “landscape area” for the purposes of this ordinance, meeting requirements under Section 490.1.

**“LATERAL LINE”** means the water delivery pipeline that supplies water to the emitters or sprinklers from the valve.

**“LOCAL WATER PURVEYOR”** means currently the Helix Water District and the Padre Dam Municipal Water District.

**“LOW VOLUME IRRIGATION”** means the application of irrigation water at low pressure through a system of tubing or lateral lines and low-volume emitters such as drip, drip lines, and bubblers. Low volume irrigation systems are specifically designed to apply small volumes of water slowly at or near the root zone of plants.

**“MAIN LINE”** means the pressurized pipeline that delivers water from the water source to the valve or outlet.

**“MAXIMUM APPLIED WATER ALLOWANCE”** (MAWA) means the upper limit of annual applied water for the established landscaped area as specified in Section 17.36.080. It is based upon the area’s reference evapotranspiration, the ET Adjustment Factor, and the size of the landscape area. The Estimated Total Water Use shall not exceed the Maximum Applied Water Allowance. Special Landscape Areas, including recreation areas, areas permanently and solely dedicated to edible plants such as orchards and vegetable gardens, and areas irrigated with recycled water are subject to the MAWA with an ETAF not to exceed 1.0.

**“MICROCLIMATE”** means the climate of a small, specific area that may contrast with the climate of the overall landscape area due to factors such as wind, sun exposure, plant density, or proximity to reflective surfaces.

**“MINED-LAND RECLAMATION PROJECTS”** means any surface mining operation with a reclamation plan approved in accordance with the Surface Mining and Reclamation Act of 1975.

**“MULCH”** means any organic material such as leaves, bark, straw, compost, or inorganic mineral materials such as rocks, gravel, and decomposed granite left loose and applied to the soil surface for the beneficial purposes of reducing evaporation, suppressing weeds, moderating soil temperature, and preventing soil erosion.

**“NEW CONSTRUCTION”** means, for the purposes of these Landscape Guidelines, a new building with a landscape or other new landscape, such as a park, playground, or greenbelt without an associated building.

**“OPERATING PRESSURE”** means the pressure at which the parts of an irrigation system are designed by the manufacturer to operate.

**“OVERHEAD SPRINKLER IRRIGATION SYSTEMS”** means systems that deliver water through the air (e.g., spray heads and rotors).

**“OVERSPRAY”** means the irrigation water which is delivered beyond the target area.

**“PERMIT”** means an authorizing document issued by local agencies for new construction or rehabilitated landscapes.

**“PERVIOUS”** means any surface or material that allows the passage of water through the material and into the underlying soil.

**“PLANT FACTOR”** or “plant water use factor” is a factor , when multiplied by ETo, estimates the amount of water needed by plants. For purposes of this ordinance, the plant factor range for low water use plants is 0 to 0.3, the plant factor range for moderate water use plants is 0.4 to 0.6, and the plant factor range for high water use plants is 0.7 to 1.0.

Plant factors cited in this ordinance are derived from the Department of Water Resources 2000 publication "Water Use Classification of Landscape Species".

**"PRECIPITATION RATE"** means the rate of application of water measured in inches per hour.

**"PROJECT APPLICANT"** means the individual or entity submitting a Landscape Documentation Package required under Section 3 of the Landscape Guidelines, to request a permit, plan check, or design review from the City. A project applicant may be the property owner or his or her designee.

**"RAIN SENSOR"** or "rain sensing shutoff device" means a component which automatically suspends an irrigation event when it rains.

**"RECORD DRAWING"** or "as-builts" means a set of reproducible drawings which show significant changes in the work made during construction and which are usually based on drawings marked up in the field and other data furnished by the contractor.

**"RECREATIONAL AREA"** means areas dedicated to active play such as parks, sports fields, and golf courses where turf provides a playing surface.

**"RECYCLED WATER"**, "reclaimed water", or "treated sewage effluent water" means treated or recycled waste water of a quality suitable for non-potable uses such as landscape irrigation and water features. This water is not intended for human consumption.

**"REFERENCE EVAPOTRANSPIRATION"** or "ET<sub>o</sub>" means a standard measurement of environmental parameters which affect the water use of plants. ET<sub>o</sub> is expressed in inches per day, month, or year as represented in Appendix A of the Landscape Guidelines, and is an estimate of the evapotranspiration of a large field of four- to seven-inch tall, cool-season grass that is well watered. Reference evapotranspiration is used as the basis of determining the Maximum Applied Water Allowance so that regional differences in climate can be accommodated.

**"REHABILITATED LANDSCAPE"** means any re-landscaping project that requires a permit, plan check, or design review, meets the requirements of Section 1 of the Landscape Guidelines, and the modified landscape area is equal to or greater than 2,500 square feet, is 50% of the total landscape area, and the modifications are completed within one year.

**"RUNOFF"** means water which is not absorbed by the soil or landscape to which it is applied and flows from the landscape area. For example, runoff may result from water that is applied at too great a rate (application rate exceeds infiltration rate) or when there is a slope.

**"SOIL MOISTURE SENSING DEVICE"** or "soil moisture sensor" means a device that measures the amount of water in the soil. The device may also suspend or initiate an irrigation event.

**"SOIL TEXTURE"** means the classification of soil based on its percentage of sand, silt, and clay.

**"SPECIAL LANDSCAPE AREA"** (SLA) means an area of the landscape dedicated solely to edible plants, areas irrigated with recycled water, water features using recycled water and areas dedicated to active play such as parks, sports fields, golf courses, and where turf provides a playing surface.

**"SPRINKLER HEAD"** means a device which delivers water through a nozzle.

**"STATIC WATER PRESSURE"** means the pipeline or municipal water supply pressure when water is not flowing.

**"STATION"** means an area served by one valve or by a set of valves that operate simultaneously.

**"SWING JOINT"** means an irrigation component that provides a flexible, leak-free connection between the emission device and lateral pipeline to allow movement in any direction and to prevent equipment damage.

**“TURF”** means a ground cover surface of mowed grass. Annual bluegrass, Kentucky bluegrass, Perennial ryegrass, Red fescue, and Tall fescue are cool-season grasses. Bermudagrass, Kikuyugrass, Seashore Paspalum, St. Augustinegrass, Zoysiagrass, and Buffalo grass are warm-season grasses.

**“VALVE”** means a device used to control the flow of water in the irrigation system.

**“WATER CONSERVING PLANT SPECIES”** means a plant species identified as having a low plant factor.

**“WATER FEATURE”** means a design element where open water performs an aesthetic or recreational function. Water features include ponds, lakes, waterfalls, fountains, artificial streams, spas, and swimming pools (where water is artificially supplied). The surface area of water features is included in the high water use hydrozone of the landscape area.

Constructed wetlands used for on-site wastewater treatment or stormwater best management practices that are not irrigated and used solely for water treatment or stormwater retention are not water features and, therefore, are not subject to the water budget calculation.

**“WATERING WINDOW”** means the time of day irrigation is allowed.

**“WUCOLS”** means the Water Use Classification of Landscape Species published by the University of California Cooperative Extension, the Department of Water Resources and the Bureau of Reclamation, 2000.

# APPENDICES

**Appendix A – REFERENCE EVAPOTRANSPIRATION (ET<sub>o</sub>)**

**Evapotranspiration Table for Santee**

| Jan   | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Annual ET <sub>o</sub> |
|---|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------------------------|
| 2.1   | 2.7 | 3.7 | 4.5 | 5.5 | 6.1 | 6.6 | 6.2 | 5.4 | 3.8 | 2.6 | 2.0 | 51.2                   |
| * The values in this table were derived from:   |     |     |     |     |     |     |     |     |     |     |     |                        |
| 1) California Irrigation Management Information System (CIMIS);   |     |     |     |     |     |     |     |     |     |     |     |                        |
| 2) Reference EvapoTranspiration Zones Map, UC Dept. of Land, Air & Water Resources and California Dept of Water Resources 1999; and   |     |     |     |     |     |     |     |     |     |     |     |                        |
| 3) Reference Evapotranspiration for California, University of California, Department of Agriculture and Natural Resources   |     |     |     |     |     |     |     |     |     |     |     |                        |
| (1987) Bulletin 1922, 4) Determining Daily Reference Evapotranspiration, Cooperative Extension UC Division of Agriculture and Natural Resources (1987), Publication Leaflet 21426 |     |     |     |     |     |     |     |     |     |     |     |                        |



# WATER EFFICIENT LANDSCAPE WORKSHEET

**DEPARTMENT OF DEVELOPMENT SERVICES**  
**10601 Magnolia Avenue, Santee, CA 92071-1266, (619) 258-4100 ext. 168**

This worksheet is filled out by the project applicant for each Point of Connection/Water Meter. Please complete all sections of the worksheet and use additional worksheets if necessary.

### 1. Project Information

**Applicant:** \_\_\_\_\_ Phone: \_\_\_\_\_  
**Address:** \_\_\_\_\_ Fax: \_\_\_\_\_  
 \_\_\_\_\_ Email: \_\_\_\_\_

**Property Owner:** \_\_\_\_\_ Phone: \_\_\_\_\_  
**Address:** \_\_\_\_\_ Fax: \_\_\_\_\_  
 \_\_\_\_\_ Email: \_\_\_\_\_

**Project Address:** \_\_\_\_\_ **Project Type:** \_\_\_\_\_  
**Assessor's Parcel Number:** \_\_\_\_\_ **Water Supply Type**  
 (Potable, recycled, well) \_\_\_\_\_  
**Total Landscape Area:** \_\_\_\_\_ **Water Purveyor:** \_\_\_\_\_

### 2. Applicant's/Property Owner's Certification

The design of this project complies with the requirements of the City of Santee Water Efficient Landscape Ordinance.

\_\_\_\_\_  
 Applicant's/Property Owner's Signature Date: \_\_\_\_\_

### 3. Landscape Documentation Package Checklist:

- Water Efficient Landscape Worksheet
- Soil Management Report
- Landscape Design Plan
- Irrigation Design Plan
- Grading Design Plan

### 4. Maximum Applied Water Allowance (MAWA)

The project's Maximum Applied Water Allowance shall be calculated using this equation:  
 Total MAWA = (Eto x 0.7 x LA x 0.62) + (Eto x 1.0 x SLA x 0.62) = Gallons per year for LA + SLA

- MAWA = Maximum Applied Water Allowance (gallons per year)
- ETo = Reference Evapotranspiration from **Appendix A** (inches per year)
- 0.7 = ET Adjustment Factor (ETAF)
- 1.0 = ET Adjustment Factor (ETAF) for SLA
- LA = Landscaped Area (square feet, exclusive of SLA)
- SLA = Special Landscape Area (square feet)
- 0.62 = Conversion factor (to gallons per square foot)

**Table for MAWA Calculation:**

|                       | ETo  |   | ETAF |   | LA or SLA (ft <sup>2</sup> ) |   | Conversion | MAWA (Gallons Per Year) |
|-----------------------|------|---|------|---|------------------------------|---|------------|-------------------------|
| <b>MAWA FOR LA =</b>  | 51.2 | X | 0.7  | X |                              | X | 0.62       |                         |
| <b>MAWA FOR SLA =</b> | 51.2 | X | 1.0  | X |                              | X | 0.62       |                         |
| <b>Total MAWA=</b>    |      |   |      |   |                              |   |            |                         |

## 5. Estimated Total Water Use

Complete the hydrozone table(s) for each irrigation point of connection and each irrigation controller. Use as many tables as necessary to provide information on the total landscape area. Hydrozone #, and Valve Circuit # should correspond to the landscape and irrigation design plans.

Irrigation Point of Connection (P.O.C.) # \_\_\_\_\_ Controller # \_\_\_\_\_

The project's Estimated Total Water Use is calculated using the following formula:

$$ETWU = (ETo \times PF \times HA \times 0.62) \div IE = \text{Gallons Per Year}$$

Where:

ETWU = Estimated applied water use per year (gallons per year)

ETo = Reference Evapotranspiration from table in Appendix A (inches per year)

PF = Plant Factor from WUCOLS

HA = Hydrozone Area [high, medium, and low water use areas] (square feet)

SLA = Special Landscape Area (square feet)

0.62 = Conversion Factor (to gallons per square foot)

IE = Irrigation Efficiency (minimum 0.71)

WUCOLS – Water Use Classification of Landscape Species, Updated 2000

WUCOLS Website: [www.water.ca.gov/wateruseefficiency/docs/wucols00.pdf](http://www.water.ca.gov/wateruseefficiency/docs/wucols00.pdf)

**Table for Calculating ETWU:**

| Valve No.           | Hydrozone Type             | ETo  |   | PF |  | HA |  | Conversion |   | Irrigation Method (Use Code) | IE |   | ETWU (Gallons Per Year) |
|---------------------|----------------------------|------|---|----|--|----|--|------------|---|------------------------------|----|---|-------------------------|
|                     | Special Landscape Area     | 51.2 | X | X  |  | X  |  | 0.62       | ÷ |                              |    | = |                         |
|                     | Cool Season Turf           | 51.2 | X | X  |  | X  |  | 0.62       | ÷ |                              |    | = |                         |
|                     | Warm Season Turf           | 51.2 | X | X  |  | X  |  | 0.62       | ÷ |                              |    | = |                         |
|                     | High Water Using Shrub     | 51.2 | X | X  |  | X  |  | 0.62       | ÷ |                              |    | = |                         |
|                     | Medium Water Using Shrub   | 51.2 | X | X  |  | X  |  | 0.62       | ÷ |                              |    | = |                         |
|                     | Low Water Using Shrub      | 51.2 | X | X  |  | X  |  | 0.62       | ÷ |                              |    | = |                         |
|                     | Very Low Water Using Shrub | 51.2 | X | X  |  | X  |  | 0.62       | ÷ |                              |    | = |                         |
|                     | Other                      | 51.2 | X | X  |  | X  |  | 0.62       | ÷ |                              |    | = |                         |
|                     | Other                      | 51.2 | X | X  |  | X  |  | 0.62       | ÷ |                              |    | = |                         |
| <b>Total ETWU =</b> |                            |      |   |    |  |    |  |            |   |                              |    |   |                         |

Hydrozone category is based on the feature or plant within the hydrozone with the highest plant factor.

| Hydrozone Category | PF – Plant Factor |
|--------------------|-------------------|
| High Water Use     | 0.7 to 1.0        |
| Moderate Water Use | 0.4 to 0.6        |
| Low Water Use      | 0.1 to 0.3        |
| Very Low Water Use | Less than 0.1     |

| Irrigation Method     | Code |
|-----------------------|------|
| Spray                 | S    |
| Rotor                 | R    |
| Drip                  | D    |
| High Efficiency Spray | HES  |
| Bubbler               | B    |

**Compare MAWA and ETWU. If ETWU exceeds MAWA the landscape and irrigation design shall be modified so that ETWU does not exceed MAWA for the project.**

## 6. Example MAWA and ETWU Calculations

### MAWA for Hypothetical Landscape Project:

The project's Maximum Applied Water Allowance shall be calculated using this equation:  

$$\text{Total MAWA} = (\text{Eto} \times 0.7 \times \text{LA} \times 0.62) + (\text{Eto} \times 1.0 \times \text{SLA} \times 0.62) = \text{Gallons per year for LA} + \text{SLA}$$

MAWA = Maximum Applied Water Allowance (gallons per year)  
 ETo = Reference Evapotranspiration of 51.2 from **Appendix A** (inches per year)  
 0.7 = ET Adjustment Factor (ETAF)  
 1.0 = ET Adjustment Factor (ETAF) for SLA  
 LA = Landscaped Area (square feet, exclusive of SLA)  
 SLA = Special Landscape Area (square feet)  
 0.62 = Conversion factor (to gallons per square foot)

**Example Calculation:** a hypothetical landscape project in Santee, CA with an irrigated landscape area of 40,000 square feet with 10,000 square feet of Special Landscape Area. To calculate MAWA, the annual reference evapotranspiration value for Santee is 51.1 inches as listed in the Reference Evapotranspiration Table in **Appendix A**

**Table for MAWA Calculation:**

|                    | ETo  |   | ETAF |   | LA or SLA (ft <sup>2</sup> ) |   | Conversion | MAWA (Gallons Per Year)                        |
|--------------------|------|---|------|---|------------------------------|---|------------|--|
| MAWA FOR LA =      | 51.2 | X | 0.7  | X | 40,000                       | X | 0.62       | 888,832  |
| MAWA FOR SLA =     | 51.2 | X | 1.0  | X | 10,000                       | X | 0.62       | 317,440  |
| <b>Total MAWA=</b> |      |   |      |   |                              |   |            | <b>1,206,272 gallons per year for LA + SLA</b> |

### ETWU for Above Hypothetical Landscape Project:

The project's Estimated Total Water Use is calculated using the following formula:  

$$\text{ETWU} = (\text{ETo} \times \text{PF} \times \text{HA} \times 0.62) \div \text{IE} = \text{Gallons Per Year}$$

Where:

ETWU = Estimated applied water use per year (gallons per year)  
 ETo = Reference Evapotranspiration of 51.2 from table in Appendix A (inches per year)  
 PF = Plant Factor from WUCOLS  
 HA = Hydrozone Area [high, medium, and low water use areas] (square feet)  
 SLA = Special Landscape Area (square feet)  
 0.62 = Conversion Factor (to gallons per square foot)  
 IE = Irrigation Efficiency (minimum 0.71)  
 WUCOLS – Water Use Classification of Landscape Species, Updated 2000  
 WUCOLS Website: [www.water.ca.gov/wateruseefficiency/docs/wucols00.pdf](http://www.water.ca.gov/wateruseefficiency/docs/wucols00.pdf)

**Table for Calculating ETWU:**

| Valve Circuit No.   | Hydrozone Type           | ETo  |   | PF  |   | HA(s.f.) |   | Conversion |   | Irrigation Method (Use Code) | IE   | =                | ETWU (Gallons Per Year) |
|---------------------|--------------------------|------|---|-----|---|----------|---|------------|---|------------------------------|------|------------------|-------------------------|
| 1                   | Special Landscape Area   | 51.2 | X | 1.0 | X | 10,000   | X | 0.62       | ÷ | D                            | 0.8  | =                | 396,800                 |
| 2                   | Cool Season Turf         | 51.2 | X | 0.8 | X | 5,000    | X | 0.62       | ÷ | S                            | 0.55 | =                | 230,865                 |
| 3                   | Warm Season Turf         | 51.2 | X | 0.6 | X | 5,000    | X | 0.62       | ÷ | R                            | 0.7  | =                | 136,046                 |
|                     | High Water Using Shrub   | 51.2 | X |     | X |          | X | 0.62       | ÷ |                              |      | =                |                         |
| 4                   | Medium Water Using Shrub | 51.2 | X | 0.5 | X | 15,000   | X | 0.62       | ÷ | D                            | 0.8  | =                | 297,600                 |
| 5                   | Low Water Using Shrub    | 51.2 | X | 0.2 | X | 15,000   | X | 0.62       | ÷ | D                            | 0.8  | =                | 119,040                 |
| <b>Total ETWU =</b> |                          |      |   |     |   |          |   |            |   |                              |      | <b>1,180,351</b> |                         |

**Compare ETWU and MAWA. The ETWU (1,180,351 gallons per year) is less than MAWA (1,203,916 gallons per year). For this example the water budget complies with MAWA.**

Appendix C – CERTIFICATE OF COMPLETION



CERTIFICATE OF COMPLETION

DEPARTMENT OF DEVELOPMENT SERVICES
10601 Magnolia Avenue, Santee, CA 92071-1266, (619) 258-4100 ext. 168

This certificate is to be completed by the project applicant and property owner upon completion of the landscape project.

6. Project Information

Project Name: Parcel, Tract, Lot No.
Project Address: Assessor's Parcel Number:

Applicant:

Name: Date:
Title: Phone:
Company: Fax:
Address: Email:

Property Owner or his/her designee:

Name: Phone:
Title: Fax:
Company: Email:
Address:

7. Property Owner's Certification

I/we certify that I/we have received copies of all the documents within the Landscape Documentation Package and the Certificate of Completion and that it is our responsibility to see that the project is maintained in accordance with the Landscape and Irrigation Maintenance Schedule.

Property Owner's Signature Date:

8. Please answer the following questions:

- 1. Date the Landscape Documentation Package was submitted to the City of Santee
2. Date the Landscape Documentation Package was approved by the City of Santee
3. Date that a copy of the Water Efficient Landscape Worksheet (including the Water Budget Calculation) was submitted to your local water provider

9. Certification of Installation According to the Landscape Documentation Package

I/we certify that based upon periodic site observations, the work has been substantially completed in accordance with the ordinance and that the landscape planting and irrigation installation conform with the criteria and specifications of the approved Landscape Documentation Package.

Signature of Landscape Plan or Irrigation Plan Designer: Date:

Name: Phone No.:
License No. or Certification No.: Email:
Address: Fax:

10. Certificate of Completion Package Checklist:

- Irrigation Schedule
Schedule of Landscape and Irrigation Maintenance
Soil Management Report (If not previously submitted)
Irrigation Survey

**Appendix D**

**SAMPLE WATER EFFICIENT LANDSCAPE AND IRRIGATION DESIGNS**

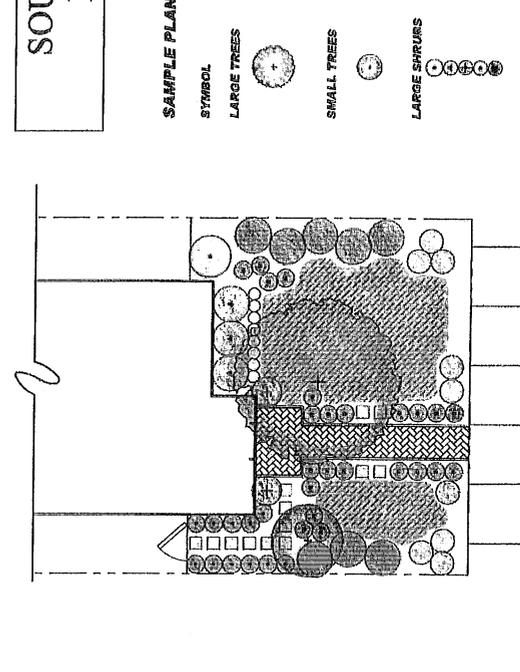


**SOUTHERN INLAND FRONT YARD**  
June 2009

**SMART**  
From the Start

**"TYPICAL" SIZED LOT HOUSE**  
SOUTH FACING FRONT GARDEN, TYPICAL  
60'x80' LOT

**ZERO-LOT LINE HOUSE**  
SOUTH FACING FRONT GARDEN, TYPICAL  
30'x80' LOT



**PLANT COUNT**  
TREES 3  
SHRUBS 104  
GROUNDCOVER 167 SF

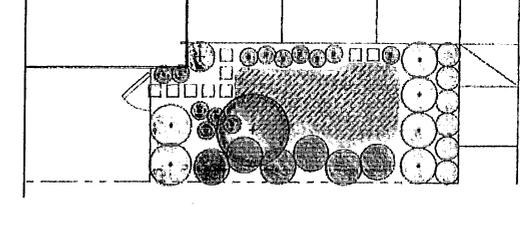
**PLANT CLIMATE:**  
Southern Inland summers are hot and dry with little marine layer influence. Winters are colder than the coast with occasional freeze. Hot dry offshore Santa Ana winds occasionally occur in late fall and early winter.

**DESIGN:**  
The Water Efficient Landscape Ordinance allows drip, drip line, or other low-flow, non-spray irrigation within two feet of any non-permeable surface. It does not allow spray irrigation in these areas. There are no restrictions on the irrigation system if the landscape area is adjacent to permeable surfacing. Planting and irrigation must be designed appropriately adjacent to non-permeable paving to meet this Ordinance.

**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:**  
Two (2) inches of mulch in all areas. Sheet mulching and recycled green waste mulch are recommended.

**FIRE:**  
Templates are based on individual lots with a subdivision. When developing up against wildlands or other fire sensitive areas for an individual parcel or a project, a fire management plan should be created.



**PLANT COUNT**  
TREES 2  
SHRUBS 65  
GROUNDCOVER 208 SF

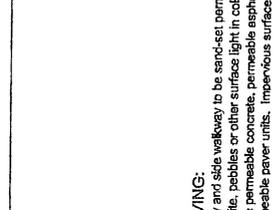
**DRAINAGE:**  
Downspouts should be directed into landscape with grading for proper drainage away from house. Runoff during plant establishment must be accommodated on-site.

**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](http://www.cnps.org)).

**SAMPLE PLANT LEGEND**

| SYMBOL                            | BOTANICAL NAME  | COMMON NAME   |
|-----------------------------------|---|---|
| (Large Tree Symbol)               | Jacaranda microbotrya<br>Junonia 'Kauai Vesuvius'<br>Olea 'Laurifolia'<br>Schinus molle                             | Jacaranda<br>Flowering Plum<br>Cork Oak<br>Pepper Tree                      |
| (Small Tree Symbol)               | Cercis occidentalis<br>Cotinus coggygria<br>Fremontodendron 'Dare's Gold'***  | Redbud<br>Smoke Tree<br>Flame Bush**  |
| (Large Shrub Symbol)              | Myrica carolinica<br>Nolina 'Pele's Shoon'<br>Juniperus S. 'Strydomer'<br>Citrus leucanther<br>Salvia microphylla   | Myrtle<br>Juniper<br>Columb<br>Chin-quap-ent Redrose<br>Sage                |
| (Medium Shrub Symbol)             | Berberis repens<br>Eucalyptus allenstehtii  | Creeping Barberry<br>Pinky Cytad  |
| (Small Shrub & Perennials Symbol) | Eubadium californica<br>Ceanothus 'Frosty Curls'<br>Nandina 'Fire Power'<br>Clarkia rubicunda<br>Erigeron glaucus** | California Fuchsia<br>Nandina<br>Heavily Bamboe<br>Clarkia<br>Beach Aster** |
| (Groundcover Symbol)              | Arctostaphylos 'Emerald Carpet'<br>Cotoneaster 'dammit'<br>Rubus pennsylvanicus                                     | Emerald Carpet<br>Barberry Cotoneaster<br>Bramble                           |
| (Hardscape Symbol)                | Pavers<br>Sand-Set Brick<br>Mulch   |   |

\* Can tolerate light traffic  
\*\* Can tolerate shade  
\*\*\* Provide no bubbler or direct irrigation--Prefers less water



**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](http://www.cnps.org)).

**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:**  
Two (2) inches of mulch in all areas. Sheet mulching and recycled green waste mulch are recommended.

**FIRE:**  
Templates are based on individual lots with a subdivision. When developing up against wildlands or other fire sensitive areas for an individual parcel or a project, a fire management plan should be created.

**PLANT CLIMATE:**  
Southern Inland summers are hot and dry with little marine layer influence. Winters are colder than the coast with occasional freeze. Hot dry offshore Santa Ana winds occasionally occur in late fall and early winter.

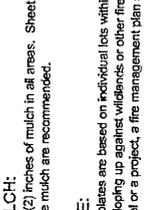
**DESIGN:**  
The Water Efficient Landscape Ordinance allows drip, drip line, or other low-flow, non-spray irrigation within two feet of any non-permeable surface. It does not allow spray irrigation in these areas. There are no restrictions on the irrigation system if the landscape area is adjacent to permeable surfacing. Planting and irrigation must be designed appropriately adjacent to non-permeable paving to meet this Ordinance.

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Note: For additional information regarding design and installation, please see back yard template and CUWCC's Water Smart Landscape Checklist at [www.cuwcc.org](http://www.cuwcc.org).  
Funded by the U.S. Bureau of Reclamation, Lower Colorado Region, Southern California Office.

Note: For additional information regarding design and installation, please see back yard template and CUWCC's Water Smart Landscape Checklist at [www.cuwcc.org](http://www.cuwcc.org).  
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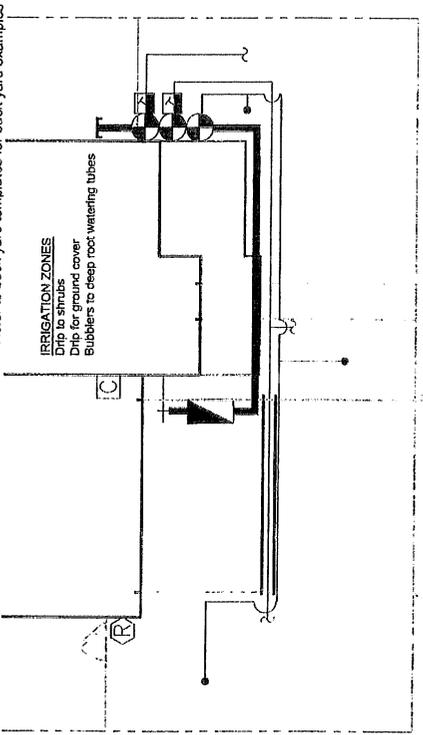
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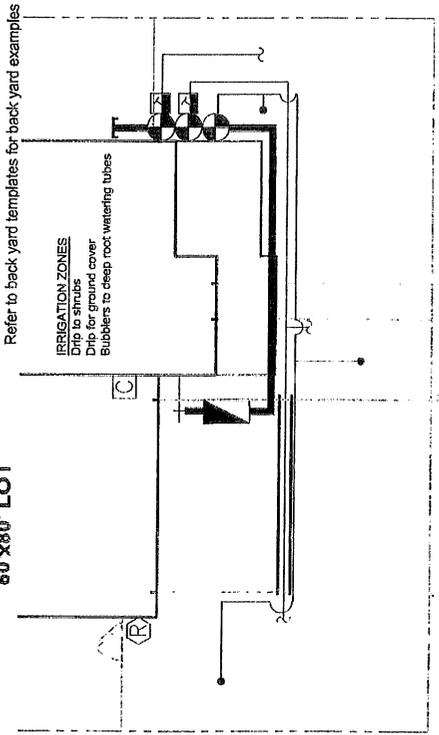
SOUTHERN INLAND FRONT YARD

June 2009

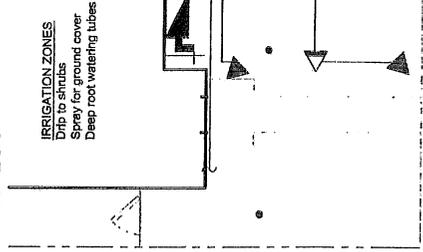
ZERO-LOT LINE HOUSE SOUTH FACING FRONT GARDEN, TYPICAL 30'x80' LOT



"TYPICAL" SIZED LOT HOUSE SOUTH FACING FRONT GARDEN, TYPICAL 60'x80' LOT



Refer to back yard templates for back yard examples



IRRIGATION ZONES  
Drip to shrubs  
Spray for ground cover  
Deep root watering tubes



SAMPLE WATER USE PROJECTIONS FOR TEMPLATE PLANTING/IRRIGATION

| Valve   | SOFT | JAN | FEB | MAR | APR   | MAY   | JUN   | JUL   | AUG   | SEP   | OCT | NOV | DEC | ANN. GAL. |
|---|------|-----|-----|-----|-------|-------|-------|-------|-------|-------|-----|-----|-----|-----------|
| Spray-Ground Cover  | 192  | 159 | 62  | 154 | 236   | 321   | 384   | 501   | 103   | 113   | 51  | 15  | 1   | 2,243     |
| Drip-Ground Cover   | 373  | 189 | 93  | 232 | 356   | 486   | 534   | 596   | 581   | 455   | 292 | 171 | 77  | 3,864     |
| TOTAL   | 565  | 348 | 155 | 386 | 592   | 807   | 918   | 1,097 | 1,614 | 1,066 | 443 | 226 | 88  | 6,107     |
| Estimated water use 6.837 gal/yr/MAWA = 3,995 gal/yr projected water use = 67% of MAWA  |      |     |     |     |       |       |       |       |       |       |     |     |     |           |
| Estimated Water use - Riverside - 1 typical Lot   |      |     |     |     |       |       |       |       |       |       |     |     |     |           |
| Valve   | SOFT | JAN | FEB | MAR | APR   | MAY   | JUN   | JUL   | AUG   | SEP   | OCT | NOV | DEC | ANN. GAL. |
| Drip-Ground Cover   | 828  | 593 | 301 | 853 | 1,232 | 1,652 | 1,852 | 1,922 | 1,782 | 1,382 | 882 | 632 | 371 | 8,586     |
| TOTAL   | 828  | 593 | 301 | 853 | 1,232 | 1,652 | 1,852 | 1,922 | 1,782 | 1,382 | 882 | 632 | 371 | 8,586     |
| Estimated water use 8.336 gal/yr/MAWA = 20,015 gal/yr projected water use = 49% of MAWA |      |     |     |     |       |       |       |       |       |       |     |     |     |           |
| Estimated Water use - Riverside - 1 typical Lot   |      |     |     |     |       |       |       |       |       |       |     |     |     |           |
| Greywater Potential for 2 showers/bath = 7,830 gal/yr                                   |      |     |     |     |       |       |       |       |       |       |     |     |     |           |

PRECIP = Precipitation Rate is the application rate of irrigation in inches per hour  
 MAWA = Maximum Annual Water Allowance  
 ETO = Reference evapotranspiration is the quantity of water evaporated from the soil and transpired by the planting and is measured in inches per month  
 ANN GAL = Annual gallons  
 RUNTIME = Total amount of minutes required for planting root depth in native soil  
 CYC TIME = Total number of repeat cycles required for native soil  
 SPRAY HEAD = Spray head with one of the following: standard matched precipitation spray nozzles - 1.87/hr, low precipitation nozzles - 1.7/hr or mist nozzles - 7.0/hr  
 During establishment period, root depth is shallower, thus requiring more frequent irrigation with shorter run times, stretching out the frequency and extending the total run times as the planting matures and roots penetrate into native soil conditions over a 3-5 year span. Establishment irrigation frequency depends upon the time of year (initial planting takes place during the planting BASE SCHEDULE for established plant material with historical weather data (10 year average) and assumed practices. Note, if low precipitation heads or mist nozzles are used in lieu of conventional spray heads, then the base run times will need to be extended to provide water down to the planting root zones.  
 Monthly example:  
 The number under the month indicates the number of times that zone needs to be irrigated during that month. For fractions of runtimes per month, multiply the # of CYC by the decimal (example, 0.8 runtimes per month of March = .8 x 7 1/2 of CYC = 4 cycles of 23 minutes total runtime one time during the month of March.  
 Front Yards: Refer to front yard design templates for layout ideas.  
 Note: Some plants respond better to overhead spray while many others do better with drip. The irrigation design will need not only to take into consideration plant preferences, but also runoff and potential blockage where the planting grove in front of the spray heads. Drip and spray are both shown on the templates to show differences in system costs and projected water use. Also see back yard templates.

SAMPLE BASE SCHEDULES FOR ESTABLISHED LOW WATER USING PLANT MATERIAL

| Valve                                  | PRECIP | RUN TIME | CYC | CYC TIME | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|--|--------|----------|-----|----------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Spray-Ground Cover                     | 1.8    | 42       | 4   | 12       | 0   | 0   | 1.0 | 1.6 | 2.1 | 2.4 | 2.6 | 2.6 | 2.0 | 1.3 | 1   | 0   |
| Drip-Shrub                             | 0.4    | 153      | 4   | 153      | 0   | 0   | 0.6 | 1.0 | 1.5 | 1.7 | 1.6 | 1.3 | 0.8 | 0   | 0   | 0   |
| Subirrigation Drip - Ground Cover      | 1.1    | 153      | 3   | 19       | 0   | 0   | 1.0 | 1.6 | 2.1 | 2.4 | 2.6 | 2.6 | 2.0 | 1.3 | 1   | 0   |
| Drip-Ground Cover                      | 0.4    | 146      | 5   | 153      | 0   | 0   | 1.0 | 1.6 | 2.1 | 2.4 | 2.6 | 2.6 | 2.0 | 1.3 | 1   | 0   |
| Deep root watering - Trees in planting | 8      | 31       | 12  | 5        | 0   | 0   | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.6 | 0.5 | 0.3 | 0   | 0   |

IRRIGATION SYSTEM LEGEND

1" Shut-off valve-domestic supply  
 Irrigation backflow prevention device-1"  
 Irrigation controller  
 Remote Control Valves  
 Drip control assembly  
 Irrigation main stub-out-1"

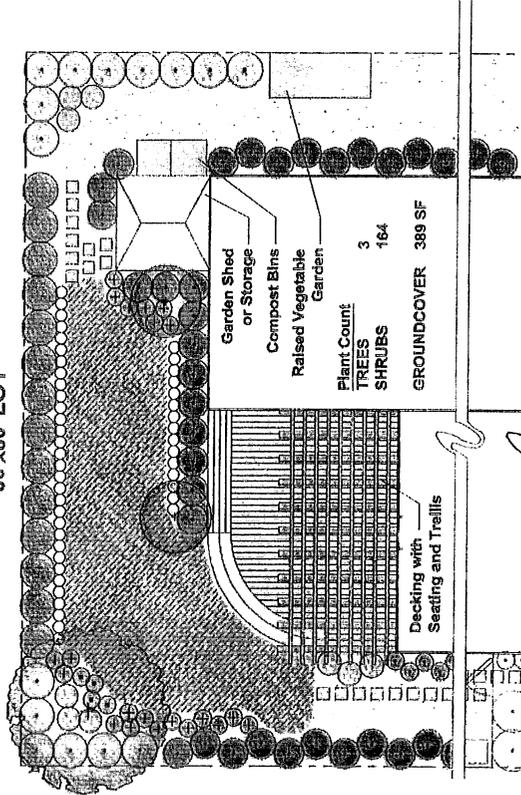
12" Spray heads (24" from walks)  
 12" Spray heads (24" from walks)

NOTE: 6" Spray head body is to be used where mature plant material is less than 5' height.  
 All spray heads to be installed 24" from handcape and 12" from permeable surfaces and fences.  
 Deep root watering tube  
 Irrigation main-1"  
 Irrigation Electrical conduit-1"  
 Shavings-3"  
 To drip Irrigation

-By other section of contract-providing 12 gpm at 55 psi min.  
 -2" Above grade to protect domestic supply  
 -Smart-technology indoor or exterior mount  
 -Provide rain Shut-off device with unobstructed installation  
 -Below grade and 40 psi regulator back of gravel below  
 -120 Mesh filter and 40 psi regulator back of gravel below  
 -Provide all spare station wires and common in valve box  
 -Matched precip with check valves-10H,T,Q -10 radius  
 -Matched precip with check valves-8H,T,Q -8" radius  
 -Use 1 GPM bubbler as alternate to hand watering  
 -1120Schedule-40 PVC pipe  
 -1120Class 200 PVC pipe  
 -1120Schedule-40 PVC pipe  
 -1120Schedule-40 PVC pipe  
 -Point source or multi-outlet emitters

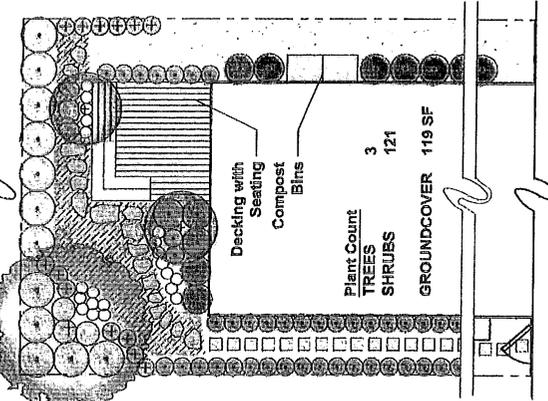
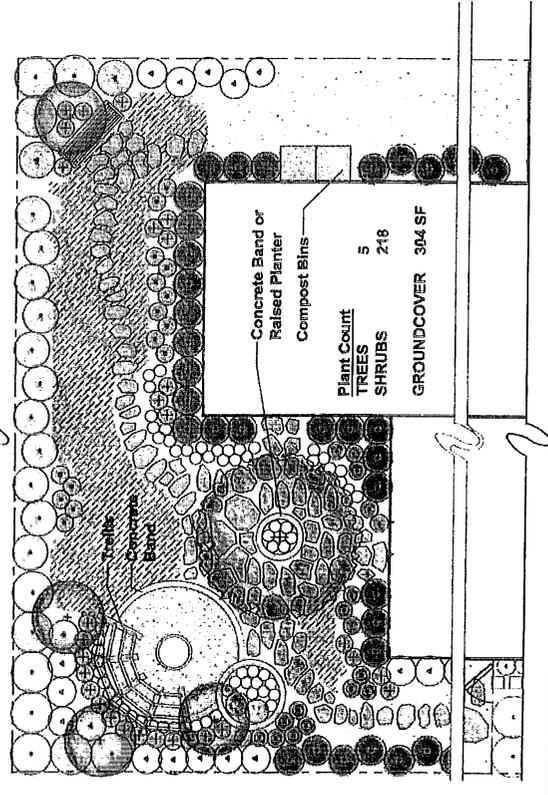
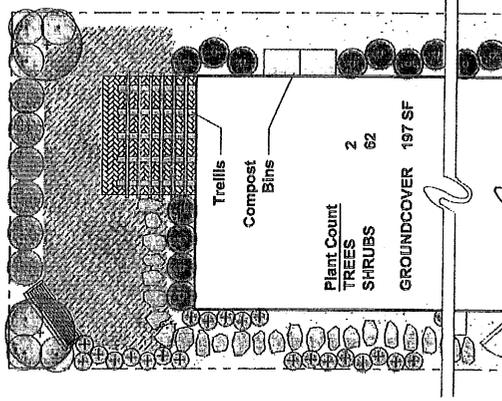
**"TYPICAL" SIZED LOT HOUSE**  
NORTH FACING REAR GARDEN, TYPICAL

60'x80' LOT



**ZERO-LOT LINE HOUSE**  
NORTH FACING REAR GARDEN, TYPICAL

30'x80' LOT



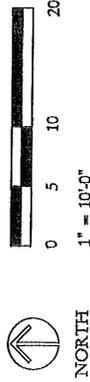
**SOUTHERN INLAND  
BACK YARD**

June 2009

**SAMPLE PLANT LEGEND**

| SYMBOL                           | BOTANICAL NAME   | COMMON NAME   |
|----------------------------------|--|---|
| (Large Tree Symbol)              | Jacaranda mimosaefolia<br>Pisonia tomentosa<br>Quercus agrifolia<br>Schinus molle  | Jacaranda<br>Pisonia<br>Oak<br>Pepper Tree  |
| (Small Tree Symbol)              | Cercis occidentalis<br>Collinsia coggygria<br>Fremontodendron 'Dana's Gold'  | Redbud<br>Smoke Tree<br>Flannel Bush  |
| (Large Shrub Symbol)             | Myrica commutata<br>Nerium o. 'Palms Salmon'<br>Citrus ladaniiflor<br>Salvia microphylla                                 | Myrtle<br>Oleander<br>Citrus-scented Rose<br>Sage   |
| (Medium Shrub Symbol)            | Berberis repens<br>Chrysothamnus 'Yucca Beauty'  | Creeper Barberry<br>Madison Orange  |
| (Small Shrub & Perennial Symbol) | Epilobium californica<br>Carex 'Frosty Dusk'<br>Clematis 'The Power'<br>Clematis 'The Power'<br>Echinostemma californica | California Fuchsia<br>New Zealand Hair Sedge<br>Heavenly Bamboo<br>Candle<br>California Poppy |
| (Groundcover Symbol)             | Carex proserpinacoides<br>Turf   | Sedges<br>Turf  |
| (Groundcover Symbol)             | Actinostaphylos 'Emerald Carpet'<br>Cotoneaster 'dammeri'<br>Rubus pensilvanicus   | Emerald Carpet<br>Berryberry Cotoneaster<br>Bramble   |
| (Hardscape Symbol)               | Pavers<br>Stepping Stones<br>Bench   | Mix of DG<br>Pav. Gravel<br>Sand-set Brick  |

**SUNSET ZONES - 20, 21**



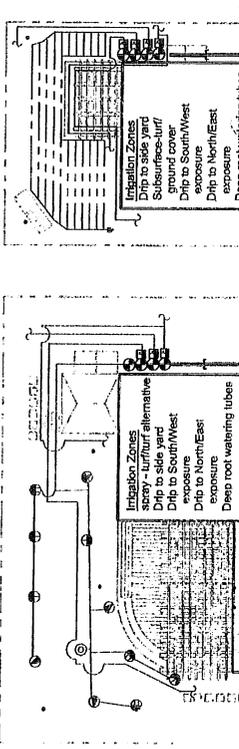
Note: For additional information regarding design and installation, please see back yard template and CIVICS Water Smart Landscaping Checklist. Prepared by the U.S. Bureau of Reclamation, Lower Colorado Region, Southern California Office.



# SOUTHERN INLAND BACK YARD

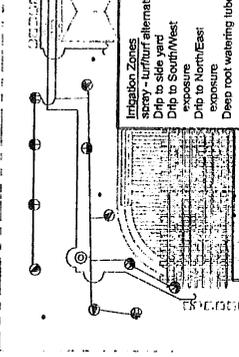
June 2009

## "TYPICAL" SIZED LOT HOUSE NORTH FACING REAR GARDEN, TYPICAL



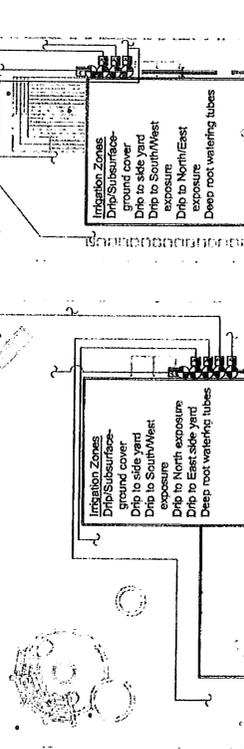
Refer to front yard templates for front yard examples

## "TYPICAL" SIZED LOT HOUSE NORTH FACING REAR GARDEN, TYPICAL



Refer to front yard templates for front yard examples

## ZERO-LOT LINE HOUSE NORTH FACING REAR GARDEN, TYPICAL



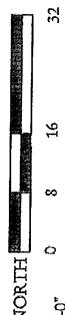
Refer to front yard templates for front yard examples

RECREATION/ACTIVE

SOCIAL/PASSIVE

### BACK YARD IRRIGATION SYSTEM LEGEND

- Existing irrigation main sub-out-1"
- Remain Control Valve
- Drip control assembly
- Flush valve/air relief valve
- 6" Spray heads (12" from fence)
- Deep root watering tube
- Irrigation main-1"
- Electrical control
- Electrical sub-out-1"
- Sleeving-3"
- To drip irrigation
- 1/2" sub-irrigation emitters
- LDPE with inline emitters 12" on center



| Typical Lot - Recreation   | JAN  | FEB  | MAR  | APR  | MAY  | JUN  | JUL  | AUG  | SEP  | OCT  | NOV  | DEC  | ANN GALL |
|--|--|------|------|------|------|------|------|------|------|------|------|------|----------|
| Values   | 465  | 502  | 537  | 572  | 608  | 643  | 678  | 713  | 748  | 783  | 818  | 853  | 12,911   |
| Spray Turf   | 465  | 502  | 537  | 572  | 608  | 643  | 678  | 713  | 748  | 783  | 818  | 853  | 12,911   |
| Spray Turf alternative   | 465  | 502  | 537  | 572  | 608  | 643  | 678  | 713  | 748  | 783  | 818  | 853  | 12,911   |
| Drip GC  | 1185   | 1242 | 1299 | 1356 | 1413 | 1470 | 1527 | 1584 | 1641 | 1698 | 1755 | 1812 | 24,699   |
| TOTAL galls with Turf  | 1650   | 1744 | 1836 | 1928 | 2020 | 2112 | 2204 | 2296 | 2388 | 2480 | 2572 | 2664 | 37,610   |
| TOTAL with Turf alternative  | 1650   | 1744 | 1836 | 1928 | 2020 | 2112 | 2204 | 2296 | 2388 | 2480 | 2572 | 2664 | 37,610   |
| Estimated water use with turf alternative 20.0% of MAVA = 39.63 gal/yr MAVA = 39.63 gal/yr projected water use = 51% of MAVA with turf alternative |  |      |      |      |      |      |      |      |      |      |      |      |          |
| Zone Len. Recreation   | JAN <th>FEB</th> <th>MAR</th> <th>APR</th> <th>MAY</th> <th>JUN</th> <th>JUL</th> <th>AUG</th> <th>SEP</th> <th>OCT</th> <th>NOV</th> <th>DEC</th> <th>ANN GALL</th> | FEB  | MAR  | APR  | MAY  | JUN  | JUL  | AUG  | SEP  | OCT  | NOV  | DEC  | ANN GALL |
| Values   | 465  | 502  | 537  | 572  | 608  | 643  | 678  | 713  | 748  | 783  | 818  | 853  | 12,911   |
| Subsurface-Turf  | 465  | 502  | 537  | 572  | 608  | 643  | 678  | 713  | 748  | 783  | 818  | 853  | 12,911   |
| Subsurface-Turf alternative  | 465  | 502  | 537  | 572  | 608  | 643  | 678  | 713  | 748  | 783  | 818  | 853  | 12,911   |
| Drip Shrubs  | 500  | 510  | 520  | 530  | 540  | 550  | 560  | 570  | 580  | 590  | 600  | 610  | 6,200    |
| TOTAL with Turf  | 720  | 740  | 760  | 780  | 800  | 820  | 840  | 860  | 880  | 900  | 920  | 940  | 12,000   |
| TOTAL with Turf alternative  | 720  | 740  | 760  | 780  | 800  | 820  | 840  | 860  | 880  | 900  | 920  | 940  | 12,000   |
| Estimated water use with turf alternative 8.4% of MAVA = 7.835 gal/yr MAVA = 7.835 gal/yr projected water use = 67% of MAVA with turf alternative  |  |      |      |      |      |      |      |      |      |      |      |      |          |
| Zone Len. Recreation   | JAN <th>FEB</th> <th>MAR</th> <th>APR</th> <th>MAY</th> <th>JUN</th> <th>JUL</th> <th>AUG</th> <th>SEP</th> <th>OCT</th> <th>NOV</th> <th>DEC</th> <th>ANN GALL</th> | FEB  | MAR  | APR  | MAY  | JUN  | JUL  | AUG  | SEP  | OCT  | NOV  | DEC  | ANN GALL |
| Values   | 833  | 853  | 873  | 893  | 913  | 933  | 953  | 973  | 993  | 1013 | 1033 | 1053 | 14,000   |
| Drip Ground Cover  | 833  | 853  | 873  | 893  | 913  | 933  | 953  | 973  | 993  | 1013 | 1033 | 1053 | 14,000   |
| Drip shrubs  | 465  | 485  | 505  | 525  | 545  | 565  | 585  | 605  | 625  | 645  | 665  | 685  | 9,000    |
| TOTAL  | 1600   | 1640 | 1680 | 1720 | 1760 | 1800 | 1840 | 1880 | 1920 | 1960 | 2000 | 2040 | 23,000   |
| Estimated water use with turf alternative 12.0% of MAVA = 11.20 gal/yr MAVA = 11.20 gal/yr projected water use = 45% of MAVA                       |  |      |      |      |      |      |      |      |      |      |      |      |          |
| Zone Len. Social   | JAN <th>FEB</th> <th>MAR</th> <th>APR</th> <th>MAY</th> <th>JUN</th> <th>JUL</th> <th>AUG</th> <th>SEP</th> <th>OCT</th> <th>NOV</th> <th>DEC</th> <th>ANN GALL</th> | FEB  | MAR  | APR  | MAY  | JUN  | JUL  | AUG  | SEP  | OCT  | NOV  | DEC  | ANN GALL |
| Values   | 123  | 128  | 133  | 138  | 143  | 148  | 153  | 158  | 163  | 168  | 173  | 178  | 2,300    |
| Drip GC  | 123  | 128  | 133  | 138  | 143  | 148  | 153  | 158  | 163  | 168  | 173  | 178  | 2,300    |
| Drip shrubs  | 500  | 510  | 520  | 530  | 540  | 550  | 560  | 570  | 580  | 590  | 600  | 610  | 6,200    |
| TOTAL  | 720  | 740  | 760  | 780  | 800  | 820  | 840  | 860  | 880  | 900  | 920  | 940  | 8,500    |
| Estimated water use with turf alternative 14.8% of MAVA = 14.835 gal/yr MAVA = 14.835 gal/yr projected water use = 48% of MAVA                     |  |      |      |      |      |      |      |      |      |      |      |      |          |

**PRECIP** = Precipitation Rate is the application rate of irrigation in inches per hour  
 Assumed precip: Spray heads - 1.8, Drip - 4, subsurface drip - 1.1, Deep root watering - 3  
 MAVA = Maximum Annual Water Allowment (in gallons and based upon 70% of area historical annual ET)  
 ET=Reference evapotranspiration is the quantity of water evaporated from the soil and transpired by the planting and is measured in inches per month.  
 ANN GALL = Annual gallons  
 CYC TIME = Total amount of minutes required for planting root depth in native soil  
 CYC TIME = number of repeat cycles required for native soil  
 CYC TIME = number of minutes of each cycle to be repeated by CYC allowing infiltration monthly number = number of times/month to apply runtime (refer to example below)  
 BASE SCHEDULE for established plant material with historical weather data (10 year average) and assumed precip. Note: If low precipitation heads or mini rotors are used in lieu of conventional spray heads, then the CYC times will need to be extended to provide water down to the planting root zones.  
 SPRAY HEAD: Spray head with one of the following: standard matched precipitation spray nozzles-1.8"hr, low precipitation nozzles - 1"hr, or mini rotor nozzles-0.4"hr  
 During establishment period, root depth is shallow, thus requiring more frequent irrigation with shorter run times, stretching out the frequency and extending the total runtimes as the planting matures and roots penetrate into native soil conditions over a 8-8 year span. Establishment/irrigation frequency depends upon the time of year. Initial planting takes place.  
 Monthly example:  
 The number under the month indicates the number of times that zone needs to be irrigated during that month. For fractions of runtimes per month, multiply the # of CYC by the decimal (example: drip/ground cover requires .6 runtimes per month of March = .6 X 7 (# of CYC) = 4 cycles of 23 minutes each (CYC). This would equate to 92 minutes total runtime one time during the month of March.  
 Backyards: Refer to backyard design templates for both social and recreation layout ideas.  
 Note: Some plants respond better to overhead spray while many others do better with drip. The irrigation design will need not only to take into consideration plant preferences, but also runoff and potential blockage where the planting grows in front of the spray heads. Drip and spray are both shown on the templates to show preference in system costs and projected water use.  
 Also see front yard templates.