



CITY of LAGUNA WOODS

Milt Robbins  
Mayor

January 29, 2010

Bert Hack  
Mayor Pro Tem

California Department of Water Resources  
Attention: Simon Eching

Cynthia Conners  
Councilmember

901 P Street  
Sacramento, CA 95814

Marty Rhodes  
Councilmember

**SUBJECT: Assembly Bill 1881 – Proof of Compliance**

Bob Ring  
Councilmember

Dear Mr. Eching:

Leslie A. Keane  
City Manager

In accordance with the requirements of Assembly Bill 1881, please find copies of several documents proving the City of Laguna Woods' compliance attached.

If you have any questions, please contact me at (949) 639-0555.

Sincerely,

Christopher Macon  
Special Projects Manager

Attachments: Ordinance No. 09-10  
Resolution No. 09-30  
Guidelines for Implementation  
Justification of Differences



**ORDINANCE NO. 09-10**

AN ORDINANCE OF THE CITY OF LAGUNA WOODS, CALIFORNIA, AMENDING THE LAGUNA WOODS MUNICIPAL CODE TO ESTABLISH WATER EFFICIENT LANDSCAPE REGULATIONS

**WHEREAS**, the State Legislature reached findings related to water use, waste, conservation, and efficiency and included those findings in the chaptered text of Assembly Bill 1881 (Laird, Water Conservation); and

**WHEREAS**, the City of Laguna Woods intends to amend its Municipal Code so that it is consistent with Assembly Bill 1881; and

**WHEREAS**, the City of Laguna Woods intends to amend its Municipal Code so that it is "at least as effective" as the State of California's Model Water Efficient Landscape Ordinance, which reflects the requirements of Assembly Bill 1881.

NOW, THEREFORE THE CITY COUNCIL OF THE CITY OF LAGUNA WOODS DOES HEREBY ORDAIN AS FOLLOWS:

**SECTION 1.**      **Findings**

The City Council hereby incorporates the foregoing recitals and findings.

**SECTION 2.**      **Adoption of Building Site Regulations**

Section 13.16.190 (Landscaping) of the Laguna Woods Municipal Code is hereby amended in its entirety to read as follows:

**Sec. 13.16.190. Landscaping.**

Landscaping, consisting of trees, shrubs, vines, ground cover, turf, plants or any combination thereof, shall be installed and maintained subject to the following standards:

- (1) Landscaping along all streets and boundaries shall be in compliance with the fences and walls requirements.

(2) Boundary landscaping is required for a minimum depth equal to the required setback distance or ten feet (whichever is less) along all property lines abutting streets except for the required street openings.

(3) Any landscaped area shall be separated from an adjacent parking or vehicular area by a wall or curb at least six inches higher than the adjacent parking or vehicular area.

(4) Landscaping shall be maintained in a neat, clean and healthy condition, and, as applicable, in compliance with Chapter 4.28. This shall include proper pruning; mowing of lawns; weeding; removal of litter; fertilizing and watering as needed and permitted; provision of permanent water facilities as needed and permitted; and replacement of any landscaping as needed and permitted.

(5) In addition to other projects that may be subject to this section, the following projects shall be subject to these regulations regardless of the district or specific plan in which they are located:

- (1) Multifamily projects of five or more units;
- (2) Residential planned developments (common areas only); and
- (3) Commercial/office projects involving landscaping/irrigation of more than one cumulative acre.

### SECTION 3. Adoption of Water Efficient Landscape Regulations

Chapter 4.28, entitled Water Efficient Landscapes, is hereby added to Title 4 (Health and Sanitation) of the Laguna Woods Municipal Code as follows:

#### **CHAPTER 4.28. WATER EFFICIENT LANDSCAPES**

4.28.010. Findings.

4.28.020. Purpose.

4.28.030. Definitions.

4.28.040. Applicability.

4.28.050. Exemptions.

4.28.060. Implementation procedures.

4.28.070. Landscape water use standards.

4.28.080. Delegation.

4.28.090. Relationship.

#### **4.28.010. Findings.**

- (a) All water services in the City of Laguna Woods are metered.
- (b) Landscape plan submittal and review for certain types of projects has been a long-standing practice in the City of Laguna Woods.
- (c) Current local design practices in new landscapes typically achieve the State Model Water Efficient Landscape Ordinance water use goals.
- (d) The average rainfall in Orange County is approximately 12 inches per year.
- (e) Orange County has an established reclaimed water infrastructure system.
- (f) The local water purveyor is implementing enforcement of water conservation and water waste prohibitions for all metered landscape areas throughout its service area, which includes the City of Laguna Woods.
- (g) Incentive-based and education-based water use efficiency programs have been and continue to be implemented in Orange County and made available to Laguna Woods residents.
- (h) Orange County is a leader in researching and promoting the use of smart automatic irrigation controllers.
- (i) Pursuant to State legislation, all new irrigation controllers sold in Orange County after 2012 will be smart automatic irrigation controllers.

**4.28.020. Purpose.**

The purpose of this chapter is to establish regulations to ensure that landscapes are planned, designed, installed, maintained, and managed in a manner that uses water efficiently, encourages water conservation, and prevents water waste.

Furthermore, the purpose of this chapter is to establish an alternative model acceptable under Assembly Bill 1881 (Laird, Water Conservation) as being "at least as effective" as the State of California's Model Water Efficient Landscape Ordinance in the context of conditions relative to the City.

**4.28.030. Definitions.**

For the purposes of this chapter and the Guidelines, the following terms are defined:

- (05) *City* means the City of Laguna Woods.
- (10) *City Manager* means the City Manager of the City of Laguna Woods or his or her designee.
- (15) *Applicant* means the person submitting a landscape documentation package. Applicants can be the property owner or his or her designee.
- (20) *Applied water* means the portion of water supplied by the irrigation system to the landscape.
- (25) *Budget-based tiered-rate structure* means tiered or block rates for irrigation accounts charged by the local water purveyor in which the block definition for each customer is derived from lot size or irrigated area and the evapotranspiration requirements of landscaping.
- (30) *Ecological restoration project* means a project where the site is intentionally altered to establish a defined, indigenous, historic ecosystem.
- (35) *Estimated Applied Water Use* or *EAWU* means the average annual total amount of water estimated to be necessary to keep plants in a healthy state, calculated as provided in the Guidelines. It is based on factors such as the reference evapotranspiration rate, the size of the landscape area, plant water use factors, and the irrigation efficiency of the irrigation system.
- (40) *Evapotranspiration adjustment factor* or *ET adjustment factor* or *ETAF* is equal to the plant factor divided by the irrigation efficiency factor for a landscape project, as described in the Guidelines. The ETAF is calculated in the context of local reference evapotranspiration, using site-specific plant factors and irrigation efficiency factors that influence the amount of water that needs to be applied to the specific landscaped area. A combined plant mix with a site-wide average plant factor of 0.5 (indicating a moderate water need) and average irrigation efficiency of 0.71 produces an ET adjustment factor of  $(0.7) = (0.5/0.71)$ , which is the standard of water use efficiency generally required by this chapter and the Guidelines, except that the ETAF for a special landscaped area shall not exceed 1.0.
- (45) *Guidelines* refers to the Guidelines for Implementation of the Water Efficient Landscape Ordinance, as approved by the City, which describes procedures, calculations, and requirements for landscape projects subject to this chapter.

(50) *Hardscapes* means any durable material or feature (pervious and non-pervious) installed in or around a landscaped area, such as pavements or walls. Pools and other water features are considered part of the landscaped area and are not considered hardscapes.

(55) *Homeowner installed* means any landscaping either installed by a private individual for a single-family or multi-family residential lot or installed by a licensed contractor hired and paid directly by a homeowner. A homeowner, for purposes of this chapter, is a person who occupies the dwelling he or she owns. This definition excludes speculative homes, which are not owner-occupied dwellings and which are subject under this chapter to the requirements applicable to developer-installed residential landscape projects.

(60) *Hydrozone* means a portion of the landscaped area having plants with similar water needs and typically irrigated by one valve/controller station. A hydrozone may be irrigated or non-irrigated.

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

(70) *Landscape Documentation Package* means the documents required to be provided to the City for review and approval of landscape projects subject to this chapter, as described in the Guidelines.

(75) *Landscape professional* means a licensed landscape architect, licensed landscape contractor, or any other person authorized to design a landscape pursuant to Sections 5500.1, 5615, 5641, 5641.1, 5641.2, 5641.3, 5641.4, 5641.5, 5641.6, 6701, 7027.5 of the California Business and Professions Code, Section 832.27 of Title 16 of the California Code of Regulations, and Section 6721 of the California Food and Agriculture Code.

(80) *Landscape project* means total area of landscape in a project, as provided in the definition of "landscaped area," meeting the requirements under Section 4.28.040 of this chapter.

(85) *Landscape rehabilitation* means any re-landscaping project that meets the applicability criteria of Section 4.28.040(a) of this chapter, where the modified landscape area is greater than 2,500 square feet or where the cumulative modified area is greater than 2,500 square feet if the modifications are planned to occur incrementally within one year.

(90) *Landscaped area* means all the planting areas, turf areas, and water features in a landscape design plan subject to the Maximum Applied Water Allowance and Estimated Applied Water Use calculations. The landscaped 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).

(95) *Local agency* means a city or county, including a charter city or charter county, or local water purveyor that is authorized by the City to implement, administer, and/or enforce any of the provisions of this chapter on behalf of the City. The local agency may be responsible for the enforcement or delegation of enforcement of this chapter including, but not limited to, design review, plan check, issuance of permits, and inspection of a landscape project.

(100) *Local water purveyor* means any entity, including a city, county, public agency, or private water company that provides retail water service. Local water purveyor shall also mean any entity that provides wholesale water service, for the purpose of Section 4.28.060(b)(1) and Section 4.28.080.

(105) *Maximum Applied Water Allowance* or *MAWA* means the upper limit of annual applied water for the landscaped area as specified in the Guidelines. It is based upon the area's reference evapotranspiration, the ET adjustment factor, and the size of the landscaped area. The Estimated Applied Water Use shall not exceed the MAWA.

(110) *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.

(115) *New landscape* means, for the purposes of this chapter, a new building with a landscape or other new landscape such as a park, playground, or greenbelt without an associated building.

(120) *Non-pervious* means any surface or natural material that does not allow for the passage of water through the material and into the underlying soil.

(125) *Person* means any individual, firm, joint venture, joint stock company, partnership, public or private association, company, corporation, business trust, organization, public or private agency, government agency or institution, school district, college, university, any other user of water provided by the local water purveyor, or the manager, agent, officer, or employee thereof, or any other entity which is recognized by law as the subject of rights or duties.

(130) *Pervious* means any surface or material that allows the passage of water through the material and into the underlying soil.

(135) *Permit* means an authorizing document issued by a local agency for new construction or rehabilitated landscape.

(140) *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 chapter, 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 chapter are derived from the Department of Water Resources 2000 publication "Water Use Classification of Landscape Species."

(145) *Recycled water* or *reclaimed 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.

(150) *Reference evapotranspiration* or *ETo* means a standard measurement of environmental parameters which affect the water use of plants. ETo is given expressed in inches per day, month, or year as represented in the 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 Allowances.

(155) *Smart automatic irrigation controller* means an automatic timing device used to remotely control valves that operate an irrigation system and which schedules irrigation events using either evapotranspiration (weather-based) or soil moisture data.

(160) *Special landscaped area* or *SLA* means an area of the landscape dedicated solely to edible plants such as orchards and vegetable gardens; areas irrigated with recycled water; water features using recycled water; and, areas dedicated to active play where turf provides a playing surface, such as parks, sports fields, and golf courses.

(165) *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.

(170) *Valve* means a device used to control the flow of water in an irrigation system.

(175) *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. The surface area of water features is included in the high water use hydrozone of the landscaped area. Constructed wetlands used for on-site wastewater treatment, habitat protection or storm water best management practices that are not irrigated and used solely for water treatment or storm water retention are not water features and, therefore, are not subject to the water budget calculation.

#### **4.28.040. Applicability.**

(a) Beginning January 1, 2010, this chapter shall apply to the following landscape projects:

(1) New landscape installations by public agencies or private non-residential developers, except for cemeteries, with a landscaped area equal to or greater than 2,500 square feet, and which are otherwise subject to a discretionary approval of a landscape plan, or which otherwise require a ministerial permit for a landscape or water feature.

(2) New landscape installations by developers or property managers of single-family and multi-family residential projects or complexes with a landscaped area equal to or greater than 2,500 square feet, and which are otherwise subject to a discretionary approval of a landscape plan, or which otherwise require a ministerial permit for a landscape or water feature.

(3) New landscapes that are homeowner installed on single-family or multi-family residential lots with a total project landscaped area equal to or greater than 5,000 square feet, and which are otherwise subject to a discretionary approval of a landscape plan, or which otherwise require a ministerial permit for a landscape or water feature.

(4) Landscape rehabilitation projects by public agencies or private non-residential developers, except for cemeteries, with a landscaped area equal to or greater than 2,500 square feet and which are otherwise subject to a discretionary approval of a landscape plan, or which otherwise require a ministerial permit for a landscape or water feature.

(5) Landscape rehabilitation projects by developers or property managers of single-family and multi-family residential projects or complexes with a landscaped area equal to or greater than 2,500 square feet and which are otherwise subject to a discretionary approval of a landscape plan, or which otherwise require a ministerial permit for a landscape or water feature.

(b) Section 4.28.070(b) of this chapter shall apply to:

(1) All landscaped areas installed prior to or after January 1, 2010.

#### **4.28.050. Exemptions.**

(a) This chapter 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.

(b) The requirements of this chapter may be partially or wholly waived, at the discretion of the City Manager or his or her designee, for landscape rehabilitation projects that are limited to replacement of plantings with equal or

lower water needs and where any modifications to the irrigation system do not require ministerial permits and the irrigation system is found to be designed, operable, and programmed consistent with minimizing water waste in accordance with the local water purveyor's regulations.

#### **4.28.060. Implementation procedures.**

(a) A Landscape Documentation Package is required to be submitted to the City for review and approval prior to the issuance of permits and prior to the start of construction. Any Landscape Documentation Package submitted to the City shall comply with the provisions of the Guidelines.

(b) The Landscape Documentation Package shall include a certification by a landscape professional stating that the landscape design plan, soil management report, irrigation design plan, and water calculations have been prepared by or under the supervision of the landscape professional and are certified to be in compliance with the provisions of this chapter.

(1) Water efficient landscape calculations shall be provided to the local water purveyor, as appropriate, under procedures determined by the City.

(2) Certification of Completion of a landscape project shall be obtained through a Certificate of Use and Occupancy or a Permit Final, as provided in the Guidelines.

#### **4.28.070. Landscape water use standards.**

(a) For applicable new landscape or landscape rehabilitation projects subject to Section 4.28.040(a) of this chapter, the Estimated Applied Water Use allowed for the landscaped area shall not exceed the MAWA calculated using an ET adjustment factor of 0.7, except for the portion of the MAWA applicable to any special landscaped areas within the landscape project, which shall be calculated using an ETAF of 1.0. Where the design of the landscaped area can be otherwise shown to be equivalently water efficient, the applicant may submit alternative or abbreviated information supporting the demonstration that the annual EAWU is less than the MAWA, at the discretion of and review and approval of the City.

(b) Irrigation of all landscaped areas shall be conducted in a manner conforming to the rules and requirements, and shall be subject to penalties and incentives for water conservation and water waste prevention as determined and

implemented by the local water purveyor or as mutually agreed by local water purveyor and the City.

**4.28.080. Delegation.**

The City may delegate to, or enter into an agreement with, one or more local agencies to implement, administer, and/or enforce any of the provisions of this chapter on behalf of the City.

**4.28.090. Relationship.**

Nothing in this Chapter is in any way intended to limit or excuse any person from having to comply with any other provision of this Code.

**SECTION 4.      Effective Date**

This Ordinance shall take effect and be in full force and operation thirty (30) days after adoption.

**SECTION 5.      Severability**

If any section, subsection, subdivision, paragraph, sentence, clause, or phrase added by this Ordinance, or any part thereof, is for any reason held to be unconstitutional or invalid or ineffective by any court of competent jurisdiction, such decision shall not affect the validity of effectiveness of the remaining portions of this Ordinance or any part thereof. The City Council hereby declares that it would have passed each section, subsection, subdivision, paragraph, sentence, clause, or phrase thereof irrespective of the fact that any one or more subsections, subdivisions, paragraphs sentences, clauses, or phrases are declared unconstitutional, invalid, or ineffective.

**SECTION 6.      Deputy City Clerk's Certification**

The Deputy City Clerk shall certify to the passage of this Ordinance and shall cause this Ordinance to be published or posted as required by law.



**RESOLUTION NO. 09-30**

A RESOLUTION OF THE CITY OF LAGUNA WOODS, CALIFORNIA, ESTABLISHING GUIDELINES FOR IMPLEMENTATION OF THE WATER EFFICIENT LANDSCAPE ORDINANCE

**WHEREAS**, the State Legislature reached findings related to water use, waste, conservation, and efficiency and included those findings in the chaptered text of Assembly Bill 1881 (Laird, Water Conservation); and

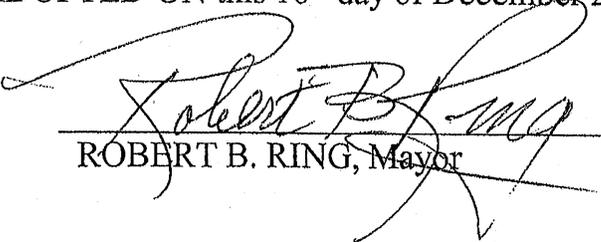
**WHEREAS**, the City of Laguna Woods intends to amend its Municipal Code so that it is consistent with Assembly Bill 1881; and

**WHEREAS**, the City of Laguna Woods intends to amend its Municipal Code so that it is "at least as effective" as the State of California's Model Water Efficient Landscape Ordinance, which reflects the requirements of Assembly Bill 1881.

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF LAGUNA WOODS, CALIFORNIA DOES HEREBY RESOLVE, DECLARE, DETERMINE AND ORDER AS FOLLOWS:

SECTION 1. The City Council adopts the Guidelines for Implementation of the Water Efficient Landscape Ordinance as attached as Exhibit 1.

PASSED, APPROVED AND ADOPTED ON this 16<sup>th</sup> day of December 2009.

  
\_\_\_\_\_  
ROBERT B. RING, Mayor

ATTEST:

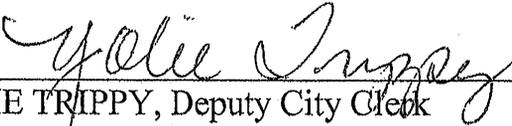
  
\_\_\_\_\_  
YOLIE TRIPPY, Deputy City Clerk

STATE OF CALIFORNIA    )  
COUNTY OF ORANGE    ) ss.  
CITY OF LAGUNA WOODS )



I, YOLIE TRIPPY, Deputy City Clerk of the City of Laguna Woods, do  
HEREBY CERTIFY that the foregoing **Resolution No. 09-30** was duly adopted by  
the City Council of the City of Laguna Woods at a regular meeting thereof, held on  
the 16<sup>th</sup> day of December 2009, by the following vote:

AYES: COUNCIL MEMBERS: Conners, Hack, Rhodes, Robbins, Ring  
NOES: COUNCIL MEMBERS: None  
ABSENT: COUNCIL MEMBERS: None

  
\_\_\_\_\_  
YOLIE TRIPPY, Deputy City Clerk



**EXHIBIT 1**

**GUIDELINES  
FOR IMPLEMENTATION OF THE  
WATER EFFICIENT LANDSCAPE  
ORDINANCE**

**City of Laguna Woods  
24264 El Toro Road  
Laguna Woods, CA 92637  
[www.lagunawoodscity.org](http://www.lagunawoodscity.org)**

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## **1. Purpose and Applicability**

### **1.1 Purpose**

- (a) The primary purpose of these Guidelines is to provide procedural and design guidance for applicants proposing new landscape or landscape rehabilitation projects that are subject to Chapter 4.28 of the Laguna Woods Municipal Code (herein after, the Water Efficient Landscape Ordinance). This document is also intended for use and reference by City staff in reviewing and approving designs and verifying compliance with the Water Efficient Landscape Ordinance.
- (b) Other regulations affecting landscape design and maintenance practices are potentially applicable and should be consulted for additional requirements. These regulations include but may not be limited to:
  - (1) State of California Assembly Bill 1881 (Laird, Water Conservation);
  - (2) National Pollutant Discharge Elimination Permit(s) for the Municipal Separate Storm Sewer System;
  - (3) Orange County Fire Authority Regulations for Fuel Modification in the Landscape;
  - (4) Water Conservation, Water Supply Shortage, and Drought Response Regulations of the Local Water Purveyor;
  - (5) Regulations of the Local Water Purveyor governing use of Recycled Water;
  - (6) Municipal Code, including Zoning Code;
  - (7) Building Code;
  - (8) Specific Plans, Master Plans, General Plan, or similar land use and planning documents; and
  - (9) Conditions of approval for a specific project

### **1.2 Applicability**

See Section 4.28.040 of the Laguna Woods Municipal Code.

## **2. Submittal Requirements for New Landscape Installations or Landscape Rehabilitation Projects**

- (a) Discretionary approval is typically required for landscape projects that are subject to site plan reviews, or where a variance from a local building code is requested, or other procedural processes apply such that standard or special conditions of approval may be required by the City. Discretionary projects with conditions of

approval may be acted on in accordance with City code and policy. A typical standard condition of approval reads:

*“Landscaping for the project shall be designed to comply with the City’s Water Efficient Landscape Ordinance and with the Guidelines for Implementation of the Water Efficient Landscape Ordinance.”*

Landscape or water features that typically require a ministerial permit (i.e., a building, grading, plumbing, electrical, or other similar permit), thereby triggering compliance with the Water Efficient Landscape Ordinance requirements independently of the need for discretionary approval include, but are not limited to, swimming pools, fountains or ponds, retaining walls, grey water systems, and electrical for irrigation systems or water features.

## **2.1 Elements of the Landscape Documentation Package**

- (a)** A Landscape Documentation Package is required to be submitted by the applicant for review and approval prior to the issuance of ministerial permits and prior to the start of construction. Unless otherwise directed by the City, the Landscape Documentation Package shall include the following elements either on plan sheets or supplemental pages as directed by the City:
  - (1)** Project Information, including, but not limited to, the following:
    - (a)** date;
    - (b)** project name;
    - (c)** project address, parcel, and/or lot number(s);
    - (d)** total landscaped area (square feet) and rehabilitated landscaped area (if applicable);
    - (e)** project type (e.g., new, rehabilitated, public, private, homeowner installed);
    - (f)** water supply type (e.g., potable, recycled, or well) and identification of the local water purveyor if the project applicant is not served by a private well;
    - (g)** checklist or index of all documents in the Landscape Documentation Package;
    - (h)** project contacts, including contact information for the applicant and property owner;
    - (i)** a Certification of Design in accordance with **Exhibit A** of these Guidelines; and

- (j) any other information the City Manager or his or her designee deems relevant for determining whether the landscape project complies with the Water Efficient Landscape Ordinance and these Guidelines.
- (2) Maximum Applied Water Allowance (MAWA) and Estimated Applied Water Use (EAWU) expressed as annual totals including, but not limited to, the following:
    - (a) a Water Efficient Landscape Worksheet for the landscape project;
    - (b) water budget calculations for the landscape project; and
    - (c) hydrozone information table (optional at the discretion of the City) for the landscape project.
  - (3) A soil management report or specification provision requiring a soil management report. (See Section 2.3 for more information)
  - (4) A landscape design plan for the landscape project.
  - (5) An irrigation design plan for the landscape project.
  - (6) A grading design plan, unless not required or unless grading information is included in the landscape design plan for the landscape project.

## 2.2 Water Efficient Landscape Calculations and Alternatives

- (a) The applicant shall provide the calculated Maximum Applied Water Allowance (MAWA) and Estimated Applied Water Use (EAWU) for the landscaped area as part of the Landscape Documentation Package submittal to the City. The MAWA and EAWU shall be calculated based on completing the Water Efficient Landscape Worksheets (in accordance with sample worksheets in **Appendix B**).
- (b) The EAWU allowable for the landscaped area shall not exceed the MAWA. The MAWA shall be calculated using an evapotranspiration adjustment factor (ETAF) of 0.7 except for the portion of the MAWA applicable to any special landscaped areas within the landscape project, which shall be calculated using an ETAF of 1.0. Where the design of the landscaped area can otherwise be shown to be equivalently water-efficient, the applicant may submit alternative or abbreviated information supporting the demonstration that the annual EAWU is less than the MAWA, at the discretion of and for the review and approval of the City.
- (c) Water budget calculations shall adhere to the following requirements:
  - (1) The MAWA shall be calculated using the Water Efficient Landscape Worksheets and equation presented in **Appendix B** on page B-1. The

example calculation on page B-1 is a hypothetical example to demonstrate proper use of the equation.

- (2) The EAWU shall be calculated using the Water Efficient Landscape Worksheets and equation presented in Appendix B on page B-2. The example calculation on page B-2 is a hypothetical example.
- (3) For the calculation of the MAWA and EAWU, an applicant shall use the ETo values from the closest location listed in the Reference Evapotranspiration Table in **Appendix C**. For geographic areas not covered in **Appendix C**, data from other cities located nearby in the same reference evapotranspiration zone may be used, as found in the CIMIS Reference Evapotranspiration Zones Map, Department of Water Resources, 1999.
- (4) For calculation of the EAWU, the plant water use factor shall be determined as appropriate to the project location from the Water Use Efficiency of Landscape Species (WUCOLS) Species Evaluation List. The plant factor is 0.1 for very low water use plants, 0.2 to 0.3 for low water use plants, 0.4 to 0.6 for moderate water use plants, and 0.7 to 1.0 for high water use plants.
- (5) For calculating the EAWU, the plant water use factor shall be determined for each valve hydrozone based on the highest-water-use plant species within the zone. The plant factor for each hydrozone may be required to be further refined as a "landscape coefficient," according to protocols defined in detail in the WUCOLS document, to reflect planting density and microclimate effects on water need at the option of the applicant or the City.
- (6) For calculation of the EAWU, the area of a water feature shall be defined as a high water use hydrozone with a plant factor of 1.0.
- (7) For calculation of the EAWU, a temporarily irrigated hydrozone area, such as an area of highly drought-tolerant native plants that are not intended to be irrigated after they are fully established, shall be defined as a very low water use hydrozone with a plant factor of 0.1.
- (8) For calculation of the MAWA, the ETAF for special landscaped areas shall be set at 1.0. For calculation of the EAWU, the ETAF for special landscaped areas shall be calculated as the special landscaped area (SLA) plant factor divided by the SLA irrigation efficiency factor.
- (9) Irrigation efficiency shall be calculated using the worksheet and equation presented in **Appendix B** on page B-2.
- (d) The Maximum Applied Water Allowance shall adhere to the following requirements:

- (1) The Maximum Applied Water Allowance shall be calculated using the equation presented in **Appendix B**. The example calculation in **Appendix B** is hypothetical to demonstrate proper use of the equation and does not represent an existing and/or planned landscape project. The reference evapotranspiration (ET<sub>o</sub>) values used in this calculation are from the Reference Evapotranspiration Table in **Appendix C** and are for planning purposes only. For actual irrigation scheduling, automatic irrigation controllers are required and shall use current ET<sub>o</sub> data, such as from the California Irrigation Management Information System (CIMIS), other equivalent data, or soil moisture sensor data.

### **2.3 Soil Management Report**

- (a) In order to reduce runoff and encourage healthy plant growth, a soil management report shall be completed by the applicant, or his/her designee, as follows:
  - (1) Submit soil samples to a certified agronomic soils 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, but is not limited to:
      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 applicant, or his/her designee, shall comply with one of the following:
    - (a) If significant mass grading is planned, the soil analysis report shall be submitted to the City as part of the Certification of Completion.

- (b) if significant mass grading is not planned, the soil analysis report shall be submitted to the City as part of the Landscape Documentation Package.
- (c) The soil analysis report shall be made available, in a timely manner, to the professionals preparing the landscape design plans and irrigation design plans in order to make any necessary adjustments to the design plans.
- (d) The applicant, or his/her designee, shall submit documentation verifying implementation of soil analysis report recommendations to the local agency with the Certification of Completion.

## **2.4 Landscape Design Plan**

- (a) For the efficient use of water, a landscape shall be carefully designed and planned for the intended function of the project. The following design criteria shall be submitted as part of the Landscape Documentation Package.
  - (1) Plant Material
    - (a) Any plant may be selected for the landscaped area provided the EAWU in the landscaped area does not exceed the MAWA. To encourage the efficient use of water, the following is highly recommended:
      1. protection and preservation of non-invasive water-conserving plant species and water-conserving turf;
      2. selection of water-conserving plant species and water-conserving turf;
      3. selection of plants based on disease and pest resistance;
      4. selection of trees based on applicable City and local tree ordinances or tree shading guidelines; and
      5. selection of plants from local and regional landscape program plant lists.
  - (b) 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 2.5(a)(2)(D) of these Guidelines.
  - (c) 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 for inclusion in the landscape design plan:

- (1) 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;
  - (2) 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, and power lines); and
  - (3) consider the solar orientation for plant placement to maximize summer shade and winter solar gain.
- (d) Turf is discouraged 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).
  - (e) A landscape design plan for projects in fire-prone areas and fuel modification zones shall comply with requirements of the Orange County Fire Authority, where applicable. When conflicts between water conservation and fire safety design elements exist, the fire safety requirements shall have priority.
  - (f) The use of invasive plant species and/or noxious plant species is strongly discouraged.
  - (g) 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 water efficient plant species as a group.
  - (h) Water Features
    - (a) Recirculating water systems shall be used for water features.
    - (b) Where available and consistent with public health guidelines, recycled water shall be used as a source for decorative water features.
    - (c) The surface area of a water feature shall be included in the high water use hydrozone area of the water budget calculation.
    - (d) Pool and spa covers are highly recommended.
  - (i) Mulch and Amendments
    - (a) 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.

- (b) Stabilizing mulching products shall be used on slopes.
  - (c) The mulching portion of the seed/mulch slurry in hydro-seeded applications shall meet the mulching requirement.
  - (d) Soil amendments shall be incorporated according to recommendations of the soil report and what is appropriate for the plants selected (see Section 2.3 of these Guidelines).
- (j) The landscape design plan, at a minimum, shall:
- (1) delineate and label each hydrozone by number, letter, or other method;
  - (2) identify each hydrozone as low, moderate, high water, or mixed water use. Temporarily irrigated areas of the landscaped area shall be included in the low water use hydrozone for the water budget calculation;
  - (3) identify recreational areas;
  - (4) identify areas permanently and solely dedicated to edible plants;
  - (5) identify areas irrigated with recycled water;
  - (6) identify type of mulch and application depth;
  - (7) identify soil amendments, type, and quantity;
  - (8) identify type and surface area of water features;
  - (9) identify hardscapes (pervious and non-pervious);
  - (10) identify location and installation details of any applicable storm water best management practices that encourage on-site retention and infiltration of storm water. Storm water best management practices are encouraged in the landscape design plan and examples include, but are not limited to:
    - (a) infiltration beds, swales, and basins that allow water to collect and soak into the ground;
    - (b) constructed wetlands and retention ponds that retain water, handle excess flow, and filter pollutants; and
    - (c) pervious or porous surfaces (e.g., permeable pavers or blocks, pervious or porous concrete, etc.) that minimize runoff.
  - (11) identify any applicable rain harvesting or catchment technologies (e.g., rain gardens, cisterns, etc.);

## 2.5 Irrigation Design Plan

- (a) For the efficient use of water, an irrigation system shall meet all the requirements listed in this section and the manufacturer's 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.

(1) System

- (a) Dedicated landscape water meters are highly recommended on landscaped areas smaller than 5,000 square feet to facilitate water management.
- (b) Smart automatic irrigation controllers utilizing evapotranspiration or soil moisture sensor data shall be required for irrigation scheduling in all irrigation systems.
- (c) 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.
1. 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.
  2. 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.
- (d) 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.
- (e) 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.

- (f) 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 for additional backflow prevention requirements.
- (g) High flow sensors that detect and report high flow conditions created by system damage or malfunction are recommended.
- (h) 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.
- (i) Relevant information from the soil management plan, such as soil type and infiltration rate, shall be utilized when designing irrigation systems.
- (j) The design of the irrigation system shall conform to the hydrozones of the landscape design plan.
- (k) Average irrigation efficiency for the project shall be determined in accordance with the EAWU calculation sheet in **Appendix B**. Unless otherwise indicated by the irrigation equipment manufacturer's specifications or demonstrated by the applicant, the irrigation efficiency of the irrigation heads used within each hydrozone shall be assumed to be:
  - Pop-up stream rotator heads = 75%
  - Stream rotor heads = 75%
  - Microspray = 75%
  - Bubbler = 80%
  - Drip emitter = 85%
  - Subsurface irrigation = 90%
- (l) It is highly recommended that the applicant 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.
- (m) In mulched planting areas, the use of low volume irrigation is required to maximize water infiltration into the root zone.
- (n) Sprinkler heads and other emission devices shall have matched precipitation rates, unless otherwise directed by the manufacturer's recommendations.

- (o) Head to head coverage is recommended. However, sprinkler spacing shall be designed to achieve the highest possible distribution uniformity using the manufacturer's recommendations.
- (p) Swing joints or other riser-protection components are required on all risers subject to damage that are adjacent to high traffic areas.
- (q) Check valves or anti-drain valves are required for all irrigation systems.
- (r) Narrow or irregularly shaped areas, including turf, less than eight (8) feet in width in any direction shall be irrigated with subsurface irrigation, low volume irrigation or low volume overhead irrigation.
- (s) 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:
  1. the landscaped 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; or
  3. the irrigation designer for the landscape project specifies an alternative design or technology, as part of the Landscape Documentation Package, and clearly demonstrates strict adherence to the irrigation system design criteria in Section 2.5 (a)(1)(H) hereof. Prevention of overspray and runoff must be confirmed during an irrigation audit.
  4. 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 of the landscape project 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.

**(2) Hydrozone**

- (a) Each valve shall irrigate a hydrozone with similar site, slope, sun exposure, soil conditions, and plant materials with similar water use.

- (b) Sprinkler heads and other emission devices shall be selected based on what is appropriate for the plant type within that hydrozone.
- (c) Where feasible, trees shall be placed on separate valves from shrubs, groundcovers, and turf.
- (d) Individual hydrozones that mix plants of moderate and low water use or moderate and high water use may be allowed if:
  1. the plant factor calculation is based on the proportions of the respective plant water uses and their respective plant factors; or
  2. the plant factor of the higher water using plant is used for the calculations.
- (e) Individual hydrozones that mix high and low water use plants shall not be permitted.
- (f) 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.
- (g) The irrigation design plan, at a minimum, shall contain:
  1. the location and size of separate water meters for landscape;
  2. the 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;
  3. static water pressure at the point of connection to the public water supply;
  4. flow rate (gallons per minute), application rate (inches per hour), and design operating pressure (pressure per square inch) for each station;
  5. irrigation schedule parameters necessary to program smart timers specified in the landscape design;

## 2.6 Grading Design Plan

- (a) For the efficient use of water, grading of a landscape project site shall be designed to minimize soil erosion, runoff, and water waste. Finished grading configuration of the landscaped area, including pads, slopes, drainage, post-construction erosion control, and storm water control Best Management Practices, as applicable, shall

be shown on the Landscape Plan unless this information is fully included in separate Grading Plans for the project.

- (b) The applicant shall submit a landscape grading design plan that indicates finished configurations and elevations of the landscaped area including, but not limited to:
  - (1) height of graded slopes;
  - (2) drainage patterns;
  - (3) pad elevations;
  - (4) finish grade; and
  - (5) storm water retention improvements, if applicable.
- (c) To prevent erosion and runoff, it is highly recommended that the applicant:
  - (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 landscaped areas.
- (d) Certification of compliance with the City of Laguna Woods' Water Efficient Landscape Ordinance (Laguna Woods Municipal Code Chapter 4.28) and the City of Laguna Woods' Guidelines for Implementation of the Water Efficient Landscape Ordinance in form sufficient to the City Manager or his or her designee.

## 2.7 Certification of Completion

- (a) Landscape project construction shall not proceed until the Landscape Documentation Package has been approved by the City and any ministerial permits required are issued.
- (b) The applicant shall notify the City at the beginning of the installation work and at intervals, as necessary, for the duration of the landscape project work to schedule all required inspections.
- (c) Certification of Completion of the landscape project shall be obtained through a Certificate of Use and Occupancy or a Permit Final. The requirements for the Final Inspection and Permit Closure include submittal of:
  - (1) A Landscape Installation Certificate of Completion in the form included as **Appendix D** of these Guidelines, which shall include: (i) certification by a landscape professional that the landscape project has been installed per the approved Landscape Documentation Package;

- (2) Documentation of the irrigation scheduling parameters used to set the controller(s);
- (3) An irrigation audit report from a certified irrigation auditor, documentation of enrollment in regional or local water purveyor's water conservation programs, and/or documentation that the MAWA and EAWU information for the landscape project has been submitted to the local water purveyor, may be required at the option of the City.

### **2.8 Post-Installation Irrigation Scheduling**

- (a) 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) Irrigation shall be scheduled in accordance with the local water purveyor's Water Conservation Ordinance, as applicable.

### **2.9 Post-Installation Landscape and Irrigation Maintenance**

- (a) Landscapes shall be maintained to ensure water use efficiency in accordance with existing City codes governing landscape and property maintenance.

## **3. Provisions for Existing Landscapes**

- (a) Irrigation of all landscaped areas shall be conducted in a manner conforming to the rules and requirements and shall be subject to penalties and incentives for water conservation and water waste prevention, as determined and implemented by the local water purveyor and as may be mutually agreed by the City.
- (b) The City and/or the regional or local water purveyor may administer programs such as irrigation water use analyses, irrigation surveys and/or irrigation audits, tiered water rate structures, water budgeting by parcel, or other approaches to achieve landscape water use efficiency community-wide to a level equivalent to or less than would be achieved by applying a MAWA calculated with an ETAF of 0.8 to all landscaped areas in the City over one acre in size.
- (c) The architectural guidelines of a common interest development, including apartments, 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.

**CERTIFICATION OF LANDSCAPE DESIGN**

I hereby certify that:

(1) I am a landscape professional meaning a licensed landscape architect, licensed landscape contractor, or any other person authorized to design a landscape pursuant to Sections 5500.1, 5615, 5641, 5641.1, 5641.2, 5641.3, 5641.4, 5641.5, 5641.6, 6701, 7027.5 of the California Business and Professions Code, Section 832.27 of Title 16 of the California Code of Regulations, and Section 6721 of the California Food and Agriculture Code.

(2) The landscape design and water use calculations for the property located at \_\_\_\_\_  
\_\_\_\_\_ (provide street address or parcel number(s)) were prepared by me or under my supervision as defined in the City of Laguna Woods' Guidelines for Implementation of the Water Efficient Landscape Ordinance.

(3) The landscape design and water use calculations for the identified property comply with the requirements of the City of Laguna Woods' Water Efficient Landscape Ordinance (Laguna Woods Municipal Code Chapter 4.28) and the City of Laguna Woods' Guidelines for Implementation of the Water Efficient Landscape Ordinance.

(4) The information I have provided in this Certificate of Landscape Design is true and correct and is hereby submitted in compliance with the City of Laguna Woods' Guidelines for Implementation of the Water Efficient Landscape Ordinance.

\_\_\_\_\_  
Print Name

\_\_\_\_\_  
Date

\_\_\_\_\_  
Signature

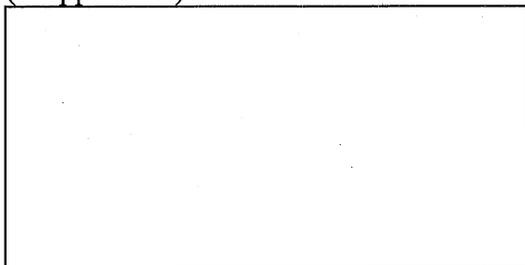
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Address

\_\_\_\_\_  
Telephone

\_\_\_\_\_  
E-mail Address

Landscape Professional's Stamp  
(If applicable)



EXAMPLE WATER EFFICIENT LANDSCAPE WORKSHEET

This worksheet is filled out for each Point of Connection. Please complete all sections of the worksheet.

**Point of Connection # 1**

**Maximum Applied Water Allowance (MAWA)**

Total MAWA = (ETo x 0.7 x LA in Sq. Ft. x 0.62) + (ETo x 1.0 x SLA in Sq. Ft. x 0.62) = Gallons per year for LA+SLA

where:

- MAWA = Maximum Applied Water Allowance (gallons per year)
- ETo = Reference Evapotranspiration Appendix C (inches per year)
- 0.7 = Evapotranspiration Adjustment Factor (ETAF)
- 1.0 = ETAF for Special Landscaped Area
- LA = Landscaped Area (square feet)
- 0.62 = Conversion factor (to gallons per square foot)
- SLA = Special Landscaped Area (square feet)

Example Calculation: a hypothetical landscape project in Santa Ana, CA with an irrigated landscaped area of 40,000 square feet with 10,000 square feet of Special Landscaped Area. To calculate MAWA, the annual reference evapotranspiration value for Santa Ana is 48.2 inches as listed in the Reference Evapotranspiration Table in Appendix C.

ETo		ETAF		LA or SLA (ft <sup>2</sup> )		Conversion		MAWA (Gallons Per Year)
MAWA for LA =	48.2	x	0.7	x	40,000	x	0.62	= 836,752
MAWA for SLA =	48.2	x	1.0	x	10,000	x	0.62	= 298,840
Total MAWA =					50,000			1,135,592 Gallons per year for LA+SLA

**Estimated Applied Water Use**

$EAWU = ETo \times K_L \times LA \times 0.62 \div IE = \text{Gallons per year}$

where:

EAWU = Estimated Applied Water Use (gallons per year)

ETo = Reference Evapotranspiration **Appendix C** (inches per year)

$K_L$  = Landscape Coefficient

LA = Landscaped Area (square feet)

0.62 = Conversion factor (to gallons per square foot)

IE = Irrigation Efficiency =  $IME \times DU$  (See definition in Appendix E for example IE percentages)

IME = Irrigation Management Efficiency (90%)

DU = Distribution Uniformity of irrigation head

Example Calculation:

	ETo	$K_L$	LA	Conversion	IE	EAWU (Gallons per year)
Special Landscaped Area	48.2	x 1.00	x 10,000	x 0.62	÷ 0.75	= 398,453
Cool Season Turf	48.2	x 1.00	x 0	x 0.62	÷ 0.71	= 0
Warm Season Turf	48.2	x 0.65	x 0	x 0.62	÷ 0.71	= 0
High Water Using Shrub	48.2	x 0.70	x 0	x 0.62	÷ 0.71	= 0
Medium Water Using Shrub	48.2	x 0.50	x 15,000	x 0.62	÷ 0.65	= 344,815
Low Water Using Shrub	48.2	x 0.30	x 25,000	x 0.62	÷ 0.75	= 298,840
Very Low Water Using Shrub	48.2	x 0.20	x 0	x 0.62	÷ 0.71	= 0
Other	48.2	x 0.50	x 0	x 0.62	÷ 0.71	= 0
Other	48.2	x 0.50	x 0	x 0.62	÷ 0.71	= 0
Total EAWU =						1,042,109 Gallons per year

$K_L = K_s \times K_d \times K_{mc}$

$K_s$  = species factor (range = 0.1-0.9) (see WUCOLS list for values)

$K_d$  = density factor (range = 0.5-1.3) (see WUCOLS for density value ranges)

$K_{mc}$  = microclimate factor (range = 0.5-1.4) (see WUCOLS)

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

Compare EAWU with MAWA.

The EAWU (1,042,109 gallons per year) is less than MAWA (1,135,592 gallons per year). For this example, the water budget complies with the MAWA.

List sprinkler heads, microspray, and drip emitters here along with average precipitation rate and Distribution Uniformity of Irrigation Head.

<u>Sprinkler Head Types</u>	<u>Average Precipitation Rate</u>	<u>Distribution Uniformity of Irrigation Head</u>
Drip		
Microspray		
Bubbler		
Low precipitation rotating nozzles		
Stream rotors		

## WATER EFFICIENT LANDSCAPE WORKSHEET

This worksheet is filled out for each Point of Connection. Please complete all sections of the worksheet.

<b>Point of Connection #</b> _____						
<b>Maximum Applied Water Allowance (MAWA)</b>						
$\text{Total MAWA} = (\text{ETo} \times 0.7 \times \text{LA in Sq. Ft.} \times 0.62) + (\text{ETo} \times 1.0 \times \text{SLA in Sq. Ft.} \times 0.62) = \text{Gallons per year for LA+SLA}$						
<p>where:</p> <p>MAWA = Maximum Applied Water Allowance (gallons per year)</p> <p>ETo = Reference Evapotranspiration <b>Appendix C</b> (inches per year)</p> <p>0.7 = Evapotranspiration Adjustment Factor (ETAF)</p> <p>1.0 = ETAF for Special Landscaped Area</p> <p>LA = Landscaped Area (square feet)</p> <p>0.62 = Conversion factor (to gallons per square foot)</p> <p>SLA = Special Landscaped Area (square feet)</p>						
<b>MAWA Calculation:</b>						
	ETo		ETAF	LA or SLA (ft <sup>2</sup> )	Conversion	MAWA (Gallons Per Year)
MAWA for LA =	x	0.7	x		x 0.62	=
MAWA for SLA =	x	1.0	x		x 0.62	=
Total MAWA = _____						

**Estimated Applied Water Use**

$EAWU = ETo \times K_L \times LA \times 0.62 \div IE = \text{Gallons per year}$

where:

EAWU = Estimated Applied Water Use (gallons per year)

ETo = Reference Evapotranspiration **Appendix C** (inches per year)

$K_L$  = Landscape Coefficient

LA = Landscaped Area (square feet)

0.62 = Conversion factor (to gallons per square foot)

IE = Irrigation Efficiency =  $IME \times DU$

IME = Irrigation Management Efficiency (90%)

DU = Distribution Uniformity of irrigation head

EAWU Calculation:

$K_L = K_s \times K_d \times K_{mc}$

$K_s$  = species factor (range = 0.1-0.9) (see WUCOLS list for values)

$K_d$  = density factor (range = 0.5-1.3) (see WUCOLS for density value ranges)

$K_{mc}$  = microclimate factor (range = 0.5-1.4) (see WUCOLS)

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

	ETo	$K_L$	LA	Conversion	IE	EAWU (Gallons Per Year)
Special Landscaped Area	x		x	0.62	÷	=
Cool Season Turf	x		x	0.62	÷	=
Warm Season Turf	x		x	0.62	÷	=
High Water Using Shrub	x		x	0.62	÷	=
Medium Water Using Shrub	x		x	0.62	÷	=
Low Water Using Shrub	x		x	0.62	÷	=
Very Low Water Using Shrubs	x		x	0.62	÷	=
	x		x	0.62	÷	=
	x		x	0.62	÷	=
	x		x	0.62	÷	=
	x		x	0.62	÷	=
	x		x	0.62	÷	=
	x		x	0.62	÷	=
	x		x	0.62	÷	=
Other	x		x	0.62	÷	=
Total EAWU =						

List sprinkler heads, microspray, and drip emitters here along with average precipitation rate and Distribution Uniformity of Irrigation Head.

<b>Sprinkler Head Types</b>	<b>Average Precipitation Rate</b>	<b>Distribution Uniformity of Irrigation Head</b>
Drip		
Microspray		
Bubbler		
Low precipitation rotating nozzles		
Stream rotors		

**Reference Evapotranspiration (ETo) Table**

<b>Appendix C - Reference Evapotranspiration (ETo) Table*</b>													
<b>County and City</b>	<b>Jan</b>	<b>Feb</b>	<b>Mar</b>	<b>Apr</b>	<b>May</b>	<b>Jun</b>	<b>Jul</b>	<b>Aug</b>	<b>Sep</b>	<b>Oct</b>	<b>Nov</b>	<b>Dec</b>	<b>Annual ETo</b>
<b>Orange</b>													
Irvine	2.2	2.5	3.7	4.7	5.2	5.9	6.3	6.2	4.6	3.7	2.6	2.3	49.6
Laguna Beach	2.2	2.7	3.4	3.8	4.6	4.6	4.9	4.9	4.4	3.4	2.4	2.0	43.2
Santa Ana	2.2	2.7	3.7	4.5	4.6	5.4	6.2	6.1	4.7	3.7	2.5	2.0	48.2
* 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, 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													

**Appendix D**

**CERTIFICATION OF LANDSCAPE COMPLETION**

I hereby certify that:

(1) I am a landscape professional meaning a licensed landscape architect, licensed landscape contractor, or any other person authorized to design a landscape pursuant to Sections 5500.1, 5615, 5641, 5641.1, 5641.2, 5641.3, 5641.4, 5641.5, 5641.6, 6701, 7027.5 of the California Business and Professions Code, Section 832.27 of Title 16 of the California Code of Regulations, and Section 6721 of the California Food and Agriculture Code.

(2) The landscape project for the property located at \_\_\_\_\_  
\_\_\_\_\_ (provide street address or parcel number(s)) was installed by me or under my supervision.

(3) The landscape project for the identified property has been installed in substantial conformance with the approved Landscape Documentation Package and complies with the requirements of the City of Laguna Woods' Water Efficient Landscape Ordinance (Laguna Woods Municipal Code Chapter 4.28) and the City of Laguna Woods' Guidelines for Implementation of the Water Efficient Landscape Ordinance for the efficient use of water in the landscape.

(4) The information I have provided in this Certificate of Landscape Design is true and correct and is hereby submitted in compliance with the City of Laguna Woods' Guidelines for Implementation of the Water Efficient Landscape Ordinance.

\_\_\_\_\_  
Print Name

\_\_\_\_\_  
Date

\_\_\_\_\_  
Signature

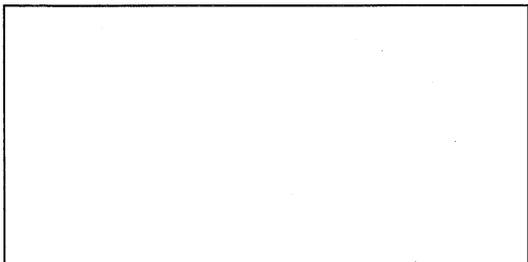
\_\_\_\_\_  
License Number

\_\_\_\_\_  
Address

\_\_\_\_\_  
Telephone

\_\_\_\_\_  
E-mail Address

Landscape Professional's Stamp  
(If Appropriate)



## Appendix E

### Supplemental Definitions

Terms used in these Guidelines are defined in Section 4.28.030 of the Laguna Woods Municipal Code. Additional terms used in these Guidelines have the meaning set forth below:

“*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.

“*Conversion factor*” means the number that converts acre-inches per acre per year to gallons per square foot per year.

“*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.

“*Certified Landscape Irrigation Auditor*” means 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.

“*Certification of Design*” means the certification included as Exhibit E of these Guidelines that must be included in the Landscape Documentation Package pursuant to Section 2.1 of these Guidelines.

“*Common interest developments*” means community apartment projects, condominium projects, planned developments, and stock cooperatives per Civil Code Section 1351

“*Distribution Uniformity*” or “*DU*” is a measure of how uniformly an irrigation head applies water to a specific target area and theoretically ranges from zero to 100 percent.

“*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.

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

“*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.

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

“*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 Management Efficiency*” or “*IME*” means the measurement used to calculate the irrigation efficiency of the irrigation system for a landscaped project. A 90% IME can be achieved by using evapotranspiration controllers, soil moisture sensors, and other methods that will adjust irrigation run times to meet plant water needs.

“*Landscape coefficient*” ( $K_L$ ) is the product of a plant factor multiplied by a density factor and a microclimate factor. The landscape coefficient is derived to estimate water loss from irrigated landscaped areas and special landscaped areas.

“*Landscape Installation Certificate of Completion*” means the certificate included as Exhibit F of these Guidelines that must be submitted to the City pursuant to Section 2.7(a)(1) of hereof.

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

“*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.

“*Low volume overhead irrigation*” means the application of irrigation water through above-ground irrigation heads with an upper flow limit of 0.5 GPM.

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

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

“*Mulch*” means any organic material such as leaves, bark, straw or compost, or inorganic mineral materials such as rocks, gravel, or 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.

“*Operating pressure*” means the pressure at which the parts of an irrigation system of sprinklers are designed to operate at by the manufacturer

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

“*Precipitation rate*” means the rate of application of water measured in inches per hour.

“*Prepared under the supervision of a landscape professional*” shall mean that the landscape professional (i) supervised those individuals responsible for the preparation of the landscape documentation package or (ii) provided direct and substantial input to the preparation of the landscape documentation package or (iii) reviewed the landscape documentation package and provided comments to the applicant or individuals responsible for preparing the landscape documentation package.

“*Runoff*” means water which is not absorbed by the soil or landscape to which it is applied and flows from the landscaped 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.

“*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.

“*Water Efficient Landscape Ordinance*” means City of Laguna Woods Ordinance Number 09-XX, codified in Laguna Woods Municipal Code Chapter 4.28.

“*Water Efficient Landscape Worksheets*” means the worksheets required to be completed pursuant to Section 2.2 of these Guidelines and which are included in Appendix B hereof.

“*Watering window*” means the time of day irrigation is allowed.

“*WUCOLS*” means the Water Use Classification of Landscape published by the University of California Cooperative Extension, the Department of Water Resources, and the Bureau of Reclamation, 2000. [www.owue.water.ca.gov/docs/wucols00](http://www.owue.water.ca.gov/docs/wucols00)

## **WATER EFFICIENT LANDSCAPE ORDINANCE JUSTIFICATION OF DIFFERENCES WITH THE STATE'S MODEL ORDINANCE**

This document identifies the significant differences between the City of Laguna Woods' Water Efficient Landscape Ordinance and the State's model ordinance and provides justification for how the Laguna Woods Ordinance is "at least as effective" as the State's model ordinance.

### **Water Efficiency Calculations**

The State Model Ordinance requires Maximum Applied Water Allowance Calculation (MAWA) and Estimated Applied Water Use (EAWU) calculations for each valve installed in a landscape area. That requirement causes a significant amount of labor-intensive paperwork and does not increase water efficiency in the landscape. By requiring MAWA and EAWU calculations for each point of connection (meter), rather than each valve, the calculations process is simplified, while still complying with the "at least as effective" requirement of Assembly Bill 1881.

### **Self-Certification**

Self-certification of the landscape documentation package is performed by licensed landscape professionals authorized to perform the tasks and prepare the documents. Those able to self-certify projects have the professional expertise necessary to ensure that projects are "at least as effective" as the State's model ordinance. Self-certification provides a cost effective and efficient method for cities to review plans.

### **Separation of Ordinance and Guidelines**

In the interest of creating a streamlined ordinance that is "at least as effective" as the State's model ordinance, the technical equations and procedures have been removed from the ordinance and placed in a separate guidelines document. Both the ordinance and guidelines document will be reviewed and adopted or approved by the City Council. By separating the technical aspects from policy matters and adopting them by resolution instead of ordinance, the City will be able to make more expedient and responsive changes as landscape technologies continue to evolve.

### **Water Waste Prohibitions**

In recent years, regulatory approaches to conservation and water waste management have become powerful tools at the local, state, and national levels in establishing water conservation requirements for virtually every customer sector (Vickers, Water Use and Conservation 2001).

The City's local water purveyor regulates and prohibits water waste. Associated regulations range from local codes that govern irrigation overspray to federal codes such as the Environmental Protection Agency's National Pollution Discharge Elimination System.

Existing regulatory water conservation requirements enforce efficient water use through monetary fines and have helped "to limit excessive lawn water and street runoff" (Vickers, Water Use and Conservation 2001).



### **492.10 Irrigation Scheduling**

Prescriptive elements for parameters used to set the automatic controller are removed in order to defer to irrigation controller manufacturer specifications.

### **492.11 Landscape and Irrigation Maintenance Schedule**

Prescriptive elements incorporated by reference to existing code in order to defer to local agency code.

### **Removal of 492.14 Recycled Water**

Section incorporated by reference to defer to existing recycled water and health code.

### **Removal of 492.15 Stormwater Management**

Section incorporated by reference to defer to existing National Pollutant Discharge Elimination System (NPDES) permits and local stormwater management code.

### **Removal of 493.2 Water Waste Prevention**

Section incorporated by reference to defer to existing agency code on water waste prevention.

### **Removal of 494 Effective Precipitation**

This section was considered optional in the State's model ordinance and was removed because annual effective precipitation of 12" in Orange County is not considered adequate for adjustment of the Maximum Applied Water Allowance.

### **2.1 Section 5 Certification of Completion (Now in Guidelines)**

Enrollment in one of the local or regional water budgeting programs fulfills the irrigation system audit report criteria. The water budgeting programs are an in-depth and ongoing irrigation monitoring process that is "at least as effective" as a one time irrigation system audit report.

The City's regulations are based on a model developed by the League of California Cities, Orange County Division, and the Municipal Water District of Orange County.

If you require additional information, please contact Chris Macon at (949) 639-0555.

