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December 30, 2009

Mr. Simon Eching
California Department of Water Resources
Water Use and Efficiency Branch
P.O. Box 942836
Sacramento, CA 94236-0001

**NOTIFICATION OF ACTION ON WATER EFFICIENT LANDSCAPE
ORDINANCE**

Dear Mr. Eching:

On December 15, 2009, in accordance with the requirements of Assembly Bill 1881, the City of Laguna Niguel adopted Ordinance 2009-156, amending its Water Efficient Landscaping Regulations in a manner that is at least as effective as the State Model Water Efficient Landscape Ordinance. The following documents are submitted herein, as required by the legislation:

1. Ordinance No. 2009-156 amending the Water Efficient Landscaping Regulations, including all Findings, and authorizing the adoption, by resolution, of separate Guidelines for implementation to assure compliance.
2. Resolution No. 2009-984, adopting Guidelines for Implementation of the City of Laguna Niguel Water Efficient Landscaping Regulations.
3. Guidelines for Implementation of the City of Laguna Niguel Water Efficient Landscaping Regulations.
4. Evidence Demonstrating Equivalent Effectiveness and Justifying Differences between the State Model A.B. 1881 Ordinance and the City of Laguna Niguel Ordinance, Regulations and Guidelines.

If you have any questions regarding this submittal, please feel free to contact me at (949)362-4384 or npalmer@ci.laguna-niguel.ca.us.

Sincerely,

A handwritten signature in cursive script that reads "Nancy R. Palmer".

Nancy R. Palmer
Senior Landscape Architect

ORDINANCE NO. 2009-156

**ORDINANCE OF THE CITY COUNCIL
OF THE CITY OF LAGUNA NIGUEL, CALIFORNIA,
AMENDING THE WATER EFFICIENT LANDSCAPING REGULATIONS**

The City Council of the City of Laguna Niguel does ordain as follows:

SECTION 1. Article 3.

Article 3 (Water Efficient Landscaping Regulations) of Division 5 (Water Conservation) of Title 6 (Health and Sanitation) of the Laguna Niguel Municipal Code is hereby amended to read as follows:

Sec. 6-5-40. Purpose and Intent.

(a) The State Legislature has found that:

- (1) The waters of the State are of limited supply and are subject to ever increasing demands;
- (2) The continuation of California's economic prosperity is dependent on the availability of adequate supplies of water for future uses;
- (3) 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) Landscapes are essential to the quality of life in California 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) Landscape design, installation, maintenance, and management can and should be water efficient; and
- (6) Article X, Section 2 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 of water.
- (7) Assembly Bill 1881 (2006) requires adoption by cities of a water efficient landscape ordinance that is at least as effective for conserving water as a model water efficient landscape ordinance issued by the State Department of Water Resources on September 17, 2009.

(b) The City Council finds and determines that:

- (1) The City has an established reclaimed water infrastructure system for landscape use, that reduces the need for importation of potable water supplies;
- (2) All water services within the City are metered, such that the water purveyor can document water use in landscapes;
- (3) Incentive-based water use efficiency programs have been actively implemented within the City;
- (4) Current local design practices in new landscapes typically achieve the State Model Water Efficient Landscape Ordinance water use goals;
- (5) All new irrigation controllers sold after 2012 within Orange County will be smart controllers that automatically adjust watering based on actual need;
- (6) Landscape plan submittal and review has been a long- standing practice in Laguna Niguel;
- (7) The rainfall in the City averages approximately 12 inches per year and does not reliably offset the need for landscape irrigation;
- (8) The local water purveyor is implementing budget- based tiered-rate billing and enforcement of water waste prohibitions for all existing metered landscaped areas throughout its service area, which includes the City of Laguna Niguel in its entirety.

Consistent with these findings, the purpose of the City's Water Efficient Landscaping Regulations is to establish alternative regulations acceptable under AB 1881 as being at least as effective as the State Model Water Efficient Landscape Ordinance in the context of conditions in the City, in order to:

- (1) Benefit from regulations that are consistent with neighboring local and regional agencies;
- (2) Promote the values and benefits of landscapes while recognizing the need to invest water and other resources as efficiently as possible;
- (3) Establish a structure for planning, designing, installing, maintaining and managing water efficient landscapes in *new construction* and rehabilitated projects;

- (4) Establish provisions for water management practices and water waste prevention for existing landscapes;
- (5) 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; and
- (6) Encourage the use of economic incentives that promote the efficient use of water, including but not limited to a budget-based tiered-rate structure.

Sec. 6-5-41. Applicability.

- (a) Beginning January 1, 2010, the Water Efficient Landscaping Regulations shall apply to the following landscape projects:
 - (1) New construction and landscape rehabilitation projects by public agencies or private non-residential developers with a landscaped area, including pools or other water features but excluding hardscape, equal to or greater than 2,500 square feet, and which are otherwise subject to design review and approval of a landscape plan pursuant to a discretionary permit (e.g., site development permit, coastal development permit, variance, use permit, minor adjustment and/or changed plan).
 - (2) New construction and landscape rehabilitation projects by developers or property managers of single-family and multi-family residential projects or complexes with a landscaped area, including pools or other water features but excluding hardscape, equal to or greater than 2,500 square feet, and which are otherwise subject to design review and approval of a landscape plan pursuant to a discretionary permit (e.g., site development permit, coastal development permit, variance, use permit, minor adjustment and/or changed plan).
 - (3) New construction landscape installation projects by individual homeowners on single-family or multi-family residential lots with a project landscaped area, including pools or other water features but excluding hardscape, equal to or greater than 5,000 square feet, and which are otherwise subject to design review and approval of a landscape plan pursuant to a discretionary permit (e.g., site development permit, coastal development permit, variance, use permit, minor adjustment and/or changed plan).
- (b) Section 6-5-43(b) of the Landscape Water Use Standards of these Water Efficient Landscaping Regulations shall apply to:

- (1) All landscaped areas, whether installed prior to or after January 1, 2010; and
 - (2) All landscaped areas installed after January 1, 2010 to which Section 6-5-41(a) is applicable.
- (c) These Water Efficient Landscaping Regulations 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.

Sec. 6-5-42. Implementation Procedures.

- (a) The City shall adopt, by resolution, Guidelines for implementation to assure compliance with these Water Efficient Landscaping Regulations.

Sec. 6-5-43. Landscape Water Use Standards.

- (a) For applicable landscape installation or rehabilitation projects subject to Section 6-5-41(a) of this Water Efficient Landscaping Regulations, 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 special landscaped areas where the MAWA is calculated using an ET adjustment factor of 1.0; or the design of the landscaped area shall otherwise be shown to be equivalently water-efficient in a manner acceptable to the City; as provided in the Guidelines.
- (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 the local water purveyor and the local agency.

Sec. 6-5-44. Delegation.

The City may delegate to, or enter into a contract with, another local agency, water purveyor, or other contractor to implement, administer, and/or enforce any of the provisions of the Water Efficient Landscape Regulations on behalf of the City.

Sec. 6-5-45. Definitions.

The following definitions are applicable to Article 3:

"Applied water" means the portion of water supplied by the irrigation system to the landscape.

"Budget-based tiered-rate structure" means tiered or block rates for irrigation accounts charged by the retail water agency in which the block definition for each customer is derived from lot size or irrigated area and the evapotranspiration requirements of landscaping.

"Ecological restoration project" means a project where the site is intentionally altered to establish a defined, indigenous, historic ecosystem.

"Estimated Applied Water Use" 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 the reference evapotranspiration rate, the size of the landscape area, plant water use factors, and the relative irrigation efficiency of the irrigation system.

"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 Water Efficient Landscape Ordinance and the Guidelines, except that the *ETAF* for a special landscape area shall not exceed 1.0.

"Guidelines" refers to the Guidelines for Implementation of the Water Efficient Landscape Ordinance, as adopted by the City, which describes procedures, calculations, and requirements for landscape projects subject to this Water Efficient Landscape Ordinance.

"Hardscapes" means any durable material or feature (pervious and non-pervious) installed around a landscaped area, such as pavements or walls. Pools and other water features are considered part of the landscaped area and not considered hardscapes for purposes of this Water Efficient Landscape Ordinance.

"Homeowner installed landscape" 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 definition excludes speculative homes, which are not owner-occupied dwellings and which are subject under this ordinance to the

requirements applicable to developer-installed residential landscape projects.

"Irrigation efficiency" 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. Better irrigation efficiency can be expected from well designed and maintained systems.

"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).

"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 to be provided to the City for review and approval of landscape design projects, as described in the Guidelines.

"Landscape project" means total area of landscape in a project, as provided in the definition of "landscaped area," meeting the requirements under Section 6-5-41 of this Water Efficient Landscape Ordinance.

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

"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" or *"MAWA"* means the upper limit of annual applied water for the established 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 Maximum Applied Water Allowance.

"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 a new building with a landscape, or other new landscape such as a park, playground, or greenbelt without an associated building.

"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.

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

"Permit" means an authorizing document issued by local agencies for new construction or rehabilitated landscape.

"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 Water Efficient Landscape 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 Water Efficient Landscape Ordinance are derived from the Department of Water Resources 2000 publication "Water Use Classification of Landscape Species."

"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.

"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 Appendix A of 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.

"Rehabilitated landscape" means any re-landscaping project that meets the applicability criteria of Section 6-5-41(a), where the modified landscape area is greater than 2,500 square feet, is 50% of the total landscape area, and the modifications are planned to occur within one year.

"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.

"Special landscape area" means an area of the landscape dedicated solely to edible plants such as orchards and vegetable gardens; an area irrigated with recycled water; a water feature using recycled water, and/or an area dedicated to active play such as parks, sports fields, golf courses, swimming pools 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 an 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 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.

SECTION 2. Severability.

The provisions of this Ordinance are severable, and the invalidity of any section, paragraph, phrase, clause, or part of this Ordinance shall not affect the validity or effectiveness of the remainder of this Ordinance.

SECTION 3. Effective Date.

This Ordinance shall become effective thirty (30) days after its adoption in accordance with the provisions of California law.

SECTION 4. City Clerk Certification.

The City Clerk shall certify to the passage of this Ordinance and cause the same to be posted at the duly designated posting places within the City and published once within fifteen (15) days after passage and adoption as required by law; or, in the alternative, the City Clerk may cause to be published a summary of this Ordinance and post a certified copy of the text of this Ordinance in the office of the City Clerk five (5) days prior to the date of adoption of this Ordinance, and, within fifteen (15) days after adoption, the City Clerk shall cause to be published the aforementioned summary and shall post a certified copy of this Ordinance, together with the vote for and against the same, in the Office of the City Clerk.

PASSED, APPROVED, AND ADOPTED this 15th day of December, 2009.


Linda Lindholm, Mayor

ATTEST:


Pamela Lawrence
Deputy City Manager/Acting City Clerk

CERTIFICATION

STATE OF CALIFORNIA)
COUNTY OF ORANGE)SS
CITY OF LAGUNA NIGUEL)

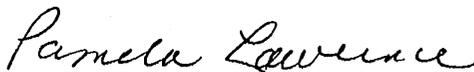
I, Pamela Lawrence, Acting City Clerk of the City of Laguna Niguel, California, do hereby certify that the foregoing is Ordinance No. 2009-156 which was adopted at a regular meeting of the City Council of the City of Laguna Niguel, California, held December 15, 2009 by the following vote:

AYES: Council Members Brown, Glaab, Ming, Mayor Pro Tem
 Capata and Mayor Lindholm

NOES: None

ABSTENTIONS: None

ABSENT: None



Pamela Lawrence
Deputy City Manager/Acting City Clerk

RESOLUTION NO. 2009-984

**RESOLUTION OF THE CITY COUNCIL
OF THE CITY OF LAGUNA NIGUEL, CALIFORNIA,
ADOPTING GUIDELINES FOR IMPLEMENTATION OF THE WATER EFFICIENT
LANDSCAPING REGULATIONS**

WHEREAS, the City Council of the City of Laguna Niguel adopted Water Efficient Landscaping Regulations (Ordinance No. 93-60) in 1993 to comply with Assembly Bill 325 which required cities to adopt water efficient landscape regulations.

WHEREAS, Assembly Bill 1881 (2006) required cities to adopt more stringent water efficient landscape standards by January 1, 2010, that would be at least as effective in conserving water supplies as those set forth by the State Department of Water Resources in a State Model Water Efficient Landscape Ordinance issued September 17, 2009.

WHEREAS, the City Council of the City of Laguna Niguel has amended its Water Efficient Landscaping Regulations to incorporate water efficient landscape standards that are at least as effective as the State Model, and to provide for adoption of Guidelines for implementation to assure compliance with the regulations;

WHEREAS, Guidelines for implementing the Water Efficient Landscape Regulations have been developed that are adapted for conditions and procedures within the City of Laguna Niguel, in order to assure that the regulations and guidelines together will be least as effective as the State's Model Ordinance for purposes of water conservation and efficiency of water use.

NOW THEREFORE, BE IT RESOLVED, by the City Council of the City of Laguna Niguel, California, that the Guidelines for Implementation of the City of Laguna Niguel Water Efficient Landscaping Regulations, which are attached to this Resolution as Exhibit "A", are hereby adopted.

PASSED, APPROVED AND ADOPTED this 15th day of December, 2009.


Linda Lindholm, Mayor

ATTEST:


Pamela Lawrence
Deputy City Manager/Acting City Clerk

CERTIFICATION

STATE OF CALIFORNIA)
COUNTY OF ORANGE)SS
CITY OF LAGUNA NIGUEL)

I, Pamela Lawrence, Acting City Clerk of the City of Laguna Niguel, California, do hereby certify that the foregoing is Resolution No. 2009-984 which was adopted at a regular meeting of the City Council of the City of Laguna Niguel, California, held December 15, 2009 by the following vote:

AYES: Council Members Brown, Glaab, Ming, Mayor Pro Tem Capata and Mayor Lindholm

NOES: None

ABSTENTIONS: None

ABSENT: None

Pamela Lawrence
Pamela Lawrence
Deputy City Manager/Acting City Clerk

GUIDELINES
FOR IMPLEMENTATION OF THE
CITY OF LAGUNA NIGUEL
WATER EFFICIENT LANDSCAPING
REGULATIONS

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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 *project applicants* proposing landscape installation or rehabilitation projects that are subject to the requirements of the *Water Efficient Landscaping Regulations*. This document is also intended for use and reference by City staff in reviewing and approving designs and verifying compliance with the Guidelines. The general purpose of the *Water Efficient Landscaping Regulations* and Guidelines is to promote the design, installation, and maintenance of landscaping in a manner that conserves regional water resources by ensuring that landscaping projects are not unduly water-needy and that irrigation systems are appropriately implemented to minimize water waste.

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;
- (2) National Pollutant Discharge Elimination Permit for the Municipal Separate Storm Sewer System;
- (3) Orange County Fire Authority Regulations for Fuel Modification in the Landscape;
- (4) Water Conservation and Drought Response Regulations of the Local Water Purveyor (Moulton Niguel Water District);
- (5) Regulations of the Moulton Niguel Water District governing use of Recycled Water;
- (6) Zoning Code, including but not limited to the community design guidelines (sections 9-1- 162.3 and 9-1-163.3 of the Municipal Code) for multifamily residential, commercial and industrial landscape requirements.
- (7) Building Code;
- (8) Specific Plans, Master Plans, General Plan, or similar documents; and
- (9) Conditions of approval for a specific project

1.2 Applicability

- (a) The Water Efficient Landscaping Regulations and these Guidelines apply to all of the following landscape projects:
- (1) *New construction* and landscape *rehabilitation* projects by public agencies or private non-residential developers with a landscaped area, including pools or other water features but excluding hardscape, equal to or greater than 2,500 square feet, and which are otherwise subject to design review and approval of a landscape plan pursuant to a discretionary permit (e.g., site development permit, coastal development permit, variance, use permit, minor adjustment and/or changed plan).
 - (2) *New construction and landscape rehabilitation* projects by developers or property managers of single-family and multi-family residential projects or complexes with a landscaped area, including pools or other water features but excluding hardscape, equal to or greater than 2,500 square feet, and which are otherwise subject to design review and approval of a landscape plan pursuant to a discretionary permit (e.g., site development permit, coastal development permit, variance, use permit, minor adjustment and/or changed plan).
 - (3) *New construction* landscape installation projects by individual homeowners on single-family or multi-family residential lots with a project landscaped area, including pools or other water features but excluding hardscape, equal to or greater than 5,000 square feet, and which are otherwise subject to design review and approval of a landscape plan pursuant to a discretionary permit (e.g., site development permit, coastal development permit, variance, use permit, minor adjustment and/or changed plan).
- (b) A landscape rehabilitation project is subject to the requirements of the Regulations and these Guidelines where (i) the modified landscaped area is greater than 2,500 square feet and represents at least 50% of the total landscaped area; and (ii) the modifications are planned to occur within one year. The requirements of the Guidelines may be partially or wholly waived, at the discretion of the Community Development Director, for landscape rehabilitation projects that are limited to replacement plantings and irrigation repairs, or do not require design review and approval of a landscape plan pursuant to a discretionary permit (e.g., site development permit, coastal development permit, use variance, use permit, minor adjustment and/or changed plan).

- (c) Unless otherwise determined by the *City*, the Water Efficient Landscape Regulations and 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.

2. **SUBMITTAL REQUIREMENTS FOR NEW LANDSCAPE INSTALLATIONS OR LANDSCAPE REHABILITATION PROJECTS**

Design review and approval is typically required for landscape projects that are subject to a discretionary permit (e.g., site development permit, coastal development permit, use variance, use permit, minor adjustment and/or changed plan). Discretionary projects with conditions of approval may be approved administratively by City staff, or acted on formally by the Planning Commission, City Council, or other jurisdictional authority. A typical standard condition of approval reads:

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

2.1 **Elements of the Landscape Documentation Package**

- (a) A *Landscape Documentation Package* is required to be submitted by the *project applicant* for review and approval prior to the issuance of ministerial permits for landscape or water features by the City, and prior to 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, cemetery, homeowner-installed);

- (F) Project water supply type (e.g., potable, recycled, or well) and identification of the local retail 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 *project applicant* and *property owner*;
 - (I) A *Certification of Design* in accordance with **Exhibit A** of these *Guidelines* that includes a *landscape professional's* professional stamp, as applicable, signature, contact information (including email and telephone number), license number, and date, certifying the statement that "The design of this project complies with the requirements of the City's *Water Efficient Landscaping Regulations*" and shall bear the signature of the *landscape professional* as required by law; and
 - (J) Any other information the City deems relevant for determining whether the landscape project complies with the *Water Efficient Landscaping Regulations* 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* (optional at discretion of the City) for the landscape project;
 - (B) *Hydrozone* information table (optional at the discretion of the City) for the landscape project; and
 - (C) Water budget calculations (optional at the discretion of the City) for the landscape project.
- (3) A soil management report or specifications, or specification provision requiring soil testing and amendment recommendations and implementation to be accomplished during construction of the landscape project.
- (4) A landscape design plan for the landscape project.
- (5) An irrigation design plan for the landscape project.
- (6) A grading design plan, unless grading information is included in the landscape design plan for the landscape project or unless the

landscape project is limited to replacement planting and/or irrigation to rehabilitate an existing landscaped area, or does not otherwise propose changes to grading and drainage.

2.2 Water Efficient Landscape Calculations and Alternatives

- (a) The *project 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 the 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 *project 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 and/or local water purveyor.
- (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*, a *project applicant* shall use the *ETo* values from the closest location listed 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. *Plant factors* for some commonly available species are listed in **Appendix F**.

- (5) For calculating the *EAWU*, the plant water use factor shall be determined for each hydrozone based on the highest-water-use plant species within the zone; or for mixed-plant-factor zones may be determined based on the proportions of the respective plant water uses and their plant factor. The *plant factor* for each hydrozone may 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 *project 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 and an *irrigation efficiency 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* and comparison to the *MAWA*, the *ETAF* for *special landscaped areas* shall be calculated as the *special landscaped area (SLA) plant factor* derived from Appendix F or *WUCOLS*, divided by the *SLA irrigation efficiency factor*, determined based on the type of irrigation system used. For a landscape project entirely composed of *special landscape areas*, the calculated *ETAF* for the *EAWU* cannot exceed 1.0.
 - (9) For calculation of the *EAWU*, *irrigation efficiency* shall be determined for a hydrozone, based on the irrigation distribution heads utilized as shown in **Appendix E**; or may be calculated from the irrigation equipment manufacturer's specified *distribution uniformity* for the head times *90% Irrigation Management Efficiency*, as presented on the worksheet 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_o)* 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_o* 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 and/or specification shall be completed by the *project 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 *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 local agency 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 *Certification of Completion*.
 - (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 *project 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.

- (C) 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. "25% slope" 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 local 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.

(2) 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 EAWU calculation, and shall be assigned an ETAF of 1.0.
- (D) Pool and spa covers are highly recommended.

(3) *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*).

(b) 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, to the extent found to be compatible with public safety, geotechnical stability constraints and vector control needs. 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.);
- (12) Contain the following statement: "I have complied with the criteria of the *Water Efficient Landscape Ordinance* and applied them for the efficient use of water in the landscape design plan;" and
- (13) Bear the signature of a California-licensed landscape professional, licensed landscape contractor or any other person licensed to design a landscape.

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) Automatic irrigation controllers utilizing either 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 (i.e., public health) 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 operate in a manner that prevents *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 *project applicant*, the *irrigation efficiency* of the irrigation heads used within each hydrozone shall be assumed to be:

Fixed-spray turf or shrub heads = 65%

Pop-up stream rotator heads = 75%

Stream rotor heads = 75%

Microspray = 75%

Bubbler = 80%

Drip emitter = 85%

Subsurface irrigation = 90%

- (L) The irrigation design shall take into account the local water purveyor's constraints due to peak water operating demands on the water supply system and/or any other water supply or irrigation scheduling restrictions that may impact the effectiveness and operation of the irrigation system.
- (M) In *mulched* planting areas, the use of *low volume irrigation* is encouraged 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*, other non-overhead system, or other irrigation technology that would not cause overspray onto adjacent hardscape.
- (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 or non-spray technology or other irrigation technology that would not cause overspray onto adjacent hardscape. The setback area may be planted or unplanted. The surfacing of the setback may be *mulch*, gravel, stepstones 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 to drain entirely to landscaping; or
 3. Irrigation is with reclaimed water at a turfed recreation area and overspray or runoff does not reach drainage ditches, gutters or drain inlets; or
 4. The irrigation designer for the landscape project specifies an alternative design, technology, or site condition, 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.
- (T) Slopes steeper than 25% (4' horizontal to 1' vertical) 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, technology, scheduling capability and parameters, and/or other mitigating condition(s), as part of the *Landscape Documentation Package*, that clearly demonstrates no *runoff* or erosion will occur.

(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) Trees may be placed on separate valves from surrounding shrubs, groundcovers, and *turf* to enable temporary supplemental watering for establishment purposes or drought conditions
- (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*.

(b) 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;
- (6) The following statement: "I have complied with the criteria of the *Water Efficient Landscape Ordinance* and applied them accordingly for the efficient use of water in the irrigation design plan;" and
- (7) The signature of a California-licensed *landscape professional*.

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, or unless the project is limited to replacement planting and/or irrigation to rehabilitate an existing *landscaped area*.
 - (1) The *project applicant* shall submit a landscape grading plan that indicates finished configurations and elevations of the *landscaped area* including:
 - (A) Height of graded slopes;
 - (B) Drainage patterns;
 - (C) Pad elevations;
 - (D) Finish grade; and
 - (E) Storm water retention improvements, if applicable.
 - (2) To prevent excessive erosion and *runoff*, it is highly recommended that the *project applicant*:
 - (A) Grade so that all irrigation and normal rainfall remains within property lines and does not drain on to non-permeable *hardscapes*;

- (B) Avoid disruption of natural drainage patterns and undisturbed soil; and
- (C) Avoid soil compaction in *landscaped areas*.

2.7 Certification of Completion

- (a) Landscape project installation shall not proceed until the *Landscape Documentation Package* has been approved by the City and any ministerial permits required are issued.
- (b) The *project 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*; and (ii) the following statement: "The landscaping has been installed in substantial conformance to the design plans, and complies with the provisions of the *Water Efficient Landscape Ordinance* for the efficient use of water in the landscape."
 - (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) *Overhead* irrigation shall be scheduled in accordance with the local water purveyor's Water Conservation Ordinance. Operation of the irrigation system outside the normal *watering window* is allowed for auditing and system maintenance.

2.9 Post-Installation Landscape and Irrigation Maintenance

- (a) Landscapes shall be maintained to ensure water use efficiency in accordance with City and Water District requirements.

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 professional appropriately licensed in the State of California to provide professional landscape design services.

(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.

(3) The landscape design and water use calculations for the identified property comply with the requirements of the City of Laguna Niguel Water Efficient Landscaping Regulations (Municipal Code Sections 6-5-40 to 6-5-45) and the *City of Laguna Niguel Guidelines for Implementation of the Water Efficient Landscaping Regulations*.

(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 Niguel Guidelines for Implementation of the Water Efficient Landscaping Regulations.

Print Name

Date

Signature

License Number

Address

Telephone

E-mail Address

Landscape Design Professional's Stamp
(If applicable)

EXAMPLE WATER EFFICIENT LANDSCAPE WORKSHEET

Page 1

This worksheet is filled out by the project applicant 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 from Appendix C (inches per year)

0.7 = Evapotranspiration Adjustment Factor (ETAF) for all Landscaped Areas except Special Areas

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 inland Laguna Niguel, 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 the closest similar location (Irvine) is 49.6 inches as listed in the Reference Evapotranspiration Table in Appendix C.

	ETo	ETAF	LA or SLA (ft ²)	Conversion	MAWA (Gallons Per Year)
MAWA for LA =	49.6	x 0.7	x 40,000	x 0.62	= 861,056
MAWA for SLA =	49.6	x 1.0	x 10,000	x 0.62	= 307,520
Total MAWA =			50,000		1,168,576 Gallons per year for LA+SLA

Estimated Applied Water Use

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

where:

$EAWU = \text{Estimated Applied Water Use (gallons per year)}$

$ETo = \text{Reference Evapotranspiration from Appendix C (inches per year)}$

$KL = \text{Hydrozone Plant Factor (Appendix F or WUCOLS); or Landscape Coefficient (see box to right)}$

$LA = \text{Landsaped Area (square feet)}$

$0.62 = \text{Conversion factor (to gallons per square foot)}$

$IE = \text{Irrigation Efficiency from Appendix E, or IME} \times DU \text{ where}$

$IME = \text{Irrigation Management Efficiency} = 90\%$

$DU = \text{Distribution Uniformity of irrigation head (from manufacturer)}$

Example Calculation: a hypothetical landscaped project in inland Laguna Niguel, CA with an irrigated landscaped area totaling 40,000 square feet with 10,000 square feet of Special Landscaped Area.

To calculate a Landscape Coefficient KL for a hydrozone:

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

where

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

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

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

For WUCOLS, visit: www.owue.water.ca.gov/docs/wucols00.pdf

	ETo	KL	LA	Conversion	IE	EAWU (Gallons per year)
Special Landscaped Area; stream rotors	49.6	x 1.00	x 10,000	x 0.62	÷ 0.75	= 410,027
Cool Season Turf	49.6	x 0.80	x 0	x 0.62	÷ 0.71	= 0
Warm Season Turf	49.6	x 0.65	x 0	x 0.62	÷ 0.71	= 0
High Water Using Shrub	49.6	x 0.70	x 0	x 0.62	÷ 0.71	= 0
Medium Water Using Shrub; fixed sprays	49.6	x 0.50	x 15,000	x 0.62	÷ 0.65	= 354,831
Low Water Using Shrub; microsprays	49.6	x 0.30	x 25,000	x 0.62	÷ 0.75	= 307,520
Very Low Water Using Shrub; drip	49.6	x 0.20	x 0	x 0.62	÷ 0.85	= 0
Water Feature	49.6	x 1.00	x 0	x 0.62	÷ 1.00	= 0
Other	49.6	x 0.50	x 0	x 0.62	÷ 0.71	= 0
Total EAWU =			50,000			1,072,378 Gallons per year

Compare EAWU with MAWA.

The EAWU (1,072,378 gallons per year) is less than MAWA (1,168,576 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		
Fixed-spray heads		

WATER EFFICIENT LANDSCAPE WORKSHEET

Page 1

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

Point of Connection # _____

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)

MAWA Calculation:

	ETo	ETAF	LA or SLA (ft ²)	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

$EA\text{WU} = E\text{T}_o \times K_L \times LA \times 0.62 \div IE = \text{Gallons per year}$
 where:

$EA\text{WU} = \text{Estimated Applied Water Use}$ (gallons per year)

$E\text{T}_o = \text{Reference Evapotranspiration Appendix C}$ (inches per year)

$K_L = \text{Hydrozone Plant Factor}$ (Appendix F or WUCOLS) or *Landscape Coefficient* (see formula in box to right)

$LA = \text{Landscape Area}$ (square feet)

$0.62 = \text{Conversion factor}$ (to gallons per square foot)

$IE = \text{Irrigation Efficiency} = IME \times DU$

$IME = \text{Irrigation Management Efficiency}$ (90%)

$DU = \text{Distribution Uniformity of irrigation head}$

EA\text{WU} Calculation:

To calculate a *Landscape Coefficient*:

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

where

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

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

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

WUCOLS – www.owue.water.ca.gov/docs/wucols00.pdf

	E _{T_o}	K _L	LA	Conversion	IE	EA\text{WU} (Gallons Per Year)
Special Landscaped Area	x	x	x	x 0.62	÷	=
Cool Season Turf	x	x	x	x 0.62	÷	=
Warm Season Turf	x	x	x	x 0.62	÷	=
High Water Using Shrub	x	x	x	x 0.62	÷	=
Medium Water Using Shrub	x	x	x	x 0.62	÷	=
Low Water Using Shrub	x	x	x	x 0.62	÷	=
Very Low Water Using Shrubs	x	x	x	x 0.62	÷	=
Water Feature	x	x	x	x 0.62	÷	=
	x	x	x	x 0.62	÷	=
	x	x	x	x 0.62	÷	=
	x	x	x	x 0.62	÷	=
	x	x	x	x 0.62	÷	=
	x	x	x	x 0.62	÷	=
	x	x	x	x 0.62	÷	=
Other	x	x	x	x 0.62	÷	=
Total EA\text{WU} =						

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		
Fixed-spray heads		

Reference Evapotranspiration (ET_o) Table

Appendix C - Reference Evapotranspiration (ET_o) Table*													
County and City	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual ET _o
Orange													
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

LANDSCAPE INSTALLATION CERTIFICATE OF COMPLETION

I hereby certify that:

(1) I am a professional appropriately licensed in the State of California to provide professional landscape design services.

(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 landscaping 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 Niguel Water Efficient Landscaping Regulations (Municipal Code Sections 6-5-40 through 6-5-47) and the Guidelines for Implementation of the City of Laguna Niguel Water Efficient Landscaping Regulations for the efficient use of water in the landscape.

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

Print Name

Date

Signature

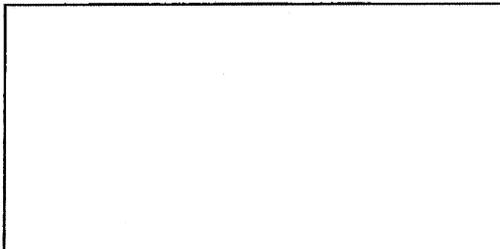
License Number

Address

Telephone

E-mail Address

Landscape Design Professional's Stamp
(If Appropriate)



Appendix E

Definitions

The 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.

“*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.

“*City*” means the City of Laguna Niguel or its authorized designee.

“*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.

“*Estimated Applied Water Use*” or “*EAWU*” means the annual total amount of water estimated to keep plants in a healthy state. It is based on factors such as reference *evapotranspiration rate*, the size of the *landscaped area*, *plant water use factors*, and the *irrigation efficiency* within each hydrozone.

“*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. 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 represents the standard of water use efficiency required by this Ordinance and the Guidelines; except that the ETAF for a *Special Landscape Area* shall not exceed 1.0.

“*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 or feature (*pervious* and *non-pervious*) installed around or through a *landscaped area*, such as pavements or walls. Pools and other water features are considered part of the *landscaped area* and not considered *hardscapes* for purposes of these Guidelines.

“*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.

“*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 is assumed to be achieved by using evapotranspiration controllers, soil moisture sensors, and other methods that will adjust irrigation run times to meet plant water needs and site factors.

“*Irrigation efficiency*” or “*IE*” means the measurement of the amount of water beneficially used divided by the amount of water applied to a *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 these *Guidelines* is 0.71. Greater *irrigation efficiency* can be expected from well designed and maintained systems. The following *irrigation efficiency* may be assumed for the listed irrigation heads where an assumed IME of 90% is appropriate:

- a. Pop-up stream rotator heads = 75%
- b. Stream rotor heads = 75%
- c. Microspray = 75%

- d. Bubbler = 80%
- e. Drip emitter = 85%
- f. Subsurface irrigation = 90%
- g. Fixed-spray turf or shrub heads = 65%

“*Landscape coefficient*” (K_L) is the product of a *plant factor* multiplied by a density factor and a *microclimate* factor. A *landscape coefficient* may be derived and used in lieu of the plant factor to more accurately estimate the ET Factor for an irrigated *landscaped areas* and *special landscaped areas*, at the discretion of the applicant or as directed by the City.

“*Landscape Documentation Package*” means the package of documents that a *project applicant* is required to submit to the *City* pursuant to Section 2.1 of these Guidelines.

“*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.

“*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.

“*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).

“*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.

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

“*Maximum Applied Water Allowance*” or “*MAWA*” means the upper design limit of annual applied water for the established *landscaped area*, as specified in Section 2.2 of these *Guidelines*. It is based upon the area’s *reference evapotranspiration*, the *ETAF*, and the size of the *landscaped area*. The *Estimated Applied Water Use* shall not exceed the *Maximum Applied Water Allowance*.

“*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.

“*New construction*” means, for the purposes of these Regulations, a new building with a new landscape, or other new landscape such as a new park, playground, or greenbelt without an associated building.

“*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.

“*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.

“*Person*” means any natural person, firm, joint venture, joint stock company, partnership, public or private association, club, 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 *City* or the *local water purveyor*, or the manager, lessee, agent, servant, officer, or employee of any of them or any other entity which is recognized by law as the subject of rights or duties.

“*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 *ET_o*, that estimates the amount of water needed by plants. For purposes of this *Water Efficient Landscape 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 these *Guidelines* 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 person submitting a *Landscape Documentation Package* required under Section 2.1 to request a permit, plan check, or design review from the local agency. A *project applicant* may be the property owner or his or her designee.

“*Property owner*” or “*owner*” means the record owner of real property as shown on the most recently issued equalized assessment roll.

“*Reference evapotranspiration*” or “*ET_o*” means a standard measurement of environmental parameters which affect the water use of plants. *ET_o* is given expressed in inches per day, month, or year as represented in Appendix C of these 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*.

“*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.

“*Rehabilitated landscape*” means any re-landscaping project by a public agency, private non-residential landowner or property manager, or property manager of an existing multi- or single-family residential complex or common area, where the modified landscape area, including water features but excluding hardscape, is greater than 2,500 square feet, and the modified area represents at least 50% of the total landscaped area, and the modifications are planned to occur within one year.

“*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.

“*Special Landscaped Areas*” 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 such as parks, sports fields, golf courses, swimming pools, 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 an irrigation system

“*Water Efficient Landscaping Regulations*” means Section 6-5-40 through 6-5-47 of the regulations codified in the Municipal Code in Article 3 of Division 5 (Water Conservation) in Title 6(Health and Sanitation).

“*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.

“*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 *landscaped area* and is assigned a *Plant Factor* of 1.0 and an *Irrigation Efficiency Factor* of 1.0. Naturally-occurring streams or ponds, or 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 defined as *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 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

APPENDIX F

Sample Plant List

- (a) This plant list has been compiled from the following sources which may be referred to for specific plant characteristics:
- (1) WUCOLS Project: Water Use Classification of Landscape Species, L.R. Costello and K.S. Jones, University of California Cooperative Extension and California Department of Water Resources
 - (2) Plants for California Landscapes, A Catalog of drought Tolerant Plants, California Department of Water Resources, February, 1981.
 - (3) Orange County Environmental Management Agency Drought Tolerant Plant List.
 - (4) County of Orange Fire Department Fuel Modification and Water Tolerant Plant List
- (b) The following list is of commonly available plants, emphasizing drought-tolerant species, that are suitable for the climate in the city. This is just a representative species list and is not intended to limit plant selection. It is designed to provide guidance to landscape professionals in selecting and maintaining plants based on their Plant Water Use Factor Range. Plant Factor Ranges are derived from WUCOLS Species Evaluation List for South Coastal Region 3. The Plant Factor Range is considered "Low" for plants with Plant Water Use Factors from 0.1 to 0.3, "Moderate" for plants with Plant Factors from 0.4 to 0.6, and "High" for plants with Plant Factors from 0.7 to 1.0. The Plant Water Use Factors shown represent average microclimatic conditions and may be adjusted for localized site conditions, such as shade, wind, slope exposure or reflected heat that can shift the Plant Factor by up to plus or minus 0.1 to 0.4.

Botanical Name	Common Name	Plant Water Use Factor
<i>TURFGRASSES</i>		
<i>Cynodon dactylon</i>	Bermuda Grass	0.6
<i>Paspalum vaginatum</i>	Seashore Paspalum	0.6
<i>Zoysia spp.</i>	Zoysia Grass	0.6
<i>Buchloe dactyloides</i>	Buffalo Grass	0.6
<i>Stenotaphrum secundatum</i>	St. Augustine Grass	0.6
<i>Poa annua</i>	Annual Bluegrass	0.8
<i>Poa pratensis</i>	Kentucky Bluegrass	0.8
<i>Lolium perenne</i>	Perennial Ryegrass	0.8
<i>Festuca rubra</i>	Red Fescue	0.8
<i>Festuca elatior</i>	Tall Fescue	0.8
<i>TREES</i>		
<i>Acacia baileyana</i>	Bailey Acacia	0.2
<i>Acacia longifolia</i>	Sydney Golden Wattle	0.2
<i>Acacia melanoxylon</i>	Blackwood Acacia	0.2
<i>Albizia julibrissin</i>	Silk Tree	0.4
<i>Cedrus atlantica</i>	Atlas Cedar	0.3
<i>Ceratonia siliqua</i>	Carob	0.2
<i>Cercidium spp.</i>	Palo Verde species	0.1
<i>Cordyline australis</i>	New Zealand Cabbage Tree	0.3
<i>Cupaniopsis anacardioides</i>	Carrotwood	0.5
<i>Eucalyptus spp.</i>	Eucalyptus species	0.3
<i>Feijoa sellowiana</i>	Pineapple Guava	0.3
<i>Geijera parviflora</i>	Australian Willow	0.3
<i>Gleditsia triacanthos</i>	Honey Locust	0.4
<i>Grevillea robusta</i>	Silk Oak	0.3
<i>Jacaranda mimosifolia</i>	Jacaranda	0.5
<i>Juglans californica</i>	So. California Black Walnut	0.2
<i>Juniperus californica</i>	California Juniper	0.2
<i>Leptospermum laevigatum</i>	Australian Tea Tree	0.2
<i>Lophostemon confertus</i>	Brisbane Box	0.5
<i>Lyonothamnus floribundus</i>	Catalina Ironwood	0.1
<i>Melaleuca linarifolia</i>	Flaxleaf Paperbark	0.2
<i>Melaleuca nesophila</i>	Pink Melaleuca	0.2
<i>Melia azedarach</i>	Chinaberry	0.1
<i>Olea europaea</i>	Olive	0.2
<i>Parkinsonia aculeate</i>	Jerusalem Thorn	0.1
<i>Phoenix canariensis</i>	Canary Island Date Palm	0.2
<i>Phoenix dactylifera</i>	Date Palm	0.2
<i>Pinus canariensis</i>	Canary Island Pine	0.3

<i>Pinus coulteri</i>	Coulter Pine	0.2
<i>Pinus halepensis</i>	Aleppo Pine	0.2
<i>Pinus pinaster</i>	Cluster Pine	0.3
<i>Pinus pinea</i>	Italian Stone Pine	0.2
<i>Pinus torreyana</i>	Torrey Pine	0.2
<i>Platanus acerifolia</i>	London Plane	0.5
<i>Platanus racemosa</i>	California Sycamore	0.5
<i>Podocarpus gracilior</i>	African Fern Pine	0.5
<i>Quercus agrifolia</i>	Coast Live Oak	0.1
<i>Quercus douglasii</i>	Blue Oak	0.1
<i>Quercus ilex</i>	Holly Oak	0.2
<i>Quercus suber</i>	Cork Oak	0.2
<i>Rhus lancea</i>	African Sumac	0.2
<i>Robinia pseudoacacia</i>	Black Locust	0.2
<i>Schinus molle</i>	California Pepper	0.1
<i>Ulmus pumila</i>	Siberian Elm	0.2
<i>Washingtonia filifera</i>	California Fan Palm	0.2
<i>Washingtonia robusta</i>	Mexican Fan Palm	0.2
<i>Zizyphus jujuba</i>	Chinese Jujube	0.3
SHRUBS		
<i>Agapanthus africanus</i>	Lily of the Nile	0.5
<i>Agave spp.</i>	Agave	0.2
<i>Aloe spp.</i>	Aloe	0.2
<i>Arctostaphylos spp.</i>	Manzanita	0.2
<i>Artemisia spp.</i>	Sage/Wormwood	0.2
<i>Atriplex spp.</i>	Saltbush	0.1
<i>Baccharis pilularis 'consaguinea'</i>	Coyote Bush	0.2
<i>Buxus microphylla japonica</i>	Japanese Boxwood	0.5
<i>Carpenteria californica</i>	Bush Anemone	0.2
<i>Cassia spp.</i>	Cassia species	0.3
<i>Cassia artemisioides</i>	Feather Cassia	0.2
<i>Ceanothus spp.</i>	California Lilac	0.1
<i>Cistus spp.</i>	Rockrose	0.2
<i>Convolvulus cneorum</i>	Bush Morning Glory	0.2
<i>Dendromecon spp.</i>	Bush Poppy	0.1
<i>Dodonaea viscosa</i>	Hopseed Bush	0.3
<i>Echium fastuosum</i>	Pride of Madeira	0.2
<i>Elaeagnus pungens</i>	Silver Berry	0.2
<i>Fremontodendron spp.</i>	Flannel Bush	0.1
<i>Grevillea spp.</i>	Grevillea species	0.2
<i>Hakea laurina</i>	Sea Urchin Tree	0.2
<i>Hakea suaveolens</i>	Sweet Hakea	0.2
<i>Heteromeles arbutifolia</i>	Toyon	0.2
<i>Juniperus spp.</i>	Juniper	0.3

<i>Lavandula</i>	Lavendar	0.2
<i>Leptosperum laevigatum</i>	Australian Tea Tree	0.2
<i>Leucophyllum frutescens</i>	Texas Ranger	0.2
<i>Lupinus arboreus</i>	Tree Lupine	0.2
<i>Lysiloma thornberi</i>	Feather Bush	0.2
<i>Myrtus communis</i>	True Myrtle	0.3
<i>Nerium oleander</i>	Oleander	0.2
<i>Phormium tenax</i>	New Zealand Flax	0.3
<i>Portulacaria afra</i>	Elephant's Food	0.2
<i>Prunus caroliniana</i>	Carolina Laurel Cherry	0.4
<i>Pyracantha spp.</i>	Firethorn	0.3
<i>Rhaphiolepis indica</i>	India Hawthorne	0.4
<i>Rhamnus californica</i>	California Coffeeberry	0.1
<i>Rhus laurina</i>	Laurel Sumac	0.1
<i>Rhus ovata</i>	Sugar Bush	0.1
<i>Ribes speciosum</i>	Fuchsia Flowering Gooseberry	0.3
<i>Rosa hybrids</i>	Hybrid Roses	0.5
<i>Rosmarinus officinalis</i>	Rosemary	0.2
<i>Simmondsia chinensis</i>	Jojoba	0.1
<i>Teucrium fruticans</i>	Bush Germander	0.2
GROUNDCOVERS		
<i>Acacia redolens</i>	Prostrate Acacia	0.2
<i>Arctostaphylos spp.</i>	Manzanita	0.2
<i>Ceanothus spp.</i>	California Lilac	0.1
<i>Cistus spp.</i>	Rockrose	0.2
<i>Gazania spp.</i>	Gazania	0.5
<i>Helianthemum nummularium</i>	Sunrose	0.2
<i>Lonicera japonica 'halliana'</i>	Hall's Honeysuckle	0.3
<i>Myoporum 'Pacifcum'</i>	Pacifica Saltbush	0.3
<i>Myoporum parvifolium</i>	Myoporum	0.2
<i>Phyla nodiflora</i>	Lippia	0.3
<i>Santolina spp.</i>	Lavendar Cotton	0.2
<i>Teucrium chamaedrys</i>	Germander	0.2
<i>Verbena peruviana</i>	Peruvian Verbena	0.2
<i>Vinca minor</i>	Periwinkle	0.5
<i>Zauschneria californica</i>	California Fuschia	0.1
PERENNIALS, FERNS, GRASSES AND BULBS		
<i>Aloe spp.</i>	Aloe	0.2
<i>Amaryllis belladonna</i>	Naked Lady	0.1
<i>Begonia 'Richmondensis'</i>	Richmond Begonia	0.5
<i>Coreopsis spp.</i>	Coreopsis	0.2
<i>Echium fastuosum</i>	Pride of Madeira	0.2

<i>Impatiens uguensis</i>	Impatiens	0.8
<i>Kniphofia uvaria</i>	Red-Hot Poker	0.3
<i>Limonium perezii</i>	Statice	0.2
<i>Oenothera berlandierii</i>	Mexican Evening Primrose	0.2
<i>Romneya coulteri</i>	Matilija Poppy	0.1
<i>Senecio cineraria</i>	Dusty Miller	0.2
FIRE RETARDANT PLANTS - TREES		
<i>Ceratonia siliqua</i>	Carob	0.2
<i>Rhus lancea</i>	African Sumac	0.2
<i>Schinus molle</i>	California Pepper	0.1
<i>Umbellularia californica</i>	California Bay Tree	0.5
<i>Washingtonia spp.</i>	Fan Palm	0.2
FIRE RETARDANT PLANTS - SHRUBS		
<i>Acacia redolens</i> 'Low Boy'	'Low Boy' Acacia	0.2
<i>Artemisia caucasica</i>	Caucasian Artemisia	0.2
<i>Atriplex cuneata</i>	Saltbush	0.1
<i>Atriplex gardneri</i>	Gardner's Saltbush	0.1
<i>Atriplex semibaccata</i>	Creeping Australian Saltbush	0.1
<i>Callistemon citrinus</i>	Lemon Bottlebrush	0.2
<i>Callistemon viminalis</i>	Weeping Bottlebrush	0.4
<i>Cistus yellosus</i>	Rockrose	0.2
<i>Heteromeles arbutifolia</i>	Toyon	0.2
<i>Nerium oleander</i>	Oleander	0.2
<i>Prunus lyonii</i>	Catalina Cherry	0.2
<i>Rhamnus alaternus</i>	Italian Buckthorn	0.3
<i>Rhus integrifolia</i>	Lemonade Berry	0.1
<i>Rosmarinus officinalis</i> 'prostratus'	Prostrate Rosemary	0.2
FIRE RETARDANT PLANTS - HERBACEOUS PLANTS		
<i>Achillea tomentosa</i>	Yarrow	0.2
<i>Agave Americana</i>	Century Plant	0.2
<i>Aloe spp.</i>	Aloe	0.2
<i>Arctotheca calendula</i>	Cape Weed	0.5
<i>Campsis radicans</i>	Trumpet Vine	0.4
<i>Carbobrotus edulis</i>	Hottentot Fig	0.1
<i>Certastium tomentosum</i>	Snow in Summer	0.5
<i>Crassula spp.</i>	Crassula	0.2
<i>Delosperma 'alba'</i>	White Trailing Iceplant	0.2
<i>Gazania uniflora</i>	Trailing Gazania	0.5
<i>Lampranthus spp.</i>	Iceplant	0.2

<i>Potentilla verna</i>	Spring Cinquefoil	0.5
<i>Santolina chamaecyparissus</i>	Lavendar Cotton	0.2
<i>Satureja Montana</i>	Winter Savory	0.5
<i>Solanum jasminoides</i>	Potato Vine	0.5
<i>Tecomaria capensis</i>	Cape Honeysuckle	0.5
<i>Verbena peruviana</i>	Peruvian Verbena	0.2
<i>Vinca spp.</i>	Periwinkle	0.5
<i>Wisteria spp.</i>	Wisteria	0.5
EROSION CONTROL PLANTS - TREES		
<i>Acacia longifolia</i>	Sydney Golden Wattle	0.2
EROSION CONTROL PLANTS - SHRUBS		
<i>Ceanothus spp.</i>	California Lilac	0.1
<i>Cistus spp.</i>	Rockrose	0.2
<i>Coprosma kirkii</i>	Coprosma	0.5
<i>Cotoneaster spp.</i>	Cotoneaster species	0.4
<i>Echium fastuosum</i>	Pride of Madeira	0.2
<i>Eriogonum fasciculatum</i>	Buckwheat	0.1
<i>Rhamnus croceus ilicifolia</i>	Redberry	0.1
<i>Rhus aromatica</i>	Fragrant Sumac	0.3
<i>Rhus trilobata</i>	Squawbush	0.2
<i>Ribes viburnifolium</i>	Evergreen Currant	0.3
<i>Rosmarinus officinalis</i>	Rosemary	0.2
<i>Santolina chamaecyparissus</i>	Lavendar Cotton	0.2
<i>Symphoricarpus orbiculatus</i>	Indian Currant	0.5
EROSION CONTROL PLANTS - VINES AND GROUNDCOVERS		
<i>Arctostaphylos uva-ursi</i>	Bearberry	0.2
<i>Arctotheca calendula</i>	Cape Weed	0.5
<i>Baccharis pilularis</i>	Coyote Brush	0.2
<i>Bougainvillea spp.</i>	Bougainvillea	0.2
<i>Carpobrotus edulis</i>	Ice Plant	0.1
<i>Delosperma 'alba'</i>	White Trailing Iceplant	0.2
<i>Drosanthemum spp.</i>	Iceplant	0.2
<i>Gazania spp.</i>	Gazania	0.5
<i>Hedera spp.</i>	Ivy species	0.5
<i>Hypericum calycinum</i>	Creeping St. John's Wort	0.5
<i>Juniperus spp.</i>	Juniper species	0.3
<i>Lampranthus spp.</i>	Ice Plant	0.2
<i>Lonicera japonica</i>	Honeysuckle	0.3
<i>Maleophora crocea</i>	Iceplant	0.2

<i>Vinca spp.</i>	Periwinkle	0.5
<i>EROSION CONTROL PLANTS – ANNUALS/PERENNIALS</i>		
<i>Achillea tomentosa</i>	Wooly Yarrow	0.2
<i>Ajuga reptans</i>	Carpet Bugle	0.6
<i>Arctotis grandis</i>	African Daisy	0.3
<i>Helianthemum nummularium</i>	Sunrose	0.2
<i>Myosotis sylvatica</i>	Forget-me-not	0.5
<i>Pelargonium Peltatum</i>	Ivy Geranium	0.5
<i>AIR POLLUTION TOLERANT PLANTS - TREES</i>		
<i>Aesculus californica</i>	California Buckeye	0.1
<i>Ailanthus altissima</i>	Tree-of-Heaven	0.2
<i>Broussonetia papyrifera</i>	Paper Mulberry	0.4
<i>AIR POLLUTION TOLERANT PLANTS – SHRUBS</i>		
<i>Forsythia spp.</i>	Forsythia species	0.4
<i>Hamamelis spp.</i>	Witch Hazel species	0.5
<i>Nerium oleander</i>	Oleander	0.2

Attachment 4

EVIDENCE DEMONSTRATING EQUIVALENT EFFECTIVENESS AND JUSTIFYING DIFFERENCES BETWEEN THE STATE MODEL A.B. 1881 ORDINANCE AND THE CITY OF LAGUNA NIGUEL ORDINANCE, REGULATIONS AND GUIDELINES

Issue 1: Separation into Regulations and Guidelines

The State Model Ordinance is a single document that includes findings, applicability provisions, performance standards and detailed technical criteria. The City has elected to separate these components into 1) an ordinance that adopts regulations including the applicability provisions and basic performance standards, and 2) a separate set of implementing guidelines that include the detailed technical criteria and procedures. No essential provisions of the State Model were eliminated, although a few in the Guidelines were adjusted to reduce complexity, improve clarity, better reflect local procedures, and/or provide for local flexibility while still achieving equivalent results, as discussed below.

Issue 2; Interpretation of Applicability Parameters

The State Model's applicability threshold is defined as including landscape projects for "new construction and rehabilitation projects with 2,500 square feet or more of irrigated area" on developer-installed residential projects, public agency projects, and private development projects requiring a "building or landscape permit, plan check, or design review". The regulations are also to apply to "new construction" landscape by individual homeowners where the irrigated area of the landscape project is equal to or more than 5,000 square feet. The State Model does not define the terms "landscape permit" or "building permit". The City's current Community Development procedures do not require any "landscape permits" per se. The City does use the phrase "building permit", applying it not just to buildings but also as a categorical term for other major or minor, interior or exterior ministerial (electrical, structural, plumbing, etc) permits, that may not involve an actual building. In order to interpret the State's intent, Staff noted that the State Model does provide a definition of the term "*new construction*", stating that the phrase "for the purposes of this ordinance, means a new building with a landscape or other new landscape, such as a park, playground, or greenbelt without an associated building." This context has been interpreted to conclude that the State Model intended the phrase "building permit" not in the City's categorical sense to include even minor ministerial permits, but to describe substantial development projects, with or without new buildings, on previously undeveloped lands. Staff therefore determined that the most accurate equivalent expression of the State's intent, in City procedural terms, was to target *projects subject to review and approval of a landscape plan, pursuant to a discretionary permit such as a site development permit, coastal development permit, use permit or variance (for a new project), or to a changed plan (for significantly revised or rehabilitated projects).*

Issue 3: Maximum Applied Water Allowance Calculation

The State Model sets the Maximum Applied Water Allowance (MAWA) performance standard, and describes in detail the equations and variables required to calculate the water allowance and Estimated Total Water Use (ETWU) for a project. The City's ordinance, in contrast, includes only the basic performance standard (i.e. that ETWU cannot exceed MAWA) in the regulations, and places all the detailed equations and discussion of variables in a separate Guidelines document adopted via a Resolution by the City Council. For purposes of clarity and consistency with the MAWA, the City regulations and guidelines re-name the ETWU as EAWU (Estimated Applied Water Allowance). Furthermore, the State Model requires that ETWU calculations be detailed for each irrigation valve, while the proposed City Guideline only requires EAWU calculations to be submitted for each water meter. The process and paperwork are thus simplified but the numerical result for the project as a whole is the same.

Issue 4: Self Certification

The State Model describes application and compliance verification procedures to be accomplished by City staff. The proposed City Guideline allows for certification of compliance to be performed by the applicant's licensed private professionals with the professional expertise to perform the tasks required as part of landscape design documentation and construction. The licensed professionals will certify the project meets the basic performance standard in the ordinance and complies with the technical Guideline, thus assuring that the project is at least as water-efficient as the State Model requires. The City will review the plans and calculations prior to approval, and inspect the landscape construction for compliance with the plans prior to occupancy, to verify that the "self-certification" is justified. Self-certification provides a cost-effective method for the City to review plans or projects without increasing the need for in-house technical expertise.

Issue 5: Water Budgets for Existing Landscaped Areas

The State Model requires Cities to administer programs to assure that existing landscapes over one acre do not use water in excess of a Maximum Applied Water Allowance determined by an Evapotranspiration Adjustment Factor (ET Factor) of 0.8. The State Model also allows Cities to delegate this program responsibility, in whole or in part, to another agency if appropriate. The proposed City regulations designate the Moulton Niguel Water District for this program administration role on existing developments, in recognition of the *community-wide* water use efficiency that should be achieved through the budget-based tiered-rate billing system that the District is implementing starting in 2009 and 2010. The Irvine Ranch Water District (IRWD) has used this type of pricing strategy successfully to reduce outdoor water use among its customers by nearly 50%. According to IRWD's Senior Conservation Specialist, in 1990 IRWD-wide water usage was 4.4 acre-feet/acre/year (an ET Factor of 1.1). After implementing a budget-based tiered-rate billing structure, water use dropped to approximately 2.2 acre-feet/acre/year (an ET Factor of 0.55). Considering that this strategy will be applied to all parcels in Laguna Niguel – not just landscapes over one acre – it should be substantially *more* effective than the State Model requires.

Issue 6: Irrigation Scheduling

The State Model sets prescriptive elements for parameters used to schedule automatic irrigation controllers for new landscaping. The proposed Guidelines do not require the schedules to be set directly, but does require that parameters needed to appropriately program the specified irrigation controller should be defined on the irrigation plans, in recognition that the new generation of automatic controllers will thereby self-adjust the watering schedule in the context of actual weather variability.

Issue 7: Landscape and Irrigation Maintenance Schedule

The State Model requires a detailed maintenance schedule to be submitted with the Certificate of Completion for new landscape projects. The proposed Guideline does not require a schedule to be submitted, and defers instead to local City and Water District codes and Conditions of Approval that require efficient watering and appropriate other maintenance to keep the landscaping healthy.

Issue 8: Irrigation Audit

The State Model requires that an irrigation audit should be conducted after a new landscape is installed. The proposed Guideline provides for post-construction certification of compliance by a licensed landscape professional; and further relies on the budget-based tiered-rate billing system implemented by Moulton Niguel Water District to provide a regular ongoing incentive (in effect, a monthly audit reinforced by cost penalties) for customers to constrain their water use.

Issue 9: Recycled Water

The State Model includes provisions to encourage the use of reclaimed water. These provisions were not included in the proposed regulations because they are redundant with local practices of the Water District and with existing recycled water and health codes.

Issue 10: Stormwater Management

The State Model includes provisions to encourage stormwater management practices. These provisions were not included in the proposed regulations because they are redundant with the National Pollutant Discharge Elimination System (NPDES) permit and the City stormwater ordinance.

Issue 11: Water Waste Prevention

The State Model requires that Cities prevent water waste resulting from inefficient landscape irrigation by prohibiting runoff. The proposed City regulations designate the Moulton Niguel Water District to take the key role in this regard, in recognition of the Water Waste Prohibitions already in the District's Water Conservation Rules and Regulations, and in acknowledgement of the District's active enforcement program. City staff responsible for implementing the National Pollution Discharge Elimination System program coordinate regularly with District field staff and management in this regard.

Issue 12: Effective Precipitation

The State Model allows but does not require, the consideration of 'effective precipitation', at 25% of annual precipitation, in reducing the Maximum Applied Water

Allowance. The proposed regulations do not include this provision because annual precipitation in Laguna Niguel is only about 12" and drought years are common, so the potential adjustment was not considered substantial or reliable enough to justify its inclusion.

Issue 13: Overhead Spray Setback

The State Model prohibits overhead irrigation within 24 inches of any non-permeable surface unless the surface drains to landscaping. This provision was considered problematical because overhead spray systems have the most optimal water distribution, cost and maintenance characteristics for the turfgrass play areas accessed by concrete walkways that typically predominate in City parks. The proposed City Guideline allows an additional narrow exemption that still avoids waste of potable water resources and protects local streams, by allowing overhead irrigation within the 24" 'setback' specifically at turfed recreational areas where the irrigation system uses reclaimed water and overspray or runoff doesn't reach the drainage system.

Issue 14: Irrigation Design Constraints on Narrow and Sloped Areas

The State Model requires that areas less than 8' wide be irrigated with subsurface or low volume irrigation, and that slope areas be irrigated at a precipitation rate not exceeding 0.75 inches per hour. The City Guidelines provide more design flexibility while retaining the underlying intent of each State provision; i.e., by requiring that overspray onto adjacent hardscapes, and/or runoff from slopes, should both be avoided.

Issue 15: Plant Water Use Factors

The State Model refers to a separate reference document, the *Water Use Characteristics of Landscape Species* (WUCOLS), as the preferred source of numerical plant water use factors to be utilized in calculating the EAWU for a project. WUCOLS, however, does not directly identify numerical plant water use factors for each species, but instead defines water need as "low", "medium" or "high" numerical ranges, depending on the local climate; and further recommends that water use factors be refined as 'landscape coefficients' based on site microclimate conditions. In order to lessen confusion and make the Guidelines simpler and more user-friendly, the City has included an appendix with a plant species list that identifies specific numerical plant water use factors appropriate to the local climatic regime. The City Guidelines also allow but do not require the adjustment of plant factors into numeric landscape coefficients, at the option of either the applicant or the City.