AGENDA ITEM NO. 7.d.

City of Garden Grove

INTER-DEPARTMENT MEMORANDUM

To:	Matthew Fertal	From:	Susan Emery
Dept:	City Manager	Dept:	Community Development
Subject:	CONSIDERATION OF AMENDMENT NO. A-152-09, AN AMENDMENT TO TITLE 9 OF THE GARDEN GROVE MUNICIPAL CODE	Date:	January 26, 2010

OBJECTIVE

To transmit a recommendation from the Planning Commission amending Title 9 (Zoning Ordinance) of the Garden Grove Municipal Code to incorporate landscape water efficiency requirements in Chapter 9.04 General Provisions, Chapter 9.08 Single-Family Residential, 9.12 Multi-Family Residential, 9.16 Commercial, Office Professional, Industrial, and Open Space.

BACKGROUND

Due to recent natural and regulatory droughts affecting the State, the Legislature has expanded water conservation requirements. Fifty-eight percent of residential water is used for landscape irrigation. In an attempt to conserve water, the Legislature enacted AB 1881 in 2006, which requires local agencies to adopt a State Model Water Efficient Landscape Ordinance (the "State Model Ordinance") or a local water efficient landscape ordinance that is "at least as effective" as the State Model Ordinance.

The Planning Commission considered the proposed amendment at their public hearing held on December 3, 2009. The Commission recommended approval of the Amendment with a 7-0 vote. No one spoke in favor, or in opposition to the proposed Amendment.

DISCUSSION

The State Legislature is requiring cities to adopt either a State model water efficient landscape ordinance ("State Model Ordinance") or a local alternative that is "at least as effective" as the State Model Ordinance. The State Model Ordinance requires that applicants submit documentation of landscape water efficiency for certain new landscaping and landscape rehabilitation projects and for projects, to which the ordinance applies, that reduce the amount of water use to no more than 70% of the project if it were planted entirely with turf.

A local model alternative water efficient landscape ordinance ("Countywide Model Ordinance") has been developed by the Orange County Division of the League of Cities and the Municipal Water District of Orange County (MWDOC) with support from the Orange County Chapter of the Building Industry Association. The Countywide Model Ordinance is intended to promote local control through focused landscape water efficiency objectives promoting landscapes that conserve water,

that create efficient irrigation systems, and that are certified for water efficiency by landscape professionals. The certification by landscape professionals would be in lieu of charging a city fee to have the City certify compliance with the ordinance and was intended as a way to reduce regulatory and economic costs.

The Countywide Model Ordinance provisions for landscape water efficiency are proposed to be integrated into, and made part of, the City of Garden Grove Municipal Code, Title 9. The provisions from the Countywide Model Ordinance are being placed in the Chapters providing development standards for Single-Family Residential (Chapter 9.08), Multi-Family Residential (Chapter 9.12) and Commercial, Office Professional, Industrial and Open Space (Chapter 9.16) and shall be known collectively as the Landscape Water Efficiency Provisions. The three Chapters (9.08, 9.12 and 9.16) are being amended to include definitions of landscaping and irrigation terms. Existing definitions for landscaping and irrigation terms are being removed from the general definitions found in Chapter 9.04 General Provisions.

The Countywide approach splits the extensive technical details contained in the State Model Ordinance into a separate Guidelines document that is proposed to be adopted by City Council Resolution. The Guidelines for Implementation of the City of Garden Grove Landscape Water Efficiency Provisions (the "Guidelines") will be attached to Title 9 as Appendix 1 and may be amended from time to time by Resolution of the City Council.

FINANCIAL IMPACT

None.

RECOMMENDATION

The Planning Commission recommends that the City Council:

- Conduct a public hearing;
- Introduce the attached ordinance approving Amendment No. A-152-09 to add Landscape Water Efficiency provisions as found in Exhibit "A",
- Adopt the attached resolution approving the Landscape Water Efficiency Guidelines

SUSAN EMERY
Community Development Director

By: Erin Webb
Senior Planner

Approved for Agenda Listing

Matthew Fertal
City Manager

Attachment 1: Planning Commission Staff Report dated December 3, 2009
Attachment 2: Planning Commission Resolution No. 5698
Attachment 3: Exhibit "A" for Amendment No. A-152-09
Attachment 4: Guidelines for Implementation of the City of Garden Grove Landscape Water Efficiency Provisions
Attachment 5: Draft Minute Excerpt of December 3, 2009 Planning Commission Meeting
Attachment 6: Draft Ordinance for Amendment No. A-152-09
Attachment 7: Draft Resolution for Adoption of the Guidelines

COMMUNITY DEVELOPMENT DEPARTMENT PLANNING STAFF REPORT

AGENDA ITEM NO: C.2	**SITE LOCATION:** Citywide
HEARING DATE: December 3, 2009	**GENERAL PLAN:** N/A
CASE NO: Amendment No. A-152-09	**ZONE:** N/A
APPLICANT: City of Garden Grove	**CEQA DETERMINATION:** Exempt

REQUEST:

A request for Planning Commission to recommend to the City Council approval of an Amendment to Title 9 of the Garden Grove Municipal Code (Zoning Ordinance, Title 9, Reorganized October 2009) to incorporate landscape water efficiency requirements in Chapter 9.04 General Provisions, Chapter 9.08 Single-Family Residential, 9.12 Multi-Family Residential, 9.16 Commercial, Office Professional, Industrial, and Open Space.

SUMMARY:

The State legislature is requiring cities, by January 1, 2010, to adopt either a State model water efficient landscape ordinance ("State Model Ordinance") or a local alternative that is "at least as effective" as the State Model Ordinance. The major components of the State Model Ordinance are: 1) review and approval by the City of a landscape water efficiency documentation package submitted by the project applicant for certain new landscaping and landscape rehabilitation projects; and 2) projects to which the ordinance applies must use no more than 70% as much water as if the project consisted completely of turf. The Orange County Division of the League of Cities has developed a local model alternative water efficient landscape ordinance supported by the Orange County Chapter of the Building Industry Association ("Countywide Model Ordinance"), intended to promote local control. The Countywide Model Ordinance accomplishes focused landscape water efficiency objectives for those landscape projects to which it applies: 1) promoting landscapes that are not water-wasting; 2) requiring that irrigation systems are appropriately planned, installed and scheduled to minimize water waste; and 3) reducing regulatory and economic costs by requiring project applicants to have a landscape professional certify compliance with the water efficient landscape ordinance instead of charging a city fee to have the City certify compliance with the ordinance. City staff recommends that the Council adopt the Countywide Model Ordinance.

BACKGROUND:

Due to recent natural and regulatory droughts affecting the State, the Legislature has expanded water conservation requirements. Fifty-eight percent of residential water is used for landscape irrigation. In an attempt to conserve water, the Legislature enacted AB 1881 in 2006, which requires local agencies to adopt a State Model Water Efficient Landscape Ordinance (the "State Model Ordinance") or a local water efficient

landscape ordinance that is "at least as effective" as the State Model Ordinance by January 1, 2010.

DISCUSSION:

The State Model Water Efficient Landscape Ordinance

In 2006, the California legislature enacted Assembly Bill ("AB") 1881 requiring cities, by January 1, 2010, to adopt a water efficient landscape ordinance. Cities may either adopt a model developed by the State Department of Water Resources ("DWR") or a local alternative which, based on evidence in the record, is at least as effective as the DWR's model. The DWR's model water efficient landscape ordinance ("State Model Ordinance") contains the following major components: 1) certain new landscaping and Landscape rehabilitation projects require review and approval by the City of a landscape water efficiency documentation package submitted by the project applicant; and 2) the landscape water efficiency documentation package must show that the proposed new or rehabilitated landscape uses only 70% as much water as if the proposed new or rehabilitated landscape consisted completely of turf. The State Model Ordinance does not contain any requirements on project applicants or the City after a Certificate of Use and Occupancy or final permit has been issued. Existing standard water district water waste prohibitions would continue to apply.

The Alternative Countywide Model Water Efficient Landscape Ordinance

The Orange County League of Cities along with the Municipal Water District of Orange County (MWDOC) has developed a local model alternative water efficient landscape ordinance ("Countywide Model Ordinance" or "Ordinance"), supported by the Orange County Chapter of the Building Industry Association. The purpose of the Countywide Model Ordinance is to comply with AB 1881's landscape water efficiency requirements in a way that promotes local control and includes significant input from local stakeholders – especially local elected officials, who were actively engaged in the process of developing the Countywide Model Ordinance. The County Model Ordinance accomplishes focused landscape water efficiency objectives: 1) promoting landscapes that are not water-wasting and 2) requiring that irrigation systems are appropriately planned, installed and scheduled to minimize water waste. The principal innovation of the Countywide Model Ordinance is a requirement that a landscape professional certify compliance with the Ordinance for landscape projects that are required to submit a landscape water efficiency documentation package.

Advantages of the Countywide Model Ordinance Compared to the State Model Ordinance

The Countywide Model Ordinance has several advantages over the State Model Ordinance. First, certification by a landscape professional of landscape water

efficiency documentation packages for landscape projects to which the Ordinance applies reduces the need for city resources and fees to perform this function. Second, the extensive technical details contained in the State Model Ordinance are split by the Countywide Model Ordinance into a separate Guidelines document to be adopted by City Council resolution, allowing the City's landscape water efficiency standards to be amended or updated more easily than what the State Model Ordinance provides. The Guidelines shall be attached to Title 9 of the City of Garden Grove Municipal Code (Zoning Ordinance) as Appendix 1, which may be amended from time to time by Resolution of the City Council. Third, the Countywide Model is tailored to local conditions, such as incorporating direct references to Orange County Fire Authority regulations and clarifying that the Orange County Fire Authority regulations take precedence in the event of a conflict between the Orange County Fire Authority regulations and the Ordinance.

Applicability

The ordinance will apply to the following landscape projects:

1. New landscape installations or landscape rehabilitation projects; by *public agencies or private non-residential developers*, except for cemeteries; 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 a discretionary approval of a landscape plan or which otherwise require a ministerial permit for a landscape or water feature (i.e., a "City permit"); and

2. New landscape installations or 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 a discretionary approval of a landscape plan or which otherwise require a City permit; and

3. New landscape installation projects; by *individual homeowners*; on single-family or multi-family residential lots; with a total 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 a discretionary approval of a landscape plan, or which otherwise require a City permit.

4. A "landscape rehabilitation project" is subject to the requirements of the Ordinance where:
   (a.) the modified landscaped area is
      greater than 2,500 square feet and
      represents at least 50% of the total landscaped area; and
   (b.) the modifications are planned to occur within one year.

Timing

All cities in the State are under a tight time constraint to adopt a local alternative water efficient landscape ordinance because AB 1881 contains the following deadlines. By January 1, 2010, the City must either adopt the State Model Ordinance or an alternative water efficient landscape ordinance. By January 31, 2010, the City must report to DWR on whether it adopted the State Model Ordinance or a local alternative water efficient landscape ordinance. If the City does not adopt either the State Model Ordinance or a local alternative water efficient landscape ordinance by January 1, 2010, the State Model Ordinance applies within the City as if the City had adopted it until the City adopts the its own local alternative water efficient landscape ordinance.

TITLE 9 AMENDMENTS:

Recently, Title 9 of the Garden Grove Municipal Code was reorganized to be more user friendly. The reorganized code divided the Zoning Section into nine separate Chapters such as Single-Family Residential and Multi-Family Residential. In this way, all the codes that applied to single-family residences were brought together into one Chapter and could be provided to a homeowner. This made it easier for the public, as well as Staff, to find all the pertinent information about a specific zone in one place.

The Countywide Model Ordinance provisions for landscape water efficiency have been integrated into, and made part of, the City of Garden Grove Municipal Code, Title 9. The provisions from the Countywide Model Ordinance have been placed in the Chapters providing development standards for Single-Family Residential (Chapter 9.08), Multi-Family Residential (Chapter 9.12) and Commercial, Office Professional, Industrial and Open Space (Chapter 9.16.) and shall be known collectively as the Landscape Water Efficiency provisions. The three Chapters have been amended to include definitions of landscaping and irrigation terms. Existing definitions for landscaping and irrigation terms have been removed from the general definitions found in Chapter 9.04. The Guidelines have been attached to Title 9 as Appendix 1.

The following summarizes the amendments and additions of Landscape Water Efficiency provisions within each Chapter:

SECTION I. ZONING

Chapter 9.04 General Provisions:

This Chapter includes the purpose of the Code; identifies the review authorities; states the relationship between the zoning regulations to the General Plan and other laws; establishes zones; and provides definitions to promote consistency in interpretation of uses and development standards. The definitions pertaining to landscaping and irrigation terms have been removed. These definitions are now included in each of the three Chapters that provide landscaping requirements, Chapter 9.08, Chapter 9.12 and Chapter 9.16.

Chapter 9.08 Single-Family Residential:

The Single-Family Residential code includes a summary of the single-family zone; list of uses and special operating conditions; special uses; development standards (i.e., setbacks, building height, lot coverage, etc.); landscaping requirements; parking requirements; and recycling requirements. Two new sections have been added to this Chapter. One new section adds the definitions for landscaping and irrigation terms (Section 9.08.40.045) and the second new section creates a separate portion of the code for Landscape Water Efficiency provisions (Section 9.08.40.055). This Chapter also has existing code sections providing landscaping requirements (Section 9.08.40.040 through 9.08.40.080) for single-family residential projects. The existing landscape requirements have been reviewed and amended/deleted to be consistent with the Countywide Model Ordinance and the Guidelines.

Chapter 9.12 Multi-Family Residential:

This Chapter includes a summary of the multi-family zones; list of uses and special operating conditions; special uses; development standards (i.e., setbacks, building height, lot coverage, etc.); landscaping requirements; parking requirements; and recycling requirements. The changes are identical to those in the Single-Family Residential Chapter with two new sections being added for definitions (Section 9.12.40.075) and for landscape water efficiency (Section 9.12.40.085). This Chapter also has existing code sections providing landscaping requirements (Section 9.12.40.070 through Section 9.12.40.110) for multi-family residential projects. The existing landscape requirements have been reviewed and amended/deleted to be consistent with the Countywide Model Ordinance and the Guidelines.

Chapter 9.16 Commercial/Industrial/Open Space:

This Chapter includes a summary of the commercial, industrial, and open space zones; list of uses and special operating conditions; special uses; development standards (i.e., setbacks, building height, lot coverage, etc.); landscaping requirements; parking requirements; and recycling requirements. As in the two Chapters above, the landscaping requirements have been expanded to have two additional sections, one for definitions (Section 9.16.40.055) and the second for landscape water efficiency requirements (Section 9.16.40.065). The existing code sections pertaining to landscaping (Section 9.16.40.050 through Section 9.16.40.080) have been reviewed and amended/deleted to be consistent with the Countywide Model Ordinance and the Guidelines.

Appendix 1

The Guidelines have been incorporated into Title 9 as Appendix 1. Appendix 1 may be amended from time to time by Resolution of the City Council.

RECOMMENDATION:

Staff recommends that the Planning Commission:

- Recommend approval of Amendment No. A-152-09 and the Guidelines to the City Council.

Karl Hill
Planning Services Manager

By: Erin Webb
Senior Planner

RESOLUTION NO. 5698

A RESOLUTION OF THE PLANNING COMMISSION OF THE CITY OF GARDEN GROVE RECOMMENDING APPROVAL OF AMENDMENT NO. A-152-09 TO THE CITY COUNCIL.

BE IT RESOLVED that the Planning Commission of the City of Garden Grove in regular session assembled on December 3, 2009, considered the amendment to Title 9 of the Garden Grove Municipal Code, which includes the amendment and addition of Landscape Water Efficiency provisions. The Planning Commission does hereby recommend approval of Amendment No. A-152-09 to the City Council. Upon consideration of the item, pursuant to the below report and findings, the Planning Commission does hereby find that the Amendment is exempt from CEQA based on a Category 7 Exemption (14 California Code of Regulations, Section 15307) for activities that enhance or protect a natural resource.

BE IT FURTHER RESOLVED in the matter of Amendment No. A-152-09 the Planning Commission of the City of Garden Grove does hereby report as follows:

1. The subject case was initiated by the City of Garden Grove.

2. The City of Garden is proposing to amend, with new Sections in bold italicized type, Title 9 of the Garden Grove Municipal Code in the following Sections regarding landscaping and as attached in Exhibit "A":
   A. Chapter 9.04: General Provisions
      Section 9.04.060 (Definitions)
   B. Chapter 9.08: Single-Family Residential Development Standards:
      Section 9.08.40.040 (Landscaping: Purpose)
      Section 9.08.40.045 (Definitions)
      Section 9.08.40.050 (Landscaping: General Provisions)
      Section 9.08.40.055 (Landscaping: Water Efficiency)
      Section 9.08.40.060 (Landscaping Requirements)
      Section 9.08.40.070 (Landscaping: Compliance)
      Section 9.08.40.080 (Landscaping: Maintenance Requirements and Violations)
   C. Chapter 9.12: Multi-Family Residential Development Standards:
      Section 9.12.40.070 (Landscaping: Purpose)
      Section 9.12.40.075 (Definitions)
      Section 9.12.40.080 (Landscaping: General Provisions)
      Section 9.12.40.085 (Landscaping: Water Efficiency)
      Section 9.12.40.090 (Landscaping Requirements)
      Section 9.12.40.100 (Landscaping: Compliance)
      Section 9.12.40.110 (Landscaping: Maintenance Requirements and Violations)
   D. Chapter 9.16: Commercial, Office Professional, Industrial and Open Space Development Standards:
      Section 9.16.40.050 (Landscaping: Purpose)
      Section 9.16.40. 055 (Definitions)
      Section 9.16.40.060 (Landscaping: General Provisions)

Section 9.16.40.065 (Landscaping Water Efficiency)
Section 9.16.40.070 (Landscaping Requirements)
Section 9.16.40.080 (Landscaping: Compliance)
Section 9.16.40.090 (Landscaping: Maintenance Requirements and Violations)

3. These amendments shall change the Municipal Code to comply with the requirements of State of California Assembly Bill 1881 that amended the Water Conservation in the Landscape Act (Act). The changes will result in a reduction in water use for new landscapes.

4. The amendments shall be consistent with the Countywide Model Water Efficient Landscape Ordinance developed by a local stakeholder group. The stakeholder group was formed under the leadership of the Municipal Water District of Orange County (MWDOC) and the Orange County Division of the League of California Cities and was supported by the Orange County Chapter of the Building Industry Association. The intent in writing a local version of a Model Water Efficient Landscape Ordinance was to meet the "at least as effective as" requirement by the State, minimize the complexity and cost of compliance, and provide consistency between local jurisdictions.

5. The Community Development Department has determined that the Amendment is exempt from CEQA based on a Category 7 Exemption (14 California Code of Regulations, Section 15307) for activities that enhance or protect a natural resource.

6. Report submitted by City Staff was reviewed.

7. Pursuant to a legal notice, a public hearing was held on December 3, 2009, and all interested persons were given an opportunity to be heard.

8. The Planning Commission gave due and careful consideration to the matter at its meeting on December 3, 2009; and

BE IT FURTHER RESOLVED, FOUND AND DETERMINED that the facts and reasons supporting the conclusion of the Planning Commission, as required under Municipal Code Section 9.24.030, are as follows:

FACTS:

In 1992, the State of California enacted the Water Conservation in Landscaping Act, (AB 325) requiring the adoption of water efficient landscape ordinances by cities and counties throughout the state. To assist local agencies, The California Department of Water Resources (DWR) developed a Model Water Efficient Landscape Ordinance that established water efficient landscape design standards for urban landscapes.

In 2006, Governor Schwarzenegger signed Assembly Bill 1881 amending the Water Conservation in the Landscape Act (Act). The bill requires two things: 1) DWR to update the original Model Water Efficient Landscape Ordinance; and 2) cities and counties to update local Landscape Ordinances so that they are "at least as effective as" DWR's updated Model Ordinance by January 1, 2010.

A stakeholder group was formed under the leadership of the Municipal Water District of Orange County (MWDOC) and the Orange County Division of the League of California Cities. The stakeholder group developed a locally crafted Orange Countywide Model Water Efficient Landscape Ordinance. The intent in writing a local version of a Model Water Efficient Landscape Ordinance was to meet the "at least as effective as" requirement by the state, minimize the complexity and cost of compliance, and provide consistency between the local jurisdictions.

The Countywide Model Ordinance provisions for landscape water efficiency have been integrated into and made part of the City of Garden Grove Municipal Code, Title 9. The proposed amendment will amend Title 9 of the Garden Grove Municipal Code in the Chapters providing development standards for Single-Family Residential (Chapter 9.08), Multi-Family Residential (Chapter 9.12) and Commercial, Office Professional, Industrial and Open Space (Chapter 9.16) and shall be known collectively as the Landscape Water Efficiency provisions. The amended and added Sections in these Chapters are listed in Number 2 above. The Countywide Model Ordinance split the extensive technical details contained in the State Model Ordinance into a separate Guidelines document that is to be adopted by City Council Resolution. The Guidelines shall be attached to Title 9 as Appendix 1 and may be amended from time to time by Resolution of the City Council.

FINDINGS AND REASONS:

1. The Amendment is internally consistent with the goals, objectives and elements of the City's general plan.

   The requested Amendment is internally consistent with the goals, objectives and the elements of the General Plan. The proposed Amendment will provide specific requirements for water conservation in proposed landscape areas. These requirements will implement the "Water Resource" goal and policies in the Conservation Element of General Plan 2030.

2. The Amendment is deemed to promote the public interest, health, safety and welfare.

   The Amendment will promote the public interest, health, safety, and welfare, as water conservation through reduced use and efficiency is critical for the entire region. Reduced water consumption lessens reliance on potentially unreliable foreign water supplies and, locally, leaves more water in natural systems to benefit the local environment. Maintaining and improving water quality is essential to protect public health, wildlife, and the local watershed.

INCORPORATION OF FACTS AND FINDINGS SET FORTH IN STAFF REPORT:

In addition to the foregoing, the Planning Commission incorporates herein by this reference, the facts and findings set forth in the staff report.

BE IT FURTHER RESOLVED that the Planning Commission does conclude:

1. Amendment No. A-152-09 possesses characteristics that would indicate justification of the request in accordance with Municipal Code Section 9.24.030.D.1 (Code Amendment).

2. The Planning Commission recommends the approval of Amendment No. A-152-09, to amend and add Landscape Water Efficiency provisions as found in Exhibit "A" including the Guidelines attached thereto.

ADOPTED this 3rd day of December, 2009

/s/ KRIS BEARD
CHAIR

I HEREBY CERTIFY that the foregoing resolution was duly adopted at the regular meeting of the Planning Commission of the City of Garden Grove, State of California, held on December 3, 2009, by the following votes:

AYES:	COMMISSIONERS:	BEARD, BONIKOWSKI, BUI, CABRAL, ELLSWORTH, KIRKHAM, TRAN
NOES:	COMMISSIONERS:	NONE
ABSENT:	COMMISSIONERS:	NONE

/s/ JUDITH MOORE
SECRETARY

PLEASE NOTE: Any request for court review of this decision must be filed within 90 days of the date this decision was final (See Code of Civil Procedure Section 1094.6).

A decision becomes final if it is not timely appealed to the City Council. Appeal deadline is January 5, 2010.

EXHIBIT "A"
For Amendment No. A-152-09

With amendments and additions to Title 9 of the Garden Grove Municipal Code in sections regarding landscaping in four Chapters: Chapter 9.04: General Provisions, Chapter 9.08: Single Family Residential, Chapter 9.12: Multi-Family Residential, and Chapter 9.16: Commercial, Office Professional, Industrial and Open Space.

Chapter 9.04: General Provisions

Section 9.04.40.060: Definitions

A. Purpose. The purpose of this Section is to promote consistency and precision in the application and interpretation of this Chapter. The meaning of words and phrases defined in this Section shall apply throughout this Section, except where the context or usage of such words and phrases clearly indicates a different meaning intended in that specific case.

Additional definitions have been provided in Chapters 9:08, 9.12, 9.16 for landscaping; 9.20 for signs; 9.24 for Wireless Communication Facilities; and 9.40 Subdivisions.

B. General interpretation. The following general interpretations shall apply throughout this Section:

1. The word "shall" is mandatory and not discretionary. The word "may" is permissive and discretionary.

2. In case of any conflict or difference in meaning between the text of any definitions and any illustration or sketch, the text shall control.

3. Any references in the masculine or feminine genders are interchangeable.

4. Words in the present and future tenses are interchangeable and words in the singular and plural tenses are interchangeable, unless the context clearly indicates otherwise.

5. In case a definition is not listed in this Section ***or in the other Chapters listed in paragraph "A" above***, the most current Webster Collegiate Dictionary shall be referred to for interpretation.

6. In the event of a conflict between the definitions Section and the remainder of Title 9, the Title 9 provision shall prevail.

C. Definitions.
Note: the following "landscape" definitions have been removed from this section and have been added to the landscaping sections in Chapter 9.08: Single Family Residential, Chapter 9.12: Multiple-

Family Residential, and Chapter 9.16: Commercial, Office Professional, Industrial and Open Space:

~~"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 an irrigation system.~~

~~"Effective Precipitation" means the portion of total precipitation that is used by plants. Precipitation is not a reliable source of water, but can contribute to some degree toward the water needs of the landscape.~~

~~"Estimated Applied Water Use" means the portion of the estimated total water use that is derived from applied water. The estimated applied water use shall not exceed the maximum applied water allowance. The estimated applied water use may be the sum of the water recommended through the irrigation schedule, as referenced in Section 702 (c) (3) of the State's "Model Water Efficient Landscape Ordinance."~~

~~"ET Adjustment Factor" means a factor of 0.8, that, when applied to reference evapotranspiration, adjusts for plant factors and irrigation efficiency, two major influences upon the amount of water that needs to be applied to the landscape.~~

~~(1.) A combined plant mix with a site wide average of 0.5 is the basis of the plant factor portion of this calculation. The irrigation efficiency for purposes of the ET adjustment factor is 0.625.~~

~~(2.) Therefore, the ET adjustment factor (0.8) = (0.5/0.625).~~

~~"Evapotranspiration" means the quantity of water evaporated from adjacent soil surfaces and transpired by plants during a specific time.~~

~~"Hydrozone" means a portion of the landscaped area having plants with similar water needs that are served by a valve or set of valves with the same schedule. A hydrozone may be irrigated or nonirrigated. For example, a naturalized area planted with native vegetation that will not need supplemental irrigation once established is a nonirrigated hydrozone.~~

~~"Maximum Applied Water Allowance" means, for design purposes, the upper limit of annual applied water for the established landscaped area as specified in Section 702 (c) (2) of the State's "Model Water Efficient Landscape Ordinance." 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.~~

~~"Overspray" means the water that is delivered beyond the landscaped area, wetting pavements, walks, structures or other nonlandscaped areas.~~

~~"Plant Factor" means a factor that when multiplied by reference evapotranspiration, estimates the amount of water used by plants. For purposes of this title, the average plant factor of low water using plants ranges from 0 to 0.3, for average water using plants the range is 0.4 to 0.6, and for high water using plants the range is 0.7 to 1.0.~~

~~"Rain Sensing Device" means a system that automatically shuts off the irrigation system when it rains.~~

~~"Reference Evapotranspiration" or "ETo" means a standard measurement of environmental parameters that affect the water use of plants. ETo is given in inches per day, month or year, as represented in Section 705 of the State's "Model Water Efficient Landscape Ordinance," 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 so that regional differences in climate can be accommodated.~~

~~"Rehabilitated Landscape" means any relandscaping project that requires a discretionary permit.~~

~~"Runoff" means water that is not absorbed by the soil or landscape to which it is applied and flows from the 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 severe slope.~~

Chapter 9.08: Single-Family Residential Development Standards

Section 9.08.40.040 (Landscaping: Purpose)
Section 9.08.40.045 (Definitions)
Section 9.08.40.050 (Landscaping: General Provisions)
Section 9.08.40.055 (Landscaping: Water Efficiency)
Section 9.08.40.060 (Landscaping Requirements)
Section 9.08.40.070 (Landscaping: Compliance)
Section 9.08.40.080 (Landscaping: Maintenance Requirements and Violations)

SECTION 9.08.40.040 Landscaping: Purpose
To establish landscape standards and water waste prevention in order to mitigate the effects of urbanization and excessive water use on the environment and to provide an aesthetically pleasing urban setting, this title ***along with the Guidelines for Implementation of the City of Garden Grove Landscape Water Efficiency Provisions (the Guidelines)*** establishes water-efficient landscape design standards consisting of maximum applied water allowance, plant material percentages, and standards for design, quantities, location, species types, combinations of plant types (i.e. shrubs and groundcover) and size and shape of materials. ***The Guidelines shall be attached to Title 9 as Appendix 1 and may be amended from time to time by Resolution of the City Council.*** The city recognizes the importance of landscaping and water efficiency to the health and well being of the community, and desires to enhance the overall appearance of development projects in the city. It is the intent of this Article ***and the Guidelines*** to establish a measure of uniformity in landscaping that will provide a structure for designing, installing and maintaining water-efficient landscapes for new projects as well as providing a mechanism to require updating and upgrading of existing landscaping in existing developments when improvements are intended.

SECTION 9.08.40.045: Definitions.
The following definitions are applicable to this Section:

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

"Effective Precipitation" means the portion of total precipitation that is used by plants. Precipitation is not a reliable source of water, but can contribute to some degree toward the water needs of the landscape.

"Estimated Applied Water Use" or "EAWU" means the average annual total amount of water estimated to be necessary to keep plants in a healthy state, calculated as provided in the Guidelines. The amount 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" (Evapotranspiration Adjustment Factor) 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 Section, and the Guidelines, except that the ETAF for a special landscape area shall not exceed 1.0.

"Evapotranspiration" means the quantity of water evaporated from adjacent soil surfaces and transpired by plants during a specific time.

"Guidelines" refers to the Guidelines for Implementation of the Landscape Water Efficiency Provisions, as adopted by the City Council, and as subsequently amended by resolution of the City Council, which describes procedures, calculations, and requirements for landscape projects subject to this Section. The Guidelines are attached to Title 9, City of Garden Grove Municipal Code, as Appendix 1 and may be amended from time to time by Resolution of the City Council.

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

"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 Section, 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 Section to the requirements applicable to developer-installed residential landscape projects.

"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. For example, a naturalized area planted with native vegetation that will not need supplemental irrigation once established is a nonirrigated hydrozone.

"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. The minimum average irrigation efficiency for purposes of this Section is 0.71. Greater 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 9.08.40.055, Subsections (A), (B), & (C) of this Section.

"Landscape Water Efficiency Provisions" means the following sections and paragraphs of this Chapter relating to landscape water efficiency: Sections 9.08.40.040; 9.08.40.045; 9.08.40.055; and 9.08.40.060 (introductory paragraph); Section 9.08.40.060 paragraphs (B), (P), (Q), (R), (S), and (T); and Section 9.08.080 paragraph (C).

"Local agency" means a local water purveyor or 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 this Section on behalf of the city. The local agency may be responsible for the enforcement or delegation of enforcement of this Section, 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. The "MAWA" 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, for the purposes of this Section, 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.

"Overspray" means the water that is delivered beyond the landscaped area, wetting pavements, walks, structures or other nonlandscaped areas.

"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" means a factor that when multiplied by reference evapotranspiration (Eto), estimates the amount of water needed by plants. For purposes of this Section, 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 Section are derived from the Department of Water Resources 2000 publication "Water Use Classification of Landscape Species."

"Rain-Sensing Device" means a system that automatically shuts off the irrigation system when it rains.

"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 expressed in inches per day, month, or year as represented in the Guidelines, and is an estimate of the evapotranspiration of a large field of four-to seven-inch tall, cool-season grass that is well watered. Reference evapotranspiration is used as the basis for determining the Maximum Applied Water Allowances.

"Rehabilitated landscape" means any re-landscaping project that meets the applicability criteria of Section 9.08.40.055 (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.

"Runoff" means water that is not absorbed by the soil or landscape to which it is applied and flows from the 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 severe slope.

"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, areas irrigated with recycled water, water features using recycled water, and areas dedicated to active play such as parks, sports fields, golf courses, and where turf provides a playing surface.

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

"Valve" means a device used to control the flow of water in 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 9.08.40.050: Landscaping: General Provisions

A. General landscaping requirements as defined herein shall be provided in all zones.

B. Parcels zoned or used for single-family purposes shall provide landscaping in all areas not covered by buildings, structures, patios or driveways.

C. For the purpose of this Section, the front yard shall be determined by a line drawn parallel to the front building plane. This shall also include any accessory structure such as a garage, if the structure is attached.

D. The following regulations are for maximum coverage of hardscape in the R-1 (single-family residential) zone:

1. The maximum permitted percentage of hardscape coverage in the front yard setback, as defined above, shall be fifty percent. Private sidewalks and walkways are excluded from this fifty percent so long as they do not exceed a width of five feet.

2. The front yard area shall be measured from the front building plane to

the property lines. In areas where no sidewalks exist, the measurement shall be from the front building plane to the sidewalk or street dedication line. Any area that is in a street or sidewalk dedication must be fully landscaped, except for a standard driveway.

3. Sidewalks fronting the property should not be included in the calculations of the front yard; however, parkways or that area between the frontage, sidewalk and the street curb shall be specifically included in the calculated front yard.

E. All developed properties shall be required to be in compliance with the provisions of this subsection when any additions of one or more square feet are proposed.

F. It is not the intent of this Section to require identical landscape materials or landscape designs for all developments. Where existing mature landscaping is in good, healthful condition, every effort shall be made to retain and to incorporate said landscaping into the overall landscape theme.

G. The Hearing body may, through the site plan review procedure, modify the requirements with consideration to the size and species of trees used, and may require landscaping in excess of the minimum area specified for a proposed development in order to achieve a superior project.

H. Adjacent uses shall be considered when designing landscaping to mitigate the negative impacts of parking areas, activities, storage or structures by appropriate screening measures.

I. Every effort shall be made to provide landscaping that is compatible with neighboring uses.

J. All unpaved areas shall be planted with an effective combination of trees, ~~grass berms,~~ ground-cover, lawn, shrubbery and/or approved dry decorative landscape material.

~~K. A water-efficient landscape documentation package shall be required for all new and rehabilitated landscaping for public agency projects, and for any private development projects that require a discretionary permit. This regulation shall not apply to the following:~~

~~1. Homeowner-provided landscaping at individual single-family homes;~~

~~2. Cemeteries;~~

~~3. Registered historical sites;~~

~~4. Ecological restoration projects that do not require a permanent irrigation system;~~

~~5. Any project with a landscaped area less than two thousand five hundred square feet;~~

~~L. The following requirements shall apply to the water efficient landscape package:~~

~~1. A copy of the water efficient landscape package conforming to this chapter shall be submitted to the city. No permit shall be issued until the city reviews and approves the landscape documentation package.~~

~~2. If effective precipitation is included in the calculation of the estimated total water use, then an effective precipitation disclosure statement from the landscape professional and the property owner shall be submitted with the landscape documentation package.~~

SECTION 9.08.40.055: Landscaping: Water Efficiency

A. Beginning January 1, 2010, Landscape Water Efficiency Provisions shall apply to all planting, irrigation, and landscape-related improvements for projects included within the following categories:

1. New landscape installations or landscape rehabilitation projects by public agencies or private non-residential developers, except for cemeteries, 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 a discretionary approval of a landscape plan, or which otherwise require a ministerial permit for a landscape or water feature;

2. New landscape installations or 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 discretionary approval of a landscape plan, or which otherwise require a ministerial permit for a landscape or water feature;

3. New landscape installation projects by individual homeowners on single-family or multi-family residential lots with a total 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 a discretionary approval of a landscape plan, or which otherwise require a ministerial permit for a landscape or water feature.

B. The Irrigation Design Criteria found in Subsection T(1)(c)(2) of

Landscaping Requirements (Section 9.08.40.060) 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 9.08.40.055 (A) is applicable.***

C. The Water Efficient Landscape regulations do not apply to the following:

1. ***Registered local, state, or federal historical sites;***

2. ***Ecological restoration projects that do not require a permanent irrigation system; or***

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.***

D. The following submittals shall be required for all landscape projects subject to the Landscape Water Efficiency Provisions:

1. ***Prior to installation, a Landscape Documentation Package shall be submitted to the city for review and approval of all landscape projects subject to the provisions of this Section and the Landscape Water Efficiency Provisions. Any Landscape Documentation Package submitted to the city shall comply with the provisions of the Guidelines.***

2. ***The Landscape Documentation Package shall include a certification by a professional, appropriately licensed in the State of California, stating that the landscape design and water use calculations have been prepared by, or under, the supervision of the licensed professional and are certified to be in compliance with the provisions of this Section and the Guidelines.***

   (a.) Landscape and Irrigation plans shall be submitted to the City for review and approval with appropriate water use calculations. Water use calculations shall be consistent with calculations contained in the Guidelines and shall be provided to the Water Department, as appropriate, under procedures determined by the city.
   (b.) Verification of compliance of the landscape installation with the approved plans shall be obtained through a

Certification of Completion in conjunction with a Certificate of Use and Occupancy or Permit Final process, as provided in the Guidelines.

SECTION 9.08.40.060: Landscaping Requirements
All landscaping shall comply with the Landscape Water Efficiency Provisions where applicable. When conflicts between general landscape requirements and the Landscape Water Efficiency requirements found in this Section and the Guidelines exist, the Landscape Water Efficiency requirements shall have priority.

A. Minimums.

All required landscaped setback areas, including front, rear, side, side street, and landscaped areas within parking lots, shall meet the requirements prescribed herein.

B. Percentage.

Ten percent of all ***parking areas for nonresidential uses permitted in the Single-Family Residential zone,*** ~~multiple-family residential, office-professional, commercial, and industrial parking areas,~~ excluding required setbacks, ~~are to~~ ***shall*** be landscaped.

C. Parking Lot Landscaping.

1. Size. For parking facilities, a variety of tree sizes are required for every ten parking spaces. Trees must be a minimum of fifteen-gallons diameter with a one inch caliper truck, eight feet in height with a two and one-half foot head or larger. These trees may be grouped or clustered and shall conform to the matrix of plant materials established by the city manager or designee.

2. Street Frontage. One twenty-four inch box tree of a two and one-quarter inch caliper trunk diameter, ten feet in height, and a five foot head is required for every thirty feet of street frontage. (These trees may be grouped or clustered.) All trees shall be placed within a root barrier per city of Garden Grove street tree planting detail specifications.

3. Area. Minimum landscaped area that may be counted is twenty-four square feet.

D. Trees.

1. No trees shall be planted under any eave, overhang or balcony.

2. All trees in landscape planters ten feet in width or less shall be provided with tree root barricades.

E. Tree Numbers.

1. Parking Area--One per eight spaces

2. Street Setbacks--One per twenty feet

3. Balance of Site--One per six hundred square feet (less parking area building).

F. Tree Size.

Total site:

48"	36"	24"	15 gal.	Other
10%	10%	15%	60%	5%

G. Planter Width.

1. Minimum width of finger planter is three feet, inside clear dimension.

2. Minimum width of all planters is three feet clear, interior dimensions, not inclusive of retaining curb or wall.

3. Minimum width of building perimeter landscape planter is three feet.

H. Groundcover.

1. All areas required to be landscaped shall be covered with turf, non-deciduous groundcover or other types of plantings. Artificial turf may be used as a ground cover within the R-1 (Single-Family Residential) zone.

2. All plant spacing shall be as indicated by the landscape architect according to the latest standards as adopted by the American Society of Landscape Architects.

I. Paved Areas. Only those portions that are required by municipal code or by site plan to be used directly for parking spaces, aisles, refuse storage areas, drives or walkways shall be paved. All other areas not needed for the above shall be landscaped. Patios may be paved.

J. Excess of Minimum Areas--Authority. The Hearing body may require landscaping in excess of the minimum area specified for a proposed development, provided that the additional landscaping is necessary to:

1. Screen adjacent objectionable uses, parking areas, activities, storage or structures that could cause a negative impact on new development based on aesthetics, noise, odors, etc.; or

2. Provide landscaping that is compatible with neighboring uses; or

3 Screen the use from neighboring negative impacts such as traffic, outside storage, etc.

K. Landscape Plans.

1. Each landscape plan shall be compatible with the shape and topography of the site and the architectural characteristics of the structure(s) on the site.

2. Each landscape plan shall be compatible with the character of adjacent landscaping, provided the quality of the adjacent landscaping meets the standard of these guidelines.

3. Each landscape plan shall illustrate a concern for design elements such as balance, scale, texture, form and unity.

4. Each landscape plan shall address the functional aspects of landscaping such as drainage, erosion prevention, wind barriers, provisions for shade and reduction of glare.

5. Each landscape plan shall demonstrate a concern for solar access, including exposure and shading of window areas.

6. Landscaping shall be used to relieve solid, unbroken elevations and to soften continuous wall expanses.

7. The applicant must submit a planting inventory and plan of existing planting materials on a development site that are to be retained. Every effort shall be taken to ensure that mature existing landscaping is utilized as part of the development plan. A landscaping retention program shall be approved by action of the Hearing body, at its discretion.

L. Substitute Landscaping.

1. Materials such as crushed rock, redwood chips, pebbles and stone may not be used in lieu of live plant materials, although their limited use may be approved by the Hearing body through the site plan review process. Artificial plants and synthetic groundcovers are prohibited, except where allowed within the R-1 (Single-Family Residential) zone, subject to the following standards:

(a.) Artificial turf shall be permitted within the front and rear yards and shall comply with the following:

(1.) Artificial turf shall have a minimum 8-year "No Fade" warranty.

(2.) Artificial turf shall be installed by a licensed professional and shall be installed pursuant to manufacturer's requirements, except if the artificial turf is installed by the homeowner. The homeowner shall be required to follow the manufacturer's specifications for installation.

(3.) Artificial turf shall be installed and maintained to effectively simulate the appearance of a well-maintained lawn. The turf shall be maintained in a green fadeless condition and shall be maintained free of weeds, debris, tears, holes, and impressions.

(4.) The use of indoor or outdoor plastic or nylon carpeting as a replacement of artificial turf or natural turf shall be prohibited. Artificial shrubs, flowers, trees, and vines in-lieu of living plant material shall be prohibited.

(5.) Areas of living plant material (i.e., flower beds, tree wells, etc.) shall be included in the overall landscape design when installing artificial turf. Living plant material shall include shrubs, vines, trees, and flowering ground covers.

(6.) Artificial turf shall be separated from flower beds by a concrete mow strip, bender board, or other barriers acceptable to the city in order to prevent intrusion of living plant material into the artificial turf.

M. Screening.

1. Landscaping shall be required to screen storage areas, trash enclosures, public utilities, freeways, highways and other similar land uses or elements that do not contribute to the enhancement of the surrounding area. Where plants are required for screening, such screening shall consist of the use of evergreen shrubs and/or trees closely spaced. Berming is suggested as an effective screening measure for parking lots and where adjacent site areas are contiguous to street frontages. Such berming shall not exceed thirty-six inches above the highest adjacent curb.

2. Perimeter landscaping adjacent to the property lines is required in parking areas. Planter area curbs shall be used in place of wheel stops.

N. Separation.

1. All landscaping shall be separated from parking and vehicular

circulation areas by a raised, continuous six inch Portland cement concrete curb.

2. Other materials that accomplish the same purpose may be approved by the Hearing body through the site plan review process.

3. All trees shall be staked in accordance with standards maintained by the city manager or designee.

O. Arterial Site Entries.

1. Unless otherwise delineated, all developments having a contiguous property line to a primary or secondary arterial highway shall observe a fifteen-foot setback that shall be landscaped. All other non-arterial highways shall observe a ten-foot setback, unless otherwise delineated by the governing zone.

2. Landscaping at major entry points are considered the focal points for landscaping emphasis, and shall contain a variety of trees, flowers and shrubs with special concern for visibility and safety.

3. No landscaping material other than trees shall exceed a height of thirty-six inches above the highest adjacent curb at street entrances and parking lot accessway intersections.

4. No berming at street entrances and parking lot accessway intersections shall exceed a height of thirty-six inches above the highest adjacent curb.

5. All trees whether singularly placed or placed on clusters shall not inhibit standard visibility parameters.

6. Parking may be designed to overhang landscaped areas. Maximum permitted overhang is two feet where planter areas have a minimum dimension of five feet or more. Otherwise, concrete wheel stops shall be installed. Any broken or damaged wheel stops shall be replaced.

P. Landscaping and Irrigation Plans Required.

Landscape and irrigation plans shall be required for all projects requiring approval by the hearing body ***and to which the Landscape Water Efficiency Provisions apply, except for*** ~~R-1 single-family homes~~ ***individual homeowners on single-family or multi-family residential lots that have a total project landscape area, including pools or other water features, but excluding hardscape that is less than 5,000 square feet.*** Such plans shall be submitted for discretionary approval to the hearing body. Said plans shall be prepared in accordance with requirements and standards established pursuant to this chapter ***and***

the Guidelines (specifically refer to sections on Landscape Design Plan and Irrigation Design Plan).

Q. In addition to the above, the following are requirements that shall apply to the landscape design plan ***and are more fully explained in the Guidelines (Appendix 1, Title 9)***:

1. Any plants may be used in the landscape, providing the estimated applied water use (EAWU) recommended does not exceed the maximum applied water allowance (MAWA), and that the plants meet the specifications set forth in this Section.

2. Plants having similar water use shall be grouped together in distinct hydrozones.

3. Plants shall be selected appropriately based upon their adaptability to the climatic, geologic and topographical conditions of the site. Protection and preservation of native species and natural areas are encouraged. The planting of trees is encouraged wherever it is consistent with the other provisions of this Article. ***To encourage the efficient use of water, the following are highly recommended for inclusion in the landscape design plan:***

   (a.) 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;

   (b.) 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

   (c.) The solar orientation of the site and how plant placement will maximize summer shade and winter solar gain.

R. Irrigation Requirements.

1. All landscaped areas shall be provided with an approved irrigation system that ***meets the requirements of this Section and the Guidelines.*** ~~shall include an automatic, time-controlled sprinkler system when the site is zoned commercial or industrial or when the site is zoned residential and permits more than three dwelling units~~ ***An irrigation design plan meeting the design criteria in the Guidelines shall be submitted as part of the Landscape Documentation Package for those projects subject to the Landscape Water Efficiency Provisions in Section 9.08.40.055 (A).***

2. Irrigation shall be performed in conformance with city ordinances ~~or~~ ***and*** with water conservation practices.

S. System Design. ***For the efficient use of water, an irrigation system shall meet all the requirements listed in the Guidelines under Section 2.5 Irrigation Design Plan 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 design criteria of the Guidelines shall be submitted as part of the Landscape Documentation Package.*** ~~Irrigation system shall consist of underground piped water lines and sprinklers designed to provide head-to-head coverage. Water meter and line sizes shall be calculated from total water demand that should be, at least, the sum of maximum irrigation demand and all building demand.~~

~~2. Due to varying irrigation requirements, separate control valves and/or sprinkler heads shall be used when shrubs and turf all appear on the same landscape plan. The irrigation system shall be designed so that overspray onto structures, streets, sidewalks, windows, walls and fences is minimized. Approved backflow prevention devices are required on all sprinkler systems.~~

T. In addition to the above, the following are requirements that shall apply to the landscape design plan.

1. Irrigation Design Criteria.

(a.) Runoff and Overspray. Soil types and infiltration rate shall be considered when designing irrigation systems. All irrigation systems shall be designed to avoid 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*** ***(***walks***, etc.)***, roadways or structures. ~~Proper irrigation equipment and schedules, including features such as repeat cycles, shall be used to closely match application rates to infiltration rates therefore minimizing runoff.~~

(b.) Special attention shall be given to avoid runoff on slopes and to avoid overspray ***on narrow and irregularly shaped areas, including turf, less than eight (8) feet in width in any direction. Such narrow and irregularly shaped areas shall be irrigated with subsurface irrigation or a low volume overhead irrigation system.*** ~~in planting areas with a width less than ten feet, and in median strips. No overhead sprinkler irrigation systems shall be installed in median strips less than ten feet wide.~~

(c.) Irrigation Efficiency. ~~For the purpose of determining the maximum water allowance, irrigation efficiency is assumed to be 0.625. Irrigation systems shall be designed, maintained and managed to meet or exceed 0.625 efficiency.~~

(1.) For applicable landscape installations or rehabilitation projects subject to Section 9.08.40.055 (A), the Estimated Applied Water Use allowed for the landscaped areas 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 areas shall otherwise be shown to be equivalently water-efficient in a manner acceptable to the city; as provided in the Guidelines.

(2.) 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 Water Services Division, or as mutually agreed by the Water Services Division and the local agency.

(3.) The project applicant shall understand and implement the requirements in the City of Garden Grove, Water Conservation Ordinance.

(c.) Equipment. ***The Guidelines provide design criteria for irrigation equipment in Section 2.5 "Irrigation Design Plan".***

~~(1.) Water Meters. Separate landscape water meters shall be installed for all projects except for single-family homes or any project with a landscaped area of less than two thousand five hundred square feet, or as required by the city.~~

~~(2.) Controllers. Automatic control systems shall be required for all irrigation systems, and must be able to accommodate all aspects of the design.~~

~~(3.) Valves. Plants that require different amounts of water shall be irrigated by separate valves. If one valve is used for a given area, only plants with similar water use shall be used in that area. Anti-drain (check) valves shall be installed in strategic points to minimize or prevent low-head drainage.~~

~~(4.) Sprinkler Heads. Head and emitters shall have consistent~~

~~application rates within each control valve circuit. Sprinkler heads shall be selected for proper area coverage, application rate, operating pressure, adjustment capability and ease of maintenance.~~

~~(5.) Rain Sensing Override Devices. Rain sensing override devices shall be required on all irrigation systems.~~

~~(6.) Soil Moisture Sensing Devices. It is recommended that soil moisture sensing devices be considered where appropriate.~~

2. Recycled Water.

   (a.) At such time as recycled water is available, the installation of recycled water irrigation systems (dual distribution systems) shall be required to allow for the current and future use of recycled water.

   (b.) Irrigation systems shall make use of recycled water unless a written exemption has been granted by the local water agency, stating that recycled water meeting all health standards is not available and will not be available in the foreseeable future.

   (c.) The recycled water irrigation systems shall be designed and operated in accordance with all local and state codes.

3. Irrigation Design Plan Specifications. Irrigation systems shall be designed to be consistent with hydrozones. ***Hydrozone areas shall be designated by number, letter, or other designation on both the Irrigation Design Plan and the Landscape Design Plan.*** The irrigation design plan shall be separate from, but use the same format as, the landscape design plan. The scale shall be the same as that used for the landscape design plan. The irrigation design plan ***at a minimum,*** shall ***contain*** ~~accurately and clearly identify~~:

   (a.) Location and size of separate water meters for the landscape;

   (b.) Location, type and size of all components of the irrigation system, including ~~automatic~~ controllers, main and lateral lines, valves, sprinkler heads, ***moisture sensing devices***, rain switches, quick couplers and backflow prevention devices;

   (c.) Static water pressure at the point of connection to the public water supply;

   (d.) Flow rate (gallons per minute), application rate (inches per hour), and design operating pressure (psi) for each station;

(e.) Irrigation schedule parameters necessary to program smart timers specified in the landscape design;

(f.) The following statement: "I have complied with the Landscape Water Efficiency Provisions and the design criteria in the Guidelines and applied them accordingly for the efficient use of water in the irrigation design plan"; and

(g.) The signature of a California-licensed landscape professional.

4. Maximum Applied Water Allowance. A project's maximum applied water allowance shall be calculated ~~using the following formula:~~ ***in a manner acceptable to the city; as provided in the Guidelines.***

~~MAWA = (ETO)(0.8)(LA)(0.62) where:~~

~~MAWA = Maximum applied water allowance (gallons per year)~~

~~ETO = Reference evapotranspiration (inches per year)~~

~~0.8 = ET adjustment factor~~

~~LA = Landscaped area (square feet)~~

~~0.62 = Conversion factor (to gallons per square foot)~~

5. Irrigation Schedules. ***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:*** ~~satisfying the following conditions shall be submitted as part of the landscape documentation package.~~

(a.) Irrigation scheduling shall be regulated by automatic irrigation controllers. ~~An annual irrigation program with monthly irrigation schedules shall be required for the plant establishment period, for the established landscape, and for any temporarily irrigated areas.~~

(b.) Overhead irrigation shall be scheduled in accordance with the local water purveyor's (City of Garden Grove, Water Services Division) Water Conservation Ordinance. Operation of the irrigation system outside the normal watering window is allowed for auditing and system

maintenance. ~~The irrigation schedule shall:~~

~~(1.) Include run time (in minutes per cycle), suggested number of cycles per day, and frequency of irrigation for each station; and~~

~~(2.) Provide the amount of applied water (in hundred cubic feet, gallons, or in whatever billing units the local water supplier uses) recommended on a monthly and annual basis.~~

~~(c.) The total amount of water for the project shall include water designated in the estimated total water use calculation plus water needed for any water features, which shall be considered as a high water using hydrozone.~~

~~(d.) Recreational areas designated in the landscape design plan shall be highlighted and the irrigation schedule shall indicate if any additional water is needed above the maximum applied water allowance because of high plant factors (but not due to irrigation inefficiency).~~

~~(e.) Irrigation scheduling shall incorporate the use of evapotranspiration data such as those from the California Irrigation Management Information System (CIMIS) weather stations to apply the appropriate levels of water for different climates, whenever possible.~~

~~(f.) Landscape irrigation shall be scheduled between ten p.m. and six a.m., whenever possible, to avoid irrigating during times of high wind or high temperature.~~

6. Certificate 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 in the Guidelines, which shall include: (i) certification by a la ndscape

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 with the design plans, and complies with the City of Garden Grove Landscape Water Efficiency Provisions."

~~g.) A licensed landscape architect or contractor, certified irrigation designer, or other licensed or certified professional in a related field, shall conduct a final field observation and shall provide a certificate of substantial completion to the city. The certificate shall specifically indicate that plants were installed as specified, that the irrigation system was installed as designed, and that an irrigation audit has been performed prior to the final field inspection.~~

(2.) Documentation of the irrigation scheduling parameters used to set the controller.

(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.

~~(h.) Certification shall be accomplished by completing a certificate of substantial completion and delivering it to the city manager or designee, and to the owner of record.~~

~~(i.) Water Waste Prevention. The irrigation system shall prevent water waste resulting from inefficient landscape irrigation by prohibiting runoff, low-head drainage, overspray or other similar conditions where water flows onto adjacent property, non-irrigated areas, walks, roadways or structures. Penalties for violation of these prohibitions shall be established locally.~~

~~(j.) Effective Precipitation. If effective precipitation is included in the calculation of the estimated total water use, an effective precipitation disclosure statement shall be completed, signed and submitted with the landscape documentation package. No more than twenty-five percent of the local annual mean precipitation shall be considered effective precipitation in the calculation of the estimated total water use.~~

SECTION 9.08.40.070: Landscaping: Compliance

A. Any modification to an approved landscape or irrigation plan must be approved by the hearing body prior to installation of said landscaping or irrigation.

B. All approvals of such plans are subject to and dependent upon the applicant complying with all applicable ordinances, codes, regulations, adopted policies and the payment of all applicable fees and assessments.

C. No final inspection or occupancy clearance will be granted until all of the landscaping and irrigation is installed in accordance with the approved plans.

D. Landscaping and irrigation systems shall be located and designed as specified on the approved plans.

SECTION 9.08.40.080: Landscaping: Maintenance Requirements and Violations

A. Maintenance. All landscaping shall be maintained. Maintenance of landscaping areas shall include, but not be limited to, the following:

1. Irrigation equipment shall be in working condition at all times.

2. Litter shall be removed from all landscaped areas in a timely fashion.

3. All sod areas shall be mowed on a regular basis. Sod areas shall at all times be kept green. Accumulation of leaves, bark and other similar plant materials shall be removed in a timely fashion. Planting areas must be kept in a weed free fashion.

4. Landscaping maintenance shall include pruning, cultivating, weeding, fertilizing, replacement of plants and watering on a regular basis.

5. Landscape maintenance shall also include pruning or removal of overgrown vegetation, cultivated or uncultivated, that is likely to harbor rats, vermin or other nuisances, or that causes detriment to neighboring properties or property.

6. Landscape maintenance shall also include the removal of dead, decayed, diseased or hazardous trees, weeds and debris constituting unsightly appearance, dangerous to public safety and welfare or detrimental to neighboring properties or property values. Compliance shall be by removal, replacement or maintenance requirements.

7. Any removal of mature landscaping must be replaced with landscaping of similar size and maturity as that which was removed.

B. Violations. Use of landscaped areas for purposes other than for landscaping as approved in the landscape plan shall be a misdemeanor. Willful failure to

maintain the landscaping shall be punishable by fine, or by imprisonment, or both fine and imprisonment.

C. ***Delegation. The city may delegate to, or enter into a contract with, a local agency to implement, administer, and/or enforce any of the Landscape Water Efficiency Provisions on behalf of the city.***

Chapter 9.12: Multi-Family Residential Development Standards

Section 9.12.40.070 (Landscaping: Purpose)
Section 9.12.40.075 (Definitions)
Section 9.12.40.080 (Landscaping: General Provisions)
Section 9.12.40.085 (Landscaping: Water Efficiency)
Section 9.12.40.090 (Landscaping Requirements)
Section 9.12.40.100 (Landscaping: Compliance)
Section 9.12.40.110 (Landscaping: Maintenance Requirements and Violations)

SECTION 9.12.40.070: Landscaping: Purpose
To establish landscape standards and water waste prevention in order to mitigate the effects of urbanization and excessive water use on the environment and to provide an aesthetically pleasing urban setting, this title ***along with the Guidelines for Implementation of the City of Garden Grove Landscape Water Efficiency Provisions (the Guidelines)*** establishes water-efficient landscape design standards consisting of maximum applied water allowance, plant material percentages, and standards for design, quantities, location, species types, combinations of plant types (i.e., shrubs and groundcover), and size and shape of materials. ***The Guidelines are attached to Title 9 as Appendix 1, which may be amended from time to time by Resolution of the City Council.*** The city recognizes the importance of landscaping and water efficiency to the health and well being of the community, and desires to enhance the overall appearance of development projects in the city. It is the intent of this article ***and the Guidelines*** to establish a measure of uniformity in landscaping that will provide a structure for designing, installing and maintaining water-efficient landscapes for new projects as well as providing a mechanism to require updating and upgrading of existing landscaping in existing developments when improvements are intended.

SECTION 9.12.40.075: Definitions.
The following definitions are applicable to this Section:

> ***"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.***
>
> ***"Effective Precipitation" means the portion of total precipitation that is used by plants. Precipitation is not a reliable source of***

water, but can contribute to some degree toward the water needs of the landscape.

"Estimated Applied Water Use" or "EAWU" means the average annual total amount of water estimated to be necessary to keep plants in a healthy state, calculated as provided in the Guidelines. The EAWU is based on the reference evapotranspiration rate (ETo), the size of the landscape area, plant water use factors, and the relative irrigation efficiency of the irrigation system.

"ET adjustment factor" or "ETAF" (Evapotranspiration Adjustment Factor) 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 (ETo), 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 Section, 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 Landscape Water Efficiency Provisions, as adopted by the City Council, and as subsequently amended by resolution of the City Council, which describes procedures, calculations, and requirements for landscape projects subject to this Section. The Guidelines are attached to Title 9, City of Garden Grove Municipal Code, as Appendix 1 and may be amended from time to time by Resolution of the City Council.

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

"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 Section, 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 Section to the requirements applicable to developer-installed residential landscape projects.

"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. For example, a natural area planted with native vegetation that will not need supplemental irrigation once established is a nonirrigated hydrozone.

"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. The minimum average irrigation efficiency for purposes of this Section is 0.71. Greater 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 9.12.40.085, Subsections (A), (B), & (C) of this Section.

"Landscape Water Efficiency Provisions" means the following sections and paragraphs of this Chapter relating to landscape water efficiency: Sections 9.12.40.070; 9.12.40.075; 9.12.40.085; and 9.12.40.090 (introductory paragraph); Section 9.12.40.090 paragraphs (B), (P), (Q), (R), (S), and (T); and Section 9.12.40.110 paragraph (C).

"Local agency" means a local water purveyor or 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 this Section on behalf of the city. The local agency may be responsible for the enforcement or delegation of enforcement of this Section, 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. The MAWA is based upon the area's reference evapotranspiration (ETo), the ET Adjustment Factor (ETAF), 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, for the purposes of this Section, 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.

"Overspray" means the water that is delivered beyond the landscaped area, wetting pavements, walks, structures, or other nonlandscaped areas.

"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 Section, 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 Section are

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

"Rain-Sensing Device" means a system that automatically shuts off the irrigation system when it rains.

"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 expressed in inches per day, month, or year as represented in the Guidelines, and is an estimate of the evapotranspiration of a large field of four-to seven-inch tall, cool-season grass that is well watered. Reference evapotranspiration is used as the basis for determining the Maximum Applied Water Allowances.

"Rehabilitated landscape" means any re-landscaping project that meets the applicability criteria of Section 9.12.40.085 (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.

"Runoff" means water that is not absorbed by the soil or landscape to which it is applied and flows from the 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 severe slope.

"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, areas irrigated with recycled water, water features using recycled water, and areas dedicated to active play such as parks, sports fields, golf courses, and where turf provides a playing surface.

"Turf" means a ground cover surface of mowed grass. Annual bluegrass, Kentucky bluegrass, Perennial ryegrass, Red fescue, and Tall fescue are cool-season grasses. Bermudagrass, Kikuyugrass,

Seashore Paspalum, St. Augustinegrass, Zoysiagrass, and Buffalo grass are warm-season grasses.

"Valve" means a device used to control the flow of water in 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 9.12.40.080: Landscaping: General Provisions

A. General landscaping requirements as defined herein shall be provided in all zones.

B. Parcels zoned or used for single-family purposes shall provide landscaping in all areas not covered by buildings, structures, patios or driveways.

C. For the purpose of this Section, the front yard shall be determined by a line drawn parallel to the front building plane. This shall also include any accessory structure such as a garage, if the structure is attached.

D. The following regulations are for maximum coverage of hardscape for properties developed with single-family homes:

1. The maximum permitted percentage of hardscape coverage in the front yard setback, as defined above, shall be fifty percent. Private sidewalks and walkways are excluded from this fifty percent so long as they do not exceed a width of five feet.

2. The front yard area shall be measured from the front building plane to the property lines. In areas where no sidewalks exist, the measurement shall be from the front building plane to the sidewalk or street dedication line. Any area that is in a street or sidewalk dedication must be fully landscaped, except for a standard driveway.

3. Sidewalks fronting the property should not be included in the calculations of the front yard; however, parkways or that area between the frontage, sidewalk and the street curb shall be specifically included in the calculated front yard.

E. All developed properties shall be required to be in compliance with the provisions of this subsection when any additions of one or more square feet are proposed.

F. It is not the intent of this Section to require identical landscape materials or landscape designs for all developments. Where existing mature landscaping is in good, healthful condition, every effort shall be made to retain and to incorporate said landscaping into the overall landscape theme.

G. The hearing body may, through the site plan review procedure, modify the requirements with consideration to the size and species of trees used, and may require landscaping in excess of the minimum area specified for a proposed development in order to achieve a superior project.

H. Adjacent uses shall be considered when designing landscaping to mitigate the negative impacts of parking areas, activities, storage or structures by appropriate screening measures.

I. Every effort shall be made to provide landscaping that is compatible with neighboring uses.

J. All unpaved areas shall be planted with an effective combination of trees, grass berms, ground-cover, lawn, shrubbery and/or approved dry decorative landscape material.

~~K. A water-efficient landscape documentation package shall be required for all new and rehabilitated landscaping for public agency projects, and for any private development projects that require a discretionary permit. This regulation shall not apply to the following:~~

~~1. Homeowner-provided landscaping at individual single-family homes and condominium units;~~

~~2. Cemeteries;~~

~~3. Registered historical sites;~~

~~4. Ecological restoration projects that do not require a permanent irrigation system;~~

~~5. Any project with a landscaped area less than two thousand five hundred square feet;~~

~~L. The following requirements shall apply to the water-efficient landscape package:~~

~~1. A copy of the water-efficient landscape package conforming to this chapter shall be submitted to the city. No permit shall be issued until~~

~~the city reviews and approves the landscape documentation package.~~

~~2. If effective precipitation is included in the calculation of the estimated total water use, then an effective precipitation disclosure statement from the landscape professional and the property owner shall be submitted with the landscape documentation package.~~

SECTION 9.12.40.085: Landscaping: Water Efficiency

A. Beginning January 1, 2010, the Landscape Water Efficiency Provisions shall apply to all planting, irrigation, and landscape-related improvements for projects included within the following categories:

1. New landscape installations or landscape rehabilitation projects by public agencies or private non-residential developers, except for cemeteries, 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 a discretionary approval of a landscape plan, or which otherwise require a ministerial permit for a landscape or water feature;

2. New landscape installations or 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 discretionary approval of a landscape plan, or which otherwise require a ministerial permit for a landscape or water feature;

3. New landscape installation projects by individual homeowners on single-family or multi-family residential lots with a total 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 a discretionary approval of a landscape plan, or which otherwise require a ministerial permit for a landscape or water feature;

B. The Irrigation Design Criteria found in Subsection T (1)(c)(2) of Landscaping Requirements (Section 9.12.40.090) 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 9.12.40.085 (A) is applicable.

C. The Water Efficient Landscape regulations do not apply to the following:

1. Registered local, state, or federal historical sites;

2. Ecological restoration projects that do not require a permanent irrigation system; or

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.

D. Required Submittals:

The following submittals shall be required for all landscape projects subject to the Landscape Water Efficiency Provisions:

1. Prior to installation, a Landscape Documentation Package shall be submitted to the city for review and approval of all landscape projects subject to the provisions of this Section. Any Landscape Documentation Package submitted to the city shall comply with the provisions of the Guidelines.

2. The Landscape Documentation Package shall include a certification by a professional, appropriately licensed in the State of California, stating that the landscape design and water use calculations have been prepared by, or under, the supervision of the licensed professional and are certified to be in compliance with the provisions of this Section and the Guidelines.

(a.) Landscape and Irrigation plans shall be submitted to the City for review and approval with appropriate water use calculations. Water use calculations shall be consistent with calculations contained in the Guidelines and shall be provided to the Water Department, as appropriate, under procedures determined by the city.

(b.) Verification of compliance of the landscape installation with the approved plans shall be obtained through a Certification of Completion in conjunction with a Certificate of Use and Occupancy or Permit Final process, as provided in the Guidelines.

SECTION 9.12.40.090: Landscaping Requirements
All landscaping shall comply with the Landscape Water Efficiency

Provisions where applicable. When conflicts between general landscape requirements and the Landscape Water Efficiency requirements found in this Section and the Guidelines exist, the Landscape Water Efficiency requirements shall have priority.

A. Minimums.

All required landscaped setback areas, including front, rear, side, side street, and landscaped areas within parking lots, shall meet the requirements prescribed herein.

B. Percentage.

Ten percent of all ***parking areas for nonresidential uses permitted in the Multiple-Family Residential zone,*** ~~multiple-family residential,~~ excluding required setbacks, ~~are to~~ ***shall*** be landscaped.

C. Parking Lot Landscaping.

1. Size. For parking facilities, a variety of tree sizes are required for every ten parking spaces. Trees must be a minimum of fifteen-gallons diameter with a one inch caliper truck, eight feet in height with a two and one-half foot head or larger. These trees may be grouped or clustered and shall conform to the matrix of plant materials established by the city manager or designee.

2. Street Frontage. One twenty-four inch box tree of a two and one-quarter inch caliper trunk diameter, ten feet in height, and a five foot head is required for every thirty feet of street frontage. (These trees may be grouped or clustered.) All trees shall be placed within a root barrier per City of Garden Grove street tree planting detail specifications.

3. Area. Minimum landscaped area that may be counted is twenty-four square feet.

D. Trees.

1. No trees shall be planted under any eave, overhang or balcony.

2. All trees in landscape planters ten feet in width or less shall be provided with tree root barricades.

E. Tree Numbers.

1. Parking Area--One per eight spaces

2. Street Setbacks--One per twenty feet

3. Balance of Site--One per six hundred square feet (less parking area building).

F. Tree Size.

Total site:

48"	36"	24"	15 gal.	Other
10%	10%	15%	60%	5%

G. Planter Width.

1. Minimum width of finger planter is three feet, inside clear dimension.

2. Minimum width of all planters is three feet clear, interior dimensions, not inclusive of retaining curb or wall.

3. Minimum width of building perimeter landscape planter is three feet.

H. Groundcover.

1. All areas required to be landscaped shall be covered with turf, non-deciduous groundcover or other types of plantings.

2. All plant spacing shall be as indicated by the landscape architect according to the latest standards as adopted by the American Society of Landscape Architects.

I. Paved Areas. Only those portions that are required by municipal code or by site plan to be used directly for parking spaces, aisles, refuse storage areas, drives or walkways shall be paved. All other areas not needed for the above shall be landscaped. Patios may be paved.

J. Excess of Minimum Areas--Authority. The hearing body may require landscaping in excess of the minimum area specified for a proposed development, provided that the additional landscaping is necessary to:

1. Screen adjacent objectionable uses, parking areas, activities, storage or structures that could cause a negative impact on new development based on aesthetics, noise, odors, etc.; or

2. Provide landscaping that is compatible with neighboring uses; or

3. Screen the use from neighboring negative impacts such as traffic, outside storage, etc.

K. Landscape Plans.

1. Each landscape plan shall be compatible with the shape and topography of the site and the architectural characteristics of the structure(s) on the site.

2. Each landscape plan shall be compatible with the character of adjacent landscaping, provided the quality of the adjacent landscaping meets the standard of these guidelines.

3. Each landscape plan shall illustrate a concern for design elements such as balance, scale, texture, form and unity.

4. Each landscape plan shall address the functional aspects of landscaping such as drainage, erosion prevention, wind barriers, provisions for shade and reduction of glare.

5. Each landscape plan shall demonstrate a concern for solar access, including exposure and shading of window areas.

6. Landscaping shall be used to relieve solid, unbroken elevations and to soften continuous wall expanses.

7. The applicant must submit a planting inventory and plan of existing planting materials on a development site that are to be retained. Every effort shall be taken to ensure that mature existing landscaping is utilized as part of the development plan. A landscaping retention program shall be approved by action of the hearing body, at its discretion.

L. Substitute Landscaping.

Materials such as crushed rock, redwood chips, pebbles and stone may not be used in lieu of live plant materials, although their limited use may be approved by the hearing body through the site plan review process. Artificial plants and synthetic groundcovers are prohibited.

M. Screening.

1. Landscaping shall be required to screen storage areas, trash enclosures, parking areas, public utilities, freeways, highways and other similar land uses or elements that do not contribute to the enhancement of the surrounding area. Where plants are required for screening, such screening shall consist of the use of evergreen shrubs and/or trees closely spaced. Berming is suggested as an effective screening measure for parking lots and where adjacent site areas are contiguous to street frontages. Such berming shall not exceed thirty-six inches above the highest adjacent curb.

2. Perimeter landscaping adjacent to the property lines is required in parking areas. Planter area curbs shall be used in place of wheel stops.

N. Separation.

1. All landscaping shall be separated from parking and vehicular circulation areas by a raised, continuous six inch Portland cement concrete curb.

2. Other materials that accomplish the same purpose may be approved by the hearing body through the site plan review process.

3. All trees shall be staked in accordance with standards maintained by the city manager or designee.

O. Arterial Site Entries.

1. Unless otherwise delineated, all developments having a contiguous property line to a primary or secondary arterial highway shall observe a fifteen-foot setback that shall be landscaped. All other non-arterial highways shall observe a ten-foot setback, unless otherwise delineated by the governing zone.

2. Landscaping at major entry points are considered the focal points for landscaping emphasis, and shall contain a variety of trees, flowers and shrubs with special concern for visibility and safety.

3. No landscaping material other than trees shall exceed a height of thirty-six inches above the highest adjacent curb at street entrances and parking lot accessway intersections.

4. No berming at street entrances and parking lot accessway intersections shall exceed a height of thirty-six inches above the highest adjacent curb.

5. All trees whether singularly placed or placed on clusters shall not inhibit standard visibility parameters.

6. Parking may be designed to overhang landscaped areas. Maximum permitted overhang is two feet where planter areas have a minimum dimension of five feet or more. Otherwise, concrete wheel stops shall be installed. Any broken or damaged wheel stops shall be replaced.

P. Landscaping and Irrigation Plans Required.

Landscape and irrigation plans shall be required for all projects requiring approval by the hearing body ***and those required by the Landscape Water Efficiency Section (Section 9.12.40.085, Subsection A,***

above), *except for* ***individual homeowners on single-family or multi-family residential lots*** ~~R-1 single family homes~~ ***that have a total project landscape area, including pools or other water features, but excluding hardscape that is less than 5,000 square feet.*** Such plans shall be submitted for discretionary approval to the hearing body. Said plans shall be prepared in accordance with requirements and standards established pursuant to this chapter ***and the Guidelines (specifically Sections 2.4 Landscape Design Plan and 2.5 Irrigation Design Plan).***

Q. In addition to the above, the following are requirements that shall apply to the landscape design plan ***and are more fully explained in the Guidelines:***

1. Any plants may be used in the landscape, providing the estimated applied water use (EAWU) recommended does not exceed the maximum applied water allowance (MAWA), and that the plants meet the specifications set forth in this Section.

2. Plants having similar water use shall be grouped together in distinct hydrozones.

3. Plants shall be selected appropriately based upon their adaptability to the climatic, geologic and topographical conditions of the site. Protection and preservation of native species and natural areas are encouraged. The planting of trees is encouraged wherever it is consistent with the other provisions of this Article. ***To encourage the efficient use of water, the following are highly recommended for inclusion in the landscape design plan:***

(a.) 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;

(b.) 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

(c.) The solar orientation of the site and how plant placement will maximize summer shade and winter solar gain.

R. Irrigation Requirements.

1. All landscaped areas shall be provided with an approved irrigation system that ***meets the requirements of this Section and the Guidelines.*** ~~shall include an automatic, time-controlled sprinkler system when the site is zoned commercial or industrial or when the~~

~~site is zoned residential and permits more than three dwelling units.~~ ***An irrigation design plan meeting the design criteria in the Guidelines shall be submitted as part of the Landscape Documentation Package for those projects subject to the Landscape Water Efficiency Provisions in Section 9.12.40.085 (A).***

2. Irrigation shall be performed in conformance with city ordinances ~~or~~ ***and*** with water conservation practices.

S. System Design. ***For the efficient use of water, an irrigation system shall meet all the requirements listed in the Guidelines under Section 2.5 Irrigation Design Plan 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 all the design criteria in Section 2.5 of the Guidelines shall be submitted as part of the Landscape Documentation Package.***

~~1. Irrigation system shall consist of underground piped water lines and sprinklers designed to provide head-to-head coverage. Water meter and line sizes shall be calculated from total water demand that should be, at least, the sum of maximum irrigation demand and all building demand.~~

~~2. Due to varying irrigation requirements, separate control valves and/or sprinkler heads shall be used when shrubs and turf all appear on the same landscape plan. The irrigation system shall be designed so that overspray onto structures, streets, sidewalks, windows, walls and fences is minimized. Approved backflow prevention devices are required on all sprinkler systems.~~

T. In addition to the above, the following are requirements that shall apply to the landscape design plan.

1. Irrigation Design Criteria.

(a.) Runoff and Overspray. Soil types and infiltration rate shall be considered when designing irrigation systems. All irrigation systems shall be designed to avoid 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 (***walks***, etc.),*** roadways or structures. ~~Proper irrigation equipment and schedules, including features such as repeat cycles, shall be used to closely match application rates to infiltration rates therefore minimizing runoff.~~

(b.) Special attention shall be given to avoid runoff on slopes and to

avoid overspray ***on narrow and irregularly shaped areas, including turf, less than eight (8) feet in width in any direction. Such narrow and irregularly shaped areas shall be irrigated with subsurface irrigation or a low volume overhead irrigation system.*** ~~in planting areas with a width less than ten feet, and in median strips. No overhead sprinkler irrigation systems shall be installed in median strips less than ten feet wide.~~

(c.) Irrigation Efficiency. ~~For the purpose of determining the maximum water allowance, irrigation efficiency is assumed to be 0.625. Irrigation systems shall be designed, maintained and managed to meet or exceed 0.625 efficiency~~.

(1.) For applicable landscape installations or rehabilitation projects subject to Section 9.12.40.085 (A), the Estimated Applied Water Use allowed for the landscaped areas 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 areas shall otherwise be shown to be equivalently water-efficient in a manner acceptable to the city; as provided in the Guidelines.

(2.) 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 Water Department, or as mutually agreed by the Water Department and the local agency.

(3.) The project applicant shall understand and implement the requirements in the City of Garden Grove, Water Conservation Ordinance.

(c.) Equipment. ***The Guidelines provide design criteria for irrigation equipment in Section 2.5 "Irrigation Design Plan".***

~~(1.) Water Meters. Separate landscape water meters shall be installed for all projects except for single family homes or any project with a landscaped area of less than two thousand five hundred square feet, or as required by the city.~~

~~(2.) Controllers. Automatic control systems shall be required for all irrigation systems, and must be able to accommodate all~~

~~aspects of the design.~~

~~(3.) Valves. Plants that require different amounts of water shall be irrigated by separate valves. If one valve is used for a given area, only plants with similar water use shall be used in that area. Anti-drain (check) valves shall be installed in strategic points to minimize or prevent low-head drainage.~~

~~(4.) Sprinkler Heads. Head and emitters shall have consistent application rates within each control valve circuit. Sprinkler heads shall be selected for proper area coverage, application rate, operating pressure, adjustment capability and ease of maintenance.~~

~~(5.) Rain-Sensing Override Devices. Rain-sensing override devices shall be required on all irrigation systems.~~

~~(6.) Soil Moisture-Sensing Devices. It is recommended that soil moisture-sensing devices be considered where appropriate.~~

2. Recycled Water.

   (a.) At such time as recycled water is available, the installation of recycled water irrigation systems (dual distribution systems) shall be required to allow for the current and future use of recycled water.

   (b.) Irrigation systems shall make use of recycled water unless a written exemption has been granted by the local water agency, stating that recycled water meeting all health standards is not available and will not be available in the foreseeable future.

   (c.) The recycled water irrigation systems shall be designed and operated in accordance with all local and state codes.

3. Irrigation Design Plan Specifications. Irrigation systems shall be designed to be consistent with hydrozones. ***Hydrozone areas shall be designated by number, letter, or other designation on both the Irrigation Design Plan and the Landscape Design Plan.*** The irrigation design plan shall be separate from, but use the same format as, the landscape design plan. The scale shall be the same as that used for the landscape design plan. The irrigation design plan ***at a minimum,*** shall ***contain***~~accurately and clearly identify~~:

   (a.) Location and size of separate water meters for the landscape;

   (b.) Location, type and size of all components of the irrigation system, including ~~automatic~~ controllers, main and lateral lines, valves,

sprinkler heads, ***moisture sensing devices,*** rain switches, quick couplers and backflow prevention devices;

(c.) Static water pressure at the point of connection to the public water supply;

(d.) Flow rate (gallons per minute), application rate (inches per hour), and design operating pressure (psi) for each station;

(e.) Irrigation schedule parameters necessary to program smart timers specified in the landscape design;

(f.) The following statement: "I have complied with the Landscape Water Efficiency Provisions and the design criteria in the Guidelines and applied them accordingly for the efficient use of water in the irrigation design plan; and

(g.) The signature of a California-licensed landscape professional.

4. Maximum Applied Water Allowance. A project's maximum applied water allowance shall be calculated ~~using the following formula:~~ ***in a manner acceptable to the city; as provided in the Guidelines.***

~~MAWA = (ETO)(0.8)(LA)(0.62) where:~~

~~MAWA = Maximum applied water allowance (gallons per year)~~

~~ETO = Reference evapotranspiration (inches per year)~~

~~0.8 = ET adjustment factor~~

~~LA = Landscaped area (square feet)~~

~~0.62 = Conversion factor (to gallons per square foot)~~

5. Irrigation Schedules. ***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:*** ~~satisfying the following conditions shall be submitted as part of the landscape documentation package.~~

(a.) ***Irrigation scheduling shall be regulated by automatic irrigation controllers.*** ~~An annual irrigation program with monthly irrigation schedules shall be required for the plant establishment period, for the established landscape, and for any temporarily irrigated areas.~~

(b.) ***Overhead irrigation shall be scheduled in accordance with the local water purveyor's (City of Garden Grove, Water Services Division) Water Conservation Ordinance. Operation of the irrigation system outside the normal watering window is allowed for auditing and system maintenance.*** ~~The irrigation schedule shall:~~

~~(1.) Include run time (in minutes per cycle), suggested number of cycles per day, and frequency of irrigation for each station; and~~

~~(2.) Provide the amount of applied water (in hundred cubic feet, gallons, or in whatever billing units the local water supplier uses) recommended on a monthly and annual basis.~~

~~(c.) The total amount of water for the project shall include water designated in the estimated total water use calculation plus water needed for any water features, which shall be considered as a high water using hydrozone.~~

~~(d.) Recreational areas designated in the landscape design plan shall be highlighted and the irrigation schedule shall indicate if any additional water is needed above the maximum applied water allowance because of high plant factors (but not due to irrigation inefficiency).~~

~~(e.) Irrigation scheduling shall incorporate the use of evapotranspiration data such as those from the California Irrigation Management Information System (CIMIS) weather stations to apply the appropriate levels of water for different climates, whenever possible.~~

~~(f.) Landscape irrigation shall be scheduled between ten p.m. and six a.m., whenever possible, to avoid irrigating during times of high wind or high temperature.~~

6. Certificate 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 in the 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 City of Garden Grove Landscape Water Efficiency Provisions."

~~g.) A licensed landscape architect or contractor, certified irrigation designer, or other licensed or certified professional in a related field, shall conduct a final field observation and shall provide a certificate of substantial completion to the city. The certificate shall specifically indicate that plants were installed as specified, that the irrigation system was installed as designed, and that an irrigation audit has been performed prior to the final field inspection.~~

(2.) Documentation of the irrigation scheduling parameters used to set the controller.

(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.

~~(h.) Certification shall be accomplished by completing a certificate of substantial completion and delivering it to the city manager or designee, and to the owner of record.~~

~~(i.) Water Waste Prevention. The irrigation system shall prevent water waste resulting from inefficient landscape irrigation by prohibiting runoff, low-head drainage, overspray or other similar conditions where water flows onto adjacent property, non-irrigated areas, walks, roadways or structures. Penalties for violation of these prohibitions shall be established locally.~~

~~(j.) Effective Precipitation. If effective precipitation is included in the calculation of the estimated total water use, an effective precipitation disclosure statement shall be completed, signed and~~

~~submitted with the landscape documentation package. No more than twenty-five percent of the local annual mean precipitation shall be considered effective precipitation in the calculation of the estimated total water use.~~

SECTION 9.12.40.100: Landscaping: Compliance

A. Any modification to an approved landscape or irrigation plan must be approved by the hearing body prior to installation of said landscaping or irrigation.

B. All approvals of such plans are subject to and dependent upon the applicant complying with all applicable ordinances, codes, regulations, adopted policies and the payment of all applicable fees and assessments.

C. No final inspection or occupancy clearance will be granted until all of the landscaping and irrigation is installed in accordance with the approved plans.

D. Landscaping and irrigation systems shall be located and designed as specified on the approved plans.

SECTION 9.12.40.110: Landscaping: Maintenance Requirements and Violations

A. Maintenance. All landscaping shall be maintained. Maintenance of landscaping areas shall include, but not be limited to, the following:

1. Irrigation equipment shall be in working condition at all times.

2. Litter shall be removed from all landscaped areas in a timely fashion.

3. All sod areas shall be mowed on a regular basis. Sod areas shall at all times be kept green. Accumulation of leaves, bark and other similar plant materials shall be removed in a timely fashion. Planting areas must be kept in a weed free fashion.

4. Landscaping maintenance shall include pruning, cultivating, weeding, fertilizing, replacement of plants and watering on a regular basis.

5. Landscape maintenance shall also include pruning or removal of overgrown vegetation, cultivated or uncultivated, that is likely to harbor rats, vermin or other nuisances, or that causes detriment to neighboring properties or property.

6. Landscape maintenance shall also include the removal of dead, decayed, diseased or hazardous trees, weeds and debris constituting unsightly appearance, dangerous to public safety and welfare or detrimental to neighboring properties or property values. Compliance shall be by removal, replacement or maintenance requirements.

7. Any removal of mature landscaping must be replaced with landscaping of similar size and maturity as that which was removed.

B. Violations. Use of landscaped areas for purposes other than for landscaping as approved in the landscape plan shall be a misdemeanor. Willful failure to maintain the landscaping shall be punishable by fine, or by imprisonment, or both fine and imprisonment.

C. Delegation. The city may delegate to, or enter into a contract with, a local agency to implement, administer, and/or enforce any of the Landscape Water Efficiency Provisions on behalf of the city.

Chapter 9.16: Commercial, Office Professional, Industrial and Open Space Development Standards

Section 9.16.40.050 (Landscaping: Purpose)
Section 9.16.40.055 (Definitions)
Section 9.16.40.060 (Landscaping: General Provisions)
Section 9.16.40.065 (Landscaping Water Efficiency)
Section 9.16.40.070 (Landscaping Requirements)
Section 9.16.40.080 (Landscaping: Compliance)
Section 9.16.40.090 (Landscaping: Maintenance Requirements and Violations)

SECTION 9.16.40.050: Landscaping: Purpose
To establish landscape standards and water waste prevention in order to mitigate the effects of urbanization and excessive water use on the environment and to provide an aesthetically pleasing urban setting, this title ***along with the Guidelines for Implementation of the City of Garden Grove Landscape Water Efficiency Provisions (the Guidelines)*** establishes water-efficient landscape design standards consisting of maximum applied water allowance, plant material percentages, and standards for design, quantities, location, species types, combinations of plant types (i.e., shrubs and groundcover), and size and shape of materials. ***The Guidelines are attached to Title 9, City of Garden Grove Municipal Code, as Appendix 1 and may be amended from time to time by Resolution of the City Council.*** The city recognizes the importance of landscaping and water efficiency to the health and well-being of the community, and desires to enhance the overall appearance of development projects in the city. It is the intent of this article ***and the Guidelines*** to establish a measure of uniformity in landscaping that will provide a structure for designing, installing and maintaining water-efficient landscapes for new projects as well as providing a mechanism to require updating and upgrading of existing landscaping in existing developments when improvements are intended.

SECTION 9.16.40.055: Definitions.
The following definitions are applicable to this Section:

> ***"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.***
>
> ***"Effective Precipitation" means the portion of total precipitation that is used by plants. Precipitation is not a reliable source of water, but***

can contribute to some degree toward the water needs of the landscape.

"Estimated Applied Water Use" or "EAWU" means the average annual total amount of water estimated to be necessary to keep plants in a healthy state, calculated as provided in the Guidelines. The EAWU is based on the reference evapotranspiration rate (ETo), 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 Section, and the Guidelines, except that the ETAF for a special landscape area shall not exceed 1.0.

"Evapotranspiration" means the quantity of water evaporated from adjacent soil surfaces and transpired by plants during a specific time.

"Guidelines" refers to the Guidelines for Implementation of the Landscape Water Efficiency Provisions, as adopted by the City Council, and as subsequently amended by resolution of the City Council, which describes procedures, calculations, and requirements for landscape projects subject to this Section. The Guidelines are attached to Title 9, City of Garden Grove Municipal Code, as Appendix 1 and may be amended from time to time by Resolution of the City Council.

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

"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 Section, 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 Section to the requirements applicable to developer-installed residential landscape projects.

"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. For example, a natural area planted with native vegetation that will not need supplemental irrigation once established is a nonirrigated hydrozone.

"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. The minimum average irrigation efficiency for purposes of this Section is 0.71. Greater 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 9.16.40.065, Subsections (A), (B), & (C) of this Section.

"Landscape Water Efficiency Provisions" means the following sections and paragraphs of this Chapter relating to landscape water efficiency: Sections 9.16.40.050; 9.16.40.055; 9.16.40.065; and

9.16.40.070 (introductory paragraph); Section 9.16.40.070 paragraphs (P), (Q), (R), (S), and (T); and Section 9.16.40.090 paragraph (C).

"Local agency" means a local water purveyor or 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 this Section on behalf of the city. The local agency may be responsible for the enforcement or delegation of enforcement of this Section, 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. MAWA is based upon the area's reference evapotranspiration (ETo), 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, for the purposes of this Section, 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.

"Overspray" means the water that is delivered beyond the landscaped area, wetting pavements, walks, structures or other nonlandscaped areas.

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

"Rain –Sensing Device" means a system that automatically shuts off the irrigation system when it rains.

"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 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 for determining the Maximum Applied Water Allowances.

"Rehabilitated landscape" means any re-landscaping project that meets the applicability criteria of Section 9.16.40.065 (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.

"Runoff" means water that is not absorbed by the soil or landscape to which it is applied and flows from the 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 severe slope.

"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, areas irrigated with recycled water, water features using recycled water, and areas dedicated to active play such as parks, sports fields, golf courses, and where turf provides a playing surface.

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

"Valve" means a device used to control the flow of water in 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 9.16.40.060: Landscaping: General provisions

A. General landscaping requirements as defined herein shall be provided in all zones.

B. Parcels zoned or used for single-family purposes shall provide landscaping in all areas not covered by buildings, structures, patios or driveways.

C. For the purpose of this Section, the front yard shall be determined by a line drawn parallel to the front building plane. This shall also include any accessory structure such as a garage, if the structure is attached.

D. Reserved.

E. All developed properties shall be required to be in compliance with the provisions of this subsection when any additions of one or more square feet are proposed.

F. It is not the intent of this Section to require identical landscape materials or landscape designs for all developments. Where existing mature landscaping is in good, healthful condition, every effort shall be made to retain and to

incorporate said landscaping into the overall landscape theme.

G. The hearing body may, through the site plan review procedure, modify the requirements with consideration to the size and species of trees used, and may require landscaping in excess of the minimum area specified for a proposed development in order to achieve a superior project.

H. Adjacent uses shall be considered when designing landscaping to mitigate the negative impacts of parking areas, activities, storage or structures by appropriate screening measures.

I. Every effort shall be made to provide landscaping that is compatible with neighboring uses.

J. All unpaved areas shall be planted with an effective combination of trees, grass berms, ground-cover, lawn, shrubbery and/or approved dry decorative landscape material.

~~K. A water-efficient landscape documentation package shall be required for all new and rehabilitated landscaping for public agency projects, and for any private development projects that require a discretionary permit. This regulation shall not apply to the following:~~

~~1. Registered historical sites;~~

~~2. Ecological restoration projects that do not require a permanent irrigation system;~~

~~3. Any project with a landscaped area less than two thousand five hundred square feet;~~

~~L. The following requirements shall apply to the water-efficient landscape package:~~

~~1. A copy of the water-efficient landscape package conforming to this chapter shall be submitted to the city. No permit shall be issued until the city reviews and approves the landscape documentation package.~~

~~2. If effective precipitation is included in the calculation of the estimated total water use, then an effective precipitation disclosure statement from the landscape professional and the property owner shall be submitted with the landscape documentation package.~~

SECTION 9.16.40.065: Landscaping: Water Efficiency

A. Beginning January 1, 2010, the following Landscape Water Efficiency Provisions shall apply to all planting, irrigation, and landscape-related improvements for projects included within the following categories:

1. *New landscape installations or landscape rehabilitation projects by public agencies or private non-residential developers, except for cemeteries, 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 a discretionary approval of a landscape plan, or which otherwise require a ministerial permit for a landscape or water feature;*

2. *New landscape installations or 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 discretionary approval of a landscape plan, or which otherwise require a ministerial permit for a landscape or water feature;*

3. *New landscape installation projects by individual homeowners on single-family or multi-family residential lots with a total 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 a discretionary approval of a landscape plan, or which otherwise require a ministerial permit for a landscape or water feature;*

B. *The Irrigation Design Criteria found in Subsection T (1)(c)(2) of Landscaping Requirements (Section 9.16.40.070) 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 9.12.40.085 (A) is applicable.*

C. *The Water Efficient Landscape regulations do not apply to the following:*

1. *Registered local, state, or federal historical sites; or*

2. *Ecological restoration projects that do not require a permanent irrigation system; or*

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.

D. The following submittals shall be required for all landscape projects subject to the Landscape Water Efficiency Provisions:

1. Prior to installation, a Landscape Documentation Package shall be submitted to the city for review and approval of all landscape projects subject to the provisions of this Section and the Landscape Water Efficiency Provisions. Any Landscape Documentation Package submitted to the city shall comply with the provisions of the Guidelines.

2. The Landscape Documentation Package shall include a certification by a professional, appropriately licensed in the State of California, stating that the landscape design and water use calculations have been prepared by, or under, the supervision of the licensed professional and are certified to be in compliance with the provisions of this Section and the Guidelines.

(a.) Landscape and Irrigation plans shall be submitted to the city for review and approval with appropriate water use calculations. Water use calculations shall be consistent with calculations contained in the Guidelines and shall be provided to the Water Department, as appropriate, under procedures determined by the city.

(b.) Verification of compliance of the landscape installation with the approved plans shall be obtained through a Certification of Completion in conjunction with a Certificate of Use and Occupancy or Permit Final process, as provided in the Guidelines.

SECTION 9.16.40.070: Landscaping requirements
All landscaping shall comply with the Landscape Water Efficiency Provisions where applicable. When conflicts between general landscape requirements and the Landscape Water Efficiency requirements found in this Section and the Guidelines exist, the Landscape Water Efficiency requirements shall have priority.

A. Minimums.

All required landscaped setback areas, including front, rear, side, side street, and landscaped areas within parking lots, shall meet the requirements prescribed herein.

B. Percentage.

Ten percent of all net developable site area for office-professional,

commercial, and industrial parking areas, excluding required setbacks, are to be landscaped.

C. Parking Lot Landscaping.

1. Size. For parking facilities, a variety of tree sizes are required for every ten parking spaces. Trees must be a minimum of fifteen-gallons diameter with a one inch caliper truck, eight feet in height with a two and one-half foot head or larger. These trees may be grouped or clustered and shall conform to the matrix of plant materials established by the city manager or designee.

2. Street Frontage. One twenty-four inch box tree of a two and one-quarter inch caliper trunk diameter, ten feet in height, and a five foot head is required for every thirty feet of street frontage. (These trees may be grouped or clustered.) All trees shall be placed within a root barrier per city of Garden Grove street tree planting detail specifications.

3. Area. Minimum landscaped area that may be counted is twenty-four square feet.

D. Trees.

1. No trees shall be planted under any eave, overhang or balcony.

2. All trees in landscape planters ten feet in width or less shall be provided with tree root barricades.

E. Tree Numbers.

1. Parking Area--One per eight spaces

2. Street Setbacks--One per twenty feet

3. Balance of Site--One per six hundred square feet (less parking area building).

F. Tree Size.

Total site:

48"	36"	24"	15 gal.	Other
10%	10%	15%	60%	5%

G. Planter Width.

1. Minimum width of finger planter is three feet, inside clear dimension.

2. Minimum width of all planters is three feet clear, interior dimensions, not inclusive of retaining curb or wall.

3. Minimum width of building perimeter landscape planter is three feet.

H. Groundcover.

1. All areas required to be landscaped shall be covered with turf, non-deciduous groundcover or other types of plantings.

2. All plant spacing shall be as indicated by the landscape architect according to the latest standards as adopted by the American Society of Landscape Architects.

I. Paved Areas. Only those portions that are required by municipal code or by site plan to be used directly for parking spaces, aisles, refuse storage areas, drives or walkways shall be paved. All other areas not needed for the above shall be landscaped. Patios may be paved.

J. Excess of Minimum Areas--Authority. The hearing body may require landscaping in excess of the minimum area specified for a proposed development, provided that the additional landscaping is necessary to:

1. Screen adjacent objectionable uses, parking areas, activities, storage or structures that could cause a negative impact on new development based on aesthetics, noise, odors, etc.; or

2. Provide landscaping that is compatible with neighboring uses; or

3. Screen the use from neighboring negative impacts such as traffic, outside storage, etc.

K. Landscape Plans.

1. Each landscape plan shall be compatible with the shape and topography of the site and the architectural characteristics of the structure(s) on the site.

2. Each landscape plan shall be compatible with the character of adjacent landscaping, provided the quality of the adjacent landscaping meets the standard of these guidelines.

3. Each landscape plan shall illustrate a concern for design elements such as balance, scale, texture, form and unity.

4. Each landscape plan shall address the functional aspects of landscaping

such as drainage, erosion prevention, wind barriers, provisions for shade and reduction of glare.

5. Each landscape plan shall demonstrate a concern for solar access, including exposure and shading of window areas.

6. Landscaping shall be used to relieve solid, unbroken elevations and to soften continuous wall expanses.

7. The applicant must submit a planting inventory and plan of existing planting materials on a development site that are to be retained. Every effort shall be taken to ensure that mature existing landscaping is utilized as part of the development plan. A landscaping retention program shall be approved by action of the hearing body, at its discretion.

L. Substitute Landscaping.

1. Materials such as crushed rock, redwood chips, pebbles and stone may not be used in lieu of live plant materials, although their limited use may be approved by the hearing body through the site plan review process. Artificial plants and synthetic groundcovers are prohibited.

M. Screening.

1. Landscaping shall be required to screen storage areas, trash enclosures, parking areas, public utilities, freeways, highways and other similar land uses or elements that do not contribute to the enhancement of the surrounding area. Where plants are required for screening, such screening shall consist of the use of evergreen shrubs and/or trees closely spaced. Berming is suggested as an effective screening measure for parking lots and where adjacent site areas are contiguous to street frontages. Such berming shall not exceed thirty-six inches above the highest adjacent curb.

2. Perimeter landscaping adjacent to the property lines is required in parking areas. Planter area curbs shall be used in place of wheel stops.

N. Separation.

1. All landscaping shall be separated from parking and vehicular circulation areas by a raised, continuous six-inch Portland cement concrete curb.

2. Other materials that accomplish the same purpose may be approved by the hearing body through the site plan review process.

3. All trees shall be staked in accordance with standards maintained by

the city manager or designee.

O. Arterial Site Entries.

1. Unless otherwise delineated, all developments having a contiguous property line to a primary or secondary arterial highway shall observe a fifteen-foot setback that shall be landscaped. All other non-arterial highways shall observe a ten-foot setback, unless otherwise delineated by the governing zone.

2. Landscaping at major entry points are considered the focal points for landscaping emphasis, and shall contain a variety of trees, flowers and shrubs with special concern for visibility and safety.

3. No landscaping material other than trees shall exceed a height of thirty-six inches above the highest adjacent curb at street entrances and parking lot accessway intersections.

4. No berming at street entrances and parking lot accessway intersections shall exceed a height of thirty-six inches above the highest adjacent curb.

5. All trees whether singularly placed or placed on clusters shall not inhibit standard visibility parameters.

6. Parking may be designed to overhang landscaped areas. Maximum permitted overhang is two feet where planter areas have a minimum dimension of five feet or more. Otherwise, concrete wheel stops shall be installed. Any broken or damaged wheel stops shall be replaced.

P. Landscaping and Irrigation Plans Required.

Landscape and irrigation plans shall be required for all projects requiring approval by the hearing body *and those required by the Landscape Water Efficiency Section (Section 9.16.40.065, Subsection A, above).* Such plans shall be submitted for discretionary approval to the hearing body. Said plans shall be prepared in accordance with requirements and standards established pursuant to this chapter ***and the Guidelines (specifically Sections 2.4 Landscape Design Plan and 2.5 Irrigation Design Plan).***

Q. In addition to the above, the following are requirements shall apply to the landscape design plan ***and are more fully explained in the Guidelines (Appendix 1, Title 9):***

1. Any plants may be used in the landscape, providing the estimated applied water use (EAWU) recommended does not exceed the maximum applied water allowance (MAWA), and that the plants meet the specifications set forth in this Section.

2. Plants having similar water use shall be grouped together in distinct hydrozones.

3. Plants shall be selected appropriately based upon their adaptability to the climatic, geologic and topographical conditions of the site. Protection and preservation of native species and natural areas are encouraged. The planting of trees is encouraged wherever it is consistent with the other provisions of this Article. ***To encourage the efficient use of water, the following are highly recommended for inclusion in the landscape design plan:***

   (a.) 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;

   (b.) 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

   (c.) The solar orientation of the site and how plant placement will maximize summer shade and winter solar gain.

R. Irrigation Requirements.

1. All landscaped areas shall be provided with an approved irrigation system that ***meets the requirements of this Section and Guidelines*** ~~shall include an automatic, time-controlled sprinkler system when the site is zoned commercial or industrial or when the site is zoned residential and permits more than three dwelling units.~~ ***An irrigation design plan meeting the design criteria in the Guidelines shall be submitted as part of the Landscape Documentation Package for those projects subject to the Landscape Water Efficiency Provisions in Section 9.16.40.065 (A).***

2. Irrigation shall be performed in conformance with city ordinances ~~or~~ ***and*** with water conservation practices.

S. System Design.

For the efficient use of water, an irrigation system shall meet all the requirements listed in the Guidelines under Section 2.5 "Irrigation Design Plan" 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 all the design criteria in Section 2.5 of the Guidelines shall be submitted as part of the Landscape Documentation Package. Irrigation system shall consist of underground piped water lines and sprinklers designed to provide head-to-head coverage. Water meter and line sizes shall be calculated from total water demand that should be, at least, the sum of maximum irrigation demand and all building demand.

~~2. Due to varying irrigation requirements, separate control valves and/or sprinkler heads shall be used when shrubs and turf all appear on the same landscape plan. The irrigation system shall be designed so that overspray onto structures, streets, sidewalks, windows, walls and fences is minimized. Approved backflow prevention devices are required on all sprinkler systems.~~

T. In addition to the above, the following are requirements that shall apply to the landscape design plan.

1. Irrigation Design Criteria.

(a.) Runoff and Overspray. Soil types and infiltration rate shall be considered when designing irrigation systems. All irrigation systems shall be designed to avoid 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 (***walks***, etc.)***, roadways or structures. ~~Proper irrigation equipment and schedules, including features such as repeat cycles, shall be used to closely match application rates to infiltration rates therefore minimizing runoff.~~

(b.) Special attention shall be given to avoid runoff on slopes and to avoid overspray ***on narrow and irregularly shaped areas, including turf, less than eight (8) feet in width in any direction. Such narrow and irregularly shaped areas shall be irrigated with subsurface irrigation or a low volume overhead irrigation system.*** ~~in planting areas with a width less than ten feet, and in median strips. No overhead sprinkler irrigation systems shall be installed in median strips less than ten feet wide.~~

(c.) Irrigation Efficiency. ~~For the purpose of determining the maximum water allowance, irrigation efficiency is assumed to be 0.625. Irrigation systems shall be designed, maintained and managed to meet or exceed 0.625 efficiency.~~

(1.) For applicable landscape installations or rehabilitation projects subject to Section 9.16.40.065 (A), the Estimated Applied Water Use allowed for the landscaped areas 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 areas shall otherwise be shown to be equivalently water-efficient in a manner acceptable to the city; as provided in the Guidelines.

(2.) 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 Water Department, or as mutually agreed by the Water Department and the local agency.

(3.) The project applicant shall understand and implement the requirements in the City of Garden Grove, Water Conservation Ordinance.

(d.) *Equipment.* ***The Guidelines provide design criteria for irrigation equipment in Section 2.5 "Irrigation Design Plan".***

~~(1.) Water Meters. Separate landscape water meters shall be installed for all projects except for single-family homes or any project with a landscaped area of less than two thousand five hundred square feet, or as required by the city.~~

~~(2.) Controllers. Automatic control systems shall be required for all irrigation systems, and must be able to accommodate all aspects of the design.~~

~~(3.) Valves. Plants that require different amounts of water shall be irrigated by separate valves. If one valve is used for a given area, only plants with similar water use shall be used in that area. Anti-drain (check) valves shall be installed in strategic points to minimize or prevent low-head drainage.~~

~~(4.) Sprinkler Heads. Head and emitters shall have consistent application rates within each control valve circuit. Sprinkler heads shall be selected for proper area coverage, application rate, operating pressure, adjustment capability and ease of maintenance.~~

~~(5.) Rain Sensing Override Devices. Rain-sensing override devices shall be required on all irrigation systems.~~

~~(6.) Soil Moisture Sensing Devices. It is recommended that soil moisture sensing devices be considered where appropriate.~~

2. Recycled Water.

   (a.) At such time as recycled water is available, the installation of recycled water irrigation systems (dual distribution systems) shall be required to allow for the current and future use of recycled water.

   (b.) Irrigation systems shall make use of recycled water unless a written exemption has been granted by the local water agency, stating that recycled water meeting all health standards is not available and will not be available in the foreseeable future.

   (c.) The recycled water irrigation systems shall be designed and operated in accordance with all local and state codes.

3. Irrigation Design Plan Specifications. Irrigation systems shall be designed to be consistent with hydrozones. ***Hydrozone areas shall be designated by number, letter, or other designation on both the Irrigation Design Plan and the Landscape Design Plan.*** The irrigation design plan shall be separate from, but use the same format as, the landscape design plan. The scale shall be the same as that used for the landscape design plan. The irrigation design plan ***at a minimum,*** shall ***contain***~~accurately and clearly identify~~:

   (a.) Location and size of separate water meters for the landscape;

   (b.) Location, type and size of all components of the irrigation system, including ~~automatic~~ controllers, main and lateral lines, valves, sprinkler heads, ***moisture sensing devices,*** rain switches, quick couplers and backflow prevention devices;

   (c.) Static water pressure at the point of connection to the public water supply;

   (d.) Flow rate (gallons per minute), application rate (inches per hour), and design operating pressure (psi) for each station;

   (e.) Irrigation schedule parameters necessary to program smart timers specified in the landscape design;

   (f.) The following statement: "I have complied with the Landscape Water Efficiency Provisions and the design criteria in the Guidelines and applied them accordingly for the efficient use of water in the irrigation design plan"; and

(g.) The signature of a California-licensed landscape professional.

4. Maximum Applied Water Allowance. A project's maximum applied water allowance shall be calculated ~~using the following formula:~~ ***in a manner acceptable to the City; as provided in the Guidelines.***

~~MAWA = (ETO)(0.8)(LA)(0.62) where:~~

~~MAWA = Maximum applied water allowance (gallons per year)~~

~~ETO = Reference evapotranspiration (inches per year)~~

~~0.8 = ET adjustment factor~~

~~LA = Landscaped area (square feet)~~

~~0.62 = Conversion factor (to gallons per square foot)~~

5. Irrigation Schedules. ***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:*** ~~satisfying the following conditions shall be submitted as part of the landscape documentation package.~~

(a.) ***Irrigation scheduling shall be regulated by automatic irrigation controllers.*** ~~An annual irrigation program with monthly irrigation schedules shall be required for the plant establishment period, for the established landscape, and for any temporarily irrigated areas.~~

(b.) ***Overhead irrigation shall be scheduled in accordance with the local water purveyor's (City of Garden Grove, Water Services Division) Water Conservation Ordinance. Operation of the irrigation schedule outside the normal watering window is allowed for auditing and system maintenance.*** ~~The irrigation schedule shall:~~

~~(1.) Include run time (in minutes per cycle), suggested number of cycles per day, and frequency of irrigation for each station; and~~

~~(2.) Provide the amount of applied water (in hundred cubic feet, gallons, or in whatever billing units the local water supplier uses) recommended on a monthly and annual basis.~~

~~(c.) The total amount of water for the project shall include water designated in the estimated total water use calculation plus water needed for any water features, which shall be considered as a high water using hydrozone.~~

~~(d.) Recreational areas designated in the landscape design plan shall be highlighted and the irrigation schedule shall indicate if any additional water is needed above the maximum applied water allowance because of high plant factors (but not due to irrigation inefficiency).~~

~~(e.) Irrigation scheduling shall incorporate the use of evapotranspiration data such as those from the California Irrigation Management Information System (CIMIS) weather stations to apply the appropriate levels of water for different climates, whenever possible.~~

~~Landscape irrigation shall be scheduled between ten p.m. and six a.m., whenever possible, to avoid irrigating during times of high wind or high temperature.~~

6. Certificate 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 in the 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 City of Garden Grove Landscape Water Efficiency Provisions."

~~(g.) A licensed landscape architect or contractor, certified irrigation designer, or other licensed or certified professional in a related field, shall conduct a final field observation and shall provide a certificate of substantial completion to the city. The certificate shall specifically indicate that plants were installed as specified, that the irrigation system was installed as designed, and that an irrigation audit has been performed prior to the final field inspection.~~

(2.) Documentation of the irrigation scheduling parameters used to set the controller.

(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.

~~(h.) Certification shall be accomplished by completing a certificate of substantial completion and delivering it to the city manager or designee, and to the owner of record.~~

~~(i.) Water Waste Prevention. The irrigation system shall prevent water waste resulting from inefficient landscape irrigation by prohibiting runoff, low-head drainage, overspray or other similar conditions where water flows onto adjacent property, non-irrigated areas, walks, roadways or structures. Penalties for violation of these prohibitions shall be established locally.~~

~~(j.) Effective Precipitation. If effective precipitation is included in the calculation of the estimated total water use, an effective precipitation disclosure statement shall be completed, signed and submitted with the landscape documentation package. No more than twenty-five percent of the local annual mean precipitation shall be considered effective precipitation in the calculation of the estimated total water use.~~

SECTION 9.16.40.080: Landscaping: Compliance

A. Any modification to an approved landscape or irrigation plan must be approved by the hearing body prior to installation of said landscaping or irrigation.

B. All approvals of such plans are subject to and dependent upon the applicant complying with all applicable ordinances, codes, regulations, adopted policies and the payment of all applicable fees and assessments.

C. No final inspection or occupancy clearance will be granted until all of the landscaping and irrigation is installed in accordance with the approved plans.

D. Landscaping and irrigation systems shall be located and designed as specified on the approved plans.

SECTION 9.16.40.090: Landscaping: Maintenance Requirements and Violations

A. Maintenance. All landscaping shall be maintained. Maintenance of landscaping areas shall include, but not be limited to, the following:

1. Irrigation equipment shall be in working condition at all times.

2. Litter shall be removed from all landscaped areas in a timely fashion.

3. All sod areas shall be mowed on a regular basis. Sod areas shall at all times be kept green. Accumulation of leaves, bark and other similar plant materials shall be removed in a timely fashion. Planting areas must be kept in a weed free fashion.

4. Landscaping maintenance shall include pruning, cultivating, weeding, fertilizing, replacement of plants and watering on a regular basis.

5. Landscape maintenance shall also include pruning or removal of overgrown vegetation, cultivated or uncultivated, that is likely to harbor rats, vermin, or other nuisances, or that causes detriment to neighboring properties or property.

6. Landscape maintenance shall also include the removal of dead, decayed, diseased or hazardous trees, weeds and debris constituting unsightly appearance, dangerous to public safety and welfare or detrimental to neighboring properties or property values. Compliance shall be by removal, replacement or maintenance requirements.

7. Any removal of mature landscaping must be replaced with landscaping of similar size and maturity as that which was removed.

B. Violations. Use of landscaped areas for purposes other than for landscaping as approved in the landscape plan shall be a misdemeanor. Willful failure to maintain the landscaping shall be punishable by fine, or by imprisonment, or both fine and imprisonment.

C. Delegation. The city may delegate to, or enter into a contract with, a local agency to implement, administer, and/or enforce any of the Landscape Water Efficiency Provisions on behalf of the city.

GUIDELINES

FOR IMPLEMENTATION OF THE CITY OF GARDEN GROVE LANDSCAPE WATER EFFICIENCY PROVISIONS

(APPENDIX 1, TITLE 9)

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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 *Landscape Water Efficiency provisions* in Title 9. This document is also intended for use and reference by City staff in reviewing and approving designs and verifying compliance with the *Landscape Water Efficiency provisions.* The general purpose of the *Landscape Water Efficiency provisions* 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.

(b) Other regulations affecting landscape design and maintenance practices are potentially applicable and should be consulted for additional requirements. These regulations include but may not be limited to:

(1) State of California Assembly Bill 1881;

(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;

(5) Regulations of the Local Water Purveyor governing use of Recycled Water;

(6) Zoning Code;

(7) Building Code;

(8) Specific Plans, Master Plans, General Plan, or similar land use and planning documents; and

(9) Conditions of approval for a specific project

1.2 Applicability

(a) The *Landscape Water Efficiency provisions* and these *Guidelines* apply to all of the following landscape projects:

(1) New landscape installations or 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 a discretionary approval of a landscape plan or which otherwise require a ministerial permit for a landscape or water feature.

(2) New landscape installations or 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 a discretionary approval of a landscape plan or which otherwise require a ministerial permit for a landscape or water feature

(3) New 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 a discretionary approval of a landscape plan or which otherwise require a ministerial permit for a landscape or water feature.

(b) A landscape rehabilitation project is subject to the requirements of the *Landscape Water Efficiency provisions* 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 city or its designee, for landscape rehabilitation projects that are limited to replacement plantings with equal or lower water needs and where the irrigation system is found to be designed, operable and programmed consistent with minimizing water waste in accordance with local water purveyor regulations.

(c) Unless otherwise determined by the City, the *Landscape Water Efficiency provisions* as stated in Title 9, 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

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

Landscape or water features that typically require a ministerial permit (i.e., a building, plumbing, electrical, or other similar permit), thereby triggering compliance with the *Landscape Water Efficiency provisions* independently of the need for discretionary approval include, but are not limited to, swimming pools, fountains or ponds, retaining walls, and overhead trellises.

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) 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 *Landscape Water Efficiency provisions*" 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 *Landscape Water Efficiency provisions* 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 Community Development Director, City of Garden Grove) for the landscape project;

(b) *hydrozone* information table (optional at the discretion of the Community Development Director, City of Garden Grove) for the landscape project; and

(c) water budget calculations (optional at the discretion of the Community Development Director, City of Garden Grove) 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.

2.2 Landscape Water Efficiency 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 *Landscape Water Efficiency 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 local agency.

(c) Water budget calculations shall adhere to the following requirements:

(1) The *MAWA* shall be calculated using the *Landscape Water Efficiency 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 *Landscape Water Efficiency 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.

(5) For calculating the *EAWU*, the plant water use factor shall be determined for each valve *hydrozone* based on the highest-water-use plant species within the zone. The *plant factor* for each hydrozone may be required to be further refined as a "landscape coefficient," according to protocols defined in detail in the *WUCOLS* document, to reflect planting density and microclimate effects on water need at the option of the *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.

(7) For calculation of the *EAWU*, a temporarily irrigated hydrozone area, such as an area of highly drought-tolerant native plants that are not intended to be irrigated after they are fully established, shall be defined as a very low water use hydrozone with a *plant factor* of 0.1.

(8) For calculation of the *MAWA*, the *ETAF* for *special landscaped areas* shall be set at 1.0. For calculation of the *EAWU*, the *ETAF* for *special landscaped areas* shall be calculated as the *special landscaped area* (*SLA*) *plant factor* divided by the *SLA irrigation efficiency factor*.

(9) *Irrigation efficiency* shall be calculated using the worksheet and equation presented in **Appendix B** on page B-2**.**

(d) The *Maximum Applied Water Allowance* shall adhere to the following requirements:

(1) The *Maximum Applied Water Allowance* shall be calculated using the equation presented in **Appendix B.** The example calculation in **Appendix B** is hypothetical to demonstrate proper use of the equation and does not represent an existing and/or planned landscape project. The *reference evapotranspiration* (*ETo*) 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 *ETo* data, such as from the California Irrigation Management Information System (CIMIS), other equivalent data, or soil moisture sensor data.

2.3 Soil Management Report

(a) In order to reduce *runoff* and encourage healthy plant growth, a soil management report shall be completed by the *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. At the landscape design plan meeting, the following design criteria shall be submitted as part of the *Landscape Documentation Package*.

(1) Plant Material

(a) Any plant may be selected for the *landscaped area* provided the *EAWU* in the *landscaped area* does not exceed the *MAWA*. To encourage the efficient use of water, the following is highly recommended:

1. protection and preservation of non-invasive *water-conserving plant species* and *water-conserving turf*;

2. selection of *water-conserving plant species* and *water-conserving turf*;

3. selection of plants based on disease and pest resistance;

4. selection of trees based on applicable City and local tree ordinances or tree shading guidelines; and

5. selection of plants from local and regional landscape program plant lists.

(b) Each *hydrozone* shall have plant materials with similar water use, with the exception of *hydrozones* with plants of mixed water use, as specified in Section 2.5(a)(2)(D) of these *Guidelines*.

(c) Plants shall be selected and planted appropriately based upon their adaptability to the climatic, geologic, and topographical conditions of the project site. To encourage the efficient use of water, the following is highly recommended for inclusion in the landscape design plan:

(1) use the Sunset Western Climate Zone System which takes into account temperature, humidity, elevation, terrain, latitude, and

varying degrees of continental and marine influence on local climate;

(2) recognize the horticultural attributes of plants (i.e., mature plant size, invasive surface roots) to minimize damage to property or infrastructure (e.g., buildings, sidewalks, and power lines); and

(3) consider the solar orientation for plant placement to maximize summer shade and winter solar gain.

(d) *Turf* is discouraged on slopes greater than 25% where the toe of the slope is adjacent to an impermeable hardscape and where 25% means 1 foot of vertical elevation change for every 4 feet of horizontal length (rise divided by run x 100 = slope percent).

(e) A landscape design plan for projects in fire-prone areas and fuel modification zones shall comply with requirements of the 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.

(1) Water Features

(a) Recirculating water systems shall be used for water features.

(b) Where available and consistent with public health guidelines, recycled water shall be used as a source for decorative water features.

(c) The surface area of a water feature shall be included in the high water use *hydrozone* area of the water budget calculation.

(d) Pool and spa covers are highly recommended.

(2) *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*).

(h) The landscape design plan, at a minimum, shall:

(1) delineate and label each *hydrozone* by number, letter, or other method;

(2) identify each *hydrozone* as low, moderate, high water, or mixed water use. Temporarily irrigated areas of the *landscaped area* shall be included in the low water use *hydrozone* for the water budget calculation;

(3) identify recreational areas;

(4) identify areas permanently and solely dedicated to edible plants;

(5) identify areas irrigated with recycled water;

(6) identify type of *mulch* and application depth;

(7) identify soil amendments, type, and quantity;

(8) identify type and surface area of water features;

(9) identify *hardscapes* (*pervious* and *non-pervious*);

(10) identify location and installation details of any applicable storm water best management practices that encourage on-site retention and infiltration of storm water. Storm water best management practices are encouraged in the landscape design plan and examples include, but are not limited to:

(a) infiltration beds, swales, and basins that allow water to collect and soak into the ground;

(b) constructed wetlands and retention ponds that retain water, handle excess flow, and filter pollutants; and

(c) *pervious* or porous surfaces (e.g., permeable pavers or blocks, *pervious* or porous concrete, etc.) that minimize *runoff*.

(11) identify any applicable rain harvesting or catchment technologies (e.g., rain gardens, cisterns, etc.);

(12) contain the following statement: "I have complied with the criteria of the *Landscape Water Efficiency provisions* 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*.

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 prevent *runoff*, low head drainage, *overspray*, or other similar conditions where irrigation water flows onto non-targeted areas, such as adjacent property, non-irrigated areas, *hardscapes*, roadways, or structures.

(i) Relevant information from the soil management plan, such as soil type and *infiltration rate*, shall be utilized when designing irrigation systems.

(j) The design of the irrigation system shall conform to the hydrozones of the landscape design plan.

(k) Average irrigation efficiency for the project shall be determined in accordance with the EAWU calculation sheet in **Appendix B**. Unless otherwise indicated by the irrigation equipment manufacturer's specifications or demonstrated by the *project applicant*, the *irrigation efficiency* of the irrigation heads used within each hydrozone shall be assumed to be:

Pop-up stream rotator heads = 75%
Stream rotor heads = 75%
Microspray = 75%
Bubbler = 80%
Drip emitter = 85%
Subsurface irrigation = 90%

(l) It is highly recommended that the *project applicant* or local agency inquire with the local water purveyor about peak water operating demands (on the water supply system) or water restrictions that may impact the effectiveness of the irrigation system (City of Garden Grove, Water Services Division "Water Conservation Ordinance").

(m) In *mulched* planting areas, the use of *low volume irrigation* is required to maximize water infiltration into the root zone.

(n) *Sprinkler heads* and other emission devices shall have matched *precipitation rates*, unless otherwise directed by the manufacturer's recommendations.

(o) Head to head coverage is recommended. However, sprinkler spacing shall be designed to achieve the highest possible *distribution uniformity* using the manufacturer's recommendations.

(p) *Swing joints* or other riser-protection components are required on all risers subject to damage that are adjacent to high traffic areas.

(q) *Check valves* or *anti-drain valves* are required for all irrigation systems.

(r) Narrow or irregularly shaped areas, including turf, less than eight (8) feet in width in any direction shall be irrigated with subsurface irrigation or a *low volume irrigation* system.

(s) *Overhead* irrigation shall not be permitted within 24 inches of any non-permeable surface. Allowable irrigation within the setback from non-permeable surfaces may include drip, drip line, or other low flow non-spray technology. The setback area may be planted or unplanted. The surfacing of the setback may be *mulch*, gravel, or other porous material. These restrictions may be modified if:

1. the *landscaped area* is adjacent to permeable surfacing and no *runoff* occurs; or

2. the adjacent non-permeable surfaces are designed and constructed to drain entirely to landscaping; or

3. the irrigation designer for the landscape project specifies an alternative design or technology, as part of the *Landscape Documentation Package,* and clearly demonstrates strict adherence to the irrigation system design criteria in Section 2.5 (a)(1)(H) hereof. Prevention of overspray and runoff must be confirmed during an irrigation audit.

4. Slopes greater than 25% shall not be irrigated with an irrigation system with a *precipitation rate* exceeding 0.75 inches per hour. This restriction may be modified if the landscape designer of the landscape project specifies an alternative design or technology, as part of the *Landscape Documentation Package*, and clearly demonstrates no *runoff* or erosion will occur. Prevention of *runoff* and erosion must be confirmed during the *irrigation audit*.

(2) Hydrozone

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

(b) *Sprinkler heads* and other emission devices shall be selected based on what is appropriate for the plant type within that *hydrozone*.

(c) Where feasible, trees shall be placed on separate valves from shrubs, groundcovers, and *turf*.

(d) Individual *hydrozones* that mix plants of moderate and low water use or moderate and high water use may be allowed if:

1. the *plant factor* calculation is based on the proportions of the respective plant water uses and their respective *plant factors*; or

2. the *plant factor* of the higher water using plant is used for the calculations.

(e) Individual *hydrozones* that mix high and low water use plants shall not be permitted.

(f) On the landscape design plan and irrigation design plan, *hydrozone* areas shall be designated by number, letter, or other designation. On the irrigation design plan, designate the areas irrigated by each *valve* and assign a number to each *valve*.

(g) The irrigation design plan, at a minimum, shall contain:

1. the location and size of separate water meters for landscape;

2. the location, type, and size of all components of the irrigation system, including controllers, main and *lateral lines*, *valves*, *sprinkler heads*, *moisture sensing devices*, rain switches, quick couplers, pressure regulators, and *backflow prevention devices*;

3. *static water pressure* at the point of connection to the public water supply;

4. *flow rate* (gallons per minute), application rate (inches per hour), and design *operating pressure* (pressure per square inch) for each *station*;

5. irrigation schedule parameters necessary to program smart timers specified in the landscape design;

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*.

(b) The *project applicant* shall submit a landscape grading plan that indicates finished configurations and elevations of the *landscaped area* including:

(1) height of graded slopes;

(2) drainage patterns;

(3) pad elevations;

(4) finish grade; and

(5) storm water retention improvements, if applicable.

(c) To prevent excessive erosion and *runoff*, it is highly recommended that the *project applicant*:

(1) grade so that all irrigation and normal rainfall remains within property lines and does not drain on to non-permeable *hardscapes*;

(2) avoid disruption of natural drainage patterns and undisturbed soil; and

(3) avoid soil compaction in *landscaped areas*.

(d) The Grading Design Plan shall contain the following statement: "I have complied with the criteria of the ordinance and applied them accordingly for the efficient use of water in the grading design plan" and shall bear the signature of the *landscape professional,* as required by law.

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 *Landscape Water Efficiency provisions* 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 existing local agency code.

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.

Appendix A

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 Garden Grove Water Efficient Landscape Ordinance (Municipal Code Sections 9-05.120) and the City of Garden Grove Guidelines for Implementation of the City of the Garden Grove Water Efficient Landscape Ordinance.

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

_____ _____
Print Name Date

_____ _____
Signature License Number

_____
Address

_____ _____
Telephone E-mail Address

Landscape Design Professional's Stamp
(If applicable)

EXAMPLE LANDSCAPE WATER EFFICIENCY WORKSHEET

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 **Appendix C** (inches per year)
0.7 = *Evapotranspiration Adjustment Factor (ETAF)*
1.0 = ETAF for *Special Landscaped Area*
LA = *Landscaped Area* (square feet)
0.62 = Conversion factor (to gallons per square foot)
SLA = Special Landscaped Area (square feet)

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

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

Estimated Applied Water Use

EAWU = ETo x *KL* x LA x *0.62* ÷ *IE* = Gallons per year

where:

EAWU = Estimated Applied Water Use (gallons per year)
ETo = Reference Evapotranspiration **Appendix C** (inches per year)
K_L = *Landscape Coefficient*
LA = *Landscaped Area* (square feet)
0.62 = Conversion factor (to gallons per square foot)
IE = Irrigation Efficiency = IME x DU (See definition in Appendix E for example IE percentages)
IME = Irrigation Management Efficiency (90%)
DU = Distribution Uniformity of irrigation head

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

K_s = species factor (range = 0.1-0.9) (see *WUCOLS* list for values)
K_d = density factor (range = 0.5-1.3) (see *WUCOLS* for density value ranges)
K_{mc} = *microclimate* factor (range = 0.5-1.4) (see *WUCOLS*)

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

Example Calculation:

	ETo		KL		LA		Conversion		*IE*		*EAWU (Gallons per year)*
Special Landscaped Area	48.2	x	1.00	x	10,000	x	*0.62*	÷	0.75	=	398,453
Cool Season Turf	48.2	x	1.00	x	0	x	*0.62*	÷	0.71	=	0
Warm Season Turf	48.2	x	0.65	x	0	x	*0.62*	÷	0.71	=	0
High Water Using Shrub	48.2	x	0.70	x	0	x	*0.62*	÷	0.71	=	0
Medium Water Using Shrub	48.2	x	0.50	x	15,000	x	*0.62*	÷	0.65	=	344,815
Low Water Using Shrub	48.2	x	0.30	x	25,000	x	*0.62*	÷	0.75	=	298,840
Very Low Water Using Shrub	48.2	x	0.20	x	0	x	*0.62*	÷	0.71	=	0
Other	48.2	x	0.50	x	0	x	*0.62*	÷	0.71	=	0
Other	48.2	x	0.50	x	0	x	*0.62*	÷	0.71	=	0
Total *EAWU* =					50,000						1,042,109 Gallons per year

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

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

***Sprinkler Head* Types**	**Average *Precipitation Rate***	***Distribution Uniformity of Irrigation Head***
Drip		
Microspray		
Bubbler		
Low precipitation rotating nozzles		
Stream rotors		

LANDSCAPE WATER EFFICIENCY WORKSHEET

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

EAWU = ETo x *KL* x LA x *0.62* ÷ *IE* = Gallons per year

where:

EAWU = Estimated Applied Water Use (gallons per year)
ETo = Reference Evapotranspiration **Appendix C** (inches per year)
K_L = *Landscape Coefficient*
LA = *Landscaped Area* (square feet)
0.62 = Conversion factor (to gallons per square foot)
IE = Irrigation Efficiency = IME x DU
IME = Irrigation Management Efficiency (90%)
DU = Distribution Uniformity of irrigation head

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

K_s = species factor (range = 0.1-0.9) (see *WUCOLS* list for values)
K_d = density factor (range = 0.5-1.3) (see *WUCOLS* for density value ranges)
K_{mc} = *microclimate* factor (range = 0.5-1.4) (see *WUCOLS*)

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

EAWU Calculation:

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

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

***Sprinkler Head* Types**	**Average *Precipitation Rate***	***Distribution Uniformity of Irrigation Head***
Drip		
Microspray		
Bubbler		
Low precipitation rotating nozzles		
Stream rotors		

Reference Evapotranspiration (ETo) Table

Appendix C - Reference Evapotranspiration (ETo) Table*													
County and City	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Annual ETo**
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 Garden Grove Water Efficient Landscape Ordinance (Municipal Code Section 9-05.120 and the City of Garden Grove Guidelines for Implementation of the City of Garden Grove Water Efficient Landscape Ordinance 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 City of Garden Grove Guidelines for Implementation of the City of Garden Grove 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.

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

"*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 Garden Grove 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 form 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 "*ETAF*" has the same meaning established in Garden Grove Municipal Code Section 9-05.120.

"*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 in or 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 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 can be achieved by using evapotranspiration controllers, soil moisture sensors, and other methods that will adjust irrigation run times to meet plant water needs.

"*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 obtained for the listed irrigation heads with an IME of 90%:

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%

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

"*Landscape 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) 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 Title16 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).

"*Landscape Water Efficiency provisions*" means Ordinance No. _____, adopted by the City Council on _____, 2010, and codified in the Municipal Code landscaping sections in Chapters 9.08, 9.12 and 9.16.

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

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

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

"*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 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*.

"M*icroclimate*" 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.

"*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 *ETo*, that estimates the amount of water needed by plants. For purposes of this *Landscape Water Efficiency provisions*, 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 "*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 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 Allowance*s.

"*Recycled water*" or "*reclaimed water*" means treated or recycled wastewater of a quality suitable for non-potable uses such as landscape irrigation and *water features*. This water is not intended for human consumption.

"*Runoff*" means water that 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, 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 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.

"*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*

DRAFT MINUTE EXCERPT

GARDEN GROVE PLANNING COMMISSION

PUBLIC HEARING: AMENDMENT NO. A-152-09
APPLICANT: CITY OF GARDEN GROVE
LOCATION: CITYWIDE
DATE: DECEMBER 3, 2009

REQUEST: To amend Title 9 of the Garden Grove Municipal Code (Zoning Ordinance, Title 9, Reorganized October 2009) to incorporate landscape water efficiency requirements amending:

Chapter 9.08: SINGLE FAMILY RESIDENTIAL REQUIREMENTS, Sections:
9.08.40.040: Landscaping: Purpose
9.08.40.050: Landscaping: General Provisions
9.08.40.060: Landscaping Requirements

Chapter 9.12: MULTI-FAMILY REQUIREMENTS, Sections:
9.12.40.070: Landscaping: Purpose
9.12.40.080: Landscaping: General Provisions
9.12.40.090: Landscaping Requirements

Chapter 9.16: COMMERCIAL/INDUSTRIAL/OPEN SPACE REQUIREMENTS, Sections:
9.16.40.050: Landscaping: Purpose
9.16.40.060: Landscaping: General Provisions
9.16.40.070: Landscaping Requirements

The City of Garden Grove is amending the Municipal Code to comply with the requirements of State of California Assembly Bill 1881 that amended the Water Conservation in the Landscape Act. The changes will result in a reduction in water use for new landscapes. The Amendment is found to be exempt from CEQA based on a Category 7 Exemption (14 California Code of Regulations Section 15307) for activities that enhance or protect a natural resource.

Staff report was read and recommended approval.

Staff added that complying with the ordinance would assist in the reduction of 100 percent water usage rate down to 70 percent efficiency by reducing turf areas and using more drought resistant plants; that the ordinance is in concert with other cities through a collective county-wide support; that if challenged, the cities could stand collectively; that the ordinance applies to new and existing developments based on site square footage, landscape area, and the renovation of existing landscaping; and that the ordinance would be incorporated into the reorganized Title 9.

Vice Chair Kirkham asked staff if a home on a site is included in the 70 percent. Staff responded that the building footprint and concrete surfaces, including driveways, are excluded; that the remaining square footage would be considered the 100 percent; that landscape architects would calculate the property zones for water usage; that the zones consist of different types of landscaping, each with their own calculations; and that those calculations added together should be .70 or less for water usage.

Vice Chair Kirkham asked staff if the adoption requirement for January 2010 would be achieved. Staff replied that if the ordinance is not in place by the required time, the City would be subject to the State's ordinance and that ordinance closely follows the State model; that under the State model, City staff would review, with possible processing fees, a landscape package submitted by an applicant; that under the County, the City would require that the applicant have a third party to pre-certify the landscape package for less impact on Staff; that Orange County is ahead of other counties in the State; and that AB1881 allows for local agencies to adopt alternative ordinances that are at least as effective as the State model.

Chair Beard asked staff to verify that 58 percent of residential water usage is for irrigation. Staff replied yes, and that now the State wants the amount of outdoor water usage to be in sync with the amount of indoor water usage.

Commissioner Cabral asked staff how the ordinance could be challenged. Staff replied that anyone could challenge the ordinance, however, the main concern was the State, as the City wants flexibility for their own approach. Staff added that having the landscape package, with calculations, created by the landscape architect would have less impact on staff, however, the City does have staff to perform this function.

Commissioner Cabral asked for staff to clarify the cost impact of using a landscape architect versus paying permit fees. Staff responded that landscape architects would probably share information to standardize calculations and that some reputable landscape architects are already submitting complete landscape packages.

Commissioner Bui asked staff how the ordinance would be monitored. Staff explained that plants, materials, and timers should be installed per plans, however the State statute does not address all aspects of landscape water efficiency, especially post installation; that it would be the City's discretion for any policing measures, however, at this time, only a certificate of completion, that all items were installed properly, would be required; and it is conceivable that site inspections, and measures that are now being implemented under the Clean Water Act addressing site runoff, could include inspections for landscape compliance.

Commissioner Ellsworth asked staff if any cities that have adopted the ordinance have had complaints. Staff responded that City ordinances vary, some with more strict models, some more proactive, and some with tiered water rates.

Commissioner Tran commented that the 70 percent, with regard to varying square footage, seemed unfair. Staff replied that no work would be done unless a permit was issued and that if no permit is required, the existing landscaping would remain; that the current City of Garden Grove landscape ordinance strives to have an 80 percent efficiency rate; and that the City's residents already have a mindset to reduce water usage, especially by reducing lawn area.

Commissioner Bonikowski asked staff how the City would monitor the homeowners that landscape without permits. Staff stated the residents would need to comply with the ordinance; that a flyer could be inserted in the water bill to make residents aware of the ordinance; that permits would be required for larger projects requiring a landscape plan or a discretionary building permit such as for adding a fountain, a swimming pool, a trellis, as part of landscaping and rehabilitated landscaping, which is more than 50 percent of landscaping within any given year and meeting the

square footage criteria; and, that any work on irrigation lines requiring a permit for a backflow prevention device, and that has a 2,500 square foot or greater landscape area, is affected.

Commissioner Cabral asked staff to verify that if residents in existing homes with less than 2,500 square feet of grass, want to install a sprinkler system, they do not need a permit. Staff replied yes, they do not need permit compliance with the proposed ordinance.

Chair Beard asked staff to clarify a pool remodel. Staff responded that a permit would be required for the pool, however, if there was a 2,500 square foot or less area of landscaping that was not being worked on in conjunction with the pool, a landscaping permit would not be required.

Chair Beard opened the public hearing to receive testimony in favor of or in opposition to the request.
There being no further comments, the public portion of the hearing was closed.

Chair Beard commented that he agreed with the certification of the landscape professional for efficiency; that the collective uniformity between cities would be worthwhile; and that any customization the City might choose at a later date would still be subject to State requirements for water conservation.

Vice Chair Kirkham moved to recommend approval of Amendment No. A-152-09 to City Council, seconded by Commissioner Ellsworth, pursuant to the facts and reasons contained in Resolution No 5698. The motion received the following vote:

AYES:	COMMISSIONERS:	BEARD, BONIKOWSKI, BUI, CABRAL, ELLSWORTH, KIRKHAM, TRAN
NOES:	COMMISSIONERS:	NONE
ABSENT:	COMMISSIONERS:	NONE