

GUIDELINES
FOR IMPLEMENTATION OF THE
CITY OF HEMET
WATER EFFICIENT LANDSCAPE
ORDINANCE

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1. Purpose and Applicability

1.1 Purpose

A. The primary purpose of these Guidelines is to provide procedural and design guidance for applicants proposing new landscape or landscape rehabilitation projects that are subject to Chapter 90, Article XLVIII of the City of Hemet Municipal Code. This document is also intended for use and reference by City staff in reviewing and approving designs and verifying compliance with Chapter 90, Article XLVIII. These Guidelines may be updated and augmented by approval of the City of Hemet Planning Director, as needed to provide consistency with state and local ordinances, changes in technology and informational guidance to the public.

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

1. State of California Assembly Bill 1881 (Laird, Water Conservation), Chapter No. 559;
2. National Pollutant Discharge Elimination Permit(s) for the Municipal Separate Storm Sewer System;
3. California Fire Code Regulations for fuel modification in landscapes;
4. Water Conservation, Water Supply Shortage and Drought Response Regulations of any other Local Water Purveyor that provides water to the City;
5. State and local regulations governing the use of Recycled Water;
6. Hemet Municipal Code
7. Specific Plans, Planned Community Developments, General Plan, or similar land use and planning documents; and
8. Conditions of approval for a specific project

1.2 Applicability

See Chapter 90-1702 of the Hemet Municipal Code.

2. Submittal Requirements

2.1 Elements of the Landscape Documentation Package

A. A Landscape Documentation Package is required to be submitted by the applicant for review and approval prior to the issuance of ministerial permits and prior to the start of construction. Unless otherwise directed by the Planning Director, the Landscape Documentation Package must 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 Landscape Design in accordance with **Exhibit A** of these Guidelines that includes a landscape professional's professional stamp, as applicable, signature, contact information (including email and telephone number), license number, and date, certifying the statement that "The design of this project complies with the requirements of the City's Water Efficient Landscape Ordinance" and shall bear the signature of the landscape professional as required by law; and
- (j) any other information the Planning Director deems relevant for determining whether the landscape project complies with the Water Efficient Landscape Ordinance and these Guidelines.

2. Maximum Applied Water Allowance (MAWA) and Estimated Applied Water Use (EAWU) expressed as annual totals including, but not limited to, the following:

(a) a Water Efficient Landscape Worksheet (optional at the Discretion of the Planning Director) for the landscape project;

(b) water budget calculations (optional at the discretion of the Planning Director) for the landscape project

(c) hydrozone information table (optional at the discretion of the Planning Director) for the landscape project; and

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 Water Efficient Landscape Calculations and Alternatives

A. The applicant must provide the calculated Maximum Applied Water Allowance (MAWA) and Estimated Applied Water Use (EAWU) for the landscaped area as part of the Landscape Documentation Package submittal to the City. The MAWA and EAWU shall be calculated based on completing the Water Efficient Landscape Worksheets (in accordance with the sample worksheets in **Appendix B**).

B. The EAWU allowable for the landscaped area may not exceed the MAWA. The MAWA must 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 must be calculated using an ETAF of 1.0. Where the design of the landscaped area can otherwise be shown to be equivalently water-efficient, the applicant may submit alternative or abbreviated information supporting the demonstration that the annual EAWU is less than the MAWA, at the discretion of and for the review and approval of the City.

C. Water budget calculations must adhere to the following requirements:

1. The MAWA must be calculated using the Water Efficient Landscape Worksheets and equation presented in **Appendix B** on page B-1. The example calculation on page B-1 is a hypothetical example to demonstrate proper use of the equation.

2. The EAWU must be calculated using the Water Efficient Landscape Worksheets and equation presented in Appendix B on page B-2. The example calculation on page B-2 is a hypothetical example.

3. For the calculation of the MAWA and EAWU, a project applicant must use the ETo values from the closest location listed in the Reference Evapotranspiration Table in **Appendix C**.

4. For calculation of the EAWU, the plant water use factor must be determined as appropriate to the project location from the Water Use Efficiency of Landscape Species (WUCOLS) Species Evaluation List (See definition of WUCOLS in **Appendix E**). 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 must be determined for each valve hydrozone based on the highest-water-use plant species within the zone. The plant factor for each hydrozone may be required to be further refined as a "landscape coefficient," according to protocols defined in detail in the WUCOLS document, to reflect planting density and microclimate effects on water need at the option of the applicant or the City.

6. For calculation of the EAWU, the area of a water feature is 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, is 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 is set at 1.0. For calculation of the EAWU, the ETAF for special landscaped areas is calculated as the special landscaped area (SLA) plant factor divided by the SLA irrigation efficiency factor.

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

D. The Maximum Applied Water Allowance must adhere to the following requirements:

- (1) The Maximum Applied Water Allowance must 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 must 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 must be completed by the applicant, or his/her designee, as follows:

1. Submit soil samples to a certified agronomic soils laboratory for analysis and recommendations.

(a) Soil sampling must be conducted in accordance with laboratory protocol, including protocols regarding adequate sampling depth for the intended plants.

(b) The soil analysis may include:

- (1) soil texture;
- (2) infiltration rate determined by laboratory test or soil texture infiltration rate table;
- (3) pH;
- (4) total soluble salts;
- (5) sodium;
- (6) percent organic matter; and
- (7) recommendations.

2. The applicant, or his/her designee, must comply with one of the following:

(a) If significant mass grading is not planned, the soil analysis report must be submitted to the City as part of the Landscape Documentation Package; or

(b) If significant mass grading is planned, the soil analysis report must be submitted to the City as part of the Certification of Completion.

(c) The soil analysis report must be made available, in a timely manner, to the professionals preparing the landscape design plans and irrigation design plans in order to make any necessary adjustments to the design plans.

(d) The applicant, or his/her designee, must submit documentation verifying implementation of soil analysis report recommendations to the City with the Certification of Completion.

2.4 Landscape Design Plan

For the efficient use of water, a landscape must be carefully designed and planned for the intended function of the project. The following design criteria must be submitted as part of the Landscape Documentation Package.

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 must 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 must 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 have priority.

F. The use of invasive plant species and/or noxious plant species is prohibited. For reference purposes, a non-exhaustive list of invasive plants may be found at <http://www.cal-ipc.org/ip/inventory/index.php>.

G. The architectural guidelines of a common interest development, which include community apartment projects, condominiums, planned developments, and stock cooperatives, may 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 must be used for water features.

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

(c) The surface area of a water feature must 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 must 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 must be used on slopes.

(c) The mulching portion of the seed/mulch slurry in hydro-seeded applications must meet the mulching requirement.

(d) Soil amendments must 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, must:

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 must 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 City of Hemet Water Efficient Landscape Ordinance (Hemet Municipal Code Chapter 90, Article XLVIII) 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 must meet all the requirements listed in this section and the manufacturer's recommendations. The irrigation system and its related components must be planned and designed to allow for proper installation, management, and maintenance. An irrigation design plan meeting the following design criteria must 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) Where available and consistent with public health guidelines, irrigation systems must use recycled water.

(c) Automatic irrigation controllers utilizing either evapotranspiration or soil moisture sensor data are required for irrigation scheduling in all irrigation systems.

(d) The irrigation system must 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 must 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 must be measured at the point of connection. These pressure and flow measurements must be conducted at the design stage. If the measurements are not available at the design stage, the measurements must be conducted at installation.

(e) Sensors (rain, freeze, wind, etc.), either integral or auxiliary, that suspend or alter irrigation operation during unfavorable weather conditions are required on all irrigation systems, as appropriate for local climatic conditions. Irrigation should be avoided during windy or freezing weather or during rain.

(f) Manual shut-off valves (such as a gate valve, ball valve, or butterfly valve) are 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.

(g) Backflow prevention devices are required to protect the water supply from contamination by the irrigation system. A project applicant must refer to the applicable City code (i.e., public health) for additional backflow prevention requirements.

(h) High flow sensors that detect and report high flow conditions created by system damage or malfunction are recommended.

(i) The irrigation system must 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.

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

(k) The design of the irrigation system must conform to the hydrozones of the landscape design plan.

(l) Average irrigation efficiency for the project must 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%

(m) It is highly recommended that the project applicant or local agency inquire with the City and, to the extent applicable, a 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.

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

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

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

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

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

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

(t) Overhead irrigation is not 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.

(u) Slopes greater than 25% may 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.

(v) All main line landscape piping to the City from the valves shall be a minimum schedule 40 pipe and shall be installed with the identifying label facing up.

2. **Hydrozone**

(a) Each valve must 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 must be selected based on what is appropriate for the plant type within that hydrozone.

(c) Where feasible, trees must 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 are not permitted.

(f) On the landscape design plan and irrigation design plan, hydrozone areas must 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, must 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 City of Hemet Water Efficient Landscape Ordinance (Hemet Municipal Code Chapter 90, Article XLVIII) 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.

[Note: Authority Cited: Section 65595, Government Code.
Reference: Section 65596, Government Code.]

2.6 Grading Design Plan

A. For the efficient use of water, grading of a landscape project site must 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, must 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 applicant must 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 must contain the following statement: "I have complied with the criteria of the Hemet Water Efficient Landscape Ordinance (Hemet Municipal Code Article XLVIII) 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.

[Note: Authority Cited: Section 65595, Government Code. Reference:
Section 65596, Government Code.]

2.7 Certification of Completion

A. Landscape project installation may not proceed until the Landscape Documentation Package has been approved by the City of Hemet Planning Department and any ministerial permits required are issued.

B. The applicant must notify the City at the beginning of the installation work and, if required, at intervals for the duration of the landscape project work to schedule all required inspections.

C. Certification of Completion of the landscape project must 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 must include: (i) certification by a landscape professional that the landscape project has been installed per the approved Landscape Documentation Package; and (ii) the following statement: "The landscaping has been installed in substantial conformance to the design plans, and complies with the provisions of the Water Efficient Landscape Ordinance for the efficient use of water in the landscape."

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

3. An irrigation audit report from a certified irrigation auditor, documentation of enrollment in City, 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 Planning Director.

[Note: Authority Cited: Section 65595, Government Code.
Reference: Section 65596, Government Code.]

2.8 Post-Installation Irrigation Scheduling

A. For the efficient use of water, all irrigation schedules must be developed, managed, and evaluated to utilize the minimum amount of water required to maintain plant health. Irrigation schedules must meet the following criteria:

1. Irrigation scheduling must be regulated by automatic irrigation controllers.

2. Overhead irrigation must be in accordance with water conservation ordinances of local water purveyors. Operation of the irrigation system outside the normal watering window is allowed for auditing and system maintenance.

[Note: Authority Cited: Section 65595, Government Code.
Reference: Section 65596, Government Code.]

2.9 Post-Installation Landscape and Irrigation Maintenance

A. Landscapes must be maintained to ensure water use efficiency in accordance with Article XLVIII of the Hemet Municipal Code.

3. Provisions for Existing Landscapes

A. Irrigation of all landscaped areas must be conducted in a manner conforming to the rules and requirements and must be subject to penalties and incentives for water conservation and water waste prevention, as determined and implemented by the City and/or the local water purveyor.

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, may not prohibit or include conditions that have the effect of prohibiting the use of low-water use plants as a group.

CERTIFICATION OF LANDSCAPE DESIGN

I hereby certify that:

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

(2) The landscape design and water use calculations for the property located at _____
_____ (provide street address or parcel number(s)) were prepared by me or under my supervision.

(3) The landscape design and water use calculations for the identified property comply with the requirements of the City of Hemet Water Efficient Landscape Ordinance (Municipal Code Chapter 90, Article XLVIII) and the City of Hemet Guidelines for Implementation of the City of Hemet 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 Hemet Guidelines for Implementation of the City of Hemet Water Efficient Landscape Ordinance.

Print Name

Date

Signature

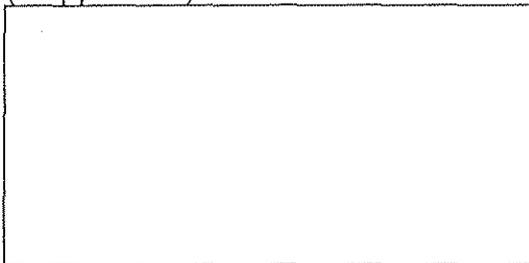
License Number

Address

Telephone

E-mail Address

Landscape Design Professional's Stamp
(If applicable)



A-1

EXAMPLE WATER EFFICIENT LANDSCAPE 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 Pomona 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 Pomona is 47.5 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 =	47.5	x	0.7	x	40,000	x	0.62	=	824,600
MAWA for SLA =	47.5	x	1.0	x	10,000	x	0.62	=	294,5000
Total MAWA =					50,000				1,119,100 Gallons per year for LA+SLA

Estimated Applied Water Use

$EAWU = ETo \times K_L \times LA \times 0.62 \div IE = \text{Gallons per year}$										
where: <i>EAWU</i> = Estimated Applied Water Use (gallons per year) <i>ETo</i> = Reference Evapotranspiration Appendix C (inches per year) <i>K_L</i> = Landscape Coefficient <i>LA</i> = Landscaped Area (square feet) 0.62 = Conversion factor (to gallons per square foot) <i>IE</i> = Irrigation Efficiency = <i>IME</i> x <i>DU</i> (See definition in Appendix E for example IE percentages) <i>IME</i> = Irrigation Management Efficiency (90%) <i>DU</i> = Distribution Uniformity of irrigation head						$K_L = K_s \times K_d \times K_{mc}$ <i>K_s</i> = species factor (range = 0.1-0.9) (see <i>WUCOLS</i> list for values) <i>K_d</i> = density factor (range = 0.5-1.3) (see <i>WUCOLS</i> for density value ranges) <i>K_{mc}</i> = microclimate factor (range = 0.5-1.4) (see <i>WUCOLS</i>) WUCOLS – www.owue.water.ca.gov/docs/wucols00.pdf				
Example Calculation:										
	<i>ETo</i>		<i>K_L</i>		<i>LA</i>		Conversion		<i>IE</i>	<i>EAWU (Gallons per year)</i>
Special Landscaped Area	47.5	x	1.00	x	10,000	x	0.62	÷	0.75	= 392,666
Cool Season Turf	47.5	x	1.00	x	0	x	0.62	÷	0.71	= 0
Warm Season Turf	47.5	x	0.65	x	0	x	0.62	÷	0.71	= 0
High Water Using Shrub	47.5	x	0.70	x	0	x	0.62	÷	0.71	= 0
Medium Water Using Shrub	47.5	x	0.50	x	15,000	x	0.62	÷	0.65	= 339,807
Low Water Using Shrub	47.5	x	0.30	x	25,000	x	0.62	÷	0.75	= 294,500
Very Low Water Using Shrub	47.5	x	0.20	x	0	x	0.62	÷	0.71	= 0
Other	47.5	x	0.50	x	0	x	0.62	÷	0.71	= 0
Other	47.5	x	0.50	x	0	x	0.62	÷	0.71	= 0
Total EAWU =					50,000					1,026,973 Gallons per year

Compare *EAWU* with *MAWA*.

The *EAWU* (1,026,973 gallons per year) is less than *MAWA* (1,119,100 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*.

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

WATER EFFICIENT LANDSCAPE 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

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

where:

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

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

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:

	<i>ETo</i>	<i>K_L</i>	<i>LA</i>	Conversion	<i>IE</i>	<i>EAWU</i> (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 <i>EAWU</i> =						

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

<i>Sprinkler Head Types</i>	<i>Average Precipitation Rate</i>	<i>Distribution Uniformity of Irrigation Head</i>
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
Los Angeles													
Beaumont	2.0	2.3	3.4	4.4	6.1	7.1	7.6	7.9	6.0	3.9	2.6	1.7	55.0
Elsinore	2.1	2.8	3.9	4.4	5.9	7.1	7.6	7.0	5.8	3.9	2.6	1.9	55.0
Pomona	2.2	2.5	3.7	4.3	5.0	5.2	5.9	5.4	4.2	3.0	2.5	2.1	46.1
* 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													

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 Hemet Water Efficient Landscape Ordinance (Municipal Code Chapter 90, Article XLVIII and the City of Hemet Guidelines for Implementation of the City of Hemet 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 Hemet Guidelines for Implementation of the City of Hemet Water Efficient Landscape Ordinance.

Print Name

Date

Signature

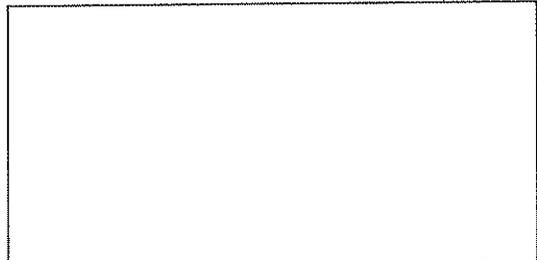
License Number

Address

Telephone

E-mail Address

Landscape Design Professional's Stamp
(If Appropriate)



Definitions

The terms used in these *Guidelines* have the meaning set forth below:

“Applicant” means the person submitting a landscape documentation package. Applicants can be the property owner or his or her designee.

“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 the irrigation system.

“Budget-based tiered-rate billing” means tiered or block rates for irrigation accounts charged by the local water purveyor(s) in which the block definition for each customer is derived from lot size or irrigated area and the evapotranspiration requirements of landscaping.

“Certificate of Completion” is a verification that landscaping and irrigation have been installed in conformance with the approved Landscape Documentation Package and is required to be submitted to the City.

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

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

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

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

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

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

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

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

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

“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 Water Efficient Landscape Guidelines. It is based on the reference evapotranspiration rate, the size of the landscape area, plant water use factors, and the relative irrigation efficiency of the irrigation system.

“Evapotranspiration adjustment factor” or **“ET adjustment factor”** or **“ETAF”** is equal to the plant factor divided by the irrigation efficiency factor for a landscape project, as described in the Water Efficient Landscape Guidelines. The ETAF is calculated in the context of local reference evapotranspiration, using site-specific plant factors and irrigation efficiency factors that influence the amount of water that needs to be applied to the specific landscaped area. A combined plant mix with a site-wide average plant factor of 0.5 (indicating a moderate water need) and average irrigation efficiency of 0.71 produces an ET adjustment factor of $(0.7) = (0.5/0.71)$, which is the standard of water use efficiency generally required by this chapter and the Water Efficient Landscape Guidelines, except that the ETAF for a special landscaped area shall not exceed 1.0.

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

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

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

“Homeowner-installed” means any landscaping either installed by a private individual for a single family residence or installed by a licensed contractor hired and paid directly by a homeowner. A homeowner, for purposes of this chapter, is a person who occupies the dwelling he or she owns. This definition excludes speculative homes, which are not owner-occupied dwellings and which are subject under this chapter to the requirements

applicable to developer-installed residential landscape projects.

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

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

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

“Certificate of Completion” is a verification that landscaping and irrigation have been installed in conformance with the approved Landscape Documentation Package and is required to be submitted to the City to obtain a Planning Final Letter (Letter #2).

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

“Landscape Documentation Package” means the documents required to be provided to the City for review and approval of landscape projects subject to this chapter and as described in the Water Efficient Landscape Guidelines.

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

“Landscape project” means any project total area of landscape in a project, as provided in the definition of “landscaped area,” meeting the requirements under Section 90-1702 of this chapter.

“Landscape rehabilitation” means any re-landscaping project that meets the applicability criteria of Section 90-1702 of this chapter, where the modified landscape area is greater than 2,500 square feet or where the cumulative modified area is greater than 2,500 square feet if the modifications are planned to occur incrementally within one year.

“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).

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

“Local Water Purveyor” means any entity, including a city, county, public agency, or private water company that provides retail water service.

“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 may 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.

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

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

“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.

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

“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.

“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 a local agency for new construction or rehabilitated landscape.

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

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

“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 **“ET_o”** means a standard measurement of environmental parameters which affect the water use of plants. ET_o is given expressed in inches per day, month, or year as represented in the Water Efficient Landscape Guidelines, and is an estimate of the evapotranspiration of a large field of four-to seven-inch tall, cool-season grass that is well watered. Reference evapotranspiration is used as the basis of determining the Maximum Applied Water Allowances.

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

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

“Sprinkler head” means a device which delivers water through a nozzle.

“Static water pressure” means the pipeline or municipal water supply pressure when water is not flowing.

“Station” means an area served by one valve or by a set of valves that operate simultaneously.

“Swing joint” means an irrigation component that provides a flexible, leak-free connection between the emission device and lateral pipeline to allow movement in any direction and to prevent equipment damage.

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

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

“Water Efficient Landscape Guidelines” refers to the Water Efficient Landscape Guidelines, as approved by and available at the City, which describes procedures, calculations, and requirements for landscape projects subject to this chapter.

“Water Efficient Landscape Ordinance” means Chapter 90, Article XLVIII of the Hemet Municipal Code.

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

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