

ORDINANCE NO. 695

AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF INDIAN WELLS, CALIFORNIA AMENDING CHAPTER 21.70 OF THE CITY OF INDIAN WELLS MUNICIPAL CODE REGARDING THE ADOPTION OF STATE UPDATED WATER EFFICIENT LANDSCAPE REGULATIONS

WHEREAS, Chapter 21.70 of the City of Indian Wells ("City") Municipal Code ("Code") regulates water conservation in landscapes; and

WHEREAS, California Constitution Article X, Section 2 and California Water Code Section 100 provide that because of conditions prevailing in the state of California (the "State"), it is the declared policy of the State that the general welfare requires that the water resources of the State shall be put to beneficial use to the fullest extent of which they are capable, the waste or unreasonable use of water shall be prevented, and the conservation of such waters is to be exercised with a view to the reasonable and beneficial use thereof in the interest of the people; and

WHEREAS, California Assembly Bill 1881 ("AB 1881"), enacted into law on September 28, 2008, required the State Department of Water Resources ("Department") to update the State's existing model water efficient landscape ordinance, which provides guidelines for cities and counties to adopt local landscape irrigation ordinances as required by the law; and

WHEREAS, all cities and counties were required to either adopt the updated model water efficient landscape ordinance or adopt their own water efficient landscape ordinance that is as effective in conserving water as the updated state version; and

WHEREAS, the City adopted its own water efficient landscape ordinance and regulations, based primarily on a model ordinance prepared by the Coachella Valley Water District ("CVWD"), to comply with this requirement and further reduce the quantity of water used by persons within its jurisdiction for the purpose of reducing water waste associated with irrigation of outdoor landscaping and conserving water in the interest of the people and the public welfare; and

WHEREAS, on April 1, 2015, due to the current drought, the Governor issued Executive Order B-29-15 and directed the Department to further update the state model water efficient landscape ordinance by expedited regulation; and

WHEREAS, on July 15, 2015, the state adopted an updated model water efficient landscape ordinance that contains increased efficiency standards; and

WHEREAS, cities and counties have until February 1, 2016 to either adopt the updated state model ordinance or adopt their own ordinance, which must be as effective in conserving water as the updated state model ordinance; and

WHEREAS, after considerable regional outreach, CVWD has updated its model water efficient landscape ordinance to comply with the increased standards in the updated state model ordinance; and

WHEREAS, on December 16, 2015, the Planning Commission held a duly noticed public hearing in conformance with Government Code and Municipal Code sections and adopted by

unanimous vote Resolution No. PC 2015-11 recommending that the City Council approve Municipal Text Amendment No. 2015-02; and

WHEREAS, Municipal Text Amendment No. 2015-02 was properly noticed and a notice of the public hearing by the City Council was provided for in accordance with applicable law; and

WHEREAS, the City has determined to update its existing water efficient landscape regulations and make them consistent with the CVWD regional model ordinance to comply with the new State requirements; and

WHEREAS, on January 7, 2016, the City Council held a duly noticed public hearing on the Municipal Text Amendment No. 2015-02.

NOW THEREFORE, THE CITY COUNCIL OF THE CITY OF INDIAN WELLS DOES HEREBY ORDAIN AS FOLLOWS:

SECTION 1. Findings. The City Council hereby finds and determines that the forgoing recitals are true and correct and are incorporated herein.

SECTION 2. Amendments to the Code. Chapter 21.70 Water Efficient Landscaping regulations of the City of Indian Wells Municipal Code is hereby **AMENDED** in its entirety to read as follows:

"21.70.010 Purpose and Intent.

The purpose of this chapter is to establish effective water efficient landscape requirements for newly installed and rehabilitated landscapes.

It is also the intent of this chapter to implement the requirements of the California Code of Regulations Title 23. Waters Division 2. Department of Water Resources Chapter 2.7. Model Water Efficient Landscape Ordinance, and State of California Water Conservation in Landscaping Act. Authority cited: Section 65593, Government Code, Reference: Sections 65591, 65593, 65596 Government Code.

It is further the intent of the City Council to promote water conservation through climate-appropriate plant material and efficient irrigation systems, and to create a water efficient city landscape theme through enhancing and improving the physical and natural environment.

21.70.020 Applicability.

A. This chapter applies to all of the following landscape projects:

1. New construction and rehabilitated landscapes for public agency projects and private development projects requiring a building or landscape permit, plan check or design review;
2. New construction and rehabilitated landscapes which are developer-installed in single-family and multi-family projects requiring a building or landscape permit, plan check or design review; and

3. New construction and rehabilitated landscapes which are homeowner-provided and/or homeowner-hired in single family and multi-family residential projects with a total project area equal to or greater than 2,500 square feet requiring a building or landscape permit, plan check or design review.

B. This chapter does not apply to:

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

21.70.030 Definitions.

The words used in this section have the meanings set forth below:

“Anti-drain valve” or “check valve” means a valve located under/in a sprinkler head to hold water in the system to eliminate drainage from the lower elevation sprinkler heads.

“Application rate” means the depth of water applied to a given area, usually measured in inches per hour. Also known as precipitation rate (sprinklers) or emission rate (drippers/microsprayers) in gallons per hour.

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

“Automatic controller” means an electronic or solid-state timer capable of operating valve stations to set the days, time and length of time of a water application.

“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.

“Billing units” means units of water (100 cubic feet = 1 billing unit = 748 gallons = 1 CCF) for billing purposes. To convert gallons per year to 100 cubic feet per year, divide gallons per year by 748. (748 gallons = 100 cubic feet).

“Conversion factor” (0.62) means a number that converts the Maximum Applied Water Allowance from acre-inches per acre to gallons per square foot. The conversion factor is calculated as follows:

(325,851 gallons/43,560 square feet)/12 inches	= (0.62)
325,851 gallons	= one acre-foot
43,560 square feet	= one acre
12 inches	= one foot

“Desert landscape” means a desert landscape using native plants spaced to look like a native habitat.

"Distribution uniformity" means a measure of how evenly sprinklers apply water. The low-quarter measurement method (DULQ) utilized in the irrigation audit procedure is utilized for the purposes of these criteria. These criteria assume an attainable performance level of 75% DULQ for spray heads, 80% DULQ for rotor heads and 85% DULQ for recreational turf grass rotor heads.

"District" means the Coachella Valley Water District.

"Drip irrigation" means a method of irrigation where the water is applied slowly at the base of plants without watering the open space between plants.

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

"Effective precipitation" or "usable rainfall" means the portion of total natural precipitation that is used by the plants, usually assumed to be three inches annually. Precipitation or rainfall is not considered a reliable source of water in the desert.

"Electronic controllers" means time clocks that have the capabilities of multiprogramming, water budgeting and multiple start times.

"Emission uniformity" means a measure of how evenly drip and microspray emitters apply water. The low-quarter measurement method (EULQ) utilized in the landscape irrigation evaluation procedure is utilized for the purposes of these criteria. These criteria assume 90% EULQ for drippers, microsprays and pressure compensating bubblers.

"Emitter" means drip irrigation fittings that deliver water slowly from the watering system to the soil.

"Established landscape" means the point at which new plants in the landscape have developed roots into the soil adjacent to the root ball.

"Establishment period" means the first year after installing the plant in the landscape.

"Estimated total water use" (by hydrozone) means the portion of the estimated annual total applied water use that is derived from applied water to a specified hydrozone.

"Estimated annual total applied water use" (Total of all hydrozones) means the annual total amount of water estimated to be needed by all hydrozones to keep the plants and water features in the landscaped area healthy and visually pleasing. It is based upon such factors as the local evapotranspiration rate, the size of the landscaped area, the size and type of water feature, the types of plants, and the efficiency of the irrigation system. The estimated annual total applied water use shall not exceed the Maximum Applied Water Allowance (MAWA).

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

"ET adjustment factor" means a factor of 0.45 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. The ET adjustment factor for Special Landscape Areas is 1.0.

"Finished grade" means grade height after surface mulch covering has been installed.

"Flow rate" means the rate at which water flows through pipes, valves and meters (gallons per minute or cubic feet per second).

"Hardscape" means concrete or asphalt areas including streets, parking lots, sidewalks, driveways, patios and decks.

"Head-to-head coverage" means one hundred percent sprinkler coverage of the area to be irrigated, with maximum practical uniformity.

"High flow check valve" means a valve located under/in a sprinkler head to stop the flow of water if the spray head is broken or missing.

"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 non-irrigated. For example, a naturalized area planted with native vegetation that will not need supplemental irrigation (once established) is a non-irrigated hydrozone.

"Infiltration rate" means the rate of water entry into the soil expressed as a depth of water per unit of time (inches per hour).

"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 irrigation efficiency for purposes of these regulations is 0.75 or 75 percent and .90 or 90 percent for drip systems.

"Landscape irrigation audit" means a process to perform site inspections, evaluate irrigation systems and develop efficient irrigation schedules.

"Landscaped area" means the entire parcel less the building footprint, driveways, non-irrigated portions of the parking lots, hardscapes (such as decks and patios), and other nonporous areas. Water features are included in the calculation of a site's landscaped area.

"Lateral line" means the water delivery pipeline that supplies water to the emitter sprinklers from a valve.

"Main line" means the pressurized pipeline that delivers water from the water source to a valve or outlet.

"Maximum applied water allowance" (MAWA) means for design purposes, the upper limit of annual applied water for the established landscape area as specified in Division 2, Title 23, California Code of Regulations, Chapter 7, Section 492.4. It is based upon the area's reference evapotranspiration, ET adjustment factor, and the size of the landscaped area. The estimated applied water use shall not exceed the MAWA.

"Micro-irrigation" means the same as drip irrigation.

"Mulch" means any organic materials such as leaves, bark, straw or inorganic material such as pebbles, stones, gravel, decorative sand or decomposed granite left loose and applied to the soil surface to reduce evaporation.

"Native plants" means low water using plants that are: 1) indigenous to the Coachella Valley and lower Colorado Desert region of California and Arizona, 2) native to the southwestern United States and northern Mexico or 3) native to other desert regions of the world, but adapted to the Coachella Valley.

"Natural grade" means grade height of native soil before application of surface mulch.

"Operating pressure" means the pressure at which an irrigation system's sprinklers, bubblers, drippers or microsprays are designed to operate, usually indicated at the base of an irrigation head.

"Overhead sprinkler irrigation stations" means sprinklers with high flow rates (spray heads, impulse sprinklers, gear rotors, etc.) that are utilized to apply water through the air to large irrigated areas.

"Overspray" means the water which is delivered beyond the landscaped area onto pavements, walks, structures or other non-landscape areas. Also known as hardscape applications.

"Plant factor" means a factor that, when multiplied by reference evapotranspiration, estimates the amount of water used by plants. For purposes of these criteria, the average plant factor of very low water using plants ranges from 0.01 to 0.10, for low water using plants the range is 0.10 to 0.30, for moderate water using plants the range is 0.40 to 0.60, and for high water using plants, the range is 0.70 to 0.90. Reference: Water Use Classifications of Landscape Species IV (WUCOLS IV).

"Pressure compensating (PC) bubbler" means an emission device that allows the output of water to remain constant regardless of input pressure. Typical flow rates for this type of bubbler range between 0.25 gpm to 2.0 gpm.

"Pressure compensating screens/devices" means small screens/devices inserted in place of standard screens/devices that are used in sprinkler heads for radius and high pressure control.

"Qualified professional" means a person who has been certified by their professional organization or a person who has demonstrated knowledge and is locally recognized as qualified among landscape architects due to longtime experience.

"Rain-sensing device" means a system which automatically shuts off the irrigation system when it rains.

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

"Recreational area" means areas of active play or recreation such as golf courses, sports fields, school yards, picnic grounds, or other areas with intense foot or vehicular traffic.

“Recreational turf grass” means high traffic turf grass that serves as a playing surface for sports and recreational activities. Athletic fields, golf courses, parks and school playgrounds are all examples of areas having recreational turf grass.

“Recreational turf grass ET adjustment factor” means a factor of 0.82 that, when applied to reference evapotranspiration, adjusts for the additional stress of high traffic on recreational turf grass and the higher irrigation efficiencies of long-range rotary sprinklers. These are the two major influences upon the amount of water that needs to be applied to a recreational landscape. A mixed cool/warm season turf grass with a seasonal average of 0.7 is the basis of the plant factor portion of this calculation. The irrigation efficiency of long-range sprinklers for purposes of the ET adjustment factor is 0.85. Therefore, the ET adjustment factor is $0.82 = 0.7/0.85$.

“Recycled water/reclaimed water” means treated or recycled wastewater of a quality suitable for nonpotable uses such as landscape irrigation. Recycled water is not for human consumption.

“Reference evapotranspiration or ETo” means a standard measurement of the environmental parameters which affect the water use of plants, using cool season grass as a reference. ETo is expressed in inches per day, month or year and is an estimate of the evapotranspiration of a large field of cool-season grass that is well watered. Reference evapotranspiration is used as a basis of determining the Maximum Applied Water Allowances so that regional differences in climate can be accommodated. For purposes of these criteria, CVWD Drawing No. 29523 will be used for ETo zones.

“Rehabilitated landscape” means any re-landscaping project in which the choice of new plant material and/or new irrigation system components is such that the calculation of the site’s estimated water use will be significantly changed. The new estimated water use calculation must not exceed the MAWA calculated for the site using a 0.45 ET adjustment factor.

“Riparian plants” means plants that are high water using and water-loving plants that are found growing naturally along flowing rivers and lake shores. They may also be native to wet swampy areas with high water tables or poor drainage.

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

“Service line” means the pressurized pipeline that delivers water from the water source to the water meter.

“Smart controller” means weather-based or soil moisture-based irrigation controls that monitor use information about environmental conditions for a specific location and landscape (such as soil moisture, rain, wind, the plants’ evaporation and transpiration rates and, in some cases, plant type and more) to automatically control when to water and when not to, providing exactly the right amount of water to maintain lush, healthy growing conditions.

“Special landscape area” means an area of the landscape dedicated solely to edible plants, recreational areas, areas irrigated with recycled water, or water features using recycled water.

“Soil moisture-sensing device” means a device that measures the amount of water in the soil.

"Soil texture" means the classification of soil based on the percentage of sand, silt and clay in the soil.

"Sprinkler head" means a device which sprays 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.

"Turf" means a surface of earth containing mowed grass with roots.

"Valve" means a device used to control the flow of water in the irrigation system.

"Water feature" means any water applied to the landscape for nonirrigation, decorative purposes. Fountains, streams, ponds and lakes are considered water features. Water features use more water than efficiently irrigated turf grass and are assigned a plant factor of 1.1 for a stationary body of water and 1.2 for a moving body of water.

"Water system" means the network of piping, valves and irrigation heads.

"WUCOLS IV" means Water Use Classifications of Landscape Species IV.

21.70.030 Provisions for new or rehabilitated landscapes.

- A. Submittal and Approval of a Landscape Documentation Package.
1. Prior to construction, the project applicant shall:
 - a. Submit two copies of the Landscape Documentation Package to the City.
 - b. Submit two copies of the Landscape Documentation Package to the District, pursuant to District Ordinance No. 1302.2.
 2. Upon review and approval of the Landscape Documentation Package by the District, the project applicant shall:
 - a. Submit a copy of the District-approved Landscape Documentation Package and Water Efficient Landscape Worksheet to the City.
 - b. Provide the property owner or site manager a copy of the District-approved Landscape Documentation Package, in addition to the record drawings and any other information normally forwarded to the property owner or site manager.
 3. Upon review and approval of the Landscape Documentation Package by the City, the project applicant shall:
 - a. Record the date of the permit on the Certificate of Completion.

- b. File the Certificate of Completion with the City and the District, and provide a copy to the property owner or designee.
 - c. Provide the property owner or designee a copy of the City approved Landscape Documentation Package, in addition to the record drawings, and any other information normally forwarded to the property owner or designee.
4. Each Landscape Documentation Package shall include the following elements:
- a. A completed Landscape Documentation Package Checklist (Appendix A), which includes the date, project applicant, and project address information. This checklist serves to verify that the elements of the Landscape Documentation Package have been completed;
 - b. Total landscaped area (square feet);
 - c. Project type (e.g., new, rehabilitated, public, private, cemetery, homeowner-installed, etc.);
 - d. Water Efficient Landscape Worksheet (Appendix B), which may be imbedded in the plan sheets of the Landscape Documentation Package, and include the following:
 - i. Hydrozone Information Table (reference Appendix C).
 - e. Water Budget Calculations (reference Appendix D) that adhere to the following requirements:
 - i. The plant factor used shall be from WUCOLS. The plant factors ranges from 0 to 0.3 for the low use plants, from 0.4 to 0.6 for the moderate use plants, from 0.7 to 1.0 for the high use plants and 1.1 to 1.2 for water features.
 - ii. All water features shall be included in the 1.1 to 1.2 hydrozone and temporary irrigated areas shall be included in the low water use hydrozone. For the calculation of the Maximum Applied Water Allowance (MAWA) and Estimated Total Water Use, a project applicant shall use ETo values from the Reference Evapotranspiration Table, Appendix C. For geographic areas not covered in Appendix C, use data from other cities located nearby in the same reference evapotranspiration zone;
 - f. Landscape Design Plan;
 - g. Irrigation Design Plan;
 - h. Grading Design Plan (as required by the City depending upon site conditions);

- i. Soil Management Report (as required by the City depending upon site conditions); and
- j. All plans must contain a signature block for both the City and the District.

B. Landscape Design Plan.

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

1. Any plant may be selected for the landscape, providing the Estimated Total Water Use in the landscape area does not exceed the MAWA, and providing the plan is consistent with the requirements of Chapter 21.60 of the Municipal Code. To encourage the efficient use of water the following is highly recommended:
 - a. Protection and preservation of native species and natural vegetation;
 - b. Selection of water-conserving plant and turf species;
 - c. Selection of trees based on applicable local tree ordinances or tree shading guidelines; and
 - d. Selection of plants from local and regional landscape program plant lists.
2. Specifications for Landscape Design Plan.

The landscape design plan shall be drawn on 36-inch by 24-inch project base sheets at a scale that accurately and clearly identifies the following:

- a. Tract name, tract number or parcel map number on cover sheet;
- b. Proposed planting areas;
- c. Plant material location and size;
- d. Plant botanical and common names;
- e. Plant spacing, where applicable;
- f. Natural features including, but not limited to, rock outcroppings, and existing trees and shrubs that will remain incorporated into the new landscape;
- g. Vicinity map showing site location on top sheet or on cover sheet;
- h. Title block on each sheet with the name and address of the project, and the name and address of the professional design company with its signed professional stamp, if applicable;

- i. Reserve two 6-inch by 3-inch spaces for a) the City signature block and b) a District signature block in lower right corner of the cover sheet and on all of the landscape, irrigation design/detail/specification sheets;
- j. Show plan scale and north arrow on design sheets;
- k. Show graphic scale on all design sheets;
- l. Show all property lines and street names;
- m. Show all paved areas, such as driveways, walkways and streets;
- n. Show all pools, ponds, lakes, fountains, water features, fences and retaining walls;
- o. Show locations of all overhead and underground utilities within project area;
- p. Provide an index map, as necessary, showing the overall project, including all 1/4 and 1/16 section lines and section numbers;
- q. Contain a statement that the landscape design plan complies with any and all District requirements regarding District easements;
- r. Show MAWA for the proposed project. (See formula in Appendix C and Sample MAWA, Appendix D);
- s. Show total landscaped area in square feet. Separate area square footages by hydrozone. Show the total percentage area of each hydrozone. Include total area of all water features as separate hydrozones of still or moving water. Show Estimated Total Water Use, for each major plant group hydrozone and water feature hydrozone expressed in either seasonal (turf grass) or annual (trees, shrubs, groundcovers and water features) billing units;
- t. Show Total Estimated Total Water Use for each major plant group hydrozone and water feature hydrozone expressed in either seasonal (turf grass) or annual (trees, shrubs, groundcovers and water features) billing units;
- u. Show Total Estimated Water Use for the entire project. (Formula in Appendix C and on Sample Calculation Estimated Water Use, Appendix D.) The Total Estimated Use shall not exceed the MAWA;
- v. Designate recreational areas and recreational turf areas; and
- w. When model homes are included, show the MAWA and Estimated Total Water Use (by hydrozone with totals) for each model unit.

3. Landscape Design Criteria.

- a. The landscape design must be carefully planned and take into account the intended function of the project.
- b. Plants' appropriateness shall be selected based upon their adaptability to the climatic, geologic and topographical conditions of the site.
- c. Selection of water-efficient and low-maintenance plant material is suggested.
- d. All planted areas must be a minimum of one inch below adjacent hardscapes to eliminate runoff and overflow.
- e. Long, narrow or irregularly shaped turf areas shall not be designed because of the difficulty in irrigating uniformly without overspray onto hardscaped areas, streets and sidewalks. Areas less than 10 feet in width shall not be designed with turf. Turf will be allowed in these areas only if irrigation design reflects the use of subsurface irrigation or a surface flow/wick irrigation system.
- f. Turf areas irrigated with spray/rotor systems must be set back at least 24 inches from curbs, driveways, sidewalks or any other area that may result in runoff of water onto streets. An undulating landscape buffer area created by the setback shall be designed with rocks, cobble or decomposed granite and/or can be landscaped with drip irrigated shrubs/accents or covered with a suitable ground cover.
- g. Plants having similar water use shall be grouped together in distinct hydrozones.
- h. The use of a soil covering mulch or a mineral groundcover of a minimum three-inch depth to reduce soil surface evaporation is required around trees, shrubs and on nonirrigated areas. The use of boulders and cobble shall be considered to reduce the total vegetation area.
- i. Annual color plantings shall be used only in areas of high visual impact and must be irrigated with drip, microirrigation or other systems with efficiencies of 90 percent or greater, except for during plant introduction period. Otherwise, drip irrigated, perennial plantings should be the primary source of color.
- j. Native desert plants shall be specified to be planted in a shallow, wide, rough hole two times the root ball width. The root ball will be set on either undisturbed native soil or a firmed native soil. The root ball top will be set even with the finished surface grade or above grade if the soil is poorly drained. The hole must be backfilled with native soil. Extra soil may be used to mound up around plants where the soil is poorly drained.

- k. Landscaping must not obstruct or interfere with street signs, lights or road/walkway visibility. Screening may be provided by walls, berms or plantings.
- l. High water use plants, characterized by a plant factor of 0.7 to 1.0, are prohibited in street medians, unless irrigated with drip or microirrigation systems.
- m. Use plant materials that are consistent with climate, geologic and topographical conditions of the site.
- n. Planter islands in parking lots with canopy trees shall be sized to meet City requirements.
- o. A landscape plan in fire-prone areas shall address fire safety and prevention. A defensible space or zone around a building or structure is required per Public Resources Code Section 4291 (a) and (b). Avoid fire-prone plant material and highly flammable mulches.
- p. The use of invasive and/or noxious plant species is prohibited.
- q. The architectural guidelines of a common interest development, which includes community apartment projects, condominiums, planned developments and stock cooperatives, shall not prohibit or include conditions that have the effect of prohibiting the use of low-water use plants as a group (California Civil Code, Section 1353.8).

D. Grading Design Plan (as required by the City depending upon site conditions).

- 1. For efficient use of water, grading of a project site shall be designed to minimize soil erosion, runoff and water waste. A grading plan shall be submitted as part of the Landscape Documentation Package. A comprehensive grading plan prepared by a civil engineer for other City permits satisfies this requirement.
- 2. The project applicant shall submit a landscape grading plan that indicates finished configurations and elevations of the landscape area including:
 - a. Height of graded slopes;
 - b. Drainage patterns;
 - c. Pad elevations;
 - d. Finish grade; and
 - e. Stormwater retention improvements, if applicable.

3. To prevent excessive erosion and runoff, it is highly recommended, and per City requirements, that project applicants:
 - a. Grade so that all irrigation and normal rainfall remains within property lines and does not drain on to non-permeable hardscapes;
 - b. Avoid disruption of natural drainage patterns and undisturbed soil; and
 - c. Avoid soil compaction in landscape areas.
4. 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 plan."
5. Turf is not allowed on slopes greater than 25% where the toe of the slope is adjacent to an impermeable hardscape and where 25% means 1 foot of vertical elevation change for every 4 feet of horizontal length (rise divided by run x 100 = slope percent).
6. Slopes greater than 25% shall not be irrigated with an irrigation system with a precipitation rate exceeding 0.75 inches per hour. This restriction may be modified if the landscape designer specifies an alternative design or technology, as part of the Landscape Documentation Package, and clearly demonstrates no runoff or erosion will occur. Prevention of runoff must be confirmed during an irrigation audit.
7. All grading must retain normal stormwater runoff and provide for an area of containment. All irrigation water must be retained within property lines and not allowed to flow into public streets or public rights-of-way. Where appropriate, a simulated dry creek bed may be used to convey storm drainage into retention areas. A drywell shall be installed if the retention basin is to be used as a recreational area.
8. Mounded or sloped planting areas that contribute to runoff onto hardscape are prohibited. Sloped planting areas above a hardscaped area shall be avoided unless there is a drainage swale at toe of slope to direct runoff away from hardscape.
9. Median islands must be graded to prevent stormwater and excess irrigation runoff.

E. Irrigation Design Plan.

For the efficient use of water, an irrigation system shall meet all the requirements listed in this section and the manufactures 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 criteria shall be submitted as part of the Landscape Documentation Package.

Separate landscape water meters shall be installed for all projects except single family homes with a landscape area less than 5,000 square feet. Landscape meters for single family

homes with a landscape area over 5,000 square feet may be served by a permanent service connection provided by the District or be a privately owned submeter installed at the irrigation point of connection on the customer service line. When irrigation water is from a well, the well shall be metered. The irrigation design plan shall be drawn on project base sheets. It should be separate from, but use the same format as, the landscape design plan. The irrigation system specifications shall accurately and clearly identify the following:

1. Specifications for Irrigation Design.
 - a. Control valves, manufacturer's model number, size and location.
 - b. Irrigation head manufacturer's model number, radius, operating pressure, gallons per minute/gallons per hour (gpm/gph) and location.
 - c. Piping type, size and location.
 - d. Point of connection or source of water and static water pressure.
 - e. Meter location and size (where applicable).
 - f. Pump station location and pumping capacity (where applicable).
 - g. Power supply/electrical access and location.
 - h. Plan scale and north arrow on all sheets.
 - i. Graphic scaling on all irrigation design sheets.
 - j. Irrigation installation details and notes/specifications.
 - k. The irrigation system shall be automatic, constructed to discourage vandalism and simple to maintain.
 - l. All equipment shall be of proven design with local service available.
 - m. Show location, station number, size, and design gpm of each valve on plan. Control valves shall be rated at 200 psi.
 - n. Visible sprinklers near hardscape shall be of pop-up design.
 - o. All heads should have a minimum number of wearing pieces with an extended life cycle.
 - p. Sprinklers, drippers, valves, etc., must be operated within manufacturer's specifications.
 - q. Manual shut-off valves shall be fully ported ball valves or butterfly valves. Manual shut-off valves are required upstream of automatic valve manifolds.

- r. Master valves shall be metal, located as close to the point of connection as possible, and be metal piped between the master valve and the water meter.
- s. High flow sensors that detect and report high flow conditions created by system damage or malfunction shall be specified for all projects where a dedicated landscape irrigation meter is required.
- t. The following statement "I have complied with the criteria of the ordinance and have applied them accordingly for the efficient use of water in the irrigation design plan."
- u. The signature of a licensed landscape architect, certified irrigation designer, irrigation consultant, landscape contractor or any other person authorized to design an irrigation system.

2. Specifications for Irrigation Efficiency.

The minimum irrigation efficiency shall be 0.75 (75%). Greater irrigation efficiencies are expected from well-designed and maintained systems. The following are required:

- a. Design spray head and rotor head stations with consideration for worst wind conditions. Close spacing and low-angle nozzles are required in high and frequent wind areas (ETo Zone No. 5);
- b. Spacing of sprinkler heads shall not exceed manufacturer's maximum recommendations for proper coverage. The plan design shall show a minimum of 0.75 (75%) distribution uniformity;
- c. Only irrigation heads with matched precipitation rates shall be circuited on the same valve;
- d. Valve circuiting shall be designed to be consistent with hydrozones;
- e. Individual hydrozones that mix plants that are moderate and low water use may be allowed if:
 - (i) plant factor calculation is based on the proportions of the respective plant water uses and their plant factor; or
 - (ii) the plant factor of the higher water using plant is used for the calculations;
- f. Individual hydrozones that mix high and low water use plants shall not be permitted; and
- g. On the landscape design plan and irrigation design plan, hydrozone areas shall be designated by number, letter, or other designation. On the

irrigation design plan, designate the areas irrigated by each valve, and assign a number to each valve. Use this valve number in the hydrozone information table. This table can assist with pre-inspection and final inspection of the irrigation system, and programming the controller.

3. Irrigation System Criteria.

- a. Reduced pressure backflow prevention devices shall be installed behind meter at curb by the District.
- b. Show location, station number, size and design gpm of each valve on plan.
- c. Smart Controllers shall be specified for all projects. This includes climate based or sensor based controllers, which can automatically adjust for local weather and/or site conditions.
- d. High flow check valves shall be installed in or under all heads adjacent to street curbing, parking lots and where damage could occur to property due to flooding, unless controllers with flow sensor capabilities are specified that can automatically shut off individual control valves when excess flow is detected.
- e. Pressure compensating screens/devices shall be specified on all spray heads to reduce radius as needed to prevent overthrow onto hardscape and/or to control high pressure misting.
- f. All irrigation systems shall be designed to avoid runoff onto hardscape from low head drainage, overspray and other similar conditions where water flows onto adjacent property, nonirrigated areas, walks, roadways or structures.
- g. Rotor type heads shall be set back a minimum of 2 feet from hardscape.
- h. The use of drip, microirrigation or pressure compensating bubblers or other systems with efficiencies of 90 percent or greater is required for all shrubs and trees. Small, narrow (less than 8 feet), irregularly shaped or sloping areas shall be irrigated with drip, microspray or PC (pressure-compensating) bubbler heads.
- i. Trees in turf areas shall be on a separate station to provide proper deep watering.
- j. Street median irrigation.
 - i. No overhead sprinkler irrigation system shall be installed in median strips or in islands, except overhead sprinkler irrigation systems that are intended for use only during annual plant introduction periods.

- ii. Median islands or strips shall be designed with either a drip emitter to each plant or subsurface irrigation. Bubblers used for trees must be fixed-flow pressure compensating type. Adjustable bubblers are prohibited.
- k. Meter sizing for landscape purposes shall be 33 gpm per planted acre. Maximum design meter flow rates are: 3/4" = 23 gpm, 1" = 37 gpm, 1-1/2" = 80 gpm, 2" = 120 gpm.
- l. Large projects, as determined by the District, may have specific recycled water requirements pursuant to District Ordinance No. 1302.2 Section 0.00.030E(3)(l).

4. Drip Irrigation System Criteria.

- a. The drip system must be sized for mature-size plants.
- b. The irrigation system should complete all irrigation cycles during peak use in about 12 hours. Normally, each irrigation controller should not have more than four drip stations that operate simultaneously.
- c. Field installed below ground pipe connections shall be threaded PVC or glued PVC. Polyethylene tubing is allowed only in subsurface installations. Drip emitter installation shall be directly into polyethylene tubing on a 1/4 inch thick-walled riser. Multi-port outlet devices and multi-port distribution is prohibited.
- d. Proportion gallons per day per plant according to plant size. The following sizing chart is for peak water use. The low to high end of the range is according to the relative water requirements of the plants. The low end is for desert natives and the high end is for medium water use type plants.

Size of Plant	Gallons Per Day
Large trees (over 30-foot diameter)	58+ to 97+
Medium trees (about 18-foot diameter)	21 to 35
Small trees/large shrubs (9-foot diameter)	6 to 10
Medium shrubs (3.5-foot diameter)	.8 to 1.3
Small shrubs/groundcover	.5 or less

- e. Plants with widely differing water requirements shall be valved separately. As an example, separate trees from small shrubs and cactus from other shrubs. Multiple emitter point sources of water for large shrubs and trees must provide continuous bands of moisture from the root ball out to the mature drip line plus 20 percent of the plant diameter. See Appendix C for more information on emitter spacing and wetted area.

- f. Most plants require 50 percent or more of the soil volume within the drip line to be wetted by the irrigation system. See Appendix C for more information. For additional information on plant watering and plant relative water needs, see the plant list section of the "Lush and Efficient, Landscape Gardening in the Coachella Valley" or a list provided by the City. See also the City requirements in Chapter 21.60.

5. Recycled Water Specifications.

- a. When a site has recycled water available or is in an area that will have recycled water available as irrigation water, the irrigation system shall be installed using the industry standard purple colored or marked "Recycled Water Do Not Drink" on pipes, valves and sprinkler heads.
- b. The backup groundwater supply (well water or domestic water) shall be metered. Backup supply water is only for emergencies when recycled water is not available.
- c. Recycled water users must comply with all county, state and federal health regulations. Cross connection control shall require a 6-inch air gap system or a reduced pressure backflow device. All retrofitted systems shall be dye tested before being put into service.
- d. Where available, recycled water shall be used as a source for decorative water features.
- e. Sites using recycled water are not exempted from the MAWA, prescribed water audits or the provisions of these criteria.
- f. A Recycled Water Checklist (Appendix F) shall be submitted to the District upon submittal of the first plan check of the landscape design plan and the irrigation design plan.

6. Irrigation Water (Nonpotable) Specifications.

- a. When a site is using nonpotable irrigation water that is not recycled water (from an on-site well or canal water) all hose bibs shall be loose key type and quick coupler valves shall be of locking type with nonpotable markings to prevent possible accidental drinking of this water.
- b. Sites using nonpotable irrigation water are not exempted from the MAWA, prescribed water audits or the provisions of these criteria.

7. Groundwater Water Specifications.

Sites using groundwater irrigation water from wells are not exempted from the MAWA, prescribed water audits, or the provisions of these criteria.

8. Golf Course Criteria.
 - a. All new golf courses and additions or renovations to existing golf courses must comply with the requirements in District Ordinance No. 1302.2.
 - b. All non-turf areas such as ponds, lakes, artificial water courses, bunkers and irrigated landscapes within the golf course project area must not exceed the MAWA calculations set forth within these criteria.

21.70.040 Other Provisions.

- A. Landscape Audit, Irrigation Survey, and Irrigation Water Use Analysis for New Construction and Rehabilitated Landscapes:
 1. This subsection shall apply to new construction and rehabilitated landscape projects installed after January 1, 2010 as described in Section 21.70.030.
 2. All landscape irrigation audits shall be conducted by a certified landscape irrigation auditor.
 3. The project applicant shall submit an irrigation audit report with the Certificate of Completion to the City that may include, but not be limited to, inspection, system tune-up, system test with distribution uniformity, reporting overspray or run-off that causes overland flow, and preparation of an irrigation schedule, including configuring irrigation controllers with application rate, soil types, plant factors, slope, exposure and any other factors necessary for accurate programming;
 4. The District will administer programs that may include, but not be limited to, irrigation water use analysis, irrigation audits and irrigation surveys for compliance with the MAWA.
 5. The owner of the landscaped area shall bear the cost of any audit.
- B. Water Waste Prevention. Water waste resulting from inefficient landscape irrigation including run-off, low-head drainage, overspray, or other similar conditions where water flows onto adjacent property, nonirrigated areas, walks, roadways, or structures is prohibited. All broken heads and pipes must be repaired within 72 hours of notification.
- C. Soil Management Report (as required by the City depending upon site conditions).
 1. In order to reduce runoff and encourage healthy plant growth, a soil management report shall be completed by the project applicant or designee as follows:
 - a. Submit soil samples to a laboratory for analysis and recommendation.
 - b. Soil sampling shall be conducted in accordance with laboratory protocol, including protocols regarding adequate sampling depth for the intended plants.

- c. The soil analysis may include:
 - i. Determination of soil texture, indicating the available water holding capacity.
 - ii. An approximate soil infiltration rate (either) measured or derived from soil texture/infiltration rate tables. A range of infiltration rates shall be noted where appropriate.
 - iii. Measure of pH, total soluble salts and percent organic matter.
- d. The project applicant or designee shall comply with one of the following:
 - i. If significant mass grading is not planned, the soil analysis report shall be submitted to the City as part of the Landscape Documentation Package; or
 - ii. If significant mass grading is planned, the soil analysis report shall be submitted to the City as part of the Certificate of Completion.
- e. The soil analysis report shall be made available, in a timely manner, to the professionals preparing the landscape design plans and the irrigation plans to make any necessary adjustments to the design plans.
- f. The project applicant or designee shall submit documentation verifying implementation of soil analysis report recommendations to the City with the Certificate of Completion.

D. Developer-Provided Documentation.

- 1. The developer/applicant/designee shall provide an approved copy of the Landscape Documentation Package and the following information for the homeowner or irrigation system operator. The package/information shall include a set of drawings, a recommended monthly irrigation schedule, and a recommended irrigation system maintenance schedule as described in Section 21.70.040F.
- 2. Irrigation Schedules. For the efficient use of water, all irrigation schedules shall be developed, managed, and evaluated to utilize the minimum amount of water to maintain plant health. Irrigation schedules shall meet the following criteria:
 - a. 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. The irrigation schedule shall:

- i. Include run time (in minutes per cycle), suggested number of cycles per day, and frequency of irrigation for each station;
- ii. Provide the amount of applied water (in hundred cubic feet) recommended on a monthly and annual basis;
- iii. Whenever possible, 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; and
- iv. Whenever possible, be scheduled between 8:00 p.m. and 10:00 a.m. to avoid irrigating during times of high wind or high temperature. Run times and other water efficient requirements may be imposed by the District from time to time.

E. Maintenance Schedules.

A regular maintenance schedule satisfying the following conditions shall be submitted as part of the Landscape Documentation Package:

1. Landscapes shall be maintained to ensure water efficiency. A regular maintenance schedule shall include but not be limited to checking, adjusting, cleaning and repairing equipment; resetting the automatic controller, aerating and dethatching turf areas; replenishing mulch; fertilizing; pruning; and weeding in all landscaped areas.
2. Repair of irrigation equipment shall be done with the originally specified materials or their approved equal.
3. A project applicant is encouraged to implement sustainable or environmentally-friendly practices for the overall landscape maintenance.

F. Certificate of Completion.

1. The Certificate of Completion (Appendix E) shall include the following:
 - a. Submittal and Approval Dates of the Landscape Documentation Package and Submittal Date of the Water Efficient Landscape Worksheet;
 - b. Project Name;
 - c. Project Address and Location;
 - d. Applicant Name, Telephone and Mailing Address; and

- e. Property Owners Name, Telephone, and Mailing Address.
 2. Certification by either the signer of the landscape design plan, the signer of the irrigation design plan, or the licensed landscape contractor that the landscape project has been installed per the approved Landscape Documentation Package.
 3. Irrigation scheduling parameters used to set the controller. A diagram of the irrigation plan showing hydrozones shall be kept with the irrigation controller for subsequent management purposes.
 4. Landscape and irrigation maintenance schedule.
 5. Irrigation audit report.
 6. Soil management report and documentation verifying implementation of soil report recommendations (as required by the City depending upon site conditions).
 7. The project applicant shall:
 - a. Submit the signed Certificate of Completion to both the City and the District for review and approval.
 - b. Ensure that copies of the Certificate of Completion with all approvals are submitted to the City, the District, and property owner or his or her designee.
 8. The District and the City shall:
 - a. Receive the signed Certificate of Completion from the project applicant.
 - b. Approve or deny the Certificate of Completion. If the Certificate of Completion is denied, the City will provide information to the project applicant regarding reapplication, appeal or other assistance.
- G. Stormwater Management.
1. Stormwater management practices minimize runoff and increase infiltration which recharges groundwater and improves water quality. Implementing stormwater best management practices into the landscape and grading design plans to minimize runoff and to increase on-site retention and infiltration are encouraged.
 2. Project applicants shall refer to the District, the City, and/or Regional Water Quality Control Board for information on any applicable stormwater ordinances and stormwater management plans.
 3. Rain gardens and other landscape features that increase rain water capture and infiltration are recommended.

21.70.050 Appeals.

Any decision made by the City Manager, Community Development Director or the ALC regarding the implementation of this Chapter may be appealed in accordance with Section 21.60.050.

21.70.060 Enforcement.

- A. Administrative Fines. In addition to any other remedies provided in the Code, persons who violate this Chapter are subject to the imposition of administrative fines pursuant to Section 8.08.060 of the Code.
- B. Civil Actions. In addition to any other remedies provided in the Code, any violation of this Chapter may be enforced by civil action brought by the City. In any such action, the City may seek, and the court may grant, as appropriate, any or all of the following remedies:
 - 1. A temporary and/or permanent injunction;
 - 2. Assessment of the violator for the costs of any investigation which led to the establishment of the violation and for the reasonable costs of preparing and bringing legal action under this chapter;
 - 3. Any other cost incurred in enforcing the provisions of this chapter; and
 - 4. Any other action the City deems appropriate to protect the general welfare and the region's water supplies, and to reduce water consumption in accordance with this chapter and the declared policies and laws of the State.

21.70.070 Delegation of Authority.

The City may delegate to, or enter into a contract with, a local agency or other person to implement and administer any of the provisions of this Chapter on behalf of the City.

21.70.080 Conflicting provisions.

If provisions of this Chapter are in conflict with each other, other provisions of the Code, the city's general plan, any city adopted specific plan or master plan, any resolution or ordinance of the city, or any State law or regulation, the more restrictive provisions shall apply."

SECTION 3. Exemption from California Environmental Quality Act. The City Council **FINDS** that this Ordinance is not subject to the California Environmental Quality Act ("CEQA") (California Public Resources Code Section 21000 *et seq.*), pursuant CEQA Section 15307 of the CEQA Guidelines (14 Cal. Code Regs., § 15307) – Actions by Regulatory Agencies for Protection of Natural Resources, as the Municipal Code Amendment is to modify the City's Water Efficient Landscape Regulations procedures and will not result in cumulative adverse environmental impacts.

SECTION 4. Severability. If any provision, section, subsection, sentence, clause or phrase or sections of this Ordinance, or the application of same to any person or set of circumstances, is for any reason held to be unconstitutional, void or invalid, the invalidity of the remaining portions of sections of this Ordinance shall not be affected, it being the intent of the City Council in adopting this Ordinance that no portions, provisions, or regulations contained herein shall become inoperative, or fail by reason of the unconstitutionality of any other provision hereof, and all provisions of this Ordinance are declared to be severable for that purpose.

SECTION 5. Effective Date. This Ordinance shall become effective thirty (30) days after its adoption in accordance with the provisions of California law.

SECTION 6. Publication. The City Clerk shall certify to the passage of this Ordinance and cause the same or a summary thereof to be published within fifteen (15) days after adoption in a newspaper of general circulation, printed and published in Indian Wells, California. A certified copy of the full text of this Ordinance along with the names of council members who voted for and against it shall be posted in the office of the city clerk within fifteen (15) days after adoption. In the case of a summary, at least five (5) days before the meeting in which this Ordinance is adopted, the summary must be published in a newspaper of general circulation, printed and published in Indian Wells and a certified copy of the full text of this Ordinance must be posted in the office of the city clerk.

PASSED APPROVED, AND ADOPTED by the City Council of the City of Indian Wells, California, at an adjourned regular meeting held on the 27th day of January, 2016.



DANA W. REED
MAYOR

STATE OF CALIFORNIA)
COUNTY OF RIVERSIDE) ss.
CITY OF INDIAN WELLS)

CERTIFICATION FOR ORDINANCE NO. 695

I, Anna Grandys, City Clerk of the City Council of the City of Indian Wells, California, **DO HEREBY CERTIFY** that Ordinance No. 695, having been regularly introduced at the meeting of January 7, 2016 was again introduced, the reading in full thereafter unanimously waived, and duly passed and adopted at an adjourned regular meeting of the City Council held on January 27, 2016 and said Ordinance was passed and adopted by the following stated vote, to wit:

AYES: Balocco, Hanson, Mertens, Peabody, Reed
NOES: None

and was thereafter on said day signed by the Mayor of said City of Indian Wells.

ATTEST:

APPROVED AS TO FORM:



ANNA GRANDYS
CITY CLERK



STEPHEN P. DEITSCH
CITY ATTORNEY

APPENDIX A

LANDSCAPE DOCUMENTATION PACKAGE CHECKLIST

Project Site: _____ Tract or Parcel Number: _____

Project Assessor's Parcel Number (APN): _____

Project Location: _____

Landscape Architect/Irrigation Designer/Contractor and Name and Contact Information:

Included in this Landscape Documentation Package are: (Check to indicate completion)

- ___ 1. Water Efficient Landscape Worksheet (Appendix B)
WATER BUDGET CALCULATIONS (Appendix D)

- ___ 2. Maximum Applied Water Allowance (MAWA):
Conventional Landscape: _____ 100 cubic feet/year
+ Recreational Turf grass Landscape: _____ 100 cubic feet/year (if applicable)
Maximum Applied Water Allowance: _____ 100 cubic feet/year

- ___ 3. Estimated Total Water Use by Hydrozone:
Turf grass Hydrozones: _____ 100 cubic feet/year
Recreational Turf grass Hydrozones: _____ 100 cubic feet/year
Low Plant Hydrozones: _____ 100 cubic feet/year
Medium Plant Hydrozones: _____ 100 cubic feet/year
High Plant Hydrozones: _____ 100 cubic feet/year
Water Features: _____ 100 cubic feet/year
Other _____: _____ 100 cubic feet/year
Estimated Total Water Use: _____ 100 cubic feet/year

- ___ 4. ETWU < MAWA
PLAN SETS

- ___ 5. Landscape Design Plan

- ___ 6. Irrigation Design Plan

- ___ 7. Grading Design Plan

- ___ 8. Soil Management Report

I agree to comply with the requirements of the water efficient landscape ordinance and submit a complete Landscape Documentation Package.

Date: _____ Applicant: _____

APPENDIX B

SAMPLE WATER EFFICIENT LANDSCAPE WORKSHEET

This worksheet is filled out by the project applicant and is a required element of the Landscape Documentation Package.

PROJECT INFORMATION

Project Name		
Name of Project Applicant	Telephone No.	
	Fax No.	
Title	Email Address	
Company	Street Address	
City	State	Zip Code

SECTION A. HYDROZONE INFORMATION TABLE

Please complete the hydrozone table(s) for each irrigation point of connection. Use as many tables as necessary to provide the square footage of landscape area per valve.

Irrigation Point of Connection (P.O.C.) No. _____					
Controller No.	Valve Circuit No.	Plant Types(s)*	Irrigation Method**	Area (Sq. Ft.)	% of Landscape
Total					100%

***Plant Type**

- Cst = Cool Season Turf
- WST = Warm Season Turf
- HW = High Water Use Plants
- MW = Moderate Water Use Plants
- LW = Low Water Use Plants

****Irrigation Method**

- MS = Microspray
- S = Spray
- R = Rotor
- B = Bubbler
- D = Drip
- O = Other

AP X C
ET PROFILE AND PLANT FACTORS

	Jan>	<Feb	Mar	Apr>	<May	Jun	Jul	Aug	Sep>	<Oct	Nov	Dec	<u>Totals</u>	<u>Totals</u>
<u>Monthly ETo (inches)</u>												Inches	Feet
Zone No. 1-Coves	1.71	2.84	4.00	5.70	6.84	7.98	7.98	6.27	5.70	4.00	2.28	1.71	57.01	4.75
Zone No. 2-COD	2.00	3.36	4.68	6.68	8.02	9.35	9.35	7.35	6.68	4.68	2.67	2.00	66.82	5.57
Zone No. 3-EMC	2.25	3.75	5.25	7.50	9.00	10.50	10.50	8.25	7.50	5.25	3.00	2.25	75.00	6.25
Zone No. 4-TH	2.64	4.40	6.16	8.80	10.56	12.32	12.32	9.68	8.80	6.16	3.52	2.64	88.00	7.33
Zone No. 5-I10	2.82	4.68	6.57	9.39	11.27	13.15	13.15	10.33	9.39	6.57	3.76	2.82	93.90	7.83

% Annual ETo per Month

3 5 7 10 12 14 14 11 10 7 4 3

- Zone No. 1 = Most protected cove areas with minimum wind, longest mountain shadows, higher rainfall, Palm Can. to La Q. Cove
- Zone No. 2 = Lower cove areas, light winds, long afternoon shadows from mountains, typ. Hwy 111 from Cathedral City to La Quinta
- Zone No. 3, 4 = Moderate winds, minimum mountain shadows, some blowing sand and dust; 3) Upper valley predominate wind from northwest, 4) Lower valley has lower elevation and more summer southeast wind
- Zone No.5 = Frequent strong northwest winds, heavy blowing sand and dust, typical of I-10 corridor to Washington Street

$$\text{Maximum Applied Water Allowance (CCF)} = \frac{\text{ETo (in inches for season)} \times .45 \times \text{Area (in square feet)} \times .62}{748}$$

ET Adjustment Factor = .45
 .62 = gallons per square foot per inch deep
 CCF = 100 cubic feet = 1 billing unit = 748 gallons

$$\text{Estimated Total Water Use (CCF)} = \frac{\text{ETo (in inches for season)} \times \text{Plant Factor} \times \text{Area (in square feet)} \times 0.62}{\text{Irrigation System Efficiency} \times 748}$$

Target Irrigation Efficiency = .80 Turf Rotor
 = .75
 Sprayheads
 = .90 Drip/Micro/PC Bubbler

APPENDIX C
ET PROFILE AND PLANT FACTORS

Emitters per Plant = $\frac{\text{Area Of Plant In Square Feet X \% Of Area To Be Wet}}{\text{Square Feet Wet Per Emitter}}$

Soil Type	(inches water holding capacity per inch of depth)	
Very Coarse Sand	0.05	Typical of high on an alluvial fan
Blow Sand	0.07	Typical of mid valley ridge area
Fine Sand	0.10	Typical of low on alluvial fans from Rancho Mirage to Indian Wells
Very Fine Silty Sand	0.15	Typical of lowest alluvial fans from La Quinta, Indio, & Coachella
Silt Loam	0.17	Typical of lower valley agricultural areas located below sea level

Emitter Area Square Feet	Wetted Area Square Feet Each	Emitter Spacing
	.75 to 1.75	10"
	1.75 to 3	18"
	3 to 5	3'
	5 to 10	4'
	10 to 28	4.5'

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg
<u>Plant Factor (Kc)</u>												
Cool Turf 100%**	1.00	1.00	1.00	NR	NR	NR	NR	NR	NR	1.00	1.00	1.00	1.00
Warm Turf 100%**	NR	NR	NR	0.80	0.80	0.80	0.80	0.80	0.80	NR	NR	NR	0.80
Cool Turf 80%*	0.80	0.80	0.80	0.70	NR	NR	NR	NR	NR	0.80	0.80	0.80	0.79
Warm Turf 60%*	NR	NR	NR	0.60	0.60	0.60	0.60	0.60	0.60	0.60	NR	NR	0.60
Combined TurfSav*	0.80	0.80	0.80	0.70	0.60	0.60	0.60	0.60	0.60	0.70	0.80	0.80	0.70
Tree/Shrub/GC L*	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
Tree/Shrub/GC L**	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40
Tree/Shrub/GC M*	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
Tree/Shrub/GC M**	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70
Tree/Shrub/GC H*	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Tree/Shrub/GC H**	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Open WaterFactor	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10

(Approx. Evaporation from a still water surface, higher factor (1.2) with falls and fountains.) Reference; WUCOLS IV

- CombinedTurfSav = Combination of cool and warm season turf according to normal management in the Coachella Valley
- * = Normal irrigation level to maintain established planting
- Normal irrigation level during plant
- ** = establishment
- GC = Groundcover
- L = Low water use Kc .1 to .3
- M = Moderate water use Kc .4 to .6
- H = High water use Kc .7 to .9
- NR = Not Recommended

APPENDIX D

SAMPLE CALCULATION/ESTIMATED TOTAL WATER USE (by Hydrozone)

Using the following formula from Appendix C:

ETWU	=	(ETo) x (PF) x (LA) x (.62)] / (748) / (IE)
ETWU	=	Estimated Water Use (hundred cubic feet)
ETo	=	Reference Evapotranspiration (inches) [for period of estimate]
PF	=	Plant Factor (Kc)
LA	=	Landscaped Area (in square feet)
.62	=	Conversion Factor (to gallons per square foot)
748	=	Conversion Factor (to hundred cubic feet)
IE	=	Irrigation System Efficiency

Project Site Example: Total landscaped area 60,000 square feet in Palm Desert near the intersection of Cook Street and Country Club Drive in Zone No. 3 (75.0" Annual ETo).

- 12,000 square feet of turf grass overseeded with rye grass in winter, irrigated with low angle rotor sprinklers.
- 32,700 square feet of "low" desert native plantings on drip irrigation.
- 15,300 square feet of "moderate" water using plantings on drip irrigation.

See Appendix C for formula factors. ETo is totaled for season. Turf grass plant factors are the average for the season and tree/shrub/groundcover plant factors are considered constant annually.

Plant Factors

Turf Grass	Low Native Plants	Moderate Shrubs
0.70	0.20	0.50

$$ETWU = [(ETo) \times (PF) \times (LA) \times (.62) / (748)] / (IE) = CCF$$

$$\text{Overseeded Turf Grass: Season} = 75.0 \times .7 \times 12,000 \times .62 / 748 / .80 = 653 \text{ CCF}$$

$$\text{Seasonal Turf ETWU} = 653 \text{ CCF}$$

$$\text{"Low" Native Plants: Annual} = 75.0 \times .2 \times 32,700 \times .62 / 748 / .90 = 451 \text{ CCF}$$

$$\text{"Low" Native ETWU} = 451 \text{ CCF}$$

$$\text{"Moderate" Shrubs and Ground Cover: Annual} = 75.0 \times .5 \times 15,300 \times .62 / 748 / .90 = 528 \text{ CCF}$$

$$\text{"Moderate" ETWU} = 528 \text{ CCF}$$

$$\text{Project Total ETWU} = 1,632 \text{ CCF}$$

APPENDIX D

SAMPLE CALCULATION

Maximum Applied Water Allowance (MAWA)

Using the following formula:

$$\text{MAWA} = [(\text{ETo}) \times (0.45) \times (\text{LA}) \times (0.62)] / (748)$$

MAWA = Maximum Applied Water Allowance (CCF or hundred cubic feet)
ETo = Reference Evapotranspiration (inches per year)
0.45 = ET adjustment factor
LA = Landscaped Area (square feet)
0.62 = Conversion Factor (to gallons per square foot)
748 = Conversion Factor (to hundred cubic feet)

Using the project for the Estimated Total Water Use example:

Landscaped area of 60,000 square feet in District Zone No. 3 (75.0" Annual ETo).

$$\begin{aligned}\text{MAWA} &= 75.0 (\text{ETo}) \times (0.45) \times (\text{LA}) \times (0.62) / (748) \\ &= [75.0(.45) (60,000) (0.62)] / (748) \\ \text{MAWA} &= 1,678 \text{ CCF}\end{aligned}$$

ETWU total of 1,632 CCF is < the MAWA of 1,678 CCF

APPENDIX E

SAMPLE CERTIFICATE OF COMPLETION

Project Name: _____
Parcel Map or Tract No.: _____ APN: _____
Project Location: _____
Maximum Applied Water Allowance (MAWA): _____ (in hundred cubic feet)
Estimated Annual Total Applied Water Use: _____ (in hundred cubic feet)

Preliminary project documentation submitted (initials indicate submittal)

- _____ 1. Grading design plan
- _____ 2. Landscape design plan
- _____ 3. Irrigation design plan
- _____ 4. Irrigation schedules

Post Installation inspection (initials indicate completion)

- _____ 1. Plants installed as specified
- _____ 2. Irrigation System installed as designed

Comments: _____

A copy of this certification has been provided to the owner/developer, the City and to the District. I certify the work has been completed in accordance with Chapter 21.70 of the City's Municipal Code and District Ordinance 1302.2, Landscape and Irrigation System Design Criteria.

Landscape Architect/Designee Signature License No. Date

- 1. Date the Landscape Documentation Package was submitted to the City: _____
- 2. Date the Landscape Documentation Package was approved by the City: _____
- 3. Date a copy of the Water Efficient Landscape Worksheet (including the Water Budget Calculation) was submitted to the District: _____

APPENDIX F

Recycled Water Checklist

1. Obtain coverage under the general waste discharge requirements for discharge of recycled water for golf course and landscape irrigation Order No. 97-700 or equivalent version of this permit from the California Regional Water Quality Control Board of the Colorado River Basin Region (Regional Board) by submitting a Notice of Intent to the Regional Board and paying application/annual fees.
2. Enter into an agreement with CVWD for receiving nonpotable water for golf course and landscape irrigation. The agreement between discharger and CVWD must be provided to the Regional Board within 90 days of receiving coverage under the permit referenced above in item #1.
3. Landscape and Irrigation system plans must meet regulatory requirements of Order 97-700 or equivalent version of this permit, the State Board's Recycled Water Policy, and California Department of Public Health (CDPH) Statutes and Regulations related to recycled water, such as the Health and Safety Code, the Water Code, Title 17 and Title 22 Code of Regulations. These requirements include but are not limited to the following:
 - a. An air-gap separation, a vertically measured distance between supply pipe and receiving vessel must be present and meet the required distance for the size of the supply pipe.
 - b. The appropriate type of backflow protection is to be installed for auxiliary water supplies and recycled water.
 - c. The required separation distance between recycled water lines and impoundments and application area; and domestic wells and water lines is maintained and approved by CDPH.
 - d. The design of the irrigation system shall not cause the occurrence of ponding anywhere in the reuse area, and overspray or mist around dwellings, outdoor eating areas and/or food handling facilities is eliminated. Irrigation runoff shall be confined to the recycled water use area unless authorized by CDPH.
 - e. Drinking fountains will be protected from spray, mist or runoff by use of a drinking fountain cover or shelter approved for this purpose.
 - f. Hose bibs are not allowed on portions of the recycled water systems accessible to the general public. Quick couplers that differ from those used on the potable water system are allowed.
 - g. Signs are posted in areas that the public has access to that are no less than 4 inches high by 8 inches wide and include "RECYCLED WATER—DO NOT DRINK" and the international do not drink symbol as indicated in CCR Title 22 Division 4 Chapter 3 Article 4 Section as figure 60310-A. The number and locations of these signs will be approved by CDPH.
 - h. The recycled water irrigation system is able to be operated during a time of day that will minimize contact with the public.
 - i. All pipes installed above or below ground on or after June 1, 1993 designed to carry recycled water are to be colored purple or wrapped in purple tape.

- j. Golf course pump houses utilizing recycled water are appropriately tagged with warning signs with proper wording of sufficient size to warn the public that recycled water is not safe for drinking. All new and replacement at grade valve boxes shall be purple or appropriately tagged for water reuse purposes. All other appurtenances and equipment used for recycled water must be identified as used for recycled water distribution per the recommendations of CDPH.
4. Prior to construction, landscape and irrigation system plans must be submitted for approval to the following agencies (please allow for a 30 day comment period):
 - a. Regional Board Water Quality Control Board,
 - b. California Department of Public Health, and
 - c. CVWD.
5. Upon approval from the Regional Board and CDPH, the discharger shall provide notification that recycled water will be used for irrigation to people who reside adjacent to the recycled water use area and to golf course patrons through a method approved by the Regional Board's Executive Officer and CDPH at least 30 days prior to use of recycled water.
6. A Use Site Supervisor must be designated and his or her name and contact information must be provided in writing to CVWD and the Regional Board 30 days prior to discharge of recycled water. This person will be available to be contacted and receive periodic education and training on the uses and restrictions of recycled water.
7. A cross-connection control test will be performed on the irrigation and domestic systems prior to the discharge of recycled water and at least once every four years thereafter. This test is to be conducted by an American Water Works Association (AWWA) certified cross-connection control program specialist or equivalent. The results of these tests are to be submitted to CVWD, CDPH, and the Regional Board within 30 days of test completion.
8. "As-Built" plans and specifications showing the domestic and irrigation systems, location of all potable and recycled water connections and location of all on-site and nearby wells to CDPH, as per the CDPH requested time frame.