

**Chapter 19.570*****Water Efficient Landscaping and Irrigation*****19.570.010 Purpose**

- A. This Chapter establishes minimum landscape standards for all uses for the purpose of enhancing the appearance of developments, reducing heat and glare, controlling soil erosion, conserving water, providing recreation areas, cleaning the air and water, offering fire protection, replacing ecosystems displaced by development, establishing a buffer and/or screen between residential and non-residential land uses, and ensuring the ongoing maintenance of landscape areas.
- B. This Chapter also implements the California Water Conservation in Landscaping Act (Government Code Article 10.8) by establishing a structure for designing, installing and maintaining water efficient landscapes.
- C. This Chapter promotes the use of recycled water for landscaping.
- D. Promote the values and benefits of landscapes while recognizing the need to invest water and other resources as efficiently as possible.
- E. Establish a structure for designing, installing and maintaining water efficient landscapes.

**19.570.020 Applicability**

- A. Owners and/or occupants of properties fronting on, or adjacent to, any portion of a street shall landscape, irrigate and maintain required yards adjacent to the street and comply with the provisions of this Chapter as well as [Chapters 6.14](#) (Landscape Maintenance) and [13.06](#) (Vegetation Maintenance) of the Municipal Code for any landscaping along said street or within the street right-of-way adjacent to their property fronting on, or adjacent to, any portion of the street.
- B. Any Development that is subject to Design Review (Chapter 19.710) shall also comply with Sections 19.570.040 (Provisions for the Review and Certification of Landscaping and Irrigation) through 19.570.050 (Certificate of Substantial Completion) and 19.570.060 B (Efficient Water Use Educational Program), if applicable.

**19.570.030 General Landscaping Standards**

These standards shall apply to all lots within the City.

- A. Any landscaping required by this Chapter shall be installed, permanently irrigated and maintained in a healthy and thriving condition
- B. Trees may be planted in any required yard areas.

- C. To safeguard against vehicle, bicycle, and pedestrian collisions caused by visual obstructions at street intersections, a clear cross-visibility area shall be maintained at the intersection of all public rights-of-way pursuant to 19.550.050 (Sight Clearance Requirements).
- D. Landscaping and vegetation throughout the City shall be maintained pursuant to Chapters [6.14](#) (Landscape Maintenance) and [13.06](#) (Vegetation Maintenance) of the Municipal Code.
- E. Landscape planting shall emphasize drought-tolerant and native species, complement the architectural design of structures on the site, and be suitable for the soil and climatic conditions of the site.
- F. All front and visible side yards shall be landscaped consistent with the provisions of this Chapter.

#### **19.570.040 Provisions for the Review and Certification of Landscaping and Irrigation**

##### **A. Applicability**

- 1. Except as provided in subsection B, this Section shall apply to:
  - a. All installations of new landscaping and irrigation for public projects and private development projects that require review and approval by the Zoning Administrator;
  - b. Developer-installed landscaping and irrigation in multifamily projects that require review and approval by the Zoning Administrator.
- 2. Projects subject to this Chapter shall conform to the provisions of this Section and shall be subject to the review and approval of the Zoning Administrator in accordance with Chapter 19.710 (Design Review).

##### **B. Exceptions**

- 1. This Chapter shall not apply to:
  - a. Landscaping and irrigation of single-family dwellings and duplexes;
  - b. Cemeteries;
  - c. Designated historical sites that are subject to review under [Title 20](#);
  - d. Ecological restoration projects that do not require a permanent irrigation system;
  - e. Mined-land reclamation projects that do not require a permanent irrigation system;
  - f. Public parks.

##### **C. Landscaping Submittal Package**

- 1. An application shall be submitted to the Planning Division for review and approval by the Zoning Administrator. No certificate of occupancy or other final City approval

shall be issued until the City reviews and approves the landscape plans and the landscaping and irrigation are installed in accordance with approved plans.

2. A copy of the approved landscape plans and conditions of approval shall be provided to the property owner or site manager along with the record drawings and any other information normally forwarded to the property owner or site manager.
3. Applications submitted to the Planning Division requesting landscaping review shall include the following information:

***Water Conservation Concept Statement:***

- a. The Water Conservation Concept Statement is a cover sheet that shall serve as a checklist to verify that the elements of the Landscape Documentation Package have been completed and as a narrative summary of the project.
- b. Forms for the Water Conservation Concept Statement shall be available at the Planning Division.

***Calculation of the Annual Water Budget:***

- c. The annual water budget is determined by the following formula:  
$$AWB = \frac{(56.65)(0.8)(TLA)}{1200}$$
where:  
AWB = Annual water budget in billing units per year (one billing unit = 100 cubic feet = 748 gallons).  
56.65 = Reference evapotranspiration in inches of water per year.  
0.8 = Allowable percentage.  
TLA = Total landscaped area per water meter in square feet.  
1200 = Conversion factor to produce a formula total in billing units. (To convert the answer to gallons, multiply the formula by 748).
- d. Portions of landscaped areas in public and private projects such as parks, playgrounds, sports fields, golf courses, driving ranges, or school yards where turf serves recreational purposes may require a supply of water in addition to the Estimated Annual Water Budget. A statement shall be included with the Landscape Design Plan, designating those areas to be used for such purposes and specifying any needed amount of additional water above the Annual Water Budget.

***Estimated Annual Water Use:***

- e. A calculation of the estimated annual water use shall be submitted with the landscape documentation package. The estimated annual water use shall be calculated using the following formula:  
$$EAWU = (56.65)(KC)(HA)(DE)(AE)(1200)$$
where:

EAWU =	Estimated annual water use in billing units per year (one billing unit = 100 cubic feet = 748 gallons).
56.65 =	Reference evapotranspiration in inches of water per year.
KC =	Crop coefficient (for a specific plant from the Water Needs of Plants list on file in the Planning Division).
HA =	Hydrozone area in square feet.
DE =	Distribution efficiency of the irrigation system expressed as a decimal as listed in Section 19.570.070 of this Chapter.
AE =	Application efficiency of the irrigation system expressed as a decimal as listed in the 19.570.070 of this Chapter.
1200 =	Conversion factor to produce a formula total in billing units. (To convert the answer to gallons, multiply the formula by 748).

- f. If the Estimated Annual Water Use is greater than the Estimated Annual Water Budget, the Zoning Administrator may require revisions to the landscaping or irrigation specifications or design to achieve greater water efficiency.

***Landscape Design Plan:*** With the exception of projects having a net size of one-half acre or less, all plans required to be submitted under the provisions of this Chapter shall be wet stamped and signed by a landscape architect licensed to practice in the State of California.

- g. **Plant Selection and Grouping:**
- (1) Any plants may be used in the landscape; however, if the estimated annual water use exceeds the annual water budget, the Zoning Administrator may require revisions to the landscape and/or irrigation plans to achieve greater water efficiency.
  - (2) Plants having similar water use shall be grouped together in distinct hydrozones.
  - (3) Plants shall be selected appropriately based upon their adaptability to the climatic, geologic, and topographical conditions of the site. Protection and preservation of native species and natural areas is encouraged. The planting of trees is encouraged wherever it is consistent with the other provisions of this Chapter.
  - (4) Fire prevention needs shall be addressed in areas that are fire prone. Information about fire prone areas and appropriate landscaping for fire safety is available from the Riverside Fire Department or the California Department of Forestry.
  - (5) A mulch of at least two inches shall be applied to all new planting areas except turf as appropriate. Slopes exceeding 4:1 shall receive jute netting or another appropriate means of slope stabilization and water retention.
- h. **Water Features:**
- (1) Decorative water features shall be designed to re-circulate the water and avoid unnecessary flows to waste.
  - (2) Pool and spa covers are encouraged.

- i. Landscape Design Plan Specifications. The landscape design plan shall be drawn on project base sheets at a scale that accurately and clearly identifies:
  - (1) Designation of hydrozones.
  - (2) Landscape materials, trees, shrubs, ground cover, turf, and other vegetation. Planting symbols shall be clearly drawn and plants labeled by botanical name, common name, container size, spacing, and quantities of each group of plants indicated.
  - (3) Property line, compass directions and street names.
  - (4) Streets, driveways, walkways, and other paved areas.
  - (5) Pools, ponds, water features, fences, and retaining walls.
  - (6) Existing and proposed buildings and structures including elevations if applicable.
  - (7) Natural features including but not limited to rock outcroppings, existing trees, shrubs proposed to remain and those proposed to be removed.
  - (8) Tree staking, plant installation, soil preparation details, and any other applicable planting and installation details.
  - (9) Calculation of the total landscaped area in square feet.
  - (10) Designation of recreational areas.

***Irrigation Design Plan:*** An irrigation design plan meeting the following conditions shall be submitted as part of the landscape application.

- j. Irrigation Design Criteria:
  - (1) Run-off and overspray.

Soil types and infiltration rate shall be considered when designing irrigation systems. All irrigation systems shall be designed to minimize run-off, low-head drainage, overspray, or other similar conditions where water flows onto adjacent property, non-irrigated areas, walks, roadways or structures. Proper irrigation equipment and schedules, including features such as repeat cycles, shall be used to closely match application rates to infiltration rates, thereby minimizing run-off.

Special attention shall be given to minimize run-off on slopes and to minimize overspray in planting areas with a width less than ten feet, and in median strips.

No overhead sprinkler irrigation systems shall be installed in median strips less than ten feet wide.
  - (2) Equipment

*Water meters.* Separate developer installed landscape water submeters are recommended for all projects except for single-family homes or any project with a landscaped area of less than five thousand square feet.
  - (3) Controllers.

Automatic control systems shall be required for all irrigation systems and must be able to accommodate all aspects of the design.
  - (4) Valves.

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

(5) Sprinkler heads.

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

(6) Soil Moisture Sensing Devices.

Soil moisture sensing devices shall be considered where appropriate.

k. Recycled Water:

(1) The installation of recycled water irrigation systems (dual distribution systems) may be required by the Zoning Administrator to allow for the current and future use of recycled water.

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

l. Irrigation Design Plan Specifications:

Irrigation systems shall be designed to be consistent with hydrozones. The irrigation design plan shall be drawn on project base sheets. It shall be separate from, but use the same format as, the landscape design plan. The scale shall be the same as that used for the landscape design plan described in subdivision 4 of this subsection. The irrigation design plan shall accurately and clearly identify:

(1) Location and size of water meters for the landscape.

(2) Location, type, and size of all components of the irrigation system, including automatic controllers, main and lateral lines, valves, sprinkler heads, moisture sensing devices, rain switches, quick couplers, backflow prevention devices and all other information required by the Zoning Administrator.

(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 (psi) for each station.

(5) Recycled water irrigation systems as specified in subsection (C)(5)(b).

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

m. 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.

n. The irrigation schedule shall:

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

- (2) Provide the amount of applied water (in hundred cubic feet, gallons, or in whatever billing units the local water supplier uses) recommended on a monthly and annual basis.
- o. The total amount of water for the project shall include water designated in the estimated annual water use calculation plus water needed for any water features, which shall be considered as a high water using hydrozone.
- p. Recreational areas designated in the landscape design plan shall be highlighted and the irrigation schedule shall indicate the amount of water needed above the annual water budget because of high plant factors (but not due to irrigation inefficiency).
- q. Whenever possible, irrigation scheduling shall incorporate the use of evapotranspiration data such as those from the California Irrigation Management Information System (CIMIS) weather stations to apply the appropriate levels of water for different climates.
- r. Whenever possible, landscape irrigation shall be scheduled to avoid irrigating during times of high wind or high temperature.

***Landscape Irrigation Audit Schedules (Optional):***

- s. Irrigation audits shall be in accordance with the State of California Landscape Water Management Program as described in the Landscape Irrigation Auditor Handbook (June 1990) version 5.5 (formerly Master Auditor Training).
- t. A landscape irrigation audit shall be conducted by a certified landscape irrigation auditor at the completion of irrigation installation and prior to release of occupancy.
- u. For all projects subject to this Chapter, the Public Utilities Department shall make available information regarding the benefits of regularly scheduled water audits.

***Grading Design Plan:*** Grading design plans satisfying the following conditions shall be submitted as part of the landscape documentation package:

- v. A grading design plan shall be drawn on project base sheets. It should be separate from but use the same format as the landscape design plan. If the irrigation design is drawn on the grading plan, all irrigation components and information must be clearly legible.
- w. The grading design plan shall indicate finished configurations and elevations of the landscaped area, including the height of graded slopes, drainage patterns, pad elevations, landscape mounding and finish grade.

***Soil Analysis (Optional):***

- x. It is recommended that a soils analysis satisfying the following conditions be submitted as part of the landscape application.
  - (1) Determination of soil texture, indicating the percentage of organic matter.

- (2) 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.
  - (3) Measure of pH, and total soluble salts.
- y. A mulch of at least three inches shall be applied to all planting areas except turf.

#### **19.570.050 Certificate of Substantial Completion**

- A. After completing the installation of the landscaping and irrigation system, an audit shall be conducted by a certified landscape irrigation auditor prior to the final field observation.
- B. The landscape architect, certified irrigation designer, or other designer responsible for the landscape and/or irrigation design shall conduct a final field observation and shall provide a Certificate of Substantial Completion to the Planning Division. The certificate shall specifically indicate that plants were installed as specified, that the irrigation system was installed as designed, and that an irrigation audit has been performed, along with a list of any observed deficiencies.
- C. The Certificate of Substantial Completion shall be on a standard form provided by the Planning Division, and delivered to the Planning Division and owner of property.
  1. No occupancy permit shall be issued until the Certificate of Substantial Completion is received and approved, and a final inspection is completed by the Planning Division.
  2. All landscaping shall be maintained in a healthy, growing condition, free of weeds and appropriately trimmed, and all irrigation shall be maintained in a fully operational condition as approved by the Zoning Administrator.

#### **19.570.060 Efficient Water Use Educational Program**

- A. Publications
  1. The Public Utilities Department will make available to the public, information regarding the design, installation, and maintenance of water efficient landscapes.
  2. Information about the efficient use of landscape water shall be provided to water users throughout the community by the Public Utilities Department.

#### **B. Model Homes**

In each project consisting of eight or more homes, at least one model home that is landscaped shall demonstrate via installed landscaping and irrigation, the principles of water efficient landscaping and irrigation described in this Chapter.

1. The water efficient landscaped and irrigated model home site shall be identified as such by signs posted that identify such water efficient elements as hydrozones, irrigation equipment and others that contribute to the overall water efficient theme.
2. The developer shall provide information at the model home site about designing, installing, and maintaining water efficient landscaping and irrigation.

### **19.570.070 Definitions for the Purposes of this Chapter Only**

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

- A. "Allowable percentage" means a factor of 0.8, that, when applied to reference evapotranspiration, determines the annual maximum allowable water budget for an individually metered landscape project.
- B. "Annual water budget" or "AWB" means the upper limit of allowable water use for the entire landscaped area per water meter in accordance with the formula in Section 19.570.040 C 3 (Calculation of the Annual Water Budget).
- C. "Anti-drain valve" or "check valve" means a valve located under a sprinkler head to hold water in the system so it minimizes drainage from the lower elevation sprinkler heads.
- D. "Application efficiency" or "AE" is a measure of the efficiency of an irrigation system based upon the characteristics of various types of irrigation system controls as follows:
  1. 0.85 for irrigation systems that have a centralized control system or controllers that measure or can be programmed to use evapotranspiration rates, or systems that use other irrigation efficiency controls such as moisture sensors;
  2. 0.65 for irrigation systems that do not have any of the above soil or weather driven types of irrigation efficiency controls.
- E. "Application rate" means the depth of water applied to a given area, usually measured in inches per hour.
- F. "Applied water" means the portion of water supplied by the irrigation systems to the landscape.
- G. "Automatic controller" means a mechanical or solid state timer, capable of operating valve stations to set the days and length of time of a water application.
- H. "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.
- I. "Conversion factor (1200)" means the number used to produce formula total in billing units of one hundred cubic feet. (To convert the answer to gallons, multiply the formula by 748).

- J. "Crop coefficient" or "KC" means a factor, expressed as a decimal, that when multiplied by reference evapotranspiration, estimates the amount of water used by a specific plant.
- K. "Distribution efficiency" or "DE" is a measure of the efficiency of an irrigation system based upon the characteristics of the various types of sprinklers and emitters as follows:
1. 0.70 for spray heads;
  2. 0.85 for gear-driven, impact or ball-driven rotors;
  3. 0.85 for bubbler heads;
  4. 0.90 for drip irrigation systems.
- L. "Ecological restoration project" means a project where the site is intentionally altered to establish a defined, indigenous, historic ecosystem.
- M. "Emitter" means a drip irrigation fitting that delivers water slowly from the system to the soil.
- N. "Established landscape" means the point at which plants in the landscape have developed roots into the soil adjacent to the root ball.
- O. "Establishment period" means the first four months after installation of the plants in the landscape.
- P. "Estimated annual water use" or "EAWU" means the estimated annual water use for an established landscaped area as calculated pursuant to the formula in Section 19.570.040 C 3 e (Estimated Annual Water Use).
- Q. "Evapotranspiration" means the quantity of water evaporated from adjacent soil surfaces and transpired by plants during a specific time.
- R. "Flow rate" means the rate at which water flows through pipes and valves (gallons per minute or cubic feet per second).
- S. "Hydrozone" means a portion of the landscaped area having plants with similar water needs that are served by a valve or set of valves with the same schedule. A hydrozone may be irrigated or nonirrigated. For example, a naturalized area planted with native vegetation that will not need supplemental irrigation once established is a nonirrigated hydrozone.
- T. "Infiltration rate" means the rate of water entry into the soil expressed as a depth of water per unit of time (inches per hour).
- U. "Irrigation efficiency" means the measurement of the amount of water beneficially used divided by the amount of water applied. Irrigation efficiency is the product of distribution efficiency (DE), based upon characteristics of the various types of sprinklers/emitters, and

application efficiency (AE), based upon characteristics of the various types of irrigation system controls.

- V. "Landscape irrigation audit" means a process to perform site inspections, evaluate irrigation systems, and develop efficient irrigation schedules.
- W. "Landscaped area" means the entire parcel less the building footprint, driveways, non-irrigated portions of parking lots, hardscapes (such as decks and patios), and other non-porous areas. Water features are included in the calculation of the landscaped area. Areas dedicated to edible plants, such as orchards or vegetable gardens, are not included.
- X. "Lateral line" means the water delivery pipeline that supplies water to the emitters or sprinklers from the valve.
- Y. "Main line" means the pressurized pipeline that delivers water from the water source to the valve or outlet.
- Z. "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.
- AA. "Mulch" means any material such as leaves, bark, straw or other materials left loose and applied to the soil surface for the beneficial purpose of reducing evaporation.
- BB. "Operating pressure" means the pressure at which a system of sprinklers is designed to operate, usually indicated at the base of a sprinkler.
- CC. "Overhead sprinkler irrigation systems" means those that apply water by spraying it into the air through nozzles.
- DD. "Overspray" means the water that is delivered beyond the landscaped area, wetting pavements, walks, structures, or other non-landscaped areas.
- EE. "Record drawing" or "as-builts" means a set of reproducible drawings that show significant changes in the work made during construction and that are usually based on drawings marked up in the field and other data furnished by the contractor.
- FF. "Recreational area" means an area of active play or recreation such as a sports field, school yard, picnic ground, or other area with intense foot traffic.
- GG. "Recycled water," "reclaimed water," or "treated sewage effluent water" means treated or recycled waste water of a quality suitable for non-potable uses such as landscape irrigation, but not intended for human consumption.
- HH. "Reference evapotranspiration" or "ET<sub>o</sub>" means a standard measurement of environmental parameters that affect the water use of plants. Reference evapo-transpiration is given as 56.65 inches of water per year, and represents the annual historic average evapotranspiration of a large field of four to seven inch tall cool season grass that is well watered and located in the area of Riverside County.

- II. "Rehabilitated landscape" means any relandscaping project that requires a permit.
- JJ. "Run-off" means water that is not absorbed by the soil or landscape to which it is applied and flows from the area. For example, run-off may result from water that is applied at too great a rate (application rate exceeds infiltration rate) or when there is a severe slope.
- KK. "Soil moisture sensing device" means a device that measures the amount of water in the soil.
- LL. "Soil texture" means the classification of soil based on the percentage of sand, silt, and clay in the soil.
- MM. "Sprinkler head" means a device that sprays water through a nozzle.
- NN. "Static water pressure" means the pipeline or municipal water supply pressure when water is not flowing.
- OO. "Station" means an area served by one valve or by a set of valves that operate simultaneously.
- PP. "Turf" means a surface layer of earth containing mowed grass with its roots. Annual bluegrass, Kentucky bluegrass, perennial rye grass, red fescue, and tall fescue are cool-season grasses. Bermuda grass, kikuyu grass, seashore paspalum, St. Augustine grass, zoysia grass, and buffalo grass are warm-season grasses.
- QQ. "Valve" means a device used to control the flow of water in the irrigation system.
- RR. "Water conservation concept statement" means a narrative summary of the means employed to conserve water in a project's design along with documentation as to the means by which the annual water budget and estimated annual water use figures were derived.