City of Corona

Landscape Design Guidelines

For

Commercial & Industrial Developments

Adopted by the Planning Commission

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400 South Vicentia Avenue
Planning and Development Department
Corona, CA 92882-3238
(951) 736-2262

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1. PURPOSE

A. The City of Corona has established landscape design guidelines for commercial and industrial developments in order to create pleasant and attractive properties throughout the City. The City believes that proper landscaping in commercial and industrial properties promotes a sense of community, creates a more pleasant living and working environment, and promotes water and resource conservation, including but not limited to, storm water retention/percolation and best management practices. The landscape guidelines complement the mandatory site development regulations contained in the City's Zoning Ordinance and Specific Plans.

B. The primary purpose of these landscape design guidelines is to provide procedural and design guidance for project applicants proposing landscape installation or landscape rehabilitation projects that are subject to the requirements of the Corona Municipal Code Section 17.70.070. This document is also intended for use and reference by City staff and/or consultants in reviewing and approving designs and verifying compliance with the Corona Municipal Code Section 17.70.070 regulations that are at least as effective as the Department of Water Resources Model Water Efficient Landscape Ordinance.

C. The landscape design guidelines will be utilized during the City's plan review process to accomplish the goals of:

1. ensuring the highest level of resource conservation including water conservation, ground water recharge, and green waste reduction;
2. promoting the design, installation, and maintenance of water-efficient landscaping, water use management and water conservation through the use of water-efficient landscaping, functional and limited use of turf grass, and aggressive use of water conserving irrigation technology and management.
3. reducing the water demands from landscapes without a decline in the landscape quality or quantity in a manner that conserves regional water resources, by ensuring that landscape projects are not unduly water-needy and that irrigation systems are appropriately implemented to minimize water waste;
4. retaining flexibility and encouraging creativity through appropriate design;
5. complying with state guidelines by requiring that landscapes not exceed a maximum water demand of seventy percent (70%) of its reference evapotranspiration (ETo) or any lower percentage as may be required by state legislation;
6. eliminating water waste from overspray and/or runoff; and
7. establishing procedural and design requirements for water efficient landscaping that are at least as effective in conserving water as the Department of Water Resources Model Water Efficient Landscape Ordinance in compliance with California Government Code section 65591 et seq.

2. APPLICABILITY

A. Unless otherwise specified within an approved Specific Plan for a commercial or industrial development, these landscape design guidelines shall apply to the following landscape projects in the City of Corona:

1. developer installed landscaping in new construction projects which have a landscaped area equal to or greater than 2,500 square feet, and are otherwise subject to:

   (a) a discretionary approval of a landscape plan, or
   (b) a ministerial permit or building permit for a landscape or water feature;

2. developer installed landscaping in rehabilitation projects which:

   (a) have a proposed landscaped area equal to or greater than 2,500 square feet,
   (b) propose to rehabilitate fifty percent (50%) or more of the existing landscaped area, and
   (c) are otherwise subject to:

      (i) a discretionary approval of a landscape plan, or
      (ii) a ministerial permit or building permit for a landscape or water feature;

B. These landscape design guidelines do not apply to:

1. registered local, State, or federal historical sites;
2. ecological restoration projects that do not require a permanent irrigation system;
3. mined-land reclamation projects that do not require a permanent irrigation system;
4. plant collections, as part of botanical gardens and arboretums open to the public;
5. landscape rehabilitation projects and/or new construction projects that require a temporary overhead spray system;
6. cemeteries; and
7. any other new construction project and landscape rehabilitation project not listed in Municipal Code section 17.70.070(A)(3).

C. On-site and off-site landscaping with automatic irrigation is required for all new construction and landscape rehabilitation projects for commercial and industrial property subject to the provisions of Section 17.70.070 of the Corona Municipal Code (Landscaping, Fences, Walls, and Hedges) and these landscape design guidelines. The landscape guidelines are to be administered by the Planning& Development Department under the guidance of the Planning & Development Director. Any decisions of the Planning & Development Director concerning implementation of these guidelines may be appealed to the Planning Commission. The Planning Commission's decision may be further appealed to the City Council.

D. Except where the context of such words or phrases clearly indicates a different meaning or construction, the definitions of those certain words, terms, and phrases provided in Section 17.70.015 and Section 17.70.070(A)(2) of the Corona Municipal Code, shall have the same meanings herein.

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

1. City specific plans, master plans, general plan, or similar land use and planning documents;
2. Corona Municipal Code Chapter 13.26 (Water Conservation);
3. Corona Municipal Code Chapter 13.28 (Recycled Water);
4. Corona Municipal Code Chapter 13.27 (Storm Water Management and Discharge);
5. Corona Municipal Code Chapter 15.36 (Grading Regulations);
6. Corona Municipal Code Title 17 (Zoning);
7. California Government Code sections 65591 et seq.;
8. National Pollutant Discharge Elimination System Permit for the City of Corona's Municipal Separate Storm Sewer System; and
9. any conditions of approval for a specific project.

3. CERTIFICATION FOR WATER CONSERVING LANDSCAPES

A. In accordance with recommendations and guidelines put forth in state Assembly Bills 2717 and 1881 (California Government Code sections 65591 et seq.) the City of Corona is committed to landscaping that is attractive and professionally designed, that incorporates low water using plant material that is adapted to the inland region of Southern California, and to efficient irrigation systems and technology engineered to maximize water conservation. Landscape architects are expected to make every effort to conserve water in design decisions and choices. As such, each conceptual landscape plan and each set of landscape development plans must contain a "Water Conservation Certification Statement" on the title sheet that reads as follows:

> I hereby certify, as the landscape architect licensed landscape professional of record, that the information provided herein meets the requirements and standards as outlined in the Corona Municipal Code Section 17.70.070 and the adopted design guidelines for the development of this project.

This statement must be signed and dated with the appropriate license stamp on the title sheet of the project landscape plans and shall be included in the City of Corona Planning & Development Department Landscape Certification Form, attached hereto as Exhibit C, and by this reference incorporated herein.

B. The commitment to water conserving landscapes includes the utilization of a free guide published by the Department of Water Resources entitled: A Guide to Estimating Water Needs of Landscape Plantings in California. This guide is subtitled, The Landscape Coefficient Method and WUCOLS III (Water Use Classifications of Landscape Species). This guideline is available from the: Department of Water Resources, Bulletins and Reports, P.O. Box 942836, Sacramento, CA, 92436-0001, (916)-653-1097 and

4. SUBMITTAL REQUIREMENTS

A. Project Review Submittal

For commercial and industrial developments subject to Section 17.70.070 of the City of Corona Municipal Code and these landscape design guidelines, applicants shall submit the following landscape information to the Planning & Development Department at the time of Development Plan Review (DPR) or Project Review Committee (PRC):

1. A conceptual landscape plan is required depicting all areas to be planted and irrigated in the proposed commercial and industrial developments. It is recommended that the scale be no greater than 1" = 20' (scale may vary due to size of project).
2. The illustrations shall include paving materials, finishes, plant palettes with WUCOLS III water needs category, notes, call-outs, details and sections, and a water conservation statement as required to communicate the project's design.
3. The design submittal shall include notes confirming the use and specific type of low precipitation automatic irrigation technology and the total square footage of the area to be landscaped and irrigated. All existing utilities must also be identified on the submittal.

B. Construction Plans and Specifications

1. At the time of plan check five sets of detailed construction landscape and irrigation plans are required to be submitted to the Building Division for routing to all other departments.
2. All on-site landscape and irrigation plans must be submitted using the City of Corona On-Site Landscape and Irrigation Standard Plans as explained in Sections 7 and 9.
3. It is recommended that the scale used on plans be no greater than 1" = 20' (scale may vary due to size of project).

C. All landscape plans for Community Facilities Districts (CFD), Landscape Maintenance Districts (LMD), and/or public rights-of-way shall be submitted to the Public Works Department.

D. Wall and fence plans shall be submitted to the Building Division separately. The wall and fence plans should be submitted for building plan check simultaneously with the landscape plans.

E. Street trees are specified by City Staff at DPR and shall be specified on the on-site landscaping plans in accordance with the Standard Plan format. All street trees are to be a minimum of 24 inch boxes or larger.

5. LANDSCAPE DESIGN

All landscaping shall include a combination of water conserving trees, shrubs, sub-shrubs, vines, groundcover, and accent lighting (if desired or conditioned). In addition it is highly encouraged to utilize low impact development (LIDs) methods including porous paving, storm water cisterns, extensive bioswales, and roof gardens. Hardscape and any site amenities including boulders, recycling fountains, walls, art/sculptures, fences and benches shall be included on the plans.

6. PLANTING PLAN REQUIREMENTS

A. Plants shall be selected based on their required level of maintenance, durability, mature widths and heights, and water requirements and must be listed in WUCOLS III with a water needs category of Very Low, Low, or Moderate (except bioswales which may contain plant material having a "High" water need). Except when utilized in conjunction with the aforementioned bio-swales, plants listed as High in WUCOLS are prohibited.

B. In order to specify plant species other than those listed in WUCOLS III as a Medium or less water user, the project applicant must provide the Planning & Development Director with the following:

1. A plant species description, picture, and water requirements from Western Sunset Garden Book or other comparable source.; and
2. A written explanation of why the plant should be used in light of the need to conserve water.

C. All landscaped planters must contain shredded wood mulch to retain moisture, suppress weeds, and moderate soil temperature. The mulch depth, type, and maintenance frequency must be noted on the plans.

1. All planters (non-slope) must be mulched with a minimum of three inches (measured after settling) of organic wood mulch. Areas of planted groundcover shall be mulched with a minimum of one and a half inches of organic wood mulch. Slope planting with point to point drip or subterranean irrigation requires a minimum of four inches of organic wood mulch.
2. Color enhanced mulches are prohibited.

3. Mulch may be omitted for native re-vegetation projects upon the recommendation of the project biologist and/or the landscape architect or landscape professional with valid reasons.
4. A minimum of two inch (2") layer of decomposed granite or crushed rock or gravel mulch may be substituted for organic wood mulch when appropriate to the overall landscape design and as approved by the Planning & Development Director after reviewing a physical sample.

D. Turf is not permitted in commercial or industrial projects unless it is in an area utilized for functional or recreational use that has been approved as part of the project review.

E. Plants shall be grouped and irrigated on separate valve zones (hydrozones) based on their water use requirements, slope aspect, and sun/shade micro-climates. Hydrozones are to be labeled and numbered on the plan.

F. Self-clinging or climbing vines may be required on garden (non-retaining) and trash enclosure walls.

G. Planting plans shall include:

1. a planting legend including plant symbol, genus, species, common name, container size, mature width and height, on-center spacing, quantity of each type of plant by container size, water needs from WUCOLS III, Region 4 (VL, L, or M), Hydrozone Number as labeled on the plan, planting detail call out, and remarks.;
2. labels for all existing trees and vegetation that will either remain or be removed.;
3. the location of street lights.;
4. location of all proposed area lights in parking lot finger planters.;
5. property lines, limit-of-work lines, streets, and street names.;
6. labels for all buildings, driveways, sidewalks, bio-swales, storm water management best management practices, and other hardscape features.;
7. topographic elevation lines and spot elevations to determine slope. These may be screened back, but must remain legible.;

H. The planting plans shall be designed in a manner that provides that:

1. no shrubs or trees shall be planted closer than diameter of plant width to any sidewalks, V-ditches, walls or pedestals unless otherwise dictated by field conditions.;
2. all soil next to curbs and sidewalks shall be graded at one inch to two inches below the finished surface.;
3. soil amendments shall be added to all planting areas with gradients 2:1 and less in accordance with post grading soil analysis recommendations.; and

4. a plan note that requires a post grading agronomic soil analysis and the requirement that contractors amend the soil in accordance with the recommendations of the report.

I. Trees

1. Shade trees must be provided for commercial and industrial parking lot and open space areas. Trees are especially important to break up the massing and reduce the scale of tilt-up and other tall industrial and commercial buildings, as well as to provide shade, and reduce glare and reflection. The trees shall be selected specifically for these purposes. The palette shall include a balance of evergreen and deciduous trees.
2. A minimum of twenty four (24) inch box specimen trees shall be provided on the site based on the following formula: one 24-inch box specimen tree for every 10,000 sq. ft. of gross commercial building area on the property, and one 24-inch box specimen tree for every 20,000 sq. ft. of gross industrial building area on the property.
3. A mix of tree sizes for commercial and industrial sites shall include at least: 25% 15-gallon trees, 70% 24-inch box trees, and 5% 36-inch box trees.
4. A minimum of one (24)-inch box tree shall be provided for every twenty linear feet of all planter areas of four feet to ten feet wide, or one tree for every three parking stalls, whichever tree count is greater.
5. A minimum of thirty-six inch box accent trees (Single or Multi-trunk specimens) or 12 foot (brown trunk) palms are required on all corner planters including all vehicular entries and major corner intersections of project area. They shall also be required at building entries and other public spaces, such as plazas, courtyards, or patio areas.
6. A minimum of one 24-inch box tree shall be planted for every five hundred square feet of landscaping area in all other areas.
7. Root panels and linear barriers are required for all trees planted within a parkway or within 8-feet of any walking or driveable surface in accordance with the Landscape and Irrigation Standard Plans and Specifications.
8. Trees shall not be placed where they interfere with site drainage or overhead and underground utilities. All utilities shall be identified on the base plan.

J. Shrubs

1. Designated landscape areas shall be covered in non-irrigated synthetic turf, groundcover, or mass planted shrubs grouped together based on their water, soil, sun and shade requirements and in relationship to the building(s).
2. Plants with different water needs shall be irrigated separately.
3. Plants with the following WUCOLS III classifications shall be grouped accordingly: moderate and low, low and very low. Plants specified in a bioswale may have a high water use rating. Deviation from these groupings shall not be permitted.

4. All shrubs, specified to be planted in the back or mid-ground of a planter shall be a minimum of 5 gallons in size unless otherwise approved as a part of the design review approval. Sub-shrubs (maximum 18" diameter) shall be specified as fore-ground planting and must be a minimum of 1 gallon size unless otherwise approved as a part of the design review approval. All shrubs and sub-shrubs must be mass planted and should utilize a variety of shrub species selected from the WUCOLS III plant list.
5. Landscapes consisting of gravel, crushed rock, and/or decomposed granite and boulders with appropriate low water shrub and tree plantings are encouraged.
6. Three (3)-foot high berms or a solid hedge is required along the street setback areas in order to screen the vehicle headlights projecting from parking areas. The height of the berm and or hedge shall be measured from the parking lot grade.
7. All shrubs and sub-shrubs shall be triangular or linear spaced based on the mature diameter of the specified shrubs. Shrubs shall be specified so as to fill the planter when mature and not require shearing or hedging.
8. A minimum of fifteen gallon shrubs will be required to screen electrical transformers, a/c units, backflow devices, trash enclosures, large screen walls, interior truck and yard areas, and all other maintenance (ground) equipment that may be visible to the public. Shrubs are to be kept a minimum of three feet from the doors of the electrical unit or as specified by the utility agency.
9. Trees and shrubs shall strategically be placed to screen/conceal parking areas and truck loading facilities from public view and to interrupt large wall expanses of industrial and commercial buildings.
10. A non-planted 24 to 36 inch wide strip of stabilized decomposed granite or crushed rock is permitted around the foundation of commercial and industrial buildings to facilitate window washing and maintenance.

K. Turf

1. The use of cool season turf in commercial and industrial landscapes is not permitted and the use of warm season turf is only permitted when specified for a functional use.
2. Artificial or synthetic turf is allowed as defined in Corona Municipal Code section 17.70.015 and must be installed per manufacturer's recommendations including a six inch by six inch concrete mow curb separating the synthetic turf from the adjacent shrub planting.
3. Approved turf areas shall not exceed a slope of four feet horizontal to one foot vertical (4:1).

L. Slopes

All natural/manufactured slopes over four feet in height shall be landscaped as follows:

1. All slopes shall contain plantings of trees, shrubs, sub-shrubs and groundcover grouped according to matched hydro-zones.
2. Trees shall be planted at a rate of one (minimum 15 gallon) tree per 400 square feet of slope area. Trees shall be planted from the WUCOLS III plant list for Region 4 with water needs Medium or lower. No less than 50 percent of the trees shall be evergreen trees.
3. Shrubs shall be mass planted, a minimum of five gallon size, on all slopes with trianglar spacing at 75% of the mature diameter of the shrub (e.g., a shrub that grows to 20 feet should be spaced at 15 feet on-center or 75% of 20 feet). All plants shall be selected from the WUCOLS III plant list for Region 4 with water needs medium or lower.
4. All groundcovers shall be a minimum of one gallon container size. No hydroseeding is permitted on manufactured or natural slopes.
5. Slopes shall be landscaped with appropriate planting for immediate erosion control. Jute netting is also allowed to be used on commercial/industrial slopes with the approval of the Planning & Development Director.
6. The owner or developer of any excavated or filled property, or any other person or agent in possession or control of such property, shall maintain all slopes, retaining walls, cribbing, drainage structures and other protective devices.

M. Additional On-site Landscaping Requirements

1. Major project entries and major street corners should be enhanced in their design to include, but not be limited to larger plant materials and decorative monumentation and fixtures.
2. All public exterior areas such as pedestrian plazas, courtyards, and patio areas shall be provided with trees or other landscape features which will provide adequate shade. Seating areas are also encouraged to be placed within these areas.
3. The landscape architect or landscape professional is encouraged to work with the project Civil Engineer to integrate Water Quality and Storm Water Best Management Practices into the landscape design. This includes but is not limited to extensive bio-swales with vegetation and/or large rocks, permeable paving and on-site storm water retention with overflow to the public storm water/flood control system.
4. Parking lot landscape planters, at a minimum width of five (5) feet including curbs (4 feet of plantable area), shall be provided at each end of the parking row. Landscape fingers (5-foot minimum width including curbs and 6 inch concrete step outs) shall be provided in parking lots at a ratio of one for every ten- (10) parking stalls or landscape diamonds (5-foot minimum width) one for every six-6 parking spaces. Fingers, diamonds, and planters shall contain shade trees. The concrete step out strip should not run the entire length of the curb but should be positioned so as to accommodate people exiting vehicles while still allowing adequate space for tree planting.

5. Show the location of proposed parking lot area lights on planting plans including raised concrete light bases which may limit the irrigation and planting in a landscape planter.
6. Parking areas adjacent to interior property lines shall be provided with planters at a minimum width of five feet at the property line. This requirement may be waived on industrial projects with the discretion of the Planning & Development Director.
7. Parking lot areas within industrial sites that are not visible from a public street or adjacent property may have the landscaping requirements waived in favor of Water Quality and Storm Water Best Management Practices subject to the discretion of the Planning & Development Director.
8. No landscape area shall have a dimension of less than four (4) feet clear in width except for vine pockets.
9. Concrete curbing is required between landscaping and the parking and driveway areas.
10. The use of any palms on-site shall be no less than 15 feet Brown Trunk Height (BTH).
11. All landscape areas shall be finished with no less than eight (8) inches of amended topsoil. As per the soil analysis recommendation and provided on plans as part of notes/specifications.
12. Boulders and rocks used for enhancement are encouraged.
13. Provide stainless steel backflow preventer enclosures on commercial and industrial properties. Backflow preventers shall not be located within the front setback areas.
14. A three- (3) foot perimeter is required around all fire hydrants. Shrubs or trees shall not be planted in this area. Low growth ground cover may be planted around the fire hydrants.
15. All landscaping planted within fuel modification zones shall be approved by the Fire Department.
16. Interim landscape areas at a minimum shall be covered with a hydro-seed mix to prevent erosion and suppress dust. The area shall be properly maintained by the owner of the property. Automatic irrigation may be is required for commercial properties.

7. DRAINAGE AND IRRIGATION PLAN REQUIREMENTS

A. Pursuant to current state law, the City requires all water conservation practices to be implemented through landscape design. Water efficient landscapes and proper irrigation designs, along with the selection and use of water conserving plants, turf for functional use areas only, and efficient irrigation is required.

B. All landscape areas shall be zoned according to the plants water requirements and orientation on the site (north, south, east or west). Irrigation systems shall be designed,

constructed, managed, and maintained to achieve the highest overall efficiency possible. Efficiency is measured by the amount of water beneficially used to sustain plant life divided by the amount of water applied. Efficiency is affected by the attributes of the controller, method of irrigation, irrigation equipment, proper hydrozoning, site topography, condition and size of plants, and weather conditions.

C. Irrigation plans shall be included in the landscape design plans for all industrial and commercial projects, and shall reflect the following minimum design standards:

1. High efficiency irrigation methods including drip, point to point, subterranean, and micro spray technology shall be utilized.
2. Match precipitation rotor heads only shall only be used for approved turf areas and shall be designed and installed with minimal overspray onto paved surfaces, structures, and non-vegetated areas. The design shall be head-to-head coverage.
3. For drip line installations, in-line pressure regulators shall be used per factory recommendations for the specific irrigation products being used. If drip line is being installed, it must be filtered at the valve along with any other necessary equipment.
4. Irrigation systems shall be zoned according to plant water use, slope aspect, and sun/shade microclimate. If low water use plants (that can also survive/flourish with medium water application) are used within a medium water use hydrozone, they must be counted as medium water use in the irrigation water budget calculations.
5. Low head drainage is not permitted on approved turf spray systems.
6. All irrigation plans shall be designed for recycled water use regardless of whether or not recycled water is currently available.
7. All landscapes shall have a dedicated landscape water meter sized and approved by the Corona Department of Water and Power.
8. Projects must include a “smart” irrigation controller with the following attributes:

    (a) real-time, weather based program adjustment capability.;
    (b) on-site weather station or external ETo input.,
    (c) rain sensors shall be placed within an unobstructed natural rainfall area and located above the irrigation spray pattern.;
    (d) master valve (or simultaneous operations).;
    (e) flow Sensor.;
    (f) multiple start times.; and
    (g) a minimum of two programs.

9. Systems shall be scheduled so that the irrigation precipitation rate does not exceed the infiltration rate of the soil.
10. A baseline irrigation schedule shall be provided on the plans for the six-month initial plant establishment period. The contractor shall adjust the schedule to meet site specific requirements and use the baseline schedule to set the weather based

controller. The schedule currently in effect shall be posted in the controller, and shall include the current water alert stage, watering windows, and watering guidelines in effect pursuant to Chapter 13.26 of the City of Corona Municipal Code.

11. A second baseline irrigation schedule shall be provided on the plan which incorporates the specific water needs of the plants throughout the post-establishment calendar year. The contractor shall adjust the schedule to meet site specific requirements and use the baseline schedule to set the weather based controller. The schedule currently in effect shall be posted in the controller.
12. The irrigation schedules shall include the recommended irrigation days per week, number of cycles per day, minutes of run times per cycle, and estimated amount of applied irrigation water, expressed in gallons per month and gallons per year.
13. The controller shall be operational and set to real-time weather prior to the completion of the 90-day maintenance period of the installing contractor.
14. Pressure loss calculations for valve with longest run and highest water demand.
15. The Irrigation Plan shall be prepared at the same scale as the Planting Plan and, at a minimum, shall identify the following:

    (h) the location and size of service lateral(s) and water meter(s).;
    (i) the point of connection (POC) location, static pressure at POC, and stated source (Name and phone number) of static pressure.;
    (j) the total flow rate (gallons per minute) and designed operating pressure (psi) for each overhead spray and/or bubbler circuit, and total flow rate (gallons per hour) and design operating pressure (psi) for each drip and low volume irrigation circuit.;
    (k) the location, size, and type of all irrigation components including, but not limited to, smart controller, central controller (backflow prevention device, ball valves, anti-drain check valves, pressure supply (main) line, lateral lines, pipe sizing, valves, spray heads, rotors, drip, low volume irrigation equipment, gallons per minute, pressure regulators, and pumps.;
    (l) hydraulic Calculations, including, but not limited to, Type of Water (Potable or Recycled), Point of Connection #, Water Information Source, Water Meter Size, Flow Available, Static Pressure at POC, Elevation Change, Service Line size, Length of Service Line, Pressure Available, Critical Station Flow, Flow at POC, Residual Flow Available, Pressure Required at Critical Station, Pressure Loss for; fittings, main line, POC to Valve elevation, backflow, Water Meter, Critical Station at POC, Pressure Available, and Residential Pressure Available.;
    (m) precipitation rate (inches per hour) for each spray type circuit.;
    (n) an irrigation legend with the symbol, manufacturer name, model number (or non-proprietary description for publicly funded projects), separate symbols for irrigation equipment with different spray patterns, spray radius, and precipitation rate.;

(o) the location, size, and type (high, medium, low; square footage; shrubs, turf, slope, etc.) of each hydrozone.;
(p) topographic elevation lines to determine slope.;
(q) irrigation system details for assembly and installation.; and
(r) Calculation for the project's landscape Water Budget. (See Section 10 of these Guidelines).

D. All landscape and hardscape areas shall have positive drainage away from structures and comply with the applicable requirements of Corona Municipal Code Chapter 13.27 (Storm Water Management and Discharge).

8. PARKWAY AND PUBLIC LANDSCAPING AND IMPROVEMENTS

The median, areas of public right-of-way, slopes, reverse frontages (private landscape outside a perimeter wall), and any adjoining Community Facilities District (CFD) or Landscape Maintenance District (LMD) lots shall be improved with landscaping and irrigation in accordance with the requirements of the Public Works and Parks and Community Services Departments.

9. STANDARD LANDSCAPE PLANS AND SPECIFICATIONS

A. The City of Corona requires that all landscape and irrigation plans be submitted for plan check using the City's Standard Landscape Plans and Specifications. The Standard Landscape Plans and Specifications can be downloaded from DiscoverCorona.com/Government/Departments/ CommunityDevelopment/LandscapeForms/StandardPlans/Industrial/Commercial. These standard plans are available in 24" X 36" or 30" X 42" dwg format. They can also be purchased from the Planning & Development Department at Corona City Hall, 400 South Vicentia, Room 120, Corona, CA.

B. Included in the Standard Plans are the Title Sheet; Project Specific Irrigation design blank sheet; Standard Irrigation Notes, Details, and Specifications; project specific blank sheet(s) for Tree, Shrub, Vine, and Groundcover plan; and Standard Planting Notes, Details, and Specifications. Other sheets may be added as necessary to complete the project set. A complete submittal package shall include the following plans: Title Sheet, Hardscape/Construction Plan, Grading and Drainage, Irrigation, Planting, Sections and profiles of landscape as necessary.

C. All plants should be selected and placed in accordance with the recommendations from the "Water Use Classifications of Landscape Species (WUCOLS III) available at www.ca.water.gov. WUCOLS III estimates irrigation water needs of landscape plantings in California and is the best resource available to select plants appropriate to the climate in Corona. All plants specified on planting plans must be listed in WUCOLS III, Regional Evaluation 4, as Moderate (M) water use or less (Low (L) or Very Low (VL)) and must be non-invasive. Plants specified in bioswales may have a "High" water need. Other plants not listed in WUCOLS or are listed as High (H) water needs that do well in

the City of Corona may also be proposed with the approval of the Planning & Development Director.

D. The landscape contractor, developer, and/or property owner, respectively, shall be responsible to fully comply with Section 17.70.070 of the Corona Municipal Code and these landscape design guidelines.

10. WATER BUDGET REQUIREMENTS

A. Water budgets are used to assist designers and governing authorities. They are a tool to verify compliance with the state requirements for water conservation and they assist with water demand management. A water budget determines how much water a particular landscape needs over a specified period of time. The Maximum Annual Water Allowance (MAWA) is calculated and compared to the Estimated Annual Water Use (EAWU) to verify that the project landscaping is not exceeding the allowed water use.

B. The City of Corona uses the formula and tables included in Figure 1, attached hereto and by this reference incorporated herein, to determine water budgets. Figure 1, the information below, and the sample worksheet following are designed to assist you in calculating a Water Budget for inclusion in your Irrigation Plan.

1. Maximum Annual Water Allowance and Evapotranspiration Rate (ETo). ETo, or Annual Reference Evapotranspiration Rate, is the quantity of water evaporated from adjacent soil surfaces and transpired by plants in terms of inches for a particular climate zone. Your total square footage of landscape and ETo are essential components of the MAWA formula.
2. The reference ETo for Corona is taken from the California Irrigation Management Information System (CIMIS) Station #44 at UCR and is 56.37 and has been entered into the Landscape Water Budget Formula.
3. Estimated Annual Water Use (EAWU). The formula for EAWU is calculated for each hydrozone separately, and then the total of all hydrozones is divided by the Irrigation System Operation Efficiency (IS). In addition to the square footage of each hydrozone, the EAWU calculation relies on several other key factors. One is the average Plant Factor (PF) that is established by the WUCOLS III for plants that are considered high, medium, low, and very low based on their water requirements. For purposes of the Water Budget Formula, turf is considered to have a high (H) water requirement. Refer to Chart 2 in Exhibit B (Factors Used in Water Budget Formula), attached hereto and by this reference incorporated herein, to establish the PF for each hydrozone and enter the number in Space D of the Water Budget Formula on Figure 1. Plant categories used in the calculation must be from WUCOLS III, Regional Zone 4 for Corona.
4. Another key factor in calculating EAWU is the Irrigation Efficiency (IE). The IE is derived from measurements and estimates of the irrigation application method performance within controlled environmental conditions. Chart 3 provides the IE factor to be used in Space F of the Water Budget Formula on Figure 2.

5. The final factor in calculating EAWU is the Irrigation System Operation Efficiency. This number is derived from the efficiency of the controller. Since "smart" controllers are required by ordinance, the IS factor shall be 0.85. This figure has been inserted in the Water Budget Formula for you.

6. To finalize the Water Budget Calculations add together the EAWU for each hydrozone within the proposed project. This will be the Sub-Total WAWU. Next, divide this number by .85 (IS for Smart Controllers). The resulting number will be the Total EAWU. Subtract the Total EAWU number from the MAWA. The resulting number must be positive. If the number is negative, then adjustments will need to be made to the planting plan (e.g. use more plant types that consume less water) and /or the Irrigation Plan (e.g. use more efficient application methods).

7. A water budget formula shall be completed and included on all Irrigation plans submitted to the City of Corona for plan check. A blank Water Budget Form is provided as Figure 2 and also may be downloaded from the City's web site at DiscoverCorona.com/CityDepartments/CommunityDevelopment/LandscapeForms/Water Budget Form.

11. MAINTENANCE

A. Landscape areas shall be maintained to ensure optimal plant health and water efficiency. A regular maintenance schedule shall include, but not limited to checking, adjusting and repairing irrigation equipment, resetting automatic controllers, aerating and detaching turf areas, replenishing mulch, fertilizing, pruning and weeding.

B. Repair of irrigation equipment shall be done with the originally specified materials or their equivalents.

C. All Landscape Plans shall contain an Affidavit of Maintenance Responsibility on the title sheet. The Maintenance Affidavit must commit the developer and/or landscape contractor to guarantee and maintain all landscape areas for a minimum of 90 days after completed installation. The Affidavit must also commit the party responsible for perpetual maintenance. On-site trees shall be guaranteed for a period no less than six (6) months. Landscape areas shall be maintained in original condition as approved on the landscape plans even after the Certificate of Occupancy is issued.

12. CERTIFICATION

A. Landscape certification forms shall be completed by the landscape architect or landscape professional of record. The landscape architect or landscape professional shall visit the site to ensure landscape work has been completed in substantial compliance with the approved plans, Section 17.70.070 of the City of Corona Municipal Code, and these landscape design guidelines. The Certificate of Completion, attached hereto as Exhibit C, and be this reference incorporated herein, shall specifically indicate that plants were installed as specified by the landscape design plan, that the irrigation system was installed as designed, that a post grading agronomic soils analysis has been performed and that the

soil has been amended per the recommendations of the report, and that an irrigation audit has been performed. The certificate shall also include a list of any identified installation deficiencies.

B. Final approval is required by the City's landscape inspector. Installation of all landscape materials and irrigation system(s) must be complete before the City's landscape inspector inspects the commercial/industrial site.

13. FINAL LANDSCAPE INSPECTION

A. Upon field inspection, the following must be in place and available for inspection:

1. a Landscape Certification Form filled out and signed by the landscape architect or landscape professional of record;
2. a post grading soil analysis and soil amendment in place as recommended by the report.;
3. a complete irrigation system installed per plan, details, specifications, and notes.;
4. a complete planting installed per plan, details, specifications, and notes.; and
5. approved Building Division plans to confirm that all planting areas on-site have been improved.

EXHIBIT A

FACTORS USED IN WATER BUDGET FORMULA

CHART 1: THE ETO FOR CORONA IS 56.37 AND HAS BEEN ENTERED IN THE LANDSCAPE WATER USE CALCULATION SHEET

CIMIS Station	Name	Reference ETo
44	UC Riverside (Riverside)	56.37

CHART 2: DETERMINING YOUR PLANT FACTOR (PF)
INSERT YOUR PLANT FACTOR IN SPACE D OF THE LANDSCAPE WATER USE CALCULATION SHEET

Plant Category	Average PF
High	0.8
Medium	0.5
Low	0.2
Very Low	0.1

CHART 3: LOCATING YOUR IRRIGATION EFFICIENCY (IE) FACTOR
INSERT YOUR NUMBER IN SPACE F OF THE LANDSCAPE WATER USE CALCULATION SHEET

Application Method	IE Factor
Drip	0.90
Bubblers	0.85*
MP Rotators	0.75
Rotors	0.75
Microsprays	0.70
Spray Heads	0.60
*With proper run times	

EXHIBIT B

LANDSCAPE WATER USE CALCULATION SHEET

1 MAXIMUM ANNUAL WATER ALLOWANCE (MAWA)

INPUT the total square footage of landscape = A x .62

Corona Historic ETo 56.37 x .8

MAWA = C / 748 gal / yr

MAWA = ccf

2 ESTIMATED ANNUAL WATER USE (EAWU)

Hydrozone #1

INPUT Plant Factor= D (low)

INPUT square footage of hydrozone = E

INPUT hydrozone irrigation efficiency = F

EAWU = G gal / yr

Total your Hydrozones

G + G + G + G = H

Finding Total (EAWU)

SubTotal EAWU = H cu ft / yr

Input Irrigation System Operation Factor 0.85

Total EAWU= I

Finding Your Total Allowance

MAWA - EAWU = } cu ft / yr

(this number must be positive)

For Lanscape Architect's Use in Design

EXHIBIT C

CITY OF CORONA
Community Development
Department
(951) 736-2262 Phone
(951) 279-3550 Fax

CITY OF CORONA
COMMUNITY DEVELOPMENT DEPARTMENT

LANDSCAPE
CERTIFICATE OF COMPLETIONS AND INSPECTION FORM

(NOTE: Must be kept on site by Project Superintendent)

DATE: _____ **TRACT:** _____

ADDRESS: _____ **LOTS:** _____

Landscaping and irrigation are to be installed in substantial compliance with approved plans. Some field modifications to hardscape, overheads, trap fencing, slopes and/or related landscape as directed by the project proponent may be acceptable upon approval by the City of Corona Community Development Department.

Items 1-9 need to be completed by the Landscape Architect of record or Licensed Contractor prior to final inspection by City Inspector. The City of Corona Landscape Inspector will conduct the final landscape inspection of items 6 through 9. Final landscape inspections shall be coordinated with the Landscape Inspection Coordinator at (951) 736-2262, 48 hours prior to requested inspection date.

	Date/Initials Landscape Architect	Date/Initials City Inspector	Field Observation
1.	____/____	N.A.	Irrigation system prior to backfill
2.	____/____	N.A.	Soil Preparation
3.	____/____	N.A.	Observation of plant material prior to installation
4.	____/____	N.A.	Finish grade prior to seeding, sod or groundcover installation
5.	____/____	N.A.	Irrigation coverage test
6.	____/____	____/____	Water Conservation Assessment Program" Items are installed
7.	____/____	____/____	Fences and walls are constructed and installed per the approved fence and wall plans
8.	____/____	____/____	Approved set of landscape plans issued by the city and job card on site
9.	____/____	____/____	Compliance with approved landscape plan*

The person identified below hereby certifies that the landscape and irrigation design, plans, and specifications for the identified landscape project comply with and have been installed in substantial conformance with the approved landscape and irrigation design, plans, and specifications, and the requirements of the City of Corona Water Efficient Landscape Regulations (Chapter 17.70 of the City of Corona Municipal Code) and the Landscape Design Guidelines of the City of Corona for the efficient use of water and an irrigation audit has been performed. I am a professional appropriately licensed in the State of California to provide professional landscape design services. The information I have provided in this Certificate of Completion is true and correct and is hereby submitted in compliance with the Landscape Design Guidelines for Residential Development.

_____
City of Corona Inspector (Print)

_____
City of Corona Inspector (Signature)

Date:_____

_____
Landscape Architect or Licensed Contractor (Print)
Lic. No._____

_____
Landscape Architect or Licensed Contractor (Signature)

Date:_____

FIGURE 1
WATER BUDGET FORMULA AND CHARTS

INSTRUCTIONS FOR FILLING OUT WATER BUDGET FORMULA

1. To find MAWA

STEP 1: Calculate your total square footage of the landscape area and insert that number into Space A. (Round the number to the nearest hundred).

STEP 2: The Reference Evapotranspiration for Corona is 56.37. Insert 56.37 in Space B.

STEP 3: Multiple A x .62 x B x .8, put the answer in Space C and divide by 748. This gives you your MAWA in gallons.

2. To find EAWU for each Hydrozone

STEP 1: Find your plant factor (CHART 2) for the hydrozone remembering to use the highest plant factor per hydrozone. If you have medium and a low in the same hydrozone, the factor is medium. Place that number in Space D.

STEP 2: Calculate your square footage for the hydrozone (Round to the nearest hundred) and put number in Space E. Next, insert the hydrozone irrigation efficiency number from (CHART 3) into Space F.

STEP 3: Multiple ETo (from Chart 1) x D x E x 0.62, then divide that number by F x 748. This will give you the EAWU number for Space G.

STEP 4: Repeat steps 1-3 for each hydrozone.

STEP 5: Add all G's and put number into Space H.

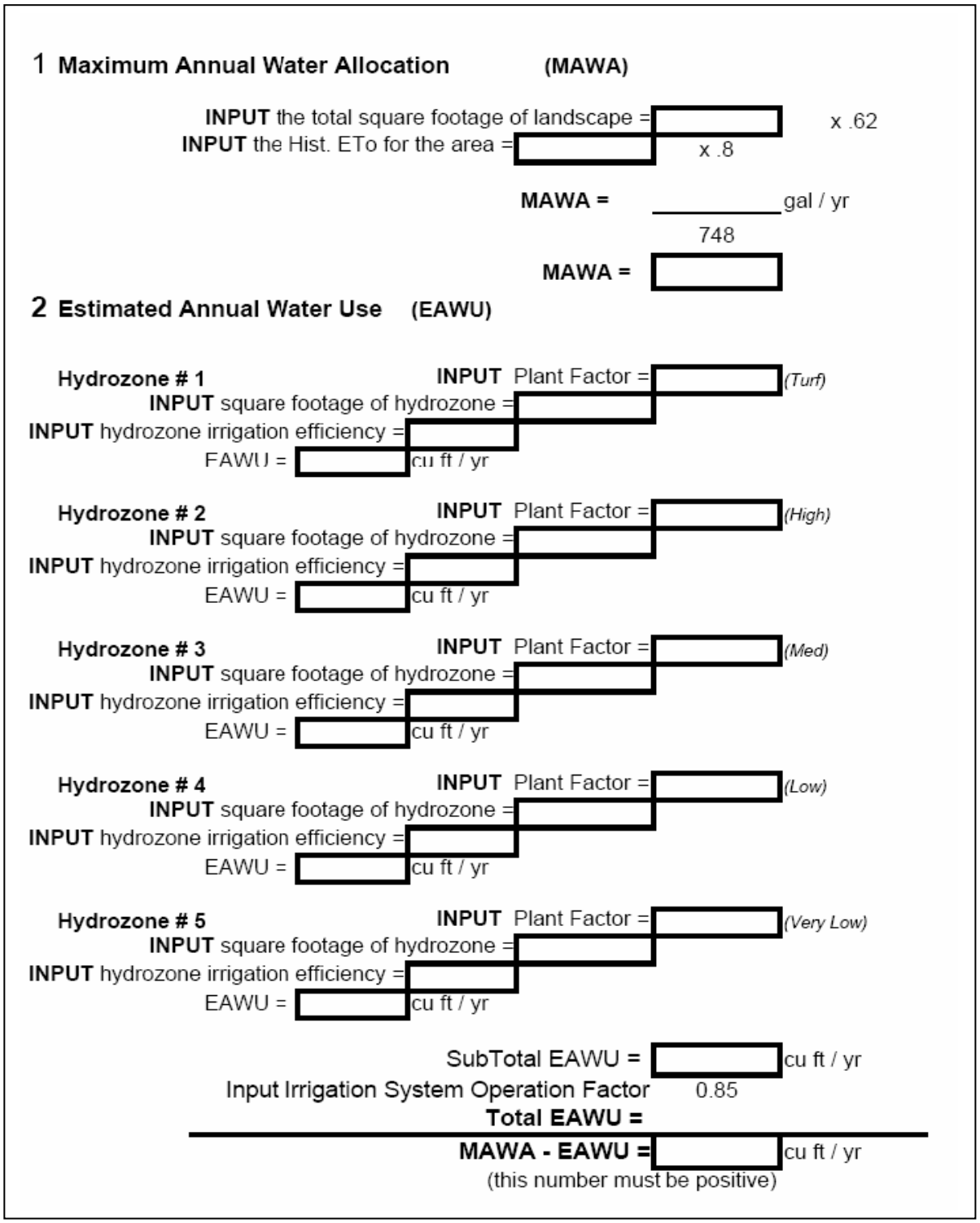
STEP 6: Divide H by .85 and that will give you tour Total EAWU (Space I). This is the irrigation system operating efficiency.

STEP 7: To find J, Subtract I (EAWU) from MAWA and that will give you the total water use for the project. The resulting number must be positive.

BE SURE TO RUN EAWU CALCULATION FOR EACH HYDROZONE WITHIN YOUR PROJECT.

FIGURE 2

The following blank work sheet may be modified as-needed for each project and shall be



included on all Irrigation Plan submittals.