WATER EFFICIENT LANDSCAPE DESIGN MANUAL

COUNTY OF SAN DIEGO

DEPARTMENT OF PLANNING & DEVELOPMENT SERVICES

PDS (06/20)

APPROVAL

I hereby certify that this **Water Efficient Landscape Design Manual** has been considered and approved by the Director of Planning & Development Services on the 24th day of June 2020, to be used in conjunction with the County's Water Conservation in Landscaping Ordinance, County Code, Title 8, Division 6, Chapter 7.

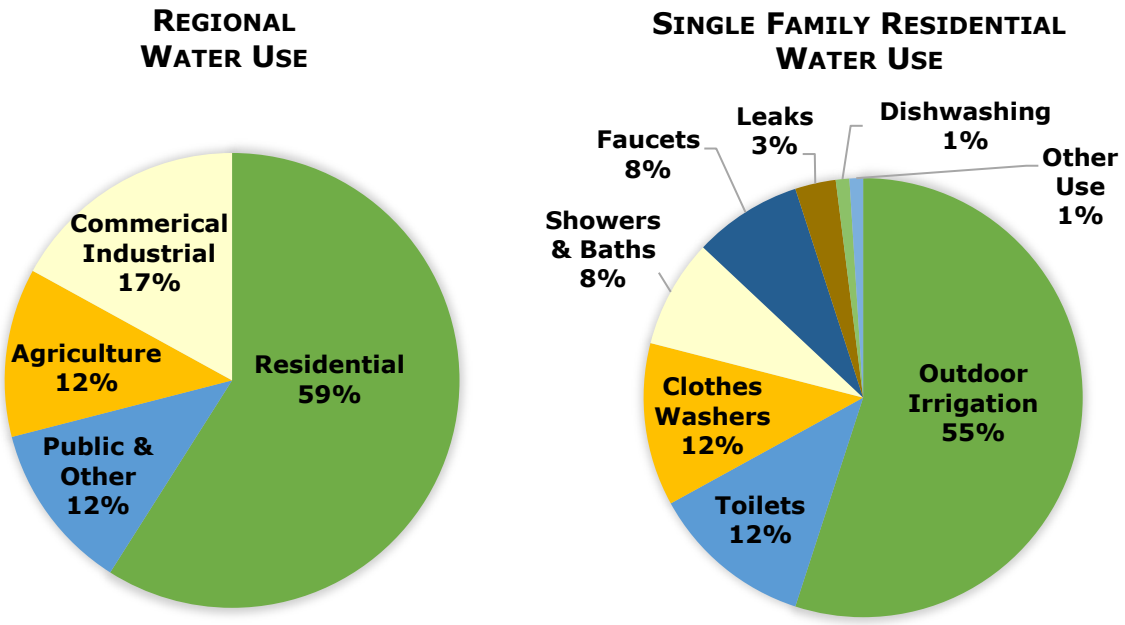
Mark Wardlaw

Director of Planning & Development Services

Purpose

The State Legislature determined in the Water Conservation in Landscaping Act (the "Act"), Government Code sections 65591 et seq., that the State's water resources are in limited supply. The legislature also recognized that while landscaping is essential to the quality of life in California, landscape design, installation, maintenance and management must be water efficient. The primary purpose of this document is to establish a structure for planning, designing, installing, maintaining and managing water efficient landscapes in new construction and projects with modified landscapes. Promoting the use of tertiary treated recycled water and graywater for irrigation, set a Maximum Applied Water Allowance as an upper limit for water use, it also encourages landscapes that create defensible space in the event of a wildfire.

This document incorporates the requirements of the County's Water Conservation in Landscaping regulations (County Code of Regulatory Ordinances Sec. 86.701 et seq., "Landscape Ordinance") with landscape design guidelines and installation specifications. It provides guidance on preparing the various components of landscape plans which may be required as part of a discretionary or ministerial permit process. Compliance with this manual will result in a more efficient process and avoid unnecessary time delays. For those people who are not required to submit a formal landscape plan, this manual serves as a resource to educate and assist in the design and installation of a water efficient landscape.



"Estimates of Water Use in the San Diego Region." *Our Water, Our Future – 2009 Update*, California Landscape Contractors Association, San Diego Chapter, May 2009.

TABLE OF CONTENTS

APPENDICES

A. Reference Evapotranspiration (ETo) Data
B. Water Use Application Using Prescriptive Compliance Option, Form PDS-410
C. Water Efficient Landscape Worksheet, Form PDS-405
D. Landscape Certificate of Completion, Form PDS-407
E. Landscape Documentation Package Checklist, Form PDS-404
F. Landscape Certificate of Completion Checklist, Form PDS-406
G. Landscape Certificate of Completion Using Prescriptive Compliance Option, Form PDS-407A
H. Low Water Use, Ignition Resistive Plants
I. Undesirable Plants
J. Invasive Species
K. Water Authority Member Agencies
L. Water Conservation Program for Established Landscapes
M. Water Conservation in Landscaping Ordinance
N. Additional Resources

Lake Oroville June 2005

Lake Oroville February 2008

Lake Oroville October 2015

SECTION 1
APPLICABILITY AND PROCESS

A. General Information

1. Any project that creates an irrigated landscaped area of 500 square feet or greater or modifies 2,500 square feet or greater of existing landscape shall obtain an outdoor water use authorization as part of the ministerial or discretionary permitting process. Refer to the ordinance applicability requirements in Sec. 86.703 of the Landscape Ordinance (Appendix M) for further detail on projects that must comply or are exempt from the ordinance requirements.

B. Ministerial Project Review

1. **Landscapes under 500 square feet**

   a. Landscapes with less than 500 square feet of aggregate area will not require any landscape review in order to obtain a building permit.

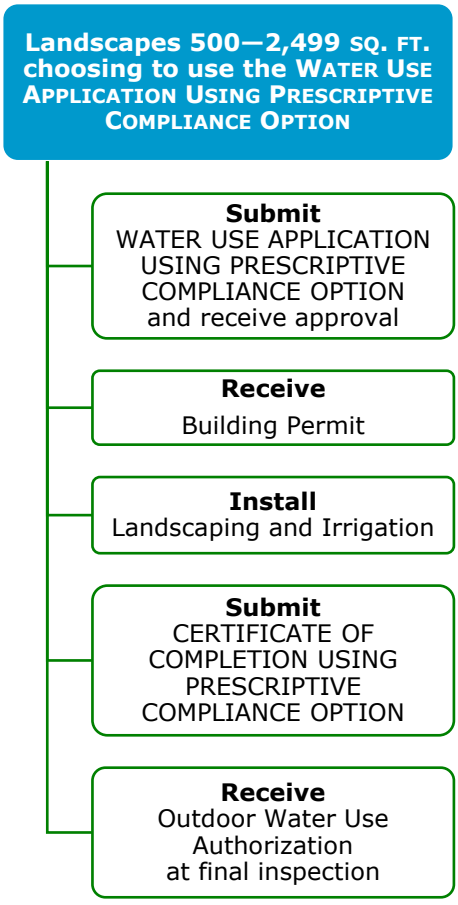
2. **Landscapes between 500 and 2,499 square feet**

   Note: Ministerial projects between 500-2,499 square feet may conform with Landscape Ordinance requirements through the streamlined Prescriptive Compliance Option (Landscape Ordinance Sec. 86.722), or if the applicant chooses to meet the ordinance water budget requirements through an expanded plant palette, they may submit a Landscape Documentation Package (Landscape Ordinance Sec. 86.707).

   a. For projects that utilize the Prescriptive Compliance Option, a "Water Use Application Using Prescriptive Compliance Option" form (PDS-410; See Appendix B) must be submitted to Planning & Development Services (PDS) at time of building permit application.

      i. Form PDS-410 must be submitted to PDS and approved prior to issuance of the building permit.

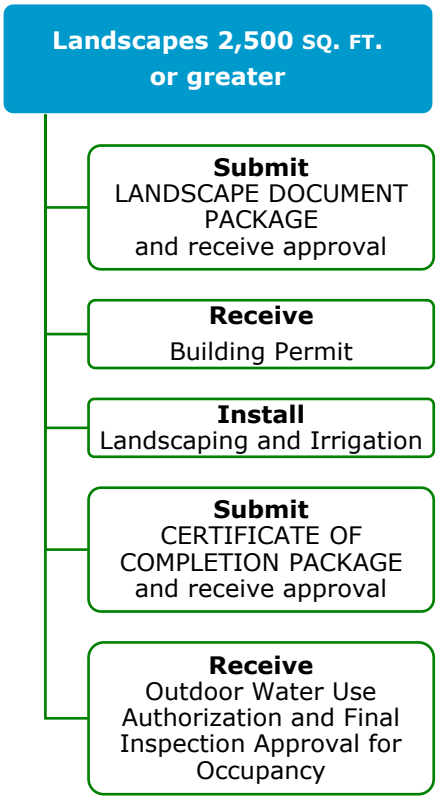
      ii. Upon installation of the landscaping and the irrigation system, the applicant will submit the "Certificate of Completion Using Prescriptive Compliance Option" form (PDS-407A; See Appendix G).



iii. Upon submittal of Form PDS-407A, the County Landscape Architect shall verify compliance prior to issuance of Water Use Authorization. Prior to any occupancy or use of the premises in reliance with a building permit, the landscaping shall be installed and certified.

b. For projects that choose to meet their water budget requirements through an expanded plant palette rather than the restrictions of the Prescriptive Compliance Option, a Landscape Documentation Package (LDP) may be submitted to PDS. See Section 1.B.3 below to determine the process for using this compliance option.

3. **Landscapes 2,500 square feet or greater**



a. A Landscape Documentation Package (LDP) must be submitted to PDS for projects that contain an aggregate landscaped area of 2,500 square feet or greater. The LDP is described in detail in Section 2 of this manual.

i. The LDP must be submitted and approved prior to issuance of the building permit.

ii. The landscape architect, civil engineer, architect, or property owner shall conduct periodic site visits during construction to ensure that the landscaping and irrigation system are being installed per the approved Landscape Documentation Package and shall certify to such as part of the Certificate of Completion requirements.

iii. Photos shall be taken at various stages of construction in order to address the photo documentation Certificate of Completion requirements.

iv. Upon installation of the landscaping and the irrigation system, the applicant will submit a "Certificate of Completion" form (PDS-407; See Appendix D).

v. Upon submittal of PDS-407, the County Landscape Architect shall verify compliance prior to issuance of Water Use Authorization. The landscaping and irrigation system must be installed and approved before final inspection and occupancy or use of the premises.

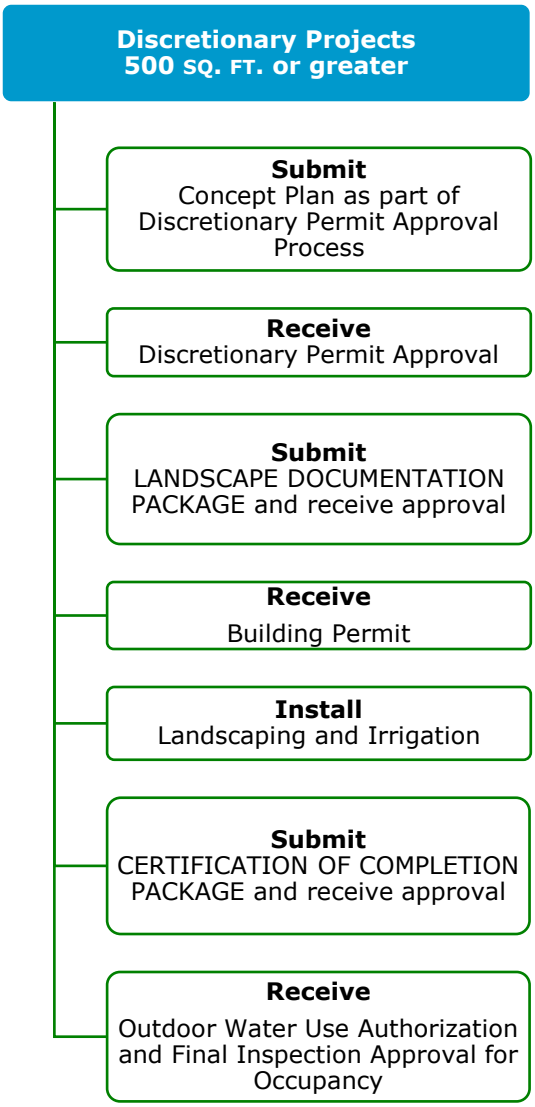
C. Discretionary Project Review

1. Concept Plan

a. Landscape projects that meet the applicability requirements of the Water Conservation in Landscaping Regulations and are required to submit an application for a discretionary permit must submit a concept plan as part of the discretionary permit process (Landscape Ordinance Sec. 86.704(b)(2)).

b. The concept plan is a generalized plan for how the Landscape Ordinance goal of water conservation will be attained. It should include a representation of the site features, proposed plantings, and the proposed method and type of irrigation.

c. When a concept plan is submitted, it will be compared to the Landscape Documentation Package which is required before a building permit for the site can be issued.



2. Landscape Documentation Package

a. A Landscape Documentation Package (LDP) must be submitted to PDS for discretionary projects that contain an aggregate landscaped area of 500 square feet or greater. The LDP is described in detail in Section 2 of this manual.

i. The LDP must be submitted and approved prior to issuance of the building permit.

ii. Upon installation of the landscaping and the irrigation system, the applicant will submit a "Certificate of Completion" form (PDS-407; See Appendix D).

iii. The landscape architect, civil engineer, architect, or property owner shall conduct periodic site visits during construction to ensure that the landscaping and irrigation system are being installed per the approved Landscape Documentation Package and shall certify to such as part of the Certificate of Completion requirements.

iv. Upon submittal of PDS-407, the County Landscape Architect shall verify compliance prior to issuance of Water Use Authorization. The

landscaping and irrigation system must be installed and approved before final inspection and occupancy or use of the premises.

v. Photos shall be taken at various stages of construction in order to address the photo documentation Certificate of Completion requirements.

D. Project-Specific Special Circumstances

1. **Modified Landscapes**

   a. Any previously approved Landscape Documentation Package that proposes revisions that amount to 10% or more, not yet installed, require the submittal and approval of a Modified Landscape Documentation Package in compliance Sec. 86.724 of the Landscaping Ordinance (Appendix M).

2. **Single Family Residential Subdivisions**

   a. Landscape Documentation Packages (LDP) for single-family residential subdivisions can include multiple landscape designs. If the developer allows the buyer to choose from various standard landscape design plans, one set of plans must be submitted and approved for each standard design as part of the LDP, prior to issuance of a building permit. If the landscaping on a lot will not conform to an approved design plan, the developer must submit a separate set of plans for each non-standard landscape.

   b. If the developer installs only a portion of the landscaping on a lot:

      i. If the total landscaped area for the entire lot is less than 2,500 sq. ft., and the developer only installs front yard landscaping, the Maximum Applied Water Allowance (MAWA) is established for the entire lot upon submittal of a "Water Use Application Using Prescriptive Compliance Option" form (PDS-410; See Appendix B) or a Landscape Documentation Package (County Code of Regulatory Ordinances Sec. 86.703 (b) (3)).

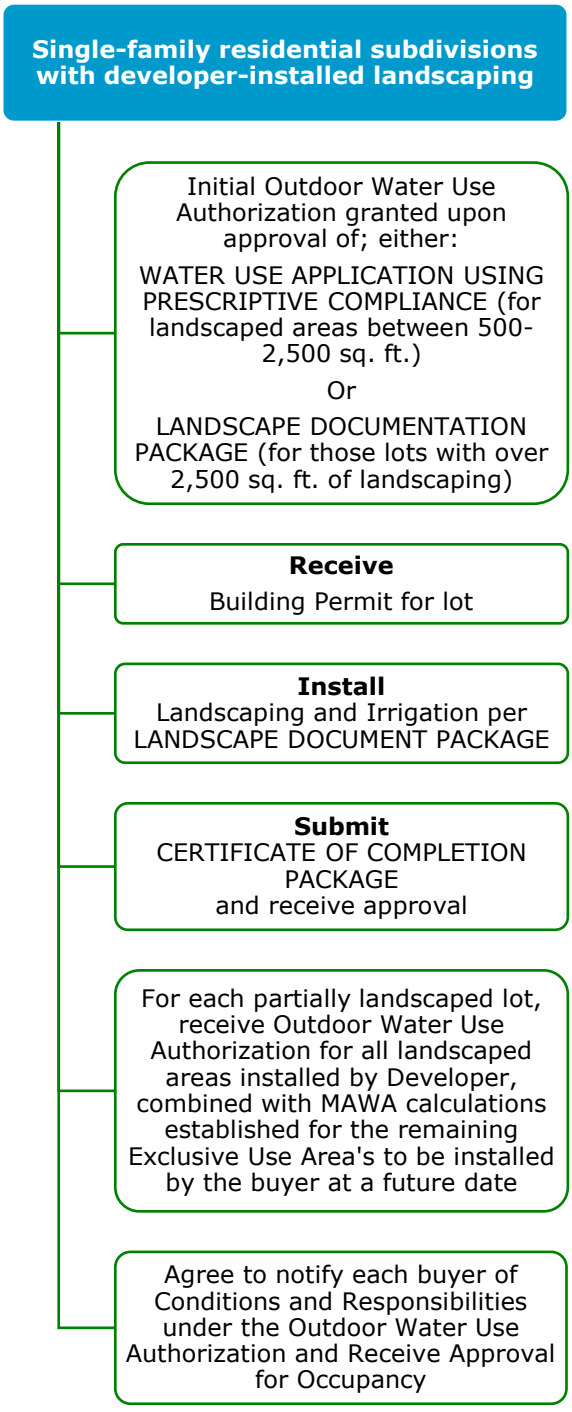
      ii. If the project total landscape area is greater than 2,500 sq. ft. and the developer only installs a portion of the landscape, a Landscape Documentation Package shall be submitted and water budget calculations established for the portion installed by the developer and added to the Exclusive Use Area to be installed by the buyer at a future date.

   c. A "Certificate of Completion" form (PDS-407; See Appendix D) shall only be required for projects submitting a Landscape Documentation Package. Developers installing landscapes utilizing the Water Use Application Using Prescriptive Compliance Option form shall agree, by signature, to provide the buyer with a copy of the Form.

   d. The developer must advise the buyer of the Outdoor Water Use Authorization and the buyer's obligation not to exceed the outdoor water budget established by the authorization, and to design, install, and

maintain their landscape in accordance with the prescriptive compliance options within the County's Water Conservation in Landscaping Ordinance (Appendix M).

e. If no other landscape related improvements are required on the lots such as structural BMP's associated with County storm water regulations, compliance with the residential tree planting requirement (Landscape Ordinance Sec. 86.709 (b) (10)), or erosion control slope protection requirements of the Grading Ordinance, or association with a grading permit, the developer may elect not to provide any landscape, but must first establish water budget calculations for all lots within the subdivision prior to issuance of a building permit.



   i. A Landscape Documentation Package shall be submitted showing the entire subdivision, along with building footprints and driveway layouts for each lot.

   ii. A plan shall be provided that establishes the Maximum Applied Water Allowance calculations for each individual residential lot under 2,500 square feet, based on 25% of the yard being planted in turf and 75% of the yard being planted with low water use plants having an average plant factor of 0.3. All calculations shall be compliant with Landscape Ordinance Sec. 86.712. Included on the plan will be all the criteria and notes from Form PDS-410 (Appendix B) that instruct homeowners on the types of irrigation components necessary to install in their yards, the restrictions on irrigated turf use, and notes and specifications about

compost and mulch. The plan shall include the lot number, total lot size in square feet, the square footage of the building footprint, square footage of the driveway and any other developer installed hardscape, the square footage on any developer installed slope or front yard landscaping, and the remaining exclusive use area that would be landscaped by the homeowner or homebuilder. These areas shall be included in a map of the subdivision that graphically shows the locations of these areas for each lot. Included on the plan will be a signature block for the developer to sign acknowledging that they will disclose this information to each future homebuyer.

iii. Those lots 2,500 square feet and over shall be required to submit a Landscape Documentation Package at time of building permit application.

f. Residences that are required comply with the residential tree planting requirement (Landscape Ordinance Sec. 86.709 (b) (10)) shall provide a Landscape Documentation Package that shows the entire subdivision and the locations of the trees. Trees shall be shown graphically and labeled within the plant legend as applying to Landscape Ordinance Sec. 86.709 (b) (10). Tree species may differ between the two required, but shall be primarily native to the surrounding environment, fire-friendly, and non-invasive. Drought tolerant ornamental trees may be planted in appropriate locations based on their growth pattern but must still be compliant with water budget requirements of the Landscape Ordinance. See Section 5, Tree Planting Guidelines for additional requirements and guidance.

g. If a Homeowner's Association will be responsible for reviewing landscape plans submitted by each homeowner within a subdivision, they shall verify that the water budgets established by the County, and provided by the developer, are still being adhered to and that the plans are compliant with the Landscape Ordinance and the Water Efficient Landscape Design Manual.

i. Individual Homeowners may elect to revise their water budgets with submittal of a Landscape Documentation Package to the Department of Planning & Development Services.

ii. Homeowner Association Guidelines shall include all applicable requirements per the County's Water Conservation in Landscaping Ordinance and the Water Efficient Landscape Design Manual.

iii. All applicable residential and common area lots shall adhere to the approved water budgets established for each lot and shall not exceed the Maximum Applied Water Allowance (MAWA).

iv. Landscape Design Standards within a Homeowner Association Guidelines shall include all information contained within Steps 4 through 8 of the Water Use Application Using Prescriptive Compliance Option (Form PDS-410).

v. Each lot is required to have a minimum of two trees per lot, and

Homeowner Association Guidelines shall refer to Section 5 (Tree Planting Guidelines) of the Water Efficient Landscape Design Manual.

vi. The Developer shall provide a disclosure statement to be signed by all homeowners within the subdivision acknowledging their obligations not to exceed the outdoor water use budget established for their lot and the restrictions on the use and maintenance of their lot, including the need to maintain the carbon sequestration capabilities of the two trees planted by the Developer or Homebuilder by not removing or replacing them.

3. **Model Homes**

   a. The new construction of one or more landscaped model homes in a single-family residential development that is subject to the Landscape Ordinance regulations requires the submittal and approval of a Landscape Documentation Package and a Certificate of Completion before use and reliance is permitted.

   b. In addition, the developer shall use signs and written information to demonstrate the principals of water efficient landscapes as described in Landscape Ordinance Sec. 86.718.

4. **Public Agencies**

   a. A public agency project that contains a landscaped area of 500 square feet or more is required to adhere to the prescriptive measures of the Landscape Ordinance and the Water Efficient Landscape Design Manual.

5. **Cemeteries**

   a. Recognizing the special landscape management needs of cemeteries, new and modified cemeteries will not be required to submit a Landscape Documentation Package but must submit a concept plan and a water efficient irrigation worksheet with the application for the discretionary permit.

   b. The applicant is also required to submit a landscape and irrigation maintenance schedule that complies with Landscape Ordinance Sec. 86.727.

6. **Graded Slopes**

   a. An applicant for any discretionary permit that includes grading and landscaping, where the landscaping will require temporary or permanent irrigation, must submit a Landscape Documentation Package and Certificate of Completion to Planning & Development Services. Occupancy of the site may be delayed until the landscaping is sufficiently established to prevent erosion as required by the County Grading Ordinance.
   b. Water budget calculations established during approval of the Landscape Documentation Package associated with a grading permit will be combined with the water budget calculations associated with subsequent building

permit applications for a particular parcel to ensure that the overall Estimated Total Water Use does not exceed the Maximum Applied Water Allowance for the entire site.

SECTION 2
LANDSCAPE DOCUMENTATION PACKAGE

A. General Information

1. A Landscape Documentation Package (LDP) must be submitted to the Department of Planning & Development Services (PDS) for all new construction projects that meet the applicability requirements of the Landscape Ordinance. The LDP shall address water conservation techniques, carbon sequestration, and efficient irrigation systems detailed in the Landscape Ordinance and summarized below. The owner or his/her agent shall be responsible for implementation of the LDP.

GIVE YOUR LANDSCAPE A MAKEOVER

- Simple design changes can save water and give your landscape a fresh, new look.
- Replace lawn areas with water smart groundcovers, trees and shrubs.
- Use permeable landscaping materials to create pathways or borders.
- Attend classes on water smart landscaping.
- Visit the Water Conservation Garden at Cuyamaca College or the Quail Botanical Gardens in Encinitas.
- Look for water-saving plants at local nurseries.
- Check with your water agency or equipment retailer for rebates on irrigation equipment.

2. The LDP shall be prepared and certified by a California licensed landscape architect, licensed civil engineer, or licensed architect. A California licensed landscape contractor may prepare and certify the LDP for the homeowner of a single-family residence if evidence of a signed contract with the property owner, acknowledging that the contractor will also install the landscaping, is provided. Personal property owners may also prepare plans and specifications for any property owned by that person.
3. The LDP must be submitted at the time of building permit application. The landscape architect, civil engineer, architect, or landscape contractor shall conduct periodic site visits during construction to observe and ensure that the landscaping and irrigation system are being installed per the approved LDP and shall certify to such as part of the Certificate of Completion requirements, including photo documentation. The Certificate of Completion shall be approved prior to occupancy.
4. The LDP consists of:
   a. Project Information
   b. Soil Management Report (Landscape Ordinance Sec. 86.708)
   c. Landscape Design Plan (Landscape Ordinance Sec. 86.709)

d. Irrigation Design Plan (Landscape Ordinance Sec. 86.709)

e. Grading Design Plan (Landscape Ordinance Sec. 86.710)

f. Water Efficient Landscape Worksheet (Landscape Ordinance Sec. 86.711)

   i. A Water Efficient Landscape Worksheet is not required for projects utilizing on-site well water, however the irrigation system shall still be efficiently designed as described in the Landscape Ordinance.

5. The LDP must be approved by the Director of PDS in order to obtain Outdoor Water Use Authorization as described in the Landscape Ordinance Sec. 86.704.

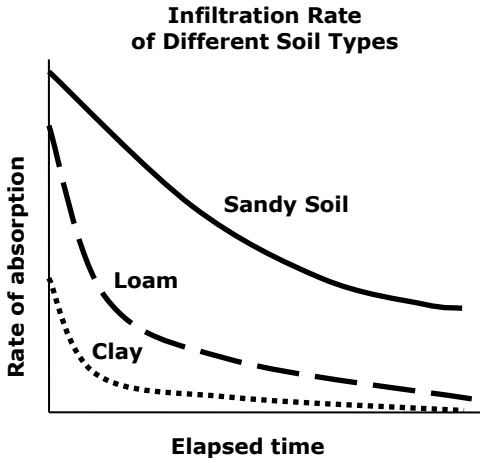
B. Project Information

The applicant shall provide the following information:

1. Date of application
2. Project applicant/Property Owner & Contact Information
3. Project Address (including parcel and lot number(s))
4. Total irrigated landscape area (square feet)
5. Landscape type (e.g., new, existing, private, cemetery, homeowner installed, etc.)
6. Water supply type (potable, recycled, well, graywater)
7. Checklist of all documents in Landscape Documentation Package (Form PDS-404; See Appendix E)

C. Soil Management Report

1. In order to reduce runoff and encourage healthy plant growth, a soil management report, or soil analysis report, must be submitted.
2. The analysis shall be completed by a properly certified or accredited laboratory using accepted industry protocol. The analysis shall be of the soil for the proposed landscaped areas of the project that include information about the soil texture, soil infiltration rate, pH, total soluble salts, sodium and percent of organic matter.



3. The report should also contain recommendations, which shall be implemented, about the type and amount of amendments necessary to sustain the

vegetation proposed in the landscape design plan. Locally produced, non-petroleum based soil amendments shall be preferred.

4. The information contained within the soil analysis report must be made available to the preparer of the required landscape and irrigation plans to make any necessary adjustments to the design relating to soil erosion, runoff, and plant establishment.
5. When a project involves mass grading of a site the applicant shall submit a soil management report that complies with subsections (1 & 2) above with the Certificate of Completion required by Landscape Ordinance Sec. 86.725.
6. In projects with multiple landscape installations (i.e. production home developments) a soil sampling rate of one in seven lots or approximately 15% will satisfy this requirement. Large landscape projects shall sample at a rate equivalent to one in seven lots.

D. Landscape Design Plan

For the efficient use of water and carbon sequestration, a landscape shall be carefully designed and planned for the intended function of the project.

1. General Submittal Requirements

a. Submit two complete sets.

b. Submit a copy of either the project's Standard Storm Water Quality Management Plan (SWQMP) or Priority Development Project Storm Water Quality Management Plan with all vegetated Best Management Practices (BMPs) highlighted. SWQMP must be a copy of the approved plan or most recent version, updated and highlighted for landscape review. See Section 2.D.11. Projects shall be compliant with all applicable Fact Sheets (Appendix E) within the County's Best Management Practice's Design Manual.

c. Plans must address fire safety issues and demonstrate compliance with State and County requirements for defensible space around buildings and structures. Additionally, all single-family residential projects shall be compliant with the Home Ignition Zone requirements within Section 4907.4 of the County's Consolidated Fire Code.

d. Plans must be standard 24" X 36" blueprint sheets. Any other size must be approved in advance.

e. Scale is 1" = 20' or smaller (such as: 1" = 10' or 1" = 5').

f. Plans must be legible, professionally prepared and a print of an original drawing. Photocopies are not acceptable.

g. All sheets must be signed, stamped, and dated along with a renewal date by the professional licensed by the State of California who prepared the plans. Personal property owners preparing their own plans must sign and date the plans.

h. The title sheet must contain the following certification:

I am familiar with the requirements for landscape and irrigation plans contained in the County Landscape Water Conservation regulations, in Title 8, Division 6, Chapter 7. I have prepared this plan in compliance with those regulations. I certify that the plan implements those regulations to provide efficient use of water.

2. Plan Requirements

Plans shall:

a. Delineate and label each hydrozone by number, letter, or other method.

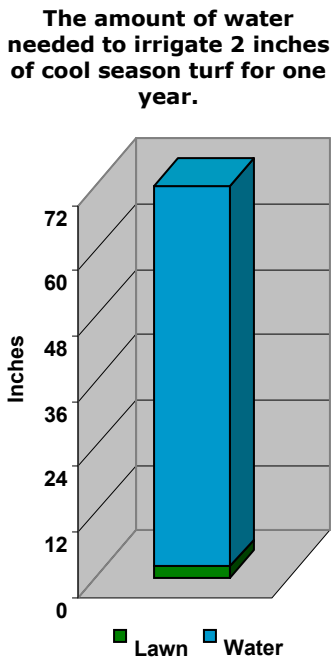
b. Identify each hydrozone as very low, low, moderate, high water use or a special landscaped area.

c. Show specific location of all vegetation, retained or planted, the plant spacing and plant quantities by container size. If seed is to be planted, the plan shall describe the seed mixes and applicable germination specifications.

d. Include a legend listing the common and botanical plant names of each plant shown on the drawing, including the species' plant factor.

e. Identify recreational areas (both passive and active) except on plans for single family residential projects.

f. Identify areas permanently and solely dedicated to edible plants.



g. Identify areas irrigated with recycled water, graywater and other non-potable water.

h. Identify temporarily irrigated areas.

i. Show all pervious and non-pervious hardscapes.

j. Show all natural features.

k. Identify the type, and surface area of all water features.

l. Identify the type and amount of mulch for each area where mulch is applied.

m. Identify any soil amendments, the type, and quantity.

n. Identify location(s) of required tree plantings in compliance with Measure A-2.1.

3. Plant Material

a. Landscaping includes the planting and maintenance of trees, groundcover, shrubs, vines, flowers, or turf varieties. In addition, when appropriate for the site and intended use, the landscaping may include natural features such as rock and stone or structural features including, but not limited to, fountains, pools, artwork or pervious pathways.

b. Plants shall be selected and planted appropriately based upon their adaptability to the climatic, geologic and topographical conditions of the project site. Low-water use, deep-rooted plants and native species are highly recommended, as well as plants that are well-suited for the soil type that exists on site.

c. Plants shall be grouped into hydrozones with plant species having similar water demands and by their soil, sun, shade, and maintenance requirements.

d. Within a fire hazard severity zone, highly flammable plant materials and mulches, such as straw, leaves, bark, or small wood chips, should be avoided. Refer to the plant list in Appendix H for plants that are both ignition resistive and low water use. Also see Section 2.D.7.

e. Plant material at full maturity shall not obscure sight distance for all roadway users. Trees shall be planted a minimum of 24” from sidewalk. Root barriers are required when used in parkways less than 3’ wide and where specified.

f. Plant material used in landscapes within the wildland/urban interface should design and maintain a defensible, ignition resistive landscape. Projects are encouraged to use ignition-resistive, low water use plants that reduce the chance for embers from the plants to spread to either urban areas or wildlands.

g. Plantings in transitional areas must consist of site adaptive and compatible native species and may also be combined with site adaptive and compatible non-native species. Invasive plant species must not be planted in transitional areas and must be eradicated when and where they occur. See Section 2.D.6. and Appendix J.

4. Irrigated Turf Areas

a. Turf must be efficiently irrigated so as to avoid runoff or overspray.

b. Turf shall not exceed 25% of the total aggregate landscape area for single family residences and multi-family residential projects.

c. No turf is allowed in non-residential areas unless included in a special landscape area. In multi-family residential areas turf is only allowed where it is readily useable by residents and serves more than just an ornamental function.

TURF MANAGEMENT

- 30% of San Diego's water is used to irrigate residential landscapes. Turf consumes the majority of that water.
- Turf should be at least 2 to 3 inches high.
- Leave grass clippings on the lawn.
- Use warm season turf instead of cool season turf.
- As an alternative, try low water use ornamental grasses such as buffalo grass or California meadow sedge.
- Dethatch or aerate your lawn to allow water to penetrate the soil.

d. Only subsurface irrigation or other means that produces no runoff or overspray shall be used for turf in a landscaped area where any dimension of the landscaped area is less than ten feet wide.

e. Turf and all other high water use plants, characterized by a plant factor of 0.7 to 1.0 are prohibited in street medians.

f. Turf shall not be allowed within 24 inches of impermeable surfaces unless it is irrigated with low volume or subsurface irrigation or unless the adjacent impermeable surfaces are designed and constructed to cause water to drain entirely into a landscaped area.

g. Turf shall not be allowed on slopes where the grade is greater than 25 percent (4:1) and where the toe of the slope is adjacent to an impermeable hardscape.

h. A ball field, park, golf course, cemetery and other similar use shall be designed to limit turf in any portion of the landscaped area not essential to operation of the facility.

i. Turf shall not be allowed in a landscaped area if the turf cannot be irrigated without causing runoff, overspray or other wasteful water uses.

j. Turf is prohibited in parkways less than 10 feet wide, unless the parkway is adjacent to a parking strip and used to enter and exit vehicles. Any turf in parkways must be irrigated by sub-surface irrigation or other technology that creates no overspray or runoff.

5. Water Features

a. Recirculating water systems must be used for water features.

b. The surface area of a water feature shall be included in the high-water use hydrozone unless the water feature is a pool or a spa and is equipped with

a durable cover. If a cover is used, the pool or spa may be included in a moderate water use hydrozone.

c. The total of all water features, excluding a swimming pool or spa, shall be limited to 15 percent of the total landscaped area of the project, or as determined by the Water Efficient Landscape Worksheet.

d. If groundwater resources are proposed to be used, long term availability of this resource and the water quality must be approved to the satisfaction of the Director of PDS.

e. Where available, recycled water shall be used as a source of water for decorative water features.

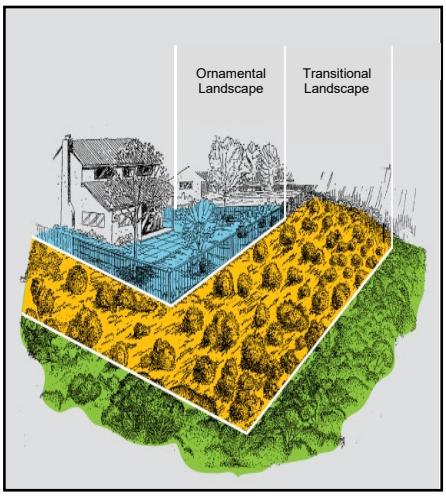


Illustration of a Transitional Landscape

6. Transitional Landscapes

a. Transitional landscape areas are the areas between non-native landscapes and undeveloped areas. The plants specified for transitional landscapes, including slopes and other disturbed areas typically consist of a combination of site adaptive and compatible native and non-native species. The mix of native and non-native plant materials should generally vary, with areas contiguous to existing native vegetation being planned with predominantly native material.

b. Invasive (i.e., those capable of reproducing and spreading into native, non-irrigated areas and displacing those communities) non-native plant species are prohibited in all transitional landscapes. Invasive plants (Appendix J) that sprout in transition areas shall be promptly abated. The irrigation in a transitional area shall not influence adjacent vegetation.

7. Fuel Management

a. Combustible vegetation must be cleared a minimum 100-foot radius from any structure. Combustible vegetation is any material that left in its natural state will readily ignite, burn and transmit fire from native or landscape plants to any structure or other vegetation. Examples are dry grass, brush, weeds, litter, or other flammable vegetation that creates a fire hazard. See the Undesirable Plant List in Appendix I for plants to avoid.

   i. The first 50 feet from the structure may be permanently irrigated and planted with ignition resistive plants which must be maintained all year around.

ii. Within the remaining 50 feet of the 100-foot area, all dead and dying vegetation must be removed and the remaining vegetation must be thinned by 50 percent.

iii. All Fuel Modification Zones shall be compliant with Section 4907.2 of the County's Consolidated Fire Code and all Home Ignition Zones shall be compliant with Section 4907.4 of the Code.

b. Vegetation can only be removed or thinned by mowing, cutting or grazing. The root structure must be left intact to prevent erosion. Do not completely remove or disturb the existing plant root system.

c. No irrigated or non-native landscaping is allowed within an open space easement.

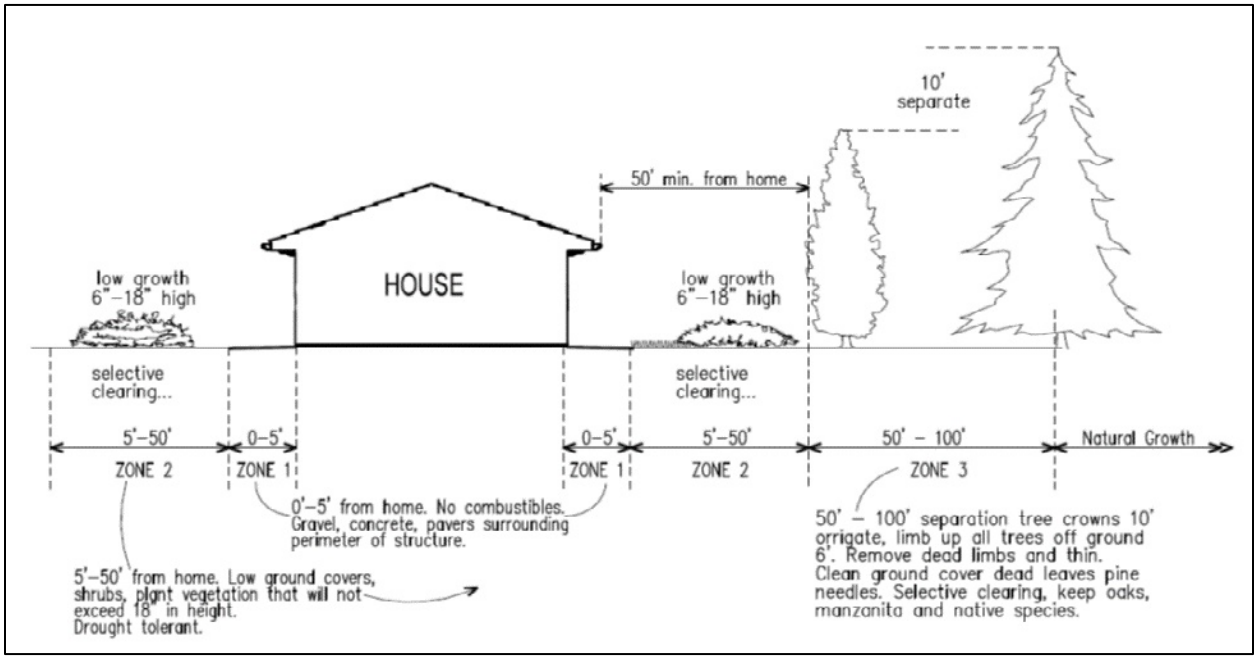
d. Trees that overhang or touch your structures must be trimmed back away from the structure.

e. Remove any tree limbs within 10 feet of your chimney.

f. For fire truck access, remove trees and shrubs within 10 feet of each side of your driveway.

g. Avoid planting trees under or near electrical lines. If the trees grow into overhead lines or make contact with overhead lines under windy conditions, they could cause a fire.

h. Existing trees should be pruned by cutting off any branches up to 6 feet above the ground and the vegetation beneath the canopy of the tree should be trimmed to prevent ground fires from spreading upward into trees.



Home Ignition Zone

i. Trees on slopes shall be compliant with Table 4907.3.1 of the County's Consolidated Fire Code.

j. Vary the height of plants and adequately space them. Taller plants need to be spaced wider apart.

k. To conserve water, plant low water use trees and shrubs that can be maintained by deep watering as infrequently as once or twice a month. Trees and shrubs shall be valved separately.

l. Work with your neighbors to clear common areas between houses, and prune areas of heavy vegetation that are a fire threat to both properties.

m. If you have a heavily wooded area on your property, removing dead, weak or diseased trees may improve growing conditions. This will leave you with a healthy mixture of both new and older trees.

n. Except in a fire hazard severity zone, any removed trees may be chipped and used as mulch provided the depth of the mulch does not exceed six inches. In hazardous fire areas, highly flammable mulch such as straw or small size wood chips must not be used.

o. Don't forget to legally dispose, compost, or recycle all your cut vegetation. You may contact your local landfill to inquire about green waste recycling. Open burning may not be allowed. Contact your fire agency for more information.

p. Stack firewood and scrap wood piles at least 30 feet from any structure and clear away any combustible vegetation within 10 feet of the piles. Many homes have survived as a fire moved past it, only to burn later from a wood pile that caught fire after the firefighters had moved on to protect other homes.

Properly maintained defensible space saves property and lives.

q. Check and clean your roofs and gutters on all structures several times during the spring, summer and fall to remove debris that can easily ignite from a spark.

r. Check with your local fire district for additional requirements.

8. Slope Erosion Control

a. At a minimum, all manufactured slope areas shall be covered within 10 days of completion of grading with hydroseed/mulch, punched straw mulch, jute netting or other approved geotextile material capable of controlling surface soil erosion.

b. Except where approved otherwise, all slopes and any other areas disturbed in conjunction with grading activities shall be maintained until vegetation is well established, with coverage equal to at least 70 percent of coverage, as compared to the native background plants is achieved. This threshold must be met before occupancy of the site will be permitted.

Vegetated slopes prevent erosion.

c. A minimum of 50 percent of the total slope area of manufactured slopes shall be planted with deep rooting plantings (i.e., those with a typical root depth of approximately 5 feet or greater). For seeded plantings, at least 50 percent of the viable seed count shall be deep rooting species.

d. All plant materials on manufactured slopes shall be appropriate to the site conditions, shall be water efficient when established and shall be adequately spaced to control soil erosion.

e. All slopes in excess of 15 feet shall be planted with rooted container stock at an average rate of one per 100 square feet unless approved otherwise by the Director of Planning & Development Services. Containers shall be a minimum of one gallon for shrubs and five gallons for trees. All container stock shall be provided with a temporary irrigation system.

f. Turf shall not be allowed on slopes where the grade is greater than 25 percent (4:1) and where the toe of the slope is adjacent to an impermeable hardscape unless the turf is irrigated with low volume or subsurface irrigation.

g. 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 and erosion must be confirmed for approval of a Certificate of Completion.

9. Groundcovers

Herbaceous groundcovers shall be planted at a distance that will typically ensure 100 percent coverage within one year of installation.

10. Mulch and Amendments

a. A minimum three-inch (3”) layer of mulch shall be applied on all exposed soil surfaces of planting areas except in turf areas, creeping or rooting

groundcovers, or direct seeding applications where mulch is contraindicated.

b. To provide habitat for beneficial insects and other wildlife, up to 5% of the landscape area may be left without mulch, designated insect habitat must be included in the landscape design plan as such.

c. Stabilizing mulching products shall be applied on slopes that meet current engineering standards.

d. The mulching portion of the seed/mulch slurry in hydro-seed applications shall meet the mulching requirements.

e. Highly flammable mulch material, such as straw, leaves, bark, or small or mini size wood chips, shall not be used in a "Fire Hazard Severity Zone," as that term is defined in the County Fire Code. Inorganic mulches such as decomposed granite, gravel, or rocks may be used instead. Non-floating shredded hardwood shall be used in all structural BMP basins.

MULCH TIPS

- Organic mulch absorbs and retains water so do not irrigate areas covered with organic mulch until the mulch dries out (about once a week).
- Use gravel mulch in areas planted with succulents.

Mulch can be a decorative ground cover that adds organic matter back to the soil, increases water retention, and reduces evaporation and weeds.

f. Preserve and reuse as much site topsoil as possible.

g. Amend disturbed soil with locally sourced organic compost and prevent re-compaction. Compacted soils shall be transformed to a friable condition through the application of compost materials.

h. Follow the recommendations from the soil analysis report. See Section 2.C.

i. Locally sourced organic mulch materials made from recycled or postconsumer products/materials shall take precedence over inorganic materials or virgin forest products unless the recycled post-consumer organic products are not locally available. Organic mulches are not required where prohibited by County Fire Code.

j. To meet the requirements of (g) above, install compost at a rate of a minimum of four cubic yards per 1,000 sq. ft. of permeable area and incorporated to a depth of six inches into the soil. Soils with greater than 6% organic matter in the top 6 inches of soil are exempt from adding compost and tilling.

11. Drainage

a. Landscape plans shall show the location and installation details of all vegetated stormwater best management practices required for on-site retention and infiltration of stormwater. Refer to the Fact Sheets (Appendix E) within the County's Best Management Practice's Design Manual for additional information. Examples include, but are not limited to:

   i. Infiltration beds, swales, and basins that allow water to collect and soak into the ground.

   ii. Constructed wetlands and retention ponds that retain water, handle excess flows, and filter pollutants.

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

b. No drainage shall flow or collect in such a manner as to allow breeding by mosquitoes or any other vermin.

c. Low areas that may cause standing water shall be filled and replanted.

12. Vehicular Use Areas Not Within the Street Right of Way

a. Landscape improvements, including, but not limited to, plants, berms, signs, and structures shall be selected, positioned, and maintained to avoid obstructing views of motorists near intersections of aisles, drives, and pedestrian walkways.

b. Trees shall be selected and maintained such that, at mature size, scaffold branches are a minimum of 60 inches above the finish grade as measured at the trunk.

c. Plant materials with known surface root problems shall not be used in vehicular use areas, paved pedestrian walkways, and structures with poured concrete slabs.

d. The plans shall certify that landscaping when planted and at full maturity shall not obscure sight distance for all roadway users.

SMALL CHANGES FOR BIG SAVINGS

- The easiest and most effective action you can take to conserve water is to reduce overwatering and runoff.
- Install a smart controller.
- If you have an old sprinkler system, replace the heads with newer, more efficient heads.
- Replace sprinkler heads with mini rotors to reduce runoff. Mini rotors have a reduced precipitation rate which allows time for water to penetrate the soil.
- Use rotors to water large areas of 25 feet by 25 feet or larger.
- Water in 2 to 3 short cycles rather than one long cycle.
- Switch to drip irrigation for watering trees and shrubs.

13. Planting in the Right of Way

a. All public right of way areas between a newly developed property or rehabilitated landscapes and the existing sidewalk or street edge shall be fully landscaped for erosion control purposes and community character. Trees shall not be planted in the right of way unless pursuant to an encroachment permit issued by the Department of Public Works.

b. Plans shall include a statement indicating who is responsible for on-going maintenance, including runoff and overspray prevention, repairs of broken or malfunctioning irrigation equipment, replacement of dead, dying, or diseased vegetation, and continual compliance with the project's approved water calculations.

c. Turf (both irrigated and artificial) shall not be planted in the public right of way.

d. Trees shall be planted a minimum of 24" from sidewalk. Root barriers are required when used in parkways less than 3' wide and where specified.

Surface roots have raised the sidewalk.

14. Screening Requirements

a. When plant materials are used to satisfy screening requirements, planting shall be spaced and sized to ensure 100 percent screening within two years of installation.

b. All plant material will be spaced according to acknowledged characteristics of the plant's growth and any restrictions or requirements of the local fire district as applicable.

15. Staking

a. All trees which are not self-supporting must be staked or cabled.

b. Stakes or cables are to be removed once the tree is self-supporting.

16. Residential Tree Planting

a. All applicable residential landscapes (Landscape Ordinance Sec. 86.709 (b) (10)) shall provide a minimum of two (2) trees per the Residential Tree Planting Guidelines contained within this Manual.

E. Irrigation Design Plan

1. General Information

a. Submit two complete sets.

b. Plans must be standard 24" X 36" blueprint sheets. Any other size must be approved in advance.

c. Scale is 1" = 20' or smaller (such as: 1" = 10' or 1" = 5').

d. Plans must be legible, professionally prepared and a print of an original drawing. Photocopies are not acceptable.

e. For the efficient use of water, an irrigation system shall meet all requirements listed in the Water Conservation in Landscaping regulations as well as the manufacturer's specifications.

HOW QUICKLY DOES YOUR SOIL ABSORB WATER?

- Dig a hole 6 inches deep by 6 inches across.
- Fill the hole with water and let it stand for one hour to saturate the soil.
- Refill the hole with water. Measure depth of the water with a ruler.
- Let stand one hour. Then measure depth of the water.
- The difference in the water level between step 3 and step 4 is the amount of water absorbed by your soil in an hour.

f. The irrigation system and its related components shall be planned and designed to allow for proper installation, management, and maintenance.

g. The designated landscape architect, civil engineer, architect, irrigation consultant or landscape contractor shall conduct periodic site visits during construction to ensure that the landscaping and irrigation system are being installed per the approved Landscape Document Package and shall certify to such as part of the Certificate of Completion requirements. Preliminary inspection shall include, but not be limited to, mainline, lateral lines, control wires, communication wires, and sprinkler head layout. Personal property owners who have prepared plans and specifications for property they own, shall also perform irrigation installation inspections throughout construction.

h. All sheets must be signed, stamped (licensed professionals only), and dated along with a renewal date by the property owner or professional licensed by the State of California who prepared the plans.

SAVE WATER

- Learn how to operate your irrigation controller.
- Water between midnight and 6 a.m. to avoid evaporation and wind.
- Do not irrigate when it rains. Wait until the soil dries out.
- Check your irrigation system every month for leaking valves or heads, misaligned heads, runoff, and puddles.

i. The title sheet must contain the following certification:

I am familiar with the requirements for landscape and irrigation plans contained in the County Landscape Water Conservation regulations, in Title 8, Division 6, Chapter 7 of the San Diego County Code of Regulatory

Ordinances. I have prepared this plan in compliance with those regulations. I certify that the plan implements those regulations to provide efficient use of water.

Irrigation plans prepared by a California certified irrigation designer shall include the following statement:

I have complied with the criteria of the Water Conservation in Landscaping Ordinance and the Water Efficient Landscape Design Manual and applied them accordingly for the efficient use of water in the irrigation design plan. I certify that the plan implements those regulations to provide efficient use of water.

2. Plan Requirements

Plans, at a minimum shall:

a. Depict the location of a dedicated separate landscape water meter for all irrigated landscape projects greater than 5,000 square feet and all non-residential irrigated landscapes of 1,000 sq. ft. or more. Dedicated landscape water meters are not required for single family residences and landscapes with less than 5,000 square feet. However, they are highly recommended to help facilitate water management. A flow sensor attached to an automatic controller may also function as a landscape water meter or submeter.

b. Show the locations of the pipes that supply water for outdoor use and the pipes that connect to any dedicated irrigation meter.

c. Show the location of recycled irrigation pipes and water meter.

d. Conform to the hydrozones of the landscape plan.

e. Illustrate a system that efficiently irrigates each hydrozone without wasting water and without exceeding the MAWA. The irrigation system shall be designed to meet or exceed an average irrigation efficiency of 0.75.

f. Provide that only low volume or subsurface irrigation will be used to irrigate any vegetation within 24 inches of an impermeable surface unless the adjacent impermeable surfaces are designed and constructed to cause water to drain entirely into a landscaped area.

A rain barrel captures roof and gutter runoff to irrigate landscape.

Photograph Courtesy of Arid Solutions, Inc.

3. Water Supply

a. When recycled water is available within the basin containing a non-residential project site or when a Reclamation Master Plan indicating the availability of recycled water

in the future has been adopted by either the County or a special district, the applicant shall incorporate the use of recycled water into the non-residential project design. If the project will also be using potable water, the original project shall provide for a dual distribution system for all landscaped areas. Projects proposing the use of recycled water must first submit irrigation plans through the Department of Environmental Health for approval prior to submitting final landscape plans to the Department of Planning & Development Services.

b. Untreated and recycled water supplies shall be clean and free of suspended particles, algae, or chemicals that may form insoluble precipitates in the equipment or may be detrimental to plantings.

c. Landscapes using recycled water are considered Special Landscape Area. The ET Adjustment Factor for new and existing (non-modified) Special Landscape Areas shall not exceed 1.0.

d. Graywater may be used legally in the County of San Diego when designed and installed in accordance with the regulations stated in the California Plumbing Code (California Code of regulations Title 24, Part 5, and Chapter 16A, Part 1) and under permit and inspection by San Diego County Department of Environmental Health.

e. If groundwater resources are proposed to be used, potential availability must be demonstrated to the satisfaction of the Director of Planning & Development Services.

4. Runoff and Overspray

a. All irrigation systems shall be designed to avoid runoff, seepage, low head drainage, overspray or other similar conditions onto adjacent property, non-irrigated areas, walks, roadways or structures. Systems benefiting from flushing shall accommodate the water generated by the flushing without erosion or disturbance to the planting. Water used for flushing shall be channeled into adjacent drainage structures (swales, gutter, etc.) where possible.

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

   i. The landscape area is adjacent to permeable surfacing and no overspray and runoff occurs; or

Overspray creates runoff and wastes water.

ii. The adjacent impermeable surfaces are designed and constructed to drain entirely to landscaping; or

iii. The irrigation designer specifies an alternative design or technology and clearly demonstrates strict adherence to irrigation system design criteria as described in the Water Conservation in Landscaping regulations and this manual. Prevention of overspray and runoff must be confirmed as part of the Certificate of Completion.

HOW TO READ YOUR WATER METER

- Water is typically measured by the cubic foot which equals approximately 7.5 gallons.
- Your water meter records how much water you use in the same way the odometer in your car records how many miles you travel.
- To check your daily water use:

1) Record the reading on your meter on Day 1.

2) Twenty-four hours later, record the new reading.

3) Subtract the reading on Day 1 from the reading on Day 2.

4) Multiply the answer by 7.5.

5) The result is the number of gallons you ahve used in the last 24 hours.

5. Application Rate

The water delivery rate of the irrigation system shall take into account the slope gradient and percolation rate of the soil in order to minimize runoff.

6. Uniformity and Use

The irrigation system shall deliver water efficiently and uniformly. Water used for irrigation shall be minimized to the amount needed to maintain adequate plant health and growth.

7. Backflow Prevention

Approved backflow prevention units are required on all potable water irrigation systems. Installation shall comply with all applicable health and safety standards.

8. Electrical Service

Electrical service for the irrigation system controllers shall be indicated and referenced on the irrigation plans, including the use of battery-operated valves or solar powered controllers.

9. Hydrozones

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

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

DEEP ROOT SYSTEMS

- Deep root systems use less water.
- Deep root systems require less frequent irrigation.
- Encourage deep rooting:

1) Water in 2 to 3 short cycles rather than one long cycle with at least 30 minutes delay between each short cycle.

2) Slowly increase the number of days between waterings until you irrigate only 1 or 2 days per week. If necessary, increase the number of short cycles.

3) In winter, irrigate only after the top 2 or 3 inches of soil dries out.

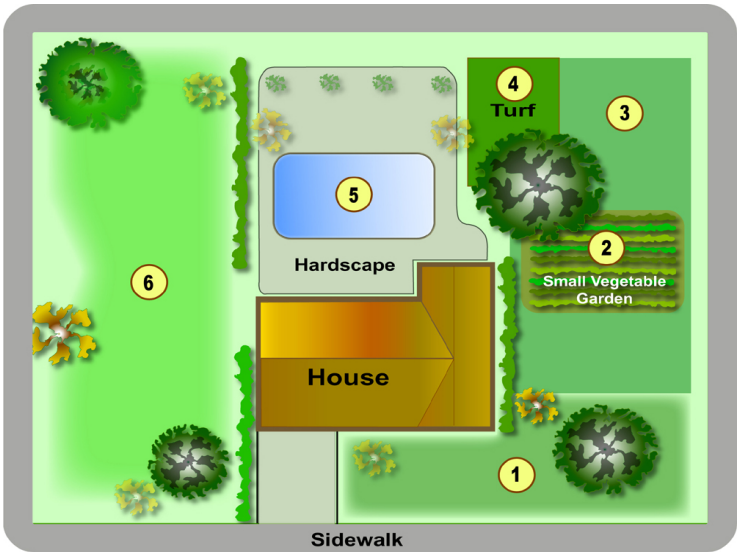
c. Where feasible, trees shall be placed on separate valves from shrubs, groundcovers, and turf.

d. Individual hydrozones that mix plants of moderate and low water use plants or moderate and high water use plants, may be allowed if the plant factor of the higher water using plant is used for calculations.

e. High water use plants shall not be permitted in a low, or very low water use hydrozone, but low, or very low water use plants may be allowed in a high water use hydrozone if the plants are of the type that tolerate the additional water.

f. On the landscape design plan and irrigation design plan, hydrozone areas shall be designated by number, letter, or other designation. On the irrigation design plan, designate the areas irrigated by each valve, and assign a number to each valve. Use this valve number in the Water Efficient Landscape Worksheet (see Appendix C). This table can also assist with pre and final inspections of the irrigation system and programming the controller.

Hydrozone Plan



Hydrozone	Plant Water use Type(s)
1	Moderate
2	Special Landscape Area
3	Moderate
4	High
5	High
6	Low

10. Scheduling and Lateral Systems

a. Each lateral system shall be capable of meeting the minimum needs of the mature plant material during peak demands.

b. Lateral systems shall be divided by exposure (sun/shade, etc.), plant material (turf/shrub/trees, etc.), differing plant water requirements (tropical/low water using, etc.), elevation, and by type of application equipment (drip, spray, etc.), to the degree that is both practical and feasible.

c. Spray system heads of different manufacturers or of different basis types (drip, bubbler, stream, low gallonage, standard, impact etc.) shall have consistent operating characteristics on any single lateral circuit.

d. Spray heads on the same lateral circuit shall be balanced for matched precipitation rates within 5 percent from the average for any different arcs of coverage or operating radii.

e. Separately controlled lateral systems shall be used when head or nozzle precipitation rate varies more than 15 percent from the average application in the area.

f. Specially designed adjustable nozzles shall be used for odd shaped areas, maintaining even application rates.

g. After plants are established, the irrigation system is to provide sufficient water to sustain plants in a healthy, growing condition.

WHY ARE PARTS OF MY LAWN TURNING BROWN?

- Typically these dry spots occur because overhead spray is not distributing water evenly.

1) Place several small containers with straight sides around your lawn in even rows and on brown spots.

2) Run your irrigation system for 15 minutes.

3) Using a ruler, measure the amount of water in each container.

4) If there is a significant difference in the amount of water in each container, water is not being applied evenly.

5) Make sure that the spray isn't blocked by tall vegetation.

6) Change the rate and direction of spray by adjusting the screw on the top of the nozzle head.

7) Different heads have different application (precipitation) rates. Replace heads so that you have the same (or matched) precipitation rates through out the area.

11. Design Pressure

a. The system design pressure and the recorded static pressure or hydraulic gradeline information (with the recording date) shall be indicated on the plans.

b. When the pressure reading is less than 40 psi, more than five years old, or is not available, the pressure shall be calculated from the hydraulic gradient (contact individual Water District Engineers) and the site elevation. The calculated pressure, meter elevation and hydraulic gradient shall be indicated on the plans.

c. When the actual measured or calculated minimum pressure is above 40 psi, irrigation systems shall include compensating design or equipment modifications.

12. Pressure Constraints

a. Irrigation systems shall be designed to operate correctly at the lowest available operational pressure expected during the year and shall withstand water system surges.

b. Pressure loss within lateral piping circuits shall not exceed 20 percent of the designed operating pressure of the equipment on that circuit.

c. Pressure regulating devices shall be installed on any systems with a static inlet pressure at the point of connection greater than 80 psi unless specifically approved by the Director of Planning & Development Services. Pressure shall be regulated to a pressure adequate to operate the equipment at designed pressures with all incidental and line losses included. Where the pressure within the system exceeds 80 psi (due to elevation drops, etc.) a pressure reducing valve shall be used to reduce pressure to designed levels.

d. The irrigation system shall be designed to ensure that the dynamic pressure at each emission device is within the manufacturer's recommended pressure range for optimal performance.

e. If the static pressure is above or below the required dynamic pressure of the irrigation system, pressure regulating devices such as inline pressure regulators, booster pumps or other devices shall be installed to meet the required dynamic pressure of the irrigation system.

f. Static water pressure, dynamic or operating pressure and flow reading of the water supply shall be measured at the point of connection. These pressure and flow measurements shall be conducted at the design stage. If the measurements are not available at the design stage, the measurements shall be conducted at installation.

13. Velocity Constraints

Irrigation system piping shall be sized such that velocities remain below 5 feet per second for metal piping and 6 feet per second for PVC piping.

14. Coverage

a. Sprinkler heads and other emission devices shall have matched precipitation rates, unless otherwise directed by the manufacturer's specifications.

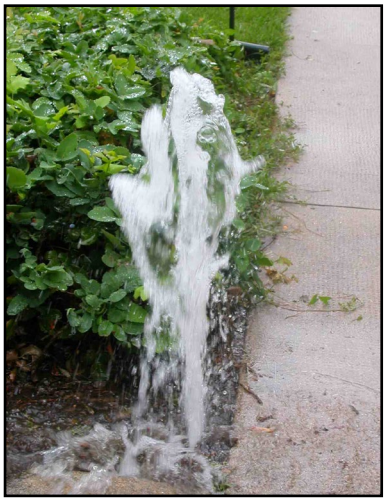
b. Head to head coverage is recommended. However, sprinkler spacing shall be set to achieve distribution uniformity using the manufacturer's specifications.

15. Equipment Protection

a. Any irrigation equipment located within 24 inches of pedestrian and vehicular use areas shall be located entirely below grade, including the use of pop-up type heads, or otherwise adequately protected from potential damage.

b. Pop-ups heads shall be installed with swing joints or other flexible assembly. Swing joints shall be installed in lines at all abrupt changes of grade.

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

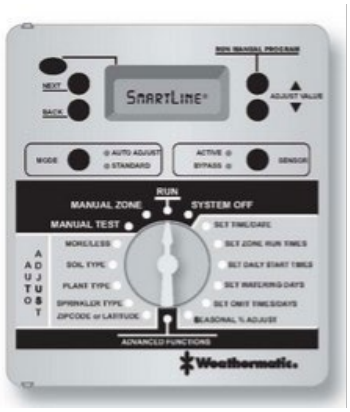


Broken sprinkler heads can waste water at the rate of 10 gallons per minute.

16. Broken or Malfunctioning Equipment

a. Flow sensors that detect and report high flow conditions created by system damage or malfunction are required for all non-residential landscapes and residential landscapes of 5,000 square feet or larger.

b. Master shut-off valves are required on all projects except landscapes that make use of technologies that allow for the individual control of sprinklers that are individually pressurized in a system equipped with low pressure shut down features.



17. Control Systems

a. Automatic control systems are required, and must be able to accommodate all aspects of the design, including multiple schedules, repeat cycles, evapotranspiration or soil moisture sensing and rain sensing override devices. Control mechanisms for an evapotranspiration (weather based) system or soil moisture detecting systems, utilizing non-volatile memory shall be accommodated within the controller enclosure. All control circuits shall be designed to operate one valve at a time unless otherwise approved by the Director of Planning & Development Services.

Smart Controllers

b. Controller units shall be enclosed in secure, weather and vandal resistant, locking housings manufactured expressly for that purpose or located within a structure.

c. All irrigation systems shall be adjusted seasonally and as weather and plant conditions warrant. Scheduling tools may be found at: www.cimis.water.ca.gov.

d. All control systems shall include weather sensors (rain, freeze, wind, etc.) appropriate to local climatic conditions, either integral or auxiliary, that will suspend or alter irrigation operation during unfavorable weather conditions acceptable to the Director of Planning and Development Services and installed per manufacture's recommendations.

e. Irrigation systems must be self-adjusting and schedule irrigation events using either evapotranspiration (weather-based) or soil moisture sensor data.

18. Valves

a. Shutoff Valves: Globe or ball valves shall be provided at points of connection and loop or zone isolation points to divide the irrigation system into controllable units, and to avoid draining long runs of piping for system repairs. For manifold remote control valves, the globe or ball valve shall be equal to or larger than the size of the largest control valve in the manifold.

b. Remote Control Valves: Control valves shall be manifolded when the main line is greater than two inches in diameter and installed in individual valve boxes. Valves shall be of slow closing design, and automatically close in the event of power failure. Valves shall be sized to provide adequate pressure differential for proper operation.

c. Quick Coupling Valves/Hose Bibs: Quick coupler valves or hose bibs shall be spaced at 100-foot intervals, maximum, and as needed to logically service areas. Quick coupling valves located with valve manifolds shall be separate and up stream of the manifold shutoff valve.

d. Check valves or anti-drain valves are required for all irrigation systems.

19. Piping

All piping shall be as per the following charts:

Acceptable Pipe Materials

Location	Use	Material	Type	Notes
Above grade	Pressure Mains	Copper	Type "L"	Any Size
		Galvanized Steel	Sch 40	Threaded
		Red Brass	Sch 40	Threaded
	Lateral Lines	Copper	Type "L"	Any Size
		Galvanized Steel	Sch 40	Threaded
		Polyethylene	UV-Resistant	Drip Systems and Mulch Required
		Flexible PVC	Algae Resistant	Drip Systems and Mulch Required
		PVC	Sch 40	< 2"
		PVC	UVR-Sch 409	Any Size
	Fittings	Copper	Type "L"	Any Size
		Galvanized Steel	Sch 40	Threaded
		Molded Plastic	UV Resistant	Drip Systems
		PVC	Sch 40	W/Flex PVC pipe
		PVC	Sch 40	Any Size*
		PVC	UVR-Sch 40	Any Size
		Red Brass	Sch 40	Threaded

NOTE: When dissimilar metals are connected together, dielectric fittings are required.
*Temporary systems only.

Acceptable Pipe Materials

Location	Use	Material	Type	Notes
Below grade	Pressure Mains	Copper	Type "L"	Any Size
		PVC	Class 315	≥ 2"
		PVC	Sch 40	< 1½"
		Red Brass	Sch 50	Threaded
	Lateral Lines	Copper	Type "L"	
		Galvanized Steel	Sch 40	Any Size
		Polyethylene	UV-Resistant	Drip Systems
		Flexible PVC	Algae Resistant	Drip Systems
		PVC	Class 315	½"
		PVC	Class 200	≥ ¾"
		PVC	Sch 40	Any Size
	Fittings	Cast Iron	Class 250	Threaded
		Copper	Type "L"	Drip Systems
		Galvanized Steel	Sch 40	Any Size
		Nylon or ABS	Specialty	Threaded
		PVC	Sch 40	Any Size
		Red Brass	Sch 40	Threaded

NOTE: When dissimilar metals are connected together, dielectric fittings are required.

20. Trench Widths

a. Trenches for irrigation pressure lines shall be excavated wide enough to allow a minimum of 8 inches between parallel pipe lines, and 8 inches from lines of other trades.

b. Lines shall not be installed parallel and directly over one another.

c. At least three inches of vertical clearance shall be maintained between crossing irrigation lines; and the minimum transverse angle shall be 45 degrees.

21. Trench Depths

The following trench depths shall be observed:

Trench Depths

Line Type	Location	Size	Depth (min.)
Pressure main	Within landscape	< 3" I.D.	18"
		≥ 3" I.D.	24"
		≥ 4" I.D.	30"
	Under vehicular paving	< 3" I.D.	30"
		< 3" I.D.	36"
		≥ 3" I.D.	36"
Non-pressure lateral	Within landscape	< 3" I.D.	12"
		≥ 3" I.D.	18"
	Under vehicular paving	< 3" I.D.	24"
		< 3" I.D.	30"
		≥ 3" I.D.	30"

22. Sleeving

a. All pipe and wire under vehicular paving shall be installed in PVC schedule 40 sleeves.

b. Sleeves shall be at least twice the diameter of the pipe or wire bundle to be enclosed, with a minimum two-inch size.

c. Sleeving locations shall be marked at each end at the time of installation with a painted spot on the back face of the curb or other similar marking.

23. Backfill

a. Backfill material shall be clean and free of debris, large rocks, and objects with sharp edges.

b. Finish grade of all trenches must conform to adjacent grades without dips, sunken areas, humps or other irregularities.

24. On-Grade Irrigation Systems

a. Permanent on-grade systems may only be allowed for selective watering of native areas or areas with highly erosive or rocky soils where trenching would disturb or loosen unstable materials and requires approval of the Director of Planning and Development Services.

b. On-grade piping shall not be allowed adjacent to pedestrian traffic.

c. All on-grade lines shall be secured to slopes every ten feet or less. The ends of all laterals shall also be staked.

d. On-grade lateral piping is allowed for temporary systems and irrigation in revegetation areas.

25. Drip and Sub-surface Irrigation Systems

a. All components shall be of non-corrosive materials.

b. Separate or multiple outlet emitters shall be of self-flushing, pressure compensating design.

c. The design of drip systems shall provide balanced water supplies to plant materials of different sizes irrigated with a common lateral line.

d. All drip systems shall be adequately filtered and regulated per the manufacture's recommended design parameters.

e. All systems shall be capable of flushing out accumulated particulate matter. Design shall provide a means for flushing with a minimum of erosion or disruption to the surrounding landscape. Water from flushing shall be accommodated back into the site, where feasible.

f. Emitters shall be protected from soil or root incursion and easily accessible. Metal studs may be required at underground emitters if necessary for easy location with a metal detector.

26. Special Irrigation Systems

Special systems shall be allowed at the discretion of the Director of Planning & Development Services.

Example of a landscape using low water use plants

F. Grading Design Plan

1. The grading on the project site shall be designed for the efficient use of water by minimizing soil erosion, runoff and water waste, resulting from precipitation and irrigation. Plans shall be signed by the project's California licensed landscape professional, or the private property owner.
2. Projects that require a grading permit and plans may submit a copy of these plans to satisfy the requirements of the Landscape Documentation Package as long as the required information is available on the plans.
3. The grading plan shall demonstrate grading has been designed to avoid obstructing roadway users' views of pedestrian crossings, driveways, roadways, other vehicular travel ways, traffic signs, and traffic signals. Sight distances lines, as provided by a California registered Civil Engineer using the sight distance requirements defined in the County Public Road Standards, shall

be shown on the plans as applicable. The plan shall also demonstrate compliance with requirements defined in the Landscape Architecture chapter of the most current Caltrans Highway Design Manual.

4. The grading design plan shall contain the following information:
   a. Finished configurations and elevations of the landscaped areas.
   b. Bottom and top of graded slope elevations.
   c. Drainage patterns.
   d. Pad Elevation.
   e. Finished grade and pad elevations.
   f. Stormwater retention improvements:
      i. Where feasible storm water must be captured and retained on site to improve water use efficiency and water quality;
      ii. Where feasible, rainwater harvesting methods must be implemented;
      iii. Water harvesting containers must be operated in a manner that excludes trash, insects (including mosquitoes), animals, and children;
      iv. Where feasible, pervious hard surfaces shall be installed to harvest and cleanse rainwater; and
      v. All Structural BMP's shall be labeled.
5. Projects that are not required to prepare grading plans for a grading permit shall provide sufficient information on the landscape plans to verify slope heights and drainage patterns. All applicable grading, drainage, and stormwater improvement information must be shown on the landscape design plan or by separate sheet.
6. Areas planned for vegetation should be protected from soil compaction activities and shall be transformed to a friable condition such as through the application of compost and/or mulch.
7. Retain and protect native topsoil and vegetation where practical.
8. Stockpile and reuse good quality topsoil.

G. Water Efficient Landscape Worksheet

See Appendix C for the required Worksheet to verify that the project's Estimated Total Water Use (ETWU) does not exceed the project's Maximum Applied Water Allowance (MAWA).

1. For the calculations of the MAWA, the evapotranspiration adjustment factor (ETAF) is equal to 0.42 for residential and non-residential areas except for special landscaped areas where the additional ET adjustment is 1-ETAF, pursuant to the County Code of Regulatory Ordinances Sec. 86.711.

2. For calculation of the ETWU, a project applicant shall use the evapotranspiration values from the Reference Evapotranspiration (ETo) Table or the average annual ETo value based on the County classification of the Community Planning Area where the site is located. See Appendix A for the ETo Table and information on County classifications and corresponding average ETo values.

Highest Plant Factor	Hydrozone Category
0.0 – 0.1	Very low water use
0.2 – 0.3	Low water use
0.4 – 0.6	Medium water use
0.7 – 1.0	High water use

3. Each hydrozone in the landscape plan must be categorized (very low, low, moderate, high water use or special landscaped area) based on the plant within the hydrozone with the highest plant factor. The applicant shall utilize the Water Use Classification of Landscape Species publication (WUCOLS) to determine plant factors (crop coefficients).
4. High water use plants cannot be planted in a low, or very low water use hydrozone.
5. All surface area of water features shall be included in a high water use hydrozone.
6. Temporarily irrigated areas shall be included in a low water use hydrozone.
7. Artificial turf shall be included in a low water use hydrozone.
8. After the appropriate hydrozone category has been established, the ETWU calculation will utilize a plant factor for each hydrozone category as shown on the Worksheet in Appendix C.
9. The plant factor for all Residential Tree Plantings shall be between 0.3 and 0.5.

Sustainable Landscape Design in Fallbrook

SECTION 3
PRESCRIPTIVE COMPLIANCE OPTION

A. General Information

1. Ministerial projects between 500-2,499 square feet may conform with Landscape Ordinance requirements through the streamlined Prescriptive Compliance Option (Landscape Ordinance Sec. 86.722).
2. For projects that utilize the Prescriptive Compliance Option, a "Water Use Application Using Prescriptive Compliance Option" form (PDS-410; See Appendix B) must be submitted to Planning & Development Services (PDS) at time of building permit application.
3. Projects eligible to utilize the Prescriptive Compliance Option that meets the Estimated Total Water Use (ETWA) requirements (Landscape Ordinance Sec. 86.713) entirely with treated or untreated graywater, or through stored rainwater captured on site need only comply with the Landscape Ordinance Sec. 86.722(a)(5) & (6) requirements.
4. The Application may be submitted by the property owner or the owner's agent but must be signed by the property owner. No other signatures will be accepted. The application must be approved by the Director of Planning & Development Services in order to achieve an initial Outdoor Water Use Authorization, as described in the County Code of Regulatory Ordinances Sec. 86.704, and to receive a building permit.
5. The Prescriptive Compliance Option Plan consists of:
    a. Project Date
    b. Project applicant
    c. Project address
    d. Total landscape area (square feet), including a breakdown of turf and plant material
    e. Project type (new/modified, public, private, cemetery, homeowner installed, developer installed)
    f. Project water type for irrigation (eg., potable, recycled, well, greywater) and identify the local retail water purveyor if the applicant is not served by a private well
    g. Contact information for the project applicant and property owner
    h. Applicant signature and date with statement, "I agree to comply with requirements of the Prescriptive Compliance Option contained in Title 8, Division 6, Chapter 7, of San Diego County Code of Regulatory Ordinances related to water conservation in landscaping."

B. Plant Material and Compost

1. Plant material shall comply with the following:
   a. Residential areas shall install climate adapted plants that require occasional, little or no summer water (average WUCOLS plant factor 0.3) for 75% of the plant area excluding edibles and areas using recycled water.
   b. Non-residential areas shall install climate adapted plants that require occasional, little or no summer water (average WUCOLS plant factor 0.3) for 100% of the plant area excluding edibles and areas using recycled water.
   c. A minimum of three (3") layer of mulch shall be applied on all exposed soil surfaces of planting areas except in turf areas, creeping or rooting groundcovers, or direct seeding applications where mulch is contraindicated. Prescribed depths of mulch and location may be modified as approved by the Director.
   d. All applicable residential landscapes (Landscape Ordinance Sec. 86.722 (a) (3) (C)) shall provide a minimum of two (2) trees per the Residential Tree Planting Guidelines contained within this Manual.
2. Projects shall incorporate compost at a rate of at least four cubic yards per 1,000 square feet to a depth of six inches into landscape area (unless contra-indicated by a soil test in which prescribed volumes of compost can be modified as approved by the Director).

PLANTING HINTS

- Plant in the fall when less water is required to establish the plants.
- Plant high water use plants in shady areas that are protected from the wind.
- For each irrigation zone, choose plants that need the same amount of water and sunlight.
- Use compost rather than fertilizer.
- Only use the minimum amount of fertilizer necessary.
  1) Fertilizers result in higher water use.
  2) Fertilizers encourage rapid growth which increases maintenance and green waste.

C. Irrigated Turf

1. Turf shall comply with the following:
   a. Turf shall not exceed 25% of the landscape area in residential areas, and there shall be no turf in non-residential areas.
   b. Turf shall not be planted on sloped areas which exceed a slope of 1-foot vertical elevation change for every 4 feet of horizontal length.
   c. Turf is prohibited in parkways less than 10 feet wide, unless the parkway is adjacent to a parking strip and used to enter and exit vehicles. Any turf in parkways must be irrigated by sub-surface irrigation or by other technology that creates no overspray or runoff.

D. Irrigation

1. Irrigation systems shall comply with the following:

a. Automatic irrigation controllers are required and must use evapotranspiration or soil moisture sensor data and utilize a rain sensor. Controller shall be type which does not lose programming data in the event the primary power source is interrupted.

b. Pressure regulators shall be installed on the irrigation system to ensure dynamic pressure of the system.

HOW TO CHECK FOR LEAKS

- Turn off all water (including ice makers).
- Record the reading on your water meter and mark the position of the needle.
- Wait 30 minutes to one hour and check the meter.
- If the needle has moved or the reading has changed, you have a leak.

c. Manual shut-off valves (such as a gate valve, or butterfly valve) shall be installed as close as possible to the point of connection of the water supply.

d. All irrigation emission devices must meet the requirements set in the ANSI standard, ASABE/ICC 802-2014. "Landscape Irrigation Sprinkler and Emitter Standard." All sprinkler heads installed in the landscape must document a distribution uniformity low quarter of 0.65 or higher using the protocol defined in ASABE/ICC 802-2014.

e. Areas less than ten (10) feet in width in any direction shall be irrigated with subsurface irrigation or other means that produces no runoff or overspray.

f. Non-residential projects with landscape areas of 1,000 square feet or more, a private submeter(s) to measure landscape water use shall be installed. Flow sensors connected to an automatic irrigation controller may also function as a landscape water meter.

E. Final Inspection

1. At the time of final inspection, the permit applicant must provide the owner of the property with a certificate of completion, certificate of installation, irrigation schedule and a schedule of landscape and irrigation maintenance.
2. Upon installation of the landscaping and the irrigation system, the applicant will submit the "Certificate of Completion Using Prescriptive Compliance Option" form (PDS-407A; See Appendix G). This form verifies that the landscaping and irrigation were installed as required in the approved Water Use Application Using Prescriptive Compliance Option, that all composting and mulch were implemented and installed, and that all plant materials meet average WUCOLS plant factor of 0.3.
3. Upon submittal of Form PDS-407A, the County Landscape Architect shall verify compliance prior to issuance of Water Use Authorization. Prior to any occupancy or use of the premises in reliance with a building permit, the landscaping shall be installed and certified.

SECTION 4
CERTIFICATE OF COMPLETION

A. General Information

1. A Certificate of Completion (Form PDS-407; See Appendix D) shall be submitted for all those projects that have an approved Landscape Documentation Package. Photo documentation of all applicable components as identified on Form PDS-407 shall also be submitted. (Use the Landscape Certificate of Completion Checklist Form PDS-406; Appendix D to assist in the completion of the Certificate of Completion.)
2. The applicant shall provide this information to the Director of Planning & Development Services within 10 days after installation of the landscaping and irrigation system.
3. An irrigation schedule and a maintenance schedule must also be submitted. In addition, a soil management report will also be required if one was not submitted as part of the Landscape Documentation Package. See Appendix D for the Certificate of Completion form and the required documentation to be submitted, verified, and approved prior to obtaining use of the property.
4. The Certificate of Completion certifies that the landscaping and irrigation system have been installed in compliance with the approved Landscape Documentation Package or Prescriptive Compliance Option Plan and that the irrigation system functions as designed and approved.
5. The landscape architect, civil engineer or architect shall conduct periodic site visits during construction to ensure that the landscaping and irrigation system are being installed per the approved Landscape Document Package or Prescriptive Compliance Option Plan and shall certify to such as part of the Certificate of Completion requirements. Where a single-family homeowner who either hired a licensed landscape contractor to install the landscaping and irrigation, or installed it themselves, the certificate shall be signed under penalty of perjury by the homeowner and the contractor, or by the homeowner if installed by them. Personal property owners who designed and installed landscape on their own property shall also be required to sign the certificate. Preliminary inspection and observations shall include, but not be limited to, mainline, lateral lines, control wires, communication wires, and sprinkler head layout. Incorporation of composting and that soils are friable shall be confirmed and that soil amendments per the required soils test have been implemented shall also be confirmed.
6. An irrigation audit report shall be submitted with the Certification of Completion that shall include, but is not limited to: inspection, system tune-up, system test with distribution uniformity, soil moisture test/observation for drip and subsurface irrigation, 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.

7. The applicant shall submit two sets of the signed Landscape Certificate of Completion with all supporting documents, including photo documentation.

B. Irrigation Scheduling

An annual irrigation program with monthly or seasonal irrigation schedules shall be submitted with the Certificate of Completion and provide the following information:

1. A description of the automatic irrigation system that will be used for the project. A diagram of the irrigation plan showing hydrozones shall be kept with the irrigation controller for subsequent management purposes. A copy shall be provided with the submittal of the Certificate of Completion to verify compliance.

1. The time period when overhead irrigation will be scheduled and confirm that overhead irrigation shall only be used during the shorter of the following two intervals; 1) between 8:00 p.m. and 10:00 a.m., or 2) any more restrictive mandated by a public water purveyor.

2. For implementation of the irrigation schedule, particular attention must be paid to irrigation run times, emission device, flow rate, and current reference evapotranspiration, so that applied water meets the Estimated Total Water Use. Total annual applied water shall be less than or equal to Maximum Applied Water Allowance (MAWA). Actual irrigation schedules shall be regulated by automatic irrigation controllers using current reference evapotranspiration data (e.g., CIMIS) or soil moisture sensor data.

Water Efficiency Tip	Estimated Savings
Water only in the late evening or early morning hours to reduce evaporation and interference from wind.	20–25 gallons/day
Adjust sprinklers to prevent overspray and runoff.	15–25 gallons/day
Add 3” of mulch around trees & plants to reduce evaporation.	20–30 gal./day/1,000 sq. ft.
Install water-efficient drip irrigation system for trees, shrubs, and flowers to get water to plant roots more efficiently.	20–25 gallons/day
Upgrade to a “weather-based irrigation controller” that automatically adjusts watering times based on weather conditions.	40 gallons/day

3. The parameters used for setting the irrigation system controller for the following:
   a. The plant establishment period (monthly).
   b. The established landscape (seasonal).
   c. Temporarily irrigated areas (monthly).
   d. Different seasons during the year.
4. Each schedule for each station should consider all of the following that apply:

a. Irrigation interval (days between irrigation).

b. Irrigation run times (hours or minutes per irrigation event to avoid runoff).

c. Number of cycle starts required for each irrigation event to avoid runoff.

d. Amount of water scheduled to be applied on a monthly basis.

e. Application rate setting, root depth setting, plant type setting, soil type, slope factor setting, shade factor setting, application rate setting, and irrigation uniformity or efficiency setting.

B. Landscape and Irrigation Maintenance and Schedule

1. A person using water under a water use authorization that the County issued pursuant to the Landscape Ordinance shall maintain the landscaping and irrigation on the property to ensure compliance with the MAWA.
2. All required plantings shall be maintained in good growing condition and whenever necessary, shall be replaced with similar plant materials to ensure continued compliance with applicable landscaping, buffering, and screening requirements.
3. All landscaping and irrigation systems shall be properly maintained for the life of the permit and per the approved irrigation and maintenance schedules.
4. Broken or malfunctioning equipment and material shall be repaired or replaced immediately with equipment and material of the same type and operating characteristics as the original.
5. All irrigation systems shall be maintained in a fully operational condition. The irrigation system must function at a minimum average efficiency factor of 0.75.
6. Plans shall include a statement indicating who is responsible for on-going maintenance, including runoff and overspray prevention, repairs of broken or malfunctioning irrigation equipment, replacement of dead, dying, or diseased vegetation, and continual compliance with the project's approved water calculations.
7. A regular maintenance schedule must be submitted as part of the Certificate of Completion and shall include, but not be limited to:

   a. Routine inspection of the irrigation system to guard against runoff and erosion.

   b. Adjustments and repair of the irrigation system and its components.

   c. Aerating and dethatching turf areas.

   d. Replenishing mulch and/or compost.

   e. Fertilizing of non-native vegetation.

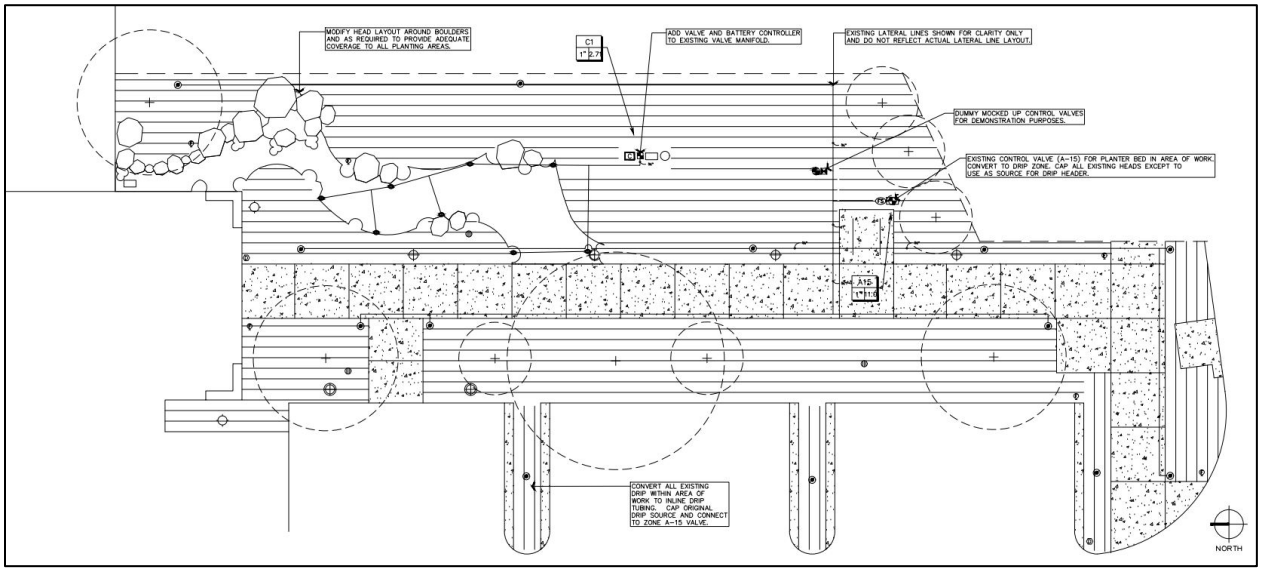
   f. Pruning, weeding and removing any obstruction to emission devices.

   g. Brush management.

h. Storm water management.

i. Identify who will be responsible for maintenance and include emergency contact information.

8. A project applicant is encouraged to implement established landscape industry sustainable best practices for all landscape maintenance activities. See the "Sustainable Landscapes" Section below for additional information and resources.



Irrigation Plan

SECTION 5
TREE PLANTING GUIDELINES

A. General Information

1. In support of Strategy A-2 (Increase Carbon Sequestration) of the County's adopted Climate Action Plan, Measure A-2.1 (Increase Residential Tree Planting) requires that two trees be planted for every new residential dwelling unit constructed in the unincorporated County.

2. During photosynthesis plants take carbon dioxide from the atmosphere and convert it to oxygen and carbon-based plant matter, storing carbon in their structures and in the soil. As part of the natural carbon cycle, trees store significant amounts of carbon because of their size and longevity while also providing habitat, clean air, beauty, shade, and contributing to community wellbeing. Trees draw greenhouse gas emissions from the atmosphere to sequester carbon within the tree roots, wood, leaves, and soil. As the tree grows, it continues to absorb more carbon adding both habitat benefit and value to a home. In addition, trees can reduce electricity use by providing shade and temperature regulation benefits for residents.

BENEFITS OF TREES

- Healthy, mature trees add an average 10% to a property's value.
- Proper tree location around buildings can reduce air conditioning needs by 30% and can save 20-50% in energy used for heating.
- Filters pollutants from the air.
- Stabilizes soil to prevent erosion.
- Reduces the overall concentration of greenhouse gases in the atmosphere.

B. Applicability

1. The residential tree planting requirement applies to new single-family residential dwelling units with a main entrance on the ground level including subdivisions, non-tract single-family homes, and single-family detached condominium projects. From the County's Zoning Ordinance definitions, these projects include single detached, semi-detached, duplex or double-detached, triplex or three unit multiple, or multi-dwelling building types.

2. This requirement applies to residential projects submitting a Landscape Document Package or utilizing the Prescriptive Compliance Option.

C. Location of Tree Plantings

1. In order of priority:

   a. Trees shall first be located on private property, outside of the public right-of-way. Trees can be located in front yards, side yards, or rear yards depending upon space available and mature canopy sizes of species selected.

   b. Trees shall be located outside of any utility easements or open space lots. Tree locations shall be compliant with Section 2.D.7 (Fuel Management) of the Water Efficient Landscape Design Manual, and any Fire District

restrictions, or as approved within a Fire Protection Plan for the development (if the subdivision has an approved Fire Protection Plan, then trees shall be compliant with that document. If none exists, trees need to be compliant with the County's 'Fire, Defensible Space and You' brochure and/or any restrictions imposed by the local Fire District having jurisdiction).

c. Trees unable to be located on private individual lots due to spacing, and/or other restrictions, shall be located within common use areas of the subdivision. This includes group useable open space areas, and street trees only if an Encroachment Maintenance and Removal Agreement has been approved by the Department of Public Works.

d. When no other space is available for remaining trees, they may be located on slopes (in excess of all required planting per Sec. 87.418 of the Grading Ordinance).

e. Engineered Tree Wells that are planted to meet stormwater compliance may be counted towards meeting this requirement only if they are substituting the required two (2) trees per residence.

2. Tree planting may not occur within mitigation areas associated with a Landscape Revegetation Plan, they may not be located in adjacent open space areas, or areas of existing native habitat.

3. Trees being used to satisfy County regulations other than this Measure (compliance with the Parking Design Manual, Community Design Guidelines, specific Conditions associated with a discretionary permit requiring tree planting, or street trees proposed by the developer) may not be counted towards satisfying this Measure. These trees are in addition to all other trees within a development.

4. Street trees required within a Landscape Zone associated with a Community Design Guidelines for detached condominium projects do not count towards meeting this Measure.

5. Locations and species of trees shall take into consideration shading capabilities for summer cooling and letting light in during winter months to reduce demand on the use of electricity.

6. Adequate justification shall be required for a project not being able to meet the required tree counts, either within each individual lot, or spread out in common areas, slopes, or storm water basins of the development or residential lot.

D. Tree Species and Specifications

1. Trees shall be low to moderate water use and have a Plant Factor between 0.3 and 0.5 per the State's Water Use Classification of Landscape Species (WUCOLS) publication and are primarily drought tolerant, native, and fire friendly varieties.

2. Fruit trees (considered a Special Landscape Area) may be used. Graywater, if available can be used to irrigate fruit trees.
3. No invasive or fire prone species shall be allowed.
4. Non-native species of palm trees do not satisfy this requirement due to insufficient data demonstrating their carbon sequestration capabilities (as a single specimen).
5. Trees shall be installed from a minimum 24" boxed container.
6. Trees can be single or multi-trunked.
7. Tree staking shall be provided in windy areas, and those trees with a trunk diameter less than two inches (as measured three feet above grade).
8. Areas prone to gopher activity shall provide gopher cages to protect the roots from damage during establishment.
9. Tree selection shall be based upon their adaptability to the climate, geologic, and topographical conditions. Any tree species can be selected providing the Estimated Total Water Use in the landscape area does not exceed the Maximum Applied Water Allowance per the requirements of the Prescriptive Compliance Option requirements. See Appendix H (Low Water Use, Ignition Resistive Plants), Appendix I (Undesirable Plants), and Appendix J (Invasive Species) within this Manual to assist in tree selections. See Appendix E (Plant Palette) within the County's Low Impact Development Manual (https://www.sandiegocounty.gov/content/dam/sdc/dpw/WATERSHED_PROTECTION_PROGRAM/susmppdf/lid_appendix_e_plant_pallette.pdf) for additional species. All tree locations shall be compliant with Sec. 4907 (Defensible Space) of the County's Consolidated Fire Code.
10. Trees shall be irrigated on a separate valve from other plantings, independently of shrubs, groundcovers, and turf.
11. Tree species shall be selected in accordance with the community's established tree list.

E. Installation and Verification

1. All trees and supporting irrigation system(s) shall be installed and verified prior to final occupancy being granted.
    a. Projects utilizing the Prescriptive Compliance Option shall provide photographic proof of tree and irrigation installation as required by Form PDS-407A (Appendix G).
    b. Projects with an approved Landscape Documentation Package shall provide photographic proof of tree planting and irrigation installation as required by Form PDS-406 (Appendix F).

SECTION 6
SUSTAINABLE LANDSCAPES

A. General Information

1. Sustainable landscapes are responsive to the local environment through implementation of four key principles including:

   a. Maximization the impact of rainwater through design features that divert rainwater to landscaped areas and devices that capture and store rainwater to reduce the amount of water used in irrigation, reduce stormwater runoff, slow evaporation, and prevent erosion;

   b. Utilization of climate-appropriate plants that are compatible with San Diego's mild Mediterranean climate;

   c. Building healthy, living soils; and

   d. Implementing high-efficiency irrigation systems that use smart irrigation controllers to adjust irrigation in response to weather conditions and high-performance distribution components to eliminate runoff and over-watering.

BENEFITS OF SUSTAINABLE LANDSCAPING

- Healthy, low-maintenance landscapes
- Lower water-bills
- Less water quality degradation
- Extended life of water resources infrastructure (pumping, water treatment facilities, etc.)
- Enhanced wildlife habitat
- Reduced air pollution
- Reduced home cooling and heating costs through strategic plant placement

B. Climate Appropriate Plants and Trees

1. Once established, local native groundcovers, plants, shrubs and trees can survive with minimal, if any, supplemental watering. At the same time, these plants can create colorful, aesthetically pleasing landscapes that require limited maintenance and offer a diversity of habitat for local insects, birds, and animals.

2. Dividing landscaping into hydrozones further improves plant watering efficiently by grouping plants with similar irrigation needs together. In San Diego County, where fire risk can be of concern, climate-appropriate plants, such as succulents, agaves, and aloes, have the added benefit of being ignition resistant and less likely to produce airborne plant embers due to a high salt and/or water and low volatile oil content in their leaves. See Appendix H for additional information.

3. Incorporating trees into sustainable landscapes can result in additional benefits.

IDENTIFYING CLIMATE-APPROPRIATE PLANTS

- **Stiff, leathery leaves** hold on to water and stay evergreen for most of the year.
- **Silver or hairy leaves** reflects sunlight, cooling the plant. Hairy back sides of leaves hold moisture longer, cooling them off.
- **Tiny little leaves** are like tiny solar panels that are easier to keep cool than one large hot surface.
- **Solar tracking leaves** that minimize the hottest sun exposure.

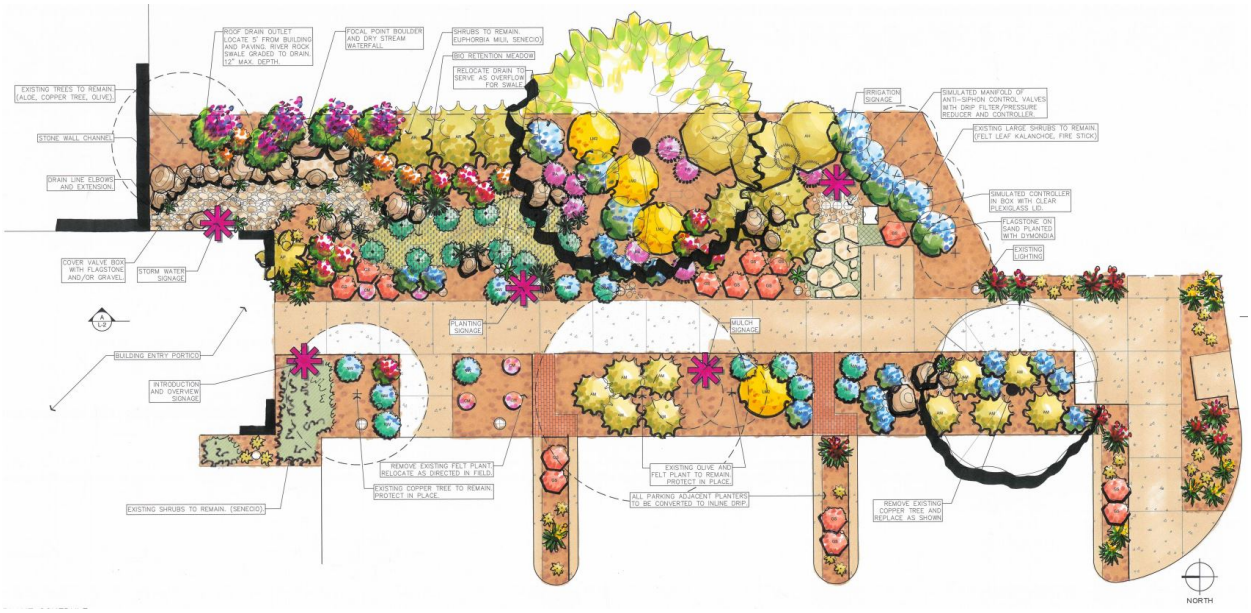
Trees can help add to property values, improve water quality, lead to less runoff and erosion, increase canopy and provide shade, absorb sound, increase carbon sequestration, and many more. Landscape design plans should consider the mature size of the tree when planting to ensure adequate space, location, and protect viewsheds.

C. Healthy Soils

1. Sustainable landscapes build healthy soils to create a complex, living collection of dirt, organic matter, microorganisms, plants, and insects. The soil acts as a sponge for water and delivers nutrients for better plant health.
2. Sustainable landscapes utilize compost and mulch to improve soil content, avoid tilling and compaction of existing soils to increase oxygen in the soil, and avoid using chemical fertilizers and herbicides that can kill soil microbes.

D. Additional Information

Creating a sustainable landscape requires proper planning. Find additional information on how to design a sustainable landscape in San Diego County at the San Diego Sustainable Landscape Program (https://sustainablelandscapessd.org/). The program offers education, training, information on incentives, and detailed guidelines and home plans to help create a sustainable landscape. The guidelines also include recommendations for types of groundcover, plants, shrubs, and trees native to the San Diego region to include in your sustainable landscape design.



Sustainable Landscape Design

APPENDICES

A. Reference Evapotranspiration (ETo) Data

B. Water Use Application Using Prescriptive Compliance Option, Form PDS-410

C. Water Efficient Landscape Worksheet, Form PDS-405

D. Landscape Certificate of Completion, Form PDS-407

E. Landscape Documentation Package Checklist, Form PDS-404

F. Landscape Certificate of Completion Checklist, Form PDS-406

G. Landscape Certificate of Completion Using Prescriptive Compliance Option, Form PDS-407A

H. Low Water Use, Ignition Resistive Plants

I. Undesirable Plants

J. Invasive Species

K. Water Authority Member Agencies

L. Water Conservation Program for Established Landscapes

M. Water Conservation in Landscaping Ordinance

N. Additional Resources