



City of Brisbane Water Conservation in Landscaping Technical Guidance Document (4/7/2016)

This guidance document accompanies the Water Conservation in Landscaping Ordinance No 607, Brisbane Municipal Code Chapter 15.70 (Ordinance), adopted by City Council on April 7th, 2016. It is intended to provide the detailed technical information required of applicants for compliance with the Ordinance. As a technical guidance document it is intended to be a living document, to keep pace with industry standards and best practices. Any future revisions to this document shall be subject to Community Development Director approval, consistent with the Ordinance, subsequent amendments and current state law.

The Landscape Project Application and Design Package shall include the following elements, which are further described in the sections which follow:

1.0 General Requirements (for all new and rehabilitated regulated projects):

- Project Application
- Landscape Design Plan
- Grading Design Plan or Grading Design Survey
- Certificate of Completion
- Irrigation Scheduling
- Landscape and Irrigation Maintenance Schedule
- Stormwater Management and Rainwater Retention

2.0 Prescriptive Option Project Requirements:

- Prescriptive Design Elements of Planting Restrictions, etc.

3.0 Water Budget Option Project Requirements:

- Irrigation System Design Plan
- Soil Management Report or Soil Management Survey
- Water Budget Calculations Outdoor
- Water Use Efficiency Checklist

1.0 General Requirements

The following documentation requirements apply to both the prescriptive compliance option and the water budget calculation option.

Project Application

The Landscape Project Application shall include the following elements:

- Project identifying information: address, lot number, or assessor's parcel number
- Project contact information
- Applicant signature and date with Certification statement, "I agree to comply with the requirements of the water efficient landscape ordinance and submit a complete Landscape Documentation Package".
- Project type: new or rehabilitated
- Total landscape area in square feet
- Water supply type: potable, recycled, or other
- Checklist of all documents in Landscape Documentation Package
- Applicable permit fee

Landscape Design Plan

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

1. Plant Material
 - a. Each hydrozone should have plant materials with similar water use, with the exception of hydrozones with plants of mixed water use, as specified in Section 492.7(a)(2)(D).
 - b. Plants shall be selected and planted appropriately based upon their adaptability to the climatic, geologic, and topographical conditions of the project site. Methods to achieve water efficiency shall include one or more of the following:

- use the Sunset Western Climate Zone System which takes into account temperature, humidity, elevation, terrain, latitude, and varying degrees of continental and marine influence on local climate;
 - Turf is not allowed on slopes greater than 25% where the toe of the slope is adjacent to an impermeable hardscape and where 25% means 1 foot of vertical elevation change for every 4 feet of horizontal length (rise divided by run x 100 = slope percent).
 - High water use plants, characterized by a plant factor of 0.7 to 1.0, are prohibited in street medians.
- c. A landscape design plan for projects in fire-prone areas shall address fire safety and prevention. A defensible space or zone around a building or structure is required per Public Resources Code Section 4291(a) and (b). Avoid fire-prone plant materials and highly flammable mulches. Refer to the local Fuel Modification Plan guidelines.
- d. The use of invasive plant species listed by the California Invasive Plant Council is prohibited.
- e. The architectural guidelines of a common interest development, which include community apartment projects, condominiums, planned developments, and stock cooperatives, shall not prohibit or include conditions that have the effect of prohibiting the use of low-water use plants as a group.
2. Water Features
- a. Recirculating water systems shall be used for water features.
 - b. Where available, recycled water shall be used as a source for decorative water features.
 - c. Surface area of a water feature shall be included in the high water use hydrozone area of the water budget calculation.
 - d. Pool and spa covers are required on any newly constructed pool or spa.
3. Soil Preparation, Mulch and Amendments
- a. Prior to the planting of any materials, compacted soils shall be transformed to a friable condition. On engineered slopes, only amended planting holes need meet this requirement.
 - b. Soil amendments shall be incorporated according to recommendations of the soil report and what is appropriate for the plants selected.
 - c. For landscape installations, compost at a rate of a minimum of four cubic yards per 1,000 square feet of permeable area shall be 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.

- d. 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. 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.
 - e. Stabilizing mulching products shall be used on slopes that meet current engineering standards.
 - f. The mulching portion of the seed/mulch slurry in hydro-seeded applications shall meet the mulching requirement.
 - g. Organic mulch materials made from recycled or post-consumer 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 local Fuel Modification Plan Guidelines or other applicable local ordinances.
4. The landscape design plan, at a minimum, shall:
- a. delineate and label each hydrozone;
 - b. identify each hydrozone as low, moderate, high water, or mixed water use;
 - c. identify recreational areas;
 - d. identify areas permanently and solely dedicated to edible plants;
 - e. identify areas irrigated with recycled water and the recycled water source;
 - f. identify type of mulch and application depth;
 - g. identify soil amendments, type, and quantity;
 - h. identify type and surface area of water features;
 - i. identify hardscapes (pervious and non-pervious);
 - j. identify location, installation details, and 24-hour retention or infiltration capacity of any applicable storm water best management practices that encourage on-site retention and infiltration of storm water. Project applicants shall refer to the local agency or regional Water Quality Control Board for information on any applicable storm water technical requirements. Storm water best management practices are to be used.
 - k. identify any applicable rain harvesting or catchment technologies and their 24-hour retention or infiltration capacity;
 - l. identify any applicable graywater discharge piping, system components and area(s) of distribution;

- m. contain the following statement: “I have complied with the criteria of the ordinance and applied them for the efficient use of water in the landscape design plan”; and
- n. bear the signature of a licensed landscape architect, licensed landscape contractor, or any other person authorized to design a landscape.

Grading Design Plan

For the efficient use of water, grading of a project site shall be designed to minimize soil erosion, runoff, and water waste. A grading plan or completed Grading Design Survey (See Attachment B) shall be submitted as part of the Landscape Documentation Package. A comprehensive grading plan prepared by a civil engineer for other City permits satisfies this requirement. The grading plan shall indicate finished configurations and elevations of the landscape area including:

- a. height of graded slopes;
- b. drainage patterns;
- c. pad elevations;
- d. pre-existing and finished grade; and
- e. storm water retention improvements, if applicable

Certificate of Completion

1. The Certificate of Completion (see Attachment A) shall include the following elements:
 - a. Project Information: Project information sheet that contains:
 - Date
 - Project name
 - Project applicant name, telephone, and mailing address;
 - Project address and location; and
 - Property owner name, telephone, and mailing address;
 - b. Certificate of Completion: certification by either the signer of the landscape design plan, the signer of the irrigation design plan, or the licensed landscape contractor that the landscape project has been installed per the approved Landscape Documentation Package;
 - where there have been significant changes made in the field during construction, these “as-built” or record drawings shall be included with the certification;
 - A diagram of the irrigation plan showing the hydrozones shall be kept on-site for subsequent management purposes.

- c. irrigation Scheduling Parameters: irrigation scheduling parameters used to set the controller;
 - d. landscape and irrigation maintenance schedule;
 - e. irrigation audit report; and
 - f. soil analysis report, if not submitted with Landscape Documentation Package, and documentation verifying implementation of soil report recommendations.
2. The project applicant shall:
 - a. submit the signed Certificate of Completion to the local agency for review;
 - b. ensure that copies of the approved Certificate of Completion are submitted to the local water purveyor and property owner or his or her designee.
 3. The local agency will, after receipt of the signed Certificate of Completion from the project applicant, approve or deny the Certificate of Completion. If the Certificate of Completion is denied, the local agency will provide information to the project applicant regarding reapplication, appeal, or other assistance.

Irrigation Scheduling

1. For the efficient use of water, all irrigation schedules shall be developed, managed, and evaluated to utilize the minimum amount of water required to maintain plant health. Irrigation schedules shall meet the following criteria:
 - a. Irrigation scheduling shall be regulated by automatic irrigation controllers.
 - b. Irrigation scheduling restrictions are to be confirmed with the City prior to installation. Notwithstanding other applicable restrictions, overhead irrigation hours are generally between 8:00 p.m. and 10:00 a.m., except where weather conditions prevent watering. Operation of the irrigation system outside the normal watering window is allowed for auditing and system maintenance.
 - c. 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.
 - d. Parameters used to set the automatic controller shall be developed and submitted for each of the following:
 - i. The plant establishment period;
 - ii. The established landscape; and
 - iii. Temporarily irrigated areas.

- e. Each irrigation schedule shall consider for each station all of the following that apply:
 - i. irrigation interval (days between irrigation);
 - ii. irrigation run times (hours or minutes per irrigation event to avoid runoff);
 - iii. number of cycle starts required for each irrigation event to avoid runoff;
 - iv. amount of applied water scheduled to be applied on a monthly basis;
 - v. application rate setting;
 - vi. root depth setting;
 - vii. plant type setting;
 - viii. soil type;
 - ix. slope factor setting;
 - x. shade factor setting; and
 - xi. irrigation uniformity or efficiency setting.

Landscape and Irrigation Maintenance Schedule

1. Landscapes shall be maintained to ensure water use efficiency. A regular maintenance schedule shall be submitted with the Certificate of Completion.
2. A regular maintenance schedule shall include, but not be limited to, routine inspection; adjustment and repair of the irrigation system and its components; aerating and dethatching turf areas; replenishing mulch; fertilizing; pruning; weeding in all landscape areas; and removing obstructions to emission devices. Operation of the irrigation system outside the normal watering window is allowed for auditing and system maintenance.
3. Repair of all irrigation equipment shall be done with the originally installed components or their equivalents or with components with greater efficiency.
4. The project applicant is encouraged to implement established landscape industry sustainable Best Practices for all landscape maintenance activities.

Stormwater Management and Rainwater Retention

1. Stormwater management practices minimize runoff and increase infiltration which recharges groundwater and improves water quality. Implementing stormwater best management practices into the landscape and grading design plans to minimize runoff and to increase on-site rainwater retention and infiltration are encouraged.
2. Project applicants shall refer to the City or Regional Water Quality Control Board for information on any applicable stormwater technical requirements.

3. All planted landscape areas are required to have friable soil to maximize water retention and infiltration.
4. It is strongly recommended that landscape areas be designed for capture and infiltration capacity that is sufficient to prevent runoff from impervious surfaces (i.e. roof and paved areas) from either: the one inch, 24-hour rain event or (2) the 85th percentile, 24-hour rain event, and/or additional capacity as required by any applicable local, regional, state or federal regulation.
5. It is recommended that storm water projects incorporate any of the following elements to improve on-site storm water and dry weather runoff capture and use:
 - a. Grade impervious surfaces, such as driveways, during construction to drain to vegetated areas.
 - b. Minimize the area of impervious surfaces such as paved areas, roof and concrete driveways.
 - c. Incorporate pervious or porous surfaces (e.g., gravel, permeable pavers or blocks, pervious or porous concrete) that minimize runoff.
 - d. Direct runoff from paved surfaces and roof areas into planting beds or landscaped areas to maximize site water capture and reuse.
 - e. Incorporate rain gardens, cisterns, and other rain harvesting or catchment systems.
 - f. Incorporate infiltration beds, swales, basins and drywells to capture storm water and dry weather runoff and increase percolation into the soil.
 - g. Consider constructed wetlands and ponds that retain water, equalize excess flow, and filter pollutants.

2.0 Prescriptive Compliance Option

This section outlines the prescriptive compliance requirements of the Water Efficient Landscape Ordinance. See also the General Requirements.

The landscape plan shall be comply with the following:

1. **Plant Material:** Plant material shall comply with all of the following;
 - a. For residential landscape areas: Install California native, climate adapted plants that require occasional, little or no summer water (WUCOLS low water use) for 80% of the landscaped areas, except for areas using recycled water or graywater. The remaining 20% of the landscaped areas may include moderate water use plants and is intended primarily to allow for edibles. Exceptions to allow for moderate to high water use edible plants which would result in a reduction in the 80% minimum landscape area may be considered on a case by case basis. Exceptions to allow for non-native plants may be considered for non-invasive, climate adapted plants.

- b. For non-residential landscape areas: Install California native, climate adapted plants that require occasional, little or no summer water (WUCOLS low water use or lower) for 100% of the landscaped areas, except areas using recycled water or graywater. Exceptions to allow for moderate or high water use plants may be considered for edible plants on a case by case basis. Exceptions to allow for non-native plants may be considered for non-invasive, climate adapted plants;
 - c. Turf is prohibited for the prescriptive compliance option.
2. **Compost:** 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 provided to the City).
3. **Mulch:** 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.
4. **Irrigation Systems:** 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.
 - b. Irrigation controllers shall be of a type which does not lose programming data in the event the primary power source is interrupted.
 - c. Pressure regulators shall be installed on the irrigation system to ensure the dynamic pressure of the system is within the manufacturers recommended pressure range.
 - d. Manual shut-off valves (such as a gate valve, ball valve, or butterfly valve) shall be installed as close as possible to the point of connection of the water supply.
 - e. 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.
 - f. 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.
5. **Submetering:** For non-residential projects with landscape areas of 1,000 sq. ft. or more, a private submeter(s) to measure landscape water use shall be installed.
6. **Final Documentation:** At the time of final inspection, the permit applicant must provide the City and owner of the property with the following:
 - a. Certificate of completion
 - b. Certificate of installation
 - c. Irrigation schedule and a
 - d. schedule of landscape and irrigation maintenance.

3.0 Water Budget Calculation Option

The following documentation requirements apply to the water budget calculation option:

1. Irrigation Design Plan

This section applies to landscaped areas requiring permanent irrigation, not areas that require temporary irrigation solely for the plant establishment period. For the efficient use of water, an irrigation system shall meet all the requirements listed in this section and the manufacturers' recommendations. The irrigation system and its related components shall be planned and designed to allow for proper installation, management, and maintenance. An irrigation design plan meeting the following design criteria shall be submitted as part of the Landscape Documentation Package.

a. System:

- i. Landscape water meters, defined as either a dedicated water service meter or private submeter, shall be installed for all non-residential irrigated landscapes of 1,000 sq. ft. and for residential irrigated landscapes of 5,000 sq. ft. or greater. A landscape water meter may be either:
 - a customer service meter dedicated to landscape use provided by the local water purveyor; or
 - a privately owned meter or submeter.
- ii. Automatic irrigation controllers utilizing either evapotranspiration or soil moisture sensor data utilizing non-volatile memory shall be required for irrigation scheduling in all irrigation systems.
- iii. If the water pressure is below or exceeds the recommended pressure of the specified irrigation devices, the installation of a pressure regulating device is required to ensure that the dynamic pressure at each emission device is within the manufacturer's recommended pressure range for optimal performance.
 - 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.
 - 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.
- iv. Sensors (rain, freeze, wind, etc.), either integral or auxiliary, that suspend or alter irrigation operation during unfavorable weather conditions shall be required on all irrigation systems, as appropriate for local climatic conditions.

- v. Manual shut-off valves (such as a gate valve, ball valve, or butterfly valve) shall be required, as close as possible to the point of connection of the water supply, to minimize water loss in case of an emergency (such as a main line break) or routine repair.
- vi. Backflow prevention devices shall be required to protect the water supply from contamination by the irrigation system. A project applicant shall refer to the applicable local agency code (i.e., public health) for additional backflow prevention requirements.
- vii. Flow sensors that detect high flow conditions created by system damage or malfunction are required for all on non-residential landscapes and residential landscapes of 5000 sq. ft. or larger.
- viii. 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.
- ix. The irrigation system shall be designed to prevent runoff, low head drainage, overspray, or other similar conditions where irrigation water flows onto non-targeted areas, such as adjacent property, non-irrigated areas, hardscapes, roadways, or structures.
- x. Relevant information from the soil management plan, such as soil type and infiltration rate, shall be utilized when designing irrigation systems.
- xi. The design of the irrigation system shall conform to the hydrozones of the landscape design plan.
- xii. The irrigation system must be designed and installed to meet, at a minimum, the irrigation efficiency criteria as described in Section 492.4 regarding the Maximum Applied Water Allowance.
- xiii. All irrigation emission devices must meet the requirements set in the American National Standards Institute (ANSI) standard, American Society of Agricultural and Biological Engineers'/International Code Council's (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.
- xiv. The project applicant shall confirm with the City whether peak water operating demands (on the water supply system) or water restrictions that may impact the effectiveness of the irrigation system.
- xv. In mulched planting areas, the use of low volume irrigation is required to maximize water infiltration into the root zone.
- xvi. Sprinkler heads and other emission devices shall have matched precipitation rates, unless otherwise directed by the manufacturer's recommendations.

- xvii. Head to head coverage is recommended. However, sprinkler spacing shall be designed to achieve the highest possible distribution uniformity using the manufacturer's recommendations.
- xviii. Swing joints or other riser-protection components are required on all risers subject to damage that are adjacent to hardscapes or in high traffic areas of turf-grass.
- xix. Check valves or anti-drain valves are required on all sprinkler heads where low point drainage could occur.
- xx. 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.
- xxi. Overhead irrigation shall not be permitted within 24 inches of any non-permeable surface. Allowable irrigation within the setback from non-permeable surfaces may include drip, drip line, or other low flow non-spray technology. The setback area may be planted or unplanted. The surfacing of the setback may be mulch, gravel, or other porous material. These restrictions may be modified if:
 - the landscape area is adjacent to permeable surfacing and no runoff occurs; or
 - the adjacent non-permeable surfaces are designed and constructed to drain entirely to landscaping; or
 - the irrigation designer specifies an alternative design or technology, as part of the Landscape Documentation Package and clearly demonstrates strict adherence to irrigation system design criteria. Prevention of overspray and runoff must be confirmed during the irrigation audit.
- xxii. Slopes greater than 25% shall not be irrigated with an irrigation system with an application 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 during the irrigation audit.

b. Hydrozone

- i. Each valve shall irrigate a hydrozone with similar site, slope, sun exposure, soil conditions, and plant materials with similar water use.
- ii. Sprinkler heads and other emission devices shall be selected based on what is appropriate for the plant type within that hydrozone.
- iii. Where feasible, trees shall be placed on separate valves from shrubs, groundcovers, and turf to facilitate the appropriate irrigation of trees. The mature size and extent of the root zone shall be considered when designing irrigation for the tree.

- iv. Individual hydrozones that mix plants of moderate and low water use, or moderate and high water use, may be allowed if:
 - plant factor calculation is based on the proportions of the respective plant water uses and their plant factor; or
 - the plant factor of the higher water using plant is used for calculations.
 - v. Individual hydrozones that mix high and low water use plants shall not be permitted.
 - vi. On the landscape design plan and irrigation design plan, hydrozone areas shall be designated by number, letter, or other designation. On the irrigation design plan, designate the areas irrigated by each valve, and assign a number to each valve. Use this valve number in the Hydrozone Information Table (see Attachment C). This table can also assist with the irrigation audit and programming the controller.
- c. The irrigation design plan, at a minimum, shall contain:
- i. location and size of separate water meters for landscape;
 - ii. location, type and size of all components of the irrigation system, including controllers, main and lateral lines, valves, sprinkler heads, moisture sensing devices, rain switches, quick couplers, pressure regulators, and backflow prevention devices;
 - iii. static water pressure at the point of connection to the public water supply;
 - iv. flow rate (gallons per minute), application rate (inches per hour), and design operating pressure (pressure per square inch) for each station;
 - v. recycled water irrigation systems, if specified;
 - vi. the following statement: "I have complied with the criteria of the ordinance and applied them accordingly for the efficient use of water in the irrigation design plan"; and
 - vii. the signature of a licensed landscape architect, certified irrigation designer, licensed landscape contractor, or any other person authorized to design an irrigation system.

Soil Management Report

In order to reduce runoff and encourage healthy plant growth, a soil management report shall be completed by the project applicant, or his/her designee, or the applicant shall complete a Soil Management Survey. The soil management report shall be completed as follows:

- a. Submit soil samples to a laboratory for analysis and recommendations.
- b. Soil sampling shall be conducted in accordance with laboratory protocol, including protocols regarding adequate sampling depth for the intended plants.
- c. The soil analysis shall include:
 - i. soil texture;
 - ii. infiltration rate determined by laboratory test or soil texture infiltration rate table;
 - iii. pH;
 - iv. total soluble salts;
 - v. sodium
 - vi. percent organic matter; and
 - vii. recommendations
- d. In projects with multiple landscape installations (i.e. production home developments) a soil sampling rate of 1 in 7 lots or approximately 15% of the total lots will satisfy this requirement.
- e. The project applicant, or his/her designee, shall comply with one of the following:
 - i. If significant mass grading is not planned, the soil analysis report shall be submitted to the local agency as part of the Landscape Documentation Package; or
 - ii. If significant mass grading is planned, the soil analysis report shall be submitted to the local agency as part of the Certificate of Completion.
- f. The soil analysis report shall be made available, in a timely manner, to the professionals preparing the landscape design plans and irrigation design plans to make any necessary adjustments to the design plans.
- g. The project applicant, or his/her designee, shall submit documentation verifying implementation of soil analysis report recommendations to the local agency with Certificate of Completion.

Water Budget Calculations

Project applicant may elect to complete a water budget calculation for the landscape project using the Water Efficient Landscape Worksheet (Attachment C), or the applicant may elect the planting restrictions option, as provided for in the Ordinance. Water budget calculations, if prepared, shall adhere to the following requirements:

- a. The plant factor used shall be from WUCOLS or from horticultural researchers with academic institutions or professional associations as approved by the California Department of Water Resources (DWR). The plant factor ranges from 0 to 0.1 for very low water using plants, 0.1 to 0.3 for low water use plants, from 0.4 to 0.6 for moderate water use plants, and from 0.7 to 1.0 for high water use plants.
- b. All water features shall be included in the high water use hydrozone.
- c. Temporarily irrigated areas, for an establishment period, are not to be included as a water use hydrozone per Section 15.70.020, but shall be identified as being irrigated for an establishment period only.
- d. All Special Landscape Areas (SLA) shall be identified and their water use included in the water budget calculations.
- e. The reference evapotranspiration adjustment factor (ETAF) for SLA shall not exceed 1.0. The ETAF for all other landscaped areas shall not exceed 0.55 for residential areas and 0.45 for non-residential areas.
- f. ETo values from the Reference Evapotranspiration Table in the Water Conservation Compliance Technical Guidance Document shall be used In calculating the Maximum Applied Water Allowance (MAWA) and Estimated Total Water Use (ETWU). For geographic areas not covered in the Water Conservation Compliance Technical Guidance Document, use data from other cities located nearby in the same reference evapotranspiration zone, as found in the CIMIS Reference Evapotranspiration Zones Map, Department of Water Resources, 1999 (See the ETo table at the end of this section). For the purpose of determining Estimated Total Water Use, average irrigation efficiency is assumed to be 0.75 for overhead spray devices and 0.81 for drip system devices.
- g. MAWA shall be calculated using the equation below:

$$\text{MAWA} = (\text{ETo}) (0.62) [(0.55 \times \text{LA}) + (0.45 \times \text{SLA})] \text{ for residential areas}$$

$$\text{MAWA} = (\text{ETo}) (0.62) [(0.45 \times \text{LA}) + (0.55 \times \text{SLA})] \text{ for non-residential areas}$$

Where:

MAWA = Maximum Applied Water Allowance (gallons per year)

ETo = Reference Evapotranspiration (inches per year)

0.62 = Conversion Factor (to gallons)

0.55 = Reference Evapotranspiration Adjustment Factor (ETAF) for residential areas

0.45 = Reference Evapotranspiration Adjustment Factor (ETAF) for non-residential areas

LA = Landscape Area including SLA (square feet)

0.45 = Additional Water Allowance for SLA in residential areas

0.55 = Additional Water Allowance for SLA in non-residential areas

SLA = Special Landscape Area (square feet)

- h. The City or project applicant may consider Effective Precipitation (25% of annual precipitation) in tracking water use and may use the following equation to calculate the MAWA:

$$MAWA = (ET_o - Eppt) (0.62) [(0.55 \times LA) + (0.45 \times SLA)] \text{ for residential areas.}$$

$$MAWA = (ET_o - EPPT) (0.62) [(0.45 \times LA) + (0.55 \times SLA)] \text{ for non-residential areas.}$$

- i. Estimated Total Water Use (ETWU) will be calculated using the equation below. The sum of the ETWU calculated for all hydrozones will not exceed the MAWA.

$$ETWU = (ET_o)(0.62) \left(\frac{PF \times HA}{IE} + SLA \right)$$

Where:

ETWU = Estimated Total Water Use per year (gallons)

ET_o = Reference Evapotranspiration (inches)

PF = Plant Factor from WUCOLS (see Section 491)

HA = Hydrozone Area [high, medium, and low water use areas] (square feet)

0.75 = Irrigation Efficiency (IE) for overhead spray devices

0.81 = Irrigation Efficiency (IE) for drip system devices

SLA = Special Landscape Area (square feet)

0.62 = Conversion Factor

Reference ET_o for Brisbane (inches) – Based on State’s MWELO Attachment A, ET_o Table, using an average of Redwood City and San Francisco values:

	Jan.	Feb.	Mar.	Apr	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec	Annual
RC - ET _o	1.5	1.8	2.9	3.8	5.2	5.3	6.2	5.6	4.8	3.1	1.7	1.0	
SF - ET _o	1.5	1.3	2.4	3.0	3.7	4.6	4.9	4.8	4.1	2.8	1.3	0.7	
Brisbane Estimated - ET_o	1.5	1.55	2.65	3.4	4.45	4.95	5.55	5.2	4.45	2.95	1.5	0.85	39.0

**Attachment A
Certificate of Completion & Installation**

CERTIFICATE OF COMPLETION & INSTALLATION		
SUBMIT UPON COMPLETION OF THE LANDSCAPE PROJECT		
BAWSCA Water Efficient Landscape Ordinance		
Project Information		
Date:	Telephone	
Project Name	Email	
Applicant Name (print):	Street Address	
Title	State	
Company	Zip	
Project Owner - Declaration of Completion		
Project Owner Name or Designee:		
Title		
Company		
I certify that I have received copies of all the documents associated with the landscape project and that it is our responsibility to see that the project is maintained in accordance with the Landscape and Irrigation Maintenance Schedule.		
Property Owner Signature		Date
Licensed Professional - Declaration of Installation		
I certify that based upon periodic site observations, the work has been substantially completed in accordance with the ordinance and that the landscape planting and irrigation installation conform with the criteria and specifications of the approved Landscape Documentation Package.		
Print Name and Company of Landscape Architect or Irrigation Designer	Signature*	License Number
Email Address	Phone Number	
*Signer of the landscape design plan, signer of the irrigation plan, or a licensed landscape contractor.		
REQUIRED ATTACHMENTS:		
<u>IRRIGATION SCHEDULING</u>		
Attach parameters for setting the irrigation schedule on controller as required by the ordinance.		
<u>SCHEDULE OF LANDSCAPE AND IRRIGATION MAINTENANCE</u>		
Attach schedule of Landscape and Irrigation Maintenance.		
<u>LANDSCAPE IRRIGATION AUDIT REPORT</u>		
Attach Landscape Irrigation Audit Report as required by the MWELO ordinance.		
<u>SOIL MANAGEMENT REPORT/SOIL MANAGEMENT AND GRADING DESIGN SURVEY</u>		
Attach soil analysis report OR Soil Management and Grading Design Survey, if not previously submitted with the Landscape Documentation Package as required by the ordinance. Attach documentation verifying implementation of recommendations from soil analysis report as required.		

Attachment B

Soil Management and Grading Design Survey

Project Name:

Project Location:

Project Lot Size:

Site Analysis Completed By:

Signature

Date

This soil analysis and grading report form is designed to assist the applicant in reviewing existing conditions at their project site and evaluate opportunities to maximize benefits. Respond to the following questions, and submit a report detailing geographic features surrounding the site, topography, vegetation and other site features as directed below.

Soil Management Survey

Laboratory soil analysis results are attached.

OR answer the following questions:

1. What is the infiltration rate in inches per hour for the site soil type?

(Instructions – in a minimum of three distinct locations dig a hole that would accommodate planting a 5-gallon plant. Fill hole with water and let drain. Fill hole again and measure the depth of the water in the hole and record the time it takes to infiltrate totally into the soil with no remaining standing water. Note the time of year and the level of existing soil saturation by touch).

2. What is the primary project site soil texture? (Example – clay, loam, silt, sand, etc)

3. What is the soil color at 2 inches depth? What is the color at 6 inches? What is the color at 12 inches? (Example – black, dark or light brown, red, gold, gray, blue, etc)

4. Has the site been previously or historically contaminated with toxic materials?

Comments:

Grading Design Survey

Grading Design Plan is attached.

OR answer the following questions:

1. Does the stormwater runoff from the site discharge to (check all that apply):
 - € Indirectly to waters of the U.S. (i.e. discharge flows overland across adjacent properties or rights-of-way prior to discharging into water of the United States)
 - € Storm drain system
 - € Directly to the water of the U.S. (e.g. river, lake, creek, stream, bay, ocean, etc.)

2. Has a stormwater pollution prevention plan been prepared for this site?
 - € Yes
 - € No

3. Is there potential for filtering or infiltrating stormwater in the landscape areas (e.g. grassy swales, infiltration planters, bioretention areas)?
 - € Yes
 - € No

4. Is there potential to store rainwater for future use?
 - € Yes
 - € No

5. Is the proposed site within a 100 year floodplain?
 - € Yes
 - € No

6. Is a creek protection plan required for this site?
 - € Yes
 - € No

Comments:

Attachment C

WATER EFFICIENT LANDSCAPE WORKSHEET

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

Reference Evapotranspiration (ET_o)

Hydrozone # /Planting Description ^a	Plant Factor (PF)	Irrigation Method ^b	Irrigation Efficiency (IE) ^c	ETAF (PF/IE)	Landscape Area (sq. ft.)	ETAF x Area	Estimated Total Water Use (ETWU) ^e
Regular Landscape Areas							
				Totals	(A)	(B)	
Special Landscape Areas							
				1			
				1			
				1			
				Totals	(C)	(D)	
						ETWU Total	
						Maximum Allowed Water Allowance (MAWA)^e	

^a**Hydrozone #/Planting Description**
E.g.
 1.) front lawn
 2.) low water use plantings
 3.) medium water use planting

^b**Irrigation Method**
overhead spray
or drip

^c**Irrigation Efficiency**
0.75 for spray head
0.81 for drip

^d**ETWU (Annual Gallons Required) = Eto x 0.62 x ETAF x Area**
 where 0.62 is a conversion factor that converts acre-inches per acre per year to gallons per square foot per year.

^e**MAWA (Annual Gallons Allowed) = (Eto) (0.62) [(ETAF x LA) + ((1-ETAF) x SLA)]**
 where 0.62 is a conversion factor that converts acre-inches per acre per year to gallons per square foot per year, LA is the total landscape area in square feet, SLA is the total special landscape area in square feet, and ETAF is .55 for residential areas and 0.45 for non-residential areas.

ETAF Calculations

Regular Landscape Areas

Total ETAF x Area	(B)
Total Area	(A)
Average ETAF	B ÷ A

Average ETAF for Regular Landscape Areas must be 0.55 or below for residential areas, and 0.45 or below for non-residential areas.

All Landscape Areas

Total ETAF x Area	(B+D)
Total Area	(A+C)
Sitewide ETAF	(B+D) ÷ (A+C)

Please Complete:

Attachment D: Residential Outdoor Water Use Efficiency Checklist
(see separate document)

or

Attachment E: Non-Residential Outdoor Water Use Efficiency Checklist
(see separate document)