

**GUIDELINES
FOR IMPLEMENTATION OF THE
TOWN OF COLMA
WATER EFFICIENT LANDSCAPE
REGULATIONS**

TABLE OF CONTENTS

<u>Section</u>	<u>Page No.</u>
1. Purpose and Applicability.....	1
1.1 Purpose.....	1
1.2 Applicability	2
2. Submittal Requirements for New Landscape Installations or Landscape Rehabilitated Landscapes.....	3
2.1 Elements of the Landscape Documentation Package and Landscape Submittal Sheet.....	3
2.2 Water Efficient Landscape Calculations and Alternatives	4
2.3 Soil Management Report	6
2.4 Landscape Design Plan.....	7
2.5 Irrigation Design Plan.....	9
2.6 Grading Design Plan.....	13
2.7 Certificate of Completion	14
2.8 Post-Installation Irrigation Scheduling.....	15
2.9 Post-Installation Landscape and Irrigation Maintenance.....	15
3. Provisions for Existing Landscapes	15
4. Conflicting Provisions	15
APPENDIX A – DEFINITIONS	1
APPENDIX B - REFERENCE EVAPOTRANSPIRATION (ETO) TABLE.....	1
APPENDIX C – WATER EFFICIENT LANDSCAPE WORKSHEETS.....	1
APPENDIX D – LANDSCAPE SUBMITTAL SHEET	1
APPENDIX E – CERTIFICATION OF LANDSCAPE DESIGN	1
APPENDIX F – CERTIFICATE OF COMPLETION.....	1
APPENDIX G – CHECKLIST OF LANDSCAPE DOCUMENTATION PACKAGE.....	1

1. Purpose and Applicability

1.1 Purpose

(a) The primary purpose of these *Guidelines* is to provide procedural and design guidance for *project applicants* proposing landscape installation or a *rehabilitated landscape* that are subject to the requirements of the *Water Efficient Landscape Regulations*. This document is also intended for use and reference by *Town* staff and/or consultants in reviewing and approving designs and verifying compliance with the *Water Efficient Landscape Regulations*. The general purposes of the *Water Efficient Landscape Regulations* are to (i) promote the design, installation, and maintenance of landscaping in a manner that conserves regional water resources, by ensuring that landscape projects are not unduly water-needy and that irrigation systems are appropriately implemented to minimize water waste; and (ii) establish alternative regulations that are at least as effective as the *Model Ordinance*.

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

- (1) *Town* specific plans, master plans, general plan, or similar land use and planning documents;
- (2) *Grading and Excavation Code*;
- (3) *Water Quality Code*;
- (4) *Planning and Zoning Code*;
- (5) California Government Code sections 65591 *et seq.*;
- (6) National Pollutant Discharge Elimination System Permit for the *Town*'s Municipal Separate Storm Sewer System;
- (7) Colma Fire Protection District and the California Department of Forestry and Fire regulations;
- (8) water conservation and drought response regulations of the *Town*, any *local water purveyor*, and any wholesale water purveyor that provides water to the *Town*;
- (9) regulations of the State, any *local water purveyor* or wholesale water purveyor governing use of *recycled water* within the *Town*;
- (10) California Building Code as codified in Chapter 5, Subchapter 5.04 of the *Code*; and
- (11) any conditions of approval for a specific project.

1.2 Applicability

(a) These *Guidelines* shall apply to all of the following *landscape projects*:

(1) *new construction* and *rehabilitated landscapes* for public agency projects and private development projects with a *landscape area* equal to or greater than 2,500 square feet requiring a building, grading or any other *permit*, plan check or design review;

(2) *new construction* and *rehabilitated landscape* which are developer-installed in single-family and multi-family projects with a *landscape area* equal to or greater than 2,500 square feet requiring a building, grading or any other *permit*, plan check, or design review;

(3) *new construction* with *homeowner-provided landscaping* and/or homeowner-hired landscaping in single-family and multi-family residential projects with a total project *landscape area* equal to or greater than 5,000 square feet requiring a building, grading or any other *permit*, plan check or design review;

(b) Existing landscapes; provided, however, existing landscapes must only comply with Section 3 of these *Guidelines*.

(c) New cemeteries and existing cemeteries with *rehabilitated landscape* must comply with Section 2 and 4 of these *Guidelines*. Provided, however, any new cemetery or existing cemetery with *rehabilitated landscape* may receive a *groundwater recharge credit* pursuant to Section 5.11.075 of the *Code*, Resolution No. 2011-17 of the Town Council of the Town, adopted on June 8, 2011, and Section 5 of these *Guidelines*.

(d) Existing cemeteries must comply with Sections 3 and 4 of these *Guidelines*.

(e) These *Guidelines* do not apply to:

(1) registered local, *State*, or federal historical sites;

(2) *ecological restoration projects* that do not require a permanent irrigation system;

(3) *mined-land reclamation projects* that do not require a permanent irrigation system;

(4) plant collections, as part of botanical gardens and arboretums open to the public; and

(5) any other new landscape installation project or *rehabilitated landscape* not listed in Section 5.11.020(a) of the *Code*.

2. Submittal Requirements for New Landscape Installations or Rehabilitated Landscape

2.1 Elements of the Landscape Documentation Package and Landscape Submittal Sheet

(a) A *Landscape Documentation Package* and *Landscape Submittal Sheet* are required to be submitted by the *project applicant* for review and approval prior to the issuance of ministerial *permits* or approval of any plan check or design review by the *Town* for any *landscape project* or *water feature*, and prior to start of construction. Unless otherwise directed by the *Town*, the *Landscape Documentation Package* shall include the following elements, either on plan sheets or supplemental pages as directed by the *Town*:

(1) project information, including, but not limited to, the following: date; project name (if applicable); project address, parcel, tract, and/or lot number(s);

(2) total *landscape area* (square feet) and *landscape area* of the *rehabilitated landscape* (if applicable); project type (e.g., *new construction*, *rehabilitated landscape*, public, private, cemetery, *homeowner-provided landscaping*, commercial, industrial, business, single-family, multi-family); water supply type (e.g., potable, recycled, or well) and identify the *local water purveyor* if the *project applicant* is not served by a private well;

(3) the *Checklist of Landscape Documentation Package* in accordance with **Appendix G** hereof;

(4) project contacts, including contact information for the *project applicant* and *owner*;

(5) a *Certification of Landscape Design* in accordance with **Appendix E** hereof that includes a *landscape professional's* professional stamp, as applicable, signature, contact information (including email address and telephone number), license number, and date, certifying the statement that, "The design of this project complies with the requirements of the *Town of Colma's Water Efficient Landscape Regulations*" and shall bear the signature of such *landscape professional* as required by law;

(6) a *Landscape Submittal Sheet* in accordance with **Appendix D** of these *Guidelines*;

(7) a *Water Efficient Landscape Worksheet* for the *landscape project* in accordance with **Appendix C** and Section 5.11.070(b) of the *Code*, which includes: a *hydrozone* area information table; water budget calculations, the *Maximum Applied Water Allowance* and *Estimated Total Water Use* calculations expressed as annual totals;

(8) a soil management report or specifications, or specification provision requiring soil testing and amendment recommendations and implementation to be accomplished during construction of the *landscape project* in accordance with Section 5.11.080 of the *Code*;

(9) a landscape design plan for the *landscape project*, including identification of the plant material to be installed in accordance with Section 5.11.090 of the *Code* and Section 2.4 of these *Guidelines*;

(10) an irrigation design plan for the *landscape project* in accordance with Section 5.11.100 of the *Code* and Section 2.5 of these *Guidelines*;

(11) a grading design plan, unless grading information is included in the landscape design plan for the *landscape project*, or unless the *landscape project* is limited to replacement planting and/or irrigation to rehabilitate an existing *landscape area*. The grading design plan shall conform to the provisions of Section 5.11.110, the *Grading and Excavation Code*, any applicable provisions of the *Water Quality Code* and *Planning and Zoning Code*, and Section 2.6 of these *Guidelines*; and

(12) any other information the *Town* or the *project applicant* deems relevant for determining whether the *landscape project* complies with the *Water Efficient Landscape Regulations* and these *Guidelines*.

(b) New cemeteries and existing cemeteries with *rehabilitated landscape* requesting a *groundwater recharge credit* shall also submit a *Groundwater Recharge Submittal Sheet* in accordance with **Appendix H** hereof.

[Note: Authority Cited: Section 65595, Government Code. Reference: Section 65596, Government Code.]

2.2 Water Efficient Landscape Calculations and Alternatives

(a) The *project applicant* shall provide the calculated *Maximum Applied Water Allowance (MAWA)* and *Estimated Total Water Use (ETWU)* for the *landscape area* as part of the *Landscape Documentation Package* submitted to the *Town*.

(b) The *project applicant* shall complete the *Water Efficient Landscape Worksheets* in accordance with the sample worksheets in **Appendix C** hereof and shall comply with the following provisions:

(1) The *MAWA* allowable for the *landscape area* shall be calculated using the following formula: $MAWA = (ETo) (0.62) [(0.7 \times LA) + (0.3 \times SLA)]$.

(2) The *ETWU* allowable for the *landscape area* shall not exceed the *MAWA* and shall be calculated using the following formula: $ETWU = (ETo) (0.62) [(PF \times HA) \div IE + SLA]$.

Where the design of the *landscape area* can otherwise be shown to be equivalently water-efficient, the *project applicant* may submit alternative or abbreviated information supporting the demonstration that the annual *ETWU* is less than the *MAWA*, at the discretion of and for the review and approval of the *Town* engineer.

(3) Water budget calculations shall adhere to the following requirements:

(A) The *MAWA* shall be calculated using the *Water Efficient Landscape Worksheets* and equation presented in **Appendix C** on page C-4. The example calculation in **Appendix B** on page B-1 is a hypothetical example to demonstrate proper use of the equation.

(B) The *ETWU* shall be calculated using the *Water Efficient Landscape Worksheets* and equation presented in **Appendix C** on page C-5. The example calculation on page C-2 thereof is a hypothetical example.

(C) For the calculation of the *MAWA* and *ETWU*, a *project applicant* shall use the *ETo* values from the Reference Evapotranspiration (*ETo*) Table in **Appendix B**.

(D) For calculation of the *ETWU*, the *plant water use factor* shall be determined as appropriate to the project location from the *Water Use Classification of Landscape Species (WUCOLS)* species evaluation list. The *plant factor* is 0.1 for very low water use plants, 0.2 to 0.3 for low water use plants, 0.4 to 0.6 for moderate water use plants, and 0.7 to 1.0 for high water use plants.

(E) For calculation of the *ETWU*, the *plant water use factor* shall be determined for each *valve hydrozone* based on the highest-water-use plant species within the *hydrozone*. At the option of the *project applicant* or the *Town*, the *plant factor* for each *hydrozone* may be required to be further refined as a “landscape coefficient” according to protocols defined in detail in the *WUCOLS* document, to reflect planting density and microclimate effects on water need.

(F) For calculation of the *ETWU*, the area of a *water feature* shall be defined as a high water use *hydrozone* with a *plant factor* of 1.0.

(G) For calculation of the *ETWU*, a temporarily irrigated *hydrozone*, such as an area of highly drought-tolerant native plants that are not intended to be irrigated after they are fully established, shall be defined as a very low water use *hydrozone* with a *plant factor* of 0.1.

(H) For calculation of the *MAWA*, the *ETAF* for *special landscape areas* shall not exceed 1.0. For calculation of the *ETWU*, the *ETAF* for *special landscape areas* shall be calculated as the *special landscape area (SLA) plant factor* divided by the *SLA irrigation efficiency factor*.

(I) *Irrigation efficiency* shall be calculated using the worksheet and equation presented in **Appendix C** on page C-5.

(4) For actual irrigation scheduling, *automatic irrigation controllers* and *smart controllers* are required and shall use current *ETo* data, such as from *CIMIS*, other equivalent data, or soil moisture sensor data.

(c) Notwithstanding the foregoing, the *Town* engineer may consider effective precipitation (25% of annual precipitation) in tracking water use and may use the following equation to calculate the *Maximum Applied Water Allowance*: $MAWA = (ETO - EPPT) (0.62) [(0.7 \times LA) + (0.3 \times SLA)]$. When *effective precipitation* is used to track water use, such calculation shall be reflected in the *Water Efficient Landscape Worksheets* submitted pursuant to this Section 2.2.

2.3 Soil Management Report

(a) 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, as follows:

(1) Submit soil samples to a certified agronomic soils laboratory for analysis and recommendations.

(2) Soil sampling shall be conducted in accordance with laboratory protocol, including protocols regarding adequate sampling depth for the intended plants.

(b) A copy of the soil analysis shall be submitted to the *Town* as a part of the soil management report. The soil analysis may include, but is not limited to:

- (1) soil texture;
- (2) infiltration rate determined by laboratory test or soil texture infiltration rate table;
- (3) pH;
- (4) total soluble salts;
- (5) sodium;
- (6) percent organic matter; and
- (7) recommendations.

(c) The *project applicant*, or his/her designee, shall comply with one of the following:

(1) if significant mass grading is not planned, the soil analysis report shall be submitted to the *Town* as part of the *Landscape Documentation Package*; or

(2) if significant mass grading is planned, the soil analysis report shall be submitted to the *Town* as part of the *Certificate of Completion*.

(d) The soil analysis report shall be made available, in a timely manner, to the *landscape professional* preparing the landscape design plans and irrigation design plans to make any necessary adjustments to such design plans.

(e) As part of the soil management report, the *project applicant*, or his/her designee, shall submit documentation verifying implementation of the soil analysis report recommendations to the *Town* with the *Certificate of Completion*.

[Note: Authority Cited: Section 65595, Government Code. Reference: Section 65596, Government Code.]

2.4 Landscape Design Plan

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

(a) Plant material may be selected for the *landscape area*, provided the *ETWU* in the *landscape area* does not exceed the *MAWA*. To encourage the efficient use of water, the following is highly recommended:

(1) protect and preserve native species, natural vegetation, non-invasive *water-conserving plant species*, and water-conserving *turf*;

(2) select *water-conserving plant species* and water-conserving *turf*;

(3) select plants based on disease and pest resistance; and

(4) select trees based on applicable *Town* tree requirements and tree shading guidelines; and

(5) select plants from *local agency* and regional landscape program plant lists.

(b) Each *hydrozone* shall have plant materials with similar water use, with the exception of *hydrozones* with plants of mixed water use, as specified in Section 2.5(d) of these *Guidelines*.

(c) Plants shall be selected and planted appropriately based upon their adaptability to the climatic, geologic, and topographical conditions of the project

site. To encourage the efficient use of water, the following is highly recommended for the landscape design plan: 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; recognize the horticultural attributes of plants (i.e., mature plant size, invasive surface roots) to minimize damage to property or infrastructure (e.g., buildings, sidewalks, and power lines); and consider the solar orientation for plant placement to maximize summer shade and winter solar gain.

(d) *Turf* is not allowed on slopes greater than 25% where the toe of the slope is adjacent to a *non-pervious 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).

(e) A landscape design plan for projects in fire-prone areas and fuel modification zones shall comply with requirements of the Colma Fire Protection District and California Department of Forestry and Fire, where applicable. When conflicts between water conservation and fire safety design elements exist, the fire safety requirements shall have priority. A defensible space or zone around a building or structure is required per Public Resources Code sections 4291(a) and (b). Avoid fire-prone plant materials and highly flammable *mulches*.

(f) The use of *invasive plant species* and/or *noxious weeds* is strongly discouraged.

(g) The architectural guidelines of a *common interest development* shall not prohibit or otherwise include conditions that have the effect of prohibiting the use of *water efficient plant species* as a group.

(h) *Water features* shall comply with the following:

(1) Recirculating water systems shall be used for any *water feature*.

(2) Where available and consistent with public health guidelines, *recycled water* shall be used as a source for decorative *water features*.

(3) The surface area of a *water feature* shall be included in the high water use *hydrozone* area of the water budget calculation.

(4) Approved safety pool covers are highly recommended for pools, hot tubs, spas, portable spas, and nonportable wading pools.

(i) *Mulch* and other soil amendments shall be required in the following circumstances and be applied in compliance with following:

(1) A minimum two inch (2") layer of *mulch* shall be applied on all exposed soil surfaces of planting areas; it shall not be applied in *turf* areas,

creeping or rooting groundcovers, or direct seeding applications where *mulch* is contraindicated.

(2) Stabilizing mulching products shall be used on slopes.

(3) The mulching portion of the seed/*mulch* slurry in hydro-seeded applications shall meet the mulching requirement.

(4) Soil amendments shall be incorporated according to recommendations of the soil report and what is appropriate for the plants selected (see Section 2.3 of these *Guidelines*).

(j) The landscape design plan, at a minimum, shall:

(1) delineate and label each *hydrozone* by number, letter, or other method;

(2) identify each *hydrozone* as low, moderate, high water or mixed water use. Temporarily irrigated areas of the *landscape area* shall be included in the low water use *hydrozone* for the water budget calculation;

(3) identify recreational areas;

(4) identify areas permanently and solely dedicated to edible plants;

(5) identify areas irrigated with *recycled water*; identify type of *mulch* and application depth;

(6) identify soil amendments, type, and quantity; identify type and surface area of *water features*;

(7) identify *hardscapes* (*pervious* and *non-pervious*);

(8) identify location and installation details of any applicable storm water best management practices that encourage on-site retention and infiltration of storm water. Storm water best management practices are encouraged in the landscape design plan. Examples include, but are not limited to:

(A) infiltration beds, swales, and basins that allow water to collect and soak into the ground;

(B) constructed wetlands and retention ponds that retain water, handle excess flow and filter pollutants; and

(C) *pervious* or porous surfaces (e.g., permeable pavers or blocks, *pervious* or porous concrete, etc.) that minimize *runoff*;

(9) identify any applicable rain harvesting or catchment technologies (e.g., rain gardens, cisterns, etc.);

(10) contain the following statement: “I have complied with the criteria of the *Water Efficient Landscape Regulations* and applied them for the efficient use of water in the landscape design plan;” and

(11) bear the signature of a California licensed *landscape professional*.

[Note: Authority Cited: Section 65595, Reference: Section 65596, Government Code and Section 1351, Civil Code.]

2.5 Irrigation Design Plan

For the efficient use of water, an irrigation system shall meet all of the requirements listed in this section and the manufacturer’s 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) Dedicated landscape water meters are highly recommended on *landscape areas* smaller than 5,000 square feet to facilitate water management.

(b) Automatic irrigation controllers utilizing either evapotranspiration or soil moisture sensor data shall be required for irrigation scheduling in all irrigation systems.

(c) 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.

(1) 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.

(2) *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.

(d) *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. Irrigation should be avoided during windy or freezing weather or during rain.

(e) 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.

(f) *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 *Code* provisions (i.e., public health) for additional backflow prevention requirements.

(g) High flow sensors that detect and report high flow conditions created by system damage or malfunction are recommended.

(h) 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.

(i) Relevant information from the soil management plan, such as soil type and *infiltration rate*, shall be utilized when designing irrigation systems.

(j) The design of the irrigation system shall conform to the *hydrozones* of the landscape design plan.

(k) Average *irrigation efficiency* for the project shall be determined in accordance with the *ETWU* calculation sheet in **Appendix C** on page C-5. Unless otherwise indicated by the irrigation equipment manufacturer's specifications or demonstrated by the *project applicant*, the *irrigation efficiency* of the *sprinkler heads* used within each *hydrozone* shall be assumed to be: pop-up stream rotator heads = 75%; stream rotor heads = 75%; microspray = 75%; bubbler = 80%; drip emitter = 85%; and subsurface irrigation = 90% .

(l) It is recommended that the *project applicant* that the project applicant or *local agency* inquire with the *local water purveyor* about peak water operating demands (on the water supply system) or water restrictions that may impact the effectiveness of the irrigation system.

(m) In mulched planting areas, the use of *low volume irrigation* is required to maximize water infiltration into the root zone.

(n) *Sprinkler heads* and other emission devices shall have matched *precipitation rates*, unless otherwise directed by the manufacturer's recommendations.

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

(p) *Check valves* or *anti-drain valves* shall be installed for all irrigation systems.

(q) Narrow, or irregularly shaped areas, including turf, less than eight (8) feet in width in any direction shall be irrigated with subsurface irrigation or *low volume overhead irrigation* system.

(r) Overhead irrigation shall not be permitted within 24 inches of any *non-pervious* surface. Allowable irrigation within the setback from *non-pervious* 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:

(1) the *landscape area* is adjacent to permeable surfacing and no *runoff* occurs; or

(2) the adjacent *non-pervious* surfaces are designed and constructed to drain entirely to landscaping; or

(3) the irrigation designer for the *landscape project* specifies an alternative design or technology, as part of the *Landscape Documentation Package* and clearly demonstrates strict adherence to irrigation system design criteria in Section 2.5 (b)(3) hereof. Prevention of *overspray* and runoff must be confirmed during an *irrigation audit* performed by the *Town*.

(s) 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 of the *landscape project* 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*.

(t) All new irrigation controllers installed within the *Town* after January 1, 2012, shall be *smart controllers*.

(u) In preparing an irrigation design plan, it is highly recommended that:

(1) the *project applicant* inquire with the *local water purveyor* about peak water operating demands (on the water supply system) or water restrictions that may impact the effectiveness of the irrigation system;

(2) the design plan includes *sprinkler head to sprinkler head* coverage. However, sprinkler spacing shall be designed to achieve the highest possible *distribution uniformity* using the manufacturer's recommendations.

(v) For each *hydrozone*, the irrigation design plan shall comply with the following requirements:

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

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

(w) Where feasible, trees shall be placed on separate *valves* from shrubs, groundcovers, and *turf*.

(x) Individual *hydrozones* that mix plants of moderate and low water use or moderate and high water use, may be allowed if:

(1) the *plant factor* calculation is based on the proportions of the respective plant water uses and their respective *plant factors*; or

(2) the *plant factor* of the higher water using plant is used for the calculations.

(y) Individual *hydrozones* that mix high and low water use plants shall not be permitted.

(z) 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, the areas irrigated by each *valve* shall be designated and assign a number to each *valve*.

(aa) The irrigation design plan, at a minimum, shall contain:

(1) the location and size of separate water meters for landscape;

(2) the 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*;

(3) *static water pressure* at the point of connection to the public water supply;

(4) *flow rate* (gallons per minute), application rate (inches per hour) and design *operating pressure* (pressure per square inch) for each *station*;

(5) irrigation schedule parameters necessary to program *automatic irrigation controllers* specified in the landscape design;

(6) the following statement: "I have complied with the criteria of the *Water Efficient Landscape Regulations* and applied them accordingly for the efficient use of water in the irrigation design plan;" and

(7) the signature of a licensed *landscape professional*.

[Note: Authority Cited: Section 65595, Government Code. Reference: Section 65596, Government Code.]

2.6 Grading Design Plan

(a) For the efficient use of water, grading of a *landscape project* site shall be designed to minimize soil erosion, *runoff* and water waste. The finished grading configuration of the *landscape area*, including pads, slopes, drainage, post-construction erosion control and storm water control Best Management Practices as applicable, shall be shown on the landscape plan unless this information is fully included in separate grading plans for the project; or unless the project is limited to replacement planting and/or irrigation to rehabilitate an existing *landscape area*. In addition to the provisions contained herein, the grading design plan shall comply with the provisions of the *Grading and Excavation Code* and any applicable provisions of the *Water Quality Code* and *Planning and Zoning Code*.

(b) The *project applicant* shall submit a landscape grading plan that indicates finished configurations and elevations of the *landscape area* including, but limited to: height of graded slopes; drainage patterns; pad elevations; finish grade; and storm water retention improvements, if applicable.

(c) To prevent excessive erosion and *runoff*, it is highly recommended that the *project applicant*: grade so that all irrigation and normal rainfall remains within property lines and does not drain on to *non-pervious hardscapes*; avoid disruption of natural drainage patterns and undisturbed soil; and avoid soil compaction in *landscape areas*.

(d) The grading design plan shall contain the following statement: “I have complied with the criteria of the ordinance and applied them accordingly for the efficient use of water in the grading design plan” and shall bear the signature of the *landscape professional* for the *landscape project*.

[Note: Authority Cited: Section 65595, Government Code. Reference: Section 65596, Government Code.]

2.7 Certificate of Completion

(a) Landscape project installation shall not proceed until (i) the *project applicant* has deposited with the *Town* all applicable permit fees in accordance with the *Town's* applicable fee schedule; (ii) the *Landscape Documentation Package* has been approved by the *Town*; and (iii) any ministerial permits required are issued.

(b) The *project applicant* shall notify the *Town* at the beginning of the installation work and at intervals as necessary for the duration of the *landscape project* work, to schedule all required inspections.

(c) A *Certificate of Completion* for the *landscape project* shall be obtained through a Certificate of Use and Occupancy or a *Permit Final* issued by the

Town. The requirements for the final inspection and *permit* closure shall include the following:

(1) The *project applicant* shall submit to the *Town* a *Certificate of Completion* in the form included as **Appendix F** of these *Guidelines*, which shall include: (i) certification by a *landscape professional* that the *landscape project* has been installed per the approved *Landscape Documentation Package*; and (ii) the following statement: “The landscaping has been installed in substantial conformance to the design plans, and complies with the provisions of the *Water Efficient Landscape Regulations* for the efficient use of water in the landscape.”

(2) The *project applicant* shall provide documentation of the irrigation scheduling parameters used to set the irrigation controller(s).

(3) At the option of the *Town*, the *project applicant* may be required to submit one or more of the following: (i) an *irrigation audit* report from a *Certified Landscape Irrigation Auditor*; (ii) documentation of enrollment in a *Town*, state, regional or *local water purveyor* sponsored water conservation and/or drought response and/or water conservation program; and/or (iii) documentation that the *MAWA* and *ETWU* information for the *landscape project* has been submitted to the *local water purveyor*.

(d) If the *Certificate of Completion* is rejected by the *Town*, the *Town* shall provide the project applicant with a written notice of denial including reasons therefore, and information regarding reapplication, appeal, or other assistance.

[Note: Authority Cited: Section 65595, Government Code. Reference: Section 65596, Government Code.]

2.8 Post-Installation Irrigation Scheduling

(a) 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:

(1) Irrigation schedules shall be regulated by automatic irrigation controllers.

(2) Irrigation schedules and overhead irrigation shall be scheduled and/or adjusted in compliance with any applicable *Town*, *State*, regional, or local water conservation and/or drought response laws, rules, policies, and regulations. Operation of the irrigation system outside the normal *watering window* is allowed for auditing and system maintenance.

(b) 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 *ETWU*. Total annual applied water shall be less than or equal to *MAWA*. Actual irrigation schedules shall be

regulated by *automatic irrigation controllers* using current *reference evapotranspiration* data (e.g., *CIMIS*) or soil moisture sensor data.

(c) Parameters used to set *automatic irrigation controllers* shall be developed and submitted for each of the following:

- (1) the plant establishment period;
- (2) the established landscape; and
- (3) temporarily irrigated areas.

(d) Each irrigation schedule shall consider for each station all of the following that apply:

- (1) irrigation interval (days between irrigation);
- (2) irrigation run times (hours or minutes per irrigation event to avoid runoff);
- (3) number of cycle starts required for each irrigation event to avoid runoff;
- (4) amount of applied water scheduled to be applied on a monthly basis;
- (5) application rate setting;
- (6) root depth setting;
- (7) plant type setting;
- (8) soil type;
- (9) slope factor setting;
- (10) shade factor setting; and
- (11) irrigation uniformity or efficiency setting.

[Note: Authority Cited: Section 65595, Government Code. Reference: Section 65596, Government Code.]

2.9 Post-Installation Landscape and Irrigation Maintenance

Landscapes shall be maintained to ensure water use efficiency in accordance with the *Code* and any applicable *Town, State, regional, or local water purveyor*, wholesale water purveyor, water conservation and/or drought response laws, rules, policies, or regulations.

3. Provisions for Existing Landscapes

(a) Irrigation of all *landscape areas* shall be conducted in a manner conforming to the rules, regulations, and requirements, and shall be subject to the penalties and incentives for water conservation and water waste prevention, as determined and implemented by the *local water purveyor* and/or the Town.

(b) The *Town* may administer programs such as irrigation water use analyses, irrigation surveys, and/or *irrigation audits*, tiered water rate structures, water budgeting by parcel or other approaches to achieve landscape water use efficiency community-wide to a level equivalent to or less than would be achieved by applying a *MAWA* calculated with an *ETAF* of 0.8 to all *landscape areas* in the *Town* over one acre in size. The *Town* may, pursuant to a contract or other agreement, elect to have a *local water purveyor*, contractor, or other local agency administer such programs.

(c) The architectural guidelines of a *common interest development* shall not prohibit or otherwise include conditions that have the effect of prohibiting the use of low-water use plants or *water-conserving plant species* as a group.

4. Irrigation Audit, Irrigation Survey, and Irrigation Water Use Analysis

(a) All landscape *irrigation audits* shall be conducted by a *Certified Landscape Irrigation Auditor*.

(b) For existing landscapes that were installed before January 1, 2010, and are over one acre in size.

(1) For all landscapes that have a water meter, the Town shall administer programs that may include, but not be limited to, *irrigation water use analyses*, *irrigation surveys*, and *irrigation audits* to evaluate water use and provide recommendations as necessary to reduce landscape water use to a level that does not exceed the Maximum Applied Water Allowance for existing landscapes. The *MAWA* for existing landscapes shall be calculated as: $MAWA = (0.8) (ET_o) (LA) (0.62)$.

(2) For all landscapes that do not have a meter, the Town shall administer programs that may include, but not be limited to, *irrigation surveys* and *irrigation audits* to evaluate water use and provide recommendations as necessary in order to prevent water waste.

(c) For *new construction* and *rehabilitated landscape* installed after January 1, 2010:

(1) the *project applicant* shall submit an *irrigation audit* report with the Certificate of Completion to the *Town* that may include, but is not limited to: inspection, system tune-up, system test with distribution uniformity, reporting *overspray* or *run off* that causes overland flow, and preparation of an irrigation schedule;

(2) the Town shall administer programs that may include, but

not be limited to, irrigation water use analysis, *irrigation audits*, and irrigation surveys for compliance with the *MAWA*.

5. Groundwater Recharge Credit

(a) New cemeteries and cemeteries with *rehabilitated landscape* shall be eligible for a *groundwater recharge credit* which shall be applied to reduce the *ETWU* calculation required pursuant to Section 5.11.070 of the *Code* and Section 2.2 of these *Guidelines*. The *groundwater recharge credit* shall be calculated as follows:

(1) The *project applicant* shall determine the absorption adequacy for the cemetery site as follows:

(A) Determine the *rainfall intensity* (*R*) for the site in inches per hour, based on a two-year, two-hour basis.

(B) Determine the *absorption rate* of site soil in inches per hour based on a minimum *absorption rate* (*A0*) and maximum *absorption rate* (*A1*); and

(C) Determine the actual *irrigation rate* (*IR*) for the cemetery site in inches per hour where *IR* = run time in hours multiplied by the *IR* in inches per hour.

(D) Determine the *average absorption* (*AA*) for the site in inches per hour using the following formula: $(AA) = (A0 + A1) \div 2$.

(E) If the *IR* is greater than *R* or *AA*, the new cemetery or *rehabilitated landscape* in the existing cemetery qualifies for a *groundwater recharge credit*.

(F) If *IR* is greater than *R* or *AA*, the *groundwater recharge credit* for the new cemetery or *rehabilitated landscape* shall be allowed, provided that one or more rainwater collection basins are constructed to hold *runoff* in sufficient quantities so the *IR* is equal to or less than *R* and less than *AA*.

(2) For new cemeteries and *rehabilitated landscape* for existing cemeteries that have absorption adequacy, groundwater recharge capacity shall be determined as follows:

(A) Average rainfall for forty-eight complete years between 1948 and 1995 at San Francisco international Airport is 19.6 inches.

(B) Average winter rainfall from November, December, January, February, and March is in excess of evapotranspiration needs.

(C) Average winter rainfall is 16.5 inches, and no irrigation is required during this period.

(D) The evapotranspiration rate per *CIMIS* data for Salinas North when adjusted through a regression model for the *Town* determined a use factor of 7.48 inches during the winter months, or an excess of 9.02 inches of the water that is not utilized for landscape needs.

(b) Available water for groundwater recharge = the average winter rainfall of 9.02 inches per year, or 0.75 acre-feet of water, **or** 244,931 gallons of water per acre, which shall constitute the *groundwater recharge credit*. The *groundwater recharge credit* shall be:

(1) applied to reduce the *ETWU* calculation for any new cemetery and any *rehabilitated landscape* in an existing cemetery subject to Section 5.11.070 of the *Code* and requesting a *groundwater recharge credit* pursuant to this Section 5; and

(2) taken into account in any *irrigation audit*, *irrigation survey*, or *irrigation water use analysis* for any new cemetery or *rehabilitated landscape* for an existing cemetery.

(c) Any new cemetery or any existing cemetery installing *rehabilitated landscape* shall complete the *Groundwater Recharge Credit Submittal Sheet* in **Appendix H** hereof.

6. Conflicting Provisions.

The provisions of these *Guidelines* are in addition to any other requirements, laws, rules, policies, or regulations imposed or adopted by the *Town*. If the provisions of these *Guidelines* are in conflict with each other, other provisions of the *Code*, the *Town's* general plan, any *Town* adopted specific plan or master plan, any resolution or ordinance of the *Town*, or any *State* law or regulation, any applicable *Town*, *State*, regional, or *local water purveyor* water conservation or drought response requirements, laws, rules, policies, or regulations, or requirements of the Orange County Fire Authority pertaining to fire-prone areas and fuel modification zones, the more restrictive provisions shall apply.

APPENDIX A – DEFINITIONS

DEFINITIONS

Unless the context otherwise requires, the italicized terms used in these *Guidelines* shall have the meanings set forth below:

“*Absorption rate*” means the rate at which a soil will accept water.

“*A0*” means the minimum *absorption rate* for site soil determined pursuant to Section 5(a)(1)(B) of these *Guidelines*.

“*A1*” means the maximum *absorption rate* for site soil determined pursuant to Section 5(a)(1)(B) of these *Guidelines*.

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

“*Association*” means a nonprofit corporation or unincorporated association created for the purpose of managing a *common interest development*.

“*Automatic irrigation controller*” means an automatic timing device used to remotely control *valves* that operate an irrigation system and which schedules irrigation events using either evapotranspiration (weather-based) or soil moisture data.

“*Average absorption*” or “*AA*” means the average *absorption rate* in inches per hour calculated in accordance with Section 5(a)(1)(D) of these *Guidelines*.

“*Backflow prevention device*” means a safety device used to prevent pollution or contamination of the water supply due to the reverse flow of water from the irrigation system.

“*Certificate of Completion*” means the certificate included in **Appendix F** hereof and required to be completed and submitted to the *Town* pursuant to Section 5.11.120 of the Code and Section 2.7(a)(1) of hereof, and certifying that the *landscape project* has been installed in substantial conformance with the approved *Landscape Documentation Package* and complies with the provisions of the *Water Efficient Landscape Regulations* and these *Guidelines*.

“*Certification of Landscape Design*” means the certification included as **Appendix E** of these *Guidelines* that must be included in the *Landscape Documentation Package* pursuant to Section 2.1 of these *Guidelines*.

“*Certified Landscape Irrigation Designer*” means a *person* certified to design irrigation systems by an accredited academic institution, a professional trade organization, or other program such as the U.S. Environmental Protection Agency’s WaterSense irrigation designer certification program and Irrigation Association’s Certified Irrigation Designer program.

“*Certified Landscape Irrigation Auditor*” means a *person* certified to perform landscape irrigation audits by an accredited academic institution, a professional trade organization

or other program such as the US Environmental Protection Agency’s WaterSense irrigation auditor certification program and Irrigation Association’s Certified Landscape Irrigation Auditor program.

“*Check valve*” or “*anti-drain valve*” means a valve located under a *sprinkler head*, or other location in the irrigation system, to hold water in the system to prevent drainage from *sprinkler heads* when the sprinkler is off.

“*Checklist of Landscape Documentation Package*” means the checklist or index of all documents in the *Landscape Documentation Package* similar in form to the checklist included in **Appendix G** hereof.

“*CIMIS*” means the California Irrigation Management Information System.

“*Code*” means the Town of Colma Municipal Code.

“*Common interest development*” means a community apartment project, condominium project, planned development, and stock cooperative per Civil Code Section 1351.

“*Conversion factor*” means the number (0.62) that converts acre-inches per acre per year to gallons per square foot per year.

“*Distribution uniformity*” or “*DU*” is a measure of how uniformly an irrigation head applies water to a specific target area and theoretically ranges from zero to 100 percent.

“*Drip irrigation*” means any non-spray *low volume irrigation* system utilizing emission devices with a *flow rate* measured in gallons per hour. *Low volume irrigation* systems are specifically designed to apply small volumes of water slowly at or near the root zone of plants.

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

“*Effective precipitation*” or “*usable rainfall*” or “*Eppt*” means the portion of total precipitation which becomes available for plant growth.

“*Emitter*” means a *drip irrigation* emission device that delivers water slowly from the system to the soil.

“*Established landscape*” means the point at which plants in the landscape have developed significant root growth into the soil. Typically, most plants are established after one or two years of growth.

“*Establishment period of the plants*” means the first year after installing the plant in the landscape or the first two years if irrigation will be terminated after establishment. Typically, most plants are established after one or two years of growth.

“*Estimated Total Water Use*” or “*ETWU*” means the total water used for the landscape as described in Section 5.11.070 of the *Code*.

“*Evapotranspiration Adjustment Factor*” or “*ETAF*” means a factor of 0.7, that, when applied to *reference evapotranspiration*, adjusts for *plant factors* and *irrigation efficiency*, two major influences upon the amount of water that needs to be applied to the landscape. A combined plant mix with a site-wide average of 0.5 is the basis of the plant factor portion of this calculation. For purposes of the *ETAF*, the average *irrigation efficiency* is 0.71. Therefore, the *ETAF* is $(0.7) = (0.5/0.71)$. *ETAF* for a *special landscape area* shall not exceed 1.0. *ETAF* for existing non-rehabilitated landscapes is 0.8.

“*Evapotranspiration rate*” means the quantity of water evaporated from adjacent soil and other surfaces and transpired by plants during a specified time.

“*Flow rate*” means the rate at which water flows through pipes, *valves* and emission devices, measured in gallons per minute, gallons per hour, or cubic feet per second.

“*Grading and Erosion and Sediment Code*” means Chapter 5, Subchapter 5.07 of the *Code*.

“*Groundwater recharge credit*” means the credit to be applied to reduce the *ETWU* for a new cemetery or *rehabilitated landscape* at an existing cemetery and taken into account in any irrigation audit, irrigation survey or irrigation analysis for any cemetery.

“*Groundwater Recharge Credit Submittal Sheet*” means the worksheet required to be submitted pursuant to Section 5 of these Guidelines and included in **Appendix H** hereof.

“*Hardscapes*” means any durable material or feature (*pervious* and *non-pervious*) installed in or around a *landscape area*, such as pavements or walls. Pools and other water features are considered part of the *landscape area* and not considered *hardscapes* for purposes of these Guidelines.

“*Home-owner provided landscaping*” or “*homeowner-provided landscaping*” means any landscaping either installed by a private individual for a single family residence or installed by a landscape professional hired by a homeowner. A homeowner, for purposes of this ordinance, is a *person* who occupies the dwelling he or she owns or rents. This definition excludes speculative homes, which are not *owner-occupied* dwellings.

“*Hydrozone*” or “*HA*” means a portion of the *landscape area* having plants with similar water needs and typically irrigated by one *valve/controller* station. A *hydrozone area* may be irrigated or non-irrigated.

“*Infiltration rate*” means the rate of water entry into the soil expressed as a depth of water per unit of time (e.g., inches per hour).

“*Invasive plant species*” means species of plants not historically found in California that spread outside cultivated areas and can damage environmental or economic resources. Invasive species may be regulated by county agricultural agencies as noxious species. “*Noxious weeds*” means any weed designated by the Weed Control Regulations in the Weed Control Act and identified on a Regional District noxious weed control list. Lists

of invasive plants are maintained at the California Invasive Plant Inventory and USDA invasive and noxious weeds database.

“*Irrigation audit*” means an in-depth evaluation of the performance of an irrigation system conducted by a *Certified Landscape Irrigation Auditor*. An *irrigation audit* includes, but is not limited to: inspection, system tune-up, system test with *distribution uniformity* or emission uniformity, reporting *overspray* or *runoff* that causes overland flow, and preparation of an irrigation schedule.

“*Irrigation rate*” or “*IR*” means the amount of water applied per hour in inches by an irrigation system.

“*Irrigation survey*” means an evaluation of an irrigation system that is less detailed than an irrigation audit. An irrigation survey includes, but is not limited to: inspection, system test, and written recommendations to improve performance of the irrigation system.

“*Irrigation water use analysis*” means an analysis of water use data based on meter readings and billing data.

“*Irrigation efficiency*” or “*IE*” means the measurement of the amount of water beneficially used divided by the amount of water applied. Irrigation efficiency is derived from measurements and estimates of irrigation system characteristics and management practices. The minimum average irrigation efficiency for purposes of Chapter 5, Subchapter 5.11 of the Code and these *Guidelines* is 0.71. Greater irrigation efficiency can be expected from well designed and maintained systems.

“*Landscape area*” or “*LA*” means all the planting areas, *turf* areas, and *water features* in a landscape design plan subject to the *Maximum Applied Water Allowance* and *Estimated Applied Water Use* calculations. The *landscape area* does not include footprints of buildings or structures, sidewalks, driveways, parking lots, decks, patios, gravel or stone walks, other *pervious* or *non-pervious hardscapes*, and other non-irrigated areas designated for non-development (e.g., open spaces and existing native vegetation).

“*Landscape Documentation Package*” means the package of documents that a *project applicant* is required to submit to the *Town* pursuant to Section 5.11.050 of the *Code* and Section 2.1 of these *Guidelines*.

“*Landscape professional*” means a licensed landscape architect, licensed landscape contractor, or any other *person* authorized to design a landscape pursuant to Sections 5500.1, 5615, 5641, 5641.1, 5641.2, 5641.3, 5641.4, 5641.5, 5641.6, 6701, 7027.5 of the California Business and Professions Code, Section 832.27 of Title 16 of the California Code of Regulations, and Section 6721 of the California Food and Agriculture Code.

“*Landscape project*” means the total area of landscape in a project as provided in the definition of “*landscape area*” meeting the requirements under section 5.11.020 of the *Code* .

“*Landscape Submittal Sheet*” means the form that a *project applicant* is required to submit to the *Town* pursuant to Section 2.1 of these *Guidelines* and included as **Appendix D** of these *Guidelines*.

“*Lateral line*” means the water delivery pipeline that supplies water to the *emitters* or sprinklers from the *valve*.

“*Local agency*” means a city or county, including a charter city or charter county, that is responsible for adopting and implementing Chapter 5, Subchapter 5.11 of the *Code*. The local agency is also responsible for the enforcement of Chapter 5, Subchapter 5.11 of the *Code* and these *Guidelines*, including but not limited to, approval of a permit and plan check or design review of a project.

“*Local water purveyor*” means any entity, including a *local agency* or private water company that provides retail water service within the *Town*.

“*Low volume irrigation*” means the application of irrigation water at low pressure through a system of tubing or *lateral lines* and low-volume *emitters* such as drip, drip lines and bubblers. *Low volume irrigation* systems are specifically designed to apply small volumes of water slowly at or near the root zone of plants.

“*Low volume overhead irrigation*” means aboveground irrigation heads with an upper flow limit of 0.5 gallons per minute.

“*Main line*” means the pressurized pipeline that delivers water from the water source to the *valve* or outlet.

“*Maximum Applied Water Allowance*” or “*MAWA*” means, the upper limit of annual *applied water* for the established *landscape area* as specified in Section 5.11.070 of the *Code* and Section 2.2 of these *Guidelines*. It is based upon the area’s *reference evapotranspiration*, the *ETAF*, and the size of the *landscape area*. The *Estimated Applied Water Use* shall not exceed the *Maximum Applied Water Allowance*. *Special landscape areas* are subject to the *Maximum Applied Water Allowance* with an *ETAF* not to exceed 1.0.

“*Microclimate*” means the climate of a small, specific area that may contrast with the climate of the overall *landscape area* due to factors such as wind, sun exposure, plant density or proximity to reflective surfaces.

“*Mined-land reclamation projects*” means any surface mining operation with a reclamation plan approved in accordance with the Surface Mining and Reclamation Act of 1975.

“*Model Ordinance*” means the Model Water Efficient Landscape Ordinance which was adopted by the California Department of Water Resources in accordance with California Government Code section 65591 *et seq.*

“*Mulch*” means any organic material such as leaves, bark, straw, compost or inorganic mineral materials such as rocks, gravel, and decomposed granite left loose and applied to

the soil surface for the beneficial purposes of reducing evaporation, suppressing weeds, moderating soil temperature and preventing soil erosion.

“*New construction*” means a new building with landscaping or a landscape-dominated project, such as a park, playground, playing field, or greenbelt or other new landscape, which may or may not have an associated building or structure.

“*Non-pervious*” means any surface or natural material that does not allow for the passage of water through the material and into the underlying soil.

“*Operating pressure*” means the pressure at which the parts of an irrigation system of sprinklers are designed by the manufacturer to operate.

“*Operating pressure*” means the pressure at which the parts of an irrigation system are designed by the manufacturer to operate.

“*Overhead sprinkler irrigation systems*” means systems that deliver water through the air (e.g., spray heads and rotors).

“*Overspray*” means the irrigation water which is delivered beyond the target irrigation area.

“*Owner*” means the record owner of real property as shown on the most recently issued equalized assessment roll.

“*Permit*” means an authorizing document issued by local agencies for *new construction* or *rehabilitated landscapes*.

“*Person*” means any natural person, firm, joint venture, joint stock company, partnership, public or private *association*, club, company, corporation, business trust, organization, public or private agency, *local agency* or institution, school district, college, university, any other user of water provided by the *Town* or the *local water purveyor*, or the manager, lessee, agent, servant, officer or employee of any of them or any other entity which is recognized by law as the subject of rights or duties.

“*Pervious*” means any surface or material that allows the passage of water through the material and into the underlying soil.

“*Planning and Zoning Code*” means Chapter 5, Subchapter 5.03 of the *Code*.

“*Plant factor*” or “*plant water use factor*” or “*PF*” is a factor, when multiplied by *ET_o*, estimates the amount of water needed by plants. For purposes of Chapter 5, Subchapter 5.11 of the *Code* and these *Guidelines*, the *plant factor* range for low water use plants is 0 to 0.3, the *plant factor* range for moderate water use plants is 0.4 to 0.6, and the *plant factor* range for high water use plants is 0.7 to 1.0. *Plant factors* cited in Chapter 5, subchapter 5.11 of the *Code* and these *Guidelines* are derived from the Department of Water Resources 2000 publication “Water Use Classification of Landscape Species.”

“*Precipitation rate*” means the rate of application of water measured in inches per hour.

“*Project applicant*” means the *person* submitting a *Landscape Documentation Package* pursuant to Section 5.11.060 of the *Code* and Section 2.1 of these *Guidelines*, to request a permit, plan check or design review from the *Town* or *local agency* for the installation of landscape. A *project applicant* may be the property owner or his or her authorized designee.

“*Rainfall intensity*” or “*R*” means the measure of the amount of rain that falls over a specified amount of time as determined pursuant to Section 5(a)(1) of these *Guidelines*.

“*Recycled water*” means treated or recycled waste water of a quality suitable for non-potable uses such as landscape irrigation and *water features*, and which is not intended for human consumption.

“*Reference evapotranspiration*” or “*ET_o*” means a standard measurement of environmental parameters which affect the water use of plants. *ET_o* is given expressed in inches per day, month, or year as represented in **Appendix B** of these *Guidelines*, and is an estimate of the evapotranspiration of a large field of four to seven-inch tall, cool-season grass that is well watered. *Reference evapotranspiration* is used as the basis of determining the *Maximum Applied Water Allowances*.

“*Rehabilitated landscape*” means any re-landscaping project that requires a permit, plan check, or design review, meets the requirements of Section 5.11.020, and the modified *landscape area* is equal to or greater than 2,500 square feet, is 50% of the total *landscape area*, and the modifications are completed within one year and meets the requirements of Section 5.11.020(a)(1), 92), and (5) of the *Code*.

“*Runoff*” means water which is not absorbed by the soil or landscape to which it is applied and flows from the *landscape area*. For example, *runoff* may result from water that is applied at too great a rate (application rate exceeds *infiltration rate*) or when there is a slope.

“*Smart controller*” means an automatic timing device used to remotely control valves that operate an irrigation system and which schedules irrigation events using either evapotranspiration, weather-based, or soil moisture data.

“*Special landscape area*” or “*SLA*” means an area of landscape dedicated solely to edible plants such as orchards and vegetable gardens, areas irrigated with *recycled water*, *water features* using *recycled water*, and areas dedicated to active play such as parks, sports fields, golf courses, and areas where *turf* provides a playing surface.

“*Sprinkler head*” means a device which delivers water through a nozzle.

“*Static water pressure*” means the pipeline or municipal water supply pressure when water is not flowing.

“*State*” means the State of California.

“*Station*” means an area served by one *valve* or by a set of *valves* that operate simultaneously.

“*Swing joint*” means an irrigation component that provides a flexible, leak-free connection between the emission device and lateral pipeline to allow movement in any direction and to prevent equipment damage.

“*Town*” means the Town of Colma or its duly authorized designee.

“*Turf*” means a ground cover surface of mowed grass. Annual bluegrass, Kentucky bluegrass, Perennial ryegrass, Red fescue, and Tall fescue are cool-season grasses. Bermudagrass, Kikuyugrass, Seashore Paspalum, St. Augustinegrass, Zoysiagrass, and Buffalo grass are warm-season grasses.

“*Valve*” means a device used to control the flow of water in an irrigation system.

“*Water-conserving plant species*” means a plant species identified as having a low *plant factor*.

“*Water Efficient Landscape Regulations*” means those regulations established in Chapter 5, Subchapter 5.11 of the *Code*.

“*Water Efficient Landscape Worksheets*” means the worksheets required and selected to be completed by the *project applicant* pursuant to Section 2.2 of these *Guidelines* and which are included in **Appendix C** hereof.

“*Water feature*” means a design element where water is artificially supplied and where open water performs an aesthetic or recreational function. *Water features* include artificial ponds, lakes, waterfalls, fountains, artificial streams, spas, and swimming pools (where water is artificially supplied). The surface area of *water features* is included in the high water use *hydrozone* of the *landscape area*. Constructed wetlands used for on-site wastewater treatment, habitat protection or storm water best management practices that are not irrigated and used solely for water treatment or storm water retention are not *water features* and, therefore, are not subject to the water budget calculation.

“*Water Quality Code*” means Chapter 5, Subchapter 3.10 of the *Code*.

“*Water Use Classification of Landscape Species*” or “*WUCOLS*” means the Water Use Classification of Landscape Species published by the University of California Cooperative Extension, the Department of Water Resources and the Bureau of Reclamation, 2000, appearing in “A Guide to Estimating Irrigation Water Needs of Landscape Plantings in California,” and currently available at the California Department of Water Resources website: www.water.ca.gov .

“*Watering window*” means the time of day irrigation is allowed pursuant to any applicable *Town*, regional, *State*, or *local water purveyor* water conservation or drought response laws, rules, policies, or regulations.

**APPENDIX B - REFERENCE
EVAPOTRANSPIRATION (ETO) TABLE**

REFERENCE EVAPOTRANSPIRATION (ETO) TABLE

Appendix B - Reference Evapotranspiration (ETo) Table*													
Town	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual ETo
Redwood City	1.5	1.8	2.9	3.8	5.2	5.3	6.2	5.6	4.8	3.1	1.7	1.0	42.8
* The values in this table were derived from:													
(1) California Irrigation Management Information System (<i>CIMIS</i>);													
(2) Reference EvapoTranspiration Zones Map, UC Dept. of Land, Air & Water Resources and California Dept of Water Resources 1999;													
(3) Reference Evapotranspiration for California, University of California, Department of Agriculture and Natural Resources 1987) Bulletin 1922 4) Determining Daily Reference Evapotranspiration, Cooperative Extension UC Division of Agriculture and Natural Resources (1987), Publication Leaflet 21426													

**APPENDIX C – WATER EFFICIENT
LANDSCAPE WORKSHEET**

EXAMPLE LANDSCAPE SUBMITTAL SHEET

This is a sample of a Landscape Submittal Sheet to be filled out by the *project applicant* for each Point of Connection.

Point of Connection # 1
Maximum Applied Water Allowance (MAWA)
$MAWA = (ETo) (0.62) [(0.7 \times LA) + (0.3 \times SLA)] = \text{Gallons per year for } LA+SLA$
where: $MAWA = \text{Maximum Applied Water Allowance (gallons per year)}$ $ETo = \text{Reference Evapotranspiration Appendix B (inches per year)}$ $0.7 = \text{Evapotranspiration Adjustment Factor (ETAF)}$ $1.0 = \text{ETAF for Special Landscape area}$ $LA = \text{Landscape area (square feet)}$ $0.62 = \text{Conversion Factor (to gallons per square foot)}$ $SLA = \text{Special landscape area (square feet)}$
Example Calculation: a hypothetical landscape project in Redwood City, CA with an irrigated landscape area of 50,000 square feet with a 2,000 square feet of <i>special landscape area</i> (LSA = 10,000 of edible plants), where ETo is 42.8.1 inches. Note: To calculate $MAWA$, the annual <i>reference evapotranspiration</i> value for Redwood City is 42.8 inches as listed in the Reference Evapotranspiration (ETo) Table in Appendix B .
$MAWA = (42.8 \text{ inches}) (0.62) [(0.7 \times 50,000 \text{ square feet}) + (0.3 \times 2,000 \text{ square feet})]$ $= 26.53 \times [35,000 + 600] \text{ gallons per year}$ $= 26.53 \times 35,600 \text{ gallons per year}$ $= 944,468 \text{ gallons per year}$
Total MAWA (LA + SLA) = 944,468 gallons per year

Estimated Total Water Use

ETWU = (ETo) (0.62) [(PF x HA) ÷ IE) + SLA] = Gallons per year

where:

ETWU = Estimated Total Water Use (gallons per year)
 ETo = Reference Evapotranspiration **Appendix B** (inches per year) (42.8)
 PF = Plant factor*
 HA = Hydrozone area [high, medium and low water use areas] (square feet)
 0.62 = Conversion factor (to gallons per square foot)
 IE = Irrigation Efficiency = IME x DU (See definitions in **Appendix A** for examples of IE percentages)

*Plant factor from WUCOLS (See definition in **Appendix A** for examples and www.owue.water.ca.gov/docs/wucols00.pdf)

Example Calculation: Landscape area is 50,000 square feet and there is 2,000 square feet of special landscape area. ETo is 42.8 inches per year.

Hydrozone	Plant Water Use Type	PF	Hydozone Area (sq. ft.)	PF x HA (square feet)
1.	High water use	0.8	7,000	5,600
2.	High water use	0.7	9,000	6,300
3.	Medium water use	0.5	15,000	7,500
4.	Low water use	0.3	7,000	2,100
5.	Low water use	0.2	10,000	<u>2,000</u>
Total for LA				24,700
6.	SLA	1.0	2,000	2,000

ETWU = (42.8) (0.62) [(23,500 ÷ 0.71) + 2,000] = gallons per year
 = 26.53 x (33,099 + 2,000) gallons per year
 = 931,176 gallons per year

Compare ETWU with MAWA.

The ETWU (931,176 gallons per year) is less than MAWA (944,468 gallons per year). For this example, the water budget complies with the MAWA.

List *sprinkler heads*, *microspray* and *drip emitters* here along with average *precipitation rate* and *distribution uniformity* of irrigation head.

<u>Sprinkler Head Types</u>	<u>Average Precipitation Rate</u>	<u>Distribution Uniformity of Irrigation Head</u>
Drip		
Microspray		
Bubbler		
Low precipitation rotating nozzles		
Stream rotors		

LANDSCAPE SUBMITTAL SHEET

This worksheet shall be filled out by the *project applicant* for each Point of Connection. Please complete all sections of the worksheet.

Point of Connection # __
<i>Maximum Applied Water Allowance (MAWA)</i>
Total <i>MAWA</i> = (<i>ETo</i>) (0.62) [(0.7 x <i>LA</i>) + (0.3 x <i>LSA</i>)] = Gallons per year for <i>LA+LSA</i>
Where: <i>MAWA</i> = Maximum Applied Water Allowance (gallons per year) <i>ETo</i> = Reference Evapotranspiration Appendix B (inches per year) 0.7 = Evapotranspiration Adjustment Factor (ETAF) 1.0 = ETAF for <i>Special Landscape area</i> <i>LA</i> = Landscape area (square feet) 0.62 = Conversion factor (to gallons per square foot) <i>LSA</i> = Special Landscape area (square feet)
<i>MAWA Calculation:</i>

Estimated Total Water Use

$ETWU = (ETo) (0.62) [(PF \times HA) \div IE] + SLA = \text{Gallons per year}$

where:

ETWU = Estimated Total Water Use (gallons per year)
ETo = Reference Evapotranspiration **Appendix B** (inches per year) (42.8)
PF = Plant factor*
HA = Hydrozone area [high, medium and low water use areas] (square feet)
0.62 = Conversion factor (to gallons per square foot)
IE = Irrigation Efficiency = *IME* x *DU* (See definitions of **Appendix A** for examples of IE percentages)

*Plant factor from WUCOLS (See definition in **Appendix A** for examples and www.owue.water.ca.gov/docs/wucols00.pdf)

Hydrozone	Plant Water Use Type	PF	HA	PF x HA

(Show Calculation) Total *ETWU* =

Compare *ETWU* to MAWA:

List *sprinkler heads*, *microspray* and *drip emitters* here along with average *precipitation rate* and *distribution uniformity* of irrigation head.

<i>Sprinkler Head Types</i>	<i>Average Precipitation Rate</i>	<i>Distribution Uniformity of Irrigation Head</i>
Drip		
Microspray		
Bubbler		
Low precipitation rotating nozzles		
Stream rotors		

**APPENDIX D – LANDSCAPE SUBMITTAL
SHEET**

LANDSCAPE SUBMITTAL SHEET

PROJECT NAME: _____
 TRACT/PARCEL/LOT: _____
 SUBMITTED BY: _____
 COMPANY: _____
 TELEPHONE: _____
 CONTACT: _____
 RETURNED TO: _____

PERMIT NO: _____
 PROJECT ADDRESS: _____
 DATE RECEIVED: _____
 RECEIVED BY: _____
 CHECKED BY: _____
 DATE RETURNED: _____

THE FOLLOWING ITEMS ARE REQUIRED FOR COMPLETE SUBMITTAL:

<u>FIRST CHECK</u>	<u>DUE AT PERMIT ISSUANCE</u>
<input type="checkbox"/> 5 Sets of plans 24" x 36	<input type="checkbox"/> 1 set of signed mylars (by landscape architect and Town engineer)
<input type="checkbox"/> 1 Copy of Planning 'Conditions of Approval'	<input type="checkbox"/> 1 set of full size plans
<input type="checkbox"/> 1 Copy of approval from other agencies (if applicable)	<input type="checkbox"/> 2 sets of half-size plans
<input type="checkbox"/> Plan check fee of \$. See fee schedule	<input type="checkbox"/> Inspection Deposit \$ _____ (see fee schedule)
<input type="checkbox"/> Other _____	<input type="checkbox"/> Surety (100% of estimate)
<input type="checkbox"/> Other _____	<input type="checkbox"/> CD of .Piffle (see attached specifications)
<input type="checkbox"/> Other _____	<input type="checkbox"/> Other _____
<u>ALL PLAN REVISION SUBMITTALS</u>	<u>DUE AT PROJECT CLOSE OUT</u>
<input type="checkbox"/> 3 sets of revised blue lines	<input type="checkbox"/> Redline as-builts
<input type="checkbox"/> Previous check print	<input type="checkbox"/> CD of signed redline as-builts
<input type="checkbox"/> Additional plan check deposit (if required) \$ _____	<input type="checkbox"/> Other _____
<input type="checkbox"/> Other _____	
<input type="checkbox"/> Other _____	
<u>FINAL SUBMITTAL FOR TOWN APPROVAL</u>	
<input type="checkbox"/> Original mylars (all sheets must be 24" x 36" maximum, stamped & signed by landscape architect)	
<input type="checkbox"/> Previous Check Print	

**APPENDIX E – CERTIFICATION OF
LANDSCAPE DESIGN**

CERTIFICATION OF LANDSCAPE DESIGN

I hereby certify that:

- (1) I am a professional appropriately licensed in the State of California to provide professional landscape design services.
- (2) The landscape design and water use calculations for the landscape project located at _____
_____ (provide street address or parcel, tract, or lot number(s)) were prepared by me or under my supervision. (Attach additional sheets as necessary.)
- (3) The landscape design and water use calculations for the identified property comply with the requirements of the Town of Colma Water Efficient Landscape Regulations and the Guidelines for Implementation of the Town of Colma Water Efficient Landscape Regulations.
- (4) The information I have provided in this Certification of Landscape Design is true and correct and is hereby submitted in compliance with the Guidelines for Implementation of the Town of Colma Water Efficient Landscape Regulations.

Print Name	Title	Date
------------	-------	------

Signature	License Number
-----------	----------------

Company	Address
---------	---------

Telephone	Fax	E-mail Address
-----------	-----	----------------

For Town Use only.

Landscape Design Professional's Stamp
(if applicable)

<p>_____ Date received</p> <p>_____ Name</p> <p>_____ Signature</p>

--

**APPENDIX F – CERTIFICATE OF
COMPLETION**

CERTIFICATE OF COMPLETION

I hereby certify that:

(1) I am a professional appropriately licensed in the State of California to provide professional landscape design services.

(2) The landscape project for the property located at _____

 (provide street address or parcel, tract, or lot number(s)) was installed by me or under my supervision. (Attached additional sheets as necessary.)

(3) The landscaping for the identified landscape project has been installed in substantial conformance with the approved Landscape Documentation Package, and complies with the requirements of the Town of Colma Water Efficient Landscape Regulations (Chapter 5, Subchapter 5.11 of the Town of Colma Municipal Code) and the Guidelines for Implementation of the Town of Colma Water Efficient Landscape Regulations for the efficient use of water in the landscape.

(4) The information I have provided in this Certificate of Completion is true and correct and is hereby submitted in compliance with the Guidelines for Implementation of the Town of Colma Water Efficient Landscape Regulations.

 Print Name Title Date

 Signature License Number

 Company Address

 Telephone Fax E-mail Address

For Town use only.

Landscape Design Professional's Stamp
 (If Appropriate)

<input type="checkbox"/> Project Approved <input type="checkbox"/> Project Not Approved	
_____ Name	_____ Title
_____ Signature	_____ Date
Reasons for denial included in attached sheet(s).	

--

**APPENDIX G – CHECKLIST OF LANDSCAPE
DOCUMENTATION PACKAGE**

CHECKLIST OF LANDSCAPE DOCUMENTATION PACKAGE

1. Project Information

Date	Project Name
Project Applicant	Title
Company	Telephone/Fax/E-mail
Company Street Address	Town/State/Zip Code
Project Street Address	Project Parcel, Tract or Lot Number(s), if available.
Project Type	Total Landscape area (Square Feet)
Water Supply Type	Additional Project Information (may attach additional sheets)

2. Property Owner Information

Name(s)	Street Address
Town/State/Zip code	Telephone/Fax/E-mail
Title (if applicable)	Company (if applicable)
Company Address (if applicable)	Town/State/Zip

3. Elements of Landscape Documentation Package Submitted:

- Certification of Landscape Design
- Landscape Submittal Sheet
- Maximum Applied Water Allowance (MAWA) Calculation
- Estimated Total Water Use (ETWU) Calculation
- Landscape Submittal Sheet
- Hydrozone Information Table
- Water Budget Calculations
- Soil Management Report
- Landscape Design Plan
- Irrigation Design Plan
- Grading Design Plan (if applicable)
- Groundwater Recharge Submittal Sheet (if applicable)
- Additional Landscape Project Information (see attached sheets)

**APPENDIX H – GROUNDWATER RECHARGE
SUBMITTAL SHEET**

Ground Water Recharge Credit for Cemeteries

$ETWU = (ETo) (0.62) [(PF \times HA) \div IE] + SLA]$ = Gallons per year

$AA = (A0 + A1) \div 2$; if IR is equal to or less than R and less than AA , the cemetery project qualifies for a *Groundwater Recharge Credit*

Where:

- $ETWU$ = Estimated Total Water Use (gallons per year)
- ETo = Reference Evapotranspiration **Appendix B** (inches per year) (42.8)
- PF = Plant factor*
- HA = Hydrozone area [high, medium and low water use areas] (square feet)
- 0.62 = Conversion factor (to gallons per square foot)
- IE = Irrigation Efficiency = $IME \times DU$ (See definitions of **Appendix A** for examples of IE percentages)
- *Plant factor from WUCOLS (See definition in **Appendix A** for examples and www.owue.water.ca.gov/docs/wucols00.pdf)

Where:

- R = rain intensity in inches per hour determined on a 2-year, 2-hour basis
- $A0$ = minimum *absorption rate* for site soil in inches per hour
- $A1$ = maximum *absorption rate* for site soil in inches per hour
- IR = the irrigation run time in inches per hour x the *irrigation rate* in inches per hour
- AA = average *absorption rate* in inches per hour

Groundwater recharge credit = average excess winter rainfall of 9.02 inches per year, **or** 0.75 acre-feet of water, **or** 244,931 gallons of water per acre. *Groundwater recharge credit* shall be applied to reduce the calculated $ETWU$.

Hydrozone	Plant Water Use Type	PF	HA	$PF \times HA$

(Show Calculation) Total *ETWU* =

(Show Calculation) *Average Absorption* =

(Show Calculation) *Groundwater Recharge Credit* =

Compare *ETWU* to MAWA:

List *sprinkler heads*, *microspray* and *drip emitters* here along with *average precipitation rate* and *distribution uniformity* of irrigation head.

<i>Sprinkler Head Types</i>	<i>Average Precipitation Rate</i>	<i>Distribution Uniformity of Irrigation Head</i>
Drip		
Microspray		
Bubbler		
Low precipitation rotating nozzles		
Stream rotors		