



June 12, 2012

Simon Eching  
Water Use and Efficiency Branch  
Department of Water Resources  
P.O. Box 942836  
Sacramento, CA 94236-0001

**SUBJECT: AB 1881 Compliance – Water Efficient Landscape Ordinance**

Dear Mr. Eching:

This letter is to notify the Department of Water Resources that Livermore Municipal Water and the City of Livermore have amended our Water Efficient Landscape Ordinance (WELO). On June 11, 2012, the Livermore City Council amended the January 2011 version of Livermore's Water Efficient Landscape Ordinance.

The amendments made in 2012, include the six following areas.

1. Turf in New Residential Developments

This change limits the percentage of turf in a residential front yard from 50% to 25% of the area.

2. Low-Water Plants

The change requires 75% of the number of non-turf plants to be low-water using.

3. Plant Selection Appropriate to Location

This change requires plants to be located so that they can grow to their natural size and fit their space well.

4. Compost in Smaller Landscapes

This change requires the amending the soil with compost in smaller landscapes so all landscape project soils are amended with a minimum 1" layer of compost. The benefits would include increasing the soil's organic matter, water penetration, root access to air, biological processes in decomposing organic material, and promoting healthy and attractive plant growth.

5. Reorganizations

In addition to the water efficiencies, staff took the opportunity to make the Ordinance more user-friendly. The existing ordinance is based of the State Model Ordinance which is organized using a lot of cross references between sections and sub-sections. This organization is not related to Livermore's permit review process. Livermore's process is in two stages: a discretionary design review, followed by a second, construction-enabling building permit. Livermore's



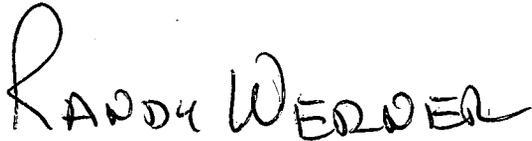
amended ordinance will reduce redundancies and cross-references to improve clarity, consolidate text, and reorganize existing requirements into two distinct lists to better correlate to and facilitate these two permit stages.

6. Supplemental Informational Bulletins

The last change in the amended ordinance is a section authorizing staff to create supplemental materials such as bulletins, forms and lists of suggested plants. This will get some of the informational clutter out of the ordinance and into bulletins or brochures.

As is the usual practice, Livermore has made our WELO as restrictive as or more restrictive than the State Model Ordinance. If you have any questions about Livermore's ordinance, please call me at **(925) 960 - 8100**.

Yours truly,

A handwritten signature in black ink that reads "RANDY WERNER". The letters are cursive and somewhat stylized, with the first name being more prominent.

Randy Werner  
Water Supervisor  
Livermore Municipal Water

925-960-8100  
925-960-8105 Fax

RW:rw

cc: Darren Greenwood, Assist. Public Works Director  
Frank Guido, Planner  
Planning

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**AMENDED**

**Chapter 13.25  
WATER EFFICIENT LANDSCAPES**

Sections:

- 13.25.010 Authority – Findings - Purpose.
- 13.25.020 Applicability.
- 13.25.030 Definitions.
- 13.25.040 Submittal Requirements.
- 13.25.050 Landscape design package.
- 13.25.060 Landscape Installation certification package.
- 13.25.070 Public education and model home complexes.
- 13.25.080 Water waste prevention .
- 13.25.090 Supplemental materials.
- 13.25.100 Violation.

**13.25.010 Authority – Findings -- Purpose.**

A. Authority. This chapter is enacted under the Water Conservation in Landscaping Act (Government Code Section 65591 et seq.) and is a "water efficient landscape ordinance" adopted by a local agency under that Act. (Ord. 1926 § 4 (Exh. B), 2010; Ord. 1399 § 1, 1992)

B. Findings. The city council finds and declares that the state of California is historically an arid environment with limited amounts of water resources subject to ever increasing demands. There are enormous costs to the residents and ecosystem of the state to maintain current water resources systems and create new systems to meet current and future demands for water. The state's, region's, and city's continued economic prosperity is dependent on continued water availability. Landscapes are essential to our quality of life, for example by providing areas for passive recreation and enhancing the environment by cleaning air and water and preventing erosion. Landscape design, installation, maintenance, and management can be water efficient. Therefore, the city council finds that it is in the public interest of the residents of the city and the state to require the wise and efficient use of a limited and costly resource through regulations that require and promote water conservation.

C. Purpose. The purpose of this chapter is to establish standards for designing, installing, and maintaining water efficient landscapes that avoid runoff and other water waste in landscape projects. This is accomplished through the requirements for responsible landscape design, soil care, irrigation design and scheduling, and management, which utilize reasonable amounts of water while ensuring that aesthetic, functional, energy and environmental benefits of landscapes are achieved with design flexibility. (Ord. 1926 § 4 (Exh. B), 2010; Ord. 1399 § 1, 1992)

**13.25.020 Applicability.**

A. The provisions of this chapter apply to landscape projects that require a permit, as that term is defined in LMC 13.25.030, for which an application is deemed complete on or after the effective date of the ordinance codified in this chapter, subject to the following.

1. New construction and rehabilitated landscape projects with total landscape area of 2,500 or more square feet shall comply with the provisions of this chapter, except for homeowner-provided and/or homeowner-hired landscape projects in single-family and multifamily residential development, the provisions of this chapter shall apply only to new construction landscape projects with a total project landscape area of 5,000 or more square feet.
2. Exceptions to specified requirements of this chapter are in subsection B of this section.
3. Categories of uses entirely exempt from the requirements of this chapter are in subsection C of this section.

B. The exceptions to the requirements of subsection A of this section are that:

1. A single family home shall not be required to have a separate landscape water meter.
2. Cemeteries shall be subject to only the water budget, irrigation evaluation, and landscape and irrigation maintenance schedule requirements (See LMC 13.25.050(B)(13) and 13.25.060(E) and (G);

C. The following categories of uses are exempt from this chapter:

1. Rehabilitated landscape projects that are homeowner-provided landscaping;
2. Agricultural and horticultural commerce (for example, commercial activities such as farming of grains, wine grapes, vegetables, fruit and nut trees and other agricultural crop production; greenhouses; nurseries; and floriculture facilities);
3. Plant collections, as part of botanical gardens and arboretums open to the public;
4. Registered historical sites;
5. Ecological restoration projects and mined-land reclamation projects that do not require a permanent irrigation system; and
6. Community gardens open to the public.

D. All landscapes not meeting the criteria of subsection A of this section are subject only to the water waste prevention provisions of LMC 13.25.080.

**13.25.030 Definitions.**

“Amendment” means any material added to the soil to alter the pH or improve the natural physical properties of the soil, such as increased organic content, water retention, water infiltration, and drainage.

“Anti-drain or check valve” means a valve, located under a sprinkler head and installed lower than the lowest head on the system, to hold water in the system when not in use so it minimizes drainage from the lower elevation sprinkler heads.

"Application rate" means the depth of water applied to a given area, usually measured in inches per hour.

"Applied water" means the portion of water supplied by the irrigation system to the landscape.

"Automatic controller" means a mechanical or solid state timer, capable of operating valve stations to set the days and length of time of a water application.

"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.

"Bay-friendly" is a holistic approach to gardening and landscaping developed and espoused by StopWaste.Org that works in harmony with the natural conditions of the San Francisco Bay watershed. Bay-friendly practices foster soil health and conserve water and other valuable resources while reducing waste and preventing pollution.

"Bay-friendly landscape guidelines" means the most recent version of the guidelines developed by StopWaste.Org for use in the professional design, construction and maintenance of landscapes.

"Bubbler" means an irrigation head that delivers water to the root zone by flooding the planted area, usually measured in gallons per minute. Bubblers exhibit a trickle, umbrella, or short stream pattern.

"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.

"CIMIS" means the California Irrigation and Management Information System, which is a network of weather stations located around the state which collects reference evapotranspiration data and managed by the California Department of Water Resources.

"Compost or finished compost" is an organic amendment that is the product of controlled biological decomposition of organic materials, often including urban plant debris and food waste. It is an organic matter resource that has the unique ability to improve the chemical, physical and biological characteristics of soils or growing media. It contains plant nutrients but is typically not characterized as a fertilizer. Compost as required by this chapter means finished compost, which is compost that has reached a well decomposed, stable, and weed free state that possesses no objectionable odors and does not resemble the raw material from which it was derived.

"Conversion factor" means a number that converts the maximum landscape water allowance from inches per square feet to gallons per square foot per year.

"Cycle" means the complete operation of an irrigation controller station.

"Department" means the community development department.

"Director" means the community development department director or his or her designee.

“Distribution uniformity, lower quarter” means a measure of the uniformity of applied irrigation water over an area. It is a ratio of the average of the lowest 25 percent measurements to the overall average measurement, gathered through the use of distributed catch cans, commonly used to evaluate the uniformity of coverage of one or more irrigation sprinkler heads.

“Drip irrigation” means surface or subsurface irrigation systems which apply water through low volume emitters.

“Drought-resistant soil” means soil that has been supplemented, for example by addition of an amendment such as compost and by covering with mulch, to maximize rainfall infiltration, increase the soil’s capacity to hold water, and allow for plant roots to penetrate and proliferate such that the landscape can survive with less than the maximum applied water allowance.

Drought-Tolerant, Extra. “Extra drought-tolerant” refers to a plant or landscape that can survive without irrigation throughout the year once established, although supplemental water may be desirable during drought periods for improved appearance and disease resistance. Plants in “Water-Conserving Plants and Landscape for the Bay Area” (latest edition), published by the East Bay Municipal Utility District, that can tolerate “no water after second year” are examples of such plants. Also known as “xeric” or “xeriscape” plants or landscapes.

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

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

“Established landscape” means the point in time at which plants in the landscape have developed roots into the soil adjacent to the root ball. Typically most plants are established after one or two years of growth.

“Establishment period” means the first year after installing the plant in the landscape or the first two years if irrigation will be terminated after establishment.

“Estimated applied water use” means the annual total amount of water estimated to be needed to keep the plants in the landscape healthy.

“ET adjustment factor” (ETAF) means a factor of 0.7 applied to reference evapotranspiration, that establishes the amount of water available to maintain the landscape and that will influence plant selection and take into account irrigation efficiency. See “reference evapotranspiration.”

“Evapotranspiration” means the quantity of water evaporated from adjacent soil surfaces and transpired by plants during a specific time, expressed in inches per day, month or year. See, too, “reference evapotranspiration.”

“Fertilizer” means a substance added to soil to provide it nutrients.

"Flow rate" means the rate at which water flows through pipes and valves (gallons per minute or cubic feet per second).

"Grading" means earthwork performed to alter the natural contours of an area.

Grasses, Cool-Season. "Cool-season grasses" means grasses that green up and grow more during the spring, set seed in early summer, then go dormant during warmer seasons until fall, when they begin growing again; e.g., annual bluegrass, Kentucky bluegrass, perennial ryegrass, red fescue, and tall fescue.

Grasses, Warm-Season. "Warm-season grasses" means grasses that green up and grow more during the summer, set seed in fall, and go dormant during cold seasons; e.g., seashore paspalum, St. Augustine grass, zoysiagrass, bahiagrass, and buffalo grass.

"Green roof" means a roof of a structure partially or completely covered with vegetation and a growing medium, typically planted over a waterproofing membrane. It may also include additional layers such as a root barrier and drainage and irrigation systems.

"Grey water" means wastewater generated from on-site activities such as laundry, bathroom wash basins, and bathing, which can be recycled and treated so it becomes suitable for uses such as landscape irrigation and constructed wetlands, and which meets all applicable local, state, and federal regulations and is approved for such uses by the city. Grey water does not include toilet water, wastewater from kitchen sinks, and laundry water from soiled diapers.

"Hardscape" means and includes paving, decks, patios, and other hard, nonporous surfaces.

"High flow sensors" or "flow meters" detect and report high flow conditions created by system damage or malfunction.

"High water using plant" means a plant that will require regular irrigation for adequate appearance, growth and disease resistance.

"Homeowner-provided landscaping" means any landscaping either installed by a private individual for an owner-occupied detached or attached single-family residence or installed by a licensed contractor hired by a homeowner.

"Hydrozone" means a portion of the landscaped area having similar microclimate, and soil conditions, and plants with similar water needs that are served by a valve or set of valves with the same schedule. A hydrozone may be irrigated or nonirrigated. For example, a naturalized area planted with native vegetation that will not need supplemental irrigation once established is a nonirrigated hydrozone.

"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). This value depends to a great extent on the texture of the soil and whether the soil is overly compacted.

“Invasive plant species” means species of plants not historically found in California that spread outside cultivated areas and can also damage environmental or economic resources. Their growth habits tend to be aggressive and they typically have high reproductive capacity and tendency to overrun the ecosystem they inhabit. Invasive species may be regulated by county agricultural agencies as noxious weeds.

“Noxious weeds” means any weed designated by the weed control regulations in the Noxious Weed Control Act and identified on a regional district noxious weed control list. Lists of invasive plants include but are not limited to the California Invasive Plant Council inventory; the USDA invasive and noxious weeds database; and the California Department of Food and Agriculture database.

“Irrigated” means supplied with equipment that can apply water from an irrigation system.

“Irrigation efficiency” 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 from management practices. An example of how estimating can be done is by comparing water meter readings to estimated water need over a period of time such as a billing period.

“Irrigation system” means a complete connection of system components, including the water source, the water distribution network, controller and the necessary irrigation equipment.

“Landscape architect” means a person licensed to practice landscape architecture in the State of California Business and Professions Code Section 5615 whose license is in good standing.

“Landscape area” means the total cumulative area of the portions of a project development site to be improved with planting and irrigation. It includes water bodies supplied with water such as fountains, swimming pools and ponds but does not include natural open spaces and nonirrigated stormwater treatment areas (e.g., a detention pond or nonirrigated bioswales), building footprints, walkways, decks, patios, driveways, nonirrigated synthetic turf, nonirrigated portions of parking lots, and other nonirrigated hardscape areas. The landscape area is the area subject to the maximum applied water allowance calculation.

“Landscape contractor” means a person licensed by the state of California to construct, maintain, repair, install, or subcontract the development of landscape systems whose license is in good standing.

“Landscape irrigation audit” means an in-depth evaluation of the performance of an irrigation system conducted by a professional qualified to be a certified landscape irrigation auditor. An irrigation audit includes, but is not limited to, site inspections, verification of proper equipment, proper installation and proper adjustment, and evaluation of irrigation systems (e.g., system test with distribution uniformity, reporting and recommending mitigations for overspray or runoff that causes overland flow and development of efficient irrigation schedules).

“Landscape 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.

"Landscape irrigation water use analysis" means an analysis of water use data based on meter readings and billing data.

"Landscape project" means the landscape area subject to the provisions of this chapter per LMC 13.25.020.

"Lateral line" means the water delivery pipeline that supplies water from the source to the emitters or sprinklers from the valve or outlet.

"Low volume irrigation" means the application of irrigation water at low pressure through a system of tubing or lateral lines and low volume emitters which may include but are not limited to drip, drip lines, micro-sprayers, and bubblers and which target small volumes of water at or near the root zone of plants.

"Low water using plant" means a plant that can survive throughout the year with little irrigation and is semi-drought-tolerant.

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

"Matched precipitation rate" means that the emitter or sprinkler heads in a system or zone have similar precipitation rates.

"Maximum applied water allowance" or "water budget" means the calculated annual upper limit of annual applied water for the established landscaped area, based upon the area's reference evapotranspiration (ET), the ET adjustment factor, and the size of the landscaped area.

"Median" means a planted area which separates two roadways or divides a portion of a road into two or more lanes.

"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, slope, or proximity to reflective surfaces.

"Micro-spray" means spray irrigation through micro tubing to a series of nozzles attached to risers delivering water in small volumes and which such risers may be fixed or designed to pop up.

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

"Moderate water using or semi-drought-tolerant plant" means a plant that can survive throughout the year with occasional irrigation.

"Mulch" means materials such as leaves, arbor or wood chips, recycled wood waste, leaves, compost, or inorganic mineral materials such as rocks, gravel, and decomposed granite left loose and applied to the soil surface to retain moisture, retard weed growth, moderate soil temperature, or prevent erosion.

“New construction” means, for the purposes of this chapter, a new building with a landscape or other new landscape, such as a park, playground, streetscape landscaping such as median or planter strip, or greenbelt without an associated building.

“Operating pressure” means the pressure at which a system of sprinklers is designed to operate, usually indicated at the base of a sprinkler.

“Overspray” means water which is delivered beyond the landscaped area, wetting pavements, walks, structures, or other nonlandscaped areas.

“Permeable” has the same meaning as “pervious.”

“Permit” means an authorization issued by the city for new construction or rehabilitated landscapes and can include but not be limited to a building or landscape permit, plan check, land use entitlement, design review, encroachment permit, or capital improvement project approval.

“Pervious” means any surface or material that allows the substantial passage of water through the material and into the underlying soil such that runoff is substantially avoided.

“Plant factor” means a factor that when multiplied by reference evapotranspiration estimates the amount of water used by plants.

“Point of connection” means the point at which an irrigation system connects into the public water system and is usually the point at which the meter and back-flow prevention device are located or will be installed.

“Precipitation rate” means the rate of water arriving at the landscape surface via rainfall or an irrigation system discharge, expressed as a depth of water per unit of time (inches per hour).

“Project development site” means the area of land under common ownership and use which contains the landscape area subject to a permit, and which may contain other features including but not limited to buildings, structures, and/or circulation routes.

“Rain sensor” or “rain sensing shutoff device” means a device in wired or wireless communication with the automatic controller that shuts off the irrigation system when it rains.

“Record drawing” or “as built” drawings means a set of construction plans or computer file including the original design and noting all design deviations approved by the director. These drawings should also show the location of all major underground components, dimensioned from permanent features.

“Recreational area” means areas designed for passive or active physical activity or recreation such as parks, sports fields, school yards, golf courses, picnic grounds, or other similar areas where turf typically provides all or a portion of the landscape surface; turf areas in private residential non-street-frontage yards; decorative water features (e.g., fountains) open to public access; pools designed for human swimming; and hot tubs.

"Recycled water" means treated or recycled wastewater of a quality suitable for nonpotable uses such as landscape irrigation and water features not intended for human consumption, and which is provided by the water purveyor or may be provided on site as grey water if approved for landscape irrigation use via an approved grey water irrigation system.

"Reference evapotranspiration" or "ET<sub>o</sub>" means the evapotranspiration rate for a particular geographical area, such as the city. Reference evapotranspiration means a standard measurement of environmental parameters that acts as a reference point for establishing relative differences in the water use of plants. For purposes of this chapter it is expressed in inches per year. Reference evapotranspiration is used as the basis of determining the maximum applied water allowance so that regional differences in climate can be accommodated.

"Registered historical site" means a site that is listed in a national, state or local register or inventory of historic resources or is zoned with a historic preservation (HP) combining district overlay.

"Rehabilitated landscape" means any existing planting area in which at least 50 percent of the landscape area is substantially redesigned, which may include but not be limited to new plant palette, substantially replaced irrigation system, and substantial grading modifications, but excludes replacement of plants as part of ongoing or routine maintenance.

"Remote control valve" means a valve in an irrigation system which is activated by an automatic electric controller via a wired or wireless signal.

"Runoff" means water which is not absorbed by the surface to which it is applied. Runoff usually occurs when water is applied at too great a precipitation rate (e.g., application rate exceeds soil infiltration rate), when water is applied to saturated soils, or when water is applied to a steep slope.

"Smart irrigation controller" means an electronic automatic irrigation controller that is weather- or soil-moisture-based with a timing device used to operate remote control valves that operate an irrigation system, which schedules irrigation events using evapotranspiration (weather-based) data such as that from the California Irrigation and Management Information System (see definition of CIMIS) and/or data from an integral or auxiliary soil moisture or rain sensor, and which may also include a high flow sensor for high flow damage or malfunction control.

"Soil moisture sensor" means an instrument for measuring the moisture content of the soil and capable of interruption of the irrigation cycle sensor when excessive moisture is detected.

"Soil texture" means the classification of soil based on the percentage of sand, silt, and clay in the soil. Soil texture largely determines the amount of water that can be stored in a soil as well as the soil infiltration rate.

"Special landscape area" (SLA) means areas of the landscape irrigated with recycled water; water features using recycled water; areas dedicated solely to edible plants; recreational areas as that term is defined in this section; and areas necessary for stormwater treatment such as bioswales which are irrigated.

“Sprinkler” means irrigation that projects pressurized water through the air (e.g., spray heads and rotors).

“Sprinkler, rotor head” means a sprinkler head that projects a rotating stream or streams of water.

“Sprinkler, spray head” means a sprinkler head that sprays water through a spray nozzle.

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

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

“Temporarily irrigated area” means a hydrozone which will be irrigated for only the plant establishment period, not to exceed two years from the date of planting.

“Topsoil” means the top approximately six to eight inches of undeveloped site soil.

“Turf” means a surface layer of earth containing mowed grass with its roots. Areas planted with lawn alternatives such as *Carex pansa* and other tufted grass or sedge species are not considered turf. See definitions of “grasses, warm-season” and “grasses, cool-season.”

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

“Very low water using plant” means a plant that can survive throughout the year with little or no irrigation and is generally extra drought-tolerant.

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

“Water feature” means a design element where artificially applied open water performs an aesthetic or recreational function, including ponds, lakes, waterfalls, fountains, artificial streams, spas, and swimming pools. Constructed wetlands such as bioswales used for onsite wastewater treatment or stormwater best management practices that are not irrigated and used primarily for water treatment or stormwater retention or detention are not water features and, therefore, are not subject to the water budget calculation.

“Water purveyor” means the public or private owner or operator of the water supplying an approved water supply which provides the water that will be used to irrigate a landscape project.

“WUCOLS” means the most recent (2000 or later edition) Water Use Classification of Landscape Species published by the University of California Cooperative Extension, the Department of Water Resources and the Bureau of Reclamation. (Ord. 1926 § 4 (Exh. B), 2010; Ord. 1399 § 51, 1992)

#### **13.25.040 Submittal requirements.**

A. For projects subject to the provisions of this chapter, the property owner or property owner's authorized agent must submit a landscape design package meeting the requirements of Section 13.25.050 prior to issuance of a permit and a landscape installation certification meeting the requirements of Section 13.25.060 following landscape installation and prior to a final inspection sign-off and occupancy.

**13.25.050 Landscape design package.**

A. Permit review. The requirements of subsection B of this section must be met prior to issuance of a discretionary permit such as a design review. The requirements of subsection C of this section must be met prior to issuance of a permit allowing project construction.

B. Design review. A landscape design package prepared by an architect or landscape architect licensed by the state in good standing containing and satisfying the conditions of the following elements shall be submitted for review with the permit application prior to approval of a discretionary permit such as a design review.

1. Certification statement. The statement "I have complied with the criteria of Livermore Municipal Code Chapter 13.25 and have applied them for efficient use of water in the landscape design plan," and the signature of an architect or landscape architect licensed in the state in good standing shall be submitted.

2. Hydrozones. Plants having similar water use shall be grouped together in distinct hydrozones. Plants having nearly similar water use may be grouped (e.g., very low and low; low and moderate; moderate and high) in the same hydrozone. For mixed plant hydrozones, the more water intensive plant factor (higher number) shall be used for the entire hydrozone for water budget calculations. Other considerations for establishing hydrozones may include sun exposure, soil condition, and slope. Depict each hydrozone, its assigned plant factor, square footage, and intended type of irrigation equipment.

3. Turf limit. Total project landscape area specified as turf shall not exceed 25 percent with recreational areas and turf bioswales necessary for stormwater treatment exempted.

4. Low water using plants. A minimum of 75% of the number of plants to be planted in non-turf areas shall be low water using plants.

5. Plants appropriate to their location. Plants shall be selected and located so their mature size will fit the space allotted and so their horticultural attributes (e.g., mature plant size, invasive surface roots) avoids damaging property or infrastructure (e.g., buildings, sidewalks, power lines).

6. Invasive plant species. Plants listed as invasive (A, B, and C rated) by the California Department of Food and Agriculture (CDFA), or listed as invasive (high or moderate rated) by the California Invasive Plant Council's (IPC) database of invasive species, shall not be used, except a turf plant rated C by CDFA or rated Moderate by Cal-IPC shall be permitted for use on sports fields and high traffic recreation areas. Project applicants may request to use other plant species rated C by CDFA or rated Moderate by Cal-IPC, provided the request is substantiated by evidence submitted to and approved by the director that clearly establishes that due to plant or site characteristics the use of the requested plant will not have detrimental ecological effects on parks, greenbelts, water bodies, water ways, agriculture, and open spaces.

7. Fire Prone Areas. Landscapes in fire prone wildland areas shall be designed to comply with any applicable fire department regulations and to create a defensible space around a building as required by Public Resources Code Section 4291.

8. Slopes and turf. Identify slopes greater than 25 percent (where “25 percent” means one foot of vertical elevation change for every four feet of horizontal length). Turf shall not be specified on slopes greater than 25% if the toe of the slope drains to an impermeable surface.

9. Grading design plan. The grading design plan may be separate from but shall use the same format and scale as the landscape design plan. It shall indicate finished configurations and elevations of the landscaped area, including the height of graded slopes, drainage patterns, pad elevations, and finish grade. It should also include existing spot elevations at the base of each existing tree or shrub that will remain, including proposed elevation changes within their driplines. The grading plan shall be designed to minimize soil erosion; maximize water retention and infiltration; and confine runoff to the property and direct it to permeable surfaces.

10. Landscape plan and context. Show landscape materials, trees, shrubs, ground cover, walkways, patios, and existing vegetation and natural features such as rock outcroppings as well as context information including but not limited to property lines, adjacent street name(s), existing and proposed buildings, structures, and retaining walls.

11. Plant information. Plant information shall include planting symbols clearly drawn; plants identified by botanical name and common name; plant container size; the spacing and quantities of each group of plants indicated; and the water requirement category of each plant material (e.g., very low (VL), low (L), moderate (M) or high (H) or an equivalent water-use indicator). The initial reference for determining the water-use category of a plant shall be the plant list in the Water Use Classification of Landscape Species (WUCOLS), as defined in LMC 13.25.030, a copy of which is on file with the department, however project applicants may request using alternate reference material from a published source or other data submitted to and approved by the director to establish plant species' plant factors and/or water use levels.

12. Landscape area calculations. Depict and include the square footage of the total landscape area; turf areas; areas that meets this chapter's definition of special landscape area; each hydrozone; the surface area of each water feature (e.g., such as pools, spas, ponds, fountains); and areas of impervious surfaces (e.g., such as walkways, patios, decks).

13. Water budget calculations and compliance. The landscape project's maximum applied water allowance, and estimated applied water use, as described below, shall be submitted with the landscape design package. The estimated applied water use shall not exceed the maximum applied water allowance.

a. Maximum Applied Water Allowance (MAWA, or Water Budget). A project's maximum applied water allowance shall be calculated using the following formula:

$$\text{MAWA} = (47.2)(0.62) \times [(0.7 \times \text{LA}) + (0.3 \times \text{SLA})]$$

MAWA = Maximum applied water allowance  
(gallons per year)

47.2 = Livermore reference evapotranspiration  
(ET<sub>o</sub>) in inches per square foot per year

0.62 = Conversion factor from inches to gallons per  
square foot

0.7 = Evapotranspiration (ET) Adjustment Factor  
(ETAF)

LA = Landscape area (square feet)

0.3 = Additional water allowance for special  
landscape area (SLA)

SLA = Landscape area that meets this chapter's  
definition of special landscape area (square feet)

b. Estimated Applied Water Use. The total estimated applied water use shall not exceed the maximum applied water allowance. Precipitation may not be used as a source of water in calculating total estimated applied water use. The total estimated applied water use shall be the sum of the estimated applied water use calculated for each of the landscape design plan hydrozones using the following formula.

EAWU = EAWU (non-SLA hydrozones) + EAWU  
(SLA hydrozones)

EAWU = Total project estimated applied water use  
in gallons per year

EAWU (non-SLA hydrozones) = [(47.2)(0.62)] x  
[(PF x HA)/IE] calculated separately for each  
hydrozone not meeting the definition of special  
landscape area (SLA), then added together for all  
such hydrozones.

EAWU (SLA hydrozones) = [(47.2)(0.62)] x (SLA)

47.2 = Livermore reference evapotranspiration  
(ET<sub>o</sub>) in inches per square foot per year

0.62 = Conversion factor from inches to gallons per  
square foot

HA = Hydrozone area (in square feet)

PF = Hydrozone plant factor

IE = Hydrozone irrigation efficiency

SLA = Landscape area that meets this chapter's definition of special landscape area (square feet)

c. If requested by the local water purveyor, the city shall require the project applicant to submit a copy of the water budget calculations required by this section to the water purveyor.

C. Construction permit review. A landscape design package prepared by an architect or landscape architect licensed by the state in good standing containing and satisfying the conditions of the following elements shall be submitted for review prior to approval and issuance of any permit allowing project construction.

1. The elements specified by and conforming to subsection B (Design Review) of this section;

2. Soil Management Plan. A soil analysis report using adequate sampling depth for the intended plants satisfying the following conditions shall be submitted and its recommendations incorporated into the landscape plan, however if mass grading is proposed (e.g., that will remove a foot or more of existing grade) then satisfaction of these requirements may be deferred at the discretion of the director until after rough grading is completed. Soil analysis shall include soils to be planted including preserved topsoil.

a. Determination of soil texture, indicating the percentage of organic matter;

b. An approximate soil infiltration rate (either measured or derived from soil texture/infiltration rate tables). A range of infiltration rates shall be noted where appropriate;

c. Measure of pH and total soluble salts;

d. Measurement of essential nutrients;

e. Identification of critical soil limitations including but not limited to compacted, waterlogged, or thin soils;

f. Areas of quality topsoil to be preserved; and

g. Recommendations to promote plant health and soil moisture infiltration and retention. Recommendations shall be tailored to recycled water and any identified critical soil limitations, if applicable. Recommendations shall be designed to promote healthy water and air access to the root zone of trees to be planted within five feet of pavement or other compacted area. Fertilizers if used shall be specified as either organic and nonsynthetic, or controlled release (slower release) if synthetic.

3. Grading plan topsoil protection. The grading plan shall include specifications to avoid topsoil compaction. The grading plan shall indicate available areas to stockpile topsoil for use in planting areas and specify to the grading contractor to remove and store topsoil prior to rough grading; protect it from wind and rain erosion and compaction; and mitigate compacted soil conditions (e.g., by ripping the soil).

4. Compost and Mulch.

a. Soil shall be amended by tilling into the soil to a minimum depth of 6 inches either a minimum of 1 inch of finished compost or an alternate amount of finished compost specified by the soils analysis to bring the soil organic matter content to a minimum of 3.5% by dry weight.

b. A mulch of at least three inches shall be applied to all planting areas except turf.

c. Stabilizing mulch products shall be applied to slopes of three to one or greater (where "three to one" means one foot of vertical elevation change for every three feet of horizontal length).

d. The mulching portion of the seed/mulch slurry in hydroseed applications shall meet the requirement of at least three inches of mulch.

5. Water features.

a. Recycled water where it is an approved and available supply of water shall be used for all decorative water features;

b. Recirculating water shall be used for all decorative water features.

6. Irrigation Design Criteria.

a. Irrigation efficiency and water budget compliance. Irrigation systems shall be designed to achieve a minimum 0.71 irrigation efficiency and to apply water in a way that does not exceed the maximum applied water allowance.

b. Hydrozones. The irrigation design plan shall be zoned to implement the hydrozones identified in the landscape design plan.

c. Point of Connection. All irrigation equipment must be connected to the landscape water meter for a project. No portion of the irrigation system may be connected to the domestic water meter, unless only one water meter is required for the property (e.g., a single family residence).

d. Runoff and Overspray. The irrigation system shall deliver water at a rate compatible with the site's soil types and infiltration rates. All irrigation systems shall be designed to avoid runoff, low head drainage, overspray, or other similar conditions where water flows onto adjacent property, nonirrigated areas, walks, roadways or structures. Proper

irrigation equipment and schedules, including such features such as repeat cycles, shall be used to closely match maximum application rates to infiltration rates.

e. Pressure Regulation. The irrigation system shall be designed to keep dynamic pressure at each emission device within the manufacturer's recommended pressure range. Static water pressure shall be measured at the point of connection if available at the design stage, or otherwise shall be estimated. If static pressure is outside the irrigation system's required dynamic pressure range, then pressure-regulating devices such as inline pressure regulators, booster pumps, or other devices shall be specified.

f. Recycled Water. If a separate landscape water meter is required and where recycled water is an approved supply of water, recycled water shall be used for landscape irrigation.

## 7. Irrigation Equipment Specifications.

a. Water Meters. Separate landscape water meters shall be installed for all new construction or rehabilitation landscape projects subject to this chapter (except single-family homes). All irrigation equipment throughout all projects must be connected to the landscape water meter;

b. Controllers. Smart irrigation controllers shall be required for all irrigation systems and must be able to accommodate all aspects of the design. Individual controllers irrigating an area of 10,000 or more square feet shall be installed with a rain sensor(s) which shall be properly installed (e.g., in a location suitable for detecting rain without interference from structures and irrigation spray);

c. Valves. Electronic valves are required for all irrigation systems. A valve may irrigate a maximum of one hydrozone of plants with similar water use. Where feasible, trees shall be placed on separate valves from shrubs, groundcovers, and turf;

d. Sprinklers. Sprinkler heads shall have compatible application rates within each control valve circuit. Sprinkler heads shall be selected for proper and uniform area coverage, application rate, operating pressure, adjustment capability, and ease of maintenance. Riser protection devices (e.g., swing joints) shall be specified for damage prone or high traffic areas. Sprinkler heads must match precipitation rates unless otherwise recommended by the manufacturer;

e. Turf areas of 10,000 square feet or larger. Sprinkler irrigation for any contiguous turf area that is 10,000 or more square feet in size must be designed to achieve a minimum 0.7 lower quarter distribution uniformity, to be verified by the landscape installation certification;

f. Anti-Drain (Check) Valves. Anti-drain valves shall be installed at strategic low points throughout the plan to avoid low-head drainage;

g. Low Volume Equipment Areas. Low volume irrigation shall be used in all the following areas, unless an alternative design having the effect of low volume irrigation (e.g., micro-sprayers) and which will avoid runoff and erosion is approved by the director as part of the landscape design package and verified by the landscape installation certification.

i. Landscape areas less than eight feet in width in any direction;

ii. Mulched areas;

iii. Within 24 inches of a nonpermeable surface unless no runoff occurs or the adjacent nonpermeable surface drains entirely to permeable surfaces capable of admitting and retaining the irrigation runoff;

iv. On slopes greater than 25 percent (where "25 percent" means one foot of vertical elevation change for every four feet of horizontal length); and

h. Slopes. Irrigation of slopes greater than 25 percent shall not exceed an application rate of 0.75 inches per hour, unless an alternative design avoiding overspray and runoff is approved by the director (e.g., the toe of the slope drains entirely to permeable surfaces).

8. Irrigation Design Plan Submittal Requirements. The irrigation design plan shall bear the signature of an architect, landscape architect, or landscape contractor licensed by the state in good standing and shall be drawn on project base sheets in the same format and scale as the landscape design plan that accurately and clearly identifies and includes the following:

a. Sufficient information to clearly demonstrate meeting the requirements of subsections (B)(6) (Irrigation Design Criteria) and (B)(7) (Equipment) of this section;

b. Location and size of separate water meters for landscape irrigation;

c. Location, type, and size of all components of the irrigation system, including automatic controllers, main and lateral lines, valves, sprinkler heads, emitters, moisture sensing devices, rain sensing devices, quick couplers, and backflow prevention devices;

d. Static water pressure at the point of connection to the public water supply;

e. Flow rate (gallons per minute), application rate (inches per hour), and design operating pressure (psi) for each station;

f. Each area to be irrigated by each valve;

g. Location of soil moisture or rain sensor(s), if any; and

h. The statement, "I have complied with the criteria of Livermore Municipal Code Chapter 13.25 and have applied them for efficient use of water in the landscape design plan," and

the signature of an architect, landscape architect, or landscape contractor licensed by the state in good standing.

9. Homeowners Associations and Common Interest Developments. The covenants, codes and restrictions (i.e., CC&Rs) of a common interest development, which may include but not be limited to community apartment projects, condominiums, planned developments, stock cooperatives, or single-family subdivisions governed by a homeowners association, shall not prohibit or include conditions that have the effect of prohibiting the use of low water use plants as a group. Further, said guidelines shall not prohibit the removal of turf, nor restrict or prohibit the reduction of turf in lieu of more water efficient alternatives. Verification of compliance with this requirement may be deferred to prior to occupancy at the discretion of the director.

**13.25.060 Landscape installation certification package.**

A. Signed Certification. The city shall not grant a final inspection sign-off or certificate of occupancy for any project until the property owner submits a landscape installation certification package to the department consistent with this section for review and approval by the director. An architect, landscape architect, or landscape contractor licensed by the state in good standing shall prepare the package and sign the certification. The certification shall specifically indicate that the landscape project was installed per the landscape design package and that the irrigation evaluation has been performed, along with a list of any observed deficiencies and documentation that those deficiencies have been corrected. The signed certification shall be on a form approved by the director. A sample of such a form is available in the department. Attached to or made part of the certification shall be the elements of this section which together with the certification shall comprise the landscape installation certification package.

B. Certification statement. The statement, "The landscape project has been installed substantially in accordance with the approved landscape design package," and signature of an architect, landscape architect, or landscape contractor licensed by the state in good standing preparing the certification shall appear on the certification.

C. Soil management plan verification. A copy of the soil analysis report and verification of implementation of its recommendations meeting the requirements of LMC 13.25.050(C)(2) shall be a part of the certification package.

D. Record drawings of the irrigation system shall be a part of the certification package if irrigation system installation deviated, with approval of the director, from the design submitted and approved with the landscape design package.

E. Irrigation Evaluation. A landscape irrigation evaluation meeting the following conditions shall be submitted with the landscape installation certification package.

1. Audit or Survey Requirement. For newly installed irrigation systems, a landscape irrigation survey, as that term is defined in LMC 13.25.030, shall be conducted. For projects relying on a preexisting irrigation system, a landscape irrigation audit, as that term is defined in LMC 13.25.030, shall be conducted.

2. The landscape design plan, irrigation design plan, and irrigation schedule shall be made available by the property owner to the person conducting the irrigation evaluation.

3. Minimum Criteria. The irrigation evaluation required by subsection (E)(1) of this section shall include but not be limited to inspection, system test, reporting overspray or runoff that causes overland flow, and documenting controller parameters, and shall at minimum verify compliance with the irrigation design criteria and irrigation equipment specifications of sections 13.25.060(B)(6) and (B)(7). For projects developed into multiple saleable lots, the irrigation evaluation may be limited to a common area (e.g., project green space or park) and a representative sample of the lots.

4. Corrective Measures Documentation. The irrigation evaluation required by subsection (E)(1) of this section shall include corrective measures if necessary to meet the criteria of subsection (E)(3) of this section, and shall document that the corrective measures have been completed.

F. Irrigation Scheduling. For the efficient use of water, all irrigation schedules shall be developed and evaluated to utilize the minimum amount of water required to promote and maintain plant health. For projects developed into multiple saleable lots, submittal of irrigation schedule parameters may be limited to any park, any representative common area, and a representative sample of the lots. A summary of controller setting parameters satisfying the following conditions shall be submitted as part of the landscape installation certification package.

1. Controllers. Irrigation scheduling shall be regulated by smart irrigation controllers. Total annual applied water shall not exceed the maximum applied water allowance (MAWA). 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 total estimated applied water use including any water needed for any water features.

2. Schedule Parameters. Parameters used to set the automatic controller shall be developed and submitted for the plant establishment period; established landscape, if any; and temporarily irrigated areas, if any; and all of the following that apply for each station:

- a. Type of irrigation equipment;
- b. Irrigation interval (days between irrigation);
- c. Run time (hours or minutes per cycle to avoid runoff);
- d. Suggested number of cycles per day to avoid runoff;
- e. The amount of applied water (in 100 cubic feet and gallons) recommended on a monthly and annual basis;
- f. Application rate setting;
- g. Root depth setting;

- h. Plant type setting;
- i. Soil type, infiltration rate, water holding capacity, and mulch depth;
- j. Slope factor setting;
- k. Shade factor setting; and
- l. Irrigation uniformity or efficiency setting.

3. Time of Operation. Overhead sprinkler irrigation shall normally be scheduled during non-daylight hours to reduce irrigating during times of high wind or high temperature.

G. Landscape and Irrigation Maintenance Schedules. A regular maintenance schedule satisfying the following conditions shall be submitted as part of the landscape installation certification package:

- 1. Landscaping and the irrigation system shall be maintained to ensure water efficiency. A regular maintenance schedule shall include, but not be limited to, checking, adjusting, clearing obstructions in, and repairing irrigation equipment; resetting the automatic controller; aerating and dethatching turf areas; replenishing mulch; fertilizing; and pruning and weeding in all landscaped areas.
- 2. Repair of irrigation equipment shall be done with the originally specified materials or their equivalents.
- 3. Indicate with details if green waste recycling is part of the maintenance program. Sustainable and environmentally friendly maintenance practices, such as integrated pest management, are also encouraged.

H. If requested by the local water purveyor, the city shall require the project applicant to submit a copy of all or a portion of the landscape installation certification package required by this section to the water purveyor. (Ord. 1926 § 4 (Exh. B), 2010)

**13.25.070 Public education and model home complexes.**

A. Publication.

- 1. The city shall provide information upon request:
  - a. To owners of all new, single-family residential homes explaining their maximum applied water allowance (water budget) and regarding the design, installation and maintenance of water efficient landscapes; and
  - b. To water users about the efficient use of landscape water in the city; and
  - c. About integrated pest management.

B. Model Homes. All model home complexes that include landscaping shall demonstrate the principles of water efficient landscapes as described in this chapter.

1. Information.

a. The project developer shall make available to all visitors of the model home complex a brochure and/or diagram depicting the landscape plan for each model, identifying all plant material by both common and botanical name, identifying whether each plant is a low, medium or high water using plant, depicting and describing hydrozones within the plan, describing the irrigation equipment used, and describing any other features which contribute to the overall water efficiency of the landscape plan.

b. The project developer shall provide each buyer of a home in the project:

i. A copy of the information described in subsection (B)(1)(a) of this section;

ii. A copy of the operations manual for the irrigation controller; and

iii. A copy of the latest edition of the "Bay-Friendly Gardening Guide" or an equivalent information source or sources describing environmentally sustainable landscape design, irrigation, soil management, and maintenance practices.

2. Signage. For each model home in each project, the developer shall place signs to:

a. Identify it as a water efficient landscape;

b. Identify all plant materials within the plan by both common and botanical name, including their relative water use;

c. Identify hydrozones, irrigation equipment, and any other features which contribute to the overall water efficiency of the plan. (Ord. 1926 § 4 (Exh. B), 2010; Ord. 1399 § 1, 1992. Formerly 13.25.070)

**13.25.080 Water waste prevention.**

A. Maintenance. Landscapes and their irrigation systems shall be maintained and managed to promote plant health with the least necessary amount of water; prevent water wastage from irrigation system breakages; and minimize runoff diversion from target landscape areas or other permeable surfaces due to low head drainage, overspray, inefficient irrigation scheduling, or other similar conditions.

Environmentally friendly maintenance practices such as those found in the "Bay-Friendly Landscape Guidelines" are encouraged (for example, integrated pest management, especially in areas that drain to bioswales, rain gardens and similar water treatment features).

B. Landscapes One Acre or Larger. Property owners of landscapes which do not otherwise meet the applicability criteria (e.g., type and size of project) of LMC 13.25.020(A) and which are one acre or more in area shall:

1. Cooperate with their water purveyors who may provide water waste prevention recommendations resulting from a landscape irrigation water use analysis, landscape irrigation audit, and/or landscape irrigation survey;
2. Be subject to maintaining irrigation levels not exceeding a maximum applied water allowance calculated per LMC 13.25.050(B)(13) if the site has a water meter. (Note: the aforementioned water budget requirement takes into account that prior water efficient landscape regulations (Ordinance 1399 adopted December 21, 1992) used an evapotranspiration (ET) adjustment factor of 0.7, as does this chapter.)
3. Attaining to the greatest extent practicable, taking into account the limitations of the existing irrigation system and if necessary by retrofitting sprinkler heads, a minimum of 0.7 lower quarter distribution uniformity for contiguous turf areas that are one acre or more in area.

C. Homeowners Associations and Common Interest Developments. The covenants, codes and restrictions (i.e., CC&Rs) of a common interest development, which may include but not be limited to community apartment projects, condominiums, planned developments, stock cooperatives, or single-family subdivisions governed by a homeowners association, shall not prohibit or include conditions that have the effect of prohibiting the use of low water use plants as a group. Further, said guidelines shall not prohibit the removal of turf, nor restrict or prohibit the reduction of turf in lieu of more water efficient alternatives. For registered historical sites only, the requirements of this subsection may be waived if it is determined by the director or historic preservation commission, via referral for determination from the director, that this requirement will significantly diminish the ability of the registered historical site to convey its historic significance. (Ord. 1926 § 4 (Exh. B), 2010)

**13.25.090 Supplemental Materials.**

The director shall be authorized to prepare, from time to time, supplemental materials, in which the definitions of section 13.25.030 of this chapter shall apply, to complement and help implement this Chapter which may include but not be limited to informational bulletins, forms and plant lists.

**13.25.100 Violation.**

Violations of any provision of this chapter may result in the immediate suspension of any development permit previously issued for the property upon which said violation occurred, until compliance with all the requirements of this chapter is demonstrated to the satisfaction of the director. (Ord. 1926 § 4 (Exh. B), 2010)