

CALIFORNIA PUBLIC UTILITIES COMMISSION

Water Division

INSTRUCTIONS FOR WATER CONSERVATION, RATIONING AND SERVICE CONNECTION MORATORIA

Standard Practice U-40-W

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SAN FRANCISCO, CALIFORNIA

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INSTRUCTIONS FOR WATER CONSERVATION, RATIONING AND SERVICE CONNECTION MORATORIA

A—PURPOSE AND SCOPE

1. The purpose of this standard practice is to provide guidance to Water Division staff, to the public and to utilities as to steps to be taken when the utility suffers from a water shortage. The three levels of action are voluntary rationing, mandatory rationing and a service connection moratorium.

B—BACKGROUND

2. General Order 103, Chart 1, and Standard Practice U-22-W, Determination of Water Supply Requirements of Water Systems, address water supply requirements, but supply can be affected temporarily due to drought or decreased production of a utility's wells. When this happens, utilities may have to resort to mandatory conservation or may have to institute a service connection moratorium.

3. Parties may also protest service area extensions (see Standard Practice U-14-W) over concern that the available supplies may be inadequate to serve the new customers, which would be the equivalent of a service connection moratorium (see Section F)¹.

4. The position of the Commission in overall water supply planning was set forth in Decision 99-04-061, April 22, 1999 (see Appendix A to this Standard Practice).

C—DEVELOPMENT OF CONSERVATION AND RATIONING

5. In mid-1976, due to a drought, the Commission opened an Order Instituting Investigation (OII, Case No. 10114, June 8, 1976) to determine what actions to take. In early 1977, the Commission issued an emergency decision that allowed water utilities to distribute water conservation kits and to implement cost effective water conservation programs.

6. The Commission was once again faced with drought conditions in mid-1988. The Commission opened OII 89-03-005 that allowed all classes of water utilities to file a water conservation and rationing plan consisting of two distinct parts: Rule 14.1 (a "voluntary conservation" program) and Schedule 14.1 (the mandatory rationing and penalty part). This plan was based primarily upon the Department of Water Resources and Metropolitan Water District's model plans, but also

¹ In Resolution No. 4154, August 5, 1999, the Sierra Club protested Valencia Water Company's Advice Letters 84 and 85 for service area extension. The Commission found in the favor of Valencia, that it had adequate supplies, but ordered the utility to file its Water Management Program by application so the long-term water availability issues could be heard.

incorporated aspects of the North Marin Water District, East Bay Municipal Utility District, and California Water Service Company's existing conservation and rationing plans. The main objective of Rule 14.1 and Schedule 14.1 was to have a plan readily available for any utility that needed conservation and/or rationing methods. This plan allowed regulated utilities to achieve conservation of 17.5% to 26%.

7. The drought was officially declared over in February 1993 and the OII was closed. Because history shows that drought occurs in California about once every ten years, Rule 14.1 has remained in place. When conditions become severe, the utility may file an advice letter to institute Schedule 14.1. The Commission must approve implementation of this schedule by resolution.

D—VOLUNTARY RATIONING

8. Voluntary rationing consists of the steps described in Rule 14.1 (Appendix B). This Tariff Rule should be in the tariff book of every utility that might suffer from a water shortage.

E—MANDATORY RATIONING

9. Mandatory rationing consists of the steps described in Schedule 14.1. The utility adds schedule 14.1 to its tariff book by filing an advice letter with full justification. Staff will prepare a resolution for consideration by the Commission. The Commission must approve the imposition of mandatory conservation.

10. Schedule 14.1 may be modified to fit the needs of the utility and its particular water shortage situation. The following provisions are examples of what might be included in a typical Schedule 14.1:

- A. Prohibit nonessential and unauthorized water use, including:
 - i. use for more than minimal landscaping in connection with new construction;
 - ii. use through any meter when the company has notified the customer in writing to repair a broken or defective plumbing, sprinkler, watering or irrigation system and the customer has failed to effect such repairs within five days;
 - iii. use of water which results in flooding or runoff in gutters or streets;
 - iv. use of water through a hose for washing cars, buses, boats, trailers or other vehicles without a positive automatic shut-off valve on the outlet end of the hose;
 - v. use of water through a hose for washing buildings, structures, sidewalks, walkways, driveways, patios, parking lots, tennis courts, or other hard-surfaced areas;
 - vi. use of water to clean, fill or maintain levels in decorative fountains;

- vii. use of water for construction purposes unless no other source of water or other method can be used;
 - viii. service of water by any restaurant except upon the request of a patron; and
 - ix. use of water to flush hydrants, except where required for public health or safety.
- B. Establish customer water allocations at a percentage of historical usage with the corresponding billing periods of a non-drought year being the base.
 - C. Establish an allocation of a percentage of historical usage with the corresponding billing periods of a non-drought year being the base for consumption for users of process water (water used to manufacture, alter, convert, clean, grow, heat or cool a product, including water used in laundries and car wash facilities that recycle the water used).
 - D. Establish a minimum allocation of a number of Ccf per month (one Ccf is one hundred cubic feet) for any customer regardless of historical usage.
 - E. Establish an exceptions procedure for customers with no prior billing period record or where unusual circumstances dictate a change in allocation.
 - F. Establish a penalty ("conservation fee") of \$2.00 per Ccf for usage over allocated amounts, provided, however, that banking of underusage from month to month is allowed.
 - G. Provide that penalty funds are not to be accounted for as income, but are to be kept in a separate reserve account for disposition as directed by the Commission.
 - H. Provide that, after written warning for nonessential or unauthorized water use, for subsequent violations the utility may install a flow restrictor to be left in a minimum of three days. The second time a flow restrictor is installed it may be left in until rationing ends.
 - I. Establish charges of \$25, \$50, or actual cost depending on meter size for removing restrictors, and provide that continuing nonessential or unauthorized use may result in disconnection.
 - J. Establish an appeal procedure first through the utility, then to the Commission staff through the Executive Director, then to the Commission via a formal complaint.

F—SERVICE CONNECTION MORATORIUM

11. A service connection moratorium is sometimes imposed by the California Department of Health Services. The California Water Code, Section 350 et seq.,

provides that any public water supplier may, after public notice and hearing, declare a water shortage emergency within its service area whenever it determines that the ordinary demands and requirements of its consumers cannot be satisfied without depleting the water supply to the extent that there would be insufficient water for human consumption, sanitation, and fire protection. After it has declared a water shortage emergency, it must adopt such regulations and restrictions on water delivery and consumption as it finds will conserve its water supply for the greatest public benefit. Section 357 requires that suppliers which are subject to regulation by the CPUC shall secure its approval before making such regulations and restrictions effective.

12. Section 2708 of the Public Utilities Code states:

2708. Whenever the commission, after a hearing had upon its own motion or upon complaint, finds that any water company which is a public utility operating within this State has reached the limit of its capacity to supply water and that no further consumers of water can be supplied from the system of such utility without injuriously withdrawing the supply wholly or in part from those who have theretofore been supplied by the corporation, the commission may order and require that no such corporation shall furnish water to any new or additional consumers until the order is vacated or modified by the commission. The commission, after hearing upon its own motion or upon complaint, may also require any such water company to allow additional consumers to be served when it appears that service to additional consumers will not injuriously withdraw the supply wholly or in part from those who theretofore had been supplied by such public utility.

13. To establish a service connection moratorium the utility must:

- a. Hold a public meeting under Section 350 and 351 of the Water Code
- b. Add the following language to each service schedule:

“MORATORIUM

No service shall be provided to any premises not previously served within the _____ Service Area as defined on the Service Area Map filed as a part of these tariffs.”

G—EXEMPTIONS

14. Some decisions to impose a moratorium contain exceptions. For example in Citizen’s Utilities (CUCC) Montara District:

“The moratorium shall not apply to owners of real property who are customers of CUCC on or before the date of this order, or their successors in interest, if any change in the use of their property

will not increase their demand upon the system.” (D.86-05-078, Ordering Paragraph 3.)

15. D.86-05-078 also provided that prospective customers could seek an exemption from the moratorium by filing an application with the Commission showing that extraordinary circumstances required an exemption.

16. In D.00-06-020, June 8, 2000 the Commission granted an application and authorized Citizens Utilities to install a water service connection to applicant’s property at APN 037-278-090 following cessation of service at applicant’s property at 888 Ocean Boulevard in Montara. Costs were to be borne by applicant. The order made it clear that water service could not be reinstated at 888 Ocean Boulevard absent a lifting or easing of the moratorium. Such determinations were also delegated to staff².

² D.86-05-078, May 28, 1986, Ordering Paragraph 4.

The Commission's Role in Water Planning

The two state agencies primarily responsible for overseeing water planning are the California Department of Water Resources, which manages the State Water Project and produces the California Water Plan, and the State Water Quality Control Board and Regional Water Quality Control Boards which have authority over water allocation and water quality protection.

In addition to the state agencies which have broad planning and management powers, local government also has a part in water use decisions. For example, county boards of supervisors, county water agencies, land use planning agencies, city governments, municipal water districts and many special districts all have a role in the use of water in California.

In this context, the Commission has recognized the futility of one party taking unilateral action to protect a groundwater basin:

Rehabilitation of the Santa Maria Groundwater Basin is not the responsibility of, and is beyond the physical and financial resources of any single individual, company, or agency. Even if [Southern California Water Company] were to stop drawing from the basin entirely and injected into the basin the entire 7,900 AFY it desires to obtain from the [Central Coast Water Authority], the basin's fundamental problems of declining quantity and water quality would not be solved. Most simply put, the basin's salvation as a water resource requires the immediate, undivided, sincere and selfless attention of all its users.

(Re Southern California Water Company, 48 CPUC2d 511, 519 (D.93-03-066)(emphasis in original).)

The Commission's role is limited to ensuring that each jurisdictional water utility provides its customers with "just and reasonable service, . . . and facilities as are necessary to promote the safety, health, comfort and convenience of its patrons, employees, and the public." (§ 451.) The Commission has further delineated the service standard in its General Order 103 where it proscribes Standards of Service

including water quality, water supply, and water pressure, as well as many other details of service.

The Commission has not, however, dictated to investor-owned utilities what method of obtaining water must be used to meet its present and future responsibility of providing safe and adequate supply of water at reasonable rates. (Southern California Water, 48 CPUC2d at 517.)

Which is not to suggest that the Commission ignores issues of water availability in its regulation of water utilities. The Commission requires that all water utilities prepare, file, and update a water management plan which includes identification of water sources as well as consumption projections over 15 years. These plans are updated by the utility as part of its general rate case.

RULE NO. 14.1
WATER CONSERVATION AND RATIONING PLAN

GENERAL INFORMATION

If water supplies are projected to be insufficient to meet normal customer demand, and are beyond the control of the utility, the utility may elect to implement voluntary conservation using the portion of this plan set forth in Section A of this Rule after notifying the Commission's Water Division of its intent. If, in the opinion of the utility, more stringent water measures are required, the utility shall request Commission authorization to implement the mandatory conservation and rationing measures set forth in Section B.

The Commission shall authorize mandatory conservation and rationing by approving Schedule No. 14.1, Mandatory Water Conservation and Rationing. When Schedule No. 14.1 has expired, or is not in effect, mandatory conservation and rationing measures will not be in force. Schedule No. 14.1 will set forth water use violation fines, charges for removal of flow restrictors, and the period during which mandatory conservation and rationing measures will be in effect.

When Schedule No. 14.1 is in effect and the utility determines that water supplies are again sufficient to meet normal demands, and mandatory conservation and rationing measures are no longer necessary, the utility shall seek Commission approval to rescind Schedule No. 14.1 to discontinue rationing.

In the event of a water supply shortage requiring a voluntary or mandatory program, the utility shall make available to its customers water conservation kits as required by Rule 20. The utility shall notify all customers of the availability of conservation kits.

(continued)

RULE NO. 14.1
(continued)

WATER CONSERVATION AND RATIONING PLAN

A. CONSERVATION - NON-ESSENTIAL OR UNAUTHORIZED WATER USE

No customer shall use utility-supplied water for non-essential or unauthorized uses as defined below:

1. Use of water through any connection when the utility has notified the customer in writing to repair a broken or defective plumbing, sprinkler, watering or irrigation system and the customer has failed to make such repairs within 5 days after receipt of such notice.
2. Use of water which results in flooding or run-off in gutters, waterways, patios, driveway, or streets.
3. Use of water for washing aircraft, cars, buses, boats, trailers or other vehicles without a positive shut-off nozzle on the outlet end of the hose. Exceptions include washing vehicles at commercial or fleet vehicle washing facilities operated at fixed locations where equipment using water is properly maintained to avoid wasteful use.
4. Use of water through a hose for washing buildings, structures, sidewalks, walkways, driveways, patios, parking lots, tennis courts, or other hard-surfaced areas in a manner which results in excessive run-off or waste.
5. Use of water for watering streets with trucks, except for initial wash-down for construction purposes (if street sweeping is not feasible), or to protect the health and safety of the public.
6. Use of water for construction purposes, such as consolidation of backfill, dust control, or other uses unless no other source of water or other method can be used.
7. Use of water for more than minimal landscaping in connection with any new construction.

(continued)

RULE NO. 14.1
(continued)

WATER CONSERVATION AND RATIONING PLAN

A. CONSERVATION – NON-ESSENTIAL OR UNAUTHORIZED WATER USE (CONT.)

8. Use of water for outside plants, lawn, landscape, and turf areas more often than every other day, with even numbered addresses watering on even numbered days of the month and odd numbered addresses watering on the odd numbered days of the month, except that this provision shall not apply to commercial nurseries, golf courses and other water-dependent industries.
9. Use of water for watering outside plants, lawn, landscape and turf areas during certain hours if and when specified in Schedule No. 14.1 when the schedule is in effect.
10. Use of water for watering outside plants and turf areas using a hand-held hose without a positive shut-off valve.
11. Use of water for decorative fountains or the filling or topping off of decorative lakes or ponds. Exceptions are made for those decorative fountains, lakes, or ponds which utilize recycled water.
12. Use of water for the filling or refilling of swimming pools.
13. Service of water by any restaurant except upon the request of the patron.

B. RATIONING OF WATER USAGE

In the event the conservation measures required by Section A are insufficient to control the water shortage, the utility shall, upon Commission approval, imposed mandatory conservation and rationing. Rationing shall be in accordance with the conditions set forth in Schedule No. 14.1 as filed at the time such rationing is approved by the Commission.

Before mandatory conservation and rationing is authorized by the Commission, the utility shall hold public meetings and takes all other applicable steps required by Sections 350 through 358 of the California Water Code.

(continued)

RULE NO. 14.1

(continued)

WATER CONSERVATION AND RATIONING PLAN

C. ENFORCEMENT OF MANDATORY CONSERVATION AND RATIONING

1. The water use restrictions of the conservation program, in Section A of this rule, become mandatory when the rationing program goes into effect. In the event a customer is observed to be using water for any nonessential or unauthorized use as defined in Section A of this rule, the utility may charge a water use violation fine in accordance with Schedule No. 14.1.
2. The utility may, after one verbal and one written warning, install a flow-restricting device on the service line of any customer observed by utility personnel to be using water for any non-essential or unauthorized use as defined in Section A above.
3. A flow restrictor shall not restrict water delivery by greater than 50% of normal flow and shall provide the premise with a minimum of 6 Ccf/month. The restricting device may be removed only by the utility, only after a three-day period has elapsed, and only upon payment of the appropriate removal charge as set forth in Schedule No. 14.1.
4. After the removal of the restricting device, if any non-essential or unauthorized use of water shall continue, the utility may install another flow-restricting device. This device shall remain in place until water supply conditions warrant its removal and until the appropriate charge for removal has been paid to the utility.
5. If, despite installation of such flow-restricting device pursuant to the provisions of the previous enforcement conditions, any such non-essential or unauthorized use of water shall continue, then the utility may discontinue water service to such customer. In such latter event, a charge as provided in Rule No. 11 shall be paid to the utility as a condition to restoration of service.
6. Any monies collected by the utility through water use violation fines shall not be accounted for as income, but shall be accumulated by the utility in a separate account for disposition as directed or authorized from time to time by the Commission.
7. The charge for removal of a flow-restricting device shall be in accordance with Schedule No. 14.1.

(continued)

RULE NO. 14.1
(continued)

WATER CONSERVATION AND RATIONING PLAN

D. APPEAL PROCEDURE

Any customer who seeks a variance from any of the provisions of this water conservation and rationing plan shall notify the utility in writing, explaining in detail the reason for such a variation. The utility shall respond to each such request.

Any customer not satisfied with the utility's response may file an appeal with the staff of the Commission. The customer and the utility will be notified of the disposition of such appeal by letter from the Executive Director of the Commission.

If the customer disagrees with such disposition, the customer shall have the right to file a formal complaint with the Commission. Except as set forth in this Section, no person shall have any right or claim in law or in equity, against the utility because of, or as a result of, any matter or thing done or threatened to be done pursuant to the provisions of this water conservation and rationing plan.

E. PUBLICITY

In the event the utility finds it necessary to implement this plan, it shall notify customers and hold public hearings concerning the water supply situation, in accordance with Chapter 3, Water Shortage Emergencies, Sections 350 to 358, of the California Water Code. The utility shall also provide each customer with a copy of this plan by means of billing inserts or special mailings; notification shall take place prior to imposing any fines associated with this plan. In addition, the utility shall provide customers with periodic updates regarding its water supply status and the results of customers' conservation efforts. Updates may be by bill insert, special mailing, poster, flyer, newspaper, television or radio spot/advertisement, community bulletin board, or other appropriate methods.

SCHEDULE NO. 14.1
MANDATORY WATER CONSERVATION AND RATIONING

APPLICABILITY

This schedule applies to all water customers served under all tariff rates schedules authorized by the Commission. It is only effective in times of rationing, as required by Rule No. 14.1, and only for the period noted in the Special Conditions section below.

TERRITORY

This schedule is applicable within the entire territory served by the utility.

WATER USE VIOLATION FINE

When this schedule is in effect, the water use restrictions of the conservation program, in Section A of Rule 14.1, become mandatory. If a customer is seen violating the water usage restrictions, as outlined in Rule No. 14.1 and the Special Conditions below, the customer will be subject to the following fine structure:

First offense -	written warning
Second offense -	\$25
(of the same restriction)	
Third offense -	\$50
(of the same restriction)	
Each additional offense -	\$25 more than the previous
	fine imposed.
(of the same restriction)	

Offenses for separate water use restrictions will each start at the warning stage.

The water use violation fine is in addition to the regular rate schedule charges.

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SCHEDULE NO. 14.1
MANDATORY WATER CONSERVATION AND RATIONING (CONT.)

FLOW RESTRICTOR REMOVAL CHARGE

The charge for removal of a flow-restricting device shall be:

<u>Connection Size</u>	<u>Removal Charges</u>
5/8" to 1"	\$25.00
1-1/2" to 2"	\$50.00
3" and larger	Actual cost

SPECIAL CONDITIONS

1. This tariff schedule shall remain in effect for period of six (6) months from the effective date set forth below.
2. There shall be no use of utility-supplied water for outside plants, lawn, landscape, and turf areas between the hours of 3:00 a.m. to 8:00 p.m., regardless of address or day of the month.
3. Water use violation fines may be applied to violations of Section A of Rule No. 14.1, which prohibits non-essential and unauthorized uses of water.
4. Water use violation fines must be separately identified on each bill.
5. All bills are subject to the reimbursement fee set forth on Schedule No. UF.

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Chapter 13.25**WATER EFFICIENT LANDSCAPE**

Sections:

- 13.25.010 Authority.
- 13.25.020 Findings – Purpose.
- 13.25.030 Applicability.
- 13.25.040 Definitions.
- 13.25.050 Landscape documentation package required.
- 13.25.060 Elements of a landscape documentation package.
- 13.25.070 Public education.

13.25.010 Authority.

This chapter is enacted under the Water Conservation and Landscaping Act (Government Code Section 65591 et seq.) and is a “water efficient landscape ordinance” adopted by a local agency under that Act. (Ord. 1399 § 1, 1992)

13.25.020 Findings – Purpose.

A. The city council finds and declares that the state of California is historically an arid environment with limited amounts of water resources. There are enormous costs to the citizens and ecosystem of the state to maintain current water resources systems and create new systems to meet current and future demands for water. Therefore, the city council finds that it is in the public interest of the citizens 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.

B. The purpose of this chapter is to establish standards for designing, installing, and maintaining water efficient landscapes in new and existing development projects. This is accomplished through the requirements for responsible landscape design, irrigation and management which utilize reasonable amounts of water while ensuring that aesthetic, functional, energy and environmental benefits of landscapes are achieved with the maximum amount of design freedom. (Ord. 1399 § 1, 1992)

13.25.030 Applicability.

A. Except as noted in subsections B and C of this section, the provisions of this chapter apply to:

1. All new and rehabilitated landscaping installed either for or by public agencies;

2. All new and rehabilitated landscaping for commercial and industrial development projects that require a permit or discretionary approval from the city;

3. All new and rehabilitated developer-installed landscaping in multifamily residential projects;

4. All new developer-installed landscaping in single-family residential projects

B. Only the water budget provisions of this chapter (LMC 13.25.060(B)) shall apply to:

1. All new homeowner provided landscaping in single-family projects. LMC 13.25.060(G)(2)(a) requiring a separate landscaping water meter, does not apply to single-family homes.

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

- 1. Cemeteries;
- 2. Registered historical sites;
- 3. Ecological restoration projects and mined-land reclamation projects that do not require a permanent irrigation system;
- 4. Projects using reclaimed water as defined and approved by the city;
- 5. Projects that contain less than 2,500 square feet of landscape area. (Ord. 1399 § 1, 1992)

13.25.040 Definitions.

1. “Amendment” means any material added to the soil to alter the pH or improve the physical properties of the soil.

2. “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 so it minimizes drainage from the lower elevation sprinkler heads.

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

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

5. “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.

6. “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.

7. “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.

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

9. “Cycle” means the complete operation of an irrigation controller station.

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

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

12. “Established landscape” means the point in time at which plants in the landscape have developed roots into the soil adjacent to the root ball.

13. “Establishment period” means the first year after installing the plant in the landscape.

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

15. “ET adjustment factor” means a factor of 0.7 applied to reference evapotranspiration, that adjusts for plant factors and irrigation efficiency, the two major influences upon the amount of water that needs to be applied to the landscape.

16. “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.

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

18. “Grading” means earthwork performed to alter the natural contours of an area.

19. “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 in a nonirrigated hydrozone.

20. “Hardscape” means and includes paving, decks, patios, and other hard, nonporous surfaces.

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

22. “Irrigated landscape area” means the entire parcel less the building footprint, driveways, non-irrigated portions of parking lots, and other hardscape areas. Landscape areas encompass all portions of a development site to be improved with planting and irrigation. They include water bodies such as fountains, swimming pools and ponds. Natural open spaces without irrigation systems are not included.

23. “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 management practices.

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

25. “Landscape irrigation audit” means a process to perform site inspections, evaluate irrigations systems, and develop efficient irrigation schedules.

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

27. “Low water using or extra-drought-tolerant plant” means a plant 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 (second edition), published by East Bay Municipal Utility District, that can tolerate “no water after second year” are examples of such plants.

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

29. “Maximum applied water allowance” or “water budget.” For design purpose, it is the upper limit of annual applied water for the established landscaped area. It is based upon the area’s reference evapotranspiration, the ET adjustment factor, and the size of the landscaped area.

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

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

32. "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.

33. "Mulch" means materials such as leaves, bark, straw, or sawdust, left loose and applied to the soil surface to retain moisture, retard weed growth, or prevent erosion.

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

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

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

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

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

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

40. "Rain sensing device" means a device wired to the automatic controller that shuts off the irrigation system when it rains.

41. "Recreational area" means of active play or recreation such as sports fields, school yards, picnic grounds, or other areas with intense foot traffic.

42. "Recycled water" or "reclaimed water" means treated or recycled wastewater of a quality reclaimed water suitable for nonpotable uses such as landscape irrigation; not intended for human consumption.

43. "Reference evapotranspiration" means the evapotranspiration rate for a particular geographical area, such as the city.

44. "Rehabilitated landscape" means any planting area in which at least 50 percent of the landscape area is replaced or modified. Examples

include a change of landscape, installations of a new irrigation system, and grading modifications.

45. "Remote control valve" means a valve in an irrigation system which is activated by an automatic electric controller via an electric control wire.

46. "Runoff" means water which is not absorbed by the soil to which it is applied. Runoff usually occurs when water is applied at too great a precipitation rate, when water is applied to saturated soils, or when water is applied to a steep slope.

47. "Site plan" means a base sheet that includes the basic information that will appear on all plans, such as natural features, roads, buildings, or other structures to remain on-site.

48. "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 or inadequate moisture is detected.

49. "Soil texture" means the classification of soil based on the percentage of sand, silt, and clay in the soil.

50. "Spray head" means an irrigation head that sprays water through a nozzle.

51. "Stream head" means an irrigation head that projects water through a rotor in single or multiple streams.

52. "Static water pressure" means the pipeline or municipal water supply pressure when water is not flowing.

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

54. "Turf" means a surface layer of earth containing mowed grass with its roots. 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.

55. "Valve" means a device used to control the flow of water in the irrigation system.

56. "Water conservation concept statement" means a one-page checklist and a narrative summary of the project. (Ord. 1399 § 51, 1992)

13.25.050 Landscape documentation package required.

A. For projects subject to all of the provisions of this chapter, the property owner must submit a landscape documentation package to the city in

compliance with the requirements of this chapter in order to be eligible for the issuance of a building permit. No building permits will be issued for projects that include incomplete packages, or that include plans which are inconsistent with the provisions of this chapter. The package must be prepared by an architect or landscape architect licensed by the state and it must include the following items. The items listed in this section are described in more detail in LMC 13.25.060.

1. Water conservation concept statement;
2. Calculation of maximum applied water allowance;
3. Calculation of the estimated applied water use;
4. Landscape design plan;
5. Irrigation design plan;
6. Irrigation schedule;
7. Maintenance schedule;
8. Landscape irrigation audit schedule;
9. Grading plan;
10. Soil analysis;
11. Certification of substantial completion (to be submitted after installation of the project);
12. Architect or landscape architect stamp.

B. The property owner shall submit items 1 through 6, 9, 10, and 12 from subsection A of this section for review and approval concurrently with submittal of the design review application for the project. The irrigation plan for this submittal may be conceptual in nature, that is, it may consist of a written description and diagram that depicts what types of irrigation equipment (drip, spray sprinklers, stream sprinklers, etc.) shall be used in what areas of the plan. (Ord. 1860 § 5, 2009; Ord. 1399 § 1, 1992)

13.25.060 Elements of a landscape documentation package.

A. Water Conservation Concept Statement. Each landscape documentation package shall include a cover sheet referred to as the water conservation concept statement. It shall serve as a checklist to verify that the elements of the landscape documentation package have been completed and shall include a narrative summary of the project.

B. The Maximum Applied Water Allowance (Water Budget).

1. A project's maximum applied water allowance shall be calculated using the following formula:

$$\begin{aligned} \text{MAWA} &= (\text{LA}) (20.5) \text{ where:} \\ \text{MAWA} &= \text{Maximum applied water allowance (gallons per year)} \\ \text{LA} &= \text{Landscaped area (square feet)} \\ 20.5 &= \text{Conversion factor (square feet to gallons per square foot per year). The conversion factor is made up of the reference evapotranspiration (47.2) multiplied by the ET adjustment factor (0.7) multiplied by .62 to convert square feet to gallons per square foot per year.} \end{aligned}$$

2. An example calculation of the maximum applied water allowance is:

Landscaped area of 10,000 square feet
in Livermore.

$$\begin{aligned} \text{MAWA} &= (\text{LA}) (20.5) \\ &= (10,000 \text{ square feet}) (20.5) \\ &= 205,000 \text{ gallons per year} \\ &= 274,100 \text{ cubic feet per year} \\ &\quad (205,000/748 = 274). \end{aligned}$$

3. Portions of landscaped areas in public and private projects such as parks, playgrounds, sports fields, golf courses, or school yards where turf provides a playing surface or serves other recreational purposes are permitted to request an increase in the maximum applied water allowance. A statement shall be included with the landscape design plan, designating areas to be used for such purposes and specifying any needed amount of additional water above the maximum applied water allowance because of high plant factors (but not due to irrigation inefficiency). Such requests shall be evaluated and, if the plan uses water efficiently throughout the project, approved by the planning director.

C. Estimated Applied Water Use.

1. The estimated applied water use shall not exceed the maximum applied water allowance.

2. A calculation of the estimated applied water use shall be submitted with the landscape documentation package. It shall be calculated by summing the amount of water recommended in the

irrigation schedule, or calculated from the following formula.

3. The estimated total water use of the entire landscaped equals the sum of the estimated water use of all hydrozones in that landscaped area.

$$\text{EWU (hydrozone)} = \frac{(47.2) (PF) (HA) (0.62)}{(IE)}$$

EWU	=	Estimated water use, per hydrozone (in gallons per year)
47.2	=	Reference evapotranspiration rate for Livermore (in inches per year)
PF	=	Plant factor
HA	=	Hydrozone area (in square feet)
0.62	=	Conversion factor (from inches to gallons)
IE	=	Irrigation efficiency.

4. Precipitation may not be used as a source of water in this calculation.

D. Plant Factors. For the purpose of this chapter, the following plant factors shall be used for each type of plant material. These figures are based on average plant densities and average microclimate conditions. For the purpose of this chapter, plants are divided into high, medium and low water requirement categories. A list of plants within each of these categories is on file with the planning department. That list is not comprehensive, and is designed to assist the designer in choosing appropriate plant materials. The designer is encouraged to use plants not on the list; provided, that appropriate information is provided to substantiate the water requirements of those plants. Such information might consist of reference material from a published source or other data acceptable to the director of planning.

Plant Type	Plant Factor
Recirculating water features	1.0
Uncovered pools and spas	0.8
Cool season grasses	0.8
Warm season grasses	0.7
High water using trees, shrubs and groundcovers	0.7
Moderate water using trees, shrubs and groundcovers	0.5
Covered pools and spas	0.5
Low water using trees, shrubs and groundcovers	0.2

E. Irrigation Efficiency. For the purpose of this chapter, the following irrigation efficiency numbers shall be used for each of the following irrigation equipment categories.

Irrigation Equipment Type	Irrigation Efficiency
Drip emitters (both above and below ground)	0.9
Bubblers	0.85
Stream sprinklers in planter strips 10 feet or wider	0.75
Spray sprinklers in planter strips 10 feet or wider	0.625
Sprinklers in planter strips less than 10 feet wide	0.4

F. Landscape Design Plan. A landscape design plan shall be submitted as part of the landscape documentation package.

1. Plant Selection and Grouping.

a. Any plants may be used in the landscape, providing the estimated applied water use recommended does not exceed the maximum applied water allowance and that the plants meet the specifications set forth in subsections (F)(1)(b) and (F)(1)(c) of this section.

b. Plants having similar water use shall generally be grouped together in distinct hydrozones.

c. Plants having nearly similar water use may be grouped together, that is, high and medium water using plants may be grouped, or medium and low water using plants may be grouped together. However, high and low water using plants shall not be grouped together in the same hydrozone. For mixed plant hydrozones, the more water intensive plant factor (higher number) shall be used for the entire hydrozone.

2. Water Features.

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

3. Landscape Design Plan Specifications. The landscape design plan shall be drawn on project base sheets at a scale that accurately and clearly identifies the following:

a. Designation of hydrozones;

b. Landscape materials, trees, shrubs, ground cover, turf, and existing vegetation. Planting symbols shall be clearly drawn and plants labeled by botanical name, common name, con-

tainer size, spacing and quantities of each group of plants indicated;

- c. Property lines and street names;
- d. Streets, driveways, walkways, and other paved areas;
- e. Pools, spas, ponds, water features, fences and retaining walls;
- f. Existing and proposed buildings and structures including the location of windows and doorways;
- g. Natural features, including, but not limited to, rock outcroppings;
- h. Soil, planting, and irrigation details;
- i. A calculation showing the square footage of each hydrozone and the total landscaped area;
- j. Designation of special recreational areas such as playgrounds, or sports fields where turf serves as a playing surface.

G. Irrigation Design Plan. An irrigation design plan meeting the following conditions shall be submitted as part of the landscape documentation package.

1. Irrigation Design Criteria.

a. 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.

b. Runoff and Overspray. The irrigation system shall deliver water at a rate compatible with the soil types and infiltration rates of the site. 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.

2. Equipment.

a. Water Meters. Separate landscape water meters shall be installed for all newly installed or renovated 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. Automatic electronic controllers shall be required for all irrigation systems and must be able to accommodate all aspects

of the design. At a minimum the controller shall have the capability to create two independent programs, include three cycle start times per program, have a battery backup to protect the program in the case of power failure, and contain a rain switch to interrupt the program in the case of rain.

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 as described in the plant selection and grouping section.

d. Sprinkler Heads and Emitters. Heads and emitters shall have compatible application rates within each control valve circuit. Sprinkler heads shall be selected for proper area coverage, application rate, operating pressure, adjustment capability, and ease of maintenance.

e. Antidrain (Check) Valves. Antidrain valves shall be installed at strategic low points throughout the plan to avoid low-head drainage.

f. Rain Sensing Override Devices. Rain sensing override devices are recommended on all irrigation systems and are required on all projects that contain at least 10,000 square feet of landscape area.

g. Soil Moisture Sensing Devices. Soil moisture sensing devices are recommended on all irrigation systems.

3. Irrigation Design Plan Specifications. The irrigation system shall be designed to be consistent with the planting design hydrozones. The irrigation design plan shall be drawn on project base sheets. It should be separate from, but use the same format as, the landscape design plan. The scale shall be the same as that used for the landscape design plan.

The irrigation design plan shall accurately and clearly identify:

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

b. 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;

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

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

H. Irrigation Schedules. Irrigation schedules satisfying the following conditions shall be submitted as part of the landscape documentation package.

1. An annual irrigation program with monthly irrigation schedules shall be required for the plant establishment period, for the established landscape, and for any temporarily irrigated areas.

2. The irrigation schedule shall:

- a. Include run time (in minutes per cycle) suggested number of cycles per day, and frequency of irrigation for each station; and

- b. Provide the amount of applied water (in 100 cubic feet and gallons) recommended on a monthly and annual basis.

3. The total amount of water for the project shall include water designated in the estimated total water use calculation including any water needed for any water features.

4. Recreational areas designated in the landscape design shall be highlighted and the irrigation schedule shall indicate if any additional water is needed above the maximum applied water allowance because of high plant factors (but not due to irrigation inefficiency).

5. Whenever possible, irrigation scheduling shall incorporate the use of evapotranspiration data such as those from the California Irrigation Management System (CIMIS) weather stations to apply the appropriate levels of water for different climate.

6. Landscape irrigation shall normally be scheduled during nondaylight hours to reduce irrigating during times of high wind or high temperature.

I. Maintenance Schedules. A regular maintenance schedule satisfying the following conditions shall be submitted as part of the landscape documentation package:

1. Landscaping shall be maintained to ensure water efficiency. A regular maintenance schedule shall include, but not be limited to, checking, adjusting, and repairing irrigation equipment, resetting the automatic controller, aerating and dethatching turf areas, replenishing mulch; fertilizing; pruning, and weeding in all landscaped areas.

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

J. Landscape Irrigation Audit Schedules. A schedule of landscape irrigation audits, for all but

single-family residences, satisfying the following conditions shall be submitted to the city as part of the landscape documentation package:

1. At a minimum, audits shall be in accordance with the State of California Landscape Water Management Program as described in the Landscape Irrigation Auditor Handbook.

2. The schedule shall provide for landscape irrigation audits to be conducted by certified landscape auditors once every five years. This requirement shall be waived if, in the last five years, the project has not at any time used more water on an annual basis than permitted by the maximum applied water allowance.

3. An audit shall also be required if the project's water use exceeds its maximum applied water allowance by 10 percent or more on an annual basis or by 20 percent or more on a monthly basis.

K. Grading Design Plan. Grading design plans satisfying the following conditions shall be submitted as part of the submittal requirements.

1. A grading design plan shall be drawn on project base sheets. For clarity, it may be separate from but use the same format as the landscape design plan.

2. The grading plan 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 shrub or tree that will remain, including proposed elevation changes within their drip lines.

L. Soils.

1. A soil analysis satisfying the following conditions shall be submitted as part of the submittal requirements.

- 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.

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

M. Certification. The city shall not grant a final certificate of occupancy for any project subject to the provisions of this chapter until the property owner submits a certificate of substantial comple-

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tion to the city planning department consistent with this section.

1. Upon completing the installation of the landscaping and the irrigation system, an irrigation audit shall be conducted by an architect, landscape architect or licensed contractor prior to the final field inspection by the city.

2. A licensed architect, landscape architect or contractor shall conduct a final field observation and shall provide a certificate of substantial completion to the city planning department. The certificate shall specifically indicate that plants were installed as specified, that the irrigation audit has been performed, along with a list of any observed deficiencies, and documentation that those deficiencies have been corrected. A sample of such a form is available in the city planning department. (Ord. 1399 § 1, 1992)

13.25.070 Public education.

A. Publication.

1. The city shall provide information 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.

2. The city shall also provide information about the efficient use of landscape water to all water users throughout the city.

3. The city shall also recognize those projects that are the most efficient users of landscaping water based on a comparison to their water budget.

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

1. The project developer shall make available to all visitors of the model home complex a brochure 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, 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.

2. For at least one 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.

3. All model homes are strongly encouraged to be more water efficient than the minimum required by this chapter, especially for the model home with signs. (Ord. 1399 § 1, 1992)

Chapter 15.80**CIVIC BAY-FRIENDLY LANDSCAPING**

Sections:

- 15.80.010 Purpose.
- 15.80.020 Findings.
- 15.80.030 Definitions.
- 15.80.040 Standards for compliance.
- 15.80.050 Implementation.

15.80.010 Purpose.

To promote economic and environmental health in the city, it is essential that the city itself, through the design, construction, and maintenance of its own landscapes and the landscapes it funds, provide leadership to both the private and public sectors by incorporating bay-friendly landscaping practices. The most immediate and meaningful way to do this is to require the integration of bay-friendly landscaping strategies in city landscapes. (Ord. 1876 § 1 (Exh. A), 2009)

15.80.020 Findings.

The city council of the city of Livermore finds that:

A. The design, construction, and maintenance of landscapes within the city can have a significant impact on the city's environmental sustainability, resource usage and efficiency, waste management, and the health of the watershed as well as the health of residents, workers, and visitors to the city.

B. Based on studies, plant debris from landscape construction, renovation and maintenance activities comprise seven percent of the materials disposed in Alameda County landfills.

C. Bay-friendly landscape design, construction, operation and maintenance can have a significant positive effect on energy, water and resource efficiency, waste and pollution generation, wildlife habitat, and the health of workers and users of the landscape and can contribute to a reduction in greenhouse gas emissions, improve air quality and enhance urban sustainability.

D. Bay-friendly landscaping benefits are spread throughout the systems and features of the landscape, the larger San Francisco Bay area ecosystem and the Livermore community. Bay-friendly landscaping is a whole-systems approach to the design, construction and maintenance of the landscape in order to support the integrity of the San Francisco

Bay watershed. Key components of bay-friendly landscaping include reducing waste and using recycled-content materials; nurturing healthy soils while reducing fertilizer use; conserving water, energy and topsoil; using integrated pest management (IPM) to minimize chemical use; reducing stormwater runoff; and creating wildlife habitat.

E. Bay-friendly landscape design and construction decisions made by the city in the construction and maintenance of landscapes can result in significant cost savings to the city over the life of the projects.

F. It is critical to both the economic and environmental health of the city that the city provide leadership to both the private and public sectors in the area of bay-friendly landscaping.

G. The most immediate and meaningful way to do so is to include bay-friendly landscaping elements in city landscape projects and in landscape projects built as public-private partnerships, and to encourage private landscape projects to include green building and bay-friendly landscaping elements.

H. In Alameda County, StopWaste.org has taken the lead in defining and promoting environmentally friendly landscaping for the commercial, institutional and residential sectors by developing the Bay-Friendly Landscape Guidelines for professional landscapers and the Bay-Friendly Gardening Guide for residents, and the use of these guidelines is increasingly widespread in residential and commercial landscape construction.

I. Requiring city projects to incorporate bay-friendly landscape guidelines is necessary and appropriate to achieving the benefits of bay-friendly landscaping in the city. (Ord. 1876 § 1 (Exh. A), 2009)

15.80.030 Definitions.

For the purposes of this chapter, the following definitions shall apply:

A. "Bay-Friendly Landscape Guidelines" means the most recent version of guidelines developed by StopWaste.org for use in the design, construction and maintenance of landscapes.

B. "Bay-friendly landscaping scorecard" means the most recent version of the bay-friendly landscaping points system developed by StopWaste.org.

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C. “Covered project” means all new landscaping projects or renovations of landscapes that equal or exceed \$100,000 in construction costs and are owned or maintained by the city or redevelopment agency.

D. “Bay-friendly landscaping compliance official” means the designated staff person(s) authorized and responsible for implementing this chapter.

E. “Initiated” means officially identified and substantially funded.

F. “Landscape” means the parcel area less the building pad and includes all planted areas and hardscapes (i.e., driveway, parking, paths and other paved areas adjacent to or integral to the landscape).

G. “Renovation” means any change, addition, or modification to an existing landscape.

H. “Public project” means those projects identified as such by Public Contracts Code Section 20161. (Ord. 1876 § 1 (Exh. A), 2009)

B. The rules and regulations promulgated by the community development director pursuant to this section shall provide for at least the following:

1. The incorporation of the bay-friendly landscaping requirements of this chapter into the appropriate design, construction, maintenance and development agreement documents prepared for the applicable covered projects.

2. The designation of an appropriate bay-friendly landscaping compliance official(s) who shall have the responsibility to administer and monitor compliance with the bay-friendly landscaping requirements set forth in this chapter and with any rules or regulations promulgated thereunder, and to grant waivers or exemptions from the requirements of this chapter, and to report to the city council regarding bay-friendly landscaping compliance on all covered projects. (Ord. 1876 § 1 (Exh. A), 2009)

15.80.040 Standards for compliance.

A. All covered projects with landscapes initiated on or after the effective date of the ordinance codified in this chapter shall meet the minimum requirements of the most recent version of the bay-friendly landscaping scorecard as recommended by StopWaste.org or its designee.

B. For the purposes of reducing operating and maintenance costs in all city facilities, projects that do not meet the threshold triggering compliance with the requirements of this chapter (noncovered projects) are encouraged to meet as many bay-friendly landscaping scorecard points as practicable, using the bay-friendly landscaping scorecard for documentation.

C. The community development department shall regularly review the project specifications used in bidding public projects to include applicable bay-friendly landscape practices. (Ord. 1876 § 1 (Exh. A), 2009)

15.80.050 Implementation.

A. The community development director or his designee shall, within six months of the ordinance codified in this chapter’s effective date, promulgate any rules and regulations necessary or appropriate to achieve compliance with the requirements of this chapter.