

NIPOMO COMMUNITY SERVICES DISTRICT

DECEMBER 18, 2009

10:00 AM

SPECIAL MEETING NOTICE & AGENDA **WATER CONSERVATION COMMITTEE**

COMMITTEE MEMBERS

MICHAEL WINN, CHAIR
LARRY VIERHEILIG, MEMBER

PRINCIPAL STAFF

MICHAEL LEBRUN, INTERIM GENERAL MANAGER
LISA BOGNUDA, ASST. GENERAL MANAGER
DONNA JOHNSON, BOARD SECRETARY
JON SEITZ, GENERAL COUNSEL
CELESTE WHITLOW, CONSERVATION COORDINATOR

MEETING LOCATION • District Board Room • 148 S. Wilson Street • Nipomo, California

1. **CALL TO ORDER, ROLL CALL AND FLAG SALUTE.**
2. **DISCUSS SOLID-WASTE FUND STATUS AND USES.**
ACTION RECOMMENDED: Discussion and Recommendations to Board.
3. **DISCUSS MODEL WATER-EFFICIENCY LANDSCAPE ORDINANCE.**
ACTION RECOMMENDED: Discussion.
4. **DISCUSS STATE LEGISLATION PERTINENT TO NCSD.**
 - A. SB407 (Water-efficient plumbing requirements).
 - B. AB 474 (Allows a public agency to enter into a contractual agreement with homeowners for a loan from the agency to finance permanent water-efficiency changes to their property).
 - C. AB 1061 (Supports the Model Water Efficient Landscape Ordinance (MWELo) legislation by forbidding a homeowners' association, city, or other common interest development from requiring landscapes which are in conflict with the MWELo).
 - D. AB 1366 (Authorizing local agencies providing wastewater treatment services to control salinity inputs from residential self-regenerating water softeners).
 - E. SB6X7 (Groundwater monitoring program).
 - F. SB7X7 (Defines specifics of requirements and documentation for the "20x2020" program; includes requirements for agriculture).ACTION RECOMMENDED: Information provided. Discuss as needed.
5. **DISCUSS MP-ROTATOR REBATE.**
ACTION RECOMMENDED: Discussion and recommendations to Board.
6. **DISCUSS LAWN AERATION REBATE.**
ACTION RECOMMENDED: Discussion and recommendations to Board.
7. **DISCUSS GRAYWATER.**
 - A. New California graywater regulations.
 - B. Holding a Graywater Workshop.
 - C. Rebate for brass valve of graywater system.ACTION RECOMMENDED: Discussion and recommendations to Board.
8. **SET SUBSEQUENT MEETING.**
ACTION RECOMMENDED: Set time/date for next meeting
9. **ADJOURNMENT.**

*** End Special Meeting Notice ***

TO: BOARD OF DIRECTORS
FROM: MICHAEL LEBRUN *ml*
DATE: DECEMBER 15, 2009

**AGENDA ITEM
2
DECEMBER 18, 2009**

DISCUSS SOLID WASTE FUND STATUS AND USE

ITEM

Discuss use of solid waste fund.

BACKGROUND

The District collections a franchise fee as a result of solid waste collection services within the District. The fund balance is currently \$615,000.00. These funds are restricted for use related to solid waste issues within the District.

FISCAL IMPACT

Items discussed and pursued will be funded from solid waste fund.

RECOMMENDATION

Discuss solid waste expenditure projects. Give staff direction.

ATTACHMENTS

- None

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NIPOMO COMMUNITY SERVICES DISTRICT

148 SOUTH WILSON STREET
POST OFFICE BOX 326
NIPOMO, CA 93444 - 0326
(805) 929-1133 FAX (805) 929-1932
Web site address www.ncsd.com

MEMORANDUM

TO: MICHAEL LEBRUN, GENERAL MANAGER *msl*
FROM: CELESTE WHITLOW, WATER CONSERVATION COORDINATOR *cw*
DATE: NOVEMBER 7, 2009 *Item 3*
RE: MODEL WATER-EFFICIENT LANDSCAPE ORDINANCE.

The Model Water Efficient Landscape Ordinance (MWELo) is the minimum landscaping requirements for new and rehabilitated landscapes requiring a building or landscape permit, plan check or design review. This includes developer-installed projects, public agency projects, and private development projects with landscape area of over 2500 ft², and homeowner-provided or homeowner-hired projects with landscape area of over 5000 ft². A water purveyor or agency may design their own ordinance that is more effective than the MWELo, but not less effective.

The MWELo directed at "local agencies." A local agency may designate another agency, such as a water purveyor, to implement requirements of this ordinance.

The MWELo requires completion of a Landscape Documentation Package and a Certificate of Completion by the construction agent (contractor, homeowner, etc.) prior to issuance of a construction permit, okay of a design check or review.

Local agencies are required to adopt the MWELo, or one that is "at least as effective as" the MWELo, by 1/1/2010.

Issues

An issue has arisen regarding meeting the 1/1/2010 deadline for implementing a Water Efficient Landscape Ordinance.

The MWELo defines a local agency as "a city or county, including a charter city or charter county, that is responsible for adopting and implementing the ordinance. The local agency is also responsible for the enforcement of this ordinance, including but not limited to, **approval of a permit and plan check or design review of a project.**"

The MWELo specifically states that the local agency is required to:

- Provide the applicant for a building permit, prior to construction, with a copy of the ordinance, procedures for permits, plan checks, or design reviews,
- Review the Landscape Documentation Package submitted by the applicant, and approve or deny the Landscape Documentation Package,
- Issue a permit, or approve the plan check or design review for the project applicant,
- Upon approval of the Landscape Documentation Package, submit a copy of the Water Efficient Landscape Worksheet to the local water purveyor.

I interpret this, as did Bruce Buel, and as do the water conservation coordinator of Templeton CSD and Los Osos CSD, as it being the responsibility of the County to initiate the process of ensuring

compliance with the Water Efficient Landscape Ordinance, including the provision and approval of the Landscape Documentation Package, and all steps up to at least the point where the Water Efficient Landscape Worksheet is issued to the applicant and to the local water purveyor. Steps required after that point may or may not be more logically the responsibility of NCSD.

At the request of Bruce Buel, a month ago a phone-call contact was made with County Planning. Inquiry was made regarding the status of their work on this ordinance. They are not going to be able to design a Water Efficient Landscape Ordinance by 1/1/2010.

There are three concerns:

- It may be interpreted as NCSD is not complying with the deadline. There are no penalties for noncompliance, but disregarding a deadline is never a good reflection on NCSD.
- We will be missing opportunities to reap the water conservation benefits of this ordinance if an ordinance is not in place by 1/1/2010.
- The CUWCC has indicated they believe an entity that approves landscape plans for construction not meeting the MWELO requirements, including completing the Landscape Document Package, may be open to third-party litigation.

Model Water Efficient Landscape Ordinance

California Code of Regulations
Title 23. Waters
Division 2. Department of Water Resources
Chapter 2.7. Model Water Efficient Landscape Ordinance

§ 490. Purpose.

(a) The State Legislature has found:

- (1) that the waters of the state are of limited supply and are subject to ever increasing demands;
- (2) that the continuation of California's economic prosperity is dependent on the availability of adequate supplies of water for future uses;
- (3) that it is the policy of the State to promote the conservation and efficient use of water and to prevent the waste of this valuable resource;
- (4) that landscapes are essential to the quality of life in California by providing areas for active and passive recreation and as an enhancement to the environment by cleaning air and water, preventing erosion, offering fire protection, and replacing ecosystems lost to development; and
- (5) that landscape design, installation, maintenance and management can and should be water efficient; and
- (6) that Section 2 of Article X of the California Constitution specifies that the right to use water is limited to the amount reasonably required for the beneficial use to be served and the right does not and shall not extend to waste or unreasonable method of use.

(b) Consistent with these legislative findings, the purpose of this model ordinance is to:

- (1) promote the values and benefits of landscapes while recognizing the need to invest water and other resources as efficiently as possible;
- (2) establish a structure for planning, designing, installing, maintaining and managing water efficient landscapes in new construction and rehabilitated projects;
- (3) establish provisions for water management practices and water waste prevention for existing landscapes;
- (4) use water efficiently without waste by setting a Maximum Applied Water Allowance as an upper limit for water use and reduce water use to the lowest practical amount;
- (5) promote the benefits of consistent landscape ordinances with neighboring local and regional agencies;
- (6) encourage local agencies and water purveyors to use economic incentives that promote the efficient use of water, such as implementing a tiered-rate structure; and
- (7) encourage local agencies to designate the necessary authority that implements and enforces the provisions of the Model Water Efficient Landscape Ordinance or its local landscape ordinance.

Note: Authority cited: Section 65593, Government Code. Reference: Sections 65591, 65593, 65596, Government Code.

§ 490.1 Applicability

(a) After January 1, 2010, this ordinance shall apply to all of the following landscape projects:

- (1) new construction and rehabilitated landscapes for public agency projects and private development projects with a landscape area equal to or greater than 2,500 square feet requiring a building or landscape permit, plan check or design review;
- (2) new construction and rehabilitated landscapes which are developer-installed in single-family and multi-family projects with a landscape area equal to or greater than 2,500 square feet requiring a building or landscape permit, plan check, or design review;
- (3) new construction landscapes which are homeowner-provided and/or homeowner-hired in single-family and multi-family residential projects with a total project landscape area equal to or greater than 5,000 square feet requiring a building or landscape permit, plan check or design review;

(4) existing landscapes limited to Sections 493, 493.1 and 493.2; and
(5) cemeteries. Recognizing the special landscape management needs of cemeteries, new and rehabilitated cemeteries are limited to Sections 492.4, 492.11 and 492.12; and existing cemeteries are limited to Sections 493, 493.1 and 493.2.

(b) This ordinance does not apply to:

- (1) registered local, state or federal historical sites;
- (2) ecological restoration projects that do not require a permanent irrigation system;
- (3) mined-land reclamation projects that do not require a permanent irrigation system; or
- (4) plant collections, as part of botanical gardens and arboretums open to the public.

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

§ 491. Definitions.

The terms used in this ordinance have the meaning set forth below:

- (a) “applied water” means the portion of water supplied by the irrigation system to the landscape.
- (b) “automatic irrigation controller” means an automatic timing device used to remotely control valves that operate an irrigation system. Automatic irrigation controllers schedule irrigation events using either evapotranspiration (weather-based) or soil moisture data.
- (c) “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.
- (d) “Certificate of Completion” means the document required under Section 492.9.
- (e) “certified irrigation designer” means a person certified to design irrigation systems by an accredited academic institution a professional trade organization or other program such as the US Environmental Protection Agency’s WaterSense irrigation designer certification program and Irrigation Association’s Certified Irrigation Designer program.
- (f) “certified landscape irrigation auditor” means a person certified to perform landscape irrigation audits by an accredited academic institution, a professional trade organization or other program such as the US Environmental Protection Agency’s WaterSense irrigation auditor certification program and Irrigation Association’s Certified Landscape Irrigation Auditor program.
- (g) “check valve” or “anti-drain valve” means a valve located under a sprinkler head, or other location in the irrigation system, to hold water in the system to prevent drainage from sprinkler heads when the sprinkler is off.
- (h) “common interest developments” means community apartment projects, condominium projects, planned developments, and stock cooperatives per Civil Code Section 1351.
- (i) “conversion factor (0.62)” means the number that converts acre-inches per acre per year to gallons per square foot per year
- (j) “drip irrigation” means any non-spray low volume irrigation system utilizing emission devices with a flow rate measured in gallons per hour. Low volume irrigation systems are specifically designed to apply small volumes of water slowly at or near the root zone of plants.
- (k) “ecological restoration project” means a project where the site is intentionally altered to establish a defined, indigenous, historic ecosystem.
- (l) “effective precipitation” or “usable rainfall” (Eppt) means the portion of total precipitation which becomes available for plant growth.
- (m) “emitter” means a drip irrigation emission device that delivers water slowly from the system to the soil.
- (n) “established landscape” means the point at which plants in the landscape have developed significant root growth into the soil. Typically, most plants are established after one or two years of growth.
- (o) “establishment period of the plants” means the first year after installing the plant in the landscape or the first two years if irrigation will be terminated after establishment. Typically, most plants are established after one or two years of growth.

(p) "Estimated Total Water Use" (ETWU) means the total water used for the landscape as described in Section 492.4.

(q) "ET adjustment factor" (ETAF) means a factor of 0.7, that, when applied to reference evapotranspiration, adjusts for plant factors and irrigation efficiency, two major influences upon the amount of water that needs to be applied to the landscape.

A combined plant mix with a site-wide average of 0.5 is the basis of the plant factor portion of this calculation. For purposes of the ETAF, the average irrigation efficiency is 0.71. Therefore, the ET Adjustment Factor is $(0.7) = (0.5/0.71)$. ETAF for a Special Landscape Area shall not exceed 1.0. ETAF for existing non-rehabilitated landscapes is 0.8.

(r) "evapotranspiration rate" means the quantity of water evaporated from adjacent soil and other surfaces and transpired by plants during a specified time.

(s) "flow rate" means the rate at which water flows through pipes, valves and emission devices, measured in gallons per minute, gallons per hour, or cubic feet per second.

(t) "hardscapes" means any durable material (pervious and non-pervious).

(u) "homeowner-provided landscaping" means any landscaping either installed by a private individual for a single family residence or installed by a licensed contractor hired by a homeowner. A homeowner, for purposes of this ordinance, is a person who occupies the dwelling he or she owns. This excludes speculative homes, which are not owner-occupied dwellings.

(v) "hydrozone" means a portion of the landscaped area having plants with similar water needs. A hydrozone may be irrigated or non-irrigated.

(w) "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).

(x) "invasive plant species" means species of plants not historically found in California that spread outside cultivated areas and can damage environmental or economic resources. Invasive species may be regulated by county agricultural agencies as noxious species. "Noxious weeds" means any weed designated by the Weed Control Regulations in the Weed Control Act and identified on a Regional District noxious weed control list. Lists of invasive plants are maintained at the California Invasive Plant Inventory and USDA invasive and noxious weeds database.

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

(z) "irrigation efficiency" (IE) means the measurement of the amount of water beneficially used divided by the amount of water applied. Irrigation efficiency is derived from measurements and estimates of irrigation system characteristics and management practices. The minimum average irrigation efficiency for purposes of this ordinance is 0.71. Greater irrigation efficiency can be expected from well designed and maintained systems.

(aa) "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.

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

(cc) "landscape architect" means a person who holds a license to practice landscape architecture in the state of California Business and Professions Code, Section 5615.

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

- (ee) "landscape contractor" means a person licensed by the state of California to construct, maintain, repair, install, or subcontract the development of landscape systems.
- (ff) "Landscape Documentation Package" means the documents required under Section 492.3.
- (gg) "landscape project" means total area of landscape in a project as defined in "landscape area" for the purposes of this ordinance, meeting requirements under Section 490.1.
- (hh) "lateral line" means the water delivery pipeline that supplies water to the emitters or sprinklers from the valve.
- (ii) "local agency" means a city or county, including a charter city or charter county, that is responsible for adopting and implementing the ordinance. The local agency is also responsible for the enforcement of this ordinance, including but not limited to, approval of a permit and plan check or design review of a project.
- (jj) "local water purveyor" means any entity, including a public agency, city, county, or private water company that provides retail water service.
- (kk) "low volume irrigation" means the application of irrigation water at low pressure through a system of tubing or lateral lines and low-volume emitters such as drip, drip lines, and bubblers. Low volume irrigation systems are specifically designed to apply small volumes of water slowly at or near the root zone of plants.
- (ll) "main line" means the pressurized pipeline that delivers water from the water source to the valve or outlet.
- (mm) "Maximum Applied Water Allowance" (MAWA) means the upper limit of annual applied water for the established landscaped area as specified in Section 492.4. It is based upon the area's reference evapotranspiration, the ET Adjustment Factor, and the size of the landscape area. The Estimated Total Water Use shall not exceed the Maximum Applied Water Allowance. Special Landscape Areas, including recreation areas, areas permanently and solely dedicated to edible plants such as orchards and vegetable gardens, and areas irrigated with recycled water are subject to the MAWA with an ETAF not to exceed 1.0.
- (nn) "microclimate" means the climate of a small, specific area that may contrast with the climate of the overall landscape area due to factors such as wind, sun exposure, plant density, or proximity to reflective surfaces.
- (oo) "mined-land reclamation projects" means any surface mining operation with a reclamation plan approved in accordance with the Surface Mining and Reclamation Act of 1975.
- (pp) "mulch" means any organic material such as leaves, bark, straw, compost, or inorganic mineral materials such as rocks, gravel, and decomposed granite left loose and applied to the soil surface for the beneficial purposes of reducing evaporation, suppressing weeds, moderating soil temperature, and preventing soil erosion.
- (qq) "new construction" means, for the purposes of this ordinance, a new building with a landscape or other new landscape, such as a park, playground, or greenbelt without an associated building.
- (rr) "operating pressure" means the pressure at which the parts of an irrigation system are designed by the manufacturer to operate.
- (ss) "overhead sprinkler irrigation systems" means systems that deliver water through the air (e.g., spray heads and rotors).
- (tt) "overspray" means the irrigation water which is delivered beyond the target area.
- (uu) "permit" means an authorizing document issued by local agencies for new construction or rehabilitated landscapes.
- (vv) "pervious" means any surface or material that allows the passage of water through the material and into the underlying soil.
- (ww) "plant factor" or "plant water use factor" is a factor, when multiplied by ETo, estimates the amount of water needed by plants. For purposes of this ordinance, the plant factor range for low water use plants is 0 to 0.3, the plant factor range for moderate water use plants is 0.4 to 0.6, and the plant

factor range for high water use plants is 0.7 to 1.0. Plant factors cited in this ordinance are derived from the Department of Water Resources 2000 publication "Water Use Classification of Landscape Species".

(xx) "precipitation rate" means the rate of application of water measured in inches per hour.

(yy) "project applicant" means the individual or entity submitting a Landscape Documentation Package required under Section 492.3, to request a permit, plan check, or design review from the local agency. A project applicant may be the property owner or his or her designee.

(zz) "rain sensor" or "rain sensing shutoff device" means a component which automatically suspends an irrigation event when it rains.

(aaa) "record drawing" or "as-builts" means a set of reproducible drawings which show significant changes in the work made during construction and which are usually based on drawings marked up in the field and other data furnished by the contractor.

(bbb) "recreational area" means areas dedicated to active play such as parks, sports fields, and golf courses where turf provides a playing surface.

(ccc) "recycled water", "reclaimed water", or "treated sewage effluent water" means treated or recycled waste water of a quality suitable for non-potable uses such as landscape irrigation and water features. This water is not intended for human consumption.

(ddd) "reference evapotranspiration" or "ET_o" means a standard measurement of environmental parameters which affect the water use of plants. ET_o is expressed in inches per day, month, or year as represented in Section 495.1, and is an estimate of the evapotranspiration of a large field of four- to seven-inch tall, cool-season grass that is well watered. Reference evapotranspiration is used as the basis of determining the Maximum Applied Water Allowance so that regional differences in climate can be accommodated.

(eee) "rehabilitated landscape" means any re-landscaping project that requires a permit, plan check, or design review, meets the requirements of Section 490.1, and the modified landscape area is equal to or greater than 2,500 square feet, is 50% of the total landscape area, and the modifications are completed within one year.

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

(ggg) "soil moisture sensing device" or "soil moisture sensor" means a device that measures the amount of water in the soil. The device may also suspend or initiate an irrigation event.

(hhh) "soil texture" means the classification of soil based on its percentage of sand, silt, and clay.

(iii) "Special Landscape Area" (SLA) means an area of the landscape dedicated solely to edible plants, areas irrigated with recycled water, water features using recycled water and areas dedicated to active play such as parks, sports fields, golf courses, and where turf provides a playing surface.

(jjj) "sprinkler head" means a device which delivers water through a nozzle.

(kkk) "static water pressure" means the pipeline or municipal water supply pressure when water is not flowing.

(lll) "station" means an area served by one valve or by a set of valves that operate simultaneously.

(mmm) "swing joint" means an irrigation component that provides a flexible, leak-free connection between the emission device and lateral pipeline to allow movement in any direction and to prevent equipment damage.

(nnn) "turf" means a ground cover surface of mowed grass. Annual bluegrass, Kentucky bluegrass, Perennial ryegrass, Red fescue, and Tall fescue are cool-season grasses. Bermudagrass, Kikuyugrass, Seashore Paspalum, St. Augustinegrass, Zoysiagrass, and Buffalo grass are warm-season grasses.

(ooo) "valve" means a device used to control the flow of water in the irrigation system.

(ppp) "water conserving plant species" means a plant species identified as having a low plant factor.

(qqq) "water feature" means a design element where open water performs an aesthetic or recreational function. Water features include ponds, lakes, waterfalls, fountains, artificial streams, spas, and swimming pools (where water is artificially supplied). The surface area of water features is included in

the high water use hydrozone of the landscape area. Constructed wetlands used for on-site wastewater treatment or stormwater best management practices that are not irrigated and used solely for water treatment or stormwater retention are not water features and, therefore, are not subject to the water budget calculation.

(rrr) "watering window" means the time of day irrigation is allowed.

(sss) "WUCOLS" means the Water Use Classification of Landscape Species published by the University of California Cooperative Extension, the Department of Water Resources and the Bureau of Reclamation, 2000.

Note: Authority Cited: Section 65595, Government Code. Reference: Sections 65592, 65596, Government Code.

§ 492. Provisions for New Construction or Rehabilitated Landscapes.

(a) A local agency may designate another agency, such as a water purveyor, to implement some or all of the requirements contained in this ordinance. Local agencies may collaborate with water purveyors to define each entity's specific responsibilities relating to this ordinance.

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

§ 492.1 Compliance with Landscape Documentation Package.

(a) Prior to construction, the local agency shall:

- (1) provide the project applicant with the ordinance and procedures for permits, plan checks, or design reviews;
- (2) review the Landscape Documentation Package submitted by the project applicant;
- (3) approve or deny the Landscape Documentation Package;
- (4) issue a permit or approve the plan check or design review for the project applicant; and
- (5) upon approval of the Landscape Documentation Package, submit a copy of the Water Efficient Landscape Worksheet to the local water purveyor.

(b) Prior to construction, the project applicant shall:

- (1) submit a Landscape Documentation Package to the local agency.

(c) Upon approval of the Landscape Documentation Package by the local agency, the project applicant shall:

- (1) receive a permit or approval of the plan check or design review and record the date of the permit in the Certificate of Completion;
- (2) submit a copy of the approved Landscape Documentation Package along with the record drawings, and any other information to the property owner or his/her designee; and
- (3) submit a copy of the Water Efficient Landscape Worksheet to the local water purveyor.

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

§ 492.2 Penalties.

(a) A local agency may establish and administer penalties to the project applicant for non-compliance with the ordinance to the extent permitted by law.

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

§ 492.3 Elements of the Landscape Documentation Package.

- (a) The Landscape Documentation Package shall include the following six (6) elements:
- (1) project information;
 - (A) date
 - (B) project applicant
 - (C) project address (if available, parcel and/or lot number(s))
 - (D) total landscape area (square feet)
 - (E) project type (e.g., new, rehabilitated, public, private, cemetery, homeowner-installed)
 - (F) water supply type (e.g., potable, recycled, well) and identify the local retail water purveyor if the applicant is not served by a private well
 - (G) checklist of all documents in Landscape Documentation Package
 - (H) project contacts to include contact information for the project applicant and property owner
 - (I) applicant signature and date with statement, "I agree to comply with the requirements of the water efficient landscape ordinance and submit a complete Landscape Documentation Package".
 - (2) Water Efficient Landscape Worksheet;
 - (A) hydrozone information table
 - (B) water budget calculations
 1. Maximum Applied Water Allowance (MAWA)
 2. Estimated Total Water Use (ETWU)
 - (3) soil management report;
 - (4) landscape design plan;
 - (5) irrigation design plan; and
 - (6) grading design plan.

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

§ 492.4 Water Efficient Landscape Worksheet.

- (a) A project applicant shall complete the Water Efficient Landscape Worksheet which contains two sections (see sample worksheet in Appendix B):
- (1) a hydrozone information table (see Appendix B, Section A) for the landscape project; and
 - (2) a water budget calculation (see Appendix B, Section B) for the landscape project. For the calculation of the Maximum Applied Water Allowance and Estimated Total Water Use, a project applicant shall use the ETo values from the Reference Evapotranspiration Table in Appendix A. For geographic areas not covered in Appendix A, use data from other cities located nearby in the same reference evapotranspiration zone, as found in the CIMIS Reference Evapotranspiration Zones Map, Department of Water Resources, 1999.
- (b) Water budget calculations shall adhere to the following requirements:
- (1) The plant factor used shall be from WUCOLS. The plant factor ranges from 0 to 0.3 for low water use plants, from 0.4 to 0.6 for moderate water use plants, and from 0.7 to 1.0 for high water use plants.
 - (2) All water features shall be included in the high water use hydrozone and temporarily irrigated areas shall be included in the low water use hydrozone.
 - (3) All Special Landscape Areas shall be identified and their water use calculated as described below.
 - (4) ETAF for Special Landscape Areas shall not exceed 1.0.
- (c) Maximum Applied Water Allowance
The Maximum Applied Water Allowance shall be calculated using the equation:

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

The example calculations below are hypothetical to demonstrate proper use of the equations and do not represent an existing and/or planned landscape project. The ETo values used in these calculations are from the Reference Evapotranspiration Table in Appendix A, for planning purposes only. For actual irrigation scheduling, automatic irrigation controllers are required and shall use current reference evapotranspiration data, such as from the California Irrigation Management Information System (CIMIS), other equivalent data, or soil moisture sensor data.

(1) Example MAWA calculation: a hypothetical landscape project in Fresno, CA with an irrigated landscape area of 50,000 square feet without any Special Landscape Area (SLA= 0, no edible plants, recreational areas, or use of recycled water). To calculate MAWA, the annual reference evapotranspiration value for Fresno is 51.1 inches as listed in the Reference Evapotranspiration Table in Appendix A.

$$MAWA = (ET_o) (0.62) [(0.7 \times LA) + (0.3 \times SLA)]$$

MAWA = Maximum Applied Water Allowance (gallons per year)

ET_o = Reference Evapotranspiration (inches per year)

0.62 = Conversion Factor (to gallons)

0.7 = ET Adjustment Factor (ETAF)

LA = Landscape Area including SLA (square feet)

0.3 = Additional Water Allowance for SLA

SLA = Special Landscape Area (square feet)

$$MAWA = (51.1 \text{ inches}) (0.62) [(0.7 \times 50,000 \text{ square feet}) + (0.3 \times 0)]$$

$$= 1,108,870 \text{ gallons per year}$$

To convert from gallons per year to hundred-cubic-feet per year:

$$= 1,108,870/748 = 1,482 \text{ hundred-cubic-feet per year}$$

(100 cubic feet = 748 gallons)

(2) In this next hypothetical example, the landscape project in Fresno, CA has the same ETo value of 51.1 inches and a total landscape area of 50,000 square feet. Within the 50,000 square foot project, there is now a 2,000 square foot area planted with edible plants. This 2,000 square foot area is considered to be a Special Landscape Area.

$$MAWA = (ET_o) (0.62) [(0.7 \times LA) + (0.3 \times SLA)]$$

$$MAWA = (51.1 \text{ inches}) (0.62) [(0.7 \times 50,000 \text{ square feet}) + (0.3 \times 2,000 \text{ square feet})]$$

$$= 31.68 \times [35,000 + 600] \text{ gallons per year}$$

$$= 31.68 \times 35,600 \text{ gallons per year}$$

$$= 1,127,808 \text{ gallons per year or } 1,508 \text{ hundred-cubic-feet per year}$$

(d) Estimated Total Water Use.

The Estimated Total Water Use shall be calculated using the equation below. The sum of the Estimated Total Water Use calculated for all hydrozones shall not exceed MAWA.

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

Where:

ETWU = Estimated Total Water Use per year (gallons)

ET_o = Reference Evapotranspiration (inches)

PF = Plant Factor from WUCOLS (see Section 491)

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

SLA = Special Landscape Area (square feet)

0.62 = Conversion Factor

IE = Irrigation Efficiency (minimum 0.71)

(1) Example ETWU calculation: landscape area is 50,000 square feet; plant water use type, plant factor, and hydrozone area are shown in the table below. The ETo value is 51.1 inches per year. There are no Special Landscape Areas (recreational area, area permanently and solely dedicated to edible plants, and area irrigated with recycled water) in this example.

| Hydrozone | Plant Water Use Type(s) | Plant Factor (PF)* | Hydrozone Area (HA) (square feet) | PF x HA (square feet) |
|-----------|-------------------------|--------------------|-----------------------------------|-----------------------|
| 1 | High | 0.8 | 7,000 | 5,600 |
| 2 | High | 0.7 | 10,000 | 7,000 |
| 3 | Medium | 0.5 | 16,000 | 8,000 |
| 4 | Low | 0.3 | 7,000 | 2,100 |
| 5 | Low | 0.2 | 10,000 | 2,000 |
| | | | Sum | 24,700 |

*Plant Factor from WUCOLS

$$ETWU = (51.1)(0.62) \left(\frac{24,700}{0.71} + 0 \right)$$

= 1,102,116 gallons per year

Compare ETWU with MAWA: For this example MAWA = (51.1) (0.62) [(0.7 x 50,000) + (0.3 x 0)] = 1,108,870 gallons per year. The ETWU (1,102,116 gallons per year) is less than MAWA (1,108,870 gallons per year). In this example, the water budget complies with the MAWA.

(2) Example ETWU calculation: total landscape area is 50,000 square feet, 2,000 square feet of which is planted with edible plants. The edible plant area is considered a Special Landscape Area (SLA). The reference evapotranspiration value is 51.1 inches per year. The plant type, plant factor, and hydrozone area are shown in the table below.

| Hydrozone | Plant Water Use Type(s) | Plant Factor (PF)* | Hydrozone Area (HA) (square feet) | PF x HA (square feet) |
|-----------|-------------------------|--------------------|-----------------------------------|-----------------------|
| 1 | High | 0.8 | 7,000 | 5,600 |
| 2 | High | 0.7 | 9,000 | 6,300 |
| 3 | Medium | 0.5 | 15,000 | 7,500 |
| 4 | Low | 0.3 | 7,000 | 2,100 |
| 5 | Low | 0.2 | 10,000 | 2,000 |
| | | | Sum | 23,500 |
| 6 | SLA | 1.0 | 2,000 | 2,000 |

*Plant Factor from WUCOLS

$$ETWU = (51.1)(0.62) \left(\frac{23,500}{0.71} + 2,000 \right)$$

= (31.68) (33,099 + 2,000)

= 1,111,936 gallons per year

Compare ETWU with MAWA. For this example:
MAWA = (51.1) (0.62) [(0.7 x 50,000) + (0.3 x 2,000)]
= 31.68 x [35,000 + 600]
= 31.68 x 35,600
=1,127,808 gallons per year

The ETWU (1,111,936 gallons per year) is less than MAWA (1,127,808 gallons per year). For this example, the water budget complies with the MAWA.

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

§ 492.5 Soil Management Report.

(a) In order to reduce runoff and encourage healthy plant growth, a soil management report shall be completed by the project applicant, or his/her designee, as follows:

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

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

(B) The soil analysis may include:

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

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

(A) If significant mass grading is not planned, the soil analysis report shall be submitted to the local agency as part of the Landscape Documentation Package; or

(B) If significant mass grading is planned, the soil analysis report shall be submitted to the local agency as part of the Certificate of Completion.

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

(4) The project applicant, or his/her designee, shall submit documentation verifying implementation of soil analysis report recommendations to the local agency with Certificate of Completion.

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

§ 492.6 Landscape Design Plan.

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

(1) Plant Material

(A) Any plant may be selected for the landscape, providing the Estimated Total Water Use in the landscape area does not exceed the Maximum Applied Water Allowance. To encourage the efficient use of water, the following is highly recommended:

1. protection and preservation of native species and natural vegetation;
2. selection of water-conserving plant and turf species;

3. selection of plants based on disease and pest resistance;
 4. selection of trees based on applicable local tree ordinances or tree shading guidelines; and
 5. selection of plants from local and regional landscape program plant lists.
- (B) Each hydrozone shall have plant materials with similar water use, with the exception of hydrozones with plants of mixed water use, as specified in Section 492.7(a)(2)(D).
- (C) Plants shall be selected and planted appropriately based upon their adaptability to the climatic, geologic, and topographical conditions of the project site. To encourage the efficient use of water, the following is highly recommended:
1. use the Sunset Western Climate Zone System which takes into account temperature, humidity, elevation, terrain, latitude, and varying degrees of continental and marine influence on local climate;
 2. recognize the horticultural attributes of plants (i.e., mature plant size, invasive surface roots) to minimize damage to property or infrastructure [e.g., buildings, sidewalks, power lines]; and
 3. consider the solar orientation for plant placement to maximize summer shade and winter solar gain.
- (D) Turf is not allowed on slopes greater than 25% where the toe of the slope is adjacent to an impermeable hardscape and where 25% means 1 foot of vertical elevation change for every 4 feet of horizontal length (rise divided by run x 100 = slope percent).
- (E) A landscape design plan for projects in fire-prone areas shall address fire safety and prevention. A defensible space or zone around a building or structure is required per Public Resources Code Section 4291(a) and (b). Avoid fire-prone plant materials and highly flammable mulches.
- (F) The use of invasive and/or noxious plant species is strongly discouraged.
- (G) The architectural guidelines of a common interest development, which include community apartment projects, condominiums, planned developments, and stock cooperatives, shall not prohibit or include conditions that have the effect of prohibiting the use of low-water use plants as a group.
- (2) Water Features
- (A) Recirculating water systems shall be used for water features.
- (B) Where available, recycled water shall be used as a source for decorative water features.
- (C) Surface area of a water feature shall be included in the high water use hydrozone area of the water budget calculation.
- (D) Pool and spa covers are highly recommended.
- (3) Mulch and Amendments
- (A) A minimum two inch (2") layer of mulch shall be applied on all exposed soil surfaces of planting areas except in turf areas, creeping or rooting groundcovers, or direct seeding applications where mulch is contraindicated.
- (B) Stabilizing mulching products shall be used on slopes.
- (C) The mulching portion of the seed/mulch slurry in hydro-seeded applications shall meet the mulching requirement.
- (D) Soil amendments shall be incorporated according to recommendations of the soil report and what is appropriate for the plants selected (see Section 492.5).
- (b) The landscape design plan, at a minimum, shall:
- (1) delineate and label each hydrozone by number, letter, or other method;
 - (2) identify each hydrozone as low, moderate, high water, or mixed water use. Temporarily irrigated areas of the landscape shall be included in the low water use hydrozone for the water budget calculation;
 - (3) identify recreational areas;
 - (4) identify areas permanently and solely dedicated to edible plants;
 - (5) identify areas irrigated with recycled water;
 - (6) identify type of mulch and application depth;
 - (7) identify soil amendments, type, and quantity;
 - (8) identify type and surface area of water features;
 - (9) identify hardscapes (pervious and non-pervious);

- (10) identify location and installation details of any applicable stormwater best management practices that encourage on-site retention and infiltration of stormwater. Stormwater best management practices are encouraged in the landscape design plan and examples include, but are not limited to:
- (A) infiltration beds, swales, and basins that allow water to collect and soak into the ground;
 - (B) constructed wetlands and retention ponds that retain water, handle excess flow, and filter pollutants; and
 - (C) pervious or porous surfaces (e.g., permeable pavers or blocks, pervious or porous concrete, etc.) that minimize runoff.
- (11) identify any applicable rain harvesting or catchment technologies (e.g., rain gardens, cisterns, etc.);
- (12) contain the following statement: "I have complied with the criteria of the ordinance and applied them for the efficient use of water in the landscape design plan"; and
- (13) bear the signature of a licensed landscape architect, licensed landscape contractor, or any other person authorized to design a landscape. (See Sections 5500.1, 5615, 5641, 5641.1, 5641.2, 5641.3, 5641.4, 5641.5, 5641.6, 6701, 7027.5 of the Business and Professions Code, Section 832.27 of Title 16 of the California Code of Regulations, and Section 6721 of the Food and Agriculture Code.)

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

§ 492.7 Irrigation Design Plan.

(a) For the efficient use of water, an irrigation system shall meet all the requirements listed in this section and the manufacturers' recommendations. The irrigation system and its related components shall be planned and designed to allow for proper installation, management, and maintenance. An irrigation design plan meeting the following design criteria shall be submitted as part of the Landscape Documentation Package.

(1) System

(A) Dedicated landscape water meters are highly recommended on landscape areas smaller than 5,000 square feet to facilitate water management.

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

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

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

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

(D) Sensors (rain, freeze, wind, etc.), either integral or auxiliary, that suspend or alter irrigation operation during unfavorable weather conditions shall be required on all irrigation systems, as appropriate for local climatic conditions. Irrigation should be avoided during windy or freezing weather or during rain.

(E) Manual shut-off valves (such as a gate valve, ball valve, or butterfly valve) shall be required, as close as possible to the point of connection of the water supply, to minimize water loss in case of an emergency (such as a main line break) or routine repair.

(F) Backflow prevention devices shall be required to protect the water supply from contamination by the irrigation system. A project applicant shall refer to the applicable local agency code (i.e., public health) for additional backflow prevention requirements.

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

(H) The irrigation system shall be designed to prevent runoff, low head drainage, overspray, or other similar conditions where irrigation water flows onto non-targeted areas, such as adjacent property, non-irrigated areas, hardscapes, roadways, or structures.

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

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

(K) The irrigation system must be designed and installed to meet, at a minimum, the irrigation efficiency criteria as described in Section 492.4 regarding the Maximum Applied Water Allowance.

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

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

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

(O) Head to head coverage is recommended. However, sprinkler spacing shall be designed to achieve the highest possible distribution uniformity using the manufacturer's recommendations.

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

(Q) Check valves or anti-drain valves are required for all irrigation systems.

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

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

1. the landscape area is adjacent to permeable surfacing and no runoff occurs; or
2. the adjacent non-permeable surfaces are designed and constructed to drain entirely to landscaping; or
3. the irrigation designer specifies an alternative design or technology, as part of the Landscape Documentation Package and clearly demonstrates strict adherence to irrigation system design criteria in Section 492.7 (a)(1)(H). Prevention of overspray and runoff must be confirmed during the irrigation audit.

(T) Slopes greater than 25% shall not be irrigated with an irrigation system with a precipitation rate exceeding 0.75 inches per hour. This restriction may be modified if the landscape designer specifies an alternative design or technology, as part of the Landscape Documentation Package, and clearly demonstrates no runoff or erosion will occur. Prevention of runoff and erosion must be confirmed during the irrigation audit.

(2) Hydrozone

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

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

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

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

1. plant factor calculation is based on the proportions of the respective plant water uses and their plant factor; or
 2. the plant factor of the higher water using plant is used for calculations.
- (E) Individual hydrozones that mix high and low water use plants shall not be permitted.
- (F) On the landscape design plan and irrigation design plan, hydrozone areas shall be designated by number, letter, or other designation. On the irrigation design plan, designate the areas irrigated by each valve, and assign a number to each valve. Use this valve number in the Hydrozone Information Table (see Appendix B Section A). This table can also assist with the irrigation audit and programming the controller.
- (b) The irrigation design plan, at a minimum, shall contain:
- (1) location and size of separate water meters for landscape;
 - (2) location, type and size of all components of the irrigation system, including controllers, main and lateral lines, valves, sprinkler heads, moisture sensing devices, rain switches, quick couplers, pressure regulators, and backflow prevention devices;
 - (3) static water pressure at the point of connection to the public water supply;
 - (4) flow rate (gallons per minute), application rate (inches per hour), and design operating pressure (pressure per square inch) for each station;
 - (5) recycled water irrigation systems as specified in Section 492.14;
 - (6) the following statement: "I have complied with the criteria of the ordinance and applied them accordingly for the efficient use of water in the irrigation design plan"; and
 - (7) the signature of a licensed landscape architect, certified irrigation designer, licensed landscape contractor, or any other person authorized to design an irrigation system. (See Sections 5500.1, 5615, 5641, 5641.1, 5641.2, 5641.3, 5641.4, 5641.5, 5641.6, 6701, 7027.5 of the Business and Professions Code, Section 832.27 of Title 16 of the California Code of Regulations, and Section 6721 of the Food and Agricultural Code.)

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

§ 492.8 Grading Design Plan.

- (a) For the efficient use of water, grading of a project site shall be designed to minimize soil erosion, runoff, and water waste. A grading plan shall be submitted as part of the Landscape Documentation Package. A comprehensive grading plan prepared by a civil engineer for other local agency permits satisfies this requirement.
- (1) The project applicant shall submit a landscape grading plan that indicates finished configurations and elevations of the landscape area including:
- (A) height of graded slopes;
 - (B) drainage patterns;
 - (C) pad elevations;
 - (D) finish grade; and
 - (E) stormwater retention improvements, if applicable.
- (2) To prevent excessive erosion and runoff, it is highly recommended that project applicants:
- (A) grade so that all irrigation and normal rainfall remains within property lines and does not drain on to non-permeable hardscapes;
 - (B) avoid disruption of natural drainage patterns and undisturbed soil; and
 - (C) avoid soil compaction in landscape areas.
- (3) The grading design plan shall contain the following statement: "I have complied with the criteria of the ordinance and applied them accordingly for the efficient use of water in the grading design plan" and shall bear the signature of a licensed professional as authorized by law.

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

§ 492.9 Certificate of Completion.

- (a) The Certificate of Completion (see Appendix C for a sample certificate) shall include the following six (6) elements:
- (1) project information sheet that contains:
 - (A) date;
 - (B) project name;
 - (C) project applicant name, telephone, and mailing address;
 - (D) project address and location; and
 - (E) property owner name, telephone, and mailing address;
 - (2) certification by either the signer of the landscape design plan, the signer of the irrigation design plan, or the licensed landscape contractor that the landscape project has been installed per the approved Landscape Documentation Package;
 - (A) where there have been significant changes made in the field during construction, these “as-built” or record drawings shall be included with the certification;
 - (3) irrigation scheduling parameters used to set the controller (see Section 492.10);
 - (4) landscape and irrigation maintenance schedule (see Section 492.11);
 - (5) irrigation audit report (see Section 492.12); and
 - (6) soil analysis report, if not submitted with Landscape Documentation Package, and documentation verifying implementation of soil report recommendations (see Section 492.5).
- (b) The project applicant shall:
- (1) submit the signed Certificate of Completion to the local agency for review;
 - (2) ensure that copies of the approved Certificate of Completion are submitted to the local water purveyor and property owner or his or her designee.
- (c) The local agency shall:
- (1) receive the signed Certificate of Completion from the project applicant;
 - (2) approve or deny the Certificate of Completion. If the Certificate of Completion is denied, the local agency shall provide information to the project applicant regarding reapplication, appeal, or other assistance.

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

§ 492.10 Irrigation Scheduling.

- (a) For the efficient use of water, all irrigation schedules shall be developed, managed, and evaluated to utilize the minimum amount of water required to maintain plant health. Irrigation schedules shall meet the following criteria:
- (1) Irrigation scheduling shall be regulated by automatic irrigation controllers.
 - (2) Overhead irrigation shall be scheduled between 8:00 p.m. and 10:00 a.m. unless weather conditions prevent it. If allowable hours of irrigation differ from the local water purveyor, the stricter of the two shall apply. Operation of the irrigation system outside the normal watering window is allowed for auditing and system maintenance.
 - (3) For implementation of the irrigation schedule, particular attention must be paid to irrigation run times, emission device, flow rate, and current reference evapotranspiration, so that applied water meets the Estimated Total Water Use. Total annual applied water shall be less than or equal to Maximum Applied Water Allowance (MAWA). Actual irrigation schedules shall be regulated by automatic irrigation controllers using current reference evapotranspiration data (e.g., CIMIS) or soil moisture sensor data.
 - (4) Parameters used to set the automatic controller shall be developed and submitted for each of the following:
 - (A) the plant establishment period;

- (B) the established landscape; and
- (C) temporarily irrigated areas.
- (5) Each irrigation schedule shall consider for each station all of the following that apply:
 - (A) irrigation interval (days between irrigation);
 - (B) irrigation run times (hours or minutes per irrigation event to avoid runoff);
 - (C) number of cycle starts required for each irrigation event to avoid runoff;
 - (D) amount of applied water scheduled to be applied on a monthly basis;
 - (E) application rate setting;
 - (F) root depth setting;
 - (G) plant type setting;
 - (H) soil type;
 - (I) slope factor setting;
 - (J) shade factor setting; and
 - (K) irrigation uniformity or efficiency setting.

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

§ 492.11 Landscape and Irrigation Maintenance Schedule.

- (a) Landscapes shall be maintained to ensure water use efficiency. A regular maintenance schedule shall be submitted with the Certificate of Completion.
- (b) A regular maintenance schedule shall include, but not be limited to, routine inspection; adjustment and repair of the irrigation system and its components; aerating and dethatching turf areas; replenishing mulch; fertilizing; pruning; weeding in all landscape areas, and removing and obstruction to emission devices. Operation of the irrigation system outside the normal watering window is allowed for auditing and system maintenance.
- (c) Repair of all irrigation equipment shall be done with the originally installed components or their equivalents.
- (d) A project applicant is encouraged to implement sustainable or environmentally-friendly practices for overall landscape maintenance.

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

§ 492.12 Irrigation Audit, Irrigation Survey, and Irrigation Water Use Analysis.

- (a) All landscape irrigation audits shall be conducted by a certified landscape irrigation auditor.
- (b) For new construction and rehabilitated landscape projects installed after January 1, 2010, as described in Section 490.1:
 - (1) the project applicant shall submit an irrigation audit report with the Certificate of Completion to the local agency that may include, but is not limited to: inspection, system tune-up, system test with distribution uniformity, reporting overspray or run off that causes overland flow, and preparation of an irrigation schedule;
 - (2) the local agency shall administer programs that may include, but not be limited to, irrigation water use analysis, irrigation audits, and irrigation surveys for compliance with the Maximum Applied Water Allowance.

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

§ 492.13 Irrigation Efficiency.

(a) For the purpose of determining Maximum Applied Water Allowance, average irrigation efficiency is assumed to be 0.71. Irrigation systems shall be designed, maintained, and managed to meet or exceed an average landscape irrigation efficiency of 0.71.

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

§ 492.14 Recycled Water.

(a) The installation of recycled water irrigation systems shall allow for the current and future use of recycled water, unless a written exemption has been granted as described in Section 492.14(b).

(b) Irrigation systems and decorative water features shall use recycled water unless a written exemption has been granted by the local water purveyor stating that recycled water meeting all public health codes and standards is not available and will not be available for the foreseeable future.

(c) All recycled water irrigation systems shall be designed and operated in accordance with all applicable local and State laws.

(d) Landscapes using recycled water are considered Special Landscape Areas. The ET Adjustment Factor for Special Landscape Areas shall not exceed 1.0.

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

§ 492.15 Stormwater Management.

(a) Stormwater management practices minimize runoff and increase infiltration which recharges groundwater and improves water quality. Implementing stormwater best management practices into the landscape and grading design plans to minimize runoff and to increase on-site retention and infiltration are encouraged.

(b) Project applicants shall refer to the local agency or Regional Water Quality Control Board for information on any applicable stormwater ordinances and stormwater management plans.

(c) Rain gardens, cisterns, and other landscapes features and practices that increase rainwater capture and create opportunities for infiltration and/or onsite storage are recommended.

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

§ 492.16 Public Education.

(a) Publications. Education is a critical component to promote the efficient use of water in landscapes. The use of appropriate principles of design, installation, management and maintenance that save water is encouraged in the community.

(1) A local agency shall provide information to owners of new, single-family residential homes regarding the design, installation, management, and maintenance of water efficient landscapes.

(b) Model Homes. All model homes that are landscaped shall use signs and written information to demonstrate the principles of water efficient landscapes described in this ordinance.

(1) Signs shall be used to identify the model as an example of a water efficient landscape featuring elements such as hydrozones, irrigation equipment, and others that contribute to the overall water efficient theme.

(2) Information shall be provided about designing, installing, managing, and maintaining water efficient landscapes.

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

§ 492.17 Environmental Review.

(a) The local agency must comply with the California Environmental Quality Act (CEQA), as appropriate.

Note: Authority cited: Section 21082, Public Resources Code. Reference: Sections 21080, 21082, Public Resources Code.

§ 493. Provisions for Existing Landscapes.

(a) A local agency may designate another agency, such as a water purveyor, to implement some or all of the requirements contained in this ordinance. Local agencies may collaborate with water purveyors to define each entity's specific responsibilities relating to this ordinance.

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

§ 493.1 Irrigation Audit, Irrigation Survey, and Irrigation Water Use Analysis.

(a) This section, 493.1, shall apply to all existing landscapes that were installed before January 1, 2010 and are over one acre in size.

(1) For all landscapes in 493.1(a) that have a water meter, the local agency shall administer programs that may include, but not be limited to, irrigation water use analyses, irrigation surveys, and irrigation audits to evaluate water use and provide recommendations as necessary to reduce landscape water use to a level that does not exceed the Maximum Applied Water Allowance for existing landscapes. The Maximum Applied Water Allowance for existing landscapes shall be calculated as: $MAWA = (0.8)(ET_o)(LA)(0.62)$.

(2) For all landscapes in 493.1(a), that do not have a meter, the local agency shall administer programs that may include, but not be limited to, irrigation surveys and irrigation audits to evaluate water use and provide recommendations as necessary in order to prevent water waste.

(b) All landscape irrigation audits shall be conducted by a certified landscape irrigation auditor.

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

§ 493.2 Water Waste Prevention.

(a) Local agencies shall prevent water waste resulting from inefficient landscape irrigation by prohibiting runoff from leaving the target landscape due to low head drainage, overspray, or other similar conditions where water flows onto adjacent property, non-irrigated areas, walks, roadways, parking lots, or structures. Penalties for violation of these prohibitions shall be established locally.

(b) Restrictions regarding overspray and runoff may be modified if:

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

(2) the adjacent non-permeable surfaces are designed and constructed to drain entirely to landscaping.

Note: Authority cited: Section 65594, Government Code. Reference: Section 65596, Government Code.

§ 494. Effective Precipitation.

(a) A local agency may consider Effective Precipitation (25% of annual precipitation) in tracking water use and may use the following equation to calculate Maximum Applied Water Allowance:

$MAWA = (ET_o - Eppt)(0.62) [(0.7 \times LA) + (0.3 \times SLA)]$.

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

Appendices.

Appendix A. Reference Evapotranspiration (ET_o) Table.

| Appendix A - Reference Evapotranspiration (ETo) Table* | | | | | | | | | | | | | |
|---|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|-------------------|
| County and City | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Annual ETo |
| ALAMEDA | | | | | | | | | | | | | |
| Fremont | 1.5 | 1.9 | 3.4 | 4.7 | 5.4 | 6.3 | 6.7 | 6.0 | 4.5 | 3.4 | 1.8 | 1.5 | 47.0 |
| Livermore | 1.2 | 1.5 | 2.9 | 4.4 | 5.9 | 6.6 | 7.4 | 6.4 | 5.3 | 3.2 | 1.5 | 0.9 | 47.2 |
| Oakland | 1.5 | 1.5 | 2.8 | 3.9 | 5.1 | 5.3 | 6.0 | 5.5 | 4.8 | 3.1 | 1.4 | 0.9 | 41.8 |
| Oakland Foothills | 1.1 | 1.4 | 2.7 | 3.7 | 5.1 | 6.4 | 5.8 | 4.9 | 3.6 | 2.6 | 1.4 | 1.0 | 39.6 |
| Pleasanton | 0.8 | 1.5 | 2.9 | 4.4 | 5.6 | 6.7 | 7.4 | 6.4 | 4.7 | 3.3 | 1.5 | 1.0 | 46.2 |
| Union City | 1.4 | 1.8 | 3.1 | 4.2 | 5.4 | 5.9 | 6.4 | 5.7 | 4.4 | 3.1 | 1.5 | 1.2 | 44.2 |
| ALPINE | | | | | | | | | | | | | |
| Markleeville | 0.7 | 0.9 | 2.0 | 3.5 | 5.0 | 6.1 | 7.3 | 6.4 | 4.4 | 2.6 | 1.2 | 0.5 | 40.6 |
| AMADOR | | | | | | | | | | | | | |
| Jackson | 1.2 | 1.5 | 2.8 | 4.4 | 6.0 | 7.2 | 7.9 | 7.2 | 5.3 | 3.2 | 1.4 | 0.9 | 48.9 |
| Shanandoah Valley | 1.0 | 1.7 | 2.9 | 4.4 | 5.6 | 6.8 | 7.9 | 7.1 | 5.2 | 3.6 | 1.7 | 1.0 | 48.8 |
| BUTTE | | | | | | | | | | | | | |
| Chico | 1.2 | 1.8 | 2.9 | 4.7 | 6.1 | 7.4 | 8.5 | 7.3 | 5.4 | 3.7 | 1.7 | 1.0 | 51.7 |
| Durham | 1.1 | 1.8 | 3.2 | 5.0 | 6.5 | 7.4 | 7.8 | 6.9 | 5.3 | 3.6 | 1.7 | 1.0 | 51.1 |
| Gridley | 1.2 | 1.8 | 3.0 | 4.7 | 6.1 | 7.7 | 8.5 | 7.1 | 5.4 | 3.7 | 1.7 | 1.0 | 51.9 |
| Oroville | 1.2 | 1.7 | 2.8 | 4.7 | 6.1 | 7.6 | 8.5 | 7.3 | 5.3 | 3.7 | 1.7 | 1.0 | 51.5 |
| CALAVERAS | | | | | | | | | | | | | |
| San Andreas | 1.2 | 1.5 | 2.8 | 4.4 | 6.0 | 7.3 | 7.9 | 7.0 | 5.3 | 3.2 | 1.4 | 0.7 | 48.8 |
| COLUSA | | | | | | | | | | | | | |
| Colusa | 1.0 | 1.7 | 3.4 | 5.0 | 6.4 | 7.6 | 8.3 | 7.2 | 5.4 | 3.8 | 1.8 | 1.1 | 52.8 |
| Williams | 1.2 | 1.7 | 2.9 | 4.5 | 6.1 | 7.2 | 8.5 | 7.3 | 5.3 | 3.4 | 1.6 | 1.0 | 50.8 |
| CONTRA COSTA | | | | | | | | | | | | | |
| Benicia | 1.3 | 1.4 | 2.7 | 3.8 | 4.9 | 5.0 | 6.4 | 5.5 | 4.4 | 2.9 | 1.2 | 0.7 | 40.3 |
| Brentwood | 1.0 | 1.5 | 2.9 | 4.5 | 6.1 | 7.1 | 7.9 | 6.7 | 5.2 | 3.2 | 1.4 | 0.7 | 48.3 |
| Concord | 1.1 | 1.4 | 2.4 | 4.0 | 5.5 | 5.9 | 7.0 | 6.0 | 4.8 | 3.2 | 1.3 | 0.7 | 43.4 |
| Courtland | 0.9 | 1.5 | 2.9 | 4.4 | 6.1 | 6.9 | 7.9 | 6.7 | 5.3 | 3.2 | 1.4 | 0.7 | 48.0 |
| Martinez | 1.2 | 1.4 | 2.4 | 3.9 | 5.3 | 5.6 | 6.7 | 5.6 | 4.7 | 3.1 | 1.2 | 0.7 | 41.8 |
| Moraga | 1.2 | 1.5 | 3.4 | 4.2 | 5.5 | 6.1 | 6.7 | 5.9 | 4.6 | 3.2 | 1.6 | 1.0 | 44.9 |
| Pittsburg | 1.0 | 1.5 | 2.8 | 4.1 | 5.6 | 6.4 | 7.4 | 6.4 | 5.0 | 3.2 | 1.3 | 0.7 | 45.4 |
| Walnut Creek | 0.8 | 1.5 | 2.9 | 4.4 | 5.6 | 6.7 | 7.4 | 6.4 | 4.7 | 3.3 | 1.5 | 1.0 | 46.2 |
| DEL NORTE | | | | | | | | | | | | | |
| Crescent City | 0.5 | 0.9 | 2.0 | 3.0 | 3.7 | 3.5 | 4.3 | 3.7 | 3.0 | 2.0 | 0.9 | 0.5 | 27.7 |
| EL DORADO | | | | | | | | | | | | | |
| Camino | 0.9 | 1.7 | 2.5 | 3.9 | 5.9 | 7.2 | 7.8 | 6.8 | 5.1 | 3.1 | 1.5 | 0.9 | 47.3 |
| FRESNO | | | | | | | | | | | | | |
| Clovis | 1.0 | 1.5 | 3.2 | 4.8 | 6.4 | 7.7 | 8.5 | 7.3 | 5.3 | 3.4 | 1.4 | 0.7 | 51.4 |
| Coalinga | 1.2 | 1.7 | 3.1 | 4.6 | 6.2 | 7.2 | 8.5 | 7.3 | 5.3 | 3.4 | 1.6 | 0.7 | 50.9 |
| Firebaugh | 1.0 | 1.8 | 3.7 | 5.7 | 7.3 | 8.1 | 8.2 | 7.2 | 5.5 | 3.9 | 2.0 | 1.1 | 55.4 |
| FivePoints | 1.3 | 2.0 | 4.0 | 6.1 | 7.7 | 8.5 | 8.7 | 8.0 | 6.2 | 4.5 | 2.4 | 1.2 | 60.4 |
| FRESNO | | | | | | | | | | | | | |
| Fresno | 0.9 | 1.7 | 3.3 | 4.8 | 6.7 | 7.8 | 8.4 | 7.1 | 5.2 | 3.2 | 1.4 | 0.6 | 51.1 |
| Fresno State | 0.9 | 1.6 | 3.2 | 5.2 | 7.0 | 8.0 | 8.7 | 7.6 | 5.4 | 3.6 | 1.7 | 0.9 | 53.7 |
| Friant | 1.2 | 1.5 | 3.1 | 4.7 | 6.4 | 7.7 | 8.5 | 7.3 | 5.3 | 3.4 | 1.4 | 0.7 | 51.3 |
| Kerman | 0.9 | 1.5 | 3.2 | 4.8 | 6.6 | 7.7 | 8.4 | 7.2 | 5.3 | 3.4 | 1.4 | 0.7 | 51.2 |
| Kingsburg | 1.0 | 1.5 | 3.4 | 4.8 | 6.6 | 7.7 | 8.4 | 7.2 | 5.3 | 3.4 | 1.4 | 0.7 | 51.6 |
| Mendota | 1.5 | 2.5 | 4.6 | 6.2 | 7.9 | 8.6 | 8.8 | 7.5 | 5.9 | 4.5 | 2.4 | 1.5 | 61.7 |
| Orange Cove | 1.2 | 1.9 | 3.5 | 4.7 | 7.4 | 8.5 | 8.9 | 7.9 | 5.9 | 3.7 | 1.8 | 1.2 | 56.7 |
| Panoche | 1.1 | 2.0 | 4.0 | 5.6 | 7.8 | 8.5 | 8.3 | 7.3 | 5.6 | 3.9 | 1.8 | 1.2 | 57.2 |
| Parlier | 1.0 | 1.9 | 3.6 | 5.2 | 6.8 | 7.6 | 8.1 | 7.0 | 5.1 | 3.4 | 1.7 | 0.9 | 52.0 |
| Reedley | 1.1 | 1.5 | 3.2 | 4.7 | 6.4 | 7.7 | 8.5 | 7.3 | 5.3 | 3.4 | 1.4 | 0.7 | 51.3 |
| Westlands | 0.9 | 1.7 | 3.8 | 6.3 | 8.0 | 8.6 | 8.6 | 7.8 | 5.9 | 4.3 | 2.1 | 1.1 | 58.8 |

Appendix A - Reference Evapotranspiration (ETo) Table*

| County and City | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Annual ETo |
|----------------------|-----|-----|-----|-----|------|------|------|------|-----|-----|-----|-----|------------|
| GLENN | | | | | | | | | | | | | |
| Orland | 1.1 | 1.8 | 3.4 | 5.0 | 6.4 | 7.5 | 7.9 | 6.7 | 5.3 | 3.9 | 1.8 | 1.4 | 52.1 |
| Willows | 1.2 | 1.7 | 2.9 | 4.7 | 6.1 | 7.2 | 8.5 | 7.3 | 5.3 | 3.6 | 1.7 | 1.0 | 51.3 |
| HUMBOLDT | | | | | | | | | | | | | |
| Eureka | 0.5 | 1.1 | 2.0 | 3.0 | 3.7 | 3.7 | 3.7 | 3.7 | 3.0 | 2.0 | 0.9 | 0.5 | 27.5 |
| Ferndale | 0.5 | 1.1 | 2.0 | 3.0 | 3.7 | 3.7 | 3.7 | 3.7 | 3.0 | 2.0 | 0.9 | 0.5 | 27.5 |
| Garberville | 0.6 | 1.2 | 2.2 | 3.1 | 4.5 | 5.0 | 5.5 | 4.9 | 3.8 | 2.4 | 1.0 | 0.7 | 34.9 |
| Hoopla | 0.5 | 1.1 | 2.1 | 3.0 | 4.4 | 5.4 | 6.1 | 5.1 | 3.8 | 2.4 | 0.9 | 0.7 | 35.6 |
| IMPERIAL | | | | | | | | | | | | | |
| Brawley | 2.8 | 3.8 | 5.9 | 8.0 | 10.4 | 11.5 | 11.7 | 10.0 | 8.4 | 6.2 | 3.5 | 2.1 | 84.2 |
| Calipatria/Mulberry | 2.4 | 3.2 | 5.1 | 6.8 | 8.6 | 9.2 | 9.2 | 8.6 | 7.0 | 5.2 | 3.1 | 2.3 | 70.7 |
| El Centro | 2.7 | 3.5 | 5.6 | 7.9 | 10.1 | 11.1 | 11.6 | 9.5 | 8.3 | 6.1 | 3.3 | 2.0 | 81.7 |
| Holtville | 2.8 | 3.8 | 5.9 | 7.9 | 10.4 | 11.6 | 12.0 | 10.0 | 8.6 | 6.2 | 3.5 | 2.1 | 84.7 |
| Meloland | 2.5 | 3.2 | 5.5 | 7.5 | 8.9 | 9.2 | 9.0 | 8.5 | 6.8 | 5.3 | 3.1 | 2.2 | 71.6 |
| Palo Verde II | 2.5 | 3.3 | 5.7 | 6.9 | 8.5 | 8.9 | 8.6 | 7.9 | 6.2 | 4.5 | 2.9 | 2.3 | 68.2 |
| Seeley | 2.7 | 3.5 | 5.9 | 7.7 | 9.7 | 10.1 | 9.3 | 8.3 | 6.9 | 5.5 | 3.4 | 2.2 | 75.4 |
| Westmoreland | 2.4 | 3.3 | 5.3 | 6.9 | 8.7 | 9.6 | 9.6 | 8.7 | 6.9 | 5.0 | 3.0 | 2.2 | 71.4 |
| Yuma | 2.5 | 3.4 | 5.3 | 6.9 | 8.7 | 9.6 | 9.6 | 8.7 | 6.9 | 5.0 | 3.0 | 2.2 | 71.6 |
| INYO | | | | | | | | | | | | | |
| Bishop | 1.7 | 2.7 | 4.8 | 6.7 | 8.2 | 10.9 | 7.4 | 9.6 | 7.4 | 4.8 | 2.5 | 1.6 | 68.3 |
| Death Valley Jct | 2.2 | 3.3 | 5.4 | 7.7 | 9.8 | 11.1 | 11.4 | 10.1 | 8.3 | 5.4 | 2.9 | 1.7 | 79.1 |
| Independence | 1.7 | 2.7 | 3.4 | 6.6 | 8.5 | 9.5 | 9.8 | 8.5 | 7.1 | 3.9 | 2.0 | 1.5 | 65.2 |
| Lower Haiwee Res. | 1.8 | 2.7 | 4.4 | 7.1 | 8.5 | 9.5 | 9.8 | 8.5 | 7.1 | 4.2 | 2.6 | 1.5 | 67.6 |
| Oasis | 2.7 | 2.8 | 5.9 | 8.0 | 10.4 | 11.7 | 11.6 | 10.0 | 8.4 | 6.2 | 3.4 | 2.1 | 83.1 |
| KERN | | | | | | | | | | | | | |
| Arvin | 1.2 | 1.8 | 3.5 | 4.7 | 6.6 | 7.4 | 8.1 | 7.3 | 5.3 | 3.4 | 1.7 | 1.0 | 51.9 |
| Bakersfield | 1.0 | 1.8 | 3.5 | 4.7 | 6.6 | 7.7 | 8.5 | 7.3 | 5.3 | 3.5 | 1.6 | 0.9 | 52.4 |
| Bakersfield/Bonanza | 1.2 | 2.2 | 3.7 | 5.7 | 7.4 | 8.2 | 8.7 | 7.8 | 5.7 | 4.0 | 2.1 | 1.2 | 57.9 |
| Bakersfield/Greenlee | 1.2 | 2.2 | 3.7 | 5.7 | 7.4 | 8.2 | 8.7 | 7.8 | 5.7 | 4.0 | 2.1 | 1.2 | 57.9 |
| KERN | | | | | | | | | | | | | |
| Belridge | 1.4 | 2.2 | 4.1 | 5.5 | 7.7 | 8.5 | 8.6 | 7.8 | 6.0 | 3.8 | 2.0 | 1.5 | 59.2 |
| Blackwells Corner | 1.4 | 2.1 | 3.8 | 5.4 | 7.0 | 7.8 | 8.5 | 7.7 | 5.8 | 3.9 | 1.9 | 1.2 | 56.6 |
| Buttonwillow | 1.0 | 1.8 | 3.2 | 4.7 | 6.6 | 7.7 | 8.5 | 7.3 | 5.4 | 3.4 | 1.5 | 0.9 | 52.0 |
| China Lake | 2.1 | 3.2 | 5.3 | 7.7 | 9.2 | 10.0 | 11.0 | 9.8 | 7.3 | 4.9 | 2.7 | 1.7 | 74.8 |
| Delano | 0.9 | 1.8 | 3.4 | 4.7 | 6.6 | 7.7 | 8.5 | 7.3 | 5.4 | 3.4 | 1.4 | 0.7 | 52.0 |
| Famoso | 1.3 | 1.9 | 3.5 | 4.8 | 6.7 | 7.6 | 8.0 | 7.3 | 5.5 | 3.5 | 1.7 | 1.3 | 53.1 |
| Grapevine | 1.3 | 1.8 | 3.1 | 4.4 | 5.6 | 6.8 | 7.6 | 6.8 | 5.9 | 3.4 | 1.9 | 1.0 | 49.5 |
| Inyokern | 2.0 | 3.1 | 4.9 | 7.3 | 8.5 | 9.7 | 11.0 | 9.4 | 7.1 | 5.1 | 2.6 | 1.7 | 72.4 |
| Isabella Dam | 1.2 | 1.4 | 2.8 | 4.4 | 5.8 | 7.3 | 7.9 | 7.0 | 5.0 | 3.2 | 1.7 | 0.9 | 48.4 |
| Lamont | 1.3 | 2.4 | 4.4 | 4.6 | 6.5 | 7.0 | 8.8 | 7.6 | 5.7 | 3.7 | 1.6 | 0.8 | 54.4 |
| Lost Hills | 1.6 | 2.2 | 3.7 | 5.1 | 6.8 | 7.8 | 8.7 | 7.8 | 5.7 | 4.0 | 2.1 | 1.6 | 57.1 |
| McFarland/Kern | 1.2 | 2.1 | 3.7 | 5.6 | 7.3 | 8.0 | 8.3 | 7.4 | 5.6 | 4.1 | 2.0 | 1.2 | 56.5 |
| Shafter | 1.0 | 1.7 | 3.4 | 5.0 | 6.6 | 7.7 | 8.3 | 7.3 | 5.4 | 3.4 | 1.5 | 0.9 | 52.1 |
| Taft | 1.3 | 1.8 | 3.1 | 4.3 | 6.2 | 7.3 | 8.5 | 7.3 | 5.4 | 3.4 | 1.7 | 1.0 | 51.2 |
| Tehachapi | 1.4 | 1.8 | 3.2 | 5.0 | 6.1 | 7.7 | 7.9 | 7.3 | 5.9 | 3.4 | 2.1 | 1.2 | 52.9 |
| KINGS | | | | | | | | | | | | | |
| Caruthers | 1.6 | 2.5 | 4.0 | 5.7 | 7.8 | 8.7 | 9.3 | 8.4 | 6.3 | 4.4 | 2.4 | 1.6 | 62.7 |
| Corcoran | 1.6 | 2.2 | 3.7 | 5.1 | 6.8 | 7.8 | 8.7 | 7.8 | 5.7 | 4.0 | 2.1 | 1.6 | 57.1 |
| Hanford | 0.9 | 1.5 | 3.4 | 5.0 | 6.6 | 7.7 | 8.3 | 7.2 | 5.4 | 3.4 | 1.4 | 0.7 | 51.5 |
| Kettleman | 1.1 | 2.0 | 4.0 | 6.0 | 7.5 | 8.5 | 9.1 | 8.2 | 6.1 | 4.5 | 2.2 | 1.1 | 60.2 |
| Lemoore | 0.9 | 1.5 | 3.4 | 5.0 | 6.6 | 7.7 | 8.3 | 7.3 | 5.4 | 3.4 | 1.4 | 0.7 | 51.7 |
| Stratford | 0.9 | 1.9 | 3.9 | 6.1 | 7.8 | 8.6 | 8.8 | 7.7 | 5.9 | 4.1 | 2.1 | 1.0 | 58.7 |

| Appendix A - Reference Evapotranspiration (ETo) Table* | | | | | | | | | | | | | |
|---|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|-------------------|
| County and City | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Annual ETo |
| LAKE | | | | | | | | | | | | | |
| Lakeport | 1.1 | 1.3 | 2.6 | 3.5 | 5.1 | 6.0 | 7.3 | 6.1 | 4.7 | 2.9 | 1.2 | 0.9 | 42.8 |
| Lower Lake | 1.2 | 1.4 | 2.7 | 4.5 | 5.3 | 6.3 | 7.4 | 6.4 | 5.0 | 3.1 | 1.3 | 0.9 | 45.4 |
| LASSEN | | | | | | | | | | | | | |
| Buntingville | 1.0 | 1.7 | 3.5 | 4.9 | 6.2 | 7.3 | 8.4 | 7.5 | 5.4 | 3.4 | 1.5 | 0.9 | 51.8 |
| Ravendale | 0.6 | 1.1 | 2.3 | 4.1 | 5.6 | 6.7 | 7.9 | 7.3 | 4.7 | 2.8 | 1.2 | 0.5 | 44.9 |
| Susanville | 0.7 | 1.0 | 2.2 | 4.1 | 5.6 | 6.5 | 7.8 | 7.0 | 4.6 | 2.8 | 1.2 | 0.5 | 44.0 |
| LOS ANGELES | | | | | | | | | | | | | |
| Burbank | 2.1 | 2.8 | 3.7 | 4.7 | 5.1 | 6.0 | 6.6 | 6.7 | 5.4 | 4.0 | 2.6 | 2.0 | 51.7 |
| Claremont | 2.0 | 2.3 | 3.4 | 4.6 | 5.0 | 6.0 | 7.0 | 7.0 | 5.3 | 4.0 | 2.7 | 2.1 | 51.3 |
| El Dorado | 1.7 | 2.2 | 3.6 | 4.8 | 5.1 | 5.7 | 5.9 | 5.9 | 4.4 | 3.2 | 2.2 | 1.7 | 46.3 |
| Glendale | 2.0 | 2.2 | 3.3 | 3.8 | 4.7 | 4.8 | 5.7 | 5.6 | 4.3 | 3.3 | 2.2 | 1.8 | 43.7 |
| Glendora | 2.0 | 2.5 | 3.6 | 4.9 | 5.4 | 6.1 | 7.3 | 6.8 | 5.7 | 4.2 | 2.6 | 2.0 | 53.1 |
| Gorman | 1.6 | 2.2 | 3.4 | 4.6 | 5.5 | 7.4 | 7.7 | 7.1 | 5.9 | 3.6 | 2.4 | 1.1 | 52.4 |
| Hollywood Hills | 2.1 | 2.2 | 3.8 | 5.4 | 6.0 | 6.5 | 6.7 | 6.4 | 5.2 | 3.7 | 2.8 | 2.1 | 52.8 |
| Lancaster | 2.1 | 3.0 | 4.6 | 5.9 | 8.5 | 9.7 | 11.0 | 9.8 | 7.3 | 4.6 | 2.8 | 1.7 | 71.1 |
| Long Beach | 1.8 | 2.1 | 3.3 | 3.9 | 4.5 | 4.3 | 5.3 | 4.7 | 3.7 | 2.8 | 1.8 | 1.5 | 39.7 |
| Los Angeles | 2.2 | 2.7 | 3.7 | 4.7 | 5.5 | 5.8 | 6.2 | 5.9 | 5.0 | 3.9 | 2.6 | 1.9 | 50.1 |
| LOS ANGELES | | | | | | | | | | | | | |
| Monrovia | 2.2 | 2.3 | 3.8 | 4.3 | 5.5 | 5.9 | 6.9 | 6.4 | 5.1 | 3.2 | 2.5 | 2.0 | 50.2 |
| Palmdale | 2.0 | 2.6 | 4.6 | 6.2 | 7.3 | 8.9 | 9.8 | 9.0 | 6.5 | 4.7 | 2.7 | 2.1 | 66.2 |
| Pasadena | 2.1 | 2.7 | 3.7 | 4.7 | 5.1 | 6.0 | 7.1 | 6.7 | 5.6 | 4.2 | 2.6 | 2.0 | 52.3 |
| Pearblossom | 1.7 | 2.4 | 3.7 | 4.7 | 7.3 | 7.7 | 9.9 | 7.9 | 6.4 | 4.0 | 2.6 | 1.6 | 59.9 |
| Pomona | 1.7 | 2.0 | 3.4 | 4.5 | 5.0 | 5.8 | 6.5 | 6.4 | 4.7 | 3.5 | 2.3 | 1.7 | 47.5 |
| Redondo Beach | 2.2 | 2.4 | 3.3 | 3.8 | 4.5 | 4.7 | 5.4 | 4.8 | 4.4 | 2.8 | 2.4 | 2.0 | 42.6 |
| San Fernando | 2.0 | 2.7 | 3.5 | 4.6 | 5.5 | 5.9 | 7.3 | 6.7 | 5.3 | 3.9 | 2.6 | 2.0 | 52.0 |
| Santa Clarita | 2.8 | 2.8 | 4.1 | 5.6 | 6.0 | 6.8 | 7.6 | 7.8 | 5.8 | 5.2 | 3.7 | 3.2 | 61.5 |
| Santa Monica | 1.8 | 2.1 | 3.3 | 4.5 | 4.7 | 5.0 | 5.4 | 5.4 | 3.9 | 3.4 | 2.4 | 2.2 | 44.2 |
| MADERA | | | | | | | | | | | | | |
| Chowchilla | 1.0 | 1.4 | 3.2 | 4.7 | 6.6 | 7.8 | 8.5 | 7.3 | 5.3 | 3.4 | 1.4 | 0.7 | 51.4 |
| Madera | 0.9 | 1.4 | 3.2 | 4.8 | 6.6 | 7.8 | 8.5 | 7.3 | 5.3 | 3.4 | 1.4 | 0.7 | 51.5 |
| Raymond | 1.2 | 1.5 | 3.0 | 4.6 | 6.1 | 7.6 | 8.4 | 7.3 | 5.2 | 3.4 | 1.4 | 0.7 | 50.5 |
| MARIN | | | | | | | | | | | | | |
| Black Point | 1.1 | 1.7 | 3.0 | 4.2 | 5.2 | 6.2 | 6.6 | 5.8 | 4.3 | 2.8 | 1.3 | 0.9 | 43.0 |
| Novato | 1.3 | 1.5 | 2.4 | 3.5 | 4.4 | 6.0 | 5.9 | 5.4 | 4.4 | 2.8 | 1.4 | 0.7 | 39.8 |
| Point San Pedro | 1.1 | 1.7 | 3.0 | 4.2 | 5.2 | 6.2 | 6.6 | 5.8 | 4.3 | 2.8 | 1.3 | 0.9 | 43.0 |
| San Rafael | 1.2 | 1.3 | 2.4 | 3.3 | 4.0 | 4.8 | 4.8 | 4.9 | 4.3 | 2.7 | 1.3 | 0.7 | 35.8 |
| MARIPOSA | | | | | | | | | | | | | |
| Coulterville | 1.1 | 1.5 | 2.8 | 4.4 | 5.9 | 7.3 | 8.1 | 7.0 | 5.3 | 3.4 | 1.4 | 0.7 | 48.8 |
| Mariposa | 1.1 | 1.5 | 2.8 | 4.4 | 5.9 | 7.4 | 8.2 | 7.1 | 5.0 | 3.4 | 1.4 | 0.7 | 49.0 |
| Yosemite Village | 0.7 | 1.0 | 2.3 | 3.7 | 5.1 | 6.5 | 7.1 | 6.1 | 4.4 | 2.9 | 1.1 | 0.6 | 41.4 |
| MENDOCINO | | | | | | | | | | | | | |
| Fort Bragg | 0.9 | 1.3 | 2.2 | 3.0 | 3.7 | 3.5 | 3.7 | 3.7 | 3.0 | 2.3 | 1.2 | 0.7 | 29.0 |
| Hopland | 1.1 | 1.3 | 2.6 | 3.4 | 5.0 | 5.9 | 6.5 | 5.7 | 4.5 | 2.8 | 1.3 | 0.7 | 40.9 |
| Point Arena | 1.0 | 1.3 | 2.3 | 3.0 | 3.7 | 3.9 | 3.7 | 3.7 | 3.0 | 2.3 | 1.2 | 0.7 | 29.6 |
| Sanel Valley | 1.0 | 1.6 | 3.0 | 4.6 | 6.0 | 7.0 | 8.0 | 7.0 | 5.2 | 3.4 | 1.4 | 0.9 | 49.1 |
| Ukiah | 1.0 | 1.3 | 2.6 | 3.3 | 5.0 | 5.8 | 6.7 | 5.9 | 4.5 | 2.8 | 1.3 | 0.7 | 40.9 |
| MERCED | | | | | | | | | | | | | |
| Kesterson | 0.9 | 1.7 | 3.4 | 5.5 | 7.3 | 8.2 | 8.6 | 7.4 | 5.5 | 3.8 | 1.8 | 0.9 | 55.1 |
| Los Banos | 1.0 | 1.5 | 3.2 | 4.7 | 6.1 | 7.4 | 8.2 | 7.0 | 5.3 | 3.4 | 1.4 | 0.7 | 50.0 |
| Merced | 1.0 | 1.5 | 3.2 | 4.7 | 6.6 | 7.9 | 8.5 | 7.2 | 5.3 | 3.4 | 1.4 | 0.7 | 51.5 |

| Appendix A - Reference Evapotranspiration (ETo) Table* | | | | | | | | | | | | | |
|---|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|-------------------|
| County and City | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Annual ETo |
| MODOC | | | | | | | | | | | | | |
| Modoc/Alturas | 0.9 | 1.4 | 2.8 | 3.7 | 5.1 | 6.2 | 7.5 | 6.6 | 4.6 | 2.8 | 1.2 | 0.7 | 43.2 |
| MONO | | | | | | | | | | | | | |
| Bridgeport | 0.7 | 0.9 | 2.2 | 3.8 | 5.5 | 6.6 | 7.4 | 6.7 | 4.7 | 2.7 | 1.2 | 0.5 | 43.0 |
| MONTEREY | | | | | | | | | | | | | |
| Arroyo Seco | 1.5 | 2.0 | 3.7 | 5.4 | 6.3 | 7.3 | 7.2 | 6.7 | 5.0 | 3.9 | 2.0 | 1.6 | 52.6 |
| Castroville | 1.4 | 1.7 | 3.0 | 4.2 | 4.6 | 4.8 | 4.0 | 3.8 | 3.0 | 2.6 | 1.6 | 1.4 | 36.2 |
| Gonzales | 1.3 | 1.7 | 3.4 | 4.7 | 5.4 | 6.3 | 6.3 | 5.9 | 4.4 | 3.4 | 1.9 | 1.3 | 45.7 |
| MONTEREY | | | | | | | | | | | | | |
| Greenfield | 1.8 | 2.2 | 3.4 | 4.8 | 5.6 | 6.3 | 6.5 | 6.2 | 4.8 | 3.7 | 2.4 | 1.8 | 49.5 |
| King City | 1.7 | 2.0 | 3.4 | 4.4 | 4.4 | 5.6 | 6.1 | 6.7 | 6.5 | 5.2 | 2.2 | 1.3 | 49.6 |
| King City-Oasis Rd. | 1.4 | 1.9 | 3.6 | 5.3 | 6.5 | 7.3 | 7.4 | 6.8 | 5.1 | 4.0 | 2.0 | 1.5 | 52.7 |
| Long Valley | 1.5 | 1.9 | 3.2 | 4.1 | 5.8 | 6.5 | 7.3 | 6.7 | 5.3 | 3.6 | 2.0 | 1.2 | 49.1 |
| Monterey | 1.7 | 1.8 | 2.7 | 3.5 | 4.0 | 4.1 | 4.3 | 4.2 | 3.5 | 2.8 | 1.9 | 1.5 | 36.0 |
| Pajaro | 1.8 | 2.2 | 3.7 | 4.8 | 5.3 | 5.7 | 5.6 | 5.3 | 4.3 | 3.4 | 2.4 | 1.8 | 46.1 |
| Salinas | 1.6 | 1.9 | 2.7 | 3.8 | 4.8 | 4.7 | 5.0 | 4.5 | 4.0 | 2.9 | 1.9 | 1.3 | 39.1 |
| Salinas North | 1.2 | 1.5 | 2.9 | 4.1 | 4.6 | 5.2 | 4.5 | 4.3 | 3.2 | 2.8 | 1.5 | 1.2 | 36.9 |
| San Ardo | 1.0 | 1.7 | 3.1 | 4.5 | 5.9 | 7.2 | 8.1 | 7.1 | 5.1 | 3.1 | 1.5 | 1.0 | 49.0 |
| San Juan | 1.8 | 2.1 | 3.4 | 4.6 | 5.3 | 5.7 | 5.5 | 4.9 | 3.8 | 3.2 | 2.2 | 1.9 | 44.2 |
| Soledad | 1.7 | 2.0 | 3.4 | 4.4 | 5.5 | 5.4 | 6.5 | 6.2 | 5.2 | 3.7 | 2.2 | 1.5 | 47.7 |
| NAPA | | | | | | | | | | | | | |
| Angwin | 1.8 | 1.9 | 3.2 | 4.7 | 5.8 | 7.3 | 8.1 | 7.1 | 5.5 | 4.5 | 2.9 | 2.1 | 54.9 |
| Carneros | 0.8 | 1.5 | 3.1 | 4.6 | 5.5 | 6.6 | 6.9 | 6.2 | 4.7 | 3.5 | 1.4 | 1.0 | 45.8 |
| Oakville | 1.0 | 1.5 | 2.9 | 4.7 | 5.8 | 6.9 | 7.2 | 6.4 | 4.9 | 3.5 | 1.6 | 1.2 | 47.7 |
| St Helena | 1.2 | 1.5 | 2.8 | 3.9 | 5.1 | 6.1 | 7.0 | 6.2 | 4.8 | 3.1 | 1.4 | 0.9 | 44.1 |
| Yountville | 1.3 | 1.7 | 2.8 | 3.9 | 5.1 | 6.0 | 7.1 | 6.1 | 4.8 | 3.1 | 1.5 | 0.9 | 44.3 |
| NEVADA | | | | | | | | | | | | | |
| Grass Valley | 1.1 | 1.5 | 2.6 | 4.0 | 5.7 | 7.1 | 7.9 | 7.1 | 5.3 | 3.2 | 1.5 | 0.9 | 48.0 |
| Nevada City | 1.1 | 1.5 | 2.6 | 3.9 | 5.8 | 6.9 | 7.9 | 7.0 | 5.3 | 3.2 | 1.4 | 0.9 | 47.4 |
| ORANGE | | | | | | | | | | | | | |
| Irvine | 2.2 | 2.5 | 3.7 | 4.7 | 5.2 | 5.9 | 6.3 | 6.2 | 4.6 | 3.7 | 2.6 | 2.3 | 49.6 |
| Laguna Beach | 2.2 | 2.7 | 3.4 | 3.8 | 4.6 | 4.6 | 4.9 | 4.9 | 4.4 | 3.4 | 2.4 | 2.0 | 43.2 |
| Santa Ana | 2.2 | 2.7 | 3.7 | 4.5 | 4.6 | 5.4 | 6.2 | 6.1 | 4.7 | 3.7 | 2.5 | 2.0 | 48.2 |
| PLACER | | | | | | | | | | | | | |
| Auburn | 1.2 | 1.7 | 2.8 | 4.4 | 6.1 | 7.4 | 8.3 | 7.3 | 5.4 | 3.4 | 1.6 | 1.0 | 50.6 |
| Blue Canyon | 0.7 | 1.1 | 2.1 | 3.4 | 4.8 | 6.0 | 7.2 | 6.1 | 4.6 | 2.9 | 0.9 | 0.6 | 40.5 |
| Colfax | 1.1 | 1.5 | 2.6 | 4.0 | 5.8 | 7.1 | 7.9 | 7.0 | 5.3 | 3.2 | 1.4 | 0.9 | 47.9 |
| Roseville | 1.1 | 1.7 | 3.1 | 4.7 | 6.2 | 7.7 | 8.5 | 7.3 | 5.6 | 3.7 | 1.7 | 1.0 | 52.2 |
| Soda Springs | 0.7 | 0.7 | 1.8 | 3.0 | 4.3 | 5.3 | 6.2 | 5.5 | 4.1 | 2.5 | 0.7 | 0.7 | 35.4 |
| Tahoe City | 0.7 | 0.7 | 1.7 | 3.0 | 4.3 | 5.4 | 6.1 | 5.6 | 4.1 | 2.4 | 0.8 | 0.6 | 35.5 |
| Truckee | 0.7 | 0.7 | 1.7 | 3.2 | 4.4 | 5.4 | 6.4 | 5.7 | 4.1 | 2.4 | 0.8 | 0.6 | 36.2 |
| PLUMAS | | | | | | | | | | | | | |
| Portola | 0.7 | 0.9 | 1.9 | 3.5 | 4.9 | 5.9 | 7.3 | 5.9 | 4.3 | 2.7 | 0.9 | 0.5 | 39.4 |
| Quincy | 0.7 | 0.9 | 2.2 | 3.5 | 4.9 | 5.9 | 7.3 | 5.9 | 4.4 | 2.8 | 1.2 | 0.5 | 40.2 |
| RIVERSIDE | | | | | | | | | | | | | |
| Beaumont | 2.0 | 2.3 | 3.4 | 4.4 | 6.1 | 7.1 | 7.6 | 7.9 | 6.0 | 3.9 | 2.6 | 1.7 | 55.0 |
| Blythe | 2.4 | 3.3 | 5.3 | 6.9 | 8.7 | 9.6 | 9.6 | 8.7 | 6.9 | 5.0 | 3.0 | 2.2 | 71.4 |
| Cathedral City | 1.6 | 2.2 | 3.7 | 5.1 | 6.8 | 7.8 | 8.7 | 7.8 | 5.7 | 4.0 | 2.1 | 1.6 | 57.1 |
| Coachella | 2.9 | 4.4 | 6.2 | 8.4 | 10.5 | 11.9 | 12.3 | 10.1 | 8.9 | 6.2 | 3.8 | 2.4 | 88.1 |

Appendix A - Reference Evapotranspiration (ETo) Table*

| County and City | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Annual ETo |
|-----------------------|-----|-----|-----|-----|------|------|------|------|-----|-----|-----|-----|------------|
| RIVERSIDE | | | | | | | | | | | | | |
| Desert Center | 2.9 | 4.1 | 6.4 | 8.5 | 11.0 | 12.1 | 12.2 | 11.1 | 9.0 | 6.4 | 3.9 | 2.6 | 90.0 |
| Elsinore | 2.1 | 2.8 | 3.9 | 4.4 | 5.9 | 7.1 | 7.6 | 7.0 | 5.8 | 3.9 | 2.6 | 1.9 | 55.0 |
| Indio | 3.1 | 3.6 | 6.5 | 8.3 | 10.5 | 11.0 | 10.8 | 9.7 | 8.3 | 5.9 | 3.7 | 2.7 | 83.9 |
| La Quinta | 2.4 | 2.8 | 5.2 | 6.5 | 8.3 | 8.7 | 8.5 | 7.9 | 6.5 | 4.5 | 2.7 | 2.2 | 66.2 |
| Mecca | 2.6 | 3.3 | 5.7 | 7.2 | 8.6 | 9.0 | 8.8 | 8.2 | 6.8 | 5.0 | 3.2 | 2.4 | 70.8 |
| Oasis | 2.9 | 3.3 | 5.3 | 6.1 | 8.5 | 8.9 | 8.7 | 7.9 | 6.9 | 4.8 | 2.9 | 2.3 | 68.4 |
| Palm Deser | 2.5 | 3.4 | 5.3 | 6.9 | 8.7 | 9.6 | 9.6 | 8.7 | 6.9 | 5.0 | 3.0 | 2.2 | 71.6 |
| Palm Springs | 2.0 | 2.9 | 4.9 | 7.2 | 8.3 | 8.5 | 11.6 | 8.3 | 7.2 | 5.9 | 2.7 | 1.7 | 71.1 |
| Rancho California | 1.8 | 2.2 | 3.4 | 4.8 | 5.6 | 6.3 | 6.5 | 6.2 | 4.8 | 3.7 | 2.4 | 1.8 | 49.5 |
| Rancho Mirage | 2.4 | 3.3 | 5.3 | 6.9 | 8.7 | 9.6 | 9.6 | 8.7 | 6.9 | 5.0 | 3.0 | 2.2 | 71.4 |
| Ripley | 2.7 | 3.3 | 5.6 | 7.2 | 8.7 | 8.7 | 8.4 | 7.6 | 6.2 | 4.6 | 2.8 | 2.2 | 67.8 |
| Salton Sea North | 2.5 | 3.3 | 5.5 | 7.2 | 8.8 | 9.3 | 9.2 | 8.5 | 6.8 | 5.2 | 3.1 | 2.3 | 71.7 |
| Temecula East II | 2.3 | 2.4 | 4.1 | 4.9 | 6.4 | 7.0 | 7.8 | 7.4 | 5.7 | 4.1 | 2.6 | 2.2 | 56.7 |
| Thermal | 2.4 | 3.3 | 5.5 | 7.6 | 9.1 | 9.6 | 9.3 | 8.6 | 7.1 | 5.2 | 3.1 | 2.1 | 72.8 |
| Riverside UC | 2.5 | 2.9 | 4.2 | 5.3 | 5.9 | 6.6 | 7.2 | 6.9 | 5.4 | 4.1 | 2.9 | 2.6 | 56.4 |
| Winchester | 2.3 | 2.4 | 4.1 | 4.9 | 6.4 | 6.9 | 7.7 | 7.5 | 6.0 | 3.9 | 2.6 | 2.1 | 56.8 |
| SACRAMENTO | | | | | | | | | | | | | |
| Fair Oaks | 1.0 | 1.6 | 3.4 | 4.1 | 6.5 | 7.5 | 8.1 | 7.1 | 5.2 | 3.4 | 1.5 | 1.0 | 50.5 |
| Sacramento | 1.0 | 1.8 | 3.2 | 4.7 | 6.4 | 7.7 | 8.4 | 7.2 | 5.4 | 3.7 | 1.7 | 0.9 | 51.9 |
| Twitchell Island | 1.2 | 1.8 | 3.9 | 5.3 | 7.4 | 8.8 | 9.1 | 7.8 | 5.9 | 3.8 | 1.7 | 1.2 | 57.9 |
| SAN BENITO | | | | | | | | | | | | | |
| Hollister | 1.5 | 1.8 | 3.1 | 4.3 | 5.5 | 5.7 | 6.4 | 5.9 | 5.0 | 3.5 | 1.7 | 1.1 | 45.1 |
| San Benito | 1.2 | 1.6 | 3.1 | 4.6 | 5.6 | 6.4 | 6.9 | 6.5 | 4.8 | 3.7 | 1.7 | 1.2 | 47.2 |
| San Juan Valley | 1.4 | 1.8 | 3.4 | 4.5 | 6.0 | 6.7 | 7.1 | 6.4 | 5.0 | 3.5 | 1.8 | 1.4 | 49.1 |
| SAN BERNARDINO | | | | | | | | | | | | | |
| Baker | 2.7 | 3.9 | 6.1 | 8.3 | 10.4 | 11.8 | 12.2 | 11.0 | 8.9 | 6.1 | 3.3 | 2.1 | 86.6 |
| Barstow NE | 2.2 | 2.9 | 5.3 | 6.9 | 9.0 | 10.1 | 9.9 | 8.9 | 6.8 | 4.8 | 2.7 | 2.1 | 71.7 |
| Big Bear Lake | 1.8 | 2.6 | 4.6 | 6.0 | 7.0 | 7.6 | 8.1 | 7.4 | 5.4 | 4.1 | 2.4 | 1.8 | 58.6 |
| Chino | 2.1 | 2.9 | 3.9 | 4.5 | 5.7 | 6.5 | 7.3 | 7.1 | 5.9 | 4.2 | 2.6 | 2.0 | 54.6 |
| Crestline | 1.5 | 1.9 | 3.3 | 4.4 | 5.5 | 6.6 | 7.8 | 7.1 | 5.4 | 3.5 | 2.2 | 1.6 | 50.8 |
| Lake Arrowhead | 1.8 | 2.6 | 4.6 | 6.0 | 7.0 | 7.6 | 8.1 | 7.4 | 5.4 | 4.1 | 2.4 | 1.8 | 58.6 |
| Lucerne Valley | 2.2 | 2.9 | 5.1 | 6.5 | 9.1 | 11.0 | 11.4 | 9.9 | 7.4 | 5.0 | 3.0 | 1.8 | 75.3 |
| Needles | 3.2 | 4.2 | 6.6 | 8.9 | 11.0 | 12.4 | 12.8 | 11.0 | 8.9 | 6.6 | 4.0 | 2.7 | 92.1 |
| Newberry Springs | 2.1 | 2.9 | 5.3 | 8.4 | 9.8 | 10.9 | 11.1 | 9.9 | 7.6 | 5.2 | 3.1 | 2.0 | 78.2 |
| San Bernardino | 2.0 | 2.7 | 3.8 | 4.6 | 5.7 | 6.9 | 7.9 | 7.4 | 5.9 | 4.2 | 2.6 | 2.0 | 55.6 |
| Twentynine Palms | 2.6 | 3.6 | 5.9 | 7.9 | 10.1 | 11.2 | 11.2 | 10.3 | 8.6 | 5.9 | 3.4 | 2.2 | 82.9 |
| Victorville | 2.0 | 2.6 | 4.6 | 6.2 | 7.3 | 8.9 | 9.8 | 9.0 | 6.5 | 4.7 | 2.7 | 2.1 | 66.2 |
| SAN DIEGO | | | | | | | | | | | | | |
| Chula Vista | 2.2 | 2.7 | 3.4 | 3.8 | 4.9 | 4.7 | 5.5 | 4.9 | 4.5 | 3.4 | 2.4 | 2.0 | 44.2 |
| Escondido SPV | 2.4 | 2.6 | 3.9 | 4.7 | 5.9 | 6.5 | 7.1 | 6.7 | 5.3 | 3.9 | 2.8 | 2.3 | 54.2 |
| SAN DIEGO | | | | | | | | | | | | | |
| Miramar | 2.3 | 2.5 | 3.7 | 4.1 | 5.1 | 5.4 | 6.1 | 5.8 | 4.5 | 3.3 | 2.4 | 2.1 | 47.1 |
| Oceanside | 2.2 | 2.7 | 3.4 | 3.7 | 4.9 | 4.6 | 4.6 | 5.1 | 4.1 | 3.3 | 2.4 | 2.0 | 42.9 |
| Otay Lake | 2.3 | 2.7 | 3.9 | 4.6 | 5.6 | 5.9 | 6.2 | 6.1 | 4.8 | 3.7 | 2.6 | 2.2 | 50.4 |
| Pine Valley | 1.5 | 2.4 | 3.8 | 5.1 | 6.0 | 7.0 | 7.8 | 7.3 | 6.0 | 4.0 | 2.2 | 1.7 | 54.8 |
| Ramona | 2.1 | 2.1 | 3.4 | 4.6 | 5.2 | 6.3 | 6.7 | 6.8 | 5.3 | 4.1 | 2.8 | 2.1 | 51.6 |
| San Diego | 2.1 | 2.4 | 3.4 | 4.6 | 5.1 | 5.3 | 5.7 | 5.6 | 4.3 | 3.6 | 2.4 | 2.0 | 46.5 |
| Santee | 2.1 | 2.7 | 3.7 | 4.5 | 5.5 | 6.1 | 6.6 | 6.2 | 5.4 | 3.8 | 2.6 | 2.0 | 51.1 |
| Torrey Pines | 2.2 | 2.3 | 3.4 | 3.9 | 4.0 | 4.1 | 4.6 | 4.7 | 3.8 | 2.8 | 2.0 | 2.0 | 39.8 |
| Warner Springs | 1.6 | 2.7 | 3.7 | 4.7 | 5.7 | 7.6 | 8.3 | 7.7 | 6.3 | 4.0 | 2.5 | 1.3 | 56.0 |

| Appendix A - Reference Evapotranspiration (ETo) Table* | | | | | | | | | | | | | |
|---|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|-------------------|
| County and City | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Annual ETo |
| SAN FRANCISCO | | | | | | | | | | | | | |
| San Francisco | 1.5 | 1.3 | 2.4 | 3.0 | 3.7 | 4.6 | 4.9 | 4.8 | 4.1 | 2.8 | 1.3 | 0.7 | 35.1 |
| SAN JOAQUIN | | | | | | | | | | | | | |
| Farmington | 1.5 | 1.5 | 2.9 | 4.7 | 6.2 | 7.6 | 8.1 | 6.8 | 5.3 | 3.3 | 1.4 | 0.7 | 50.0 |
| Lodi West | 1.0 | 1.6 | 3.3 | 4.3 | 6.3 | 6.9 | 7.3 | 6.4 | 4.5 | 3.0 | 1.4 | 0.8 | 46.7 |
| Manteca | 0.9 | 1.7 | 3.4 | 5.0 | 6.5 | 7.5 | 8.0 | 7.1 | 5.2 | 3.3 | 1.6 | 0.9 | 51.2 |
| Stockton | 0.8 | 1.5 | 2.9 | 4.7 | 6.2 | 7.4 | 8.1 | 6.8 | 5.3 | 3.2 | 1.4 | 0.6 | 49.1 |
| Tracy | 1.0 | 1.5 | 2.9 | 4.5 | 6.1 | 7.3 | 7.9 | 6.7 | 5.3 | 3.2 | 1.3 | 0.7 | 48.5 |
| SAN LUIS OBISPO | | | | | | | | | | | | | |
| Arroyo Grande | 2.0 | 2.2 | 3.2 | 3.8 | 4.3 | 4.7 | 4.3 | 4.6 | 3.8 | 3.2 | 2.4 | 1.7 | 40.0 |
| Atascadero | 1.2 | 1.5 | 2.8 | 3.9 | 4.5 | 6.0 | 6.7 | 6.2 | 5.0 | 3.2 | 1.7 | 1.0 | 43.7 |
| Morro Bay | 2.0 | 2.2 | 3.1 | 3.5 | 4.3 | 4.5 | 4.6 | 4.6 | 3.8 | 3.5 | 2.1 | 1.7 | 39.9 |
| Nipomo | 2.2 | 2.5 | 3.8 | 5.1 | 5.7 | 6.2 | 6.4 | 6.1 | 4.9 | 4.1 | 2.9 | 2.3 | 52.1 |
| Paso Robles | 1.6 | 2.0 | 3.2 | 4.3 | 5.5 | 6.3 | 7.3 | 6.7 | 5.1 | 3.7 | 2.1 | 1.4 | 49.0 |
| San Luis Obispo | 2.0 | 2.2 | 3.2 | 4.1 | 4.9 | 5.3 | 4.6 | 5.5 | 4.4 | 3.5 | 2.4 | 1.7 | 43.8 |
| San Miguel | 1.6 | 2.0 | 3.2 | 4.3 | 5.0 | 6.4 | 7.4 | 6.8 | 5.1 | 3.7 | 2.1 | 1.4 | 49.0 |
| San Simeon | 2.0 | 2.0 | 2.9 | 3.5 | 4.2 | 4.4 | 4.6 | 4.3 | 3.5 | 3.1 | 2.0 | 1.7 | 38.1 |
| SAN MATEO | | | | | | | | | | | | | |
| Hal Moon Bay | 1.5 | 1.7 | 2.4 | 3.0 | 3.9 | 4.3 | 4.3 | 4.2 | 3.5 | 2.8 | 1.3 | 1.0 | 33.7 |
| Redwood City | 1.5 | 1.8 | 2.9 | 3.8 | 5.2 | 5.3 | 6.2 | 5.6 | 4.8 | 3.1 | 1.7 | 1.0 | 42.8 |
| Woodside | 1.8 | 2.2 | 3.4 | 4.8 | 5.6 | 6.3 | 6.5 | 6.2 | 4.8 | 3.7 | 2.4 | 1.8 | 49.5 |
| SANTA BARBARA | | | | | | | | | | | | | |
| Betteravia | 2.1 | 2.6 | 4.0 | 5.2 | 6.0 | 5.9 | 5.8 | 5.4 | 4.1 | 3.3 | 2.7 | 2.1 | 49.1 |
| Carpenteria | 2.0 | 2.4 | 3.2 | 3.9 | 4.8 | 5.2 | 5.5 | 5.7 | 4.5 | 3.4 | 2.4 | 2.0 | 44.9 |
| Cuyama | 2.1 | 2.4 | 3.8 | 5.4 | 6.9 | 7.9 | 8.5 | 7.7 | 5.9 | 4.5 | 2.6 | 2.0 | 59.7 |
| Goleta | 2.1 | 2.5 | 3.9 | 5.1 | 5.7 | 5.7 | 5.4 | 5.4 | 4.2 | 3.2 | 2.8 | 2.2 | 48.1 |
| Goleta Foothills | 2.3 | 2.6 | 3.7 | 5.4 | 5.3 | 5.6 | 5.5 | 5.7 | 4.5 | 3.9 | 2.8 | 2.3 | 49.6 |
| Guadalupe | 2.0 | 2.2 | 3.2 | 3.7 | 4.9 | 4.6 | 4.5 | 4.6 | 4.1 | 3.3 | 2.4 | 1.7 | 41.1 |
| Lompoc | 2.0 | 2.2 | 3.2 | 3.7 | 4.8 | 4.6 | 4.9 | 4.8 | 3.9 | 3.2 | 2.4 | 1.7 | 41.1 |
| Los Alamos | 1.8 | 2.0 | 3.2 | 4.1 | 4.9 | 5.3 | 5.7 | 5.5 | 4.4 | 3.7 | 2.4 | 1.6 | 44.6 |
| Santa Barbara | 2.0 | 2.5 | 3.2 | 3.8 | 4.6 | 5.1 | 5.5 | 4.5 | 3.4 | 2.4 | 1.8 | 1.8 | 40.6 |
| SANTA BARBARA | | | | | | | | | | | | | |
| Santa Maria | 1.8 | 2.3 | 3.7 | 5.1 | 5.7 | 5.8 | 5.6 | 5.3 | 4.2 | 3.5 | 2.4 | 1.9 | 47.4 |
| Santa Ynez | 1.7 | 2.2 | 3.5 | 5.0 | 5.8 | 6.2 | 6.4 | 6.0 | 4.5 | 3.6 | 2.2 | 1.7 | 48.7 |
| Sisquoc | 2.1 | 2.5 | 3.8 | 4.1 | 6.1 | 6.3 | 6.4 | 5.8 | 4.7 | 3.4 | 2.3 | 1.8 | 49.2 |
| Solvang | 2.0 | 2.0 | 3.3 | 4.3 | 5.0 | 5.6 | 6.1 | 5.6 | 4.4 | 3.7 | 2.2 | 1.6 | 45.6 |
| SANTA CLARA | | | | | | | | | | | | | |
| Gilroy | 1.3 | 1.8 | 3.1 | 4.1 | 5.3 | 5.6 | 6.1 | 5.5 | 4.7 | 3.4 | 1.7 | 1.1 | 43.6 |
| Los Gatos | 1.5 | 1.8 | 2.8 | 3.9 | 5.0 | 5.6 | 6.2 | 5.5 | 4.7 | 3.2 | 1.7 | 1.1 | 42.9 |
| Morgan Hill | 1.5 | 1.8 | 3.4 | 4.2 | 6.3 | 7.0 | 7.1 | 6.0 | 5.1 | 3.7 | 1.9 | 1.4 | 49.5 |
| Palo Alto | 1.5 | 1.8 | 2.8 | 3.8 | 5.2 | 5.3 | 6.2 | 5.6 | 5.0 | 3.2 | 1.7 | 1.0 | 43.0 |
| San Jose | 1.5 | 1.8 | 3.1 | 4.1 | 5.5 | 5.8 | 6.5 | 5.9 | 5.2 | 3.3 | 1.8 | 1.0 | 45.3 |
| SANTA CRUZ | | | | | | | | | | | | | |
| De Laveaga | 1.4 | 1.9 | 3.3 | 4.7 | 4.9 | 5.3 | 5.0 | 4.8 | 3.6 | 3.0 | 1.6 | 1.3 | 40.8 |
| Green Valley Rd | 1.2 | 1.8 | 3.2 | 4.5 | 4.6 | 5.4 | 5.2 | 5.0 | 3.7 | 3.1 | 1.6 | 1.3 | 40.6 |
| Santa Cruz | 1.5 | 1.8 | 2.6 | 3.5 | 4.3 | 4.4 | 4.8 | 4.4 | 3.8 | 2.8 | 1.7 | 1.2 | 36.6 |
| Watsonville | 1.5 | 1.8 | 2.7 | 3.7 | 4.6 | 4.5 | 4.9 | 4.2 | 4.0 | 2.9 | 1.8 | 1.2 | 37.7 |
| Webb | 1.8 | 2.2 | 3.7 | 4.8 | 5.3 | 5.7 | 5.6 | 5.3 | 4.3 | 3.4 | 2.4 | 1.8 | 46.2 |

Appendix A - Reference Evapotranspiration (ETo) Table*

| County and City | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Annual ETo |
|--------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------------|
| SHASTA | | | | | | | | | | | | | |
| Burney | 0.7 | 1.0 | 2.1 | 3.5 | 4.9 | 5.9 | 7.4 | 6.4 | 4.4 | 2.9 | 0.9 | 0.6 | 40.9 |
| Fall River Mills | 0.6 | 1.0 | 2.1 | 3.7 | 5.0 | 6.1 | 7.8 | 6.7 | 4.6 | 2.8 | 0.9 | 0.5 | 41.8 |
| Glenburn | 0.6 | 1.0 | 2.1 | 3.7 | 5.0 | 6.3 | 7.8 | 6.7 | 4.7 | 2.8 | 0.9 | 0.6 | 42.1 |
| McArthur | 0.7 | 1.4 | 2.9 | 4.2 | 5.6 | 6.9 | 8.2 | 7.2 | 5.0 | 3.0 | 1.1 | 0.6 | 46.8 |
| Redding | 1.2 | 1.4 | 2.6 | 4.1 | 5.6 | 7.1 | 8.5 | 7.3 | 5.3 | 3.2 | 1.4 | 0.9 | 48.8 |
| SIERRA | | | | | | | | | | | | | |
| Downieville | 0.7 | 1.0 | 2.3 | 3.5 | 5.0 | 6.0 | 7.4 | 6.2 | 4.7 | 2.8 | 0.9 | 0.6 | 41.3 |
| Sierraville | 0.7 | 1.1 | 2.2 | 3.2 | 4.5 | 5.9 | 7.3 | 6.4 | 4.3 | 2.6 | 0.9 | 0.5 | 39.6 |
| SISKIYOU | | | | | | | | | | | | | |
| Happy Camp | 0.5 | 0.9 | 2.0 | 3.0 | 4.3 | 5.2 | 6.1 | 5.3 | 4.1 | 2.4 | 0.9 | 0.5 | 35.1 |
| MacDoel | 1.0 | 1.7 | 3.1 | 4.5 | 5.9 | 7.2 | 8.1 | 7.1 | 5.1 | 3.1 | 1.5 | 1.0 | 49.0 |
| Mt Shasta | 0.5 | 0.9 | 2.0 | 3.0 | 4.5 | 5.3 | 6.7 | 5.7 | 4.0 | 2.2 | 0.7 | 0.5 | 36.0 |
| Tule lake FS | 0.7 | 1.3 | 2.7 | 4.0 | 5.4 | 6.3 | 7.1 | 6.4 | 4.7 | 2.8 | 1.0 | 0.6 | 42.9 |
| Weed | 0.5 | 0.9 | 2.0 | 2.5 | 4.5 | 5.3 | 6.7 | 5.5 | 3.7 | 2.0 | 0.9 | 0.5 | 34.9 |
| Yreka | 0.6 | 0.9 | 2.1 | 3.0 | 4.9 | 5.8 | 7.3 | 6.5 | 4.3 | 2.5 | 0.9 | 0.5 | 39.2 |
| SOLANO | | | | | | | | | | | | | |
| Dixon | 0.7 | 1.4 | 3.2 | 5.2 | 6.3 | 7.6 | 8.2 | 7.2 | 5.5 | 4.3 | 1.6 | 1.1 | 52.1 |
| Fairfield | 1.1 | 1.7 | 2.8 | 4.0 | 5.5 | 6.1 | 7.8 | 6.0 | 4.8 | 3.1 | 1.4 | 0.9 | 45.2 |
| Hastings Tract | 1.6 | 2.2 | 3.7 | 5.1 | 6.8 | 7.8 | 8.7 | 7.8 | 5.7 | 4.0 | 2.1 | 1.6 | 57.1 |
| Putah Creek | 1.0 | 1.6 | 3.2 | 4.9 | 6.1 | 7.3 | 7.9 | 7.0 | 5.3 | 3.8 | 1.8 | 1.2 | 51.0 |
| Rio Vista | 0.9 | 1.7 | 2.8 | 4.4 | 5.9 | 6.7 | 7.9 | 6.5 | 5.1 | 3.2 | 1.3 | 0.7 | 47.0 |
| Suisun Valley | 0.6 | 1.3 | 3.0 | 4.7 | 5.8 | 7.0 | 7.7 | 6.8 | 5.3 | 3.8 | 1.4 | 0.9 | 48.3 |
| Winters | 0.9 | 1.7 | 3.3 | 5.0 | 6.4 | 7.5 | 7.9 | 7.0 | 5.2 | 3.5 | 1.6 | 1.0 | 51.0 |
| SONOMA | | | | | | | | | | | | | |
| Bennett Valley | 1.1 | 1.7 | 3.2 | 4.1 | 5.5 | 6.5 | 6.6 | 5.7 | 4.5 | 3.1 | 1.5 | 0.9 | 44.4 |
| Cloverdale | 1.1 | 1.4 | 2.6 | 3.4 | 5.0 | 5.9 | 6.2 | 5.6 | 4.5 | 2.8 | 1.4 | 0.7 | 40.7 |
| Fort Ross | 1.2 | 1.4 | 2.2 | 3.0 | 3.7 | 4.5 | 4.2 | 4.3 | 3.4 | 2.4 | 1.2 | 0.5 | 31.9 |
| Healdsburg | 1.2 | 1.5 | 2.4 | 3.5 | 5.0 | 5.9 | 6.1 | 5.6 | 4.5 | 2.8 | 1.4 | 0.7 | 40.8 |
| Lincoln | 1.2 | 1.7 | 2.8 | 4.7 | 6.1 | 7.4 | 8.4 | 7.3 | 5.4 | 3.7 | 1.9 | 1.2 | 51.9 |
| Petaluma | 1.2 | 1.5 | 2.8 | 3.7 | 4.6 | 5.6 | 4.6 | 5.7 | 4.5 | 2.9 | 1.4 | 0.9 | 39.6 |
| Santa Rosa | 1.2 | 1.7 | 2.8 | 3.7 | 5.0 | 6.0 | 6.1 | 5.9 | 4.5 | 2.9 | 1.5 | 0.7 | 42.0 |
| Valley of the Moon | 1.0 | 1.6 | 3.0 | 4.5 | 5.6 | 6.6 | 7.1 | 6.3 | 4.7 | 3.3 | 1.5 | 1.0 | 46.1 |
| Windsor | 0.9 | 1.6 | 3.0 | 4.5 | 5.5 | 6.5 | 6.5 | 5.9 | 4.4 | 3.2 | 1.4 | 1.0 | 44.2 |
| Denair | 1.0 | 1.9 | 3.6 | 4.7 | 7.0 | 7.9 | 8.0 | 6.1 | 5.3 | 3.4 | 1.5 | 1.0 | 51.4 |
| La Grange | 1.2 | 1.5 | 3.1 | 4.7 | 6.2 | 7.7 | 8.5 | 7.3 | 5.3 | 3.4 | 1.4 | 0.7 | 51.2 |
| Modesto | 0.9 | 1.4 | 3.2 | 4.7 | 6.4 | 7.7 | 8.1 | 6.8 | 5.0 | 3.4 | 1.4 | 0.7 | 49.7 |
| Newman | 1.0 | 1.5 | 3.2 | 4.6 | 6.2 | 7.4 | 8.1 | 6.7 | 5.0 | 3.4 | 1.4 | 0.7 | 49.3 |
| STANISLAUS | | | | | | | | | | | | | |
| Oakdale | 1.2 | 1.5 | 3.2 | 4.7 | 6.2 | 7.7 | 8.1 | 7.1 | 5.1 | 3.4 | 1.4 | 0.7 | 50.3 |
| Patterson | 1.3 | 2.1 | 4.2 | 5.4 | 7.9 | 8.6 | 8.2 | 6.6 | 5.8 | 4.0 | 1.9 | 1.3 | 57.3 |
| Turlock | 0.9 | 1.5 | 3.2 | 4.7 | 6.5 | 7.7 | 8.2 | 7.0 | 5.1 | 3.4 | 1.4 | 0.7 | 50.2 |
| SUTTER | | | | | | | | | | | | | |
| Nicolaus | 0.9 | 1.6 | 3.2 | 4.9 | 6.3 | 7.5 | 8.0 | 6.9 | 5.2 | 3.4 | 1.5 | 0.9 | 50.2 |
| Yuba City | 1.3 | 2.1 | 2.8 | 4.4 | 5.7 | 7.2 | 7.1 | 6.1 | 4.7 | 3.2 | 1.2 | 0.9 | 46.7 |
| TEHAMA | | | | | | | | | | | | | |
| Corning | 1.2 | 1.8 | 2.9 | 4.5 | 6.1 | 7.3 | 8.1 | 7.2 | 5.3 | 3.7 | 1.7 | 1.1 | 50.7 |
| Gerber | 1.0 | 1.8 | 3.5 | 5.0 | 6.6 | 7.9 | 8.7 | 7.4 | 5.8 | 4.1 | 1.8 | 1.1 | 54.7 |
| Gerber Dryland | 0.9 | 1.6 | 3.2 | 4.7 | 6.7 | 8.4 | 9.0 | 7.9 | 6.0 | 4.2 | 2.0 | 1.0 | 55.5 |
| Red Bluff | 1.2 | 1.8 | 2.9 | 4.4 | 5.9 | 7.4 | 8.5 | 7.3 | 5.4 | 3.5 | 1.7 | 1.0 | 51.1 |

| Appendix A - Reference Evapotranspiration (ETo) Table* | | | | | | | | | | | | | |
|--|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|-------------------|
| County and City | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Annual ETo |
| TRINITY | | | | | | | | | | | | | |
| Hay Fork | 0.5 | 1.1 | 2.3 | 3.5 | 4.9 | 5.9 | 7.0 | 6.0 | 4.5 | 2.8 | 0.9 | 0.7 | 40.1 |
| Weaverville | 0.6 | 1.1 | 2.2 | 3.3 | 4.9 | 5.9 | 7.3 | 6.0 | 4.4 | 2.7 | 0.9 | 0.7 | 40.0 |
| TULARE | | | | | | | | | | | | | |
| Alpaugh | 0.9 | 1.7 | 3.4 | 4.8 | 6.6 | 7.7 | 8.2 | 7.3 | 5.4 | 3.4 | 1.4 | 0.7 | 51.6 |
| Badger | 1.0 | 1.3 | 2.7 | 4.1 | 6.0 | 7.3 | 7.7 | 7.0 | 4.8 | 3.3 | 1.4 | 0.7 | 47.3 |
| Delano | 1.1 | 1.9 | 4.0 | 4.9 | 7.2 | 7.9 | 8.1 | 7.3 | 5.4 | 3.2 | 1.5 | 1.2 | 53.6 |
| Dinuba | 1.1 | 1.5 | 3.2 | 4.7 | 6.2 | 7.7 | 8.5 | 7.3 | 5.3 | 3.4 | 1.4 | 0.7 | 51.2 |
| Lindcove | 0.9 | 1.6 | 3.0 | 4.8 | 6.5 | 7.6 | 8.1 | 7.2 | 5.2 | 3.4 | 1.6 | 0.9 | 50.6 |
| Porterville | 1.2 | 1.8 | 3.4 | 4.7 | 6.6 | 7.7 | 8.5 | 7.3 | 5.3 | 3.4 | 1.4 | 0.7 | 52.1 |
| Visalia | 0.9 | 1.7 | 3.3 | 5.1 | 6.8 | 7.7 | 7.9 | 6.9 | 4.9 | 3.2 | 1.5 | 0.8 | 50.7 |
| TUOLUMNE | | | | | | | | | | | | | |
| Groveland | 1.1 | 1.5 | 2.8 | 4.1 | 5.7 | 7.2 | 7.9 | 6.6 | 5.1 | 3.3 | 1.4 | 0.7 | 47.5 |
| Sonora | 1.1 | 1.5 | 2.8 | 4.1 | 5.8 | 7.2 | 7.9 | 6.7 | 5.1 | 3.2 | 1.4 | 0.7 | 47.6 |
| VENTURA | | | | | | | | | | | | | |
| Camarillo | 2.2 | 2.5 | 3.7 | 4.3 | 5.0 | 5.2 | 5.9 | 5.4 | 4.2 | 3.0 | 2.5 | 2.1 | 46.1 |
| Oxnard | 2.2 | 2.5 | 3.2 | 3.7 | 4.4 | 4.6 | 5.4 | 4.8 | 4.0 | 3.3 | 2.4 | 2.0 | 42.3 |
| Piru | 2.8 | 2.8 | 4.1 | 5.6 | 6.0 | 6.8 | 7.6 | 7.8 | 5.8 | 5.2 | 3.7 | 3.2 | 61.5 |
| Port Hueneme | 2.0 | 2.3 | 3.3 | 4.6 | 4.9 | 4.9 | 4.9 | 5.0 | 3.7 | 3.2 | 2.5 | 2.2 | 43.5 |
| Thousand Oaks | 2.2 | 2.6 | 3.4 | 4.5 | 5.4 | 5.9 | 6.7 | 6.4 | 5.4 | 3.9 | 2.6 | 2.0 | 51.0 |
| Ventura | 2.2 | 2.6 | 3.2 | 3.8 | 4.6 | 4.7 | 5.5 | 4.9 | 4.1 | 3.4 | 2.5 | 2.0 | 43.5 |
| YOLO | | | | | | | | | | | | | |
| Bryte | 0.9 | 1.7 | 3.3 | 5.0 | 6.4 | 7.5 | 7.9 | 7.0 | 5.2 | 3.5 | 1.6 | 1.0 | 51.0 |
| Davis | 1.0 | 1.9 | 3.3 | 5.0 | 6.4 | 7.6 | 8.2 | 7.1 | 5.4 | 4.0 | 1.8 | 1.0 | 52.5 |
| Esparto | 1.0 | 1.7 | 3.4 | 5.5 | 6.9 | 8.1 | 8.5 | 7.5 | 5.8 | 4.2 | 2.0 | 1.2 | 55.8 |
| Winters | 1.7 | 1.7 | 2.9 | 4.4 | 5.8 | 7.1 | 7.9 | 6.7 | 5.3 | 3.3 | 1.6 | 1.0 | 49.4 |
| Woodland | 1.0 | 1.8 | 3.2 | 4.7 | 6.1 | 7.7 | 8.2 | 7.2 | 5.4 | 3.7 | 1.7 | 1.0 | 51.6 |
| Zamora | 1.1 | 1.9 | 3.5 | 5.2 | 6.4 | 7.4 | 7.8 | 7.0 | 5.5 | 4.0 | 1.9 | 1.2 | 52.8 |
| YUBA | | | | | | | | | | | | | |
| Browns Valley | 1.0 | 1.7 | 3.1 | 4.7 | 6.1 | 7.5 | 8.5 | 7.6 | 5.7 | 4.1 | 2.0 | 1.1 | 52.9 |
| Brownsville | 1.1 | 1.4 | 2.6 | 4.0 | 5.7 | 6.8 | 7.9 | 6.8 | 5.3 | 3.4 | 1.5 | 0.9 | 47.4 |
| * The values in this table were derived from: | | | | | | | | | | | | | |
| 1) California Irrigation Management Information System (CIMIS); | | | | | | | | | | | | | |
| 2) Reference EvapoTranspiration Zones Map, UC Dept. of Land, Air & Water Resources and California Dept of Water Resources 1999; and | | | | | | | | | | | | | |
| 3) Reference Evapotranspiration for California, University of California, Department of Agriculture and Natural Resources (1987) Bulletin 1922 4) Determining Daily Reference Evapotranspiration, Cooperative Extension UC Division of Agriculture and Natural Resources (1987), Publication Leaflet 21426 | | | | | | | | | | | | | |

Appendix B – Sample Water Efficient Landscape Worksheet.

WATER EFFICIENT LANDSCAPE WORKSHEET

SECTION A. HYDROZONE INFORMATION TABLE

| Hydrozone* | Zone or Valve | Irrigation Method** | Area (Sq. Ft.) | % of Landscape Area |
|--------------|---------------|---------------------|----------------|---------------------|
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| | | | | |
| Total | | | | 100% |

*** Hydrozone**
 HW = High Water Use Plants
 MW = Moderate Water Use Plants
 LW = Low Water Use Plants

****Irrigation Method**
 MS = Micro-spray
 S = Spray
 R = Rotor
 B = Bubbler
 D = Drip
 O = Other

SECTION B. WATER BUDGET CALCULATIONS

Section B1. Maximum Applied Water Allowance (MAWA)

0 62 0 7 0 3

0 7

0 62

0 3

1 0 0 7 0 3

Maximum Applied Water Allowance _____ **gallons per year**

Effective Precipitation (Eppt)

25

- 0 62 0 7 0 3

Maximum Applied Water Allowance _____ **gallons per year**

Section B2. Estimated Total Water Use (ETWU)

$$ETWU = (ET_0)(0.62) \left(\frac{PF \times HA}{IE} + SLA \right)$$

0.62

0.71

Hydrozone Table for Calculating ETWU

| | | | | |
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Estimated Total Water Use = _____ gallons

Appendix C – Sample Certificate of Completion.

CERTIFICATE OF COMPLETION

PART 1. PROJECT INFORMATION SHEET

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Project Address and Location:

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Property Owner or his/her designee:

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| | |

Property Owner

"

"

Please answer the questions below:

- 1
- 2
- 3

PART 2. CERTIFICATION OF INSTALLATION ACCORDING TO THE LANDSCAPE DOCUMENTATION PACKAGE

"

"

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PART 3. IRRIGATION SCHEDULING

492 10

PART 4. SCHEDULE OF LANDSCAPE AND IRRIGATION MAINTENANCE

492 11

PART 5. LANDSCAPE IRRIGATION AUDIT REPORT

492 12

PART 6. SOIL MANAGEMENT REPORT

492 5

492 5



NIPOMO COMMUNITY SERVICES DISTRICT

148 SOUTH WILSON STREET
POST OFFICE BOX 326
NIPOMO, CA 93444 - 0326
(805) 929-1133 FAX (805) 929-1932
Web site address www.ncsd.com

MEMORANDUM

TO: MICHAEL LEBRUN, GENERAL MANAGER
FROM: CELESTE WHITLOW, WATER CONSERVATION COORDINATOR *CS*
DATE: NOVEMBER 7, 2009 *Item 4*
RE: SB7 X7 (Steinberg) SUSTAINABLE WATER USE AND DEMAND REDUCTION.

DEFINITIONS

- "Agriculture water supplier": A water supplier providing water to 10,000 or more irrigated acres (excludes the DWR).
- "Base daily per capita water use": Average gross water use in GPCD over a ten-year period ending between 2004 and 2010.
- "Gross water use" does not include recycled water, water in storage, and agricultural water use.

SUMMARY-ALL CATEGORIES

This bill is contingent on enactment of SB 1 X7 (Simitian) and SB6 X7 (Steinberg).

B7 X7 succeeds two prior bills, 2175 (Laird/Feuer) and AB 49 (Feuer/Huffman), and reflects the subsequent amendments which have narrowed SB7 X7's scope on several issues, including effect on existing water rights, "process water," and agricultural water management.

This bill legislates the "20x2020" program, and establishes a statewide water conservation target of 10% by 2015 and 20% by 2020. It also establishes a statewide conservation program, in a new "Sustainable Water Use and Demand Reduction" part in the Water Code. It also, for the first time, outlines requirements for agricultural water suppliers.

This bill ensures that "water conservation" measures adopted because of this Part in the Water Code will receive the protection, under Water Code Section 1101 "use or lose," from loss of water rights for the conserved water.

A reduction in total water use is not required. Noncompliance with the specific water conservation requirements will not result in a law violation for any legal proceeding prior to 2021. However, any data reported to the Department of Water Resources (DWR) or the State Water Resources Control Board (SWRCB) may be used as evidence in legal or administrative proceedings.

Provision sunsets in 2021.

Other general requirements include:

1. Water supplier must hold public hearings for community input on the supplier's implementation plan for meeting the water target.
2. The implementation plan must avoid placing a disproportionate burden on any customer group.

3. Eligibility for state water grants is dependent on the water supplier's compliance with the requirements in this bill, but funding is allowed for water conservation under certain conditions.

URBAN SPECIFIC

This bill would require urban retail water suppliers, individually or on a regional basis, to develop an urban water use target by 12/31/2010. Each urban water supplier is required to reach their 20% reduction goal by 2020, and half of that goal (10%) by 2015.

There are four methods, designed to provide flexibility to tailor the program for regional specifics, for urban water suppliers to reach the water use target:

1. Reduction of 20% of the baseline daily GPCD.
2. A combination of efficiency standards for residential indoor use (55 gpcd), residential outdoor use (i.e., the Model Water Efficient Landscape Ordinance, and a 10% reduction of water used by commercial-institutional-institutional (CII) customers.
3. A 5% reduction from DWR targets for applicable region.
4. A method developed by DWR, using specific factors, by 12/31/2010.

The bill also allows water suppliers to use more recycled water to meet their 2020 target reduction in water use.

AGRICULTURE SPECIFIC

Agriculture water management

1. Relies on implementation of efficient water management practices (EWMPs). These were developed by the Agricultural Water Management Council (AWMC).
2. There are two categories of EWMPs. Agricultural water suppliers must implement specified efficient water management practices by 7/31/2009.
 - A. "Critical": All agricultural water suppliers must implement (i.e., measurement and pricing structures).
 - B. "Additional": Fourteen additional EWMPs that must be implemented if the measures are locally cost effective and technically feasible (including on-farm irrigation practices, recycled water use, incentive pricing)..

Agriculture water plans

1. Reauthorizes the Agricultural Water Management Planning Program.
2. Requires an agricultural water supplier to adopt an agricultural water management plan (AWMP) by 12/31/2012, using a specified public process and five-year updates.
3. Contents of the AWMP are specified.
4. Compliance can be by submitting AWMPs according to the "Memorandum of Understanding Regarding Efficient Water Management Practices," water conservation plans per federal law, or urban water management plan (UWMP).
5. Specified reporting on water use efficiently improvements.
6. Alternative compliance by submitting water conservation plan which is based on federal law.
7. **Agricultural water suppliers are exempt** from the requirements if they are part of the Colorado River agreement.
8. **Agricultural water suppliers are exempt** if they serve less than 25,000 irrigated acres from compliance with either water conservation or agricultural water management planning if state funding is not provided to the supplier for those purposes.

COMMERCIAL-INDUSTRIAL-INSTITUTIONAL

1. Restricts urban water suppliers from imposing conservation requirements on process water, except in water shortage emergencies.

2. Require an open, transparent process for all water customers to review and provide input into the water supplier implementation plan.
3. Requires specified reporting on water use efficiency improvements.
4. Alternative compliance by submitted a water conservation plan based on federal law.
5. Does not mandate conservation requirements or targets for CII.

DWR REQUIREMENTS

1. Requires DWR to adopt technical methods and criteria for consistent implementation, with a public process, and as emergency regulations.
2. Requires DWR to review and report on urban water management plans, and report to the Legislature by 12/31/2016, on progress in meeting the 20% statewide target, including recommendations on changes to the standards or targets in order to achieve the 20% target.
3. Requires DWR to promote implementation of regional water resource management practices through increased incentives/removal of barriers and standardized data collection.
4. Requires DWR, in consultation with SWRCB, to develop or update statewide targets as to recycled water, brackish groundwater desalination, and urban stormwater runoff.
5. Requires DWR to develop a methodology for quantifying efficiency of agricultural water use, including specified factors and estimation of costs of implementation.
6. Requires DWR to submit report on agricultural EWMPs by specified dates and adopt regulations on agricultural water measurement;
7. Requires DWR to review plans and report to the Legislature on status and effectiveness;
8. Requires DWR to develop incentives for sustainable water management and alternative water supplies such as brackish water desalination and stormwater recovery.

Senate Bill No. 7

CHAPTER 4

An act to amend and repeal Section 10631.5 of, to add Part 2.55 (commencing with Section 10608) to Division 6 of, and to repeal and add Part 2.8 (commencing with Section 10800) of Division 6 of, the Water Code, relating to water.

[Approved by Governor November 10, 2009. Filed with
Secretary of State November 10, 2009.]

LEGISLATIVE COUNSEL'S DIGEST

SB 7, Steinberg. Water conservation.

(1) Existing law requires the Department of Water Resources to convene an independent technical panel to provide information to the department and the Legislature on new demand management measures, technologies, and approaches. "Demand management measures" means those water conservation measures, programs, and incentives that prevent the waste of water and promote the reasonable and efficient use and reuse of available supplies.

This bill would require the state to achieve a 20% reduction in urban per capita water use in California by December 31, 2020. The state would be required to make incremental progress towards this goal by reducing per capita water use by at least 10% on or before December 31, 2015. The bill would require each urban retail water supplier to develop urban water use targets and an interim urban water use target, in accordance with specified requirements. The bill would require agricultural water suppliers to implement efficient water management practices. The bill would require the department, in consultation with other state agencies, to develop a single standardized water use reporting form. The bill, with certain exceptions, would provide that urban retail water suppliers, on and after July 1, 2016, and agricultural water suppliers, on and after July 1, 2013, are not eligible for state water grants or loans unless they comply with the water conservation requirements established by the bill. The bill would repeal, on July 1, 2016, an existing requirement that conditions eligibility for certain water management grants or loans to an urban water supplier on the implementation of certain water demand management measures.

(2) Existing law, until January 1, 1993, and thereafter only as specified, requires certain agricultural water suppliers to prepare and adopt water management plans.

This bill would revise existing law relating to agricultural water management planning to require agricultural water suppliers to prepare and adopt agricultural water management plans with specified components on or before December 31, 2012, and update those plans on or before December

31, 2015, and on or before December 31 every 5 years thereafter. An agricultural water supplier that becomes an agricultural water supplier after December 31, 2012, would be required to prepare and adopt an agricultural water management plan within one year after becoming an agricultural water supplier. The agricultural water supplier would be required to notify each city or county within which the supplier provides water supplies with regard to the preparation or review of the plan. The bill would require the agricultural water supplier to submit copies of the plan to the department and other specified entities. The bill would provide that an agricultural water supplier is not eligible for state water grants or loans unless the supplier complies with the water management planning requirements established by the bill.

(3) The bill would take effect only if SB 1 and SB 6 of the 2009–10 7th Extraordinary Session of the Legislature are enacted and become effective.

The people of the State of California do enact as follows:

SECTION 1. Part 2.55 (commencing with Section 10608) is added to Division 6 of the Water Code, to read:

PART 2.55. SUSTAINABLE WATER USE AND DEMAND REDUCTION

CHAPTER 1. GENERAL DECLARATIONS AND POLICY

10608. The Legislature finds and declares all of the following:

(a) Water is a public resource that the California Constitution protects against waste and unreasonable use.

(b) Growing population, climate change, and the need to protect and grow California's economy while protecting and restoring our fish and wildlife habitats make it essential that the state manage its water resources as efficiently as possible.

(c) Diverse regional water supply portfolios will increase water supply reliability and reduce dependence on the Delta.

(d) Reduced water use through conservation provides significant energy and environmental benefits, and can help protect water quality, improve streamflows, and reduce greenhouse gas emissions.

(e) The success of state and local water conservation programs to increase efficiency of water use is best determined on the basis of measurable outcomes related to water use or efficiency.

(f) Improvements in technology and management practices offer the potential for increasing water efficiency in California over time, providing an essential water management tool to meet the need for water for urban, agricultural, and environmental uses.

(g) The Governor has called for a 20 percent per capita reduction in urban water use statewide by 2020.

(h) The factors used to formulate water use efficiency targets can vary significantly from location to location based on factors including weather, patterns of urban and suburban development, and past efforts to enhance water use efficiency.

(i) Per capita water use is a valid measure of a water provider's efforts to reduce urban water use within its service area. However, per capita water use is less useful for measuring relative water use efficiency between different water providers. Differences in weather, historical patterns of urban and suburban development, and density of housing in a particular location need to be considered when assessing per capita water use as a measure of efficiency.

10608.4. It is the intent of the Legislature, by the enactment of this part, to do all of the following:

(a) Require all water suppliers to increase the efficiency of use of this essential resource.

(b) Establish a framework to meet the state targets for urban water conservation identified in this part and called for by the Governor.

(c) Measure increased efficiency of urban water use on a per capita basis.

(d) Establish a method or methods for urban retail water suppliers to determine targets for achieving increased water use efficiency by the year 2020, in accordance with the Governor's goal of a 20-percent reduction.

(e) Establish consistent water use efficiency planning and implementation standards for urban water suppliers and agricultural water suppliers.

(f) Promote urban water conservation standards that are consistent with the California Urban Water Conservation Council's adopted best management practices and the requirements for demand management in Section 10631.

(g) Establish standards that recognize and provide credit to water suppliers that made substantial capital investments in urban water conservation since the drought of the early 1990s.

(h) Recognize and account for the investment of urban retail water suppliers in providing recycled water for beneficial uses.

(i) Require implementation of specified efficient water management practices for agricultural water suppliers.

(j) Support the economic productivity of California's agricultural, commercial, and industrial sectors.

(k) Advance regional water resources management.

10608.8. (a) (1) Water use efficiency measures adopted and implemented pursuant to this part or Part 2.8 (commencing with Section 10800) are water conservation measures subject to the protections provided under Section 1011.

(2) Because an urban agency is not required to meet its urban water use target until 2020 pursuant to subdivision (b) of Section 10608.24, an urban retail water supplier's failure to meet those targets shall not establish a violation of law for purposes of any state administrative or judicial proceeding prior to January 1, 2021. Nothing in this paragraph limits the use of data reported to the department or the board in litigation or an

administrative proceeding. This paragraph shall become inoperative on January 1, 2021.

(3) To the extent feasible, the department and the board shall provide for the use of water conservation reports required under this part to meet the requirements of Section 1011 for water conservation reporting.

(b) This part does not limit or otherwise affect the application of Chapter 3.5 (commencing with Section 11340), Chapter 4 (commencing with Section 11370), Chapter 4.5 (commencing with Section 11400), and Chapter 5 (commencing with Section 11500) of Part 1 of Division 3 of Title 2 of the Government Code.

(c) This part does not require a reduction in the total water used in the agricultural or urban sectors, because other factors, including, but not limited to, changes in agricultural economics or population growth may have greater effects on water use. This part does not limit the economic productivity of California's agricultural, commercial, or industrial sectors.

(d) The requirements of this part do not apply to an agricultural water supplier that is a party to the Quantification Settlement Agreement, as defined in subdivision (a) of Section 1 of Chapter 617 of the Statutes of 2002, during the period within which the Quantification Settlement Agreement remains in effect. After the expiration of the Quantification Settlement Agreement, to the extent conservation water projects implemented as part of the Quantification Settlement Agreement remain in effect, the conserved water created as part of those projects shall be credited against the obligations of the agricultural water supplier pursuant to this part.

CHAPTER 2. DEFINITIONS

10608.12. Unless the context otherwise requires, the following definitions govern the construction of this part:

(a) "Agricultural water supplier" means a water supplier, either publicly or privately owned, providing water to 10,000 or more irrigated acres, excluding recycled water. "Agricultural water supplier" includes a supplier or contractor for water, regardless of the basis of right, that distributes or sells water for ultimate resale to customers. "Agricultural water supplier" does not include the department.

(b) "Base daily per capita water use" means any of the following:

(1) The urban retail water supplier's estimate of its average gross water use, reported in gallons per capita per day and calculated over a continuous 10-year period ending no earlier than December 31, 2004, and no later than December 31, 2010.

(2) For an urban retail water supplier that meets at least 10 percent of its 2008 measured retail water demand through recycled water that is delivered within the service area of an urban retail water supplier or its urban wholesale water supplier, the urban retail water supplier may extend the calculation described in paragraph (1) up to an additional five years to a maximum of

a continuous 15-year period ending no earlier than December 31, 2004, and no later than December 31, 2010.

(3) For the purposes of Section 10608.22, the urban retail water supplier's estimate of its average gross water use, reported in gallons per capita per day and calculated over a continuous five-year period ending no earlier than December 31, 2007, and no later than December 31, 2010.

(c) "Baseline commercial, industrial, and institutional water use" means an urban retail water supplier's base daily per capita water use for commercial, industrial, and institutional users.

(d) "Commercial water user" means a water user that provides or distributes a product or service.

(e) "Compliance daily per capita water use" means the gross water use during the final year of the reporting period, reported in gallons per capita per day.

(f) "Disadvantaged community" means a community with an annual median household income that is less than 80 percent of the statewide annual median household income.

(g) "Gross water use" means the total volume of water, whether treated or untreated, entering the distribution system of an urban retail water supplier, excluding all of the following:

(1) Recycled water that is delivered within the service area of an urban retail water supplier or its urban wholesale water supplier.

(2) The net volume of water that the urban retail water supplier places into long-term storage.

(3) The volume of water the urban retail water supplier conveys for use by another urban water supplier.

(4) The volume of water delivered for agricultural use, except as otherwise provided in subdivision (f) of Section 10608.24.

(h) "Industrial water user" means a water user that is primarily a manufacturer or processor of materials as defined by the North American Industry Classification System code sectors 31 to 33, inclusive, or an entity that is a water user primarily engaged in research and development.

(i) "Institutional water user" means a water user dedicated to public service. This type of user includes, among other users, higher education institutions, schools, courts, churches, hospitals, government facilities, and nonprofit research institutions.

(j) "Interim urban water use target" means the midpoint between the urban retail water supplier's base daily per capita water use and the urban retail water supplier's urban water use target for 2020.

(k) "Locally cost effective" means that the present value of the local benefits of implementing an agricultural efficiency water management practice is greater than or equal to the present value of the local cost of implementing that measure.

(l) "Process water" means water used for producing a product or product content or water used for research and development, including, but not limited to, continuous manufacturing processes, water used for testing and maintaining equipment used in producing a product or product content, and

water used in combined heat and power facilities used in producing a product or product content. Process water does not mean incidental water uses not related to the production of a product or product content, including, but not limited to, water used for restrooms, landscaping, air conditioning, heating, kitchens, and laundry.

(m) “Recycled water” means recycled water, as defined in subdivision (n) of Section 13050, that is used to offset potable demand, including recycled water supplied for direct use and indirect potable reuse, that meets the following requirements, where applicable:

(1) For groundwater recharge, including recharge through spreading basins, water supplies that are all of the following:

- (A) Metered.
- (B) Developed through planned investment by the urban water supplier or a wastewater treatment agency.
- (C) Treated to a minimum tertiary level.
- (D) Delivered within the service area of an urban retail water supplier or its urban wholesale water supplier that helps an urban retail water supplier meet its urban water use target.

(2) For reservoir augmentation, water supplies that meet the criteria of paragraph (1) and are conveyed through a distribution system constructed specifically for recycled water.

(n) “Regional water resources management” means sources of supply resulting from watershed-based planning for sustainable local water reliability or any of the following alternative sources of water:

- (1) The capture and reuse of stormwater or rainwater.
- (2) The use of recycled water.
- (3) The desalination of brackish groundwater.
- (4) The conjunctive use of surface water and groundwater in a manner that is consistent with the safe yield of the groundwater basin.

(o) “Reporting period” means the years for which an urban retail water supplier reports compliance with the urban water use targets.

(p) “Urban retail water supplier” means a water supplier, either publicly or privately owned, that directly provides potable municipal water to more than 3,000 end users or that supplies more than 3,000 acre-feet of potable water annually at retail for municipal purposes.

(q) “Urban water use target” means the urban retail water supplier’s targeted future daily per capita water use.

(r) “Urban wholesale water supplier,” means a water supplier, either publicly or privately owned, that provides more than 3,000 acre-feet of water annually at wholesale for potable municipal purposes.

CHAPTER 3. URBAN RETAIL WATER SUPPLIERS

10608.16. (a) The state shall achieve a 20-percent reduction in urban per capita water use in California on or before December 31, 2020.

(b) The state shall make incremental progress towards the state target specified in subdivision (a) by reducing urban per capita water use by at least 10 percent on or before December 31, 2015.

10608.20. (a) (1) Each urban retail water supplier shall develop urban water use targets and an interim urban water use target by July 1, 2011. Urban retail water suppliers may elect to determine and report progress toward achieving these targets on an individual or regional basis, as provided in subdivision (a) of Section 10608.28, and may determine the targets on a fiscal year or calendar year basis.

(2) It is the intent of the Legislature that the urban water use targets described in subdivision (a) cumulatively result in a 20-percent reduction from the baseline daily per capita water use by December 31, 2020.

(b) An urban retail water supplier shall adopt one of the following methods for determining its urban water use target pursuant to subdivision (a):

(1) Eighty percent of the urban retail water supplier's baseline per capita daily water use.

(2) The per capita daily water use that is estimated using the sum of the following performance standards:

(A) For indoor residential water use, 55 gallons per capita daily water use as a provisional standard. Upon completion of the department's 2016 report to the Legislature pursuant to Section 10608.42, this standard may be adjusted by the Legislature by statute.

(B) For landscape irrigated through dedicated or residential meters or connections, water efficiency equivalent to the standards of the Model Water Efficient Landscape Ordinance set forth in Chapter 2.7 (commencing with Section 490) of Division 2 of Title 23 of the California Code of Regulations, as in effect the later of the year of the landscape's installation or 1992. An urban retail water supplier using the approach specified in this subparagraph shall use satellite imagery, site visits, or other best available technology to develop an accurate estimate of landscaped areas.

(C) For commercial, industrial, and institutional uses, a 10-percent reduction in water use from the baseline commercial, industrial, and institutional water use by 2020.

(3) Ninety-five percent of the applicable state hydrologic region target, as set forth in the state's draft 20x2020 Water Conservation Plan (dated April 30, 2009). If the service area of an urban water supplier includes more than one hydrologic region, the supplier shall apportion its service area to each region based on population or area.

(4) A method that shall be identified and developed by the department, through a public process, and reported to the Legislature no later than December 31, 2010. The method developed by the department shall identify per capita targets that cumulatively result in a statewide 20-percent reduction in urban daily per capita water use by December 31, 2020. In developing urban daily per capita water use targets, the department shall do all of the following:

(A) Consider climatic differences within the state.

(B) Consider population density differences within the state.

(C) Provide flexibility to communities and regions in meeting the targets.

(D) Consider different levels of per capita water use according to plant water needs in different regions.

(E) Consider different levels of commercial, industrial, and institutional water use in different regions of the state.

(F) Avoid placing an undue hardship on communities that have implemented conservation measures or taken actions to keep per capita water use low.

(c) If the department adopts a regulation pursuant to paragraph (4) of subdivision (b) that results in a requirement that an urban retail water supplier achieve a reduction in daily per capita water use that is greater than 20 percent by December 31, 2020, an urban retail water supplier that adopted the method described in paragraph (4) of subdivision (b) may limit its urban water use target to a reduction of not more than 20 percent by December 31, 2020, by adopting the method described in paragraph (1) of subdivision (b).

(d) The department shall update the method described in paragraph (4) of subdivision (b) and report to the Legislature by December 31, 2014. An urban retail water supplier that adopted the method described in paragraph (4) of subdivision (b) may adopt a new urban daily per capita water use target pursuant to this updated method.

(e) An urban retail water supplier shall include in its urban water management plan required pursuant to Part 2.6 (commencing with Section 10610) due in 2010 the baseline daily per capita water use, urban water use target, interim urban water use target, and compliance daily per capita water use, along with the bases for determining those estimates, including references to supporting data.

(f) When calculating per capita values for the purposes of this chapter, an urban retail water supplier shall determine population using federal, state, and local population reports and projections.

(g) An urban retail water supplier may update its 2020 urban water use target in its 2015 urban water management plan required pursuant to Part 2.6 (commencing with Section 10610).

(h) (1) The department, through a public process and in consultation with the California Urban Water Conservation Council, shall develop technical methodologies and criteria for the consistent implementation of this part, including, but not limited to, both of the following:

(A) Methodologies for calculating base daily per capita water use, baseline commercial, industrial, and institutional water use, compliance daily per capita water use, gross water use, service area population, indoor residential water use, and landscaped area water use.

(B) Criteria for adjustments pursuant to subdivisions (d) and (e) of Section 10608.24.

(2) The department shall post the methodologies and criteria developed pursuant to this subdivision on its Internet Web site, and make written copies

available, by October 1, 2010. An urban retail water supplier shall use the methods developed by the department in compliance with this part.

(i) (1) The department shall adopt regulations for implementation of the provisions relating to process water in accordance with subdivision (f) of Section 10608.12, subdivision (e) of Section 10608.24, and subdivision (d) of Section 10608.26.

(2) The initial adoption of a regulation authorized by this subdivision is deemed to address an emergency, for purposes of Sections 11346.1 and 11349.6 of the Government Code, and the department is hereby exempted for that purpose from the requirements of subdivision (b) of Section 11346.1 of the Government Code. After the initial adoption of an emergency regulation pursuant to this subdivision, the department shall not request approval from the Office of Administrative Law to readopt the regulation as an emergency regulation pursuant to Section 11346.1 of the Government Code.

(j) An urban retail water supplier shall be granted an extension to July 1, 2011, for adoption of an urban water management plan pursuant to Part 2.6 (commencing with Section 10610) due in 2010 to allow use of technical methodologies developed by the department pursuant to paragraph (4) of subdivision (b) and subdivision (h). An urban retail water supplier that adopts an urban water management plan due in 2010 that does not use the methodologies developed by the department pursuant to subdivision (h) shall amend the plan by July 1, 2011, to comply with this part.

10608.22. Notwithstanding the method adopted by an urban retail water supplier pursuant to Section 10608.20, an urban retail water supplier's per capita daily water use reduction shall be no less than 5 percent of base daily per capita water use as defined in paragraph (3) of subdivision (b) of Section 10608.12. This section does not apply to an urban retail water supplier with a base daily per capita water use at or below 100 gallons per capita per day.

10608.24. (a) Each urban retail water supplier shall meet its interim urban water use target by December 31, 2015.

(b) Each urban retail water supplier shall meet its urban water use target by December 31, 2020.

(c) An urban retail water supplier's compliance daily per capita water use shall be the measure of progress toward achievement of its urban water use target.

(d) (1) When determining compliance daily per capita water use, an urban retail water supplier may consider the following factors:

(A) Differences in evapotranspiration and rainfall in the baseline period compared to the compliance reporting period.

(B) Substantial changes to commercial or industrial water use resulting from increased business output and economic development that have occurred during the reporting period.

(C) Substantial changes to institutional water use resulting from fire suppression services or other extraordinary events, or from new or expanded operations, that have occurred during the reporting period.

(2) If the urban retail water supplier elects to adjust its estimate of compliance daily per capita water use due to one or more of the factors described in paragraph (1), it shall provide the basis for, and data supporting, the adjustment in the report required by Section 10608.40.

(e) When developing the urban water use target pursuant to Section 10608.20, an urban retail water supplier that has a substantial percentage of industrial water use in its service area, may exclude process water from the calculation of gross water use to avoid a disproportionate burden on another customer sector.

(f) (1) An urban retail water supplier that includes agricultural water use in an urban water management plan pursuant to Part 2.6 (commencing with Section 10610) may include the agricultural water use in determining gross water use. An urban retail water supplier that includes agricultural water use in determining gross water use and develops its urban water use target pursuant to paragraph (2) of subdivision (b) of Section 10608.20 shall use a water efficient standard for agricultural irrigation of 100 percent of reference evapotranspiration multiplied by the crop coefficient for irrigated acres.

(2) An urban retail water supplier, that is also an agricultural water supplier, is not subject to the requirements of Chapter 4 (commencing with Section 10608.48), if the agricultural water use is incorporated into its urban water use target pursuant to paragraph (1).

10608.26. (a) In complying with this part, an urban retail water supplier shall conduct at least one public hearing to accomplish all of the following:

(1) Allow community input regarding the urban retail water supplier's implementation plan for complying with this part.

(2) Consider the economic impacts of the urban retail water supplier's implementation plan for complying with this part.

(3) Adopt a method, pursuant to subdivision (b) of Section 10608.20, for determining its urban water use target.

(b) In complying with this part, an urban retail water supplier may meet its urban water use target through efficiency improvements in any combination among its customer sectors. An urban retail water supplier shall avoid placing a disproportionate burden on any customer sector.

(c) For an urban retail water supplier that supplies water to a United States Department of Defense military installation, the urban retail water supplier's implementation plan for complying with this part shall consider the United States Department of Defense military installation's requirements under federal Executive Order 13423.

(d) (1) Any ordinance or resolution adopted by an urban retail water supplier after the effective date of this section shall not require existing customers as of the effective date of this section, to undertake changes in product formulation, operations, or equipment that would reduce process water use, but may provide technical assistance and financial incentives to those customers to implement efficiency measures for process water. This section shall not limit an ordinance or resolution adopted pursuant to a declaration of drought emergency by an urban retail water supplier.

(2) This part shall not be construed or enforced so as to interfere with the requirements of Chapter 4 (commencing with Section 113980) to Chapter 13 (commencing with Section 114380), inclusive, of Part 7 of Division 104 of the Health and Safety Code, or any requirement or standard for the protection of public health, public safety, or worker safety established by federal, state, or local government or recommended by recognized standard setting organizations or trade associations.

10608.28. (a) An urban retail water supplier may meet its urban water use target within its retail service area, or through mutual agreement, by any of the following:

(1) Through an urban wholesale water supplier.

(2) Through a regional agency authorized to plan and implement water conservation, including, but not limited to, an agency established under the Bay Area Water Supply and Conservation Agency Act (Division 31 (commencing with Section 81300)).

(3) Through a regional water management group as defined in Section 10537.

(4) By an integrated regional water management funding area.

(5) By hydrologic region.

(6) Through other appropriate geographic scales for which computation methods have been developed by the department.

(b) A regional water management group, with the written consent of its member agencies, may undertake any or all planning, reporting, and implementation functions under this chapter for the member agencies that consent to those activities. Any data or reports shall provide information both for the regional water management group and separately for each consenting urban retail water supplier and urban wholesale water supplier.

10608.32. All costs incurred pursuant to this part by a water utility regulated by the Public Utilities Commission may be recoverable in rates subject to review and approval by the Public Utilities Commission, and may be recorded in a memorandum account and reviewed for reasonableness by the Public Utilities Commission.

10608.36. Urban wholesale water suppliers shall include in the urban water management plans required pursuant to Part 2.6 (commencing with Section 10610) an assessment of their present and proposed future measures, programs, and policies to help achieve the water use reductions required by this part.

10608.40. Urban water retail suppliers shall report to the department on their progress in meeting their urban water use targets as part of their urban water management plans submitted pursuant to Section 10631. The data shall be reported using a standardized form developed pursuant to Section 10608.52.

10608.42. The department shall review the 2015 urban water management plans and report to the Legislature by December 31, 2016, on progress towards achieving a 20-percent reduction in urban water use by December 31, 2020. The report shall include recommendations on changes to water efficiency standards or urban water use targets in order to achieve

the 20-percent reduction and to reflect updated efficiency information and technology changes.

10608.43. The department, in conjunction with the California Urban Water Conservation Council, by April 1, 2010, shall convene a representative task force consisting of academic experts, urban retail water suppliers, environmental organizations, commercial water users, industrial water users, and institutional water users to develop alternative best management practices for commercial, industrial, and institutional users and an assessment of the potential statewide water use efficiency improvement in the commercial, industrial, and institutional sectors that would result from implementation of these best management practices. The taskforce, in conjunction with the department, shall submit a report to the Legislature by April 1, 2012, that shall include a review of multiple sectors within commercial, industrial, and institutional users and that shall recommend water use efficiency standards for commercial, industrial, and institutional users among various sectors of water use. The report shall include, but not be limited to, the following:

(a) Appropriate metrics for evaluating commercial, industrial, and institutional water use.

(b) Evaluation of water demands for manufacturing processes, goods, and cooling.

(c) Evaluation of public infrastructure necessary for delivery of recycled water to the commercial, industrial, and institutional sectors.

(d) Evaluation of institutional and economic barriers to increased recycled water use within the commercial, industrial, and institutional sectors.

(e) Identification of technical feasibility and cost of the best management practices to achieve more efficient water use statewide in the commercial, industrial, and institutional sectors that is consistent with the public interest and reflects past investments in water use efficiency.

10608.44. Each state agency shall reduce water use on facilities it operates to support urban retail water suppliers in meeting the target identified in Section 10608.16.

CHAPTER 4. AGRICULTURAL WATER SUPPLIERS

10608.48. (a) On or before July 31, 2012, an agricultural water supplier shall implement efficient water management practices pursuant to subdivisions (b) and (c).

(b) Agricultural water suppliers shall implement all of the following critical efficient management practices:

(1) Measure the volume of water delivered to customers with sufficient accuracy to comply with subdivision (a) of Section 531.10 and to implement paragraph (2).

(2) Adopt a pricing structure for water customers based at least in part on quantity delivered.

(c) Agricultural water suppliers shall implement additional efficient management practices, including, but not limited to, practices to accomplish all of the following, if the measures are locally cost effective and technically feasible:

(1) Facilitate alternative land use for lands with exceptionally high water duties or whose irrigation contributes to significant problems, including drainage.

(2) Facilitate use of available recycled water that otherwise would not be used beneficially, meets all health and safety criteria, and does not harm crops or soils.

(3) Facilitate the financing of capital improvements for on-farm irrigation systems.

(4) Implement an incentive pricing structure that promotes one or more of the following goals:

(A) More efficient water use at the farm level.

(B) Conjunctive use of groundwater.

(C) Appropriate increase of groundwater recharge.

(D) Reduction in problem drainage.

(E) Improved management of environmental resources.

(F) Effective management of all water sources throughout the year by adjusting seasonal pricing structures based on current conditions.

(5) Expand line or pipe distribution systems, and construct regulatory reservoirs to increase distribution system flexibility and capacity, decrease maintenance, and reduce seepage.

(6) Increase flexibility in water ordering by, and delivery to, water customers within operational limits.

(7) Construct and operate supplier spill and tailwater recovery systems.

(8) Increase planned conjunctive use of surface water and groundwater within the supplier service area.

(9) Automate canal control structures.

(10) Facilitate or promote customer pump testing and evaluation.

(11) Designate a water conservation coordinator who will develop and implement the water management plan and prepare progress reports.

(12) Provide for the availability of water management services to water users. These services may include, but are not limited to, all of the following:

(A) On-farm irrigation and drainage system evaluations.

(B) Normal year and real-time irrigation scheduling and crop evapotranspiration information.

(C) Surface water, groundwater, and drainage water quantity and quality data.

(D) Agricultural water management educational programs and materials for farmers, staff, and the public.

(13) Evaluate the policies of agencies that provide the supplier with water to identify the potential for institutional changes to allow more flexible water deliveries and storage.

(14) Evaluate and improve the efficiencies of the supplier's pumps.

(d) Agricultural water suppliers shall include in the agricultural water management plans required pursuant to Part 2.8 (commencing with Section 10800) a report on which efficient water management practices have been implemented and are planned to be implemented, an estimate of the water use efficiency improvements that have occurred since the last report, and an estimate of the water use efficiency improvements estimated to occur five and 10 years in the future. If an agricultural water supplier determines that an efficient water management practice is not locally cost effective or technically feasible, the supplier shall submit information documenting that determination.

(e) The data shall be reported using a standardized form developed pursuant to Section 10608.52.

(f) An agricultural water supplier may meet the requirements of subdivisions (d) and (e) by submitting to the department a water conservation plan submitted to the United States Bureau of Reclamation that meets the requirements described in Section 10828.

(g) On or before December 31, 2013, December 31, 2016, and December 31, 2021, the department, in consultation with the board, shall submit to the Legislature a report on the agricultural efficient water management practices that have been implemented and are planned to be implemented and an assessment of the manner in which the implementation of those efficient water management practices has affected and will affect agricultural operations, including estimated water use efficiency improvements, if any.

(h) The department may update the efficient water management practices required pursuant to subdivision (c), in consultation with the Agricultural Water Management Council, the United States Bureau of Reclamation, and the board. All efficient water management practices for agricultural water use pursuant to this chapter shall be adopted or revised by the department only after the department conducts public hearings to allow participation of the diverse geographical areas and interests of the state.

(i) (1) The department shall adopt regulations that provide for a range of options that agricultural water suppliers may use or implement to comply with the measurement requirement in paragraph (1) of subdivision (b).

(2) The initial adoption of a regulation authorized by this subdivision is deemed to address an emergency, for purposes of Sections 11346.1 and 11349.6 of the Government Code, and the department is hereby exempted for that purpose from the requirements of subdivision (b) of Section 11346.1 of the Government Code. After the initial adoption of an emergency regulation pursuant to this subdivision, the department shall not request approval from the Office of Administrative Law to readopt the regulation as an emergency regulation pursuant to Section 11346.1 of the Government Code.

CHAPTER 5. SUSTAINABLE WATER MANAGEMENT

10608.50. (a) The department, in consultation with the board, shall promote implementation of regional water resources management practices through increased incentives and removal of barriers consistent with state and federal law. Potential changes may include, but are not limited to, all of the following:

(1) Revisions to the requirements for urban and agricultural water management plans.

(2) Revisions to the requirements for integrated regional water management plans.

(3) Revisions to the eligibility for state water management grants and loans.

(4) Revisions to state or local permitting requirements that increase water supply opportunities, but do not weaken water quality protection under state and federal law.

(5) Increased funding for research, feasibility studies, and project construction.

(6) Expanding technical and educational support for local land use and water management agencies.

(b) No later than January 1, 2011, and updated as part of the California Water Plan, the department, in consultation with the board, and with public input, shall propose new statewide targets, or review and update existing statewide targets, for regional water resources management practices, including, but not limited to, recycled water, brackish groundwater desalination, and infiltration and direct use of urban stormwater runoff.

CHAPTER 6. STANDARDIZED DATA COLLECTION

10608.52. (a) The department, in consultation with the board, the California Bay-Delta Authority or its successor agency, the State Department of Public Health, and the Public Utilities Commission, shall develop a single standardized water use reporting form to meet the water use information needs of each agency, including the needs of urban water suppliers that elect to determine and report progress toward achieving targets on a regional basis as provided in subdivision (a) of Section 10608.28.

(b) At a minimum, the form shall be developed to accommodate information sufficient to assess an urban water supplier's compliance with conservation targets pursuant to Section 10608.24 and an agricultural water supplier's compliance with implementation of efficient water management practices pursuant to subdivision (a) of Section 10608.48. The form shall accommodate reporting by urban water suppliers on an individual or regional basis as provided in subdivision (a) of Section 10608.28.

CHAPTER 7. FUNDING PROVISIONS

10608.56. (a) On and after July 1, 2016, an urban retail water supplier is not eligible for a water grant or loan awarded or administered by the state unless the supplier complies with this part.

(b) On and after July 1, 2013, an agricultural water supplier is not eligible for a water grant or loan awarded or administered by the state unless the supplier complies with this part.

(c) Notwithstanding subdivision (a), the department shall determine that an urban retail water supplier is eligible for a water grant or loan even though the supplier has not met the per capita reductions required pursuant to Section 10608.24, if the urban retail water supplier has submitted to the department for approval a schedule, financing plan, and budget, to be included in the grant or loan agreement, for achieving the per capita reductions. The supplier may request grant or loan funds to achieve the per capita reductions to the extent the request is consistent with the eligibility requirements applicable to the water funds.

(d) Notwithstanding subdivision (b), the department shall determine that an agricultural water supplier is eligible for a water grant or loan even though the supplier is not implementing all of the efficient water management practices described in Section 10608.48, if the agricultural water supplier has submitted to the department for approval a schedule, financing plan, and budget, to be included in the grant or loan agreement, for implementation of the efficient water management practices. The supplier may request grant or loan funds to implement the efficient water management practices to the extent the request is consistent with the eligibility requirements applicable to the water funds.

(e) Notwithstanding subdivision (a), the department shall determine that an urban retail water supplier is eligible for a water grant or loan even though the supplier has not met the per capita reductions required pursuant to Section 10608.24, if the urban retail water supplier has submitted to the department for approval documentation demonstrating that its entire service area qualifies as a disadvantaged community.

(f) The department shall not deny eligibility to an urban retail water supplier or agricultural water supplier in compliance with the requirements of this part and Part 2.8 (commencing with Section 10800), that is participating in a multiagency water project, or an integrated regional water management plan, developed pursuant to Section 75026 of the Public Resources Code, solely on the basis that one or more of the agencies participating in the project or plan is not implementing all of the requirements of this part or Part 2.8 (commencing with Section 10800).

10608.60. (a) It is the intent of the Legislature that funds made available by Section 75026 of the Public Resources Code should be expended, consistent with Division 43 (commencing with Section 75001) of the Public Resources Code and upon appropriation by the Legislature, for grants to implement this part. In the allocation of funding, it is the intent of the

Legislature that the department give consideration to disadvantaged communities to assist in implementing the requirements of this part.

(b) It is the intent of the Legislature that funds made available by Section 75041 of the Public Resources Code, should be expended, consistent with Division 43 (commencing with Section 75001) of the Public Resources Code and upon appropriation by the Legislature, for direct expenditures to implement this part.

CHAPTER 8. QUANTIFYING AGRICULTURAL WATER USE EFFICIENCY

10608.64. The department, in consultation with the Agricultural Water Management Council, academic experts, and other stakeholders, shall develop a methodology for quantifying the efficiency of agricultural water use. Alternatives to be assessed shall include, but not be limited to, determination of efficiency levels based on crop type or irrigation system distribution uniformity. On or before December 31, 2011, the department shall report to the Legislature on a proposed methodology and a plan for implementation. The plan shall include the estimated implementation costs and the types of data needed to support the methodology. Nothing in this section authorizes the department to implement a methodology established pursuant to this section.

SEC. 2. Section 10631.5 of the Water Code is amended to read:

10631.5. (a) (1) Beginning January 1, 2009, the terms of, and eligibility for, a water management grant or loan made to an urban water supplier and awarded or administered by the department, state board, or California Bay-Delta Authority or its successor agency shall be conditioned on the implementation of the water demand management measures described in Section 10631, as determined by the department pursuant to subdivision (b).

(2) For the purposes of this section, water management grants and loans include funding for programs and projects for surface water or groundwater storage, recycling, desalination, water conservation, water supply reliability, and water supply augmentation. This section does not apply to water management projects funded by the federal American Recovery and Reinvestment Act of 2009 (Public Law 111-5).

(3) Notwithstanding paragraph (1), the department shall determine that an urban water supplier is eligible for a water management grant or loan even though the supplier is not implementing all of the water demand management measures described in Section 10631, if the urban water supplier has submitted to the department for approval a schedule, financing plan, and budget, to be included in the grant or loan agreement, for implementation of the water demand management measures. The supplier may request grant or loan funds to implement the water demand management measures to the extent the request is consistent with the eligibility requirements applicable to the water management funds.

(4) (A) Notwithstanding paragraph (1), the department shall determine that an urban water supplier is eligible for a water management grant or loan even though the supplier is not implementing all of the water demand management measures described in Section 10631, if an urban water supplier submits to the department for approval documentation demonstrating that a water demand management measure is not locally cost effective. If the department determines that the documentation submitted by the urban water supplier fails to demonstrate that a water demand management measure is not locally cost effective, the department shall notify the urban water supplier and the agency administering the grant or loan program within 120 days that the documentation does not satisfy the requirements for an exemption, and include in that notification a detailed statement to support the determination.

(B) For purposes of this paragraph, “not locally cost effective” means that the present value of the local benefits of implementing a water demand management measure is less than the present value of the local costs of implementing that measure.

(b) (1) The department, in consultation with the state board and the California Bay-Delta Authority or its successor agency, and after soliciting public comment regarding eligibility requirements, shall develop eligibility requirements to implement the requirement of paragraph (1) of subdivision (a). In establishing these eligibility requirements, the department shall do both of the following:

(A) Consider the conservation measures described in the Memorandum of Understanding Regarding Urban Water Conservation in California, and alternative conservation approaches that provide equal or greater water savings.

(B) Recognize the different legal, technical, fiscal, and practical roles and responsibilities of wholesale water suppliers and retail water suppliers.

(2) (A) For the purposes of this section, the department shall determine whether an urban water supplier is implementing all of the water demand management measures described in Section 10631 based on either, or a combination, of the following:

(i) Compliance on an individual basis.

(ii) Compliance on a regional basis. Regional compliance shall require participation in a regional conservation program consisting of two or more urban water suppliers that achieves the level of conservation or water efficiency savings equivalent to the amount of conservation or savings achieved if each of the participating urban water suppliers implemented the water demand management measures. The urban water supplier administering the regional program shall provide participating urban water suppliers and the department with data to demonstrate that the regional program is consistent with this clause. The department shall review the data to determine whether the urban water suppliers in the regional program are meeting the eligibility requirements.

(B) The department may require additional information for any determination pursuant to this section.

(3) The department shall not deny eligibility to an urban water supplier in compliance with the requirements of this section that is participating in a multiagency water project, or an integrated regional water management plan, developed pursuant to Section 75026 of the Public Resources Code, solely on the basis that one or more of the agencies participating in the project or plan is not implementing all of the water demand management measures described in Section 10631.

(c) In establishing guidelines pursuant to the specific funding authorization for any water management grant or loan program subject to this section, the agency administering the grant or loan program shall include in the guidelines the eligibility requirements developed by the department pursuant to subdivision (b).

(d) Upon receipt of a water management grant or loan application by an agency administering a grant and loan program subject to this section, the agency shall request an eligibility determination from the department with respect to the requirements of this section. The department shall respond to the request within 60 days of the request.

(e) The urban water supplier may submit to the department copies of its annual reports and other relevant documents to assist the department in determining whether the urban water supplier is implementing or scheduling the implementation of water demand management activities. In addition, for urban water suppliers that are signatories to the Memorandum of Understanding Regarding Urban Water Conservation in California and submit biennial reports to the California Urban Water Conservation Council in accordance with the memorandum, the department may use these reports to assist in tracking the implementation of water demand management measures.

(f) This section shall remain in effect only until July 1, 2016, and as of that date is repealed, unless a later enacted statute, that is enacted before July 1, 2016, deletes or extends that date.

SEC. 3. Part 2.8 (commencing with Section 10800) of Division 6 of the Water Code is repealed.

SEC. 4. Part 2.8 (commencing with Section 10800) is added to Division 6 of the Water Code, to read:

PART 2.8. AGRICULTURAL WATER MANAGEMENT PLANNING

CHAPTER 1. GENERAL DECLARATIONS AND POLICY

10800. This part shall be known and may be cited as the Agricultural Water Management Planning Act.

10801. The Legislature finds and declares all of the following:

- (a) The waters of the state are a limited and renewable resource.
- (b) The California Constitution requires that water in the state be used in a reasonable and beneficial manner.
- (c) Urban water districts are required to adopt water management plans.

(d) The conservation of agricultural water supplies is of great statewide concern.

(e) There is a great amount of reuse of delivered water, both inside and outside the water service areas.

(f) Significant noncrop beneficial uses are associated with agricultural water use, including streamflows and wildlife habitat.

(g) Significant opportunities exist in some areas, through improved irrigation water management, to conserve water or to reduce the quantity of highly saline or toxic drainage water.

(h) Changes in water management practices should be carefully planned and implemented to minimize adverse effects on other beneficial uses currently being served.

(i) Agricultural water suppliers that receive water from the federal Central Valley Project are required by federal law to prepare and implement water conservation plans.

(j) Agricultural water users applying for a permit to appropriate water from the board are required to prepare and implement water conservation plans.

10802. The Legislature finds and declares that all of the following are the policies of the state:

(a) The conservation of water shall be pursued actively to protect both the people of the state and the state's water resources.

(b) The conservation of agricultural water supplies shall be an important criterion in public decisions with regard to water.

(c) Agricultural water suppliers shall be required to prepare water management plans to achieve conservation of water.

CHAPTER 2. DEFINITIONS

10810. Unless the context otherwise requires, the definitions set forth in this chapter govern the construction of this part.

10811. "Agricultural water management plan" or "plan" means an agricultural water management plan prepared pursuant to this part.

10812. "Agricultural water supplier" has the same meaning as defined in Section 10608.12.

10813. "Customer" means a purchaser of water from a water supplier who uses water for agricultural purposes.

10814. "Person" means any individual, firm, association, organization, partnership, business, trust, corporation, company, public agency, or any agency of that entity.

10815. "Public agency" means any city, county, city and county, special district, or other public entity.

10816. "Urban water supplier" has the same meaning as set forth in Section 10617.

10817. “Water conservation” means the efficient management of water resources for beneficial uses, preventing waste, or accomplishing additional benefits with the same amount of water.

CHAPTER 3. AGRICULTURAL WATER MANAGEMENT PLANS

Article 1. General Provisions

10820. (a) An agricultural water supplier shall prepare and adopt an agricultural water management plan in the manner set forth in this chapter on or before December 31, 2012, and shall update that plan on December 31, 2015, and on or before December 31 every five years thereafter.

(b) Every supplier that becomes an agricultural water supplier after December 31, 2012, shall prepare and adopt an agricultural water management plan within one year after the date it has become an agricultural water supplier.

(c) A water supplier that indirectly provides water to customers for agricultural purposes shall not prepare a plan pursuant to this part without the consent of each agricultural water supplier that directly provides that water to its customers.

10821. (a) An agricultural water supplier required to prepare a plan pursuant to this part shall notify each city or county within which the supplier provides water supplies that the agricultural water supplier will be preparing the plan or reviewing the plan and considering amendments or changes to the plan. The agricultural water supplier may consult with, and obtain comments from, each city or county that receives notice pursuant to this subdivision.

(b) The amendments to, or changes in, the plan shall be adopted and submitted in the manner set forth in Article 3 (commencing with Section 10840).

Article 2. Contents of Plans

10825. (a) It is the intent of the Legislature in enacting this part to allow levels of water management planning commensurate with the numbers of customers served and the volume of water supplied.

(b) This part does not require the implementation of water conservation programs or practices that are not locally cost effective.

10826. An agricultural water management plan shall be adopted in accordance with this chapter. The plan shall do all of the following:

(a) Describe the agricultural water supplier and the service area, including all of the following:

- (1) Size of the service area.
- (2) Location of the service area and its water management facilities.
- (3) Terrain and soils.
- (4) Climate.

- (5) Operating rules and regulations.
- (6) Water delivery measurements or calculations.
- (7) Water rate schedules and billing.
- (8) Water shortage allocation policies.
- (b) Describe the quantity and quality of water resources of the agricultural water supplier, including all of the following:
 - (1) Surface water supply.
 - (2) Groundwater supply.
 - (3) Other water supplies.
 - (4) Source water quality monitoring practices.
 - (5) Water uses within the agricultural water supplier's service area, including all of the following:
 - (A) Agricultural.
 - (B) Environmental.
 - (C) Recreational.
 - (D) Municipal and industrial.
 - (E) Groundwater recharge.
 - (F) Transfers and exchanges.
 - (G) Other water uses.
 - (6) Drainage from the water supplier's service area.
 - (7) Water accounting, including all of the following:
 - (A) Quantifying the water supplier's water supplies.
 - (B) Tabulating water uses.
 - (C) Overall water budget.
 - (8) Water supply reliability.
- (c) Include an analysis, based on available information, of the effect of climate change on future water supplies.
- (d) Describe previous water management activities.
- (e) Include in the plan the water use efficiency information required pursuant to Section 10608.48.

10827. Agricultural water suppliers that are members of the Agricultural Water Management Council, and that submit water management plans to that council in accordance with the "Memorandum of Understanding Regarding Efficient Water Management Practices By Agricultural Water Suppliers In California," dated January 1, 1999, may submit the water management plans identifying water demand management measures currently being implemented, or scheduled for implementation, to satisfy the requirements of Section 10826.

10828. (a) Agricultural water suppliers that are required to submit water conservation plans to the United States Bureau of Reclamation pursuant to either the Central Valley Project Improvement Act (Public Law 102-575) or the Reclamation Reform Act of 1982, or both, may submit those water conservation plans to satisfy the requirements of Section 10826, if both of the following apply:

- (1) The agricultural water supplier has adopted and submitted the water conservation plan to the United States Bureau of Reclamation within the previous four years.

(2) The United States Bureau of Reclamation has accepted the water conservation plan as adequate.

(b) This part does not require agricultural water suppliers that are required to submit water conservation plans to the United States Bureau of Reclamation pursuant to either the Central Valley Project Improvement Act (Public Law 102-575) or the Reclamation Reform Act of 1982, or both, to prepare and adopt water conservation plans according to a schedule that is different from that required by the United States Bureau of Reclamation.

10829. An agricultural water supplier may satisfy the requirements of this part by adopting an urban water management plan pursuant to Part 2.6 (commencing with Section 10610) or by participation in areawide, regional, watershed, or basinwide water management planning if those plans meet or exceed the requirements of this part.

Article 3. Adoption and Implementation of Plans

10840. Every agricultural water supplier shall prepare its plan pursuant to Article 2 (commencing with Section 10825).

10841. Prior to adopting a plan, the agricultural water supplier shall make the proposed plan available for public inspection, and shall hold a public hearing on the plan. Prior to the hearing, notice of the time and place of hearing shall be published within the jurisdiction of the publicly owned agricultural water supplier pursuant to Section 6066 of the Government Code. A privately owned agricultural water supplier shall provide an equivalent notice within its service area and shall provide a reasonably equivalent opportunity that would otherwise be afforded through a public hearing process for interested parties to provide input on the plan. After the hearing, the plan shall be adopted as prepared or as modified during or after the hearing.

10842. An agricultural water supplier shall implement the plan adopted pursuant to this chapter in accordance with the schedule set forth in its plan, as determined by the governing body of the agricultural water supplier.

10843. (a) An agricultural water supplier shall submit to the entities identified in subdivision (b) a copy of its plan no later than 30 days after the adoption of the plan. Copies of amendments or changes to the plans shall be submitted to the entities identified in subdivision (b) within 30 days after the adoption of the amendments or changes.

(b) An agricultural water supplier shall submit a copy of its plan and amendments or changes to the plan to each of the following entities:

- (1) The department.
- (2) Any city, county, or city and county within which the agricultural water supplier provides water supplies.
- (3) Any groundwater management entity within which jurisdiction the agricultural water supplier extracts or provides water supplies.
- (4) Any urban water supplier within which jurisdiction the agricultural water supplier provides water supplies.

(5) Any city or county library within which jurisdiction the agricultural water supplier provides water supplies.

(6) The California State Library.

(7) Any local agency formation commission serving a county within which the agricultural water supplier provides water supplies.

10844. (a) Not later than 30 days after the date of adopting its plan, the agricultural water supplier shall make the plan available for public review on the agricultural water supplier's Internet Web site.

(b) An agricultural water supplier that does not have an Internet Web site shall submit to the department, not later than 30 days after the date of adopting its plan, a copy of the adopted plan in an electronic format. The department shall make the plan available for public review on the department's Internet Web site.

10845. (a) The department shall prepare and submit to the Legislature, on or before December 31, 2013, and thereafter in the years ending in six and years ending in one, a report summarizing the status of the plans adopted pursuant to this part.

(b) The report prepared by the department shall identify the outstanding elements of any plan adopted pursuant to this part. The report shall include an evaluation of the effectiveness of this part in promoting efficient agricultural water management practices and recommendations relating to proposed changes to this part, as appropriate.

(c) The department shall provide a copy of the report to each agricultural water supplier that has submitted its plan to the department. The department shall also prepare reports and provide data for any legislative hearing designed to consider the effectiveness of plans submitted pursuant to this part.

(d) This section does not authorize the department, in preparing the report, to approve, disapprove, or critique individual plans submitted pursuant to this part.

CHAPTER 4. MISCELLANEOUS PROVISIONS

10850. (a) Any action or proceeding to attack, review, set aside, void, or annul the acts or decisions of an agricultural water supplier on the grounds of noncompliance with this part shall be commenced as follows:

(1) An action or proceeding alleging failure to adopt a plan shall be commenced within 18 months after that adoption is required by this part.

(2) Any action or proceeding alleging that a plan, or action taken pursuant to the plan, does not comply with this part shall be commenced within 120 days after submitting the plan or amendments to the plan to entities in accordance with Section 10844 or the taking of that action.

(b) In an action or proceeding to attack, review, set aside, void, or annul a plan, or an action taken pursuant to the plan by an agricultural water supplier, on the grounds of noncompliance with this part, the inquiry shall extend only to whether there was a prejudicial abuse of discretion. Abuse

of discretion is established if the agricultural water supplier has not proceeded in a manner required by law, or if the action by the agricultural water supplier is not supported by substantial evidence.

10851. The California Environmental Quality Act (Division 13 (commencing with Section 21000) of the Public Resources Code) does not apply to the preparation and adoption of plans pursuant to this part. This part does not exempt projects for implementation of the plan or for expanded or additional water supplies from the California Environmental Quality Act.

10852. An agricultural water supplier is not eligible for a water grant or loan awarded or administered by the state unless the supplier complies with this part.

10853. No agricultural water supplier that provides water to less than 25,000 irrigated acres, excluding recycled water, shall be required to implement the requirements of this part or Part 2.55 (commencing with Section 10608) unless sufficient funding has specifically been provided to that water supplier for these purposes.

SEC. 5. This act shall take effect only if Senate Bill 1 and Senate Bill 6 of the 2009–10 Seventh Extraordinary Session of the Legislature are enacted and become effective.

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NIPOMO COMMUNITY SERVICES DISTRICT

148 SOUTH WILSON STREET
POST OFFICE BOX 326
NIPOMO, CA 93444 - 0326
(805) 929-1133 FAX (805) 929-1932
Web site address www.ncsd.com

MEMORANDUM

TO: MICHAEL LEBRUN, GENERAL MANAGER *ML*
FROM: CELESTE WHITLOW, WATER CONSERVATION COORDINATOR *CW*
DATE: NOVEMBER 7, 2009
RE: AB 407(Padilla) RESIDENTIAL AND COMMERCIAL PLUMBING FIXTURE
RETROFITTING.

This bill applies to single-family residences (SFR), multi-family residences (MFR) and commercial buildings built prior to 1994, and requires owner replacement of noncompliant (non-water-conserving) plumbing fixtures with water-conserving plumbing fixtures.

The plumbing-fixture retrofitting must be done by 1/1/2017 for SFRs. Owners applying for building permits for a SFR after 1/1/2014 will be required to replace all noncompliant plumbing fixtures as a condition for receiving a permit.

The plumbing-fixture retrofitting for MFRs and commercial buildings must be completed by 1/1/2019. Owners applying for building permits after 2014 will be required to replace some or all of noncompliant plumbing fixtures as a condition for receiving a permit.

This bill also requires sellers of SFRs, MFRs and commercial buildings to provide written disclosure to a potential buyer of the new requirement and whether the property has been retrofitted as required.

This bill does not preempt local ordinances requiring plumbing retrofits if the ordinance was adopted prior to 7/1/2009.

If the Commission on State Mandate decides that the bill includes a cost mandate, the state will provide reimbursement to local agencies.

Senate Bill No. 407

CHAPTER 587

An act to add Section 1102.155 to, and to add Article 1.4 (commencing with Section 1101.1) to Chapter 2 of Title 4 of Part 4 of Division 2 of, the Civil Code, relating to water conservation.

[Approved by Governor October 11, 2009. Filed with
Secretary of State October 11, 2009.]

LEGISLATIVE COUNSEL'S DIGEST

SB 407, Padilla. Property transfers: plumbing fixtures replacement.

(1) Existing law authorizes public entities that supply water, by the adoption of an ordinance or resolution pursuant to specified procedures, to adopt and enforce a water conservation program. Existing law requires certain disclosures to be made upon the transfer of real estate. Existing law requires that all water closets or urinals sold or installed in the state use no more than an average of 1.6 gallons or one gallon per flush, respectively.

This bill would establish requirements for residential and commercial real property built and available for use on or before January 1, 1994, for replacing plumbing fixtures that are not water conserving, as defined as noncompliant plumbing fixtures. On and after January 1, 2014, the bill would require, for all building alterations or improvements to single-family residential real property, as defined, that water-conserving plumbing fixtures replace other noncompliant plumbing fixtures as a condition for issuance of a certificate of final completion and occupancy or final permit approval by the local building department. By creating a new duty to inspect for local officials, this bill would impose a state-mandated local program. The bill would require, on or before January 1, 2017, that all noncompliant plumbing fixtures in any single-family residential real property shall be replaced by the property owner with water-conserving plumbing fixtures.

The bill would require, on or before January 1, 2019, that all noncompliant plumbing fixtures in multifamily residential real property and commercial real property, as defined, be replaced with water-conserving plumbing fixtures. The bill would require, on and after January 1, 2014, for specified building alterations or improvements to multifamily residential real property and commercial real property, that water-conserving plumbing fixtures replace other noncompliant plumbing fixtures as a condition for issuance of a certificate of final completion and occupancy or final permit approval by the local building department. By creating a new duty to inspect for local officials, this bill would impose a state-mandated local program.

The bill would require, on and after January 1, 2017, that a seller or transferor of single-family residential real property, multifamily residential real property, or commercial real property disclose to a purchaser or

transferee, in writing, specified requirements for replacing plumbing fixtures, and whether the real property includes noncompliant plumbing. The bill would require, on and after January 1, 2017, a seller of certain residential real property to make a specified disclosure in this regard. The bill would permit an owner or the owner's agent to enter rental property for the purpose of installing, repairing, testing, and maintaining water-conserving plumbing fixtures, as specified, and would require, on and after January 1, 2019, that the water-conserving plumbing fixtures prescribed by the bill operate at the manufacturer's rated water consumption at the time that a tenant takes possession, as specified. The bill would provide that the application of its requirements may be postponed up to one year, as specified, with respect to a building for which a demolition permit has been issued. The bill would permit a city or county or retail water supplier to enact a local ordinance or policy that promotes compliance with the bill's provisions or that will result in greater water savings than otherwise provided by the bill. The bill would provide that any city, county, or city and county that has adopted an ordinance requiring retrofit of noncompliant plumbing fixtures prior to July 1, 2009, is exempt from its requirements so long as the ordinance remains in effect.

(2) The California Constitution requires the state to reimburse local agencies and school districts for certain costs mandated by the state. Statutory provisions establish procedures for making that reimbursement.

This bill would provide that no reimbursement is required by this act for a specified reason.

The people of the State of California do enact as follows:

SECTION 1. Article 1.4 (commencing with Section 1101.1) is added to Chapter 2 of Title 4 of Part 4 of Division 2 of the Civil Code, to read:

Article 1.4. Installation of Water Use Efficiency Improvements

1101.1. The Legislature finds and declares all of the following:

(a) Adequate water supply reliability for all uses is essential to the future economic and environmental health of California.

(b) Environmentally sound strategies to meet future water supply and wastewater treatment needs are key to protecting and restoring aquatic resources in California.

(c) There is a pressing need to address water supply reliability issues raised by growing urban areas.

(d) Economic analysis by urban water agencies has identified urban water conservation as a cost-effective approach to addressing water supply needs.

(e) There are many water conservation practices that produce significant energy and other resource savings that should be encouraged as a matter of state policy.

(f) Since the 1991 signing of the “Memorandum of Understanding Regarding Urban Water Conservation in California,” many urban water and wastewater treatment agencies have gained valuable experience that can be applied to produce significant statewide savings of water, energy, and associated infrastructure costs. This experience indicates a need to regularly revise and update water conservation methodologies and practices.

(g) To address these concerns, it is the intent of the Legislature to require that residential and commercial real property built and available for use or occupancy on or before January 1, 1994, be equipped with water-conserving plumbing fixtures.

(h) It is further the intent of the Legislature that retail water suppliers are encouraged to provide incentives, financing mechanisms, and funding to assist property owners with these retrofit obligations.

1101.2. Except as provided in Section 1101.7, this article shall apply to residential and commercial real property built and available for use on or before January 1, 1994.

1101.3. For the purposes of this article:

(a) “Commercial real property” means any real property that is improved with, or consisting of, a building that is intended for commercial use, including hotels and motels, that is not a single-family residential real property or a multifamily residential real property.

(b) “Multifamily residential real property” means any real property that is improved with, or consisting of, a building containing more than one unit that is intended for human habitation, or any mixed residential-commercial buildings or portions thereof that are intended for human habitation. Multifamily residential real property includes residential hotels but does not include hotels and motels that are not residential hotels.

(c) “Noncompliant plumbing fixture” means any of the following:

(1) Any toilet manufactured to use more than 1.6 gallons of water per flush.

(2) Any urinal manufactured to use more than one gallon of water per flush.

(3) Any showerhead manufactured to have a flow capacity of more than 2.5 gallons of water per minute.

(4) Any interior faucet that emits more than 2.2 gallons of water per minute.

(d) “Single-family residential real property” means any real property that is improved with, or consisting of, a building containing not more than one unit that is intended for human habitation.

(e) “Water-conserving plumbing fixture” means any fixture that is in compliance with current building standards applicable to a newly constructed real property of the same type.

(f) “Sale or transfer” means the sale or transfer of an entire real property estate or the fee interest in that real property estate and does not include the sale or transfer of a partial interest, including a leasehold.

1101.4. (a) On and after January 1, 2014, for all building alterations or improvements to single-family residential real property, as a condition for

issuance of a certificate of final completion and occupancy or final permit approval by the local building department, the permit applicant shall replace all noncompliant plumbing fixtures with water-conserving plumbing fixtures.

(b) On or before January 1, 2017, noncompliant plumbing fixtures in any single-family residential real property shall be replaced by the property owner with water-conserving plumbing fixtures.

(c) On and after January 1, 2017, a seller or transferor of single-family residential real property shall disclose in writing to the prospective purchaser or transferee the requirements of subdivision (b) and whether the real property includes any noncompliant plumbing fixtures.

1101.5. (a) On or before January 1, 2019, all noncompliant plumbing fixtures in any multifamily residential real property and in any commercial real property shall be replaced with water-conserving plumbing fixtures.

(b) An owner or the owner's agent may enter the owner's property for the purpose of installing, repairing, testing, and maintaining water-conserving plumbing fixtures required by this section, consistent with notice requirements of Section 1954.

(c) On and after January 1, 2019, the water-conserving plumbing fixtures required by this section shall be operating at the manufacturer's rated water consumption at the time that the tenant takes possession. A tenant shall be responsible for notifying the owner or owner's agent if the tenant becomes aware that a water-conserving plumbing fixture within his or her unit is not operating at the manufacturer's rated water consumption. The owner or owner's agent shall correct an inoperability in a water-conserving plumbing fixture upon notice by the tenant or if detected by the owner or the owner's agent.

(d) (1) On and after January 1, 2014, all noncompliant plumbing fixtures in any multifamily residential real property and any commercial residential real property shall be replaced with water-conserving plumbing fixtures in the following circumstances:

(A) For building additions in which the sum of concurrent building permits by the same permit applicant would increase the floor area of the space in a building by more than 10 percent, the building permit applicant shall replace all noncompliant plumbing fixtures in the building.

(B) For building alterations or improvements in which the total construction cost estimated in the building permit is greater than one hundred fifty thousand dollars (\$150,000), the building permit applicant shall replace all noncompliant plumbing fixtures that service the specific area of the improvement.

(C) Notwithstanding subparagraph (A) or (B), for any alterations or improvements to a room in a building that require a building permit and that room contains any noncompliant plumbing fixtures, the building permit applicant shall replace all noncompliant plumbing fixtures in that room.

(2) Replacement of all noncompliant plumbing fixtures with water-conserving plumbing fixtures, as described in paragraph (1), shall be a condition for issuance of a certificate of final completion and occupancy or final permit approval by the local building department.

(e) On and after January 1, 2019, a seller or transferor of multifamily residential real property or of commercial real property shall disclose to the prospective purchaser or transferee, in writing, the requirements of subdivision (a) and whether the property includes any noncompliant plumbing fixtures. This disclosure may be included in other transactional documents.

1101.6. The duty of an owner or building permit applicant to comply with the requirements of this article shall be postponed for one year from the date of issuance of a demolition permit for the building. If the building is demolished within the one-year postponement, the requirements of this article shall not apply. If the building is not demolished after the expiration of one year, the provisions of this article shall apply, subject to appeal to the local building department, even though the demolition permit is still in effect or a new demolition permit has been issued.

1101.7. This article shall not apply to any of the following:

- (a) Registered historical sites.
- (b) Real property for which a licensed plumber certifies that, due to the age or configuration of the property or its plumbing, installation of water-conserving plumbing fixtures is not technically feasible.
- (c) A building for which water service is permanently disconnected.

1101.8. A city, county, or city and county, or a retail water supplier may do either of the following:

- (a) Enact local ordinances or establish policies that promote compliance with this article.
- (b) Enact local ordinances or establish policies that will result in a greater amount of water savings than those provided for in this article.

1101.9. Any city, county, or city and county that has adopted an ordinance requiring retrofit of noncompliant plumbing fixtures prior to July 1, 2009, shall be exempt from the requirements of this article so long as the ordinance remains in effect.

SEC. 2. Section 1102.155 is added to the Civil Code, to read:

1102.155. (a) (1) The seller of residential real property subject to this article shall disclose, in writing, that Section 1101.4 of the Civil Code requires that California single-family residences be equipped with water-conserving plumbing fixtures on or before January 1, 2017, and shall disclose whether the property includes any noncompliant plumbing fixtures.

(2) The seller shall affirm that this representation is that of the seller and not a representation of any agent, and that this disclosure is not intended to be part of any contract between the buyer and the seller. The seller shall further affirm that this disclosure is not a warranty of any kind by the seller or any agent representing any principal in the transaction and is not a substitute for any inspections that or warranties any principal may wish to obtain.

(b) This section shall become operative on January 1, 2017.

SEC. 3. No reimbursement is required by this act pursuant to Section 6 of Article XIII B of the California Constitution because a local agency or school district has the authority to levy service charges, fees, or assessments

sufficient to pay for the program or level of service mandated by this act, within the meaning of Section 17556 of the Government Code.

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NIPOMO COMMUNITY SERVICES DISTRICT

148 SOUTH WILSON STREET
POST OFFICE BOX 326
NIPOMO, CA 93444 - 0326
(805) 929-1133 FAX (805) 929-1932
Web site address www.ncsd.com

MEMORANDUM

TO: MICHAEL LEBRUN, GENERAL MANAGER *ML*
FROM: CELESTE WHITLOW, WATER CONSERVATION COORDINATOR *CW*
DATE: NOVEMBER 7, 2009
RE: AB 474: VOLUNTARY CONTRACTURAL ASSESSMENTS

AB 474 (Blumenfield) allows a legislative body of any public agency to designate an area in which landowners and public agency (including community services districts, cities, counties, and other public agencies providing water service to retail customers) may enter into contractual assessments to finance the installation of water-efficiency improvements which are permanently fixed to real property.

Precedent was set last year (AB 811) when legislators authorized city and county officials to use contractual assessments to finance the installation of energy efficiency improvements to residential, commercial, industrial, or other real property. Local officials want to use contractual assessments to finance water efficiency improvements on private property, as well.

For the purpose of this financing arrangement, "public agency" includes in its definition "community services district."

By providing low-interest loans, local agencies can assist customers who want to make permanent water-efficiency improvements but are deterred by up-front costs by providing low-interest loans. The customer who makes such improvements will immediately, and over the long-term, see water savings and decrease in water charges. The agency will benefit from the decrease in water consumption from these customers.

An example where this would be of benefit to a water provider is seen in the City of Henderson, NV. Their city includes low-income property owners. Turf-replacement rebate applications were approved for some low-income homeowners, but because of financial limitations, the turf-replacement landscape projects were not completed, or they were completed in a substandard manner. This left an unattractive landscape or torn-up landscape. This not only makes neighbors unhappy; it may reduce the property value of the home in question as well as the neighboring community.

Assembly Bill No. 474

CHAPTER 444

An act to amend Section 1102.6b of the Civil Code, and to amend Sections 5898.12, 5898.14, 5898.20, 5898.21, 5898.22, 5898.24, 5898.28, and 5898.30 of, and to add Section 5898.31 to, the Streets and Highways Code, relating to contractual assessments.

[Approved by Governor October 11, 2009. Filed with
Secretary of State October 11, 2009.]

LEGISLATIVE COUNSEL'S DIGEST

AB 474, Blumenfeld. Contractual assessments: water efficiency improvements.

Existing law authorizes the legislative body of any city, defined as a city, county, or city and county, to determine that it would be convenient and advantageous to designate an area within which authorized city officials and free and willing property owners may enter into contractual assessments and make arrangements to finance public improvements to specified lots or parcels or to finance the installation of distributed generation renewable energy sources or energy efficiency improvements that are permanently fixed to real property, as specified. Existing law requires the legislative body to make these determinations by adopting a resolution indicating its intention to do so and requires the resolution to include certain specified information.

This bill would expand these provisions to authorize the legislative body of any public agency, as defined, to determine that it would be in the public interest to designate an area within which authorized city officials and free and willing property owners may enter into contractual assessments to finance the installation of water efficiency improvements that are permanently fixed to real property, as specified. The bill would also, with respect to all of its provisions, modify its definitions and require a legislative body to perform additional record keeping duties and provide specified notice to any entity that provides energy or water within the boundaries of the area within which contractual assessments may be entered into. This bill would also require additional specified disclosures for a transfer of real property subject to a contractual assessment. The bill would declare the intent of the Legislature in regard to these provisions. This bill would make technical, nonsubstantive changes to these provisions.

The people of the State of California do enact as follows:

SECTION 1. Section 1102.6b of the Civil Code is amended to read:

1102.6b. (a) This section applies to all transfers of real property for which all of the following apply:

(1) The transfer is subject to this article.

(2) The property being transferred is subject to a continuing lien securing the levy of special taxes pursuant to the Mello-Roos Community Facilities Act (Chapter 2.5 (commencing with Section 53311) of Part 1 of Division 2 of Title 5 of the Government Code), to a fixed lien assessment collected in installments to secure bonds issued pursuant to the Improvement Bond Act of 1915 (Division 10 (commencing with Section 8500) of the Streets and Highways Code), or to a contractual assessment program authorized pursuant to Chapter 29 (commencing with Section 5898.10) of Part 3 of Division 7 of the Streets and Highway Code.

(3) A notice is not required pursuant to Section 53341.5 of the Government Code.

(b) In addition to any other disclosure required pursuant to this article, the seller of any real property subject to this section shall make a good faith effort to obtain a disclosure notice concerning the special tax as provided for in Section 53340.2 of the Government Code, or a disclosure notice concerning an assessment installment as provided in Section 53754 of the Government Code, from each local agency that levies a special tax pursuant to the Mello-Roos Community Facilities Act, or that collects assessment installments to secure bonds issued pursuant to the Improvement Bond Act of 1915 (Division 10 (commencing with Section 8500) of the Streets and Highways Code), or a disclosure notice concerning the contractual assessment as provided in Section 5898.24 of the Streets and Highways Code, on the property being transferred, and shall deliver that notice or those notices to the prospective purchaser, as long as the notices are made available by the local agency.

(c) (1) The seller of real property subject to this section may satisfy the disclosure notice requirements in regard to the bonds issued pursuant to the Improvement Bond Act of 1915 (Division 10 (commencing with Section 8500) of the Streets and Highways Code) by delivering a disclosure notice that is substantially equivalent and obtained from another source, until December 31, 2004.

(2) The seller of real property subject to this section may satisfy the disclosure notice requirements in regard to the assessments collected under the contractual assessment program authorized pursuant to Chapter 29 (commencing with Section 5898.10) of Part 3 of Division 7 of the Streets and Highway Code by delivering a disclosure notice that is substantially equivalent and obtained from another source.

(3) For the purposes of this section, a substantially equivalent disclosure notice includes, but is not limited to, a copy of the most recent year's property tax bill or an itemization of current assessment amounts applicable to the property.

(d) (1) Notwithstanding subdivision (c), at any time after the effective date of this section, the seller of real property subject to this section may satisfy the disclosure notice requirements of this section by delivering a

disclosure notice obtained from a nongovernmental source that satisfies the requirements of paragraph (2).

(2) A notice provided by a private entity other than a designated office, department, or bureau of the levying entity may be modified as needed to clearly and accurately describe a special tax pursuant to the Mello-Roos Community Facilities Act levied against the property or to clearly and accurately consolidate information about two or more districts that levy or are authorized to levy a special tax pursuant to the Mello-Roos Community Facilities Act against the property, and shall include the name of the Mello-Roos entity levying taxes against the property, the annual tax due for the Mello-Roos entity for the current tax year, the maximum tax that may be levied against the property in any year, the percentage by which the maximum tax for the Mello-Roos entity may increase per year, and the date until the tax may be levied against the property for the Mello-Roos entity and a contact telephone number, if available, for further information about the Mello-Roos entity. A notice provided by a private entity other than a designated office, department, or bureau of the levying entity may be modified as needed to clearly and accurately describe special assessments and bonds pursuant to the Improvement Bond Act of 1915 levied against the property, or to clearly and accurately consolidate information about two or more districts that levy or are authorized to levy special assessments and bonds pursuant to the Improvement Bond Act of 1915 against the property, and shall include the name of the special assessments and bonds issued pursuant to the Improvement Bond Act of 1915, the current annual tax on the property for the special assessments and bonds issued pursuant to the Improvement Bond Act of 1915 and a contact telephone number, if available, for further information about the special assessments and bonds issued pursuant to the Improvement Bond Act of 1915.

(3) This section does not change the ability to make disclosures pursuant to Section 1102.4 of the Civil Code.

(e) If a disclosure received pursuant to subdivision (b), (c), or (d) has been delivered to the transferee, a seller or his or her agent is not required to provide additional information concerning, and information in the disclosure shall be deemed to satisfy the responsibility of the seller or his or her agent to inform the transferee regarding the special tax or assessment installments and the district. Notwithstanding subdivision (b), (c), or (d), nothing in this section imposes a duty to discover a special tax or assessment installments or the existence of any levying district not actually known to the agents.

SEC. 2. Section 5898.12 of the Streets and Highways Code is amended to read:

5898.12. (a) It is the intent of the Legislature that this chapter should be used to finance public improvements to lots or parcels which are developed and where the costs and time delays involved in creating an assessment district pursuant to other provisions of this division or any other law would be prohibitively large relative to the cost of the public improvements to be financed.

(b) It is also the intent of the Legislature that this chapter should be used to finance the installation of distributed generation renewable energy sources or energy efficiency improvements that are permanently fixed to residential, commercial, industrial, agricultural, or other real property.

(c) It is also the intent of the Legislature to address chronic water needs throughout California by permitting voluntary individual efforts to improve water efficiency. The Legislature further intends that this chapter should be used to finance the installation of water efficiency improvements that are permanently fixed to residential, commercial, industrial, agricultural, or other real property, including, but not limited to, recycled water connections, synthetic turf, cisterns for stormwater recovery, and permeable pavement.

(d) It is also the intent of the Legislature that a public agency in the process of establishing an assessment program, to the extent feasible, use a good faith effort to provide advance notice of the proposed program to water and electric service providers in the relevant service area, as set forth in Section 5898.24, to allow the most efficient coordination and collaboration between the public agency and water and electric service providers.

(e) This chapter shall not be used to finance facilities for parcels which are undergoing development.

(f) This chapter shall not be used to finance the purchase or installation of appliances that are not permanently fixed to residential, commercial, industrial, agricultural, or other real property.

(g) Assessments may be levied pursuant to this chapter only with the free and willing consent of the owner of each lot or parcel on which an assessment is levied at the time the assessment is levied.

SEC. 3. Section 5898.14 of the Streets and Highways Code is amended to read:

5898.14. (a) The Legislature finds all of the following:

(1) Energy and water conservation efforts, including the promotion of energy efficiency improvements to residential, commercial, industrial, agricultural, or other real property are necessary to address the issue of global climate change.

(2) The upfront cost of making residential, commercial, industrial, agricultural, or other real property more energy and water efficient prevents many property owners from making those improvements. To make those improvements more affordable and to promote the installation of those improvements, it is necessary to authorize an alternative procedure for authorizing assessments to finance the cost of energy and water efficiency improvements.

(b) The Legislature declares that a public purpose will be served by a voluntary contractual assessment program that provides the legislative body of any public agency with the authority to finance the installation of distributed generation renewable energy sources and energy or water efficiency improvements that are permanently fixed to residential, commercial, industrial, agricultural, or other real property.

SEC. 4. Section 5898.20 of the Streets and Highways Code is amended to read:

5898.20. (a) (1) The legislative body of any public agency may determine that it would be convenient and advantageous to designate an area within the public agency, which may encompass the entire public agency or a lesser portion, within which authorized public agency officials and property owners may enter into voluntary contractual assessments for public improvements and to make financing arrangements pursuant to this chapter.

(2) The legislative body of any public agency may also determine that it would be convenient, advantageous, and in the public interest to designate an area within the public agency, which may encompass the entire public agency or a lesser portion, within which authorized public agency officials and property owners may enter into voluntary contractual assessments to finance the installation of distributed generation renewable energy sources or energy or water efficiency improvements that are permanently fixed to real property pursuant to this chapter.

(b) The legislative body shall make these determinations by adopting a resolution indicating its intention to do so. The resolution of intention shall include a statement that the public agency proposes to make voluntary contractual assessment financing available to property owners, shall identify the kinds of public works, distributed generation renewable energy sources, or energy or water efficiency improvements that may be financed, shall describe the boundaries of the area within which voluntary contractual assessments may be entered into, and shall briefly describe the proposed arrangements for financing the program, including a brief description of criteria for determining the creditworthiness of a property owner. The resolution of intention shall state that it is in the public interest to finance the installation of distributed generation renewable energy sources or energy or water efficiency improvements, or both, pursuant to paragraph (2) of subdivision (a), if applicable. The resolution shall state that a public hearing should be held at which interested persons may object to or inquire about the proposed program or any of its particulars, and shall state the time and place of the hearing. The resolution shall direct an appropriate public agency official to prepare a report pursuant to Section 5898.22 and to enter into consultations with the county auditor's office or county controller's office in order to reach agreement on what additional fees, if any, will be charged to the city or county for incorporating the proposed voluntary contractual assessments into the assessments of the general taxes of the city or county on real property.

(c) As used in this chapter, each of the following terms shall have the following meaning:

(1) "Efficiency improvements" means permanent improvements fixed to residential, commercial, industrial, agricultural, or other real property.

(2) "Legislative body" means the governing body of a public agency.

(3) (A) For the purpose of financing the installation of water efficiency improvements, "public agency" means a city, county, city and county, municipal utility district, community services district, sanitary district, sanitation district, or water district, as defined in Section 20200 of the Water

Code. The definition of “city” in Section 5005 shall not apply to this subparagraph.

(B) For the purpose of financing the installation of distributed generation renewable energy sources or energy efficiency improvements, “public agency” means a county, city, city and county, or a municipal utility district, an irrigation district, or public utility district that owns and operates an electric distribution system. The definition of “city” in Section 5005 shall not apply to this subparagraph.

(C) For the purpose of financing the public improvements, “public agency” means a city as defined in Section 5005.

SEC. 5. Section 5898.21 of the Streets and Highways Code is amended to read:

5898.21. Notwithstanding any other provision of this chapter, upon the written consent of an authorized public agency official, the proposed arrangements for financing the program pertaining to the installation of distributed generation renewable energy sources or energy or water efficiency improvements that are permanently fixed to real property may authorize the property owner to purchase directly the related equipment and materials for the installation of distributed generation renewable energy sources or energy or water efficiency improvements and to contract directly for the installation of distributed generation renewable energy sources or energy or water efficiency improvements that are permanently fixed to the property owner’s residential, commercial, industrial, agricultural, or other real property.

SEC. 6. Section 5898.22 of the Streets and Highways Code is amended to read:

5898.22. The report shall contain all of the following:

(a) A map showing the boundaries of the territory within which voluntary contractual assessments are proposed to be offered.

(b) A draft contract specifying the terms and conditions that would be agreed to by a property owner within the voluntary contractual assessment area and the public agency.

(c) A statement of public agency policies concerning voluntary contractual assessments including all of the following:

(1) Identification of types of facilities, distributed generation renewable energy sources, or energy or water efficiency improvements that may be financed through the use of contractual assessments.

(2) Identification of a public agency official authorized to enter into voluntary contractual assessments on behalf of the public agency.

(3) A maximum aggregate dollar amount of voluntary contractual assessments.

(4) A method for setting requests from property owners for financing through voluntary contractual assessments in priority order in the event that requests appear likely to exceed the authorization amount.

(d) A plan for raising a capital amount required to pay for work performed pursuant to voluntary contractual assessments. The plan may include amounts to be advanced by the public agency through funds available to it from any

source. The plan may include the sale of a bond or bonds or other financing relationship pursuant to Section 5898.28. The plan shall include a statement of or method for determining the interest rate and time period during which contracting property owners would pay any assessment. The plan shall provide for any reserve fund or funds. The plan shall provide for the apportionment of all or any portion of the costs incidental to financing, administration, and collection of the voluntary contractual assessment program among the consenting property owners and the public agency.

(e) A report on the results of the consultations with the county auditor's office or county controller's office concerning the additional fees, if any, that will be charged to the city or county for incorporating the proposed voluntary contractual assessments into the assessments of the general taxes of the city or county on real property, and a plan for financing the payment of those fees.

SEC. 7. Section 5898.24 of the Streets and Highways Code is amended to read:

5898.24. (a) A legislative body shall publish notice of a hearing pursuant to Section 6066 of the Government Code, and the first publication shall occur not later than 20 days before the date of the hearing.

(b) A legislative body shall provide written notice of a proposed contractual assessment program to all water or electric providers within the boundaries of the area within which voluntary contractual assessments may be entered into not less than 60 days prior to adoption of any resolution pursuant to Section 5898.26.

(c) (1) A legislative body administering a voluntary contractual assessment program shall designate an office, department, or bureau of the local agency that shall be responsible for annually preparing the current roll of assessment obligations by assessor's parcel number on property subject to a voluntary contractual assessment.

(2) The designated office, department, or bureau shall establish procedures to promptly respond to inquiries concerning current and future estimated liability for a voluntary contractual assessment. Neither the designated office, department, or bureau, nor the legislative body, shall be liable if any estimate of future voluntary contractual assessment liability is inaccurate, nor for any failure of any seller to request notice pursuant to this chapter or to provide the notice to a buyer.

(d) For purposes of enabling sellers of real property subject to a voluntary contractual assessment to satisfy the notice requirements of Section 1102.6b of the Civil Code, the legislative body shall cause to be recorded in the office of the county recorder for the county in which the real property is located, concurrently with the instrument creating the voluntary contractual assessment, a separate document that meets all of the following requirements:

(1) The title of the document shall be "Payment of Contractual Assessment Required" in at least 14-point boldface type.

(2) The document shall include all of the following information:

(A) The names of all current owners of the real property subject to the contractual assessment, and the legal description and the assessor's parcel number for the affected real property.

(B) The annual amount of the contractual assessment.

(C) The date or circumstances under which the contractual assessment expires, or a statement that the assessment is perpetual.

(D) The purpose for which the funds from the contractual assessment will be used.

(E) The entity to which funds from the contractual assessment will be paid and specific contact information for that entity.

(F) The signature of the authorized representative of the legislative body to which funds from the contractual assessment will be paid.

(e) The recorder shall only be responsible for examining the document required by subdivision (d) and determining that it contains the information required by subparagraphs (A), (E), and (F) of paragraph (2) of subdivision (d). The recorder shall index the document under the names of the persons and entities identified in subparagraphs (A) and (E) of paragraph (2) of subdivision (d). The recorder shall not examine any other information contained in the document required by subdivision (d).

SEC. 8. Section 5898.28 of the Streets and Highways Code is amended to read:

5898.28. A public agency may issue bonds pursuant to this chapter, the principal and interest for which would be repaid by voluntary contractual assessments. A public agency may advance its own funds to finance work to be repaid through voluntary contractual assessments, and may from time to time sell bonds to reimburse itself for such advances. A public agency may enter into a relationship with an underwriter or financial institution that would allow the sequential issuance of a series of bonds, each bond being issued as the need arose to finance work to be repaid through voluntary contractual assessments. The interest rate of each bond may be determined by an appropriate index, but shall be fixed at the time each bond is issued. Bond proceeds may be used to establish a reserve fund, and to pay for expenses incidental to the issuance and sale of the bonds. Division 10 (commencing with Section 8500) shall apply to any bonds issued pursuant to this section, insofar as that division is not in conflict with this chapter.

SEC. 9. Section 5898.30 of the Streets and Highways Code is amended to read:

5898.30. Assessments levied pursuant to this chapter, and the interest and any penalties thereon shall constitute a lien against the lots and parcels of land on which they are made, until they are paid. Division 10 (commencing with Section 8500), insofar as those provisions are not in conflict with the provisions of this chapter, Article 13 (commencing with Section 53930) of, and Article 13.5 (commencing with Section 53938) of, Chapter 4 of Part 1 of Division 2 of Title 5 of the Government Code apply to the imposition and collection of assessments contracted for pursuant to this chapter, including, but not limited to, provisions related to lien priority, the collection of assessments in the same manner and at the same time as

the general taxes of the city or county on real property, and any penalties and remedies in the event of delinquency and default.

SEC. 10. Section 5898.31 is added to the Streets and Highways Code, to read:

5898.31. Since contractual assessments on real property under this chapter are voluntary and imposed pursuant to an agreement with an assessed property owner, the Legislature finds and declares that voluntary contractual assessments under this chapter are not assessments for the purposes of Articles XIII C and XIII D of the California Constitution and therefore the provisions of Articles XIII C and XIII D and Article 4.6 (commencing with Section 53750) of Chapter 4 of Part 1 of Division 2 of Title 5 of the Government Code are not applicable to voluntary contractual assessments levied pursuant to this chapter.

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NIPOMO COMMUNITY SERVICES DISTRICT

148 SOUTH WILSON STREET
POST OFFICE BOX 326
NIPOMO, CA 93444 - 0326
(805) 929-1133 FAX (805) 929-1932
Web site address www.ncsd.com

MEMORANDUM

TO: MICHAEL LEBRUN, GENERAL MANAGER *MLR*
FROM: CELESTE WHITLOW, WATER CONSERVATION COORDINATOR *CW*
DATE: NOVEMBER 7, 2009
RE: AB 1061 (Lieu).

AB 1061 is in support of the Model Water-Efficient Landscape Ordinance (AB 2717-Laird).

The legislation prevents homeowners' associations and other common interest developments (CID) from forbidding compliance with AB 2717's requirements for water-efficient landscaping, including low-water-use plants.

Approximately 11 million (about one-third) of California's population live in CIDs, and account for a large portion of the landscaping in California (California Community Association Statistics, 2007). CIDs often have landscaping restrictions (requirement of turf, for instance).

AB 1061 is in response to the potential for inequity between groups of homeowners if AB 2717 requires water-efficient landscaping from some homeowners, but cannot affect other homeowners because of CID covenants, laws or regulations. The concern is that inequity in application of AB 2717 will lead to resistance for modifying landscapes for increased water efficiency.

Assembly Bill No. 1061

CHAPTER 503

An act to repeal and add Section 1353.8 of the Civil Code, relating to common interest developments.

[Approved by Governor October 11, 2009. Filed with
Secretary of State October 11, 2009.]

LEGISLATIVE COUNSEL'S DIGEST

AB 1061, Lieu. Common interest developments: water-efficient landscapes.

Existing law requires a local agency to adopt a specified updated model ordinance regarding water-efficient landscapes or a water-efficient landscape ordinance that is at least as effective in conserving water as the updated model ordinance. Existing law allows certain water providers to take specified actions regarding water conservation.

The Davis-Stirling Common Interest Development Act provides for the creation and regulation of common interest developments. The act provides that the architectural guidelines of a common interest development shall not prohibit or include conditions that have the effect of prohibiting the use of low water-using plants as a group.

This bill would, instead, provide that a provision of any of the governing documents of a common interest development shall be void and unenforceable if it prohibits, or includes conditions that have the effect of prohibiting, the use of low water-using plants as a group, or if it has the effect of prohibiting or restricting compliance with a local water-efficient landscape ordinance or water conservation measure described above.

The people of the State of California do enact as follows:

SECTION 1. The Legislature finds and declares all of the following:

(a) Landscapes are essential to the quality of life in California, and are an important aesthetic element with economic value in common interest developments.

(b) Landscape design, installation, maintenance, and management can and should be water efficient. The use of water-efficient landscapes contributes to the state's efforts to increase the reliability of its water supplies.

(c) There are common interest developments with governing documents that hinder or preclude property owners from complying with applicable water conservation requirements.

(d) It is in the public interest to ensure that property owners within a common interest development comply with applicable state and local ordinances and regulations regarding water conservation and drought, while maintaining the inherent powers of a common interest development to establish uniform architectural and landscaping standards.

(e) It is also in the public interest to ensure that property owners within a common interest development may comply with emergency water use regulations adopted by authorized providers of public water supply.

SEC. 2. Section 1353.8 of the Civil Code is repealed.

SEC. 3. Section 1353.8 is added to the Civil Code, to read:

1353.8. (a) Notwithstanding any other law, a provision of any of the governing documents of a common interest development shall be void and unenforceable if it does any of the following:

(1) Prohibits, or includes conditions that have the effect of prohibiting, the use of low water-using plants as a group.

(2) Has the effect of prohibiting or restricting compliance with either of the following:

(A) A water-efficient landscape ordinance adopted or in effect pursuant to subdivision (c) of Section 65595 of the Government Code.

(B) Any regulation or restriction on the use of water adopted pursuant to Section 353 or 375 of the Water Code.

(b) This section shall not prohibit an association from applying landscaping rules and regulations established in the governing documents, to the extent the rules and regulations fully conform with the requirements of subdivision (a).

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NIPOMO COMMUNITY SERVICES DISTRICT

148 SOUTH WILSON STREET
POST OFFICE BOX 326
NIPOMO, CA 93444 - 0326
(805) 929-1133 FAX (805) 929-1932
Web site address www.ncsd.com

MEMORANDUM

TO: MICHAEL LEBRUN, GENERAL MANAGER *MLB*
FROM: CELESTE WHITLOW, WATER CONSERVATION COORDINATOR *CW*
DATE: NOVEMBER 7, 2009
RE: AB 1366 (Feuer/Caballero/Strickland): Residential self-regenerating water softeners.

AB 1366 authorizes local agencies providing wastewater treatment services to control salinity inputs from residential self-regenerating water softeners, allowing tailoring of controls to local needs. The bill is in response to concerns about the progress on recycled water use in California. The purpose of the bill is to encourage increase in the use of recycled water. It allows each agency to make the decision about how to regulate salinity inputs and to tailor responses to the community's specific problems.

This bill follows AB 2270 (Laird) in 2008, which Governor Schwarzenegger vetoed.

Changes made from AB 2270 include:

1. Regions and counties must be identified by SWRCB as having significant salinity problems threatening surface bodies of water and high-use groundwater basins.
2. Agencies considering setting controls on salinity have to hold a public meeting.
3. Agencies are specifically allowed to, after the public meeting, decide not to adopt a water softener ordinance.
4. Forbids controls on residential use of portable exchange water softeners, which do not discharge into the sewer.
5. No requirement for reporting on recycled water use.

Procedural safety requirements from AB 2270 remain intact.

AB 1366 expands the procedural safeguards from AB 2270, including:

1. The requirement of public meetings before adopting an ordinance limiting use of self-regenerating water softeners.
2. If a local agency requires removal of water softeners must determine and pay the "reasonable water value" of a water softener. This provision is not necessarily required by the U.S. Constitution's Fifth Amendment. It is a policy decision by the State Legislature that payment should be made to those discharging salt into a sewer system whether or not they have a right to such compensation. It is in conflict with the usual "polluter pays" policy, where the polluter is required to pay to reduce or clean up the discharge.

The water softener industry is opposed to this legislation. They argue that residential water softeners are not the major source of the salinity in California's wastewater, and the legislation restricts consumer rights to have water softeners. The state's rebuttal points out that there are other types of water softeners that do not discharge into the sewer, and no one has a right to discharge pollutants into a public domain.

Assembly Bill No. 1366

CHAPTER 527

An act to add Section 13148 to the Water Code, relating to water softeners.

[Approved by Governor October 11, 2009. Filed with
Secretary of State October 11, 2009.]

LEGISLATIVE COUNSEL'S DIGEST

AB 1366, Feuer. Residential self-regenerating water softeners.

Existing law requires the State Water Resources Control Board to formulate and adopt state policy for water quality control. California regional water quality control boards are required to establish water quality objectives in water quality control plans. Under existing law, a local agency, by ordinance, may limit the availability, or prohibit the installation, of residential water softening or conditioning appliances that discharge to the community sewer system if the local agency makes certain findings and includes them in the ordinance.

This bill would authorize any local agency that owns or operates a community sewer system or water recycling facility, within specified areas of the state, to take action, by ordinance or resolution, after a public hearing on the matter, to control salinity inputs from residential self-regenerating water softeners to protect the quality of the waters of the state, if the appropriate regional board makes a finding that the control of residential salinity input will contribute to the achievement of water quality objectives. The bill would state related findings and declarations of the Legislature, including findings and declarations concerning the need for special legislation.

The people of the State of California do enact as follows:

SECTION 1. The Legislature finds and declares all of the following:

(a) Recycled water provides additional water supplies that are a cost-effective and reliable method of helping to meet California's water needs.

(b) The Water Recycling Act of 1991 established a statewide goal to recycle a total of 700,000 acre-feet of water per year by 2000, and one million acre-feet of water per year by 2010.

(c) The 2005 California Water Plan indicates that the statewide potential for recycled water use by 2030 is between 900,000 acre-feet to 1.4 million acre-feet per year. Based on this projection, the state will fall far short of the goal of recycling one million acre-feet per year by 2010, unless new policies are enacted to accelerate recycled water use.

(d) Elevated levels of salinity in community sewer systems can hinder needed water recycling projects, and discharges from those systems may impair groundwater resources and surface waters of the state.

(e) The State Water Resources Control Board's Recycled Water Policy is intended to support an increase in the use of recycled water from municipal wastewater sources in a manner that implements state and federal water quality laws. Some groundwater basins in the state contain salts and nutrients that exceed or threaten to exceed water quality objectives established in the applicable water quality control plans. The policy requires every groundwater basin or subbasin to have a salt and nutrient management plan that includes adequate implementation procedures for achieving or ensuring compliance with the water quality objectives for salt or nutrients. It is the intent of the policy that salts and nutrients from all sources be managed in a manner that ensures attainment of water quality objectives and protection of beneficial uses. The policy recognizes that local water and wastewater agencies, together with local salt and nutrient contributing stakeholders, including, but not limited to, the water treatment industry, will engage in a collaborative process that is open to all stakeholders to prepare salt management plans.

(f) Existing law allows regulation of discharges from industrial, commercial, and agricultural sources, but severely limits local agencies from regulating salinity discharges from residential self-regenerating water softeners, which can discharge up to one pound of salt per day.

(g) The California Water Recycling Task Force Report of 2003, prepared by the Department of Water Resources and the State Water Resources Control Board, recommends that current law be changed to allow local agencies more control over salinity from residential self-regenerating water softeners.

(h) It is the intent of the Legislature to require local agencies to consider local economic issues and other community input before taking action to regulate residential self-regenerating water softeners.

(i) It is the intent of the Legislature, by enacting this act, to give local agencies additional authority to regulate residential self-regenerating water softeners, especially in areas of the state with water bodies adversely impacted by salinity and high use groundwater basins that are hydrogeologically vulnerable to contamination.

SEC. 2. Section 13148 is added to the Water Code, to read:

13148. (a) This section applies to the following hydrologic regions as identified in the California Water Plan: Central Coast, South Coast, San Joaquin River, Tulare Lake, and the Counties of Butte, Glenn, Placer, Sacramento, Solano, Sutter, and Yolo.

(b) Notwithstanding Article 1 (commencing with Section 116775) of Chapter 5 of Part 12 of Division 104 of the Health and Safety Code, any local agency that owns or operates a community sewer system or water recycling facility and that is subject to a finding made by a regional board pursuant to subdivision (e) may take action to control salinity input from residential self-regenerating water softeners to protect the quality of the waters of the state. A local agency may take action only by adoption of an

ordinance or resolution after a public hearing. The local agency shall not consider the adoption of an ordinance or resolution until at least 30 days following the date of the public hearing on the proposed ordinance or resolution. An ordinance or resolution shall become effective 30 days from the date of adoption.

(c) Actions to control residential self-regenerating water softener salinity inputs authorized by subdivision (b) include, but are not limited to, any of the following:

(1) Require that residential self-regenerating water softeners installed within the jurisdiction of the local agency be rated at the highest efficiency commercially available and certified by NSF International or the American National Standards Institute.

(2) Require that plumbing permits be obtained prior to the installation of residential self-regenerating water softeners.

(3) Require that residential self-regenerating water softeners be plumbed to hook up to hot water only.

(4) Enact a voluntary buy-back or exchange program for residential self-regenerating water softeners, consistent with existing law. A voluntary buy-back or exchange program may be conducted in cooperation with local water treatment businesses.

(5) Require the removal of previously installed residential self-regenerating water softeners.

(6) Prohibit the installation of residential self-regenerating water softeners.

(7) Require the retrofit of clock control and demand control systems on previously installed residential self-regenerating water softeners.

(8) Require the replacement of previously installed residential self-regenerating water softeners with appliances that meet or exceed the salt efficiency rating set forth in paragraph (2) of subdivision (b) of Section 116785 of the Health and Safety Code.

(d) If a local agency adopts an ordinance or resolution to require the removal of previously installed residential self-regenerating water softeners pursuant to paragraph (5) of subdivision (c), the local agency shall make available to owners of residential self-regenerating water softeners within its service area a program to compensate the owner of the residential self-regenerating water softener for the reasonable value of the removed residential self-regenerating water softener, as determined by the local agency.

(e) Before a local agency may take action to control salinity input from residential self-regenerating water softeners pursuant to subdivision (b), a regional board with jurisdiction over a region identified in subdivision (a) shall have made a finding at a public hearing that the control of residential salinity input will contribute to the achievement of water quality objectives. The finding may be made in any of the following water quality actions adopted by a regional board:

(1) A total maximum daily load that addresses salinity-related pollutants in a water segment.

(2) A salt and nutrient management plan for a groundwater basin or subbasin.

(3) Waste discharge requirements for a local agency discharger.

(4) Master reclamation permit for a supplier or distributor of recycled water.

(5) Water recycling requirements for a supplier or distributor of recycled water.

(6) Cease and desist order directed to a local agency.

(f) The regional board making a finding pursuant to subdivision (e) shall base its finding on the evidence in the record, such as a source determination study or other appropriate studies. The standard of judicial review required for a finding made pursuant to subdivision (e) shall be the same as the standard of review required for the water quality action in which the finding is made.

(g) This section does not limit the use of portable exchange water softening appliances or limit the authority of a local agency to regulate the discharge from a centralized portable exchange tank servicing facility into the community sewer system.

(h) For purposes of this section, "residential self-regenerating water softener" means residential water softening equipment or conditioning appliances that discharge brine into a community sewer system.

SEC. 3. The Legislature finds and declares that it is necessary to address elevated levels of salinity in community sewer systems in specified hydrologic regions of the state. It is therefore hereby declared that a general law within the meaning of Section 16 of Article IV of the California Constitution cannot be made applicable to those specified hydrologic regions and the enactment of this special law is necessary for the public good.

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NIPOMO COMMUNITY SERVICES DISTRICT

148 SOUTH WILSON STREET
POST OFFICE BOX 326
NIPOMO, CA 93444 - 0326
(805) 929-1133 FAX (805) 929-1932
Web site address www.ncsd.com

MEMORANDUM

TO: MICHAEL LEBRUN, GENERAL MANAGER
FROM: CELESTE WHITLOW, WATER CONSERVATION COORDINATOR
DATE: NOVEMBER 7, 2009
RE: SB6 X7 (Steinberg) GROUNDWATER ELEVATION MONITORING.

NOT CHAPTERED

This bill established statewide systemic groundwater elevation monitoring, with public reporting in all groundwater basins and sub-basins.

Background

In the past five years, the governor has vetoed three Legislature-approved bills that would have improved the state's access to groundwater information. Over this period, groundwater problems have worsened, in part because California is the last western state without state groundwater management. In addition, excessive pumping in the last century has produced substantial subsidence. Recently recent pumping was done by the west side of the San Joaquin Valley where Delta water allocations were minimal. The DWR reported the canal for the State Water Project where it passes through the area of increased pumping may suffer cracks because the increased pumping had caused slumping of the soil under the canal.

Summary

"Elevation" is defined as "distance from surface to water."

This bill provides for a local groundwater management entity to do the monitoring, and specifies how this entity will be selected. Entities can be:

- A court-appointed "watermaster."
- A groundwater management agency with statutory authority to manage.
- A local agency that is managing all or part of a groundwater basin or sub-basin as per AB 3030 plans.
- A local agency managing all or part of a groundwater basin or sub-basin per an integrated regional water management plan that includes a groundwater management component.
- A county.
- A voluntary cooperative groundwater monitoring association.

The DWR is required to:

- Identify the extent of groundwater monitoring in each basin, and to work with well owners in areas not monitored to determine interest in groundwater monitoring.
- Work with each monitoring entity to determine the best manner for reporting groundwater elevations.
- Required groundwater monitoring on 1/1/2012, and make this information available through specified means.

- Identify the extent of monitoring by 2012. If a basin is without monitoring, the DWR is to see if there is a local party willing to do the monitoring, or if there is interest in developing a groundwater management association.

If the DWR has determined that all or part of a groundwater basin or sub-basin is not being monitored, then the DWR is required to:

- Identify any existing monitoring wells overlying basin or sub-basin owned or operated by the DWR or any other state or federal agency.
- Determine whether the identified monitoring wells provide enough information to demonstrate seasonal and long-term trends in groundwater elevations.

If the DWR determines the monitoring wells provide enough information, the DWR would not perform additional groundwater monitoring functions.

If the DWR determines the monitoring wells provide insufficient information to demonstrate seasonal and long-term trends in groundwater elevations, and the State Mining and Geology Board concurs with that determination, the DWR would perform groundwater-monitoring functions. Once this decision is made, the DWR is required to:

- Notify the affected parties the DWR is forming the groundwater-monitoring district.
- Impose a charge on each well owner for its share of the DWR's costs to perform the required groundwater monitoring.
- Updating groundwater report by 2012, and in years ending in 5 and 0.

This bill specifies neither the DWR nor the entities described above as the authority to do:

- Enter private property without the consent of the property owner.
- Require a private property owner to submit groundwater-monitoring information to the entity.

Any counties or specified agencies overlying the groundwater basins not complying with groundwater monitoring requirements will not be eligible for state water grants or loans.

AMENDED IN ASSEMBLY OCTOBER 31, 2009

CALIFORNIA LEGISLATURE—2009—10 SEVENTH EXTRAORDINARY SESSION

ASSEMBLY BILL

No. 6

Introduced by Assembly Member De Leon
*(Coauthors: Assembly Members Emmerson, Fuller, Gilmore, Salas,
and Solorio)*

October 29, 2009

An act to amend Sections 5100, 5101, 5103, and 5107 of, to add Chapter 2.7 (commencing with Section 348) to Division 1 of, and to repeal Section 5108 of, the Water Code, relating to water diversion.

LEGISLATIVE COUNSEL'S DIGEST

AB 6, as amended, De Leon. Water diversion and use: reporting.

Existing law, with certain exceptions, requires each person who diverts water after December 31, 1965, to file with the State Water Resources Control Board a prescribed statement of diversion and use. Existing law requires a statement to include specified information, including, on and after January 1, 2012, monthly records of water diversions. Under existing law, the monthly record requirement does not apply to a surface water diversion with a combined diversion capacity from a natural channel that is less than 50 cubic feet per second or to diverters using siphons in the tidal zone. Existing law subjects a person who makes a material misstatement in connection with the filing of the diversion and use statements to administratively imposed civil penalties in the amount of \$500 for each violation.

This bill would revise the types of water diversions for which the reporting requirement does not apply, including, among other diversions, a diversion that occurs before January 1, 2009, if certain requirements are met. The bill would delete exceptions to the monthly record

requirement, and revise requirements relating to the contents of the statement of diversion and use.

The bill would subject a person to civil liability if that person fails to file, as required, a diversion and use statement for a diversion or use that occurs after January 1, 2009, tampers with any measuring device, or makes a material misstatement in connection with the filing of a diversion and use statement. The board would be authorized to impose the civil liability in accordance with a specified schedule.

The bill would authorize the board and the Department of Water Resources to adopt emergency regulations for the filing of reports of water diversion or use that are required to be filed by those respective state agencies under specified statutory provisions.

The bill would make additional conforming changes and would set forth related legislative findings and declarations.

Vote: majority. Appropriation: no. Fiscal committee: yes.
State-mandated local program: no.

The people of the State of California do enact as follows:

- 1 SECTION 1. The Legislature finds and declares all of the
2 following:
- 3 (a) The San Francisco Bay-Sacramento-San Joaquin River Delta
4 (Delta) is in the midst of an ecological crisis. Its unique character
5 and capacity to serve California are threatened by a variety of
6 factors, including diversions of water, pollution, urbanization,
7 flood and seismic risks, and invasive species.
- 8 (b) The water that is found in, and delivered through, the Delta
9 is the source of drinking water for 25,000,000 Californians, fuels
10 a \$37,000,000,000 agricultural industry, and serves as an important
11 habitat for over 750 plant and animal species.
- 12 (c) It has been estimated that there are *approximately over* 1,800
13 agricultural, municipal, and industrial diversions in the Delta that,
14 combined, divert 5 percent of the freshwater flows from the Delta
15 watershed. However, because none of these in-Delta diverters are
16 required to measure and report their water diversion and use, there
17 is presently little data regarding the nature, extent, and location of
18 these diversions.
- 19 (d) Given the well-known importance of water to the state's
20 health, economy, and welfare, including to its ecosystems and

1 natural resources, water measurement and reporting are required
2 for most diversions.

3 (e) The Delta Vision Committee Implementation Report
4 recommends improved monitoring and reporting, including the
5 elimination of exemptions from requirements for the filing of
6 statements of water diversion and use.

7 SEC. 2. Chapter 2.7 (commencing with Section 348) is added
8 to Division 1 of the Water Code, to read:

9

10 CHAPTER 2.7. WATER DIVERSION AND USE REPORTS

11

12 348. (a) The department or the board may adopt emergency
13 regulations providing for the electronic filing of reports of water
14 diversion or use required to be filed with the department or board
15 under this code, including, but not limited to, any report required
16 to be filed under Part 5.1 (commencing with Section 5100) of
17 Division 2 and any report required to be filed by a water right
18 permittee or licensee.

19 (b) Emergency regulations adopted pursuant to this section, or
20 any amendments thereto, shall be adopted by the department or
21 the board in accordance with Chapter 3.5 (commencing with
22 Section 11340) of Part 1 of Division 3 of Title 2 of the Government
23 Code. The adoption of these regulations is an emergency and shall
24 be considered by the Office of Administrative Law as necessary
25 for the immediate preservation of the public peace, health, safety,
26 and general welfare. Notwithstanding Chapter 3.5 (commencing
27 with Section 11340) of Part 1 of Division 3 of Title 2 of the
28 Government Code, any emergency regulations or amendments to
29 those regulations adopted under this section shall remain in effect
30 until revised by the department or the board that adopted the
31 regulations or amendments.

32 SEC. 3. Section 5100 of the Water Code is amended to read:

33 5100. As used in this part:

34 (a) "Best available technologies" means technologies at the
35 highest technically practical level, using flow totaling devices, and
36 if necessary, data loggers and telemetry.

37 (b) "Best professional practices" means practices attaining and
38 maintaining the accuracy of measurement and reporting devices
39 and methods.

1 (c) "Diversion" means taking water by gravity or pumping from
2 a surface stream or subterranean stream flowing through a known
3 and definite channel, or other body of surface water, into a canal,
4 pipeline, or other conduit, and includes impoundment of water in
5 a reservoir.

6 (d) "Person" means all persons whether natural or artificial,
7 including the United States of America, State of California, and
8 all political subdivisions, districts, municipalities, and public
9 agencies.

10 SEC. 4. Section 5101 of the Water Code is amended to read:

11 5101. Each person who, after December 31, 1965, diverts water
12 shall file with the board, prior to July 1 of the succeeding year, a
13 statement of his or her diversion and use, except that a statement
14 is not required to be filed if the diversion is any of the following:

15 (a) From a spring that does not flow off the property on which
16 it is located and from which the person's aggregate diversions do
17 not exceed 25 acre-feet in any year.

18 (b) Covered by a registration for small domestic or livestock
19 stockpond uses, or permit or license to appropriate water on file
20 with the board.

21 (c) Included in a notice filed pursuant to Part 5 (commencing
22 with Section 4999).

23 (d) Regulated by a watermaster appointed by the department
24 and included in annual reports filed with a court or the board by
25 the watermaster, which reports identify the persons who have
26 diverted water and describe the general purposes and the place,
27 the use, and the quantity of water that has been diverted from each
28 source.

29 (e) Included in annual reports filed with a court or the board by
30 a watermaster appointed by a court or pursuant to statute to
31 administer a final judgment determining rights to water, which
32 reports identify the persons who have diverted water and give the
33 general place of use and the quantity of water that has been diverted
34 from each source.

35 (f) For use in compliance with Article 2.5 (commencing with
36 Section 1226) or Article 2.7 (commencing with Section 1228) of
37 Chapter 1 of Part 2.

38 (g) A diversion that occurs before January 1, 2009, if any of the
39 following applies:

1 (1) The diversion is from a spring that does not flow off the
2 property on which it is located, and the person's aggregate
3 diversions exceed 25 acre-feet in any year.

4 (2) The diversion is covered by an application to appropriate
5 water on file with the board.

6 (3) The diversion is reported by the department in its hydrologic
7 data bulletins.

8 (4) The diversion is included in the consumptive use data for
9 the Delta lowlands published by the department in its hydrologic
10 data bulletins.

11 SEC. 5. Section 5103 of the Water Code is amended to read:

12 5103. Each statement shall be prepared on a form provided by
13 the board. The statement shall include all of the following
14 information:

15 (a) The name and address of the person who diverted water
16 and of the person filing the statement.

17 (b) The name of the stream or other source from which water
18 was diverted, and the name of the next major stream or other body
19 of water to which the source is tributary.

20 (c) The place of diversion. The location of the diversion works
21 shall be depicted on a specific United States Geological Survey
22 topographic map, or shall be identified using the California
23 Coordinate System, or latitude and longitude measurements. If
24 assigned, the public land description to the nearest 40-acre
25 subdivision and the assessor's parcel number shall also be provided.

26 (d) The capacity of the diversion works and of the storage
27 reservoir, if any, and the months in which water was used during
28 the preceding calendar year.

29 (e) (1) On and after January 1, 2012, monthly records of water
30 diversions. The measurements of the diversion shall be made using
31 best available technologies and best professional practices. Nothing
32 in this paragraph shall be construed to require the implementation
33 of technologies or practices by a person who provides to the board
34 documentation demonstrating that the implementation of those
35 practices is not locally cost effective.

36 (2) (A) The terms of, and eligibility for, any grant or loan
37 awarded or administered by the department, the board, or the
38 California Bay-Delta Authority on behalf of a person that is subject
39 to paragraph (1) shall be conditioned on compliance with that
40 paragraph.

1 (B) Notwithstanding subparagraph (A), the board may
2 determine that a person is eligible for a grant or loan even though
3 the person is not complying with paragraph (1), if both of the
4 following apply:

5 (i) The board determines that the grant or loan will assist the
6 grantee or loan recipient in complying with paragraph (1).

7 (ii) The person has submitted to the board a one-year schedule
8 for complying with paragraph (1).

9 (C) It is the intent of the Legislature that the requirements of
10 this subdivision shall complement and not affect the scope of
11 authority granted to the board by provisions of law other than this
12 article.

13 (f) The purpose of use.

14 (g) A general description of the area in which the water was
15 used. The location of the place of use shall be depicted on a specific
16 United States Geological Survey topographic map and on any other
17 maps with identifiable landmarks. If assigned, the public land
18 description to the nearest 40-acre subdivision and the assessor's
19 parcel number shall also be provided.

20 (h) The year in which the diversion was commenced as near as
21 is known.

22 SEC. 6. Section 5107 of the Water Code is amended to read:

23 5107. (a) The making of any willful misstatement pursuant
24 to this part is a misdemeanor punishable by a fine not exceeding
25 one thousand dollars (\$1,000) or by imprisonment in the county
26 jail for not to exceed six months, or both.

27 (b) Any person who fails to file a statement required to be filed
28 under this part for a diversion or use that occurs after January 1,
29 2009, who tampers with any measuring device, or who makes a
30 material misstatement pursuant to this part may be liable civilly
31 as provided in subdivisions (c) and (d).

32 (c) Civil liability may be administratively imposed by the board
33 pursuant to Section 1055 in an amount not to exceed the following
34 amounts:

35 (1) For failure to file a statement, one thousand dollars (\$1,000),
36 plus five hundred dollars (\$500) per day for each additional day
37 on which the violation continues if the person fails to file a
38 statement within 30 days after the board has called the violation
39 to the attention of that person.

1 (2) For a violation resulting from a physical malfunction of a
2 measuring device not caused by the person or any other
3 unintentional misstatement, two hundred fifty dollars (\$250), plus
4 two hundred fifty dollars (\$250) per day for each additional day
5 on which the measuring device continues to malfunction or the
6 misstatement is not corrected if the person fails to correct or repair
7 the measuring device or correct the misstatement within 60 days
8 after the board has called the malfunction or violation to the
9 attention of that person.

10 (3) For knowingly tampering with any measuring device or
11 knowingly making a material misstatement in a statement filed
12 under this part, twenty-five thousand dollars (\$25,000), plus one
13 thousand dollars (\$1,000) for each day on which the violation
14 continues if the person fails to correct the violation within 30 days
15 after the board has called the violation to the attention of that
16 person.

17 (4) For any other violation, five hundred dollars (\$500), plus
18 two hundred fifty dollars (\$250) for each additional day on which
19 the violation continues if the person fails to correct the violation
20 within 30 days after the board has called the violation to the
21 attention of that person.

22 (d) When an additional penalty may be imposed under
23 subdivision (c) for failure to correct a violation or correct or repair
24 a malfunctioning measuring device within a specified period after
25 the violation has been called to a person's attention by the board,
26 the board, for good cause, may provide for a longer period for
27 correction of the problem, and the additional penalty shall not
28 apply if the violation is corrected within the period specified by
29 the board.

30 (e) In determining the appropriate amount, the board shall
31 consider all relevant circumstances, including, but not limited to,
32 all of the following factors:

33 (1) The extent of harm caused by the violation.

34 (2) The nature and persistence of the violation.

35 (3) The length of time over which the violation occurs.

36 (4) Any corrective action undertaken by the violator.

37 (f) All funds recovered pursuant to this section shall be deposited
38 in the Water Rights Fund established pursuant to Section 1550.

39 (g) Remedies under this section are in addition to, and do not
40 supersede or limit, any other remedies, civil or criminal.

- 1 SEC. 7. Section 5108 of the Water Code is repealed.

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NIPOMO COMMUNITY SERVICES DISTRICT

148 SOUTH WILSON STREET
POST OFFICE BOX 326
NIPOMO, CA 93444 - 0326
(805) 929-1133 FAX (805) 929-1932
Web site address www.ncsd.com

Water Conservation Committee Meeting Memorandum

TO: BRUCE BUEL, GENERAL MANAGER *MBL*
FROM: CELESTE WHITLOW, WATER CONSERVATION COORDINATOR *cw*
DATE: OCTOBER 26, 2009
RE: ITEM ⁵ ~~7~~: DISCUSS REBATE FOR MP ROTATORS.

MP Rotators are also known as "rotating sprinkler nozzles," "matched precipitation rate sprinklers" and "rotary nozzles." MP Rotators are small rotors that can be retrofitted to pop-up spray-head bodies. Pop-up spray-head bodies equipped with MP Rotators use less water (lower precipitation rates), increase the distribution uniformity (how evenly a sprinkler delivers water over the landscape), greatly decreases runoff (especially from slopes), and provides dependable water savings.

Irrigation systems where pop-up spray-heads have been replaced by MP Rotators have consistently shown from 25 to 40% water savings.

MP Rotators are much more efficient than pop-up sprinkler heads by emitting multiple distinct streams of water at one-third of the precipitation rate of spray heads. This allows the soil to more efficiently absorb the applied water. MP Rotators do not mist or fog. They also apply water better right in front of the sprinkler head, an area that often shows brown spots first.

Because of the lower application rate, MP Rotators have far less potential to produce runoff or standing water. The shape and form of the water streams coming from the MP Rotator are not impacted by wind. MP Rotators can address "micro" distribution problem areas because the arc and radius adjustments are easily accomplished, maintaining the application rate and distribution uniformity (DU).

MP Rotators work best at 40 psi, which enables systems with poor DU due to low water pressure to suddenly achieve much better DU. A sprinkler system's DU is maximized with use of MP Rotators. They are known for addressing brown spots that pop-up sprinklers, especially in windy areas, cannot cover.

MP Rotators are adjustable from 90-210°, and also are available in full-circle distribution (360°). They will retrofit the major irrigation equipment manufacturers' (Rainbird, Hunter and Toro) sprinkler heads, but will not retrofit Orbit, Genie or Champion sprinklers.

The retrofitting is easy, and requires unscrewing the old sprinkler heads and screwing on the MP Rotators.



STAFF REBATE RECOMMENDATIONS

It is recommended that a \$3.00 for each MP Rotator, up to a maximum of \$375, be offered as a rebate.

REBATE REQUIREMENTS FOR CUSTOMERS

Only NCSD customers are eligible for the MP Rotator rebate. The property where the project is to occur must be the primary residence of the customer applying for the rebate. Rebates for MP Rotators will be given only once for each property.

Customers who wish to apply for rebates on MP Rotators for retrofitting pop-up sprinkler heads must have the project approved by the NCSD Water Conservation Program in advance. MP Rotator rebated properties require pre-inspection and post-inspection by the NCSD Water Conservation Program staff.

The rebate program is not retroactive to previously retrofitted properties. New construction landscapes and landscapes where there was no previous landscaping are not eligible for MP Rotator rebates.

The MP Rotator project must be completed within 60 days of the pre-inspection.

Sales receipts and/or contractor invoices are required for the rebate.

Rebates are available as long as funding is available, and the program may change or expire at any time.

FINANCIAL/FUNDING ISSUES

The current Water Conservation Program budget does not include funds for the MP Rotator rebate program.

Staff requests funding of \$37,500 for the 2009-2010 fiscal year, which would provide full-rebate (\$375 rebate limit per customer) to 100 customers.



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POST OFFICE BOX 326
NIPOMO, CA 93444 - 0326
(805) 929-1133 FAX (805) 929-1932
Web site address www.ncsd.com

Water Conservation Committee Meeting Memo

FROM: CELESTE WHITLOW, WATER CONSERVATION COORDINATOR *CS*
TO: BRUCE BUEL, GENERAL MANAGER *MB*
DATE: 10/28/2009
RE: ITEM 6: DISCUSS REBATES FOR LAWN AERATION.

Potable water in California is increasingly in short supply, expensive, or unavailable. California State anticipates that this will not be a temporary, drought-type situation, but a more fixed condition in the future.

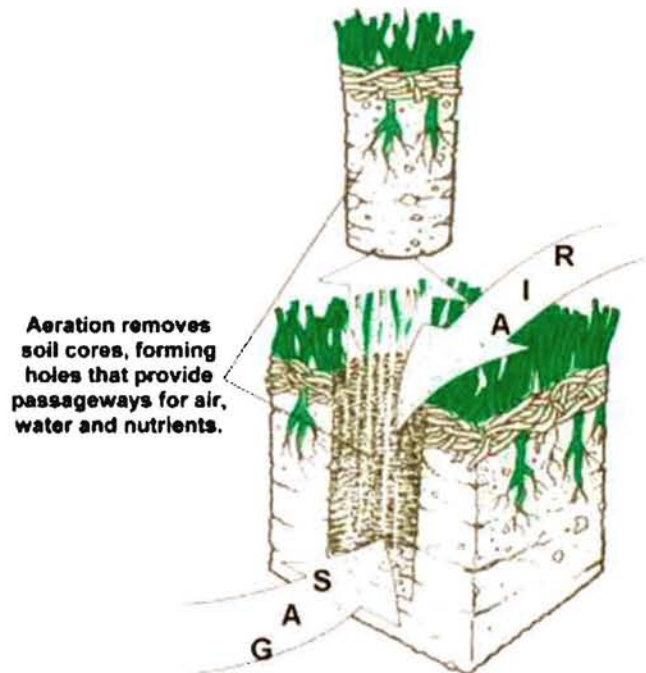
Water conservation has been named as one of the State's top priorities, and the State has instituted the "20 x 2020" program, by which Californians will have to achieve 20% water conservation by 2020.

There are many ways to save water, especially in the single-family residence landscape. Some of the measures, such as lawn aeration, can actually improve the appearance and health, and decrease the time spent in upkeep, of the existing landscape.

Lawn aeration is done with a mechanical device which removes plugs of the turf and soil. Usually sand or ground-up plugs are swept over the lawn to fill in the holes.

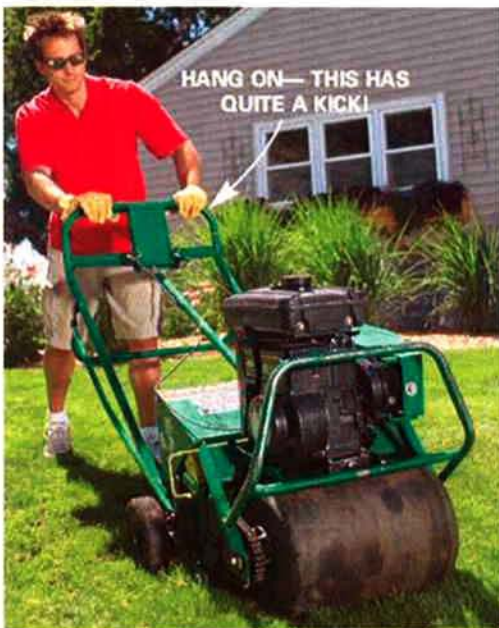
Many of the lawn diseases with which gardeners struggle are greatly facilitated by a lawn in soil that has become compacted; soil structure has been made denser, and lost soil aeration. Fungus is the main culprit, but pests can also find a welcoming home in the low-aerated irrigated-lawn environment.

Spring is typically the time of year when lawn diseases and pests appear. Once disease and pests appear, it often is an ongoing struggle for control until winter arrives. Aerating a lawn can greatly decrease the possibility of a homeowner spending spring, summer and fall battling lawn diseases.



Benefits of aerating a lawn include:

- Is an effective water-conservation measure because it allows irrigation to soak into the ground, decreasing the chance for runoff.
- It greatly improves the appearance of the lawn; homeowners are often surprised at how much more green, vibrant and healthy their lawn appears after aeration.
- It allows for more efficient fertilization of the lawn by decreasing runoff.
- It helps break up existing thatch.
- It promotes healthy turf root development.
- It improves soil structure by decreasing soil compaction, a problem that develops when a lawn has been in place for a few years.
- It improves the air-exchange between the soil and atmosphere.
- Less fertilizer and pesticides can be used on the lawn.
- It promotes a healthier environment for beneficial soil microbes, and creates a lawn environment that does not promote disease and pests.



Lawn aeration is done by mechanical means, and removal of soil plugs is important. Aeration machines or devices that only poke holes in the ground do not address the problem of soil compaction and loss of structure, and only temporarily improves soil aeration.

Most homeowners hire a landscape contractor to do the job. With an experienced landscaper, the best result for the money spent is achieved. Details such as sweeping sand or ground-up plugs back into the holes are important in achieving the best end result.

Aerating machines can be rented, but unless the homeowner is experienced and is familiar with the process, good results cannot be ensured. In addition, a mechanical aerator if not controlled can cause damage to other elements of the landscape, and a lawn aerator of the quality needed to do a good job requires physical strength to safely operate.

RECOMMENDATIONS

Consideration of a \$50 rebate.

The proposed rebate would be limited to single-family residences only. Only homeowners are eligible for the rebate. The rebated residence must be the primary residence of the homeowner. An inspection before and after the aeration is required to qualify for the rebate. Aerator rental or landscape contractor aeration receipts are required. Aeration rebates cannot be obtained more often than once every two years. Rebates are conditioned on funding, and the rebate program may end or change at any time.



NIPOMO COMMUNITY SERVICES DISTRICT

148 SOUTH WILSON STREET
POST OFFICE BOX 326
NIPOMO, CA 93444 - 0326
(805) 929-1133 FAX (805) 929-1932
Web site address www.ncsd.com

Water Conservation Committee Meeting Memo

FROM: CELESTE WHITLOW, WATER CONSERVATION COORDINATOR *CW*
TO: BRUCE BUEL, GENERAL MANAGER *MB*
DATE: 10/27/2009
RE: ITEM 3: DISCUSS NEW STATE OF CALIFORNIA GRAYWATER REGULATIONS. *7*

BACKGROUND

Of the many methods of water conservation about which I get inquiries from customers, one of the more frequently requested is information on the use of graywater.

Prior to 8/4/2009, there was a paucity of information from San Luis Obispo County or the State of California about use of graywater. To use graywater in the County required a permit, inspections, and specifications that made compliance difficult.

However, on 8/4/2009, the California Building Standards Commission (BSC) code language for residential graywater reuse, adopted on 7/30/2009, took effect. The new language modifies the California Plumbing Code, Title 24, Part 5, Chapter 16A, Part 1.

The code changes were applied on an emergency-rulemaking basis (using Governor Schwarzenegger's State of Emergency declaration), and the new language was applied to the current plumbing code. The State Department of Public Health supported these changes to the code.

Overall, the new code is more "performance-based" rather than prescriptive, and allows for much less expensive systems to be created by California's residents.

GENERAL RULES

- The changes to the plumbing code affect only residential buildings.
- Graywater must not pond, spray, or runoff to the storm-sewer system.
- The definition of "graywater" does not include kitchen-sink and diaper-soiled water.
- All systems must have backflow-prevention device or other air-gap device.
- Graywater may not be applied to root crops or edible portions of food crops.

PERMITS-Not Required

There are two types of graywater systems that do not require local building permits, which apply only to single- and two-family dwellings:

1. Clothes-washer graywater.
2. Graywater from one single-fixture system (or fixtures to a common drain).

There are twelve conditions applying to these two types of systems:

1. If required, notification has been provided to the enforcing agency regarding the proposed location and installation of a graywater irrigation or disposal system. (A city, county, or other local government may, after a public hearing and enactment of an ordinance or resolution, apply more restrictions to, or prohibit the use of, graywater systems (Health and Safety Code Section 18941.7).
2. The design must allow the user to direct the flow of the graywater to the irrigation or disposal field, or the building's sewer. The direction control of the graywater must be clearly labeled and easily accessible to the user.
3. The installation, change, alteration or repair of the system must not include a potable water connection or a pump, and does not affect other building plumbing, electrical or mechanical components, including structural features, egress, fire/life safety, sanitation, potable water supply piping, or accessibility.
4. The graywater must be contained on the site where it is generated.
5. Graywater must be directed to, and contained within, an irrigation or disposal field.
6. Ponding or runoff is prohibited, and will be considered a nuisance.
7. Graywater may be released above the ground surface provided at least two inches of mulch, rock or soil, or a solid shield, covers the release point. Other methods providing equal separation are also acceptable.
8. Graywater systems must be designed to minimize contact with humans and domestic pets.
9. Water used to wash diapers or similarly soiled or infectious garments must not be used, and must be diverted to the building sewer.
10. Graywater must not contain hazardous chemicals from activities such as cleaning car parts, washing greasy or oily rags, or disposing of waste products of home photo labs, or similar hobbyist or occupational activities.
11. Exemption from construction permit requirements of the code must not be interpreted to grant authorization for any graywater system to be installed in a manner that violates other parts of this code, or any other laws or ordinances of the enforcing agency.
12. An operation and maintenance manual must be provided. Directions must indicate the manual is to remain with the building throughout the life of the graywater system, and indicate that at the time of change of ownership or occupancy the new owner or tenant must be notified the structure contains a graywater system.

PERMITS – Required

These graywater systems do require permits.

1. Simple System. Up to 250 gpd of discharge, not including a clothes-washer and single-fixture system. Local authority can exempt these from permits if design is acceptable to the local authority. All other aspects of the code apply.
2. Complex System. Over 250 gpd of discharge. Local authority can exempt these from permits, too. Designer must be someone acceptable to the local authority. All other aspects of the code apply.

REQUIREMENTS FOR ALL GRAYWATER SYSTEMS

Discharge of Graywater to Landscapes. This is an area of the code that becomes simplified.

- Mulch basins are an acceptable type of disposal field.
- Disposal through drip irrigation has to be under a minimum of two inches of soil or mulch

Indoor Graywater Reuse.

Treatment is required. Currently, there are no treatment standards, so it is left up to the local enforcing agency.

Adoption of Local Standards.

Cities or counties can adopt more restrictive standards. For example, some cities may adopt a requirement that clothes-washer and simple systems be registered. Registration may be as simple as providing a checklist of the 12 conditions described under "PERMITS – Not Required." Cities and local governments may elect to prohibit graywater systems.

ATTACHMENTS

Senate Bill 1258.

San Luis Obispo Guide to Graywater Use

Senate Bill No. 1258

CHAPTER 172

An act to add Sections 17922.12 and 18941.7 to the Health and Safety Code, and to amend Section 14877.1 of the Water Code, relating to building standards.

[Approved by Governor July 22, 2008. Filed with
Secretary of State July 22, 2008.]

LEGISLATIVE COUNSEL'S DIGEST

SB 1258, Lowenthal. Building standards: graywater.

The California Building Standards Law provides for the adoption of building standards by state agencies by requiring all state agencies that adopt or propose adoption of any building standard to submit the building standard to the California Building Standards Commission for approval and adoption.

Existing law requires the Department of Housing and Community Development to propose the adoption, amendment, or repeal of building standards to the commission relating to hotels, motels, lodging houses, apartment houses, and dwellings, and the buildings and structures accessory thereto, except as specified.

Existing law authorizes a city or county to make changes or modifications in the building standards proposed by the department and approved by the commission, to provide for local variances relating to local climatic, geological, or topographical conditions, upon making certain findings and filing those findings with the commission.

This bill would require the department, at the next triennial building standards rulemaking cycle that commences on or after January 1, 2009, to adopt and submit to the commission for approval building standards for the construction, installation, and alteration of graywater, as defined, systems for indoor and outdoor uses. The bill would terminate the authority of the Department of Water Resources to adopt graywater standards for residential buildings upon the approval by the commission of the standards submitted under the bill.

The bill would authorize a city, county, or other local agency to adopt, after a public hearing and enactment of an ordinance or resolution, building standards that prohibit entirely the use of graywater, or building standards that are more restrictive than the graywater building standards adopted by the department and published in the California Building Standards Code.

The people of the State of California do enact as follows:

SECTION 1. Section 17922.12 is added to the Health and Safety Code, to read:

17922.12. (a) For the purposes of this section, “graywater” means untreated wastewater that has not been contaminated by any toilet discharge, has not been affected by infectious, contaminated, or unhealthy bodily wastes, and does not present a threat from contamination by unhealthful processing, manufacturing, or operating wastes. “Graywater” includes wastewater from bathtubs, showers, bathroom washbasins, clothes washing machines, and laundry tubs, but does not include wastewater from kitchen sinks or dishwashers.

(b) Notwithstanding Chapter 22 (commencing with Section 14875) of Division 7 of the Water Code, at the next triennial building standards rulemaking cycle that commences on or after January 1, 2009, the department shall adopt and submit for approval pursuant to Chapter 4 (commencing with Section 18935) of Part 2.5 building standards for the construction, installation, and alteration of graywater systems for indoor and outdoor uses.

(c) In adopting building standards under this section, the department shall do all of the following:

(1) Convene and consult a stakeholder’s group that includes members with expertise in public health, water quality, geology or soils, residential plumbing, home building, and environmental stewardship.

(2) Ensure protection of water quality in accordance with applicable provisions of state and federal water quality law.

(3) Consider existing research available on the environmental consequences to soil and groundwater of short-term and long-term graywater use for irrigation purposes, including, but not limited to, research sponsored by the Water Environment Research Foundation.

(4) Consider graywater use impacts on human health.

(5) Consider the circumstances under which the use of in-home graywater treatment systems is recommended.

(6) Consider the use and regulation of graywater in other jurisdictions within the United States and in other nations.

(d) The department may revise and update the standards adopted under this section at any time, and the department shall reconsider these standards at the next triennial rulemaking that commences after their adoption.

(e) The approval by the California Building Standards Commission of the standards for graywater systems adopted under this section shall terminate the authority of the Department of Water Resources to adopt and update standards for the installation, construction, and alteration of graywater systems in residential buildings pursuant to Chapter 22 (commencing with Section 14875) of Division 7 of the Water Code.

SEC. 2. Section 18941.7 is added to the Health and Safety Code, to read:

18941.7. A city, county, or other local agency may adopt, after a public hearing and enactment of an ordinance or resolution, building standards

that prohibit entirely the use of graywater, or building standards that are more restrictive than the graywater building standards adopted by the department under Section 17922.12 and published in the California Building Standards Code.

SEC. 3. Section 14877.1 of the Water Code is amended to read:

14877.1. (a) The department, in consultation with the State Department of Public Health and the Center for Irrigation Technology at California State University, Fresno, shall adopt standards for the installation of graywater systems. In adopting these standards, the department shall consider, among other resources, "Appendix J," as adopted on September 29, 1992, by the International Association of Plumbing and Mechanical Officials, the graywater standard proposed for the latest edition of the Uniform Plumbing Code of the International Association of Plumbing and Mechanical Officials, the City of Los Angeles Graywater Pilot Project Final Report issued in November 1992, and the advice of the Center for Irrigation Technology at California State University, Fresno, on the installation depth for subsurface drip irrigation systems.

(b) The department shall include among the approved methods of subsurface irrigation, but shall not be limited to, drip systems.

(c) The department shall revise its graywater systems standards as needed.

(d) The authority of the department under this chapter to adopt standards for residential buildings shall terminate upon the approval by the California Building Standards Commission of the standards submitted to that commission pursuant to Section 17922.12 of the Health and Safety Code.

O

SAN LUIS OBISPO GUIDE TO THE USE OF GRAYWATER



Vegetated leach field, page 15.



Constructed wetland reed beds, page 21-22.



SLO Botanic Garden building uses a constructed wetland water reclamation system creating riparian habitat page, 21-22.

\$10

This is the first of an educational series regarding water and waste applications of appropriate technology for San Luis Obispo County. **Appropriate technology** is defined as:

Applying technology to address problems related to energy use, the water cycle, and affordable building at the smallest and most accessible scale possible.

These guidelines are being developed by the San Luis Obispo Coalition of Appropriate Technology (SLO-COAT) to specifically address efforts to maintain a healthy hydrologic cycle in San Luis Obispo County.

SLO-COAT is a joint effort by SLO Green Build, the San Luis Bay Chapter of the Surfrider Foundation and the Santa Lucia Chapter of the Sierra Club. The information presented is for general education purposes. Final details and construction must be developed and designed for specific site conditions; therefore, SLO-COAT is hereby indemnified from any liability arising from the use of this information.



Cover images (clockwise from top left) courtesy of Carmichael Environmental Design/Build, Greg McMillan and San Luis Sustainability Group Architects.

HISTORY

During Jerry Brown's Administration in California from 1972 to 1980, the State Office of Appropriate Technology was developed. OAT as it was called was headed by Sim Van der Ryn, the State Architect at the time. OAT encouraged the application of appropriate technologies to address the economic and environmental concerns of development.

SITUATION

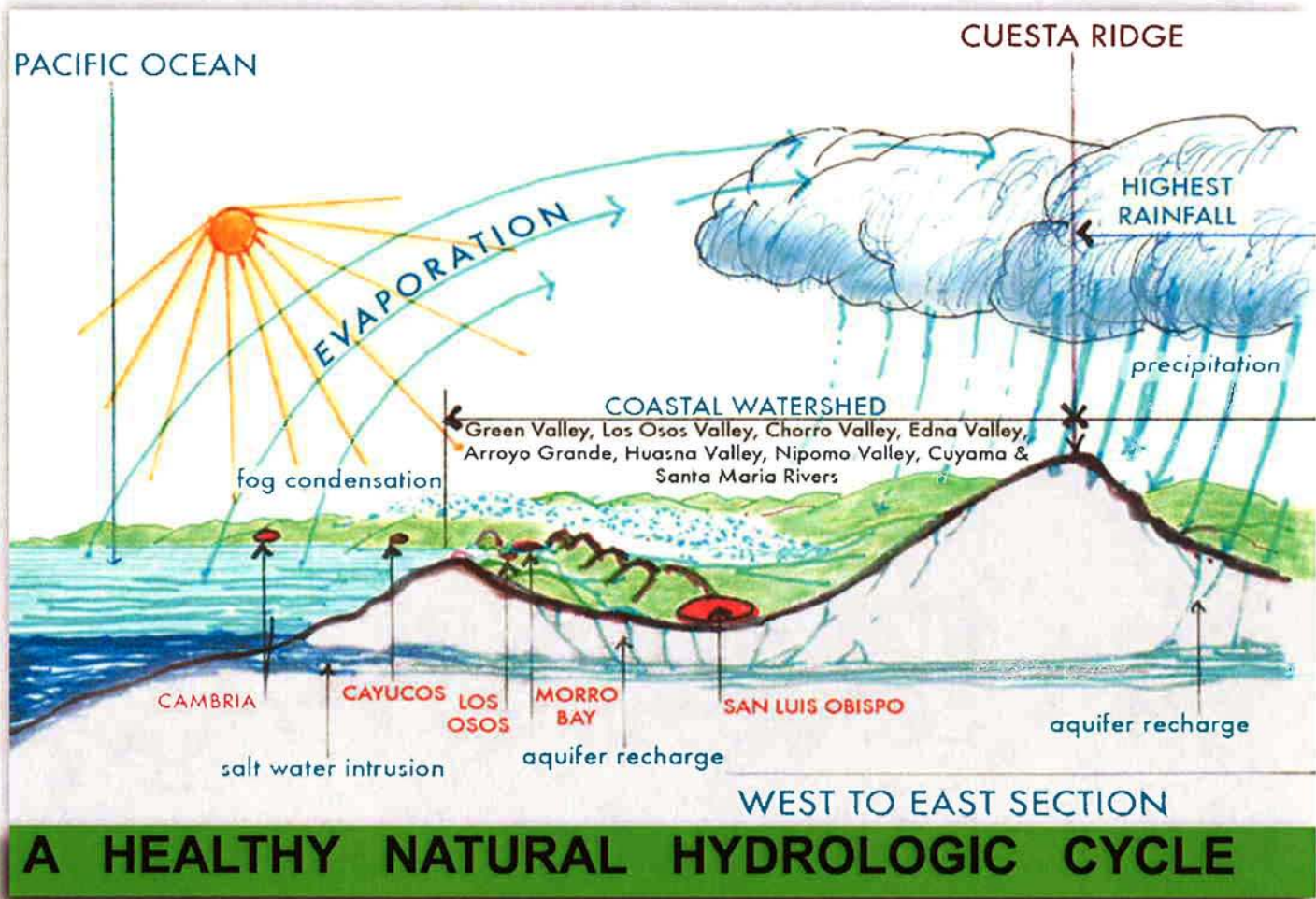
The dismantling of OAT by the next administration in 1980 proved to be short-sighted given the ongoing concerns about energy and the double threat of climate change coupled with peak fossil fuel supply. The water imbalances in San Luis Obispo County have become evident as many municipalities implement water rationing policies. Growth has always been naturally restrained due to scarce water resources in the County, so increased infrastructure costs burden new development. Fortunately, over the past thirty years, the research and refinement of appropriate technologies have much to offer us today.

SLO-COAT believes it is imperative that we revisit, at a local scale, the encouragement and application of appropriate technology. San Luis Obispo County is in a position to be at the forefront of these efforts to reconcile growth and environmental quality. This San Luis Obispo Guide to the Use of Graywater was produced to encourage the use of graywater in a safe and legal manner.

Contributing members of SLO-COAT: Ken Haggard-Architect & Planner, Mikel Robertson- General Contractor & Green Building Material Specialist, Rachel Aljilani- LEED AP, Joshua Carmichael- Landscape Designer & Contractor

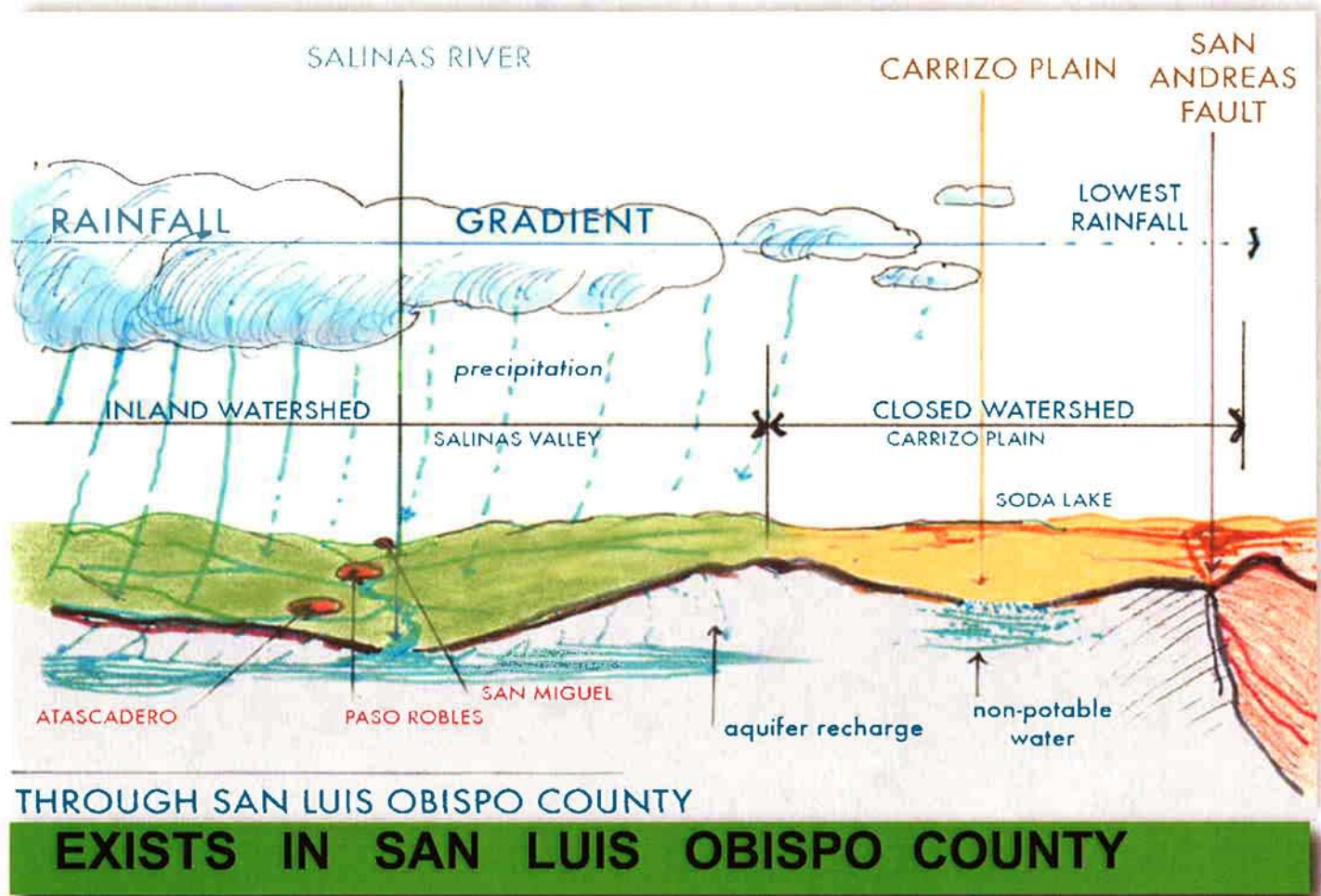
Special thanks to:

Brad Lancaster, Art Ludwig, Brock Dolman and Johnathan Todd who have helped educate our community on the current trends in appropriate technology applications and regulations. Of course this would not be possible without the support of SLO-COAT members: Mladen Bandov, Andrew Christie, Mary Fullwood, Cheryl Lenhardt, Steve Paige, Scott Peterson, Lawson Schaller, Jessica Steely, Karen Venditti, Sam Studer, and the numerous family and friends who are also concerned about water resources and sustainable development.



The Greening of San Luis Obispo sketch by Ken Haggard

APPROPRIATE TECHNOLOGY SUPPORTS



A healthy hydrologic cycle provides fresh water in the form of precipitation and condensation. This water is transmitted to riparian systems consisting of rivers and streams which in turn charge underground aquifers. In its natural state, this cycle creates healthy watersheds, prevents erosion, stabilizes salt water intrusion and supports rich ecological systems.

Increased built areas usually accentuate adverse changes to the natural hydrologic cycle; therefore, it becomes of vital necessity for us to mimic the natural hydrologic cycle, using the same processes regarding water movement, filtration, and storage.

Application of appropriate technologies as described in this guide can allow development while still maintaining a healthy hydrologic cycle. In addition to graywater, appropriate technology topics related to a healthy water ecology are:

- Low Impact Development**
- Rainwater Harvesting**
- Waterless Waste Treatment**
- Bioremediation Strategies**

Look forward to more information and educational events presented by SLO-COAT on these topics. If you would like to become involved contact SLO Green Build through the web at www.slogreenbuild.org

GROWTH & A HEALTHY HYDROLOGIC CYCLE

INTRODUCTION

WHAT IS GRAYWATER ?

Graywater is untreated household or building waste water that has not come in contact with toilet or kitchen sink waste. Essentially, graywater is soapy water from washing machines, bathroom sinks, bathtubs, and showers. Graywater should not be stored as it will quickly become foul and turn into blackwater unless treated. Graywater is kept separate from blackwater, which comes from kitchen sinks, dishwashers and toilets. Blackwater is not safe for reuse without more elaborate procedures for treatment & filtration. All graywater systems must be valved to send water to either the graywater distribution area or the sewer/septic (blackwater) line. Most plumbing combines the wastewater from all fixtures to flow together into either a sewer system or a septic tank. Although



combined wastewater (graywater and blackwater) can be treated and reused, the rigorous standards, system costs and permitting requirements for this type of water recycling are prohibitive for most homeowners. In comparison, a graywater system offers an effective way to reuse your wastewater with minimal cost and effort. The graywater designs presented in this guide can provide you with a better understanding for developing your own graywater system.

IS GRAYWATER LEGAL? ...YES!!!

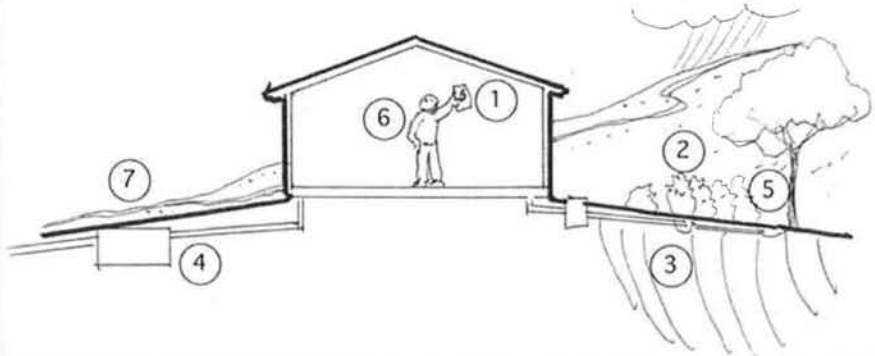
There is an increased demand for water due to population and economic growth. In addition, pollution of and reduction in the water table has adversely affected our once balanced ecosystems, making water an increasingly important and valuable natural resource. Clean potable water is the most valuable type of water, but graywater is useful in meeting our water needs as well. Graywater should not be considered a waste product because it is a valuable resource that can be

WHY IS GRAYWATER SO IMPORTANT?

applied to irrigation and other non-potable water uses. Harvesting graywater to meet your non-potable water demand utilizes an appropriate technology that can recover initial costs quickly. The added benefits to your watershed and community infrastructure make having a graywater system an environmentally friendly solution to scarce water supplies, since more than half of your indoor water can be reused as graywater. It's time to tap into graywater!

POSITIVE IMPACTS OF GRAYWATER SYSTEMS

1. Lower water utility bills for home or business occupants
2. Potential for landscape irrigation
3. Groundwater or aquifer recharge
4. Reduced strain on septic or sewer systems which in turn lower energy loads at central treatment plants
5. Bioremediation strategies can clean water and enhance the local ecology
6. Feel good about conserving a precious resource essential to our lives
7. Preserve potable water sources for future uses



I N D E X

| | <u>page #</u> |
|--|---------------|
| Introduction..... | 3-4 |
| How to Get Started..... | 5-6 |
| Calculations & Standards..... | 7-8 |
| Graywater Process & Design Options | 9-10 |

CARD: RECIPE CARDS FOR OPTIONS SHOWN ON PAGE 8

| | |
|--|-------|
| <u>A</u> Surge Tank Options..... | 11 |
| <u>B</u> Distribution Options | 11 |
| <u>C</u> Branched System | 12 |
| <u>D</u> Flower Pot Emitter | 13 |
| <u>E</u> Mini- Leach Field..... | 14 |
| <u>F</u> Vegetated Leach Field..... | 15 |
| <u>G</u> Mulched Watering Moat | 16 |
| <u>H</u> Tree Watering Moat..... | 17 |
| <u>I</u> Infiltration Galley..... | 18 |
| <u>J</u> Drip System with Rewatering | 19-20 |
| <u>K</u> Reed Beds..... | 21-22 |
| <u>L</u> Washing Machine Sump | 23 |
| <u>M</u> In House Use of Graywater | 24 |
| Checklist | 25 |
| Summary & References..... | 26 |
| Appendix 1 - Detergents for Graywater Systems..... | 27 |
| Appendix 2 - Plants for Graywater Systems..... | 28 |
| Glossary of Graywater Terms | 29-31 |

This guide has been set-up in a way that allows you to consider options that are appropriate for your specific site conditions and graywater resources, pages 7-10.

Once you choose a graywater system that is right for you, then you can use the recipe cards to determine the components and overall design.

10 Easy Steps to Develop Your Own Graywater System

Reference page

- 1 Adopt a baseline conservation program. _____ 7
- 2 Do a few calculations to determine:
 - a. Graywater flow. _____ 7
 - b. Soil absorption capacity & distribution area. _____ 8
 - c. Site planning issues. _____ 8
- 3 Evaluate system options to determine the solution for your situation. _____ 10
- 4 Draw up your chosen system using page 8 and the recipe cards. _____ 11-24
- 5 Use the checklist provided to refine your design. _____ 25
- 6 Provide and keep an operations and maintenance manual for your system. This manual shall remain with the building throughout the life of the system and upon change of ownership, the new owner shall be notified the structure contains a graywater system. [Ref. 9]
- 7 Apply and obtain a permit from the County or your City (if necessary).
- 8 Construct your system.
- 9 Operate & maintain your system.
- 10 Enjoy your graywater use and educate others about the process and benefits.

GET STARTED

You can use graywater, it is legal under state regulations. This guide illustrates how to design, permit and maintain your own graywater system as interpreted by the California State Graywater law [ref. 4].

Maintaining and Using Graywater

- Graywater should be avoided when irrigating edibles in your landscape. [Ref. 9]
- Avoid planting invasive water loving plants (pampas grass, Arunda donax, scotch broom, etc.).
- Avoid using graywater in hoses that can be used to wash or play with.
- Potable and graywater supply pipes should never be connected.
- Graywater that has come in contact with soiled diapers is blackwater.
- Corrugated pipes for graywater discharge should be avoided, they slow the flow.
- Use a subsurface drip system when irrigating lawns.
- In general, tilling organic matter into soil that comes in contact with graywater is good.

Detergents & Cleaners [ref. 1]

Additional information regarding the composition of detergents can be found in appendix 1- Detergents for Graywater Systems, page 27.

Hand soaps and shampoos by and large do not damage plants or clog soil profiles, in fact graywater is a light fertilizer. Laundry detergents commonly have sodium and boron which are chemicals that can have a negative effect on landscapes. The following are detergents or cleaners to avoid:

- Bleaches or softeners
- Detergents that advertise whitening, softening, and enzymatic powers
- Detergents with the following ingredients: boron, borax, chlorine, bleach, petroleum distillers, sodium and peroxygen
- Products designed to open clogs without scrubbing
- Water softeners that use sodium chloride

Plants that Typically Love Graywater [ref. 1]

Oleander, bougainvillea, fan and date palms, rosemary, roses, agapanthus, Bermuda grass, honeysuckle, Australian tea tree, Italian stone, oaks, Arizona cypress, cottonwood, olive, ice plant, juniper, purple hopseed, manzanita, ceanothus, rushes, coffeeberry, toyon, western redbud, california wax myrtel, penstemon.

Plants that Typically Don't Like Graywater [ref. 1]

Rhododendron, bleeding hearts, wood sorrel, hydrangeas, azaleas, violets, impatiens, begonias, ferns, foxgloves, gardenias, philodendron, camellias, primroses, crape mertyle, redwoods, star jasmine, holly and deoder cedar.

For more information on graywater plants, see appendix 2- Plants for Graywater Systems, page 28.

C O N S E R V A T I O N F I R S T , T H E N

STEP 1: BASELINE CONSERVATION

Bathrooms

- Check for leaks from pipes and faucets, the smallest drip can waste up to 2 gallons per day!
- Install dual-flush or ultra low flow toilets.
- Install low-flow faucets or faucet aerators.
- Turn off water while brushing your teeth and shaving.
- Take 5 minute or shorter showers and turn water off during and while soaping.

Before incorporating graywater into your lifestyle, first start off by adopting a baseline conservation plan. Conservation is the most affordable technology and practices are readily available that require little if any behavior change. Most water providers have programs to help you conserve that offer free or discounted low flow shower heads, faucet aerators, toilet tumblers and more.

While this document does not attempt to provide a thorough cost benefit analysis, we recognize it is a worthwhile consideration. Cost/benefit will vary greatly depending on the graywater system selected, the local cost of water and the volumes utilized. Some systems are very simple, low cost and can be done by the homeowner with few new parts and supplies, or by integrating salvaged/used materials. Other systems are more complex, requiring professional installation, and expensive components. Regardless of the system selected and the volumes utilized, the user will have the satisfaction and benefit of reusing water, helping the environment, and having a drought resistant supply during mandatory watering restrictions.

Kitchen

- Scrape rather than rinse dishes before placing them in the dishwasher.
- Do not thaw frozen food under running water.
- When hand washing dishes, fill one basin with soapy water and the other with rinse water.
- Install Energy Star rated dishwasher and only wash full loads.
- Avoid running water continuously while washing dishes.

STEP 2: CALCULATIONS A- Graywater Flow

Using the number of bedrooms in your residence provides an estimate of the graywater flow for typical households:

Enter the number of bedrooms =

Calculate the number of occupants =
 • Start with two (2) occupants for the first bedroom
 • Add one (1) occupant for each additional bedroom

Graywater can be estimated as generated from each occupant on a daily basis. Choose from the following list of sources based on your graywater system. Each graywater flow estimate is based per occupant.

| | |
|---|--------------------|
| Showers, bathtubs, wash basins & clothes washer | 40 gallons per day |
| Showers, bathtubs & wash basins (only) | 25 gallons per day |
| Clothes washer (only) | 15 gallons per day |

Laundry

- Install Energy Star clothes washer and set water volume to the minimum requirement per load.
- Use short water cycles for lightly soiled loads.
- Pre-treat stains to avoid multiple washings.
- Soak heavily soiled items in a sink one third full to prewash.

Multiply the number of occupants by the estimated graywater flow in gallons per day (gpd) per occupant to determine the total estimated graywater flow.

| | | | | |
|---|---|---|---|---|
| Number of occupants | x | Graywater flow per occupant | = | Total estimated graywater flow |
| <input style="width: 50px;" type="text"/> | x | <input style="width: 50px;" type="text"/> gpd | = | <input style="width: 50px;" type="text"/> gpd |

For example, the graywater flow for a four-bedroom main house, which includes all fixtures such as showers, sinks, and clothes washer, and a one-bedroom guest house, which includes only a shower and sink, is estimated :

| | | | | | |
|--------------------------|-------------|---|---------------------|----------|----------------|
| Main House (4 bedroom): | 5 occupants | x | 40 gpd per occupant | = | 200 gpd |
| Guest House (1 bedroom): | 2 occupants | x | 25 gpd per occupant | = | 50 gpd |
| TOTAL GRAYWATER | | | | = | 250 gpd |

CALCULATIONS & STANDARDS

STEP 2: CALCULATIONS B - Soil Absorption Capacity & Distribution Area

Design the graywater system based on the soil and groundwater conditions of the property. Select an area within the property boundaries to be used for irrigation or disposal of the graywater. The surface and subsurface soil must be suitable to accept the design flow of graywater. The fundamental soil characteristic is the percolation rate, which indicates how fast the soil can absorb water. Soil types like fine sand or sandy loam have better percolation rates than clay, for instance. Better percolation rates mean that less area will be required to adequately disperse all the graywater.

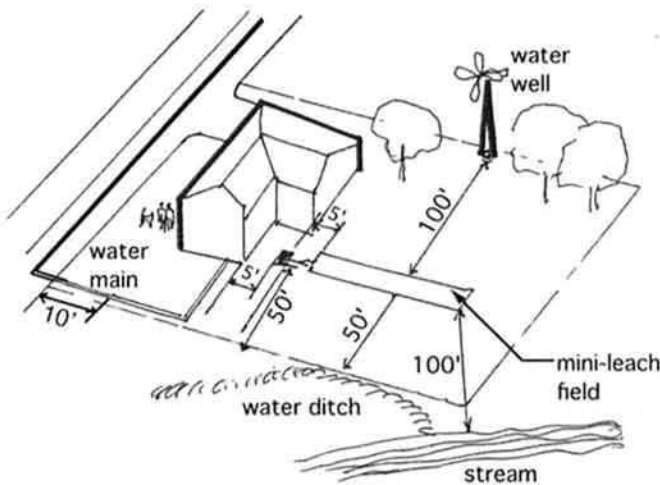
Percolation Rate Table:

| Soil Type | Percolation Test Results (min/inch) | Infiltration Type Irrigation (sf/gpd) | 18" Wide Mini-Leachfield (linear ft/gpd) | Subsurface Drip System (sf/gpd) |
|--|-------------------------------------|---------------------------------------|--|---------------------------------|
| | 0 - 4 | not allowed - too fast | | |
| Coarse sand or gravel | 5 - 11 | 0.20 | 0.13 | 0.82 |
| Fine sand | 12 - 17 | 0.25 | 0.17 | 0.95 |
| Sandy loam | 18 - 23 | 0.40 | 0.27 | 1.22 |
| Sandy clay | 24 - 47 | 0.60 | 0.40 | 1.50 |
| Clay with considerable sand or gravel | 48 - 59 | 0.90 | 0.60 | 2.18 |
| Clay with small amount of sand or gravel | 60 | 1.20 | 0.80 | 2.72 |
| | 61+ | not allowed - too slow | | |

Percolation Test Procedures

Select percolation test locations in the area to be used for graywater disposal. Dig a few test holes (8"-12" diameter) to the same depth as the bottom of the disposal area. Cover the hole bottom with 2" of gravel. Pre-soak holes overnight. During the test, fill the holes to at least 8"-10" above the gravel. Using a stake marked at 1/4" intervals, measure the falling water level at 30 minute intervals while refilling after each measurement. Obtain at least 12 measurements (i.e., a perc test is at least 6 hours long.) The drop during the final 30-minute interval is the calculated percolation rate converted to minutes per inch. For sandy soils where the water level drops faster than 6" in 25 minutes, take 12 measurements every 10 minutes.

STEP 2: CALCULATIONS C - Site Planning [ref. 4]



To locate your existing utility lines for your plot plan, call 811 or visit www.call811.com

| Minimum Horizontal Distance From | Surge Tank (feet) | Irrigation Field (feet) |
|--|-------------------|-------------------------|
| Buildings or structures ¹ | 5 ² | 8 ³ |
| Property line adjoining private property | 5 | 5 |
| Water supply wells ⁴ | 50 | 100 |
| Streams and lakes ⁴ | 50 | 50 |
| Seepage pits or cesspools | 5 | 5 |
| Disposal field and 100% expansion area | 5 | 4 ⁵ |
| Septic tank | 0 | 5 ⁶ |
| On-site domestic water service line | 5 | 5 ⁷ |
| Pressure public water main | 10 | 10 ⁸ |
| Water ditches | 50 | 50 |

Notes: When mini-leach fields are installed in sloping ground, the minimum horizontal distance between any part of the distribution system and ground surface shall be 15 feet.

¹ Including porches and steps, whether covered or uncovered, but does not include carports, covered walks, driveways and similar structures.

² The distance may be reduced to zero feet for aboveground tanks if approved by the Administrative Authority.

³ The distance may be reduced to two feet, with a water barrier, by the Administrative Authority, upon consideration of the soil expansion index.

⁴ Where special hazards are involved, the distance may be increased by the Administrative Authority.

⁵ Applies to the mini-leach-field type system only. Plus two feet for each additional foot of depth in excess of one foot below the bottom of the drain line.

⁶ Applies to mini-leach-field type system only.

⁷ A two foot separation is required for subsurface drip systems.

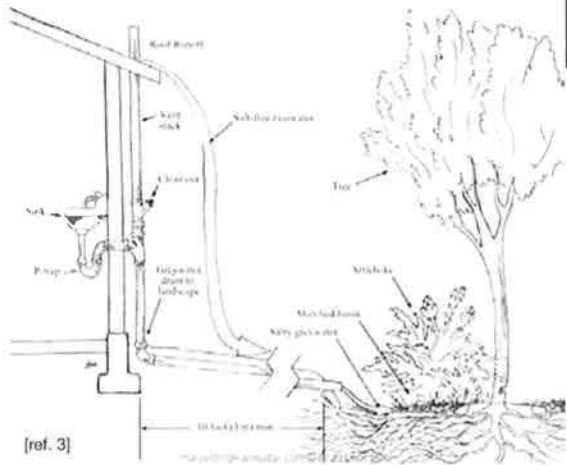
⁸ For parallel construction or for crossings, approval by the Administrative Authority shall be required.

⁹ Minimum separation from highest known groundwater is five feet.

*Drip systems may allow for a reduction in setbacks.

PARTS OF A GRAYWATER SYSTEM

| Collection of Graywater | Provide Surge Capacity | Filtration | Distribution | Using Graywater |
|---|---|----------------------------|--------------|--|
| Individual plumbing of laundry or shower/tub or sinks | gravity surge tank | Disk or in-line filter | Gravity fed | <i>Irrigation and aquifer recharge by</i> |
| -or- | -or- | -or- | -or- | Mini leach field |
| Dual plumbing whole house (especially recommended for new construction) | pumped surge tank | Bag, mesh or fabric filter | Pumped | -or- |
| | -or- | -or- | -or- | Branched system |
| | surge capacity in the distribution system (i.e. branched irrigation system) | Gravity sand filter | Siphoned | -or- |
| | | -or- | | Watering Moat |
| | | Pressurized sand filter | | -or- |
| | | | | Field consisting of a drip system |
| | | | | -or- |
| | | | | Reed bed |
| | | | | -or- |
| | | | | Washing machine sump |
| | | | | <i>Use in the building (toilet flushing)</i> |
| | | | | Cistern Mode |
| | | | | -or- |
| | | | | commercially available tank |
| | | | | <i>Aquifer Recharge & septic system relief</i> |
| | | | | Galley System |



Salt Build Up - What to do?

Salt builds up in the soils of graywater systems, especially in warmer areas. Salt can be leached out by flushing the system with fresh water. You might be surprised to find out that approximately every 1000 square feet of property can yield 600 gallons of water in a 1 inch rain storm. By directing the flow of our roof's drip lines, gutters, and driveways into the landscape via depressions or basins, instead of mounds, the graywater system is flushed naturally and salt build up does not become a problem.

DESIGN OF YOUR GRAYWATER SYSTEM

This page shows the basic components of all graywater systems and some options available to you. Choose the best option for your site, soil type, financial resources and maintenance preferences. Once a system is chosen, you can use the recipe cards for details of construction.

NOTES:

DIAGRAM OF SYSTEM OPTIONS

REFERENCE
RECIPE/PAGE
CARD #

BASELINE CONSERVATION IS THE PREREQUISITE AND FIRST STEP IN GRAYWATER UTILIZATION.

GRAYWATER SHOULD NOT BE STORED BUT SHOULD BE UTILIZED AS FAST AS YOU CAN PROCESS IT.

ALL GRAYWATER SYSTEMS NEED TO HAVE A VALVE TO SWITCH TO YOUR SEPTIC OR SEWER SYSTEM.

THE SURGE TANK ALLOWS YOU TO TEMPORARILY HOLD GRAYWATER IF THE FLOW EXCEEDS YOUR ABILITY TO UTILIZE IT

DUAL FIELDS ARE USED IN LEACH AREAS FOR IRRIGATION TO GIVE ADEQUATE ABSORPTION TIME TO EACH SIDE. THE FLOW IS CONTROLLED BY A DISTRIBUTION OPTION SHOWN ON PAGE 11.

THE DRIP SYSTEM REQUIRES A PUMPED SURGE TANK TO MINIMIZE CLOGGING.

IN-HOUSE UTILIZATION CAN BE FOR TOILET FLUSHING WITH EXCESS FLOWS TO IRRIGATION SYSTEMS

ALTHOUGH NOT HELPFUL FOR IRRIGATION, A TRADITIONAL LEACH FIELD CAN BE USED TO TAKE SOME LOAD OFF OF A SEWER SYSTEM OR RECHARGE THE LOCAL AQUIFER.



HOUSE WITH BASELINE CONSERVATION _____ 9



GRAYWATER

ESTIMATING DISCHARGE _____ 9
EVALUATING SOIL CONDITIONS _____ 10
SITE STANDARDS & PLANNING _____ 10



SWITCH VALVE



SURGE TANK & DISTRIBUTION OPTIONS

A. SURGE TANK OPTIONS _____ A 11
B. DISTRIBUTION OPTIONS _____ B 11
C. BRANCHED SYSTEM (NO SURGE TANK) _____ C 12



UTILIZATION OPTIONS

(OTHER THAN THE BRANCHED SYSTEM)

1. LEACH OPTIONS FOR IRRIGATION

D. FLOWER POT EMITTER _____ D 13
E. MINI-LEACH FIELD _____ E 14
F. VEGETATED LEACH FIELD _____ F 15
G. MULCHED WATERING MOAT _____ G 16
H. TREE WATERING MOAT _____ H 17
I. INFILTRATION GALLEY _____ I 18
J. DRIP SYSTEM FIELD _____ J 19-20
K. REED BEDS _____ K 21-22
L. WASHING MACHINE SUMP _____ L 23

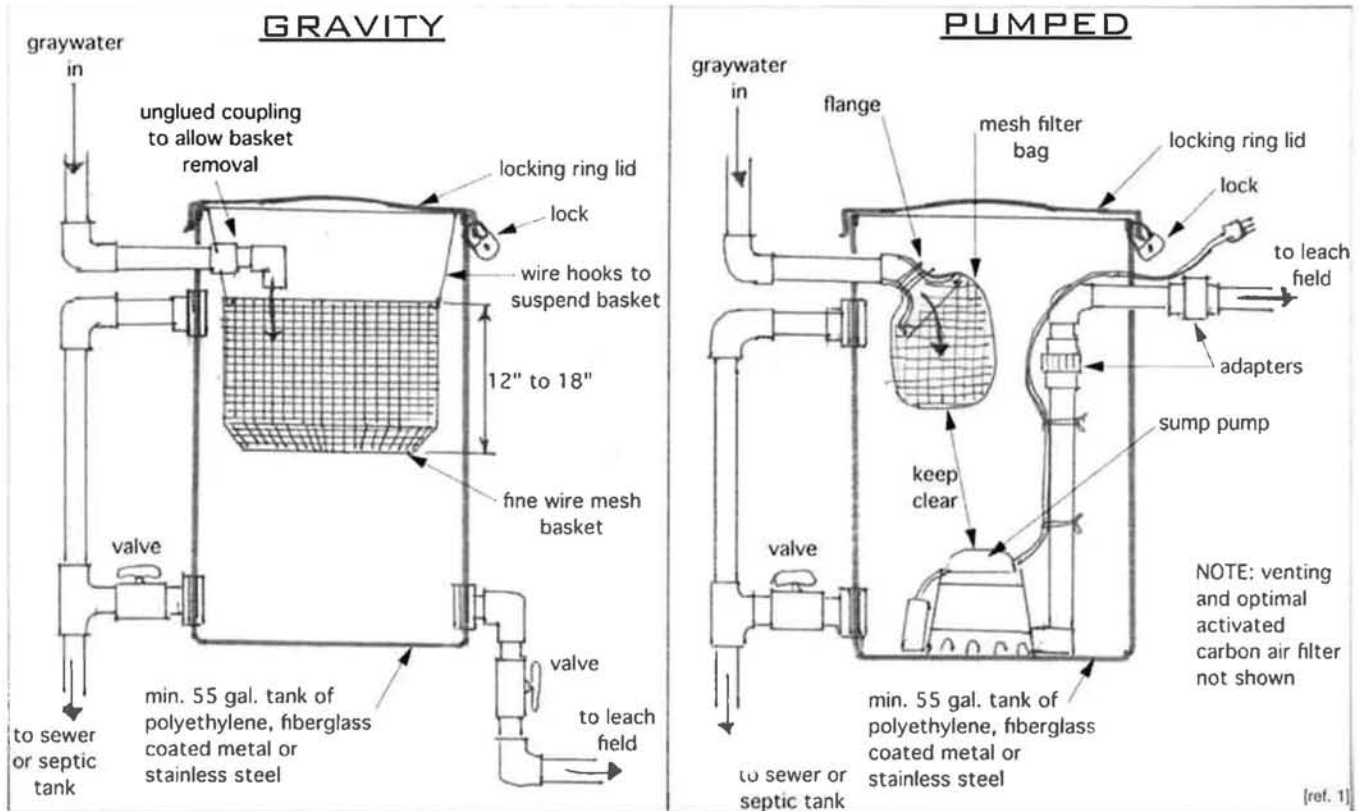
2. IN-HOUSE UTILIZATION

M. GRAYWATER TOILET FLUSHING _____ M 24

3. TRADITIONAL LEACH FIELD

New technologies are constantly being refined and improved.

A - SURGE TANK



SURGE CAPACITY

All graywater systems need to be able to handle the peak flows, or surge capacity, from the various plumbing fixtures. For most homes, a surge capacity of 45 gallons is sufficient. For instance, a 10-minute shower could generate 20-50 gallons of graywater at a time. Use the estimated daily flow rates as a guide for the surge capacity needed. If daily water use combines showers, bathing, and laundry all at the same time, the surge capacity should be adjusted accordingly. Graywater systems without sufficient surge capacity will cause pipes to backup.

SURGE TANKS

Surge tanks are the standard solutions for providing surge capacity, usually ranging between 30 to 55 gallons. Specific construction details and requirements including a conceptual diagram are given in the plumbing code. The surge tanks shown in this guide are examples and might not include all the permit requirements such as venting, backwater valves, bracing, labeling, etc. Multiple tanks could be joined together to provide additional surge capacity.

In addition to the inlet and outlet ports, surge tanks also have an emergency drain valve and overflow outlet, which connect to the main sewer line. The overflow outlet should not have a valve and remain permanently open to the main sewer line, while other valves can be operated during cleaning and other maintenance activities.

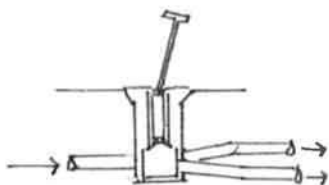
Surge tanks can be gravity-fed or pump-based distribution as well as have various filter configurations. Inadequate filtration and clogged pumps are two issues with the pump surge tank. Using pumps designed for wastewater such as effluent pumps are expensive but last longer than cheaper well water or sump pumps. Filters should be sized to minimize the change-out/cleaning frequency. Even with the best level of filtration, subsurface drip systems are likely to clog over time, so systems using an automated sand filtration with backwash capabilities fair even better than the prescribed drip system from the plumbing code.

B - DISTRIBUTION OPTIONS

Distribution is automatic in the branched system shown on recipe card C, but with the other absorption systems, distribution must be regulated to give adequate time to each absorption area. This is done by a distribution box (D-box). A distribution box evenly splits the flow of graywater between

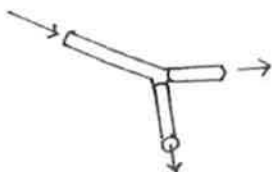
absorption areas therefore they should be installed perfectly level on undisturbed ground. Pre-made D-boxes have 4" diameter inlet and outlet pipes with the inlet 1" higher than the outlets. Various options are shown below:

Valve Control



Flow is controlled by a valve which can be operated manually or electrically. Requires attention but does not need to be as level as the other options.

"Y" Outlet



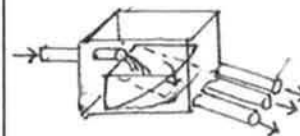
Automatic system for splitting flows equally between 2 absorption areas.

D-Box w/ Multiple Outlets



Automatic system for splitting flow equally between more than 2 areas.

D-Box w/ Dipper Option



This system provides automatic 1.5 gal surge to help prevent the build up of solids. * available commercially as Polylok dipper box.

[ref. 1]

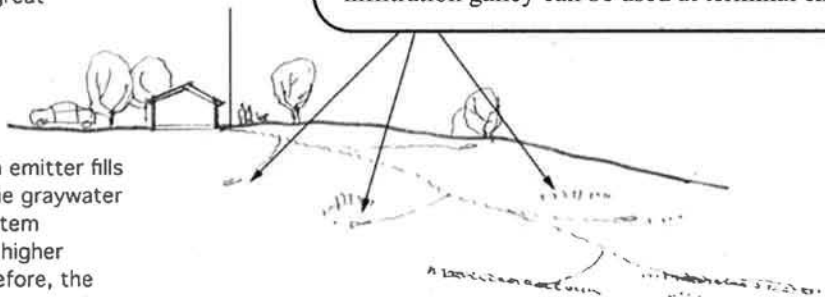
C - BRANCHED SYSTEM

BRANCHED DRAIN SYSTEM

Surge capacity can be provided in the distribution plumbing and the receiving landscape if properly designed. Careful calculations are necessary to ensure that flow splitting and distribution piping function as intended and that piping fittings and slopes are installed properly. Constant slopes, adequately-sized outlets, and precise flow splitting are among the challenges with this approach to providing adequate surge capacity. The Branched Drain System, detailed by Art Ludwig, uses special double ell flow splitters, dipper boxes, and free-flow outlets such as a mulched moat system. Other emitters can also be used provided all the surge capacity is met. This option necessitates a sloped topography where lower elevation areas receive more water and should be planted accordingly.

This is the only system that doesn't require a surge tank since the capacity of the system is great

Various emitters such as the flower pot emitter, tree watering moat, or infiltration galley can be used at terminal ends of the branched system.



As the bottom emitter fills to capacity, the graywater fills up the system activating the higher emitters; therefore, the system must be on a slope.

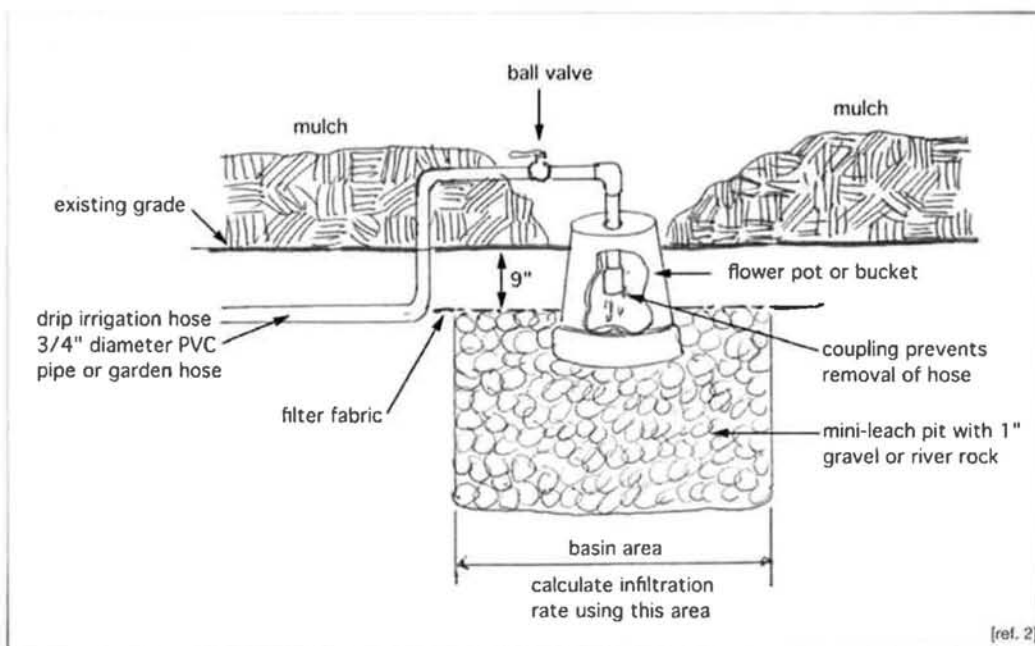
Absorption by the use of mini-leach fields as shown in recipe card E is also possible.

[ref. 2]

THE FOLLOWING RELATIVE RATING GUIDE WILL HELP YOU COMPARE THE VARIOUS UTILIZATION OPTIONS, LOOK FOR THESE IMAGES AT THE TOP OF THE RECIPE CARDS:
 LEAST (☉) TO MOST (☉☉☉) ENVIRONMENTALLY SUSTAINABLE
 LOW (★) TO HIGH (★★★) COMPLEXITY OF DESIGN, INSTALLATION OR MAINTENANCE
 LOW (\$) TO HIGH (\$\$\$) COST FOR MATERIALS

D - FLOWER POT EMITTER

SUSTAINABILITY: 🌱🌱
 COMPLEXITY: ✖✖
 MATERIALS COST: \$\$



TECHNOLOGY HIGHLIGHT

- Best suited for small tree or shrub groups with deep roots systems
- Works best with gravity surge tank, pumped surge tank or branched drain system
- Potential beneficial reuse of flower pots, buckets, or similar containers

The flower pot emitter is a passive outlet from the distribution lines after a surge tank (or branched drain system). If each emitter is at the end of a branching pipe, careful flow control is needed to prevent overflowing at any single outlet. Trees and shrubs with deep root system benefit the most from this simple system. Ball valves or other control devices can be used to regulate flow to each emitter.

EXAMPLE OF DESIGN CALCULATIONS

| | | |
|---|------|----------------------------------|
| Total graywater flow (4-bedroom house) at | 200 | gallons per day (gpd) |
| Sandy loam soil (see Percolation Rate Table) at | 0.40 | gpd per square foot |
| Required total area (i.e., 200×0.40) | 80 | square feet |
| Design area for flower pot emitter | 9 | square feet per emitter |
| Minimum number of emitters (i.e., $80 \div 9$) | 9 | flower pot emitters (rounded up) |




INSTALLATION

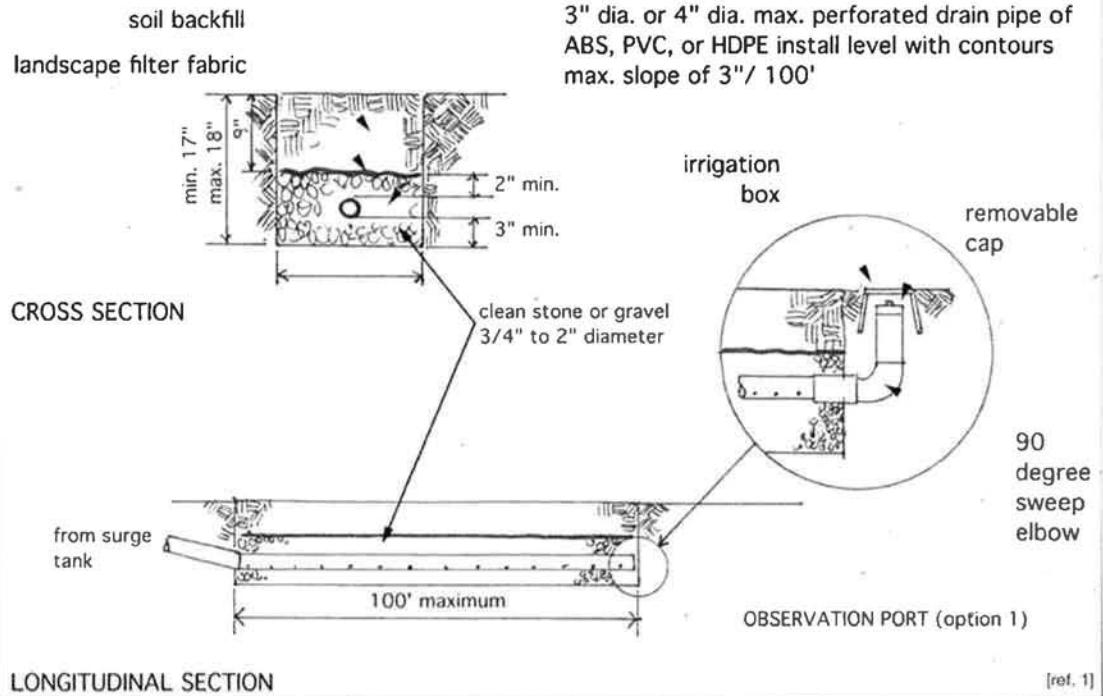
Fill a pit with clean gravel or river rock (minimum 1") at least 1 foot deep and 3 feet on each side. Cover the gravel with filter fabric. Place a flower pot (minimum 5 gallons) upside down on the filter fabric. Use 3/4" PVC pipe and a coupling to secure the pipe inside of the pot. Use a ball valve to help regulate the graywater flow to each emitter. Cover the gravel and filter fabric with mulch or soil at least 9 inches above the bottom of the flower pot.

MAINTENANCE

Clear mulch or soil to expose flower pot, lift up and clean out any clogging material. Replace filter fabric if needed. Flush out pipes and ball valves with clean water when flow is restricted.

E - MINI-LEACH FIELD

SUSTAINABILITY: 
 COMPLEXITY:  
 MATERIALS COST: \$\$



TECHNOLOGY HIGHLIGHT

- Best suited for straight rows of vegetation
- Works best with filtered gravity surge tank
- Most beneficial for high flows, groundwater recharge or septic tank relief
- Detailed requirements provided in the plumbing code for simplified permitting

The mini-leachfield is a standard design similar to a septic system leachfield with a few differences, including shallower placement. The mini-leachfield has low irrigation efficiency (i.e., most of the water drains away instead of used by the vegetation). Factors such as root intrusion, clogging potential, and the amount of imported gravel or stone overshadow the maintenance and sustainability benefits (compared to other designs.)

EXAMPLE OF DESIGN CALCULATIONS

| | | |
|---|------|--|
| Total graywater flow (4-bedroom house) at | 200 | gallons per day (gpd) |
| Sandy loam soil (see Percolation Rate Table) at | 0.27 | gpd per square foot for standard 18" wide trench |
| Required total area (i.e., 200 x 0.40) | 54 | linear feet (18" wide trench) |

INSTALLATION

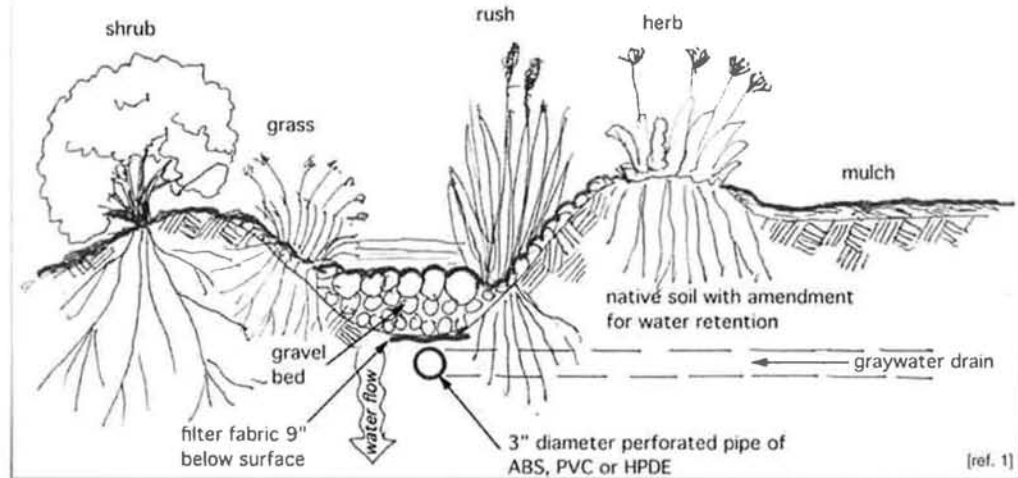
Install valves to allow for switching between irrigation zones. Level each leach field along contours to allow for even distribution, with a maximum slope of 3" per 100'. Use non-corrugated PVC perforated pipe (minimum 3", maximum 4") with holes facing down. Install a 90 degree sweep elbow fitting to the surface with a removable cap as an observation port (optional). Fill a trench (minimum 12", maximum 36" width) with clean stone or gravel at 17" (or 18") below the surface for a 3" (or 4") PVC pipe. Place the PVC pipe on a 3" layer of gravel (3/4" to 2" diameter) with at least a 2" layer over the PVC pipe. Cover the gravel with filter fabric. Backfill with soil to the surface with a 9" minimum cover.

MAINTENANCE

Remove invading roots using the observation ports when needed.

F - VEGETATED LEACH FIELD

SUSTAINABILITY: 🌱🌱
 COMPLEXITY: ✖✖
 MATERIALS COST: \$\$



TECHNOLOGY HIGHLIGHT

- Best suited for larger lots (or long runs) with well-designed landscaping
- Works best with filtered gravity surge tank
- Uses gravel or stone material for an aesthetic dry creek-type feature

The vegetated leachfield is similar to the mini-leachfield using perforated piping to distribute graywater to the surrounding landscape. Native grasses, sedges and shrubs suitable for wetland and drier conditions are located according to root access and proximity to the leachfield pipe. Stormwater flows along the swale during rainy periods to help flush out accumulated salt and sediment.

EXAMPLE OF DESIGN CALCULATIONS

| | | |
|---|------|---|
| Total graywater flow (4-bedroom house) at | 200 | gallons per day (gpd) |
| Sandy loam soil (see Percolation Rate Table) at | 0.40 | gpd per square foot |
| Required total area (i.e., 200 x 0.40) | 80 | square feet |
| Design length for vegetated leachfield | 0.5 | square feet per linear foot of 6-inch wide trench |
| Minimum length required (i.e., 80 ÷ 0.5) | 160 | linear feet of vegetated leachfield Note: maximum single run is 100 feet |

INSTALLATION

Create a depression (swale) along contour lines in the soil and mounded sides. Lay down a French drain (3" perforated PVC pipe, non-corrugated) in a 6" wide trench at 6" below the swale bottom. Connect pipes from graywater and roof runoff sources at a minimum 2% slope. Cover perforated pipe with filter fabric to prevent clogging. Place amended soil on top of the planting areas. Plant wetland-type plants at the bottom of the swale and upland-type plants along the mounded banks. Cover entire swale with 4" to 6" river rock and gravel mulch, with at least 9" directly over the perforated pipe. Install vault boxes at the ends of the pipe runs.

MAINTENANCE

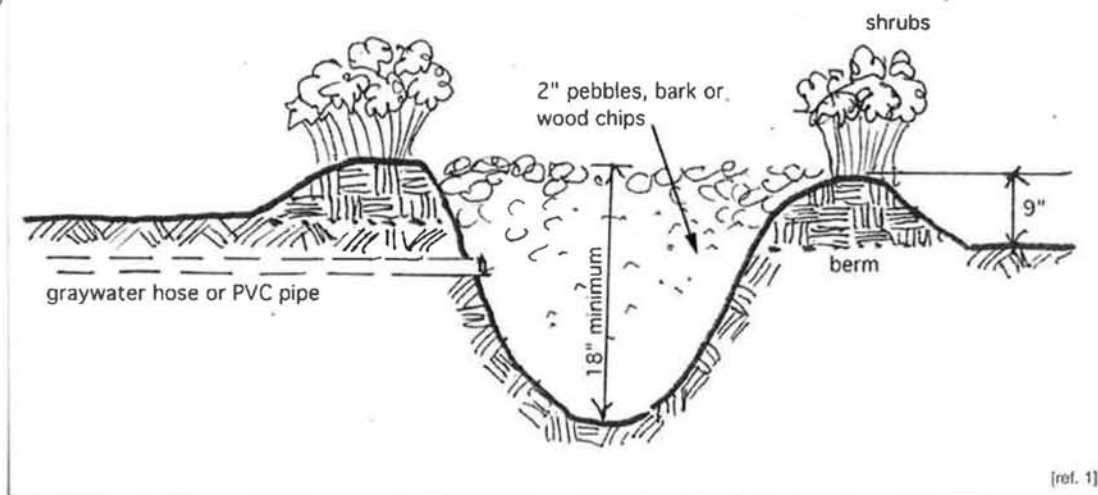
Regular landscape maintenance and garden upkeep required during the growing seasons. Flush out at seasonal intervals and check for clogging and root intrusion. Most wetland plants get cut to the ground every winter. Trees and shrubs get pruned back as needed. Remove debris collected from vault boxes at the ends of the pipe.

G - MULCHED WATERING MOAT

SUSTAINABILITY: ☺☺☺

COMPLEXITY: ✖

MATERIALS COST: \$



TECHNOLOGY HIGHLIGHT

- Best suited for small flows from single individual plumbing sources
- Works best with filtered gravity surge tank or branched drain system
- Potential beneficial reuse of woods chips, bark, or other mulch material

The mulched watering moat is the simplest passive outlet yet requires regular maintenance to remove and replace decomposed mulch material. Whether plumbed from individual sources or an entire graywater system, each mulched watering moat needs to have well-draining soils (i.e., little or no clay) and sufficient surge capacity to prevent water from surfacing.

EXAMPLE OF DESIGN CALCULATIONS

| | | |
|---|------|-----------------------------|
| Total graywater flow (4-bedroom house) at | 200 | gallons per day (gpd) |
| Sandy loam soil (see Percolation Rate Table) at | 0.40 | gpd per square foot |
| Required total area (i.e., 200×0.40) | 80 | square feet |
| Designed area for mulched watering moat | 9 | square feet per moat |
| Minimum number of moats (i.e., $80 \div 9$) | 9 | watering moats (rounded up) |




INSTALLATION

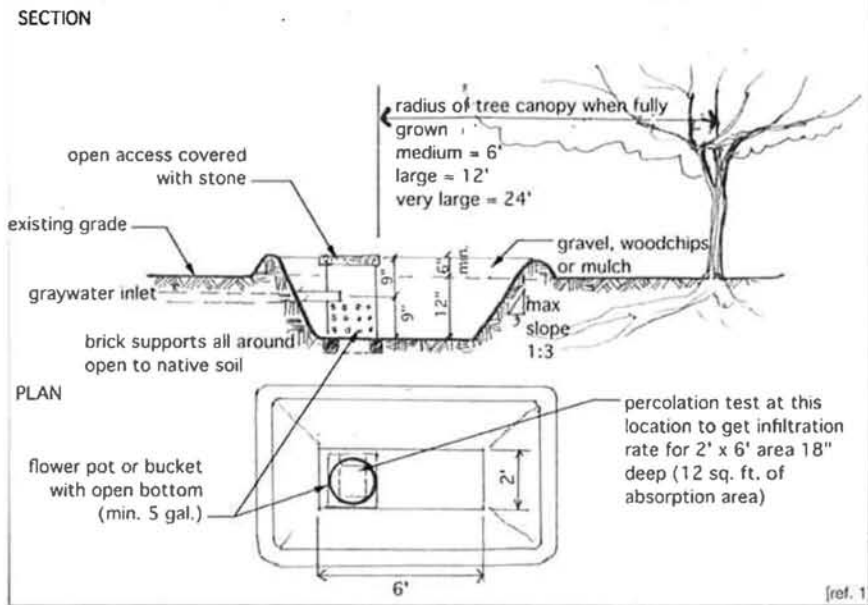
Fill a pit with clean gravel, river rock, bark, or wood chips (minimum 2") 3 feet wide on each side at ground surface. Use soil to create a berm at least 9" above the surface, with a maximum 2:1 slope to the pit bottom. Place 3/4" PVC pipe at least 9" below the ground surface into the moat. Use a screen around the outlet area to keep out pests.

MAINTENANCE

Flush the mulched moats periodically to reduce salt build up. Remove decomposed mulch material and replace with new material as necessary. Check for clogging and root intrusion at the pipe outlet.

H - TREE WATERING MOAT

SUSTAINABILITY:   
 COMPLEXITY: ✖ ✖
 MATERIALS COST: \$\$



TECHNOLOGY HIGHLIGHT

- Best suited for high flow volumes and irrigation of trees and large shrubs
- Works best with gravity surge tank or branched drain system
- Potential beneficial reuse of woods chips, bark, or other mulch material

The tree watering moat is similar to the flower pot design with a larger basin for better percolation. Each tree watering moat needs to have well-draining soils (i.e., little or no clay) and sufficient surge capacity to prevent water from surfacing. Planning the location of the moats requires knowing the tree canopy size (or dripline) at maturity.

EXAMPLE OF DESIGN CALCULATIONS

| | | |
|---|------|------------------------------------|
| Total graywater flow (4-bedroom house) at | 200 | gallons per day (gpd) |
| Sandy loam soil (see Percolation Rate Table) at | 0.40 | gpd per square foot |
| Required total area (i.e., 200×0.40) | 80 | square feet |
| Designed area for tree watering moat | 12 | square feet per tree watering moat |
| Minimum number of moats (i.e., $80 \div 12$) | 7 | tree watering moats (rounded up) |

INSTALLATION

Dig a rectangular pit at 2 feet wide by 6 feet long at least 12" below the natural surface. Slope the sides at a maximum of 3 feet horizontally for each foot vertically and berm up extra soil for an additional 6" above the ground. Place 3/4" PVC pipe at least 9" below the ground surface into the flower pot or bucket emitter (see Flower Pot Emitter profile) with brick supports. Create an open access for bucket emitters covered with a heavy stone for easier maintenance.

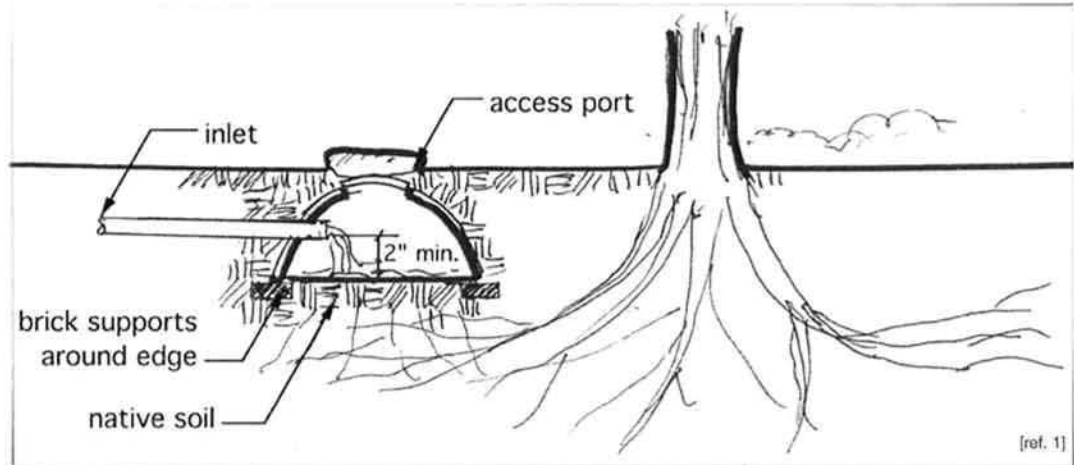
Fill moat with clean gravel, river rock, bark, or wood chips (minimum 2"). Use roadside wood chips, composted municipal waste and recycled aggregate if possible. Locate each tree watering moat between 2/3 times and 1-1/2 times the radius of the tree canopy when fully grown. Use 6' for medium-sized trees, 12' for large trees, and 24' for very large trees. Keep water away from the trunk to avoid root rot.

MAINTENANCE

Flush the tree watering moats periodically to reduce salt build up. Remove decomposed mulch material and replace with new material as necessary. Check the bucket emitter and remove any clogging material as necessary.

I - INFILTRATION GALLEY

SUSTAINABILITY: 🌱
 COMPLEXITY: ✖ ✖
 MATERIALS COST: \$ \$



TECHNOLOGY HIGHLIGHT

- Best suited for high flow volumes and irrigation of trees and large shrubs
- Works best with gravity surge tank, pumped surge tank or branched drain system
- Proven technology with septic systems

The infiltration galley uses half-cylinder structures, such as manufactured infiltrators, barrels cut in half, or large diameter pipes, to create a large void space beneath the soil. The large capacity also allows for more surge volume for each galley. Manufactured infiltrators can be linked together to reduce piping. Design and install prefab infiltrators according to the manufacturer instructions.

EXAMPLE OF DESIGN CALCULATIONS

| | | |
|--|-------------|--|
| Total graywater flow (4-bedroom house) at Sandy loam soil (see Percolation Rate Table) at | 200 0.40 | gallons per day (gpd) gpd per square foot |
| Required total area (i.e., 200 x 0.40) | 80 | square feet |
| Typical infiltrator disposal area (for example, 75" long x 34" wide x 12" deep) | 17 | square feet per infiltrator |
| Minimum number of infiltrators (i.e., 80 ÷ 17) | 5 | infiltrators (rounded up) |

INSTALLATION

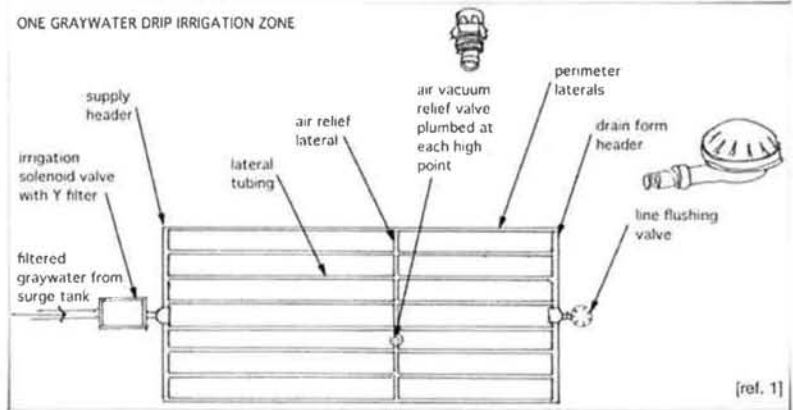
Prefab infiltrator galleys should be installed according to the manufacturer instructions. Modify access ports and observation ports with stone markers for easier maintenance (optional). Alternative infiltration galleys include plastic 55-gallon drums cut lengthwise, large diameter plastic pipes cut lengthwise, and constructed box troughs; Construct with splash blocks, brick or mesh fabric supports (to keep galleys from sinking into the soil), and removable lids, if possible. Cover the galley with soil at least 9" from the bottom of the galley. Locate similarly to tree watering moat for tree irrigation (and away from tree trunks to prevent root rot.)

MAINTENANCE

Check access ports (if available) for any clogging material and remove as necessary.

J - DRIP SYSTEM

SUSTAINABILITY: 🌱🌍
 COMPLEXITY: ✖✖✖
 MATERIALS COST: \$\$\$



TECHNOLOGY HIGHLIGHT

- Best suited for lawns, clay soils, and sloped sites
- Works best with filtered pumped surge tank
- Standard (prescribed) technology for graywater

A subsurface drip irrigation system is complex and also has the greatest potential for system failure. The drip system requires a well-maintained filter and a properly sized pumping system to prevent clogging. Further details on required equipment and materials are given in the plumbing code. Drip irrigation systems require at least 11 psi operating pressure, and generally include filters, tubing, valves, drip emitters, and controllers. Despite costs and maintenance, drip systems are highly efficient at irrigation, spreading the graywater over the largest possible area with the greatest control.

EXAMPLE OF DESIGN CALCULATIONS

| | | |
|--|------|---|
| Total graywater flow (4-bedroom house) at | 200 | gallons per day (gpd) |
| Sandy loam soil (see Percolation Rate Table) at | 1.22 | gpd per square foot |
| Required total area (i.e., 200 x 1.22) | 244 | square feet (sf) |
| Emitter spacing, using 14" spacing in all directions | 1.36 | square feet per emitter |
| Minimum number of emitters (i.e., 244 ÷ 1.36) | 180 | emitters (spacing at 14" in all directions) |

Note: Further drip system design is required to ensure that the pump cycling meets the graywater flow rate.

INSTALLATION

Follow manufacturers instructions for installation of subsurface drip system equipment, including pre-filters, filters, pumps, drip tubing, and emitters. Pre-filters are an initial filter required to catch most of the lint, hair and particles found in graywater. This filter should be easily accessible for cleaning and replacement. They are commonly located at the inlet pipe in the surge tank. The surface area of the filter should be at least 2 square feet. Material can be PVC, polyethylene, woven mesh bag or paper canister filter.

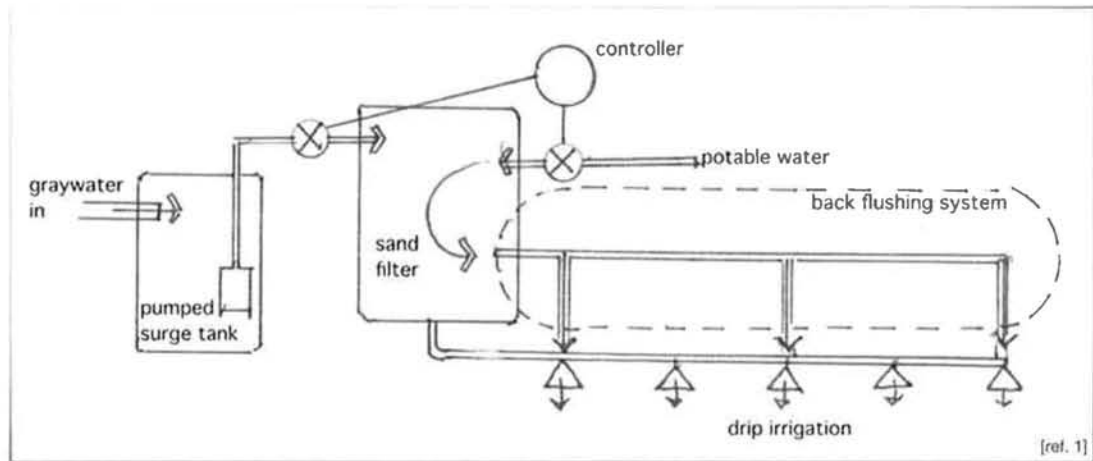
Pump options available include a sump pump, a centrifugal pump or submersible high head effluent pump. Use pressure regulators to maintain the pressure below 25 psi, where most fittings must be kept to prevent damage. Multiple drip system zones are useful to reduce the pump size and provide better operations. Zoned assemblies have a limited number of running feet to maintain the necessary pressure. Stagger drip lines between 12-14" apart so that emitters alternate from row to row. Use manual ball valves or actuated diverter valves to help distribute the flow.

MAINTENANCE

Check and clean all filters routinely. Flush system with clean water or slightly acidic solution several times a year at the beginning of each watering season. Check flushing valve periodically for sediments. Flush the Y-filter monthly. Check tubing for rodents, digging and other abrasion damage where surfaced tubing is visible.

J - DRIP SYSTEM WITH PRESSURIZED SAND FILTER OPTION

SUSTAINABILITY: 🌱
 COMPLEXITY: ❌❌❌
 MATERIALS COST: \$\$\$



TECHNOLOGY HIGHLIGHT

- Best suited for lawns, clay soils, and sloped sites
- Automated system with minimal maintenance or owner intervention
- Developed proprietary system with high rate of operational success

A subsurface drip irrigation system with pressurized sand filtration and automatic backflushing may be one of the best approaches for challenging projects. Drip systems with pressurized sand filtration require little maintenance compared to regular filter cleaning in surge tanks. The high degree of filtration (similar to swimming pool filtration) provides longer life of pumping equipment, drip lines, and emitters. Although relatively expensive and complex, this system achieves efficient irrigation with low maintenance.

EXAMPLE OF DESIGN CALCULATIONS

| | | |
|--|------|---|
| Total graywater flow (4-bedroom house) at | 200 | gallons per day (gpd) |
| Sandy loam soil (see Percolation Rate Table) at | 1.22 | gpd per square foot |
| Required total area (i.e., 200 x 1.22) | 244 | square feet (sf) |
| Emitter spacing, using 14" spacing in all directions | 1.36 | square feet per emitter |
| Minimum number of emitters (i.e., 244 ÷ 1.36) | 180 | emitters (spacing at 14" in all directions) |

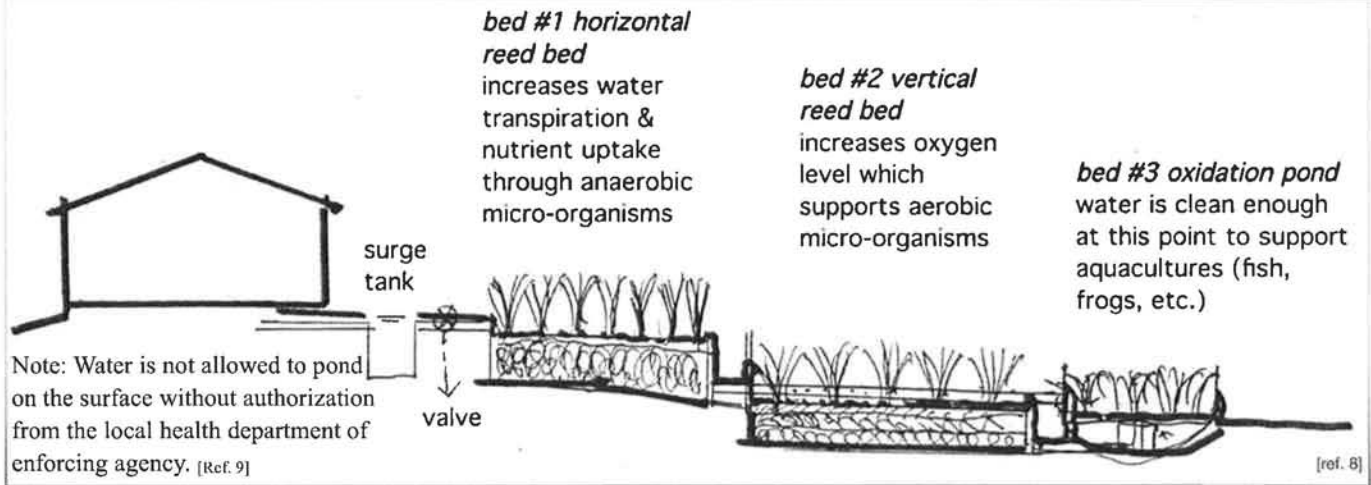
Note: Further drip system design is required to ensure that the pump cycling meets the graywater flow rate.

INSTALLATION & MAINTENANCE

The drip irrigation system with pressurized sand filtration is similar to the basic drip system, using a automatic sand filter vessel under pressure, automated backflushing with potable water, and special emitter cones (instead of in-line emitters). Follow the manufacturer instructions (provided by ReWater Systems). Anticipated maintenance includes checking yearly and, as needed, replacing the sand filter media.

K - REED BEDS

SUSTAINABILITY: 🌱🌱
COMPLEXITY: ❌❌❌
MATERIALS COST: \$\$\$



TECHNOLOGY HIGHLIGHT

- Best suited for large areas with slow percolation rates
- Provides graywater treatment mimicking natural ecological systems
- Allows for better controlled plant growth and possible cultivation

Reed Beds, also known as constructed wetlands, are man made, engineered, marsh like area designed and constructed to treat wastewater. Wetlands are cost-effective, ecological systems, and simple to both install and operate. Reed bed systems are best when soil percolation is very low, space is limited and there is a need to treat large volumes of water. Reed beds provide a home for bacteria, fungus and microbes that digest effluent while deterring flow and retaining suspended solids. Reed beds can be designed as either horizontal or vertical. Horizontal reed beds allow water to enter one side of the bed and flow slowly across and through bed until reaching outlet on opposite side, which then flows into another bed or percolates into the soil.

Reed beds do not have much popularity in this country, thus partnerships and communication with the building department will be helpful. Vertical reed beds allow water to be evenly dispersed along the top of the soil profile. The water slowly percolates through a sandy, rock soil profile until it exits from below or simply percolates into the soil.

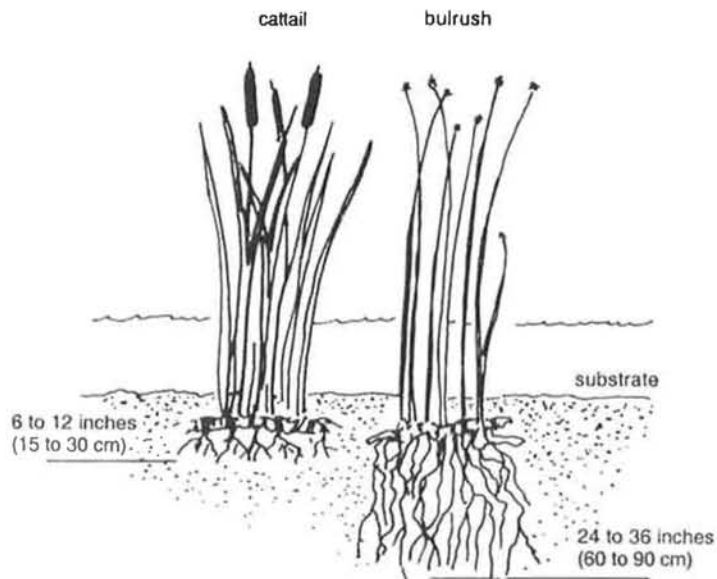
Reed beds provide an ecologically based filtration of wastewater while providing higher biodiversity and beauty. Reed beds when mature host various species of plants, homes to butterflies, dragonflies and other important species. Plants can be harvested for textile and building purposes. In dry areas reed beds provide a contrast to otherwise arid lands.

INSTALLATION

Reed bed construction requires further research for proper design. Plant native species, such as members of the Cyperaceae, Junaceae and Typhaceae families. Aquatic plant species should also be selected based on the following criteria: rapid and relatively constant growth rate, ease of propagation, capacity of absorption of pollutants, ease of harvesting, potential for usefulness of harvested material, high oxygen transport ability, tolerance to adverse climate conditions and resistance to pests and disease. Do not plant invasive species.

Reed beds require a combination of vertical and horizontal reed beds. Horizontal beds increase water transpiration and nutrient, nitrogen and phosphorous, uptake through anaerobic micro organisms. Vertical reed beds increase the presence of oxygen which host aerobic micro organisms. All reed beds should have overflow zones for storm water conditions. After passing through the beds, install a pond supporting aqua-cultures for fish, frogs, and other ecology.

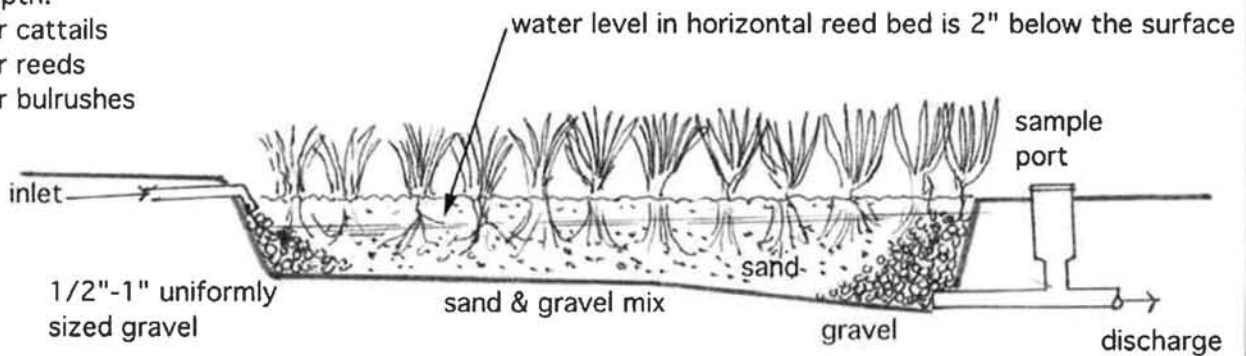
K - REED BEDS



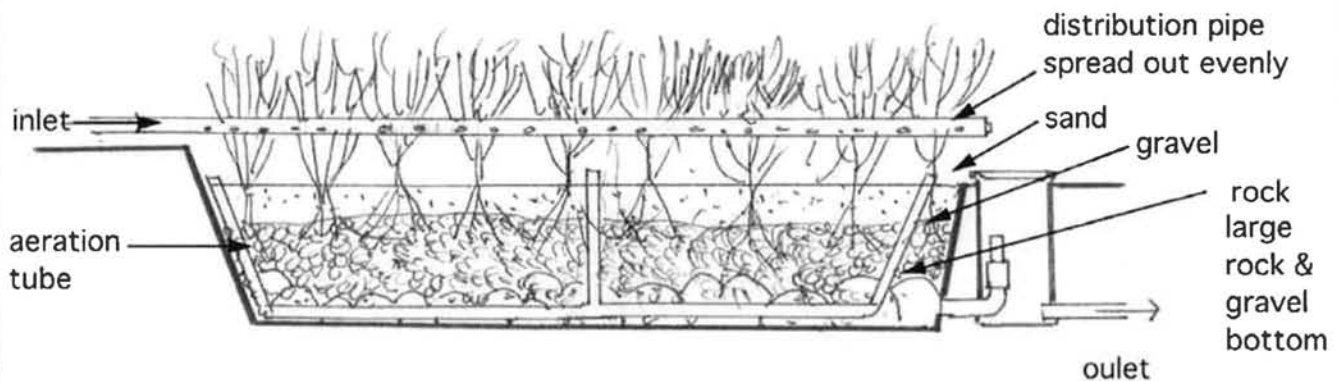
Typical rooting depth - cattail and bulrush [ref. 8]

Note: Water is not allowed to pond on the surface without authorization from the local health department of enforcing agency. [Ref. 9]

bed depth:
12" for cattails
24" for reeds
30" for bulrushes





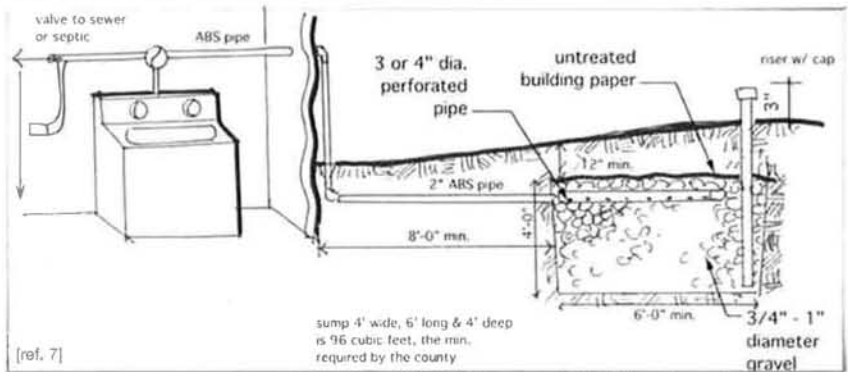
HORIZONTAL REED BED



VERTICAL REED BED

L - WASHING MACHINE SUMP

SUSTAINABILITY: 
 COMPLEXITY: 
 MATERIALS COST: \$



Note: emitters on cards D,G,H,& I can be used instead of a sump

TECHNOLOGY HIGHLIGHT

- Best suited for all projects, especially remodels and existing construction with slab foundations
- Minimal material and equipment saves on costs
- Basic system design allows for easy installation for most owners

The washing machine sump, also known as a drumless laundry system, is a simple design suitable for all houses with a standard washing machine. San Luis Obispo County permits this system as an alternative to a full dual-plumbed system. Most washing machines are located on exterior walls with access already. Alternative designs may include adaptability to various distribution and irrigation options, such as the flower pot emitter. Be careful to ensure that the pressurized surge capacity is included in design.

EXAMPLE OF DESIGN CALCULATIONS

| | | |
|---|------|-----------------------|
| Washing machine flow (4-bedroom house) at | 75 | gallons per day (gpd) |
| Sandy loam soil (see Percolation Rate Table) at | 0.40 | gpd per square foot |
| Required total area (i.e., 75 x 0.40) | 30 | square feet |

Continue with design calculations for selected irrigation option, such as the mini-leachfield, flower pot emitter, mulched watering moat, SLO County sump permit, etc.

Note: San Luis Obispo County permits require that the sumps have a minimum volume of 96 cubic feet. For more information, please visit http://www.slocounty.ca.gov/planning/building/Building_details_info/septic.htm

INSTALLATION

Material List: 1" brass three-way, 1" PVC pipe and fittings, check valve or "auto vent" used for air gap, swing check valve (if yard is higher than washer), 1" HDPE (black polyethylene plastic) tubing and barbed fittings, and 1" and 1/2" ball valves

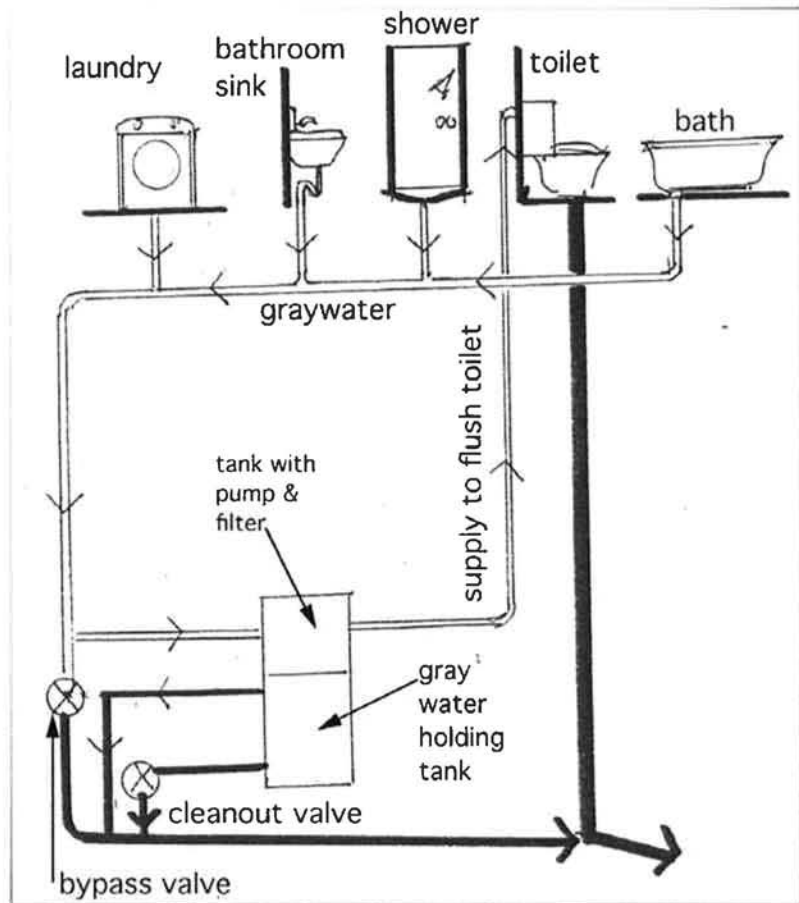
The washing machine's internal pump pressurizes the graywater, so system can irrigate plants that are slightly uphill or further away along flat ground. Do not over stress the washing machine pump, which could require costly repairs. The washer hose is connected to a 3-way valve that can divert graywater either to the sewer or the graywater system. Use 1" rigid HDPE pipe to connect to the outside pipe. Split the flow using barbed Tee fittings to allow graywater to spread out to several freefall locations, such as the flower pot emitters, tree moats, or mulch basin. Drip irrigation will overburden the washing machine and most likely burn out the pump.

MAINTENANCE

Check irrigation emitters for clogging, especially lint material. Lint filters are available specifically for washing machines if lint becomes a problem. Ensure that the piping friction and emitter elevations are not adding unnecessary friction resistance. Every 50 feet of run adds about as much resistance as 10" vertically. For example, a system that sends water through 100 feet of 1" pipe that ends up 12" lower in elevation than the lid is equivalent to pumping 8" above the lid of the washer (20" - 12" = 8").

M - IN HOUSE USE OF GRAYWATER

SUSTAINABILITY: 🌱🌱🌱
COMPLEXITY: ❌❌❌
MATERIALS COST: \$\$\$



TECHNOLOGY HIGHLIGHT

- Paired with irrigation reuse, indoor reuse systems can significantly reduce potable water use
- Mainly used for toilet flushing
- Proprietary systems are readily available and easy to install

Indoor reuse of graywater systems are primarily designed to treat and reuse graywater for toilet flushing. Some systems collect all the graywater (such as in a dual-plumbed house), provide treatment at a central location, and redistribute the treated stream to all the toilets. Other systems provide a direct connection from the adjacent sink and either treat and temporarily store the graywater for later flushing or allow the graywater water to be fill up the toilet tank immediately prior to flushing. Providing finer filtration coupled with chemical, UV or ozone disinfection allows longer storage time with graywater for toilet reuse. While most indoor reuse have been for commercial projects, residential systems are becoming more popular. [Ref. 9]

Most systems for indoor reuse are complex and expensive, compared to the basic systems used for irrigation, but may have greater environmental impact. Highly treated graywater that meets a certain purification standard in Canada, for example, is allowed for some non-potable uses, such as showers and swimming pools. Units are available for single family, shared central system located at co-housing or apartments.

DESIGN, INSTALLATION & MAINTENANCE

Design, installation and maintenance of indoor reuse systems vary by manufacturer. Most systems are purchased through a vendor and installed by a professional licensed plumber. Some systems requires a minimum storage tank, where similar installation requirements with a surge tank may apply. Maintenance may require filter cleaning, handling of chemicals, and checking for clogging. For example, the Brac system consists of a pump, filter, and holding tank. The Pontos AquaCycle system includes aeration, disinfection, and filtration as well.

GRAYWATER CHECKLIST

Planning

- Estimate graywater flow (page 7)
- Estimate graywater absorption area based on soil type or percolation test results (page 8)
- Estimate distribution area for absorption
- Plot plan to scale showing
 - Lot lines, structures, and slopes of surfaces
 - Location of drainage channels, supply lines, wells
 - Location of sewage disposal system if applicable, plus 100% expansion area
 - Location of graywater system consistent with standards on page 8

Surge tank (unless using a branched system)

- Anchored on dry level compacted soil or on a 3" concrete slab
- Capacity permanently marked on the tank
- "Graywater system – irrigation – danger unsafe water" permanently marked on tank
- Drain & overflow permanently connected to sewer or tank system
- Test surge tank to ensure it is water tight when filled

Utilization system of your choice

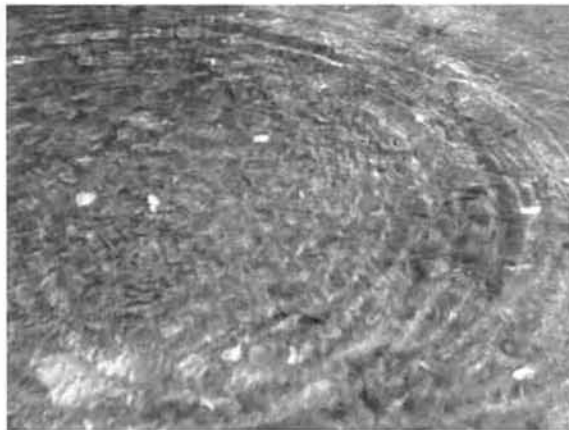
- Insure that installation conforms to the plot plan
- Develop a maintenance manual and operating log

S U M M A R Y

The demand for potable water is increasing and at the same time, climate change is making the consistency of water supplies less predictable. The effect is an increase in demand for imported water from distant sources which is associated with energy intensive and ecologically disruptive processes. The alternative to importing water usually means increased pressure on the local aquifer resulting in aquifer depletion.

This challenging situation forces us to produce and use water carefully. Reduce, reuse and recycle are concepts applied to consumer products; water should be thought of as one of these products, most importantly, it is the one product we must consume to survive. Graywater utilization is an important part of this effort to reduce, reuse and recycle water. Healthy and sustainable communities of the future will use graywater for all non-potable water uses such as irrigation and toilet flushing. Innovators today include REEF, well known for their contribution to the surfing industry, REEF's global headquarters in Carlsbad, CA, uses reclaimed water for irrigation and graywater for toilet flushing. Despite the fact that REEF doesn't own their building, they were able to integrate appropriate technologies yielding cost savings of \$200 per month on utility bills and lots of water saved for the future! [5]

In 2008, 20% of the electricity consumed in California was used to move and pump water. On-site harvesting and treatment of water can greatly reduce the amount of electricity used for this purpose. Graywater is but one appropriate technology that will enable us to meet the resource demands of today.



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A P P E N D I X 1- DETERGENTS FOR GRAYWATER SYSTEMS

When looking for appropriate detergents, read the following information regarding the contents.

Is Biodegradable Better?

The word biodegradable means that a complex chemical is broken down into simpler components through biological action. Do not be confused by the word biodegradable, which is often used to imply environmentally safe. Harmful chemicals as well as beneficial ones may be biodegradable.

A Note About Chlorides

Although chlorine in bleach and detergents is generally expended in the washing process, some may be left in the graywater that reaches plants. Chlorine should not be used in the garden because it may substitute for similar nutrients, blocking normal metabolic processes. The addition of chlorine to water used for irrigation should be kept to a minimum. Choose your detergents and clothes-washing products keeping in mind that it is better for your plants and soils to have a low alkalinity, boron, conductivity, and sodium content in the water. Personal preference may affect your choice of products since higher levels of these constituents may add to their cleansing ability.

Alkalinity

Alkalinity refers to the relative amounts of alkaline chemicals in a solution. Sodium, potassium, and calcium are alkaline chemicals; they often are combined with carbonates, sulfates, or chlorides. Plants do not tolerate high concentrations of alkali salts.

Boron

Boron is considered a plant micro-nutrient required in only very, very small amounts. Most soils provide adequate amounts of this chemical. Concentrations only slightly higher than those considered beneficial can cause severe injury or death to plants!

Conductivity

Conductivity is a simple measure of the amount of dissolved chemicals in a solution. These chemicals can be beneficial or harmful. The higher the conductivity, the more dissolved salts and minerals are present. In general, the higher the concentration of dissolved salts and minerals in the water, the greater the potential for adverse affects on the environment and plant health.

Sodium

Sodium can act as a plant poison by reducing the plants ability to take up water from the soil. Too much sodium can destroy the structure of clay soils, making them slick and greasy by removing air spaces and thus preventing good drainage. Once a clay soil is damaged by sodium, it can be very difficult to restore it to a viable condition.

Phosphate

Phosphate is a plant food and is added to soil as a fertilizer. Soils in the San Luis Obispo area are typically low in phosphates; thus, there may be some benefit to plants if phosphate is present in graywater. However, this may be inaccurate since many forms of phosphate are not readily usable by plants and soils.

Some recommended products are:

Alfa Kleen
Bold
Oasis
Bio Pac
Cheer Free
Ecocover
Shaklee Basic L
Sun Ultra
White King
Yes

A P P E N D I X 2 - PLANTS FOR GRAYWATER SYSTEMS

Plant List - some recommended species by hydrozone:

Wetland Type—reeds, rushes, & sedges

Carex sp.—Sedge species—C. tumilicola, C. spissa, C. Praegracilis, etc.
Juncus sp.—Rush species—J. patens, J. effusus
Equisetum sp.—Horsetail species—E. hyemale (plant in container to keep from spreading)
Canna sp.—Canna species—Hybrid colors (plant in container to keep from spreading)
*Chondropetalum elephantium—Cape Rush

Upland Type—herbs, shrubs, & trees

Arbutus 'Marina'—Strawberry Madrone Tree
Cercis occidentalis—Western Redbud
Myrica californica—California Wax Myrtle
Rhamnus californica—Coffeeberry
Heteromeles arbutifolia—Toyon
*Rosmarianus officinalis—Rosemary
Artiplex sp.—Salt Bush species
Arctostaphylos sp.—Manzanita species
Ceanothus sp.—California Lilac species
Salvia sp.—Sage species—S. spathacea, S. 'Pt. Sal', S. elegans
Penstemon sp.—Penstemon species—P. heterophyllus, P. digitalis
Achillea sp.—Yarrow species
*Lavandula sp.—Lavender species
*Fragaria chiloensis—Beach Strawberry

Grasses—used in both planting groups

Mulhenbergia rigens—Deergrass
Festuca sp.—Fescue species—Blue Fescue, California Fescue
Calamagrostis sp.—Reed Grass species—C. 'Karl Foerster', C. 'Overdam'
Seslaria sp.—Moor Grass species—S. caerulea, S. autumnalis

Note: more common edible plants can be used as long as no edible parts touch the actual graywater flow. The foods produced above ground from plants rooted in graywater are just as fit to eat as plants grown in drinking quality water. Do not drink graywater!

* Plants with an asterisk beside them are not native plants to California, but are climate appropriate species for San Luis Obispo County.

GLOSSARY OF TERMS

ADAPTER: Any plumbing or drip irrigation part which connects one size pipe or part to another. Often used to refer to the female fitting, whether glued or threaded, which joins different parts together.

ACTUATOR: A 24V DC motorized valve, used to automatically control valves. Unlike a solenoid, this valve's opening and closing is powered by the motor, not the pressure in the pipe. Because it works without any water pressure in the pipes, it is the most practical valve for many graywater systems.

AEROBIC SOIL: A well drained soil with sufficient pore space to allow plenty of air circulation. The pore space is usually dependent upon the texture (sand is most open) and a reasonable amount of organic matter and humus.

ANIONIC SURFACTANTS: A cleaning agent, most commonly some form of sodium salt. Usually found in high sudsing detergents (see sodium chloride).

BALL VALVE: A valve which has a globe shaped rotating interior. The solid globe has a circular tunnel through it. When the handle of the valve is rotated, the solid portion of the ball cuts off the flow of water. Another rotation lines up the tunnel and water flows through the valve. Ball valves are often found at the discharge port of quality y-filters. Because ball-valves shear off any contaminants and because they don't easily wear out like gate valves, they are the preferred valve for graywater systems.

BEACHFRONT AREAS: Areas with a sand profile verses a soil profile.

CENTRIFUGAL PUMP: A pump installed outside the surge tank, not submersed in the graywater. The centrifugal pump along with a diaphragm pressure tank should be housed in or under a weatherproof structure.

CHECK-VALVE: A backflow preventer which stops any water siphoning back toward the house. Often not legal as the only backflow preventer in potable-water drip system. Must be coupled with some form of atmospheric vacuum breaker.

DRIP: A style or technology of irrigation where a tiny trickle of water is slowly applied to the soil.

DRIP HOSE ADAPTER: The first fitting after the main assembly of a drip irrigation system. Almost always an FHT (female hose thread) swivel X drip hose adapter. The female hose threads of the swivel go on to the male hose threads of a hose-bib or a transition nipple. The swivel action makes it easy to quickly add or remove this fitting. The other side of the adapter is either a slip (glue), or compression, depending on the system.

DRIP LINE: A length of solid drip irrigation hose or in-line emitter tubing.

DRIPLINE: The width of a tree's or shrub's foliage, where water would drip off the edge of the canopy. Not an indicator of the width of the root system as roots grow from one half to three times wider than the dripline.

DUAL PLUMBING: A permanent separate set of pipes for all the graywater sources in the home.

ELBOW: A fitting which allows drip hose or pipe to make 90 degree turn.

EMITTER: The little gizmos attached to or built in to solid drip irrigation hose which control the flow of water to the soil. There are many name brands that basically fall into four generic styles or technologies: single diaphragm, double diaphragm, tortuous (or complex) path, or simple orifice.

END CAP: The fitting added at the end of a lateral to make it easy to open the tubing for draining or flushing. Has a female hose thread cap with a washer which threads on to the male hose thread fitting. The other end will be either a compression, insert or other opening, depending on the system you use.

EVAPOTRANSPIRATION (ET): The loss of water from a plant or crop via transpiration (exhaling) by foliage and evaporation from the plant's and soil's surface. The ET rate is influenced by humidity, rainfall, slope aspect, wind speed, temperature, plant care and soil.

FIGURE EIGHT END CLOSURE: A simple end closure which involves threading the end of the drip hose through one side of the figure eight, bending over the end of the end of the drip hose and securing the bent end inside the other half of the figure eight.

FILTER: A device with a screen (cheap, poor quality models have plastic screens) which is used to trap any particulates, dirt, or scum before it can enter the drainfield or clog the drip emitters. An essential component of all graywater drip systems.

FHT: Plumbing shorthand for a female iron pipe thread.

FLAPPER CHECK VALVE: A valve that prevents any water from siphoning back into the surge tank.

GFI: A ground fault interrupt outlet. All sump pumps must be plugged into a GFI outlet.

HEAD: A pump's head is the gross difference in elevation which it pumps. As a safety factor, the head for a graywater system is determined by adding the total changes, both up and down, in the elevation from the surge tank to the point of disposal. To this figure add at least 15% more feet of the total head.

HOSE-BIB: Another name for a garden faucet. The standard gizmo on the pipe sticking out of the house's exterior wall or on top of a metal water pipe in the yard and onto which the garden hose is attached.

GLOSSARY OF TERMS

HOSE SHUT OFF VALVE: A small ball-valve which can be added at the end of a hose to control water without having to run back to the hose bib. With a few extra parts, this valve can be spliced into any drip hose and allow the gardener to exclude water from portions of a system. Often used to rotate graywater to different zones as needed.

IN-LINE EMITTER HOSE: A more recent and effective type of drip irrigation hose where the emitters are manufactured inside the hose at regular intervals. The pre-spaced emitters use a tortuous path technology for water regulation without clogging. Water can be distributed at 1/2, 1, and 2 gal/hr. rates at many separate intervals ranging from 12-72 inches.

INSERT FITTING: These fittings have male-shaped parts with barbed exteriors which insert inside the drip irrigation hose. As the water pressure increases, the fitting is more likely to fail because the swelling drip hose can bloat away from the barbed posts. Must use a ring clamp to secure the hose against too much pressure.

J-STAKE: A landscape pin used to secure drip irrigation hose, landscape netting and 12v DC wiring. Made like the upside version of the letter 'J', not as sturdy as the best U-stakes.

LABRYINTH: A complex, tortuous path inside certain emitters. The labyrinth of passages keeps any sediment in the water in suspension to pass out the emitter's orifice. All in-line emitter tubing uses some form of labyrinth to allow for a relatively large emitter orifice and to keep the emitter from clogging.

LATERAL: A lateral is a water-bearing pipe or drip hose which originates as an offshoot of a main supply pipe. Laterals are usually attached to the supply header via a tee.

MAIN ASSEMBLY: The collection of parts at the beginning of a graywater system which filters the graywater system to the drip emitters and regulates the water pressure to keep the drip system intact. Composed of a filter and pressure regulator plus the miscellaneous parts needed to connect everything together.

MAIN SWITCHING VALVE: A main valve is required to allow the homeowner to alternate between the graywater system and the septic tank or sewer. Use the main valve when the ground is saturated with rainwater, when someone is ill with an infectious disease or the occupants don't want to use the graywater irrigation system. The main valve, whether manual or electro-mechanical, is best plumbed near the surge tank.

MESH: Most drip irrigation filters are rated by mesh size. The larger the mesh number, the better the filtration because smaller particles can be trapped. Many metal screen filters are either: 60 mesh (254 microns or .01 inches), 100 mesh (152 microns or .006 inches), 140 mesh (104 microns or .004 inches) or 250 mesh (61 microns or .0024 inches). Graywater systems should use a 200 mesh or better filter.

MICRON: A common measurement for irrigation parts. The bigger the micron number, the bigger the opening. A single

micron equals one-millionth of a meter. It takes 254 microns to equal .01 inches, which is a 60 mesh screen. Most graywater systems should have a 75 micron or better filter.

MIPT: Plumbing shorthand for a male iron pipe thread.

NIPPLE: Comes in plastic and iron versions with male iron pipe threads on each end. Plumbing nipples range in size from 3/4 inches to 48 inches. Used to join two female iron pipe threads together.

OVERFLOW PORT (AUTOMATIC): An overflow pipe near the top of the tank dumps graywater to the sewer or septic tank in case something clogs the surge tank or the sump pump fails.

PATHOGENS: Disease causing organisms. To become infected, an individual must be exposed to a large enough dosage and be vulnerable to the pathogen. Most pathogens can reside out of the body of a host, in the soil, but each disease has a different life span in the soil.

PERCOLATION TEST: A test to determine the ability of the soil to accept graywater. The test is only required at the request of the City Health Officer. Percolation tests can be useful but they may not reflect long term acceptance rates.

PHYTOPHTHORA: Genus of various species of fungal diseases which attack the upper portion of the roots to destroy the bark's active layers of transport. Often called crown rot.

POROUS HOSE: Unlike an emitter, where the water dribbles out at select points; the water in porous drip hose oozes out through the entire surface area of the hose's walls. The genre of drip hose only works well with chlorinated city water because it's so prone to getting clogged by sediment and becoming sealed off internally due to the build-up of various types of algae slimes. Not recommended at all with graywater, no matter how well filtered.

POTABLE WATER: Fresh drinking water, city or pure well water.

PRESSURE COMPENSATING EMITTER: A special type of emitter engineered so that the flow rate stays the same regardless of the length of the line (up to a point) and any change in elevation. Required when irrigating landscapes with a total elevation change of 20 feet or more.

PRE-FILTER: Usually a basket with a mesh bag which catches most of the offending lint, hair and particulates before entering the surge tank. Its filtering surface area should be at least 2 square feet so that it does not clog quickly. The bigger the pre-filter, the better. Must be used with a graywater drip irrigation system.

PRESSURE REGULATOR: A gizmo which reduces the water pressure in a graywater drip irrigation to 25 psi or lower to protect the subsequent drip irrigation fittings. Must be installed in every main assembly.

GLOSSARY OF TERMS

PSI: Pounds per square inch, the unit of measure for water pressure. Typical home water pressure is 40-80 psi. Drip irrigation systems generally operate at 11-25 psi.

PVC: A type of semi-rigid plastic that is made from polyvinyl chloride which is often used for garden plumbing. Some of the more common grades of this pipe (from the sturdiest to the weakest walls) are Schedule 80, Schedule 40, Class 200 and Class 120, which resist bursting up to, respectively, 800, 400, 200 and 120 psi.

SALINE WATER: Irrigation or ground water which is high in salt (sodium chloride). While saline water is useful in many medical applications, it is not healthy for many plants. Graywater can be particularly saline due to the salts in many detergents, especially powdered detergents.

SCH: Shorthand for 'schedule'. Used to denote the type or grade of PVC pipe and fittings.

SLIP: A PVC fitting with an opening which requires glue, as opposed to threads with pipe dope, to 'weld' the two parts together. Usually the end of the rigid PVC irrigation pipe and the fitting are moistened with PVC glue and the pipe is slipped into the wet round opening of the waiting fitting.

SOLENOID: An electric valve used to control drip irrigation systems. The wires to the solenoid usually carry 24 volts of AC power. The irrigation controller has a transformer to step down the house current. It is dependent on the static line pressure of the water supply to assist in the opening and closing of the valve, therefore they often can't be used with a graywater system unless the system is fully pressurized at all times.

SPAGHETTI TUBING: A tiny or slender type of polyethylene tubing which can be used to distribute water to emitters or plants. Comes in 1/4 and 1/8 inch diameters. Because of this tubing's propensity to twist around itself, it will make a tangled mess in the landscape. Can be controlled when used in container plantings.

SUB-SYSTEM: A branched system of drip irrigation laterals originating from a main supply line or header. Unlike a single lateral, a sub-system, also called a sub-main, has several subordinate lines all connected by tees in a pattern similar to the lines on a sheet of music.

SUBMERSIBLE HIGH-HEAD EFFLUENT PUMP: A 4 inch diameter submersible turbine pump made of stainless steel and high quality thermoplastics specifically for pumping wastewater effluent. Develops higher pressures than sump pumps.

SUMP PUMP: A pump designed to be submerged in water, to automatically turn on when the water reaches a predetermined level and to pump the water a certain maximum height and distance at a specific rate in gpm of gph. Installed in the surge tank.

SUPPLY HEADER: The solid plastic pipe, solid drip hose or in-line drip irrigation hose which supplies one or more laterals.

SURFACE: Refers to the top of a thick permanent mulch covering the soil or the top of an un-mulched soil. Graywater must not daylight on the surface.

SWIVEL: The rotating fitting that can be screwed onto another fitting. Usually refers to female hose threads which are threaded onto the end of a hose, hose-bibs or drip irrigation parts. Usually requires a rubber gasket in the swivel to prevent leaks.

TEE: A fitting which joins a lateral line (solid PVC pipe, in-line emitter tubing or solid drip hose) to another water supply line.

THREE WAY SWING DIVERTER VALVE: A spa type swing gate valve which comes in manual form or with a 24V DC actuator for automatic control. Used to divert graywater flow from one zone to another zone.

TIMER: A battery powered controller which controls one irrigation line. Attaches to the hose-bib and controls the flow of water to a hose or drip irrigation system.

TORTUOUS PATH EMITTERS: Drip irrigation emitters with a complex, tortuous or labyrinth path within the emitter which allows larger particles to flow through the emitter without clogging. Best emitter for use with graywater and one of the more recent developments in drip technology.

TRANSITION NIPPLE: A plastic or metal fitting with a male hose thread and a male iron pipe thread used to connect conventional garden plumbing to drip irrigation fittings.

TWO-WAY SWING DIVERTER VALVE: A spa type swing gate valve which comes in manual form or with a 24V DC actuator for automatic control. Turns graywater flow on and off.

U-STAKE: A landscape pin used to secure drip irrigation hoses, landscape netting and 12V DC wiring. Shaped like an inverted 'U', sturdier than the J-stakes.

UNION: Related to a coupling, a union is a plumbing part which, after unthreading the locking ring, separates into two pieces and allows you to take a portion of any irrigation system (providing there is a union on each end of the section) out for repairs without having to cut the pipe. The use of unions allows for the quick reinstallation of the repaired section without having to re-glue with extra fittings.

WET SPOT: The wet spot in drip irrigation has both depth and breadth, the extent of which is dependent upon the rate of the dribble (in gph), the duration of the trickle (in hours), the soil type, the slope of the land and the climate.

Y-FILTER: The best type of filter for a graywater drip irrigation system Easily identified by the filter chamber which is integrated into the filter at an obtuse angle. The best y-filters have a metal-screen filter within the filter chamber to make it easy to flush out the screen.



NIPOMO COMMUNITY SERVICES DISTRICT

148 SOUTH WILSON STREET
POST OFFICE BOX 326
NIPOMO, CA 93444 - 0326
(805) 929-1133 FAX (805) 929-1932
Web site address www.ncsd.com

Water Conservation Committee Meeting Memo

FROM: CELESTE WHITLOW, WATER CONSERVATION COORDINATOR
TO: BRUCE BUEL, GENERAL MANAGER
DATE: 10/27/2009
RE: ITEM 4: DISCUSS HOLDING A GRAYWATER WORKSHOP AT NCSD .

BACKGROUND

California is faced with a water shortage, and the State of California has made water conservation and water planning top priorities.

NCSD depends on the groundwater basin underlying the Nipomo Mesa for customers' potable water. Other users of this water resource, and NCSD, use about twice as much water from the groundwater basin as nature can replenish in a normal year.

NCSD is in the process of bringing water to the Nipomo Mesa from Santa Maria, but actual water delivery is over a year away.

I frequently get inquiries about graywater systems from NCSD customers, who see letting the clothes-washer water go into the sewer as a waste.

Recently the State of California changed the wording of California Plumbing Code, Title 24, Part 5, Chapter 16A, Part I, greatly simplifying the process for homeowners wishing to install a simple graywater system.

For further details on the State requirements, please refer to *Water Conservation Committee Meeting Memo, Item 4*.

Slogreenbuild, with the guidance of the staff of the San Luis Obispo County Building and Planning Department, Department of Environmental Health, and Public works, and SLO County Supervisor, Jim Patterson, developed a comprehensive guide for homeowners on the safe use of graywater (see *San Luis Obispo Guide to Graywater Use* attached to Item 3).

Recently I spoke briefly with Supervisor Patterson, who attended a Slogreenbuild two-hour workshop on the simplified graywater system requirements, and he expressed his informational and other support of facilitating SLO County residents who are so inclined in adding graywater use to their water conservation measures used in their home and landscape.

The two-hour Slogreenbuild graywater workshop I attended is said to be very similar to the workshop offered by Slogreenbuild. They brought in equipment and parts necessary to build a simple system, and constructed one during the workshop. The information was presented in an easily understood way, and would be appropriate for laypersons, such as NCSD's customers.

WORKSHOP

Slogreenbuild is offering a workshop on graywater use (see the attached flyer, *Graywater, a Resource to Be Reused*).

I believe we could get Slogreenbuild to give the workshop at a much reduced rate by printing the Guides at NCSD, and providing our own after-workshop simple snacks. I believe we could negotiate for a more reasonable charge for the two-hour workshop. Other water purveyors on the Nipomo Mesa could also be approached for participation in this workshop.

RECOMMENDATION

The graywater workshop would be a centralized introduction for interested NCSD customers, and others if appropriate. Knowledgeable people would be able to answer questions or give advice on graywater systems. Providing a workshop for our customers would demonstrate NCSD's commitment to helping them conserve water, and would demonstrate NCSD's leadership in bringing information to them on water conservation.

ATTACHMENTS

Workshop Flyer: *Graywater, a Resource to Be Reused*.

Greetings friends,

It's the end of a hot and dry summer. Rainfall for the year is well below average and water conservation is a top priority. We have all heard radio ads asking to adjust irrigation schedules and amounts, seen the billboards asking us to shorten our shower time and to skip washing that dirty vehicle and been given notice that water rates have risen amongst all purveyors. The scramble is on to educate the community as to how we can reduce our individual strain on our precious water resources.

Well, the Central Coast Chapter of Surfrider, Santa Lucia Sierra Club and SLO Green Build, have an offer for you. A workshop – "Graywater, a Resource to be Reused".

The reuse of graywater has been legal in the state of California since 1992 when it was adopted as part as the uniform plumbing code. However there are very few installations to be found and the burden on our water supplies has never been more demanding. With the water crisis at hand how could this be?

Newly proposed graywater standards SB1258, allows residences to hook up their clothes washer and/or one single fixture system, excluding toilet and kitchen sink drain, with out a permit.

With the guidance of the staff of the Building and Planning Department, Department of Environmental Health, Public Works and Board of Supervisor Jim Patterson, our coalition has developed a comprehensive guide to the safe use of graywater. The guide walks you through the importance of water in our community and how graywater can be effectively used as a resource to help remediate the pressure on our potable water supplies. It is currently available for download at www.slogreenbuild.com.

The guide is only helpful if homeowners and businesses are aware of graywater systems as an applicable resource, professionals know how to install and maintain systems, local vendors provide the necessary resources to construct systems and that the building officials understand the permissible systems.

We are offering to all purveyors, public works and community service providers the opportunity to take advantage of our comprehensive workshop. All you have to do is sponsor an appropriate venue and provide a preferred date to bring a professional workshop to your community.

The workshop is offered in two different packages as follows:

Graywater – A Resource to be Reused

Learn the benefits, costs and requirements to install a safe and legal graywater system. Program will cover how to calculate graywater discharge, landscape and surface areas requirements, plumbing techniques and materials and discharge options. The workshop will cover the do's and don'ts, maintenance programs and will evaluate the costs, complexity and environmental footprint of various systems. Attendees require no prior knowledge.

- Basic Package - \$720.00
 - 30 Graywater Guides (additional copies are available for \$5.00 each- \$10 value)
 - A two (2) hour presentation provided by SLO Green Build professionals
 - Appropriate technology healthy water cycle educational display
- Graywater Social - \$1200.00
 - 50 Graywater Guides (additional copies are available for \$5.00 each- \$10 value)
 - A two (2) hour presentation provided by SLO Green Build professionals
 - Appropriate technology healthy water cycle educational display
 - Food and beverage (generally gourmet pizza, beer, wine and non-alcoholic offerings)
 - Band (to be approved prior to booking)
- Graywater Guides- available at \$5 ea without the workshop (30 copies or more)

We encourage those interested that can not afford the program to partner with other entities and communities to sponsor and share a workshop opportunity, have a suggested donation at the door of the event or to charge the full cover price of the Guide. **In order to honor this proposal we ask that you reply to Jessicas@semmesco.com or 805-466-6737 x 203 no later that **October 16th, 2009.****

Thanks,

The hardworking, dedicated folks from **SLOCOAT**, a coalition formed among Surf rider, Sierra Club and SLO Green Build. Hope to see you there. Cheers!



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Water Conservation Committee Meeting Memo

FROM: CELESTE WHITLOW, WATER CONSERVATION COORDINATOR *cuw*

TO: BRUCE BUEL, GENERAL MANAGER

DATE: 10/27/2009

RE: ITEM ~~4~~⁷: DISCUSS REBATE FOR GRAYWATER SYSTEM.

BACKGROUND

California is faced with a water shortage, and the State of California has made water conservation and water planning top priorities.

NCSO depends on the groundwater basin underlying the Nipomo Mesa for customers' potable water. Other users of this water resource, and NCSO, use about twice as much water from the groundwater basin as nature can replenish in a normal year.

NCSO is in the process of bringing water to the Nipomo Mesa from Santa Maria, but actual water delivery is over a year away.

I frequently get inquiries about graywater systems from NCSO customers, who see letting the clothes-washer water go into the sewer as a waste.

Recently the State of California changed the wording of California Plumbing Code, Title 24, Part 5, Chapter 16A, Part I, greatly simplifying the process for homeowners wishing to install a simple graywater system.

For further details on the State requirements, please refer to *Water Conservation Committee Meeting Memo, Item 4*.

San Luis Obispo County Supervisor Jim Patterson is a strong supporter of making graywater reuse systems accessible and affordable by the public.

A simple graywater reuse system requires time and money to assemble and problem-solve. One of the most important, and expensive, parts of the system (from a safe-operation point of view) is the brass diverter valve which can be switched to direct graywater to a landscape, percolation field, or to the sewer. The 1-inch 3-way diverter valves are priced from \$50 up.



RECOMMENDATION

Consideration of a \$50 rebate.

The proposed rebate would be limited to single-family residences only. Only homeowners are eligible for the rebate. The rebated residence must be the primary residence of the homeowner. An inspection prior to construction of the graywater system and after the construction is finish is required to qualify for the rebate. Only one brass-valve rebate per property. Rebates are conditioned on funding, and the rebate program may end or change at any time