LANDSCAPE DOCUMENT PACKAGE

Community Development • Planning & Building
2263 Santa Clara Ave., Rm. 190 Alameda, CA 94501-4477
alamedaca.gov
510.747.6805 • F: 510.865.4053 • TDD: 510.522.7538

On July 7, 2016, the City enacted the Water Efficient Landscape Ordinance (WELO) to bring the Alameda Municipal Code in compliance with the State of California's recently adopted Model WELO. WELO requires documentation from applicant/developers and landscape professionals regarding the water efficiency of proposed landscaped areas. The City's WELO requires the applicant/developer of qualified projects submit a complete Landscape Document Package.

The Landscape Document Package has several components; (a) Landscape Document Package Checklist, (b) Water Efficient Landscape Worksheet, (c) Soil Management Report, (d) Landscape Design Plan, (e) Irrigation Design. This Landscape Document Package provides checklists of the required content of each individual component. Upon approval, projects will be required to comply with the City's Standard Landscaping Conditions of Approval. Applicant/developers will be required to submit a Certificate of Completion after the installation of project landscaping. Below is a table what forms are required dependent on the aggregate size of new or refurbished landscape areas.

Qualified Projects

New Total Area	Required Form(s)	Refurbished Total Area	Required Form(s)
0 - 500 Sq Ft	None		
501 - 2,499 Sq. Ft.	(a) through (e) and Appendix A; or Appendix B*	0 - 2,499 Sq Ft	None
2,500 Sq Ft or Greater	(a) through (e) and Appendix A	2,500 Sq Ft or Greater	(a) through (e), Appendix A

Contents

(a) Landscape Document Package Checklist 1
(b) Water Efficient Landscape Worksheet 2
(c) Soil Management Report Checklist 3
(d) Landscape Design Plan Checklist 4
(e) Irrigation Design Plan Checklist 5

Appendix A – Certificate of Completion

Appendix B – Prescriptive Compliance Option Form and Standard Conditions of Approval

Appendix C – Standard Landscaping Conditions of Approval.

*Qualified projects with new landscaped areas in aggregate greater than 500 square feet but less than 2,500 square feet are eligible to submit a Prescriptive Option Form in lieu of a Landscape Document Package. Projects opting to submit a Prescriptive Option Form will be subject to the Standard Prescriptive Option Conditions of Approval.

LANDSCAPE DOCUMENT PACKAGE CHECKLIST

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Project Address: _____ **APN:** _____

Property Owner(s): _____

Address:_____City:_____State: _____ Zip:_____

Email:_____Phone:_____(mobile):_____

Applicant(s): *(if different from owner)*_____

Address:_____City:_____State: _____ Zip:_____

Email:_____Phone:_____(mobile):_____

Preparer of Landscape Plans: I agree to comply with the requirements of the Water Efficient Landscape Ordinance and submit a complete Landscape Document Package

X_____ _____
Preparer(s) of Landscape Plans Signature Required Date

Project Information

Date Prepared:_____ Project Type:_____

Total Landscape Area:_____ Sq. Ft. Water Supply Type:_____

Submittal Checklist

1) Water Efficient Landscape Worksheet
   a) Hydrozone Information Table ..... ☐
   b) Water Budget Calculations
      i) Maximum Applied Water Allowance (MAWA) ..... ☐
      ii) Estimated Total Water Use (ETWU) ..... ☐
2) Soil Management Report ..... ☐
3) Landscape Design Plan ..... ☐
4) Irrigation Design Plan ..... ☐

FOR OFFICE USE ONLY

File #: _____ Date Received: _____ Received By: _____

Zoning: _____ GP: _____

Last Updated 7/14/16

WATER EFFICIENT LANDSCAPE WORKSHEET

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City of Alameda Reference Evapotranspiration (ETo) 41.8

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

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

[b]Irrigation Method
overhead spray or drip
or drip

[c]Irrigation Efficiency
0.75 for spray head
0.81 for drip

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

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

ETAF Calculations
All Landscape Areas

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

Regular Landscape Area

Total ETAF x Area	(B)
Total Area	(A)
Sitewide ETAF	**B ÷ A**

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

SOIL MANAGEMENT REPORT CHECKLIST

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Project Address/APN: _____ **Date Prepared:** _____

Submittal Checklist

1) Soil Sample Lab Report
   a) Soil Sampling Conducted at Appropriate Depth for the Intended Plants ☐
   b) Soil Analysis:
      1. Soil Texture ☐
      2. Infiltration Rate ☐
      3. pH ☐
      4. Total Soluble Salts ☐
      5. Percent Organic Matter ☐
      6. Recommendations ☐
   c) Multiple Landscape Installations (Subdivision):
      a. Sample at Minimum 15% of Lots: ☐

Soil Management Report Submittal

No Significant Mass Grading Planned ☐
(Submit with Landscape Document Package)

I verify that the Soil Management Report was provided to person(s) preparing the Landscaping Design Plan.

X _____ _____
Preparer(s) of Landscape Plans Signature Required Date

Significant Mass Grading Planned ☐
(Submit with Certificate of Completion)

I verify that a Soil Management Report will be prepared and submitted to the City along with the Certificate of Completion.

X _____ _____
Preparer(s) of Landscape Plans Signature Required Date

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Zoning: _____ GP: _____

LANDSCAPE DESIGN PLAN CHECKLIST

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Project Address/APN: _____ **Date Prepared:** _____

Submittal Checklist

1) Hydrozone
   a) Delineate and Label Each Hydrozone by Number, Letter, or Other Method ☐
   b) Identify Each Hydrozone as Low, Moderate, High Water, or Mixed Water Use ☐
2) Identify on Plans:
   a. Recreational Areas ☐
   b. Areas Permanently and Solely Dedicated to Edible Plants ☐
   c. Areas Irrigated with Recycled Water ☐
   d. Type of Mulch and Application Depth ☐
   e. Soil Amendments, Type, and Quantity ☐
   f. Type and Surface Area of Water Features ☐
   g. Location of Hardscapes (Pervious and Non-Pervious ☐
   h. Applicable Rain Harvest or Catchment Technologies ☐
      i. 24-Hour Capacities ☐
   i. Graywater Systems (if applicable)
      i. Discharge Piping ☐
      ii. System Components ☐
      iii. Area(s) of Distribution ☐
3) Stormwater Requirements Checklist (C3) ☐
4) The following statement shall be printed on the front page of the Landscape Design Plan along with the signature of person(s) authorized to prepare the Landscape Design Plan:

> I have complied with the criteria of the Water Efficient Landscape Ordinance and applied them for the efficient use of water in the Landscape Design Plan
>
> X _____ _____
> Preparer(s) of Landscape Plans Signature Required Date

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IRRIGATION DESIGN PLAN CHECKLIST

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Project Address/APN: _____ **Date Prepared:** _____

Submittal Checklist

1) Location of Separate Water Meters for Landscaped Areas ☐
2) Location, Type and Size of all System Components:
   a. Controllers ☐
   b. Main and Lateral Lines ☐
   c. Valves ☐
   d. Sprinkler Heads ☐
   e. Moisture Sensing Devices ☐
   f. Rain Switches ☐
   g. Quick Couplers ☐
   h. Pressure Regulators ☐
   i. Backflow Prevention Devices ☐
3) For Each Station:
   a. Flow Rate (gallons per minute) ☐
   b. Application Rate (inches per hour) ☐
   c. Design Operating Pressure (pressure per square inch) ☐
4) Location of Recycled Water Irrigation Systems ☐

The following statement shall be printed on the front page of the Irrigation Design Plan along with the signature of person(s) authorized to design the landscaping plan:

> I have complied with the criteria of the Water Efficient Landscape Ordinance and applied them for the efficient use of water in the Irrigation Design Plan
>
> **X** _____ _____
> Preparer(s) of Landscape Plans Signature Required Date

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APPENDIX A – CERTIFICATE OF COMPLETION

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Project Address: _____ **APN:** _____

Property Owner(s): _____

Address:_____City:_____State: _____ Zip:_____

Email:_____Phone:_____(mobile):_____

Applicant(s): *(if different from owner)*_____

Address:_____City:_____State: _____ Zip:_____

Email:_____Phone:_____(mobile):_____

I certify that the landscape project has been installed per the approved Landscape Documentation Package (Must be signed by either preparer of the Landscape Design Plan, Irrigation Design Plan, or the Licensed Landscape Contractor

X_____ _____
Signature Date

Project Information

Date Prepared:_____ Project Type:_____

Total Landscape Area:_____ Sq. Ft. Water Supply Type:_____

Submittal Checklist

1) "As-Built" or Record Drawings that Reflect Significant Changes..... ☐

2) Irrigation Scheduling Parameters Used to set the Controller..... ☐

3) Landscape and Irrigation Maintenance Schedule ☐

4) Irrigation Audit Report ☐

5) Soil Analysis Report ☐
(If not submitted with Landscape Document Package)

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Zoning: _____ GP: _____

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APPENDIX B – PRESCRIPTIVE COMPLIANCE

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Project Address: _____ **APN:** _____

Property Owner(s): _____

Address:_____City:_____State: _____ Zip:_____

Email:_____Phone:_____(mobile):_____

Applicant(s): *(if different from owner)*_____

Address:_____City:_____State: _____ Zip:_____

Email:_____Phone:_____(mobile):_____

I agree to comply with the requirements of the Prescriptive Compliance Option of the Water Efficient Landscape Ordinance

X_____ _____
Signature Date

Project Information

Total Landscape Area: Turf:_____Sq. Ft. Plant Material:_____ Sq. Ft. **Water Supply Type:**_____

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Zoning: _____ GP: _____

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1. Incorporate compost at a rate of at least four cubic yards per 1,000 square feet to a depth of six inches into landscape area (unless contra-indicated by a soil test);
2. Plant material shall comply with all of the following:
    a. For residential areas, install climate adapted plants that require occasional, little or no summer water (average WUCOLS plant factor 0.3) for 75% of the plant area excluding edibles and areas using recycled water; For non-residential reas, install climate adapted plants that require occasional, little or no summer water (average WUCOLS plant factor 0.3) for 100% of the plant area excluding edibles and areas using recycled water;
    b. A minimum three inch (3”) layer of mulch shall be applied on all exposed soil surfaces of planting areas except in turf areas, creeping or rooting groundcovers, or direct seeding applications where mulch is contraindicated;
3. Turf shall comply with all of the following:
    a. Turf shall not exceed 25% of the landscape area in residential areas, and there shall be no turf in non-residential areas;
    b. Turf shall not be planted on sloped areas which exceed a slope of 1 vertical elevation change for every 4 feet of horizontal length;
    c. Turf is prohibited in parkways less than 10 feet wide, unless the parkway is adjacent to a parking strip and used to enter and exit vehicles. Any turf in parkways must be irrigated by sub-surface irrigation or by other technology that creates non overspray or runoff.
4. Irrigation Systems Shall Comply with the Following:
    a. Automatic irrigation controllers are required and must use evapotranspiration or soil moisture sensor data and utilize a rain sensor.
    b. Irrigation controllers shall be of a type which does not lose programming data in the event the primary power source is interrupted.
    c. Pressure regulators shall be installed on the irrigation system to ensure the dynamic pressure of the system is within the manufacturers recommended pressure range.
    d. Manual shut-off valves (such as a gate valve, ball valve, or butterfly valve) shall be installed as close as possible to the point connection of the water supply.
    e. All irrigation emission devices must meet the requirements set in the ANSI standard, ASABE/ICC 802-2014.
    f. Areas less than (10) feet in width in any direction shall be irrigated with subsurface irrigation or other means that produces no runoff or overspray.
5. For non-residential projects with landscape areas of 1,000 square feet or more, a private submeter(s) to measure landscape water use shall be installed.
6. At the time of final inspection, the permit applicant must provide the owner of the property with a certificate of completion, certificate of installation, irrigation schedule and a schedule of landscape and irrigation maintenance.

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LANDSCAPE DESIGN PLAN

1. The use of invasive plant species, such as those listed by the California Invasive Plant Council, is prohibited
2. Recirculating Water Systems shall be used for water features
3. Where available, recycled water shall be used as a source for decorative water features.
4. Surface area of a water feature shall be included in the high water use hyrdozone area of the water budget calculation.
5. Prior to the planting of any Materials, compacted soils shall be transformed to a friable condition. On engineered slopes, only amended planting holes need meet this requirement.
6. Soil amendments shall be incorporated according to recommendations of the Soil Report reviewed and approved as part of the project's Landscape Document Package.
7. Compost at a rate of a minimum of four cubic yards per 1,000 square feet of permeable area shall incorporated to a depth of six inches into the soil. Soils with greater than 6% organic matter in the top 6 inches of soil are exempt from adding compost and tilling.
8. A minimum three inch (3") layer of mulch shall be applied on all exposed soil surfaces of planting areas except in turf areas, creeping or rooting groundcovers, or direct seeding applications where mulch is contraindicated. To provide habitat for beneficial insects and other wildlife, up to 5% of the landscape area may be left without mulch. Designated insect habitat must be included in the landscape design plan as such.
9. The mulching portion of the seed/mulch slurry in hydro-seeded applications shall meet the mulching requirement.
10. Organic mulch materials made from recycled or post-consumer shall take precedence over inorganic materials or virgin forest products unless the recycled post-consumer organic products are not locally available.

IRRIGATION DESIGN PLAN

11. Landscape water meters, defined as either a dedicated water service meter or private submeter, shall be installed for all non-residential irrigated landscapes of 1,000 square feet but not more than 5,000 square feet, and residential irrigated landscapes of 5,000 square feet or greater. A landscape water meter may be either:
    a. A customer service meter dedeicated to landscape use provided by the local water purveyor; or
    b. A privately owned meter or submeter.
12. Automatic irrigation controllers utilizing either evapotranspiration or soil moisture sensor data utilizing non-volatile memory shall be required for irrigation scheduling in all irrigation systems.
13. If the water pressure is below or exceeds the recommended pressure of the specified irrigation devices, the installation of a pressure regulating device is required to ensure that the dynamic pressure at each emission device is within the manufacturer's recommended pressure range for optimal performance.
    a. 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,

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or other devices shall be installed to meet the required dynamic pressure of the irrigation system.

b. 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.

14. 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.
15. 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.
16. 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.
17. Flow sensors that detect high flow conditions created by system damage or malfunction are required for all on non-residential landscapes and residential landscapes of 5000 sq. ft. or larger.
18. Master shut-off valves are required on all projects except landscapes that make use of technologies that allow for the individual control of sprinklers that are individually pressurized in a system equipped with low pressure shut down features.
19. 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.
20. Relevant information from the soil management plan, such as soil type and infiltration rate, shall be utilized when designing irrigation systems.
21. The design of the irrigation system shall conform to the hydrozones of the landscape design plan.
22. The irrigation system must be designed and installed to meet, at a minimum, the irrigation efficiency criteria as demonstrated in the submitted Water Efficient Landscape Worksheet regarding the Maximum Applied Water Allowance.
23. All irrigation emission devices must meet the requirements set in the American National Standards Institute (ANSI) standard, American Society of Agricultural and Biological Engineers'/International Code Council's (ASABE/ICC) 802-2014 "Landscape Irrigation Sprinkler and Emitter Standard, All sprinkler heads installed in the landscape must document a distribution uniformity low quarter of 0.65 or higher using the protocol defined in ASABE/ICC 802-2014.
24. The project applicant/developer should 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.

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25. In mulched planting areas, the use of low volume irrigation is required to maximize water infiltration into the root zone.
26. Sprinkler heads and other emission devices shall have matched precipitation rates, unless otherwise directed by the manufacturer's recommendations.
27. Head to head coverage is recommended. However, sprinkler spacing shall be designed to achieve the highest possible distribution uniformity using the manufacturer's recommendations.
28. Swing joints or other riser-protection components are required on all risers subject to damage that are adjacent to hardscapes or in high traffic areas of turfgrass.
29. Check valves or anti-drain valves are required on all sprinkler heads where low point drainage could occur.
30. Areas less than ten (10) feet in width in any direction shall be irrigated with subsurface irrigation or other means that produces no runoff or overspray.
31. Overhead irrigation shall not be permitted within 24 inches of any non-permeable surface. Allowable irrigation within the setback from nonpermeable surfaces may include drip, drip line. Or other low flow non-spray technology. These restrictions may be modified if:
    a. the landscape area is adjacent to permeable surfacing; or
    b. the adjacent non-permeable surfaces are designed and constructed to drain entirely to landscaping;
32. Each valve shall irrigate a hydrozone with similar site, slope, sun exposure, soil conditions, and plant materials with similar water use.
33. Plants in biotreatment soils shall be on a separate valve.
34. Sprinkler heads and other emission devices shall be selected based on what is appropriate for the plant type within that hydrozone.
35. Where feasible, trees shall be placed on separate valves from shrubs, groundcovers, and turf to facilitate the appropriate irrigation of trees. The mature size and extent of the root zone shall be considered when designing irrigation for the tree.
36. Individual hydrozones that mix plants of moderate and low water use, or moderate and high water use, may be allowed if:
    a. plant factor calculation is based on the proportions of the respective plant water uses and their plant factor; or
    b. the plant factor of the higher water using plant is used for calculations.
37. Individual hydrozones that mix high and low water use plants shall not be permitted.
38. 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 Sample Water Efficient Landscape Worksheet. (see Appendix B). This table can also assist with the irrigation audit and programming the controller.

<u>LANDSCAPE AND IRRIGATION MAINTENANCE SCHEDULE</u>

39. Landscapes shall be maintained to ensure water use efficiency. A regular maintenance schedule shall be submitted with the Certificate of Completion.

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40. A regular maintenance schedule shall include, but not be limited to, routine inspection; auditing, adjustment and repair of the irrigation system and its components; aerating and dethatching turf areas; topdressing with compost, replenishing mulch; fertilizing; pruning; weeding in all landscape areas, and removing obstructions to emission devices. Operation of the irrigation system outside the normal watering window is allowed for auditing and system maintenance.
41. Repair of all irrigation equipment shall be done with the originally installed components or their equivalents or with components with greater efficiency.
42. A project applicant is encouraged to implement established landscape industry sustainable Best Practices for all landscape maintenance activities.
43. It is highly recommended that the Bay-Friendly Maintenance Manual is used as an official reference document in the landscape maintenance contract and/or with on-site landscape staff.
44. Landscapes shall be maintained to ensure water use efficiency. A regular maintenance schedule shall be submitted with the Certificate of Completion.

<u>IRRIGATION SCHEDULING</u>

45. 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:
46. (1) Irrigation scheduling shall be regulated by automatic irrigation controllers.
47. 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.
48. 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.
49. 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.
    d. Each irrigation schedule shall consider for each station all of the following that apply:
        i. irrigation interval (days between irrigation);
        ii. irrigation run times (hours or minutes per irrigation event to avoid runoff);
        iii. number of cycle starts required for each irrigation event to avoid runoff;
        iv. amount of applied water scheduled to be applied on a monthly basis;
        v. application rate setting;
        vi. root depth setting;

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vii. plant type setting;
viii. soil type;
ix. slope factor setting;
x. shade factor setting; and
xi. irrigation uniformity or efficiency setting.

IRRIGATION AUDIT, IRIGATION SURVEY, AND IRRGATION WATER USE ANALYSIS

50. 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, including configuring irrigation controllers with application rate, soil types, plant factors, slope, exposure and any other factors necessary for accurate programming;
    a. All landscape irrigation audits shall be conducted by a local agency landscape irrigation auditor or a third party certified landscape irrigation auditor. Landscape audits shall not be conducted by the person who designed the landscape or installed the landscape.
51. The City of Alameda 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.
52. For the purpose of determining Estimated Total Water Use, average irrigation efficiency is assumed to be 0.75 for overhead spray devices and 0.81 for drip system devices.
53. The installation of recycled water irrigation systems shall allow for the current and future use of recycled water.
54. All recycled water irrigation systems shall be designed and operated in accordance with all applicable local and State laws.
55. Landscapes using recycled water are considered Special Landscape Areas. The ET Adjustment Factor for new and existing (non-rehabilitated) Special Landscape Areas shall not exceed 1.0.
56. All graywater systems shall conform to the California Plumbing Code (Title 24, Part 5, Chapter 16) and any applicable local ordinance standards. Refer to § 490.1 (d) for the applicability of this ordinance to landscape areas less than 2,500 square feet with the Estimated Total Water Use met entirely by graywater.