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DEPARTMENT OF RESOURCE MANAGEMENT

SOLANO COUNTY

Planning Division

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Water Efficient Landscape Plan Check Requirements

Packet Contents **Page**

GENERAL

- □ **Please apply online and submit all drawings electronically. See page 2 for instructions.**
- □ All plans shall be signed by the person responsible for their preparation. Plans shall be sealed and signed by the architect and/or engineer of record if applicable. Electronic signatures are acceptable.

QUESTIONS?

- □ Call or email the Water Efficiency Landscape Ordinance (WELO) Section: 707-784-6765 or WELO@solanocounty.com.
- □ Call or email the Building Division: 707-784-6765 or building@solanocounty.com
- □ For zoning or setback information, contact the Planning Division: 707-784-6765 or planning@solanocounty.com
- □ For Construction & Demolition (C&D) Waste Management Plan information, contact the Planning Division- Integrated Waste Management Section: 707-784-6765 or recycling@solanocounty.com
- □ For grading and encroachment information please contact the Public Works Division: 707-784-6765

ELECTRONIC SUBMITTAL INSTRUCTIONS

All building permits shall be submitted electronically. To apply:

- Visit: https://aca-prod.accela.com/SOLANO/Login.aspx
- Select: 'New Users: Register for an Account'
- Once registered, log in, apply for your permit, and upload all required documents
- Call 707-784-6765 or email planning@solanocounty.com with questions

SOLANO COUNTY

DEPARTMENT OF RESOURCE MANAGEMENT
Planning Services Division

WELO PIW

Water Efficient Landscapes – Project Information Worksheet

Office Use		
Application No.	Date Filed:	Planner:
Application Fees Paid:	Receipt No:	

Landscape Type: ☐ New Construction ☐ Renovation/Rehabilitation **Public or Private:** ☐ Public ☐ Private

Project Description (Select best description of project):

☐ Single-family residential ☐ Multi-family residential ☐ Commercial/Institutional ☐ Cemetery

Water Supply Type (Select all that apply):

☐ Potable ☐ Recycled (Municipal) ☐ Well ☐ Onsite rainwater ☐ Onsite greywater

Water Purveyor: _____

PROJECT SITE					
Address		City		Zip	
Assessor's Parcel Number(s)					
Total Landscape Area (square feet)					

CONTACT INFORMATION							
Applicant Name		Company (if applicable)					
Address		City		State		Zip	
Phone		Email					
Property Owner Name ☐ Same as above							
Address		City		State		Zip	
Phone		Email					

Landscape Documentation Package

all items are required at submission unless noted

- ☐ Project Information Worksheet (this form)
- ☐ Water Use Worksheet (page 3)
- ☐ Soil Management Report
- ☐ Landscape Design Plan Checklist
- ☐ Irrigation Design Plan Checklist
- ☐ Grading Design Plan Checklist
- ☐ Water Features Worksheet (as needed)

Project Completion Package

all items are required at project completion unless noted

- ☐ Certificate of Completion (page 9)
- ☐ Irrigation Audit Report
- ☐ Irrigation & Maintenance Schedule Worksheet (page 10)
- ☐ As-built plans & record drawings (as needed)
- ☐ Post-project Soil Management Report (as needed)
- ☐ Water Efficient Landscape Inspection (performed by Solano County staff)

"I agree to comply with the requirements of the Water Efficient Landscape Ordinance and submit a complete Landscape Documentation Package."

Signature: _____ **Date:** _____

SOLANO COUNTY

DEPARTMENT OF RESOURCE MANAGEMENT
Planning Services Division

WELO WUW

Water Use Worksheet

This worksheet is to be filled out by the project applicant or a landscape contractor. It is a required element of the Landscape Documentation Package.

Reference Evapotranspiration (ETo) =

Benicia:	40.3	Hastings Tract:	57.1	Suisun Valley:	48.3
Dixon:	52.1	Putah Creek:	51.0	Winters:	51.0
Fairfield:	45.2	Rio Vista:	47.0		

Plant Factor	Range
Very Low	0 – 0.10
Low	0.10 – 0.30
Moderate	0.40 – 0.60
High	0.70 – 1.0

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)[d]
Regular Landscape Areas							
			Totals		(A)	(B)	
Special Landscape Areas							
				1.0			
				1.0			
				1.0			
			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
medium water use planting

[b]Irrigation Method
Overhead Spray or Drip

[c]Irrigation Efficiency
0.75 for Spray Head
0.81 for Drip

[d]ETWU (Annual Gallons Required)
= ET 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 0.55 for Residential areas and 0.45 for Non-Residential areas**. If factoring in Effective Precipitation, subtract Peff from ETo. Peff = 25% of area annual precipitation as per CDEC data.

ETAF Calculations

Regular Landscape Areas

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

All Landscape Areas

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

Average ETAF for Regular Landscape Areas must be 0.55 or below for Residential areas, and 0.45 or below for Non-Residential areas.

This worksheet has been prepared by:	
Name:	
License No.:	
Signature:	
Date:	

SOLANO COUNTY | **DEPARTMENT OF RESOURCE MANAGEMENT**
Planning Services Division

WELO LDPC

Landscape Design Plan Checklist

The following details must be included on the landscape design plan, include this signed checklist with plan submittal. Plan must be completed by a licensed landscape architect or licensed landscape contractor.

☐ **Hydrozones –** Delineate location and label each hydrozone by either color, number, or letter.

☐ **Hardscapes –** Location of hardscapes, pervious and non-pervious.

☐ **Water features –** Location, type and surface area of water features. Water features are design elements where open water performs an aesthetic or recreational function. Water features includes ponds, lakes, waterfalls, foundations, artificial streams, spas, and swimming pools (where water is artificially supplied).

☐ **Stormwater –** Location, capacity, and installation details for stormwater best management practices techniques.

☐ **Rainwater –** Location, capacity, and installation details for rainwater harvesting or catchment technologies.

☐ **Graywater –** Location and area of distribution for any applicable graywater discharge piping or system components.

☐ **Statement and signature –** The following statement and signature of licensed landscape architect or licensed landscape contractor:

> *"I have complied with the criteria of the Ordinance and applied them for the efficient use of water in the Landscape Design Plan."*

☐ **Recreational areas –** Location of recreational areas. These are areas dedicated to active play such as parks, sports fields, and golf courses where turf provides a playing surface.

☐ **Edible plants –** Location of area solely and permanently dedicated to edible plants.

☐ **Recycled water irrigation –** Location of areas irrigated solely with recycled water.

☐ **Mulch –** Location, application depth, and type of mulch.

☐ **Insect habitat –** Location of any proposed insect habitat area for beneficial insects or wildlife.

☐ **Soil –** Location, type, and quantity of soil amendments.

☐ **Wildfire Risk Area –** If located in a Wildfire Risk Area, location of defensible space area(100 feet from each side of building).

Hydrozone Guidance:
Identify each hydrozone as very low, low, moderate, high, or mixed water use.

Each hydrozone must include plants materials that use a similar amount of water, except hydrozones designated as mixed water use.

Temporarily irrigated areas must be included in the low water use hydrozone.

Surface area of a water feature shall be included in the high water use hydrozone area.

Plant Material Guidance:
Any plant may be selected for the landscape, provided the ETQU does not exceed the MAWA (see Water Use Worksheet). Methods to achieve water efficiency shall include one or more of the following:

- Protection and preservation of native species and natural vegetation
- Selection of water conserving plant, tree, and turn species, especially local native plants
- Selection of plants based on local climate suitability, disease, and pest resistance
- Selection of trees based on applicable local tree ordinances or tree shading guidelines, and size at maturity as appropriate for the planting area
- Selection of plants from local and regional landscape program plant lists
- Selection of plants from local Fuel Modification Plan Guidelines

Plants must be selected based on their suitability to the climatic, geologic, and topographical conditions of the project site. Water efficiency methods must include one or more of the following:

- Use of the Sunset Western Climate Zone System
- Recognition of the horticultural attributes of plants to minimize damage to property or infrastructure, and allowances for adequate soil volume for healthy root growth.
- Consideration of solar orientation in plant placement to maximize summer shade and winter solar gain.

Turf is not allowed on slopes greater than 25% where the toe of the slope is adjacent to an impermeable hardscape.

High water use plants (plant factor of 0.7-1.0) are prohibited in street medians.

If project is located in a Wildfire Risk Area, plant selection must address fire safety and prevention, including selecting fire-safe mulches.

Invasive plant species identified by the California Invasive Plant Council are highly discouraged.

The architectural guidelines of common interest developments (community apartment projects, condominiums, planned developments, and stock cooperatives) must not prohibit or include conditionals that have the effect of prohibiting the use of low-water use plants as a group.

Water Features Guidance:
Water features must use a recirculating water system.

When available, recycled water shall be used as a source for decorative water features.

Pool and spa covers are highly recommended and may be required.

Soil Preparation, Mulch, and Amendment Guidance:
Prior to planting, compacted soils shall be transformed to a friable condition. On engineered slopes, only amended planting holes need to meet this requirement.

Soil amendments must be incorporated according to the soil report recommendation and must be appropriate for the plants selected.

Compost (at a minimum of four cubic yards per one thousand square feet of permeable area) must be incorporated to a depth of six inches into the soil. Soils with more than 6% organic matter in the top six inches of soil are exempt from adding compost and tilling.

A minimum three-inch layer of mulch must 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.

In order to provide habitat for beneficial insects or other wildlife, up to 5% of the landscape area mat be left without mulch. Area must be designated on plan.

Stabilizing mulch products must be used on slopes, which meet current engineering standards.

Mulching portion of a seed/mulch slurry in hydro-seeded applications shall meet the mulching requirement.

Organic mulch materials made from recycled or post-consumer waste take precedence over inorganic materials or virgin forest products, unless the recycled post-consumer organic products are not locally available.

Organic mulches are not required where prohibited by local Fuel Modification Plan Guidelines or other applicable local ordinances.

This checklist has been prepared by:
Name: _____ License No.: _____

Signature: _____ Date: _____

SOLANO COUNTY

DEPARTMENT OF RESOURCE MANAGEMENT
Planning Services Division

WELO IDPC

Irrigation Design Plan Checklist

The following details must be included on the irrigation design plan, include this signed checklist with plan submittal. Plan must be completed by a licensed landscape architect, certified irrigation designer, or licensed landscape contractor.

☐ **Hydrozones –** Delineate location and label each hydrozone by either color, number, or letter. Designate the areas irrigated by each valve and assign a number to each valve. Use valve numbers in the Irrigation Method box on Water Use Worksheet (page 3 of this package)

☐ **Water meters –** Location and size of separate water meters for the landscape area, if applicable.

☐ **Irrigation system components –** Location, type, and size of all components of the irrigation system, to include recycled water irrigation systems. This includes controllers, main and lateral lines, valves, sprinkler heads, moisture sensing devices, rain switches, quick couplers, pressure regulators, and/or backflow prevention devices.

☐ **Static water pressure –** Static water pressure at the point of connection to the public water supply.

☐ **Station details –** For each station, provide:

- Flow rate (gallons per minute)
- Application rate (inches per hour)
- Design operating pressure (pressure per square inch)

☐ **Statement and signature –** The following statement and signature of licensed landscape architect, certified irrigation designer, or licensed landscape contractor:

> *"I have complied with the criteria of the Ordinance and applied them accordingly for the efficient use of water in the Irrigation Design Plan."*

General Irrigation Guidance:

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. Design of the irrigation system shall conform to the hydrozones of the landscape design plan, must meet the irrigation efficiency criteria regarding Maximum Applied Water Allowance (MAWA), and use relevant information from the soil management plan, such as soil type and infiltration rate.

Landscape water meters shall be installed for all non-residential irrigated landscapes of 1,000-5,000 sqft (the level at which Water Code 535 applies) and residential irrigated landscapes of 5,000 sqft or greater. A landscape water meter may be either a customer service meter dedicated to landscape use provided by the local water purveyor or a privately owned meter or submeter.

Automatic irrigation controllers using either evapotranspiration or soil moisture sensor data, and with non-volatile memory, are required.

Integral or auxiliary sensors that suspend or alter irrigation operation during unfavorable weather conditions are required on all irrigation systems, as appropriate for local climatic conditions. Irrigation should be avoided during windy, rainy, or freezing weather.

Backflow prevention devices are required to protect the water supply from contamination by the irrigation system. A project applicant shall refer to Cal. Code Regs. Tit. 17, § 7605 for additional cross contamination prevention requirements.

Flow sensors that detect high flow conditions created by system damage or malfunction are required for all non-residential landscapes and residential landscapes of 5,000 sqft or larger.

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 (ASABFJICC) 802-2014. 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. Sprinkler heads and other emission devices shall have matched precipitation rates, unless otherwise directed by the manufacturer's recommendations.

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

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. 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 mate- rial. These restrictions may be modified if:

- the landscape area is adjacent to permeable surfacing and no runoff occurs; or
- the adjacent non-permeable surfaces are designed and constructed to drain entirely to landscaping; or
- 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)(I)(I). Prevention of overspray and runoff must be confirmed during the irrigation audit.

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.

Slopes greater than 25% shall not be irrigated with an irrigation system with an application 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.

Water Pressure Guidance:

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.

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.

Static water pressure, dynamic or operating pressure, and flow reading of the water supply shall be measured at the point of connection.

Manual shut-off valves (such as a gate valve, ball valve, or butter- fly valve) are required to be as close as possible to the point of connection of the water supply to minimize water loss in the case of emergency or repair. Master shut-off valves are required on all projects except landscapes using technology which allows for the individual control of sprinklers that are individually pressurized in a system equipped with low pressure shut down features. Check valves or anti-drain valves are required on all sprinkler heads where low point drainage could occur.

Hydrozone Guidance:

Each valve shall irrigate a hydrozone with similar site, slope, sun exposure, soil conditions, and plant materials with similar water use. Sprinkler heads and other emission devices shall be selected based on what is appropriate for the plant type within that hydrozone.

Individual hydrozones that mix high and low water use plants are not permitted. Individual hydrozones that mix plants of moderate and low water use, or moderate and high water use, may be allowed if:

- plant factor calculation is based on the proportions of the respective plant water uses and their plant factor; or
- the plant factor of the higher water using plant is used for calculations

Irrigation Recommendations (Optional):

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.

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

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.

This checklist has been prepared by:

Name: _____ License No.: _____

Signature: _____ Date: _____

SOLANO COUNTY | **DEPARTMENT OF RESOURCE MANAGEMENT**
Planning Services Division

WELO GDPC

Grading Design Plan Checklist

The following details must be included on the grading design plan, include this signed checklist with plan submittal. A grading plan completed by a civil engineer for other local agency permits is accepted.

☐ Plan must indicate finished configurations and elevations of the landscape area including:
- Height of graded slopes
- Drainage patterns
- Pad elevations
- Finish grade
- Stormwater retention improvements (as applicable)

☐ The following statement and signature of licensed professional as authorized by law: *"I have complied with the criteria of the Ordinance and applied them accordingly for the efficient use of water in the Grading Design Plan."*

General Grading Guidance:
For the efficient use of water, grading of a project site shall be designed to minimize soil erosion, runoff, and water waste. A comprehensive grading plan prepared by a civil engineer for other local agency permits is acceptable.

Grading Recommendations (Optional):
To prevent excessive erosion and runoff, it is highly recommended that project applicants:
- Grade so that irrigation and normal rainfall remains within property lines and does not drain on to non-permeable hardscapes
- Avoid disruption of natural drainage patterns and undisturbed soil
- Avoid soil compaction in landscape areas

This checklist has been prepared by:
Name: _____ License No.: _____

Signature: _____ Date: _____

SOLANO COUNTY

DEPARTMENT OF RESOURCE MANAGEMENT
Planning Services Division

WELO COC

Certificate of Completion

Upon project completion, this certificate must be signed and provided to Solano County Planning Division.

Date Landscape Documentation Package submitted to the local agency: _____

Date Landscape Documentation Package approved by the local agency: _____

Date the Water Efficient Landscape Worksheet (including the Water Budget Calculation) submitted to local water purveyor: _____

Project Name	Project Address	
Name of Project Applicant	Telephone No.	
	Fax No.	
Title	Email Address	
Company	Street Address	
City	State	Zip Code

Name	Telephone No.	
	Fax No.	
Title	Email Address	
Company	Street Address	
City	State	Zip Code

"I/we certify that I/we have received copies of all the documents within the Landscape Documentation Package and the Certificate of Completion and that it is our responsibility to see that the project is maintained in accordance with the Landscape and Irrigation Maintenance Schedule."

Property Owner Signature: _____ Date: _____

Landscape Architect or Contractor/Installer Name	Telephone No.	
	Fax No.	
Title	Email Address	
License No. or Certification No.		
Company	Street Address	
City	State	Zip Code

"I/we certify that based upon periodic site observations the work has been completed in accordance with the Water Efficient Landscape Guidelines and that the landscape planting and irrigation installation conform with the criteria and specifications of the approved Landscape Documentation Package."

Landscape Architect or Contractor/Installer Signature: _____ Date: _____

SOLANO COUNTY
DEPARTMENT OF RESOURCE MANAGEMENT
Planning Services Division

WELO IMSW

Irrigation & Maintenance Schedule Worksheet

Upon project completion, this report must be completed, signed, and provided to Solano County Planning Division.

1. Irrigation schedules will be regulated using weather-based irrigation controller / soil moisture sensor located_____ _____. The controller has a non-volatile memory.

2. Irrigation watering will occur typically between the hours of 8pm – 10am unless otherwise dictated by weather, drought emergency, system, maintenance, repair and or testing. ☐ Yes ☐ No
   Hours of Operation:_____

3. The total annual applied water shall not exceed the Maximum Applied Water Allowance from approved Landscape Documentation package.
   ☐ Yes ☐ No

4. An establishment irrigation schedule is attached. ☐ Yes ☐ No

5. A permanent irrigation schedule is attached. ☐ Yes ☐ No

6. A temporary irrigated areas schedule is applicable and is attached. ☐ Yes ☐ No ☐ N/A

7. The following additional parameters are in place for each hydrozone/station:
   a. Interval between watering events ☐ Yes ☐ No
   b. Station run times to prevent run off ☐ Yes ☐ No
   c. Number of cycle starts to prevent runoff ☐ Yes ☐ No
   d. A monthly water budget ☐ Yes ☐ No
   e. Type of emission device and application rate ☐ Yes ☐ No
   f. Root depth target ☐ Yes ☐ No
   g. Plant type ☐ Yes ☐ No
   h. Soil type ☐ Yes ☐ No
   i. Slope factors ☐ Yes ☐ No
   j. Shade factors ☐ Yes ☐ No
   k. Distribution uniformity ☐ Yes ☐ No

8. A copy of this worksheet is/will be located in the controller cabinet. ☐ Yes ☐ No

9. A regular maintenance schedule has been established. ☐ Yes ☐ No

10. Repair of all irrigation equipment shall be done with the originally installed components or their equivalents or with components with greater efficiency. ☐ Yes ☐ No

This checklist has been prepared by:
Name: _____ License No.: _____

Signature: _____ Date: _____