This presentation premiered at WaterSmart Innovations

watersmartinnovations.com
Exercise Handouts

• Session includes an interactive exercise.
• To participate, please pick up a set of the printed handouts in the front of the room.
• There are a total of seven documents in the package.
Model Water Efficient Landscape Ordinance (MWELO) and the New Normal for California Landscaping

Kelly Schoonmaker, StopWaste
Ryan Stroupe, PG&E Pacific Energy Center
Session Objectives

- To encourage others to offer WELO trainings.
- Session includes an interactive exercise.
  - To participate, please pick up a set of the printed handouts in the front of the room.
  - Handouts represent a WELO submittal package.
  - There are a total of seven documents in the package.
  - For this WELO submittal exercise, please review the documents and identify potential areas of non-compliance.
What: California state ordinance regulating water use in new landscape construction with the goal of conserving water in the urban landscape.

Why: Landscape accounts for an average of 50% of urban water use, 10% of overall water use and over 1% of all electric energy use in CA.

How: All new permitted landscape construction over 500 sf; all renovations over 2,500 sf must comply with the ordinance.
CA MWELO Update History

Figure 1
State's Precipitation Below Average in Recent Years

Statewide Precipitation in Inches


- AB325
- AB1881
- EO B-29-15

40 Year Average
How WELO Works

• **Performance-based measures**, such as
  – Calculate the **Maximum Applied Water Allowance (MAWA)** is based on reference ET
    • 0.55 ETo for residential
    • 0.45 ETo for non-residential
  – Then **Estimate the Total Water Use (ETWU)** based on their design.
  – Allows use of any plants as long as they meet budget

• **Prescriptive measures**, such as
  – Low-volume irrigation (with exceptions)
  – Mulch requirement: 3 inches
  – Compost: 4 CY/1,000 sf

• **Verification – Local Jurisdictions**
  – Plan review
  – Irrigation audit
  – Sometimes field inspection

For more details go to CA DWR web site:
http://www.water.ca.gov/wateruseefficiency/landscapeordinance/
WELO Training Logistics

- Extensive promotional outreach effort
- Collection of expertise (local)
- In-class exercises
- Simulcast to remote attendees
- File sharing
- Costs: Speakers, catering, venue
- Continuing Education Units

Past and Future Training Dates

- June 29, 2016
  - In-person registrants: 129/77
  - Simulcast registrants: 123/65
- November 30, 2016
  - In-person registrants: 120/72
  - Simulcast registrants: 155/96
- June 15, 2017
  - In-person registrants: 96/58
  - Simulcast registrants: 160/88
- November 30, 2017
  - In-person registrants: TBD
  - Simulcast registrants: TBD
Continuing Education Units

- American Institute of Architects
- American Institute of Certified Planners
- American Society of Landscape Architects
- American Water Works Association
- Bay-Friendly Qualified Professionals
- Irrigation Association
- National Association of Landscape Professionals
Partnerships

• **Benefits**
  – Increases outreach potential and expand audience
  – Share costs and coordination effort
  – Benefit of collective expertise

• **Potential partnership organizations**
  – Water districts
  – Waste management authorities
  – Electric utilities
  – Municipalities and other government agencies
  – Professional organizations
    • Landscape architects, architects and other designers
    • Water, irrigation and related organizations
    • Plan reviewer organizations
    • Other professional organizations: USGBC, IFMA, BOMA
Teaching Approach

• Selective overview
• Applying concepts
• Working within restrictions of WELO
• Variety of speakers/expertise/perspectives
• Feedback: answer key
• Working in teams
• Training resources
Collection of Experts

- WELO expert to provide overview of ordinance
- Code reviewer to discuss compliance issues
- Water budget calculation expert
- Irrigation expert
- Compost expert
- Landscape designer
- Water/Energy perspective
Training Resources

• Title 23 (MWELO) extract
• Appendix B – Sample Water Efficient Landscape Worksheet.
• DWR’s Water Budget Workbook
• BayFriendly Landscape and Gardening Guides
• Water Use Classification of Landscape Species (WULCOLDs)
• Jennifer’s plant catalog
In-class Plan Review Exercise

Whether you’re a plan checker or redlining drawings in a firm, you will need to review drawings for WELO compliance. This exercise is meant to provide “real-world” exposure to a pretty good MWELO submittal. However, the package does not meet all MWELO requirements. There are at least 21 mistakes or omissions. Can you find them all?

Instructions:

Using the City of Menlo Park checklist included in the documents, you will verify that the project is in compliance with the ordinance and meets all the requirements. Working with a classmate, you will identify and correct any errors on the drawings and documents. Document your work as follows:

- Errors: show revisions on drawings or documents
- Omissions: note on back of this sheet
- Summarize your findings by checking the pass/fail boxes on the Menlo Park Checklist.
Documents for Plan Review Exercise

1. WELO-exercise-writeup_FINAL.docx
2. Layout-plan
3. WaterUseCalculations
4. Irrigation-plan
5. Planting-plan
6. Plant-list
7. Checklist
Plan Review Exercise Write Up

• Problem statement
• List of documents
• Additional tools
• Questions

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(MWELO) and the New Normal for California Landscaping 16
Water Use Calculations

- ETWU calculated for each hydrozone
- MAWA

Water Use Calculations

<table>
<thead>
<tr>
<th>Zone</th>
<th>Plant Factor</th>
<th>Irr.</th>
<th>Irr. Eff.</th>
<th>ETAF (PF/IE)</th>
<th>Area</th>
<th>ETAF x Area</th>
<th>ETWU</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.2</td>
<td>Drip</td>
<td>0.81</td>
<td>0.25</td>
<td>368  s.f.</td>
<td>92</td>
<td>2,453</td>
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<tr>
<td>2</td>
<td>.5</td>
<td>Drip</td>
<td>0.81</td>
<td>0.62</td>
<td>395  s.f.</td>
<td>245</td>
<td>6,529</td>
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<tr>
<td>3</td>
<td>.5</td>
<td>Drip</td>
<td>0.81</td>
<td>0.62</td>
<td>143  s.f.</td>
<td>89</td>
<td>2,364</td>
</tr>
<tr>
<td>4</td>
<td>.2</td>
<td>Drip</td>
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<td>0.25</td>
<td>648  s.f.</td>
<td>17,276</td>
<td></td>
</tr>
<tr>
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<td>Drip</td>
<td>0.81</td>
<td>0.25</td>
<td>430  s.f.</td>
<td>108</td>
<td>2,866</td>
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<tr>
<td>6</td>
<td>.5</td>
<td>Drip</td>
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<td>0.62</td>
<td>642  s.f.</td>
<td>106</td>
<td>10,612</td>
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<tr>
<td>7</td>
<td>.2</td>
<td>Drip</td>
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<td>0.25</td>
<td>128  s.f.</td>
<td>32</td>
<td>853</td>
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<tr>
<td>8</td>
<td>.2</td>
<td>Spray</td>
<td>0.75</td>
<td>0.27</td>
<td>175  s.f.</td>
<td>47</td>
<td>1,260</td>
</tr>
</tbody>
</table>

**Total Special Landscape Area Area**: 648 s.f.

**Total Special Landscape Area ETWU**: 44,212 gal/yr

**MAWA**: 50,722 gal/yr

**ETWU**: 44,212 gal/yr

Palo Alto Annual ETo = 43 in.

PASS!
Irrigation Plan

Irrigation Notes

1. All planter areas are dripped with Netafim TLCV4-12 yd. The emitter spacing is 10", and the row spacing is 16".

2. Ensure that all plants have one emitter positioned on the root ball, use the Netafim Micro Tubing Adapter plugged into a nearby Netafim in-line emitter, and run 1/8" drip tubing onto root ball, and stake down.

3. The drip emitters have drip lines drawn in starting the positions of all the drip tubing.

4. The three-fingered paths are watered by Rain Bird sprinklers with SQ nozzles in them. They are pressure regulated at the valve to 40 psi.

5. Valves

6. A pipe and polyethylene tubing

7. The main pipe is 1" schedule 40 PVC. It is 1" from the point of connection all the way to the valve manifold.

8. Run 1/2" black polyethylene tubing from each valve to beginning of Netafim grid for each zone.

9. The supply and exhaust headers for each sub-grid consist of 1/2" black polyethylene tubing. See example drawings on the Notes and Details page.

10. All drip tubing is color-coded to match its hydromap.

Irrigation Legend

- Sprinklers
- Backflow Devices
- Control Valves
- Y-Strainers / Filters
- Irrigation Accessories
- Mainline Pipe
- Laterals Line Pipe
- Soakers
- Drip Tubing

Total landscape area: 2,029 sq. ft.
Soil type: Sandy day

Application Rates

- Drip in planter areas: 0.48 in/hr
- Drip in soaker: 0.68 in/hr
- Sprinklers on patios: 2.0 in/hr

Designer’s Statement:

This plan complies with the aspects of the Water Efficient Landscaping Ordinance and applies them accordingly for the efficient use of water in this irrigation design plan.

Lori D. Pilgram
January 24, 2017

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Plan Review Checklist

### OUTDOOR WATER USE EFFICIENCY CHECKLIST

**City of Menlo Park Water Efficient Landscape Ordinance**

**OUTDOOR WATER USE EFFICIENCY CHECKLIST**

<table>
<thead>
<tr>
<th>To Be Completed by Applicant</th>
<th>Page 1 of 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Information</td>
<td></td>
</tr>
<tr>
<td>New Construction</td>
<td></td>
</tr>
<tr>
<td>X Single Family</td>
<td></td>
</tr>
<tr>
<td>X Multi Family</td>
<td></td>
</tr>
<tr>
<td>X Commercial</td>
<td></td>
</tr>
<tr>
<td>X Institutional</td>
<td></td>
</tr>
<tr>
<td>Irrigation Only</td>
<td></td>
</tr>
<tr>
<td>X Industrial, Other</td>
<td></td>
</tr>
<tr>
<td>Applicant Name, Address, Telephone, Fax</td>
<td></td>
</tr>
<tr>
<td>Project Site Address</td>
<td></td>
</tr>
<tr>
<td>Project Area (sq. ft.)</td>
<td></td>
</tr>
<tr>
<td>Total Landscape Area (sq. ft.)</td>
<td>2,921 sq. ft.</td>
</tr>
<tr>
<td>Irrigated Area (sq. ft.)</td>
<td></td>
</tr>
<tr>
<td>Special Landscape Area (SA)</td>
<td></td>
</tr>
<tr>
<td>Water Feature Surface Area (sq. ft.)</td>
<td></td>
</tr>
<tr>
<td>Compliance</td>
<td></td>
</tr>
<tr>
<td>Plant Material</td>
<td></td>
</tr>
<tr>
<td>X Yes, x sq. ft.</td>
<td></td>
</tr>
<tr>
<td>Turf</td>
<td></td>
</tr>
<tr>
<td>X Yes, x sq. ft.</td>
<td></td>
</tr>
<tr>
<td>Hydrozones</td>
<td></td>
</tr>
<tr>
<td>X Yes, x sq. ft.</td>
<td></td>
</tr>
<tr>
<td>Compost</td>
<td></td>
</tr>
<tr>
<td>X Yes, x lb.</td>
<td></td>
</tr>
<tr>
<td>Mulch</td>
<td></td>
</tr>
<tr>
<td>X Yes, x sq. ft.</td>
<td></td>
</tr>
<tr>
<td>Irrigation System</td>
<td></td>
</tr>
<tr>
<td>Use of automatic irrigation controllers that use evapotranspiration or soil moisture sensor data and utilize a rain sensor</td>
<td>X Yes</td>
</tr>
<tr>
<td>Use of functional programing data when power source is interrupted</td>
<td>X Yes</td>
</tr>
<tr>
<td>Irrigation system includes pressure regulators</td>
<td>X Yes</td>
</tr>
<tr>
<td>Vertical mattress are installed near the connection to the water supply</td>
<td>X Yes</td>
</tr>
<tr>
<td>All sprinkler heads installed in the landscape must meet a distribution uniformity low of 75% or higher</td>
<td>X Yes</td>
</tr>
<tr>
<td>Audit to be performed after construction</td>
<td>X Yes</td>
</tr>
<tr>
<td>Water Features</td>
<td></td>
</tr>
<tr>
<td>X Yes, x sq. ft.</td>
<td></td>
</tr>
<tr>
<td>Documentation</td>
<td></td>
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<tr>
<td>x Yes, x sq. ft.</td>
<td></td>
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<tr>
<td>Agency Name, Address, Telephone, Fax</td>
<td></td>
</tr>
</tbody>
</table>

### OUTDOOR WATER USE EFFICIENCY CHECKLIST

**City of Menlo Park Water Efficient Landscape Ordinance**

**OUTDOOR WATER USE EFFICIENCY CHECKLIST**

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<thead>
<tr>
<th>To Be Completed by Applicant</th>
<th>Page 2 of 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auditor</td>
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<td>X Yes, x sq. ft.</td>
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<tr>
<td>Material Distributed to Applicant</td>
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<tr>
<td>Material Requested</td>
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<tr>
<td>Regional Water Efficient Landscape Ordinance</td>
<td>X Yes</td>
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<tr>
<td>Water Efficient Landscape Worksheet</td>
<td>X Yes</td>
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<tr>
<td>Residential Outdoor Water Use Efficiency Checklist</td>
<td>X Yes</td>
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<tr>
<td>See Water Use Efficiency Checklist</td>
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<tr>
<td>Plant List</td>
<td></td>
</tr>
<tr>
<td>X Yes, x sq. ft.</td>
<td></td>
</tr>
<tr>
<td>Plant Material</td>
<td></td>
</tr>
<tr>
<td>X Yes, x sq. ft.</td>
<td></td>
</tr>
<tr>
<td>Water Features</td>
<td></td>
</tr>
<tr>
<td>X Yes, x sq. ft.</td>
<td></td>
</tr>
<tr>
<td>Documentation</td>
<td></td>
</tr>
<tr>
<td>x Yes, x sq. ft.</td>
<td></td>
</tr>
<tr>
<td>Agency Name, Address, Telephone, Fax</td>
<td></td>
</tr>
</tbody>
</table>

WaterSmart Innovations (MWELO) and the New Normal for California Landscaping
In addition, please answer the following questions:

1. How much compost (total cubic yards) should be installed on this project? How would you verify in the field?

2. How much mulch (total cubic yards) should be installed on this project? Verification?

3. Bonus soil question: What else should be included in the notes on compost and mulch to ensure a successful project?
Plan Review Activity

What issues would you explore as part of this exercise?
Mistakes on Planting Plan

- Plant water-use values not on planting plan (these are on a separate sheet)
- Hydrozones not on planting plan (these are on the irrigation plan)
- Compliance statement is not signed

Mistakes on Irrigation Plan

- Controller not located on plan
- Rain sensor not located on plan
- No backflow preventer at POC
- No static pressure noted on plan
- No pressure regulation on the sprinkler zones
- Some of the zones don’t show the flow in gpm (three are missing)
- Size of irrigation main not shown
- Size of sprinkler zone laterals not shown
Missing Documents
• Soil Management Report
• Irrigation Maintenance Schedule, and Irrigation Controller Schedule (these are being requested by the city to be turned in with the Certificate of Completion at the end of the project)

Mistakes in Layout Plan
• Should specify recycled mulch in notes.
• Water conservation statement is not signed

Mistakes in Calcs
• Zone 1 is supposed to be moderate, not low (Solanum makes it moderate)
• Zone 4 is supposed to be low, not SLA (Pomegranates need to be on their own zone to qualify as SLA)
• Zone 6 is supposed to be high, not moderate (Dicksonia makes it high)
• Zone 5 is supposed to be moderate, not low
• Zone 7 is supposed to be spray
Training Lessons Learned

• Include in-class exercises to reinforce concepts
• Conduct water budget calculation exercise twice
• Make exercises real-world but achievable in limited time (review vs. design)
• To stay on schedule, roll questions to end-of-class forum
• Originally included vendors area
• Have developed our own resources – workshops provide good testing ground
Next WELO Workshop

November 30, 2017
• In-person in SF
• Simulcast

PG&E and StopWaste present:

WELO and the New Normal for the California Landscape
San Francisco, CA • November 30, 2017

The updated California Model Water Efficient Landscape Ordinance (WELO) has been in effect throughout the state for over a year.

The new WELO:
• Affects all new permitted landscape construction over 500 square feet
• Is required by CALGreen
• Significantly reduces applied water allowances
• Requires compost on all projects

Join us for a free, one-day workshop on the new statewide WELO.

The workshop will be a combination of lecture and hands-on exercises, giving attendees a thorough understanding of what’s required by ordinance and how to comply with it. The workshop will be simulcast via the internet.

Location:
PG&E Pacific Energy Center
851 Howard Street
San Francisco, CA 94103
Date & Time:
Thursday, November 30, 2017
8:30am to 4:30pm

Speakers Include:
• Ron Alexander – Principal, R Alexander Associates, Inc.
• Jennifer de Graaf, RLA – Principal, de Graaf Design Associates
• Christine Hawkins – Specification Manager, Hunter Industries
• Lori Palmquist, CID, CIC, CLA, CLWM – Partner, WaterWorx

REGISTER TO ATTEND IN PERSON

REGISTER TO ATTEND VIA WEBINAR

This training is being developed through a partnership between PG&E and StopWaste and is free to the public.

CEU’s available: ASLA, AWWA, AIA, AICP/APA, Bay-Friendly, CLCA/NALP, IA
Discussion/Q&A

Kelly Schoonmaker: KSchoonmaker@stopwaste.org

Ryan Stroupe: r2s2@pge.com