

# Drip Irrigation

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# Drought emergency declared January 17<sup>th</sup>, 2014



20% voluntary cutback in water use requested



# April 2015

## 25% Mandatory Cutback





# How we **can** influence water use

- Plant selection, and how they are grouped in irrigation zones
- Efficiency of irrigation components
- Proper scheduling



# How we **can** influence water use

- **Plant selection, and how they are grouped in irrigation zones**
- Efficiency of irrigation components
- Proper scheduling



# Learn from nature





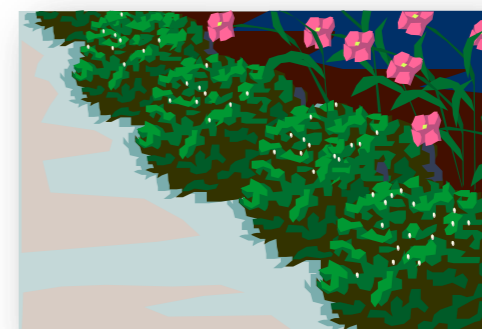
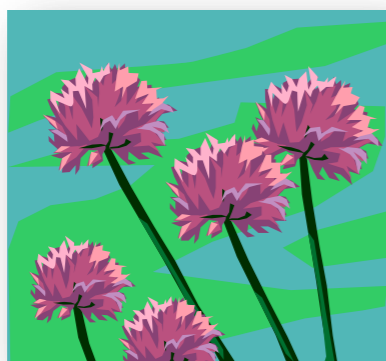
# Hand watering **is** an option



Hand watering is said to be an efficient way of watering landscapes.

How can you know how much water plants need?

# How Much Water Do My Plants Need?





# [www.WaterWonk.us/how-much](http://www.WaterWonk.us/how-much)

## How much water?

What California city?

Roseville

What time frame?

Weekly in May

What plant?

High water in sun .9

How wide is the plant?

500 sq. ft.

Calculate

How much water:

Any incorporated CA city

Any time frame

Any plant material

Various sizes of plants and  
planted areas

**Water needs of plants**



**How do I know**



**High**



**Moderate**



**Low**



**Very Low**





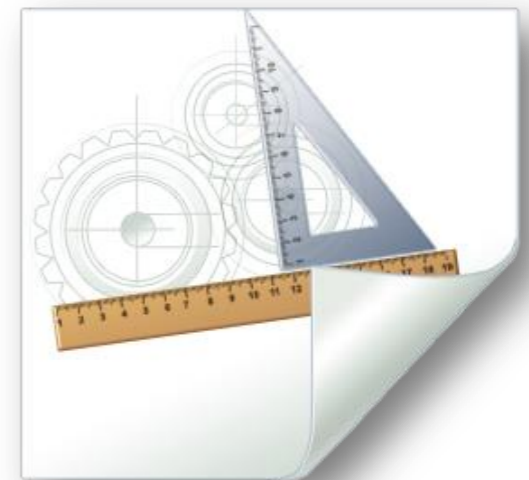
# How do we know how much water?



Weather



Plants



Area

$$\text{Weather} \times \text{Plants} \times \text{Area} \times .62 = \text{gallons per period}$$

# [www.WaterWonk.us](http://www.WaterWonk.us)

Lori

[Choose city](#) ▶ [Plant search](#) ▶ [My Plant List: 1](#)

[Logout](#) | [More](#)

## Plant Search

American Canyon, CA

WUCOLS Region 1

[Choose new city](#)

Botanical name begins with

Find

Common name begins with

Find

### Plant Type

- Ba** Bamboo
- Bu** Bulb
- G** Grass
- Gc** Groundcover
- P** Perennial
- Pm** Palm
- S** Shrub
- Su** Succulent
- T** Tree
- V** Vine

### Water use

- Very Low
- Low
- Moderate
- High
- Unknown
- Not appropriate for this region

Find


California Native

[Go to WUCOLS list for all 6 regions](#)

All plants for this region

Find

[▲ New Search](#)

 [California Native](#)




[Go to list](#)

## Search Results

34 plants:

Type-Grass

Water use-Low

Type	Botanical Name	Common Name	Water Use	Flickr Photos	Select for My List
G	Aristida purpurea 	purple three-awn	Low	<a href="#">See it</a>	<input type="checkbox"/> <a href="#">Add</a>
G	Arundinaria gigantea	cane reed	Low	<a href="#">See it</a>	<input type="checkbox"/>
G	Bothriochloa barbinodis 	cane bluestem	Low	<a href="#">See it</a>	<input type="checkbox"/>
G	Bouteloua gracilis and cvs. 	blue grama	Low	<a href="#">See it</a>	<input type="checkbox"/>



# Flickr Plant Search at WaterWonk.us

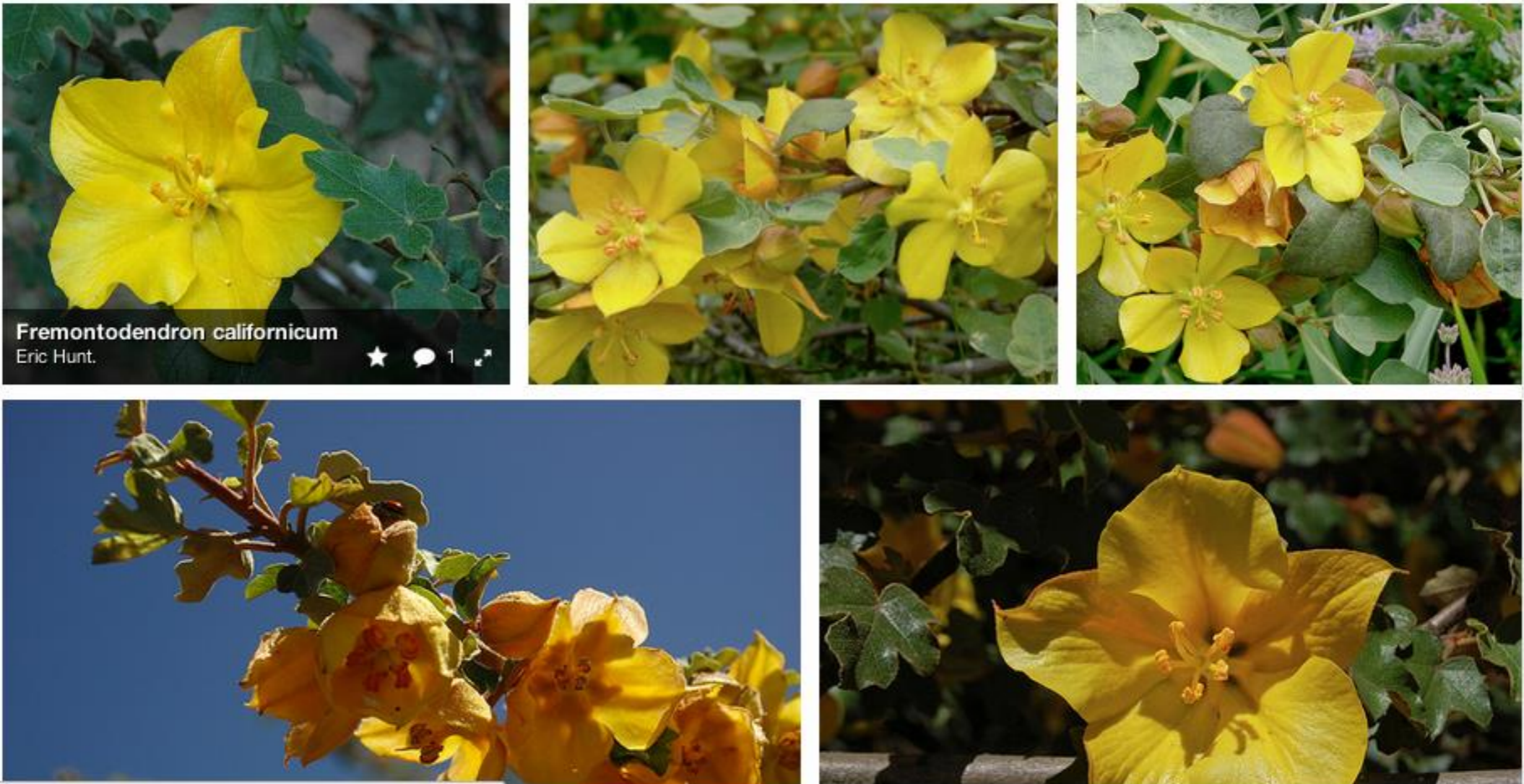
Y Mail News Sports Finance Weather Games Groups Answers Flickr More ▾

flickr You Contacts Communities Explore Upload

Fremontodendron californicum 🔍

Sort: Relevant ▾ [Advance](#)

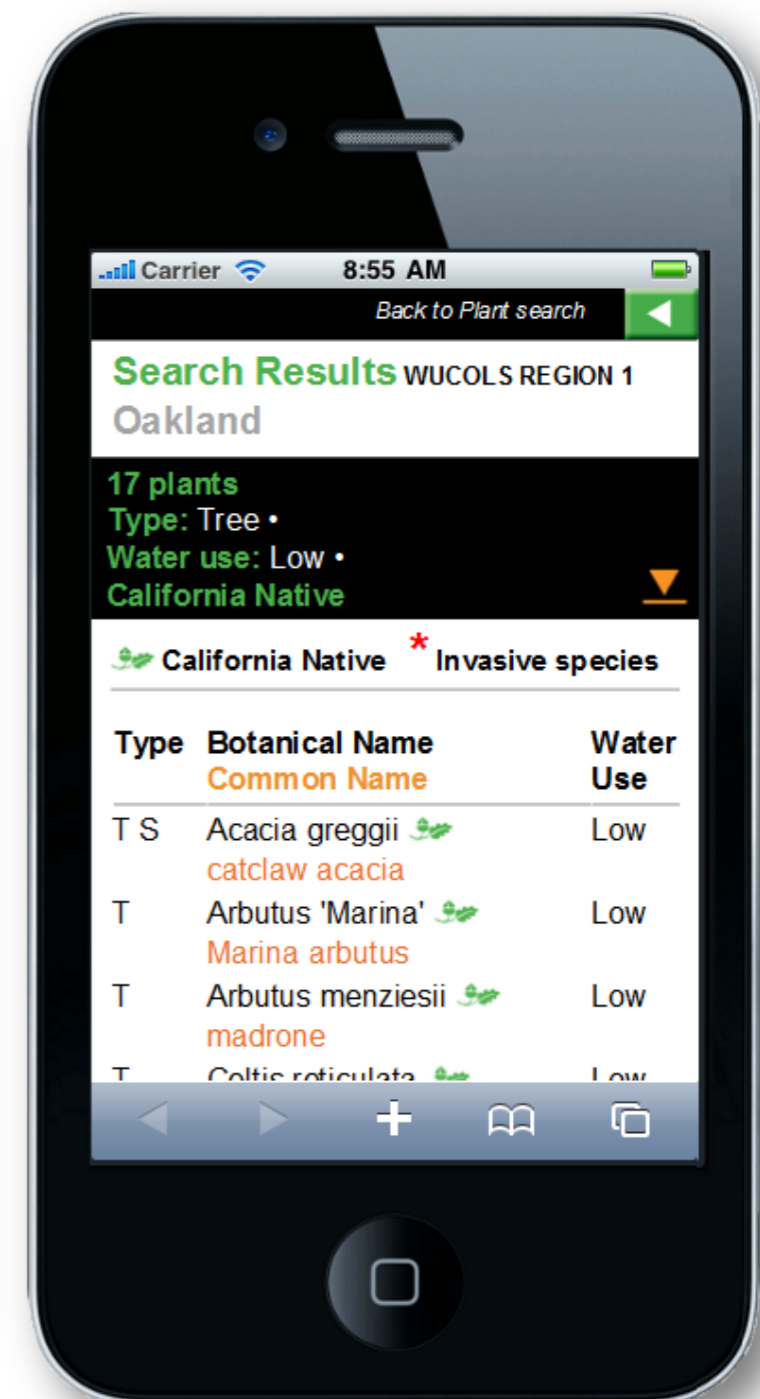
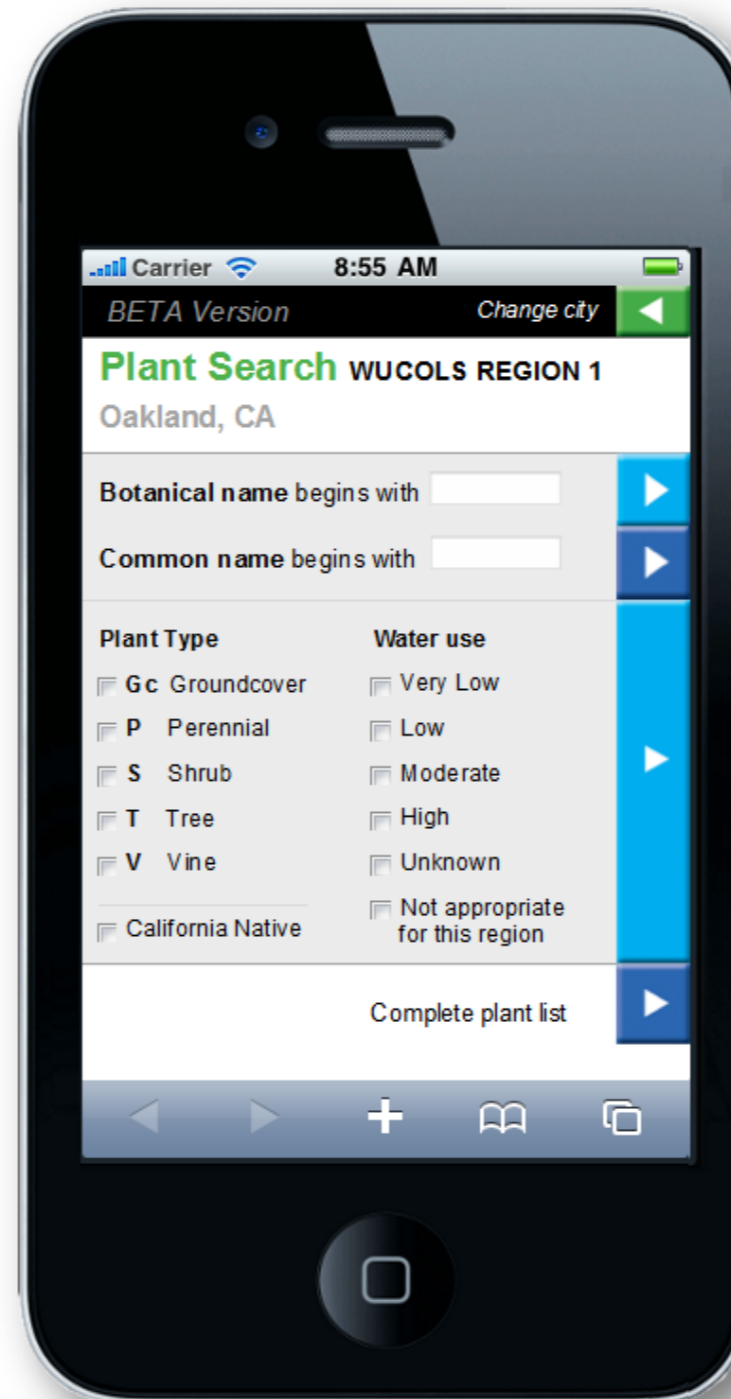
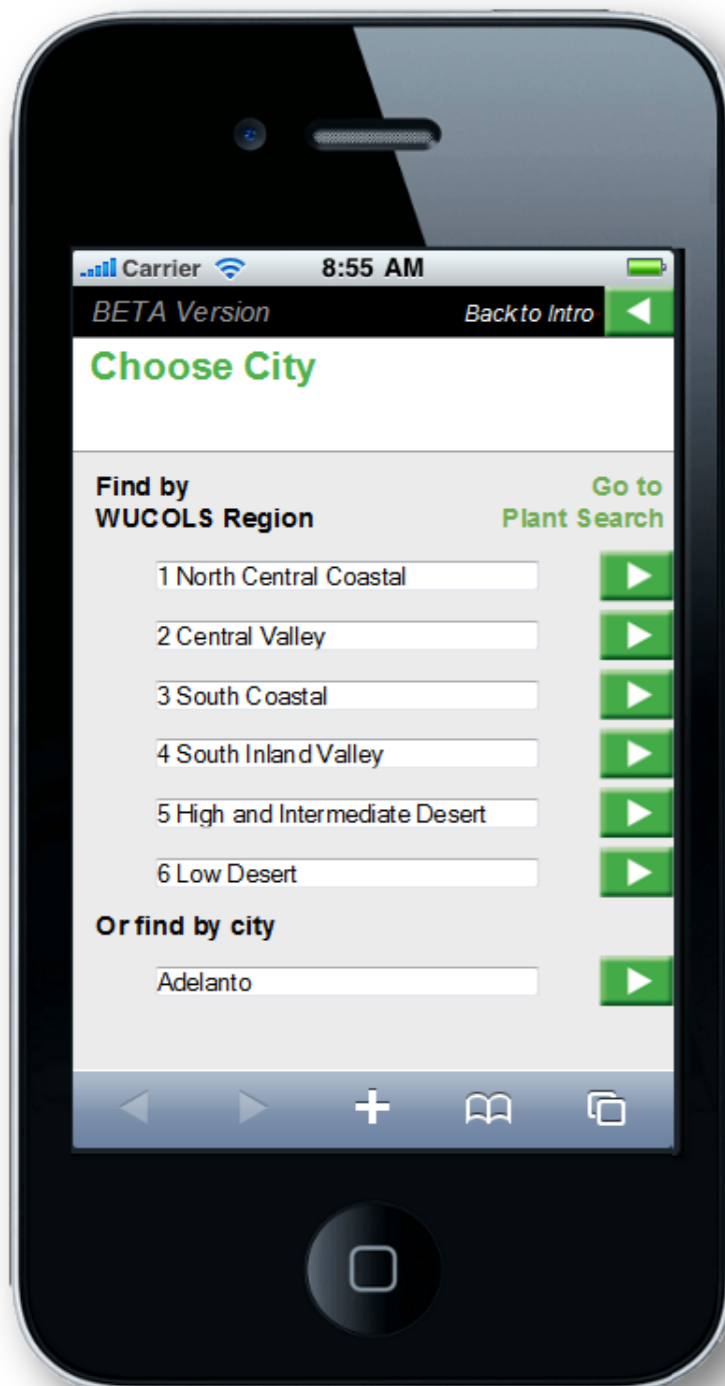
Showing Creative Commons-licensed content ×



[www.flickr.com/photos/ericinsf/16678463/](http://www.flickr.com/photos/ericinsf/16678463/)

# WaterWonk phone app

## m.WaterWonk.us





# What about trees in turf?



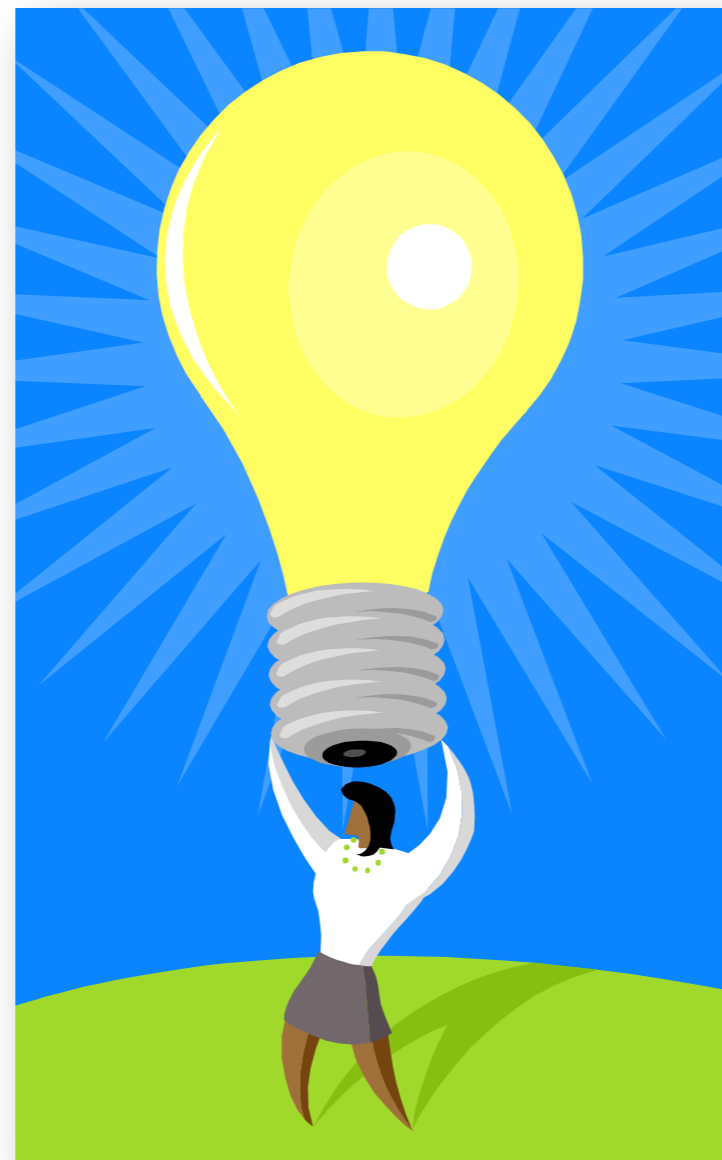


# Clear grass from beneath tree's canopy





# Best Watering Strategies for the Landscape







# How we **can** influence water use

- Plant selection, and how they are grouped in irrigation zones
- **Efficiency of irrigation components**
- Proper scheduling

# Efficient sprinkler nozzles



20% higher  
efficiency!



# Inefficient fixed spray sprinklers





# Efficient solution: rotary nozzles





# Efficient nozzles for lawn sprinklers





# Benefits and drawbacks of drip

Discussion:

Benefits of drip

Drawbacks of drip





# Sprinkler-to-drip conversions

## Spray-to-Drip Retrofit Kits

### Convert Any Spray Zone to a Drip Zone!

*The easiest and fastest way to convert a conventional spray zone to a low-volume irrigation zone.*

#### 1800-Retro

*1800 Series Spray Body that contains a filter, pressure regulator, and 1/2" male threaded outlet*



#### Installation

- Simply remove the top of any 1800 and remove the internal assembly (On the 1806 and 1812 leave the spring in the body)
- Remove the internal assembly of the retro kit and drop into the existing body
- Tighten the cap
- Use Easy Fit Fittings or a female adapter to connect to drip tubing or other 1/2" FPT devices

#### Features

- Can be installed above or below grade
- Provides 30 psi (2,1 bar) pressure regulation and 200-mesh (75 micron) screen
- Flow rate 0.50 to 4.00 GPM (1.9 to 15.1 l/m)



# Sprinkler-to-drip conversions

## RBY Pressure-Regulating Filter

*Unique, compact unit that combines filtration and pressure regulation in one compact piece for protection of downstream components*



PRF-100-RBY

### Installation

- Simply connect the RBY Pressure-Regulating Filter into the water line
- Use Easy Fit Fittings or a female adapter to connect to drip tubing
- Install a valve or emitter box over the filter for easy access during cleaning

### Features

- Comes in 3/4" MPT (model PRF-075-RBY, not shown) or 1" versions (model PRF-100-RBY)
- 3/4" MPT (PRF-075-RBY) regulates pressure at 30 psi (2,1 bar) and flows 0.20 to 5.0 GPM (0.8 to 18.9 l/m)
- 1" MPT (PRF-100-RBY) regulates pressure at 40 psi (2,8 bar) and flows 3.0 to 15.0 GPM (11.4 to 56.8 l/m)
- Can be installed above or below grade
- Robust body and cap are made of glass-filled polypropylene and provide 150 psi (10,3 bar) pressure rating
- 200 mesh stainless steel filter (75 micron)





# Two types of drip



Emitters placed at the plants – **Point Source**  
**For sparse plantings**



Built-in emitters in a grid formation – **Line Source**  
**For dense plantings**



# Drip for dense plantings





# Drip grid for dense plantings





# Drip for sparse plantings



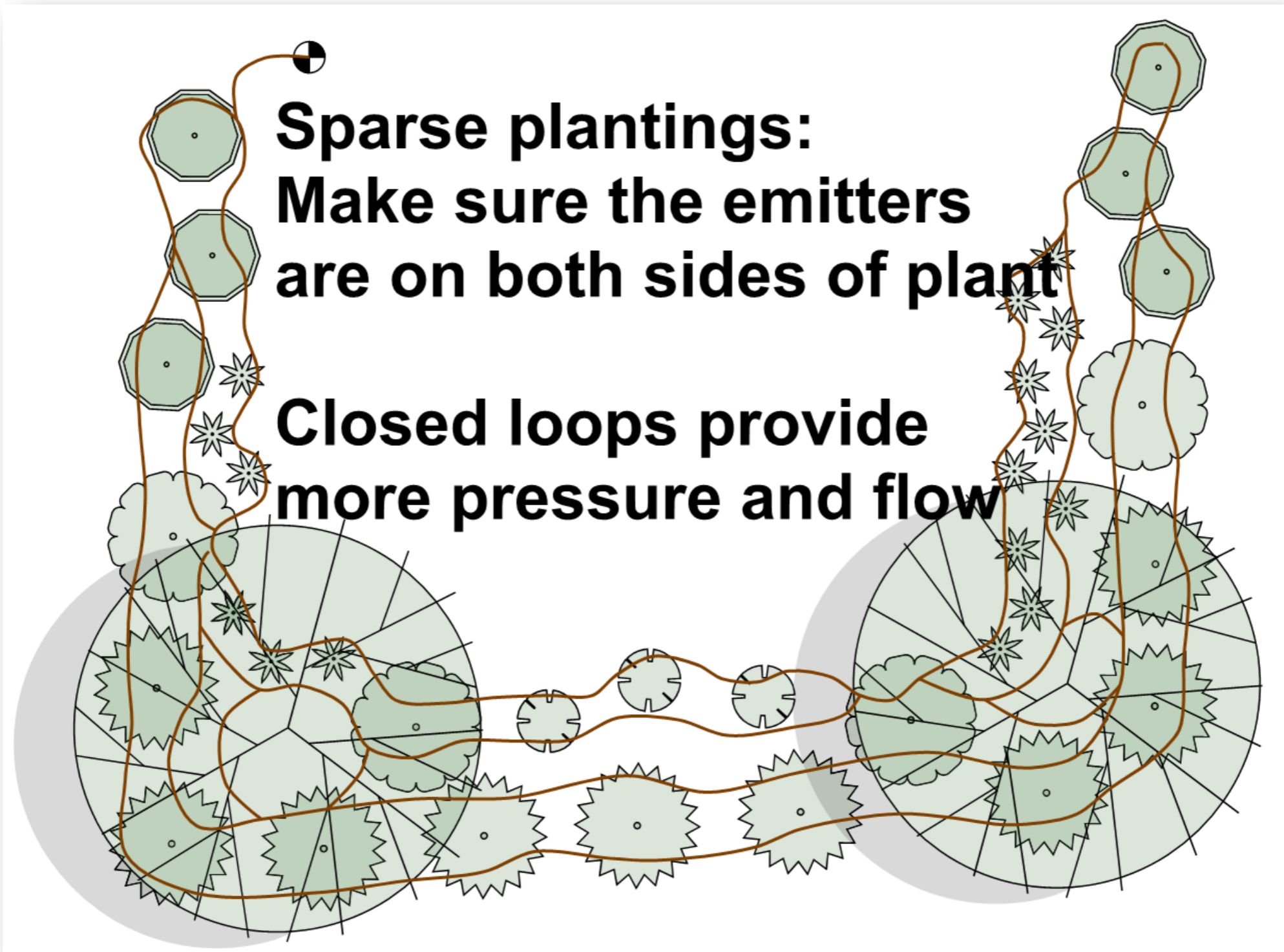


# Example of sparse plantings





# Drip for sparse plantings



# Do not mix these on same zone

Microsprays



Drip emitters







# Drip guidelines

- Use .5 gph emitters in clay or clay loam
- 240 gph capacity per valve zone (4 gpm)
- 480 emitters capacity per valve zone
  
- Use plant sizes to determine number of emitters, and add more if plants appear to need more water



# Rule of thumb: Number of emitters

- Plants 1 - 2 feet in diameter: 2 emitters
- Plants 3 – 4 feet in diameter: 4 emitters
- Plants 5 – 6 feet in diameter: 8 emitters







## Remember:

- Make sure to install pressure reg. and filter
- Make sure to flush system regularly
- Make sure the application rate of the emitters matches infiltration rate of soil
- Use tubing with check valves on slopes to avoid runoff



# Mulch for soil water retention



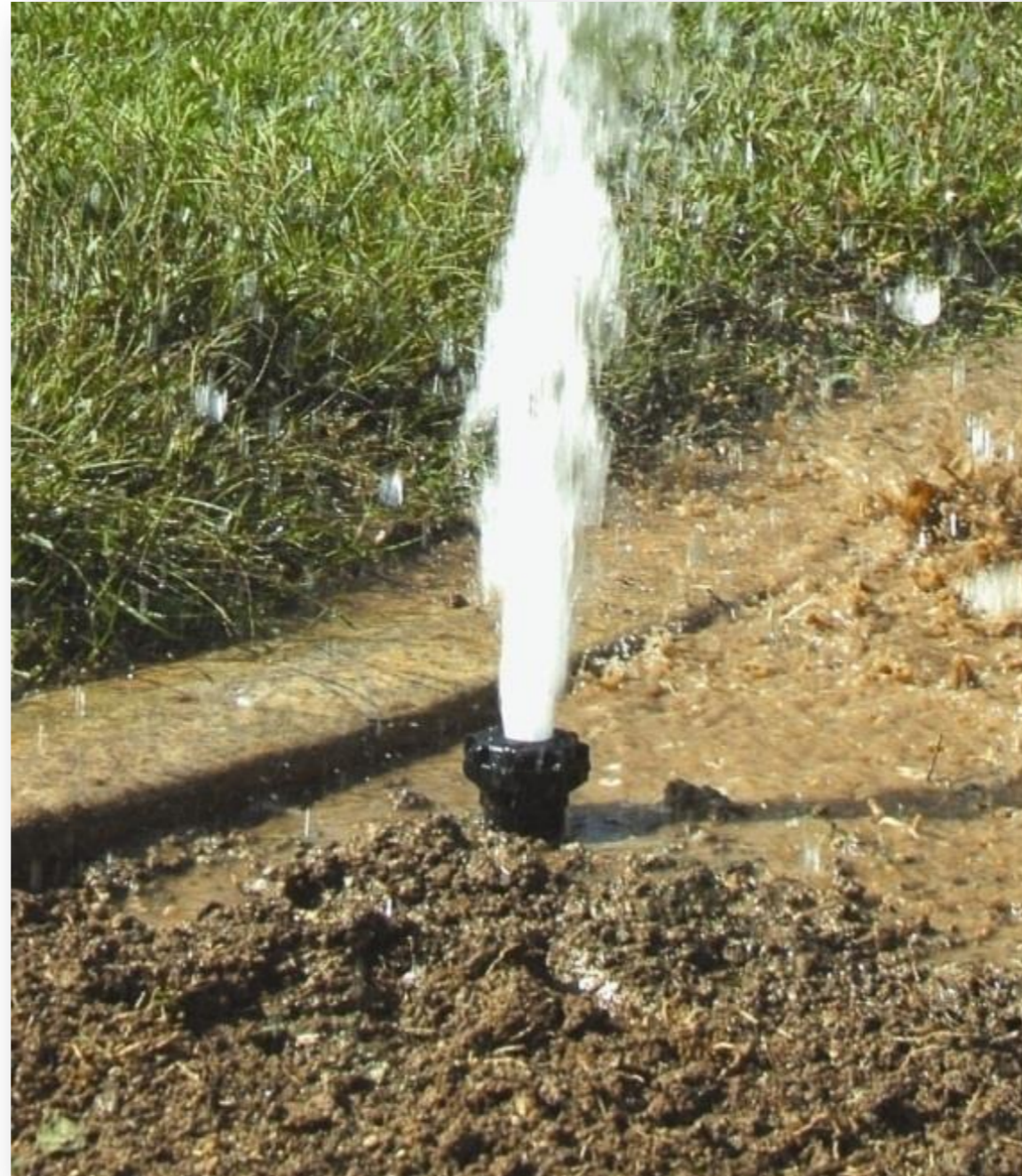


2 – 3 inches of mulch





Check your irrigation system often!







# How we **can** influence water use

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- **Proper scheduling**



# How Long and How Often to Water the Landscape?



# Smart controllers can lower water use significantly



Hunter Solar Sync






# Free help with timer scheduling



**Front timer**  
Hunter PRO-C Edit

[Program my controller](#)

FRONT LAWN	PERENNIAL BED	BACKYARD DRIP
Water <b>34 min, 4x per week</b> applied in <b>1 cycle of 34 min</b>	Water <b>148 min, 1x per week</b> applied in <b>2 cycles of 74 min</b>	Water <b>87 min, 2x per week</b> applied in <b>1 cycle of 87 min</b>
		
[+]	[+]	[+]

[www.ETWaterGnome.com](http://www.ETWaterGnome.com)

# Help with timer scheduling (reasonably priced)

**Step 1**  
Select your landscape's unique features

Plant Type	Sprinkler Type	Soil Type	Sun Exposure	Zip Code
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**Plant Type**

Grass Normal Water	Grass Less Water	Shrubs and Trees
Drought Tolerant	Annual Flowers	Newly Planted

**Step 2**  
Sprinkler Times generates customized monthly schedules

Program A	Program B	Program C	Program D
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**RUN TIMES**

# of Watering Days per Week:	3
# of Start Times per Day:	2
Minutes between Start Times:	60

Zone	JUNE	Minutes
Zone 1		6
Zone 3		3
Zone 4		10
Zone 4		12
Zone 5		5

**Step 3**  
Print your schedule from a computer or access it in the field on your smartphone or iPad!

Access your account on all platforms!

[www.SprinklerTimes.com](http://www.SprinklerTimes.com)



# Simple method for cutting back 20%



1. Turn down your run times by 10%
2. Observe for a couple of weeks
3. Turn down your run times by 10%



# When does the lawn need water?





You can cut back on lawn  
water 30% – 40%

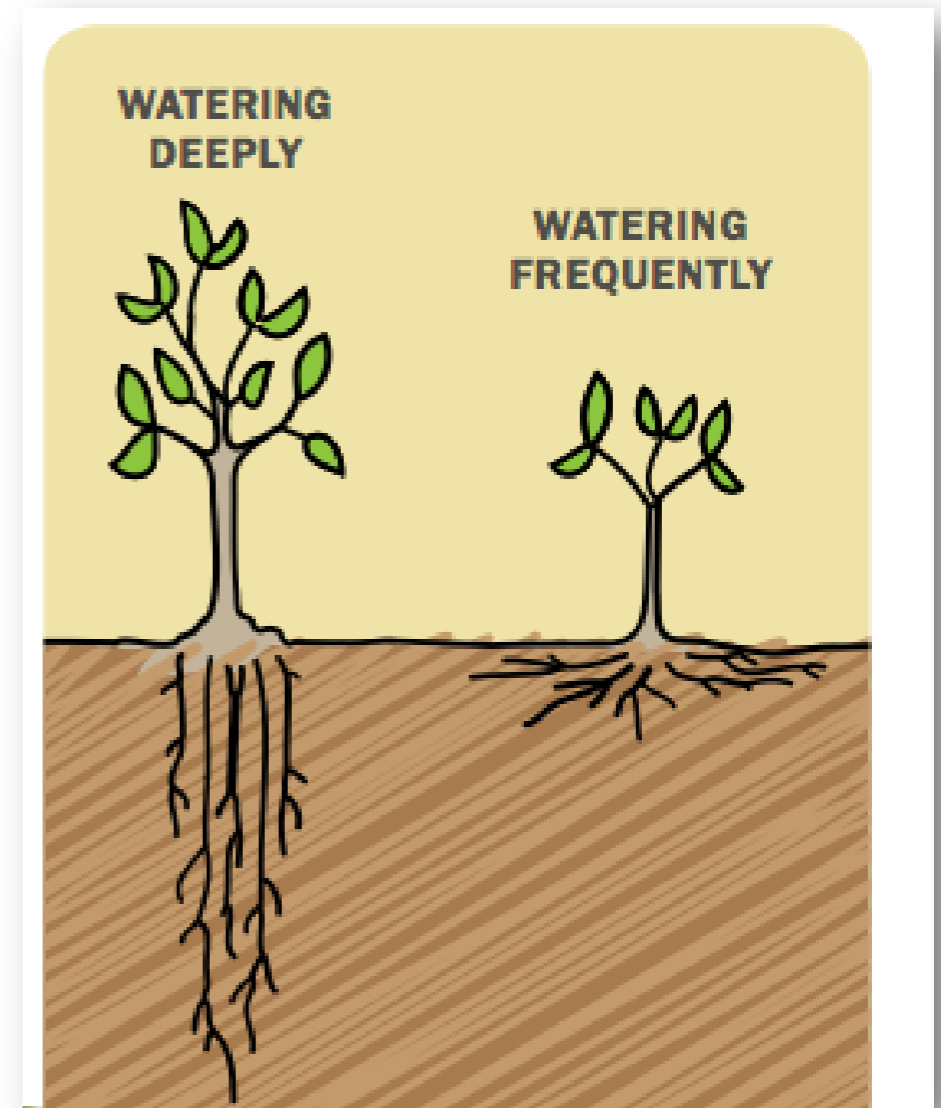


# Don't let the lawn go this far

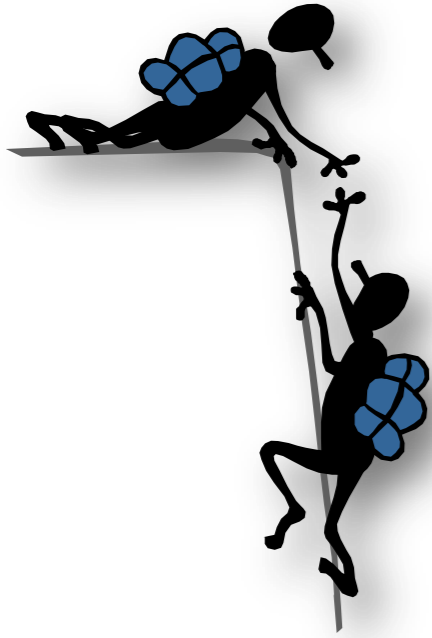




# Water only when soil is dry enough



Courtesy of  
SFPUC



# Who can assist you?

- Irrigation stores and manufacturers
- Urban Farmer Store  
[www.UrbanFarmerStore.com](http://www.UrbanFarmerStore.com)
- Hunter Industries [www.HunterIndustries.com](http://www.HunterIndustries.com)
- Rain Bird Corp. [www.RainBird.com](http://www.RainBird.com)



# DIY - friendly irrigation store

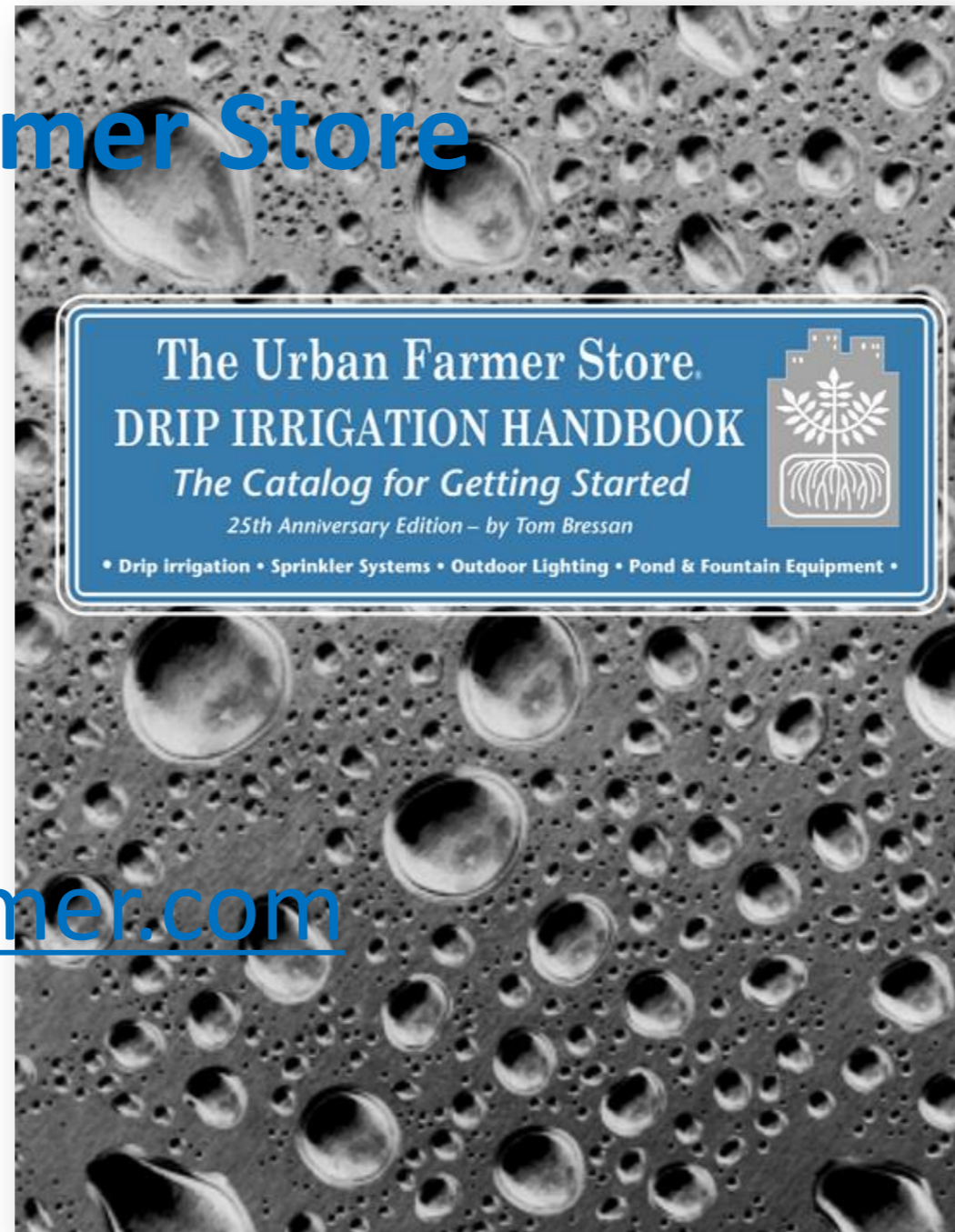
## The Urban Farmer Store

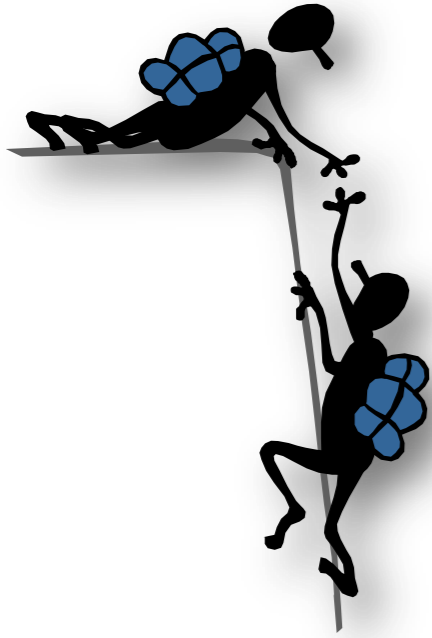
San Francisco

Mill Valley

Richmond

[www.UrbanFarmer.com](http://www.UrbanFarmer.com)





# Who can assist you?

- Landscape Designers  
[www.apld.org/FindADesigner.aspx](http://www.apld.org/FindADesigner.aspx)
- CLCA Water Managers [www.CLCA.org](http://www.CLCA.org)
- QWEL qualified professionals [www.qwel.net](http://www.qwel.net)
- Master Gardeners  
[www.MasterGardeners.org](http://www.MasterGardeners.org)
- Your water company



# Today's take-away message

Using water wisely is not a compromise... it's an upgrade.

Keep asking yourself what you have done, and what more you can do to be the solution for water waste in the landscape.



# That's all, folks!



<http://go.funpic.hu>