

Step 2: Determine Irrigation field size

Soil Type: sandy loam

Maximum absorption capacity of soil 2.5 gal/ft²/day
(from Table 1602.10)

Minimum Irrigation Field Size = (54.3 gal/day / 2.5 gallon/ ft² /day) = 21.7 ft²

Step 3: Estimate water budget (gal/month and gal/day)

Monthly Peak ETo for CIMIS Zone: 5 6.51 "/month
(From CIMIS ETo Table in handouts)

Hydrozone : Plant Type : Plant factor (PF)

Hydrozone 1: Fruit Trees: 0.5

Hydrozone 2: Vines : 0.8

Area of Hydrozones

Hydrozone 1 = ((3.14 x 6²) x 2) + (3.14 x 8²) + (3.14 x 7²) = 580.9 ft²

Hydrozone 2 = (2' x 10') x 4 = 80 ft²

When Area of Hydrozones = ((3.14 x r²) x number of plants)

Total Area of all Hydrozones: 660.9 ft²

Water Budget of Hydrozones

Hydrozone 1 Water Budget = (0.62 x 580.9 ft² x 6.51"/month x 0.5) = 1172.3 gal/month

Hydrozone 2 Water Budget = (0.62 x 80 ft² x 6.51"/month x 0.8) = 258.3 gal/month

When the Water Budget = 0.62 x Area x ETo x Pf

- 0.62 (constant that converts inches to gallons)
- Area = 3.14 x r² or total area of hydrozones
- ETo = Use ETo (inches per month) from above
- Pf = Plant Factor

Total Water Budget: 1430.6 gal/month 46.7 gal/day (assuming 30 days)

Step 4: Cross check and adjust

Total area of hydrozone canopies (step 3) **660.9 ft² (=) or (>) 21.7 ft² minimum irrigation field (step 2)?**

(If No, expand hydrozone canopy/irrigation field area to meet code requirement)

Is the total Water Budget for hydrozone canopies (step 3) 47.7 gal/day (**<**) (=) (>) 54.3 gal/day **the** actual graywater output (step 1)?

If the Water Budget is more than 20% > graywater output, plants may experience drought stress.

Would you recommend installing a system that produces this much graywater for a client with a similar water budget? Please state why or why not.

Yes. Although there is more water produced than needed it will be absorbed by the extra irrigation field.

Activity: Determine Your Irrigation Field Size Scenario and Water Budget

of Occupants _____

of Bedrooms _____

Location (Zone) _____

Washing machine _____ gallons/load.

Your family averages _____ # of loads/week.

Determine the Irrigation Field Size.

List existing plants that are currently being irrigated. The backyard orchard includes:

1) _____ mature semi-dwarf _____ trees (_____ ' radius circular dripline), Plant Factor = _____

2) _____

3) _____

4) _____

5) _____

The soil is _____ (ie. sandy loam)

Step 1: Determine the output of graywater fixtures (find code estimate and actual data)

Actual Data	CPC estimates				
Number of Occupants in Household: _____	Number of Occupants in Household: _____ (According to Ch. 16A, 1606A, first bedroom = 2 people, every additional bedroom = 1 person)				
Laundry:	Laundry:				
<table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">Front loader (10-20 GPL)</td> <td style="width: 50%;">Top Loader</td> </tr> <tr> <td>(30-50 GPL)</td> <td></td> </tr> </table>	Front loader (10-20 GPL)	Top Loader	(30-50 GPL)		
Front loader (10-20 GPL)	Top Loader				
(30-50 GPL)					
Laundry _____ GPL	CPC estimates: 15 GPD/occupant				
Loads per week _____	(# of occupants x 15 GPD) _____ total				
(GPL x loads per week) / 7 _____ GPD	GPD				
(GPL x loads per week) x 4 _____ GPM	(total GPD) x 31 _____ GPM				
Shower:	Shower:				
Shower _____ gallons/minute (fixture flow rate)	CPC estimates: 25 GPD/occupant				
Shower _____ minutes/day/person (average)	(# of occupants x 25 GPD) _____ total				
(gallons/minute x minutes/day/person x number of occupants) _____ GPD	GPD				
(gallons/minute x minutes/day/person x number of occupants) x 31 days _____ GPM	(total GPD) x 31 _____ GPM				

GPL = Gallons per load; GPD = Gallons per day; GPM = Gallons per month

For the following calculations use the actual data given above.

Total (Laundry + Shower)

_total GPD used

_total GPM used

Step 2: Determine Irrigation field size

Soil Type:

Maximum absorption capacity of soil gal/ft²/day
(from Table 1602.10 in CA Plumbing Code)

Irrigation Field Size = (___ gal/day / ___ gallon/ ft²/day) = ___ ft²

Step 3: Estimate water budget (gal/month and gal/day)

Monthly Peak ETo for CIMIS Zone: ___ "/month

Hydrozone : Plant Type: Crop Coefficient or Plant factor (Pf)

Hydrozone 1: :

Hydrozone 2: :

Area of Hydrozone canopies (Square Feet)

Hydrozone 1 = ((3.14 x ___²) x ___) + (3.14 x ___²) + (3.14 x ___²) = ___ ft²

Hydrozone 2 = (___' x ___') x ___ = ___ft²

When Area of Hydrozones = ((3.14 x r²) x number of plants)

Total Area of all Hydrozone canopies: ___ ft²

Hydrozone 1 Water Budget = (0.62 x ___ x ___ x ___) = ___gal/month

Hydrozone 2 Water Budget = (0.62 x ___ x ___ x ___) = ___gal/month

When the Water Budget = 0.62 x Area x ETo x Pf

- 0.62 (constant that converts inches to gallons)
- Area = Hydrozone canopy area square footage
- ETo = Use Peak ETo (inches per month) from above
- Pf = Plant Factor

Total Water Budget: ___ gal/month ___ gal/day

Step 4: Cross check and adjust

Total area of hydrozone canopies (step 3) _____ (=) or (>) _____ minimum irrigation field (step 2)? (If No, expand hydrozone canopy/irrigation field area to meet code requirement)

Is the total Water Budget for hydrozone canopies (step 3) _____ (<) (=) (>) _____ the actual graywater output (step 1)?

If the Water Budget is more than 20% > graywater output, plants may experience drought stress.