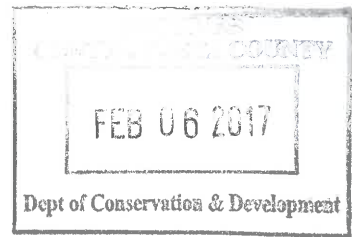


CPDS-2096



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Date: February, 2017

CREEKSIDE MEMORIAL PARK – Water Efficient Plan

PROPOSED LANDSCAPE IRRIGATION SYSTEM

Irrigation System Narrative:

- A. The irrigation system will be designed with the latest technology in water conservation and efficiency. The system will consist of the following types of irrigation methods and equipment complying with the State Water Ordinance AB1881. Shrubs and Trees will be irrigated with point source bubblers and the bioretention and bio swales will be irrigated with high efficiency dripline. The system will be controlled by a SMART irrigation controller that utilizes weather station data and will automatically adjust the run times of the valves based on daily weather conditions. Utilizing this type of weather based system will help the landscape manager save 25% more water than with a conventional controller.

Irrigation System Water Use Calculations:

- A. The irrigation system water use calculations are done using the Maximum Applied Water Use (MAWA) and the Estimated Total Water Use (ETWU) methods. The results were as follows; MAWA= 643,985; ETWU = 472,889 gallons. This is based on the yearly evapotranspiration rate in Danville. Note, the water use calculation includes the refill water for the water features.

Creekside Memorial Park - Water Efficient Plan

2/2/17

- 1. Hydrozone Table
- 2. Maximum Applied Water Use
- 3. Estimated Total Water Use

1. HYDROZONE CALCULATION TABLE

ETO= 39.95

YEARLY ETo minus NOV, DEC, JAN, FEB, HALF OF MARCH

HYDROZONE	WATER USE TYPE	PLANT FACTOR (PF)	IRRIGATION METHOD	EFFICIENCY (IE)	ETAF (PF/IE)	LANDSCAPE AREA (SQ. FT)	ETAF x AREA	ETWU	PERCENTAGE OF LANDSCAPE
Regular Landscape Areas									
GROUND COVERS	LOW	0.2	DRIP	0.81	0.25	3,275	809	20029	5.7%
SHRUBS	LOW	0.2	DRIP	0.81	0.25	9,800	2420	59935	17.0%
TREES	LOW	0.2	BUBBLER	0.81	0.25	7,875	1944	48162	13.6%
TREES (WILLOWS)	MOD	0.4	BUBBLER	0.81	0.49	200	99	2446	0.3%
BIO RETENTION	LOW	0.2	DRIP	0.81	0.25	21,894	5406	133899	37.9%
BIO 4' SWALES	MOD	0.4	DRIP	0.81	0.49	12,483	6164	152687	21.6%
WATER FEATURES	HIGH	1	-	1	1.00	2,250	2250	55730	3.9%
						Totals	57,777	19082	100%
Special Landscape Areas									
					1		0		0%
					1		0		0%
					1		0		0%
						Totals	0	0	0%
								ETWU Total	472,889
								Maximum Allowed Water Allowance (MAWA)	643,985

ETWU	Acre feet/yr	1.45
	Cubic feet/yr (CCF)	632.16

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RMA

FORMULAS USE IN THE WATER USE CALCULATIONS

2. Maximum Applied Water Allowance (MAWA) Gallons Per Year

$$\text{MAWA} = (\text{ETo})(0.62)[(\text{LA} * 0.45) + (0.55 * \text{SLA})]$$

ETo = Reference evapotranspiration

0.45= ET adjustment factor (Non residential, 0.55 residential)

LA=Landscaped Area (square feet)

0.62 = Conversion factor (gallons per square foot per year)

3. ESTIMATED TOTAL WATER USE (ETWU) Gallons per year

$$\text{ETWU} = ((\text{ETO})(.62))\{[\text{ETAF}(\text{LA}/\text{IE})]$$

ETo = Reference evapotranspiration

PF = Plant factor for hydrozones

HA = Hydrozone area (square feet)

0.62 = Conversion factor (gallons per square foot per year)

IE = Irrigation efficiency (0.81) bubbler/drip

IE = Irrigation efficiency (0.75) spray