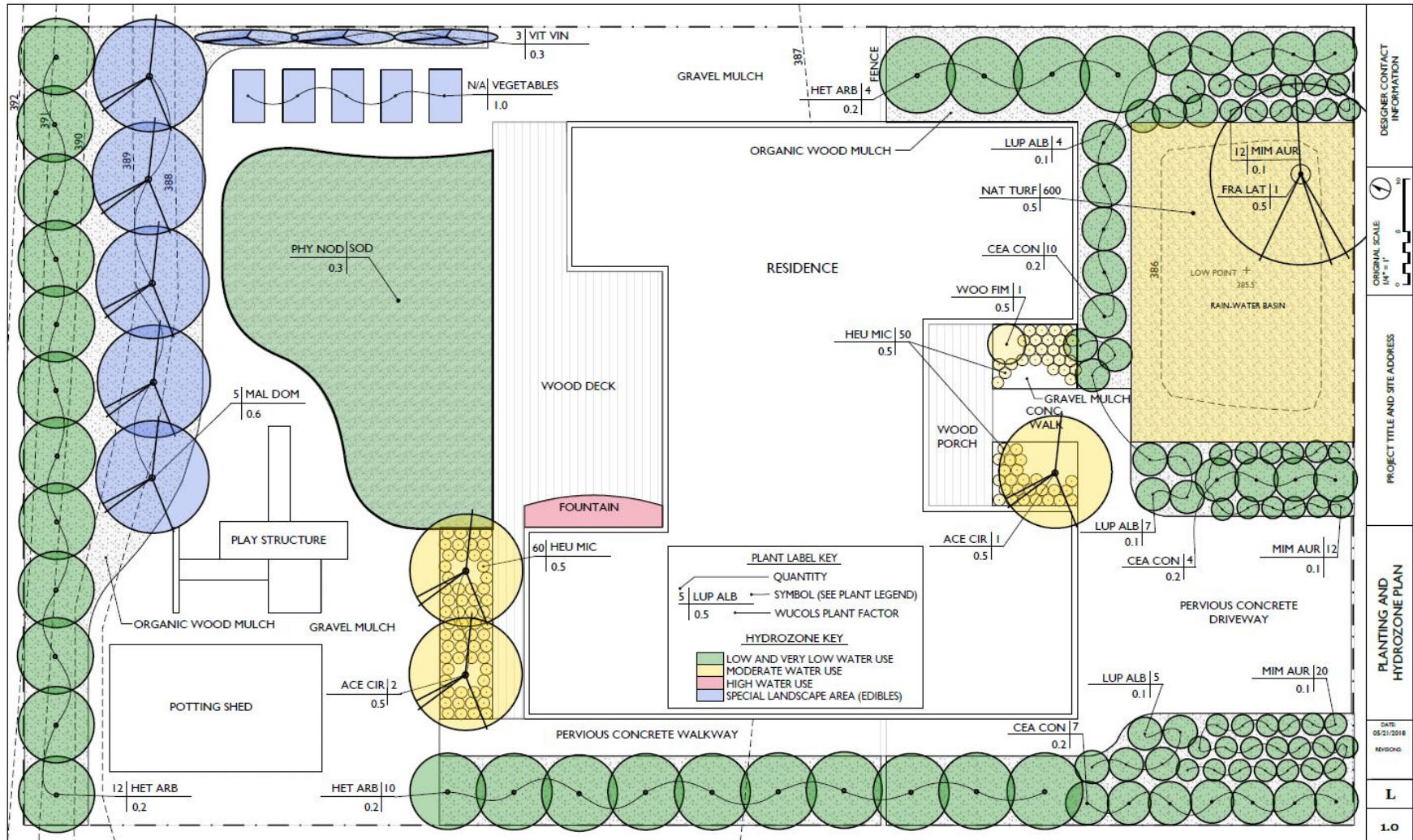


This presentation premiered at WaterSmart Innovations

watersmartinnovations.com



Are Prescriptive Landscape Ordinances Measuring up to Actual Water Savings?



East Bay Municipal Utility District Overview



EBMUD WATER SUPPLY



EBMUD Service Area



- 1.4 million customers
- 85% residential
- 160 mgd demand
 - 210 mgd pre-drought
- 35 communities
- Coastal/Inland microclimates
- 330 square miles
- 4,200 miles of pipe
- 400,000 meters

Prescriptive...

“Relating to the imposition or enforcement of a rule or method”



MWELO Regulation



- No overhead spray within 24 inch non-permeable surface
- No more than 25% of the total irrigated area shall be turf
- Grading plan – A comprehensive grading plan prepared by a civil engineer for other local agency permits satisfies this requirement
- Certification - All landscape irrigation audits shall be conducted by a local agency landscape irrigation auditor or a third party certified landscape auditor
- Soils Test...

Examples of Past Prescriptive Requirement

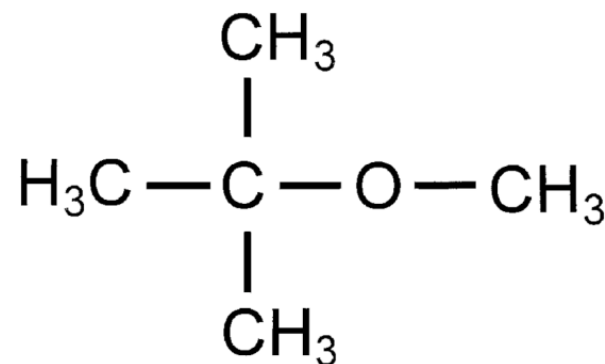
- Catalytic Converters



- MTBE (fuel additive in California)



- 1.6 toilets





- AB 325 (1993)
 - Deemed ineffective and unenforceable
- AB 1881 (2010)
 - Updated based on stakeholder task force
- EO B-29-15
 - Update due to drought pressures

MWELO Regulation



§ 492.8

BARCLAY'S CALIFORNIA CODE OF REGULATIONS

Title 23

(S) Check valves or anti-drain valves are required on all sprinkler heads where low point drainage could occur.

(T) 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.

(U) 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 material. These restrictions may be modified if:

1. the landscape area is adjacent to permeable surfacing and no runoff occurs; or

2. the adjacent non-permeable surfaces are designed and constructed to drain entirely to landscaping; or

3. 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)(1)(f). Prevention of overspray and runoff must be confirmed during the irrigation audit.

(V) Slopes greater than 25% shall not be irrigated with an irrigation system with a 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.

(2) Hydrozones

(A) Each valve shall irrigate a hydrozone with similar site, slope, sun exposure, soil conditions, and plant materials with similar water use.

(B) Sprinkler heads and other emission devices shall be selected based on what is appropriate for the plant type within that hydrozone.

(C) 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.

(D) Individual hydrozones that mix plants of moderate and low water use, or moderate and high water use, may be allowed if:

1. plant factor calculation is based on the proportions of the respective plant water uses and their plant factor; or

2. the plant factor of the higher water using plant is used for calculations.

(E) Individual hydrozones that mix high and low water use plants shall not be permitted.

(F) On the landscape design plan and irrigation design plan, hydrozone areas shall be designated by number, letter, or other designation. On the irrigation design plan, designate the areas irrigated by each valve, and assign a number to each valve. Use this valve number in the Hydrozone Information Table (see Appendix B Section A). This table can also assist with the irrigation audit and programming the controller.

(b) The irrigation design plan, at a minimum, shall contain:

- (1) location and size of separate water meters for landscape;
- (2) location, type and size of all components of the irrigation system, including controllers, main and lateral lines, valves, sprinkler heads, moisture sensing devices, rain switches, quick couplers, pressure regulators, and backflow prevention devices;
- (3) static water pressure at the point of connection to the public water supply;
- (4) flow rate (gallons per minute), application rate (inches per hour), and design operating pressure (pressure per square inch) for each station;
- (5) recycled water irrigation systems as specified in Section 492.14;
- (6) the following statement: "I have complied with the criteria of the ordinance and applied them accordingly for the efficient use of water in the irrigation design plan"; and
- (7) the signature of a licensed landscape architect, certified irrigation designer, licensed landscape contractor, or any other person authorized

to design an irrigation system. (See Sections 5500.1, 5615, 5641, 5641.1, 5641.2, 5641.3, 5641.4, 5641.5, 5641.6, 6701, 7027.5 of the Business and Professions Code, Section 832.27 of Title 16 of the California Code of Regulations, and Section 6721 of the Food and Agricultural Code.)

NOTE: Authority cited: Section 65595, Government Code; and sections 11 and 30, Governor's Exec. Order No. B-29-15 (April 1, 2015). Reference: Section 65596, Government Code; and section 11, Governor's Exec. Order No. B-29-15 (April 1, 2015).

HISTORY

1. New section filed 9-10-2009; operative 9-10-2009 pursuant to Government Code section 11343.4 (Register 2009, No. 37).

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§ 492.8. Grading Design Plan.

(a) For the efficient use of water, grading of a project site shall be designed to minimize soil erosion, runoff, and water waste. A grading plan shall be submitted as part of the Landscape Documentation Package. A comprehensive grading plan prepared by a civil engineer for other local agency permits satisfies this requirement.

(1) The project applicant shall submit a landscape grading plan that indicates finished configurations and elevations of the landscape area including:

- (A) height of graded slopes;
 - (B) drainage patterns;
 - (C) pad elevations;
 - (D) finish grade; and
 - (E) stormwater retention improvements, if applicable.
- (2) To prevent excessive erosion and runoff, it is highly recommended that project applicants:

- (A) grade so that all irrigation and normal rainfall remains within property lines and does not drain on to non-permeable landscapes;
- (B) avoid disruption of natural drainage patterns and undisturbed soil; and
- (C) avoid soil compaction in landscape areas.

(3) The grading design plan shall contain the following statement: "I have complied with the criteria of the ordinance and applied them accordingly for the efficient use of water in the grading design plan" and shall bear the signature of a licensed professional as authorized by law.

NOTE: Authority cited: Section 65595, Government Code. Reference: Section 65596, Government Code.

HISTORY

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§ 492.9. Certificate of Completion.

(a) The Certificate of Completion (see Appendix C for a sample certificate) shall include the following six (6) elements:

- (1) project information sheet that contains:
 - (A) date;
 - (B) project name;
 - (C) project applicant name, telephone, and mailing address;
 - (D) project address and location; and
 - (E) property owner name, telephone, and mailing address;
- (2) certification by either the signer of the landscape design plan, the signer of the irrigation design plan, or the licensed landscape contractor that the landscape project has been installed per the approved Landscape Documentation Package;

(A) where there have been significant changes made in the field during construction, these "as-built" or record drawings shall be included with the certification;

(B) A diagram of the irrigation plan showing hydrozones shall be kept with the irrigation controller for subsequent management purposes.

(3) irrigation scheduling parameters used to set the controller (see Section 492.10);

(4) landscape and irrigation maintenance schedule (see Section 492.11);

(5) irrigation audit report (see Section 492.12); and

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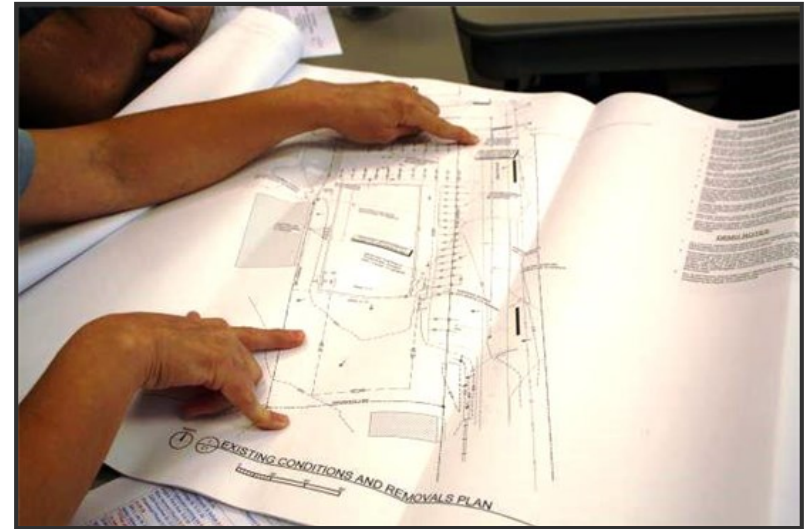
(4) landscape and irrigation maintenance schedule (see Section 492.11);

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EBMUD Plan review



- EBMUD regulations mirrors the State of California's WELO.
 - Works with EBMUD New Business Office to confirm Indoor and Outdoor efficiency standards are being met.
- Random site visits.
 - Primarily to identify the irrigated area of sites with multiple meters.

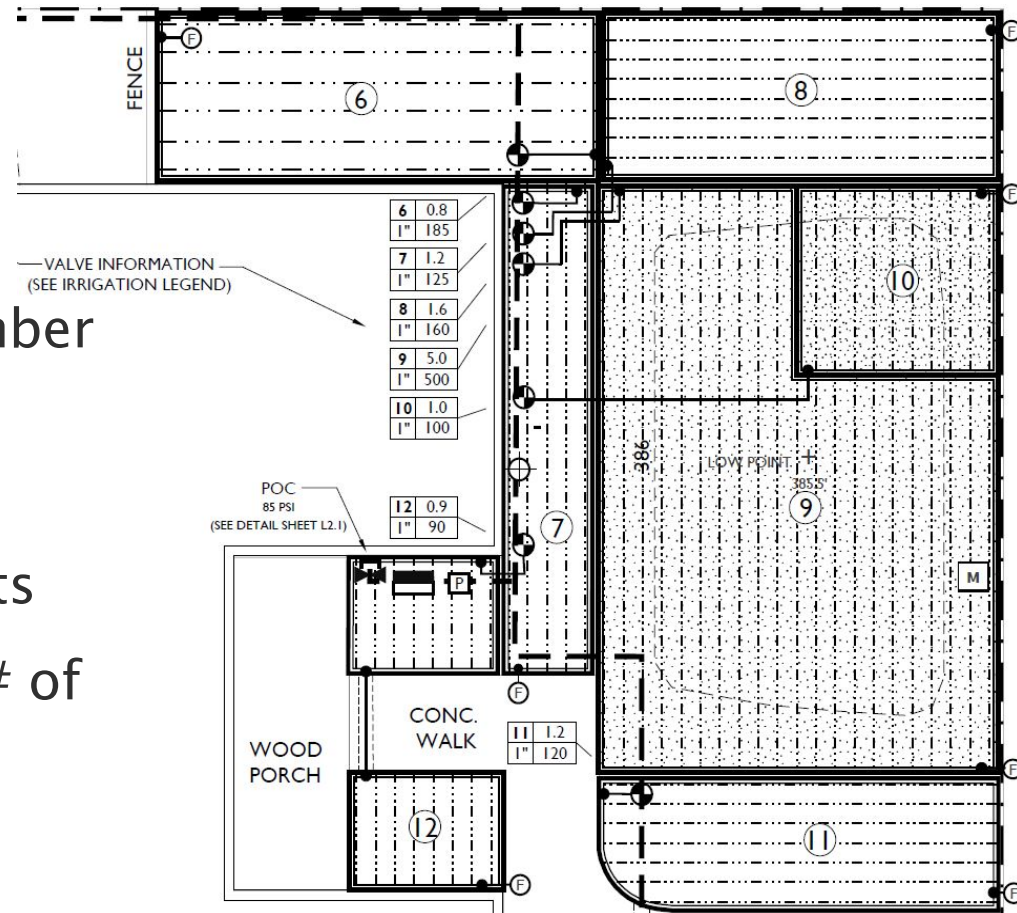


Landscape Plan Review



Irrigation Plan Basics

- Valve/Zone numbers and flow rates
- Zone boundaries and areas
- Include emitter flow rates, number per zone and/or spacing
- Mainline and lateral lines
- Point of connection components
- Legend with make and model # of each component



Landscape Plan Review



Water Budget Worksheet

Irrigation information

Controller ID

C

Associated Meter(s)

10471-B - Plan 4
10471-C - Plans 2 and 3
10471-D - Irrigation
10471-A - Plan 1



Zone/Valve #	Flow Rate (GPM)	Planting Description	Hydrozone Type	Irrigation Method	Area (Square Feet)	
1	1.0	Trees	Low water use plants:	Point Source I	60	
2	20.0	Shrubs	Low water use plants:	Point Source I	1386	
3	20.0	Shrubs	Special Landscape Are	In-Line Drip: 1	1560	

Landscape Plan Review



Annual Water Budget (ETWU and MAWA)

EBMUD - Water Efficient Landscape Worksheet

The purpose of this worksheet is to calculate a project's Estimated Total Water Use and Maximum Applied Water Allowance to determine its compliance with the Model Water Efficient Landscape Ordinance (MWELO). This worksheet is to be filled out by the project applicant and is a required element of the MWELO Landscape Documentation Package.

Property Address: 175 Gil Blas Rd., Danville, 94526

Reference Site:
(See MWELO Appendix A): Walnut Creek

Annual ETo
(Reference Evapotranspiration Rate): 46.2 Inches

ETAF (ET Adjustment Factor)
for Landscape Areas: 55.0 %

ETAF for Special Landscape Areas: 100%

NOTES

- 1) ETo is the reference evapotranspiration rate and represents the water needs of grass at a given location. It is an estimate of the inches of water lost due to evapotranspiration from a field of cool-season grass that is well watered. ETo values can be derived from MWELO Appendix A for locations across the State of California.
- 2) Use an evapotranspiration adjustment factor (ETAF) of 40% for new non-residential landscapes, 50% for new residential landscapes and 60% for schools. ETAF is a percentage of ETo and establishes the amount of water allowed per year for irrigation.
- 3) Use an ETAF of 100% for any special landscape areas which are those dedicated solely to edible plants, programmed recreational areas (e.g. public pools and sports fields), areas irrigated with non-potable water (e.g. recycled, grey and rain water) and stormwater treatment facilities that are required by permit (e.g. bio-retention basins, bio-swales, and flow-through planters).

ESTIMATED TOTAL WATER USE (ETWU) = (ETo) x (APF) x (Area) x (GAI) where GAI is the coefficient that converts inches to gallons per square foot

ZONE/ VALVE #	PLANTING DESCRIPTION Eg. Medium Trees, Groundcover, Water Feature, etc.	PLANT FACTOR (PF) Water requirements as a % of ETo	IRRIGATION EFFICIENCY (IE) Percent of applied water that reaches its target (e.g. root zone or water feature) by irrigation method	ADJUSTED PLANT FACTOR (APF) (PF/IE) = APF Watering requirements adjusted for irrigation efficiency as a % of ETo	HYDROZONE AREA (AREA) Square Feet	CONVERSION FACTOR The coefficient that converts inches to gallons per square foot	ETWU PER HYDROZONE (ETo)(APF)(Area)(GAI) = Annual gallons required to irrigate this landscape
Landscape Areas (LA)							
1	Shrubs	30%	90%	33%	450	0.62	4241
4	Forbs	30%	90%	33%	675	0.62	6361
5	Trees	50%	90%	56%	90	0.62	1445
6	Shrubs	20%	90%	22%	185	0.62	1170
7	Shrubs	30%	90%	33%	125	0.62	1178
8	Shrubs	30%	90%	33%	160	0.62	1508
9	Grasses and Strap-leafed Plants	60%	90%	67%	500	0.62	9610
10	Trees	60%	90%	67%	100	0.62	1922
11	Shrubs	30%	90%	33%	120	0.62	1131
12	Trees	50%	90%	56%	90	0.62	1445
13	Shrubs	30%	90%	33%	245	0.62	2309
14	Shrubs	20%	90%	22%	350	0.62	2213
15	Water Feature	100%	100%	100%	35	0.62	1003
Totals:					3125	0.62	35536
Special Landscape Areas (SLA)							
2	Trees			100%	560	0.62	16041
3	Forbs			100%	125	0.62	3581
Totals:					685	0.62	19622
Controller Controller A						ETWU Grand Total:	55158

PLANT FACTOR RANGES:

0-10% = Very low; 10-30% = Low; 40-60% = Moderate; 70-100% = High. Water Requirements cited in this ordinance are derived from the publication *San Francisco Water Use Classification of Landscape Species* (ucanr.edu/sites/MUCOLS/).

IRRIGATION METHODS AND EFFICIENCIES:

Spray = 70%; Rotating nozzle = 75%; Bubblers = 80%;
Point-source drip = 85%; In-line drip = 90%; Water feature = 100%

MAXIMUM APPLIED WATER ALLOWANCE (MAWA)

MAWA represents the annual water budget for this landscape. It is the maximum amount of water allowed per year for irrigation

LA

$(ETo)(ETAF)(Total Area)(0.62) =$ Annual gallons allowed

MAWA for LA:

49213

SLA

$(ETo)(ETAF)(Total Area)(0.62) =$ Annual gallons allowed

MAWA for SLA:

19621

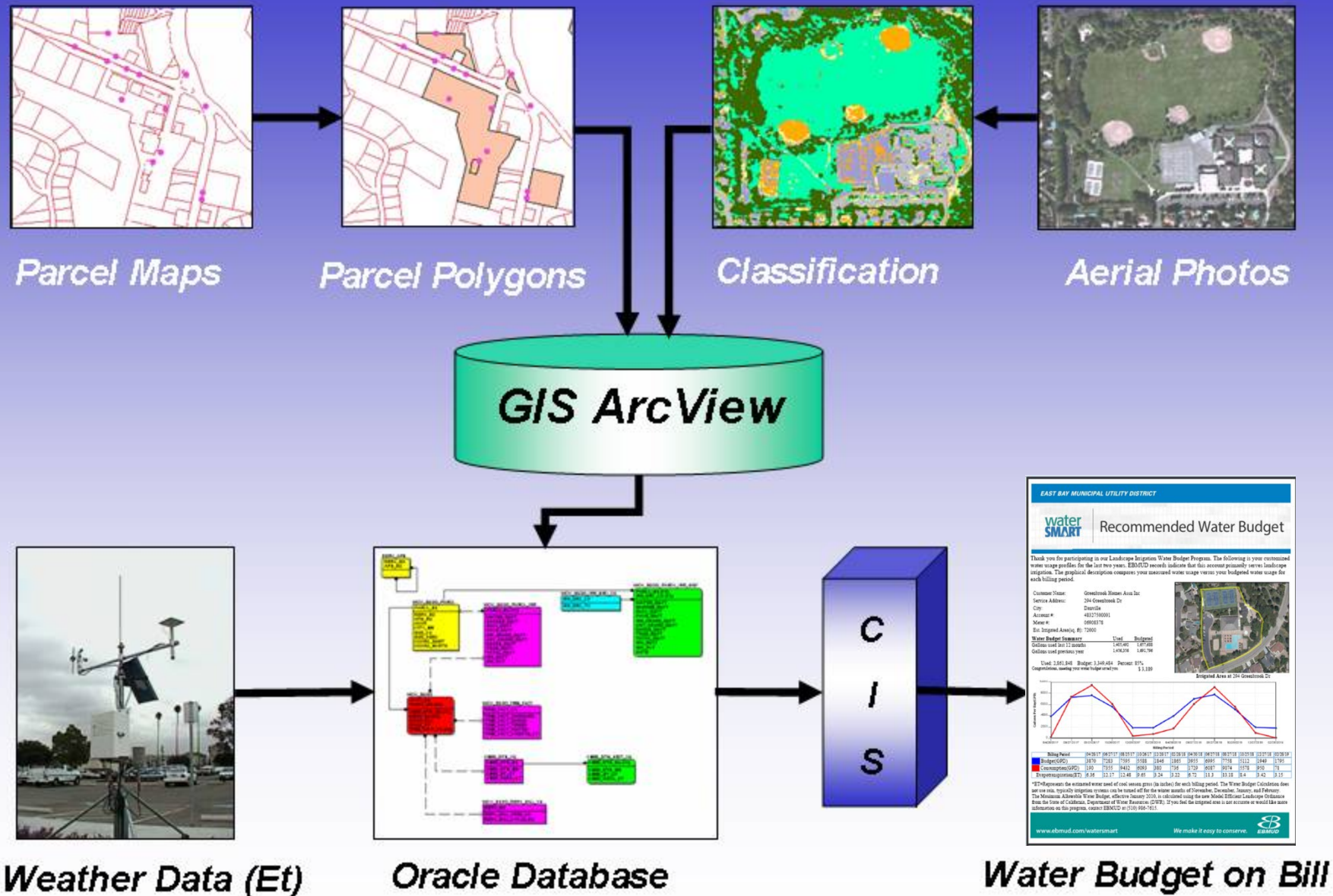
MAWA
Grand Total:

68834

Pass: Yes

ETWU shall not exceed MAWA

Water Budget Process

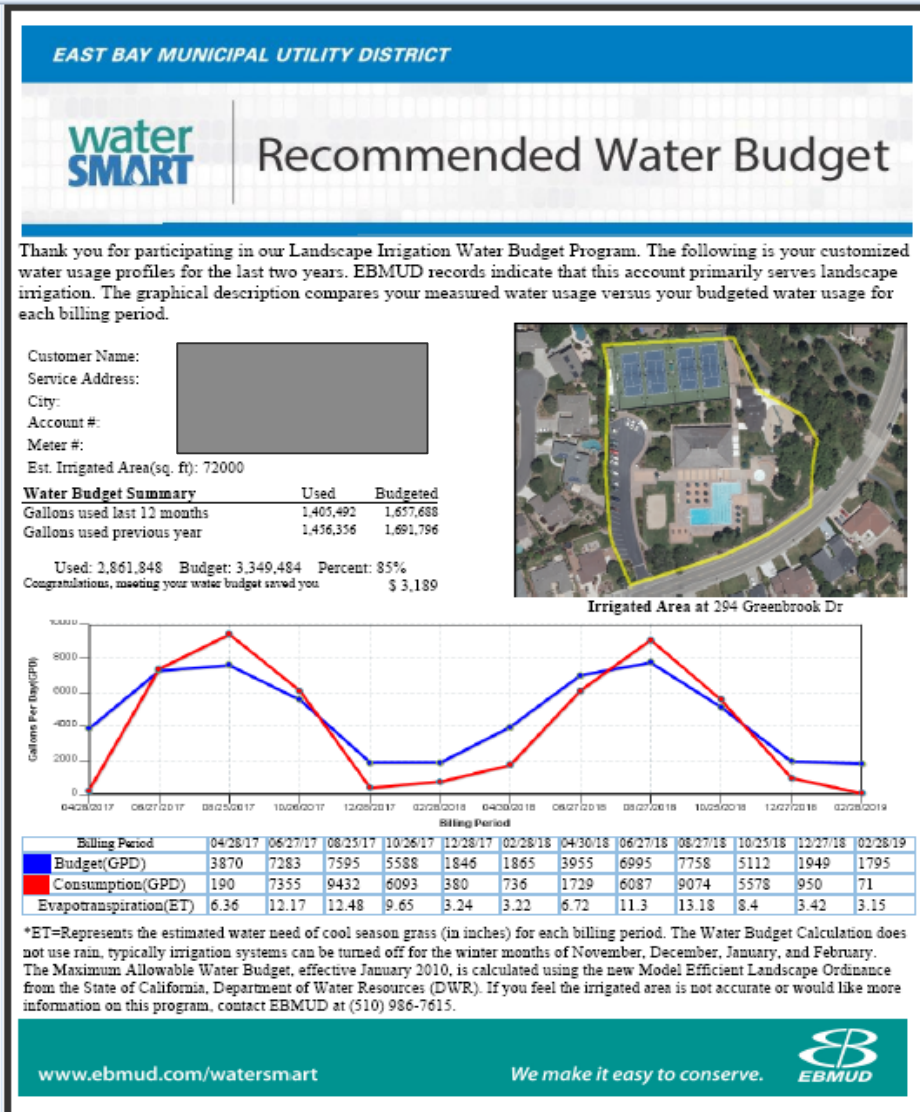


EBMUD Water Budget Report

Getting information to the customer



- Informs customers on how efficiently water is being used in the landscape.
- Uses irrigated area and local weather.
- ETAF's of 1.0, .80, .70, .65, .55, and .45%



Post 2010 WELO – Type Landscapes.

Big Changes...



- DWR Model Water Efficient Landscape Ordinance (2015).
 - 490 Purpose
 - (b) (4) *“Use water efficiently without waste by setting a Maximum Applied Water Allowance as an upper limit for water use and reduce water use to the lowest practical amount”.*



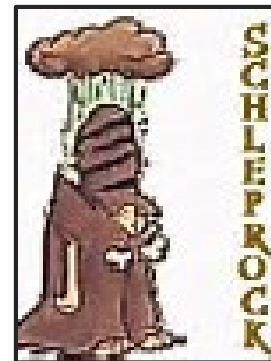
Example of Why We Have MWELO



New commercial landscapes guarantee water savings...



- *Dave ruins everything...*
- *So far, very few seem to be using water efficiently in the new post 2010 commercial landscapes*



Tracked WELO Landscapes



- Reviewed 86 Commercial Water Budget (irrigation only metered) properties
 - 2018, All billing periods
 - Evaluated *actual* consumption versus *budget*.
 - Plant material had at least 2 years of establishment

Consumption **184%** of Budgeted amount for 523 total budgets

- Budget based on 80% of ET for pre 2010 customers.
- Budget adjusted to 70% of ET post 2010
- Budget adjusted to 45% of ET post 2016
- In 2016-2017 consumption **204%** of budgeted amount



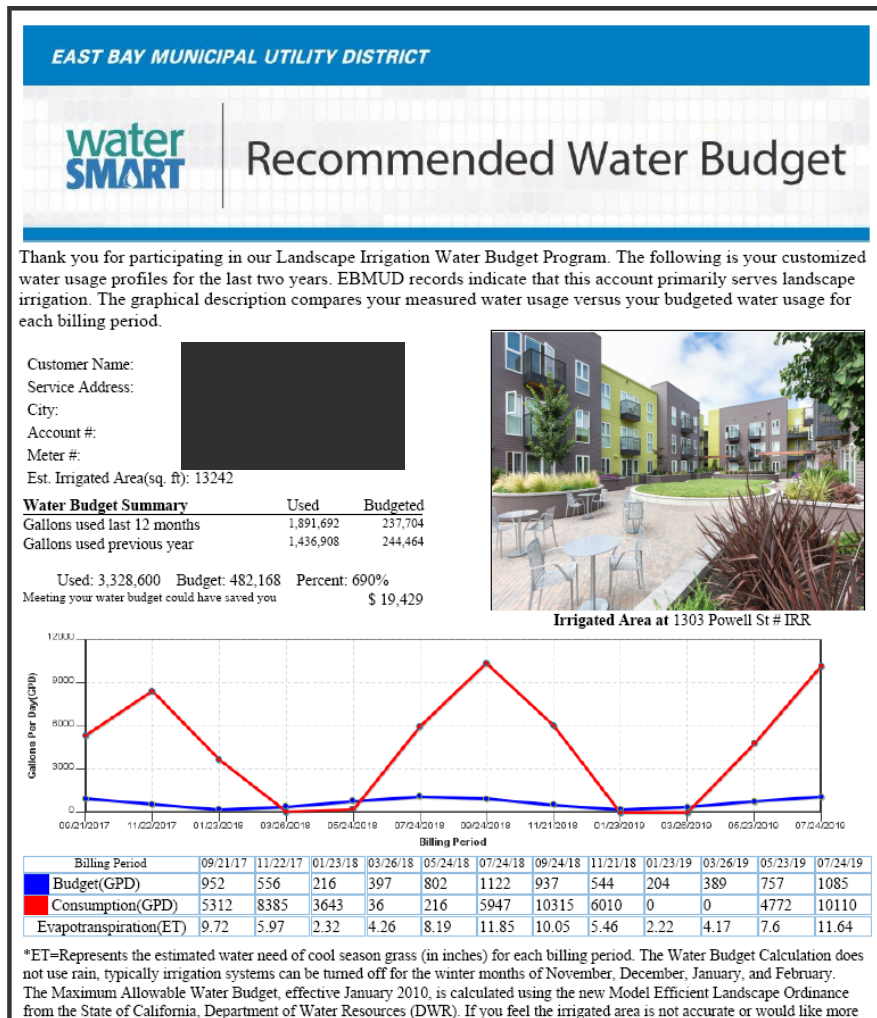
Tracked WELO Landscapes



- When reviewing these same 86 customers
 - Irrigation Season only
April – November
2016/17
- Consumption **203%** of Budgeted amounts.
- 506 Total Budgets.
 - **357 Budgets (70%)** where consumption exceeded budget.



WELO Water Budget Customer



- Over a two year period potential cost savings – over \$19,000
- Consumption almost 700% of recommended budget over a two year period.
- Peak consumption would meet the water needs of two acres of grass in the Oakland area.
- More water being applied “after” peak July billing period.
- Audit noted MV, Flow Sensor, and weather sensor for SMART controller not being used.

Where's the Water Waste?



- Common scenario:
 - Stuck open drip irrigation valve.
 - No one can see water in planter.
 - Drip “indicator flag” hard to see.
 - Drip not for everybody...
 - No one checks “irrigation only” meter for movement.

Drip Irrigation is not for everybody



- Water applied at different rates.
 - Flow rates differ in gallons/hour.
 - Drip line spacing.
 - Drip “Emitter” spacing.
- Soil types





Ahh...nevermind

Irrigation Scheduling

- As the season changes
- Base irrigation schedule
- Adjust number minutes/days
- % Water Budget
- SMART, ET Controllers



Landscape Design – Possible Liabilities??



Bio Swales Are A Challenge

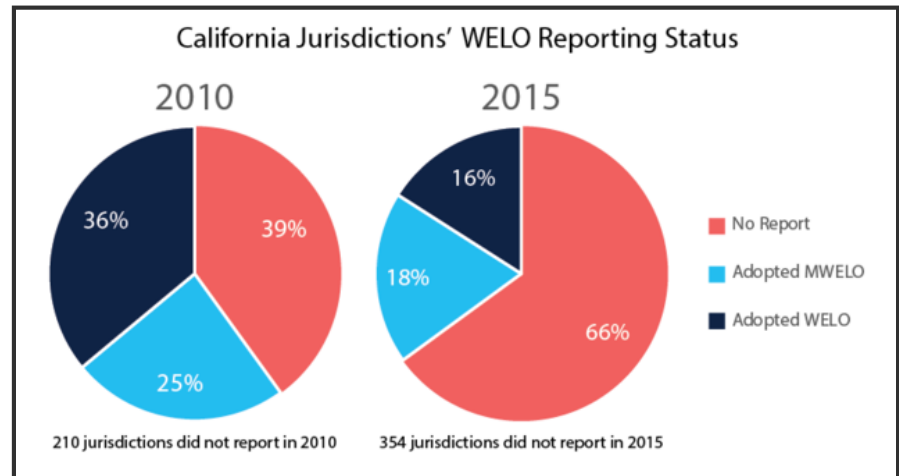


- MWELO and bio-swales are at odds in design
- Made to filter water and do it quickly, almost never overhead spray, drip dominates, water quickly passes through the soil

Implementation Barriers



- Who locally implements WELO?
 - “Local Agency” means a City/County that is responsible for adopting and implementing the ordinance.
 - Staffing, training, reporting



Paths Forward

WELO .45/.55 ETAF Realistic?



Body Mass Index (BMI) Chart for Adults

	Obese (>30)					Overweight (25-30)					Normal (18.5-25)					Underweight (<18.5)							
		HEIGHT in feet/inches and centimeters																					
WEIGHT		4'8"	4'9"	4'10"	4'11"	5'0"	5'1"	5'2"	5'3"	5'4"	5'5"	5'6"	5'7"	5'8"	5'9"	5'10"	5'11"	6'0"	6'1"	6'2"	6'3"	6'4"	6'5"
lbs (kg)		142cm	147	150	152	155	157	160	163	165	168	170	173	175	178	180	183	185	188	191	193	196	
260	(117.9)	58	56	54	53	51	49	48	46	45	43	42	41	40	38	37	36	35	34	33	32	32	31
255	(115.7)	57	55	53	51	50	48	47	45	44	42	41	40	39	38	37	36	35	34	33	32	31	30
250	(113.4)	56	54	52	50	49	47	46	44	43	42	40	39	38	37	36	35	34	33	32	31	30	29
245	(111.1)	55	53	51	49	48	46	45	43	42	41	40	38	37	36	35	34	33	32	31	31	30	29
240	(108.9)	54	52	50	48	47	45	44	43	41	40	39	38	36	35	34	33	33	32	31	30	29	28
235	(106.6)	53	51	49	47	46	44	43	42	40	39	38	37	36	35	34	33	32	31	30	29	28	27
230	(104.3)	52	50	48	46	45	43	42	41	39	38	37	36	35	34	33	32	31	30	30	29	28	27
225	(102.1)	50	49	47	45	44	43	41	40	39	37	36	35	34	33	32	31	31	30	29	28	27	26
220	(99.8)	49	48	46	44	43	42	40	39	38	37	36	34	33	32	32	31	30	29	28	27	27	26
215	(97.5)	48	47	45	43	42	41	39	38	37	36	35	34	33	32	31	30	29	28	28	27	26	25
210	(95.3)	47	45	44	42	41	40	38	37	36	35	34	33	32	31	30	29	28	28	27	26	26	25
205	(93.0)	46	44	43	41	40	39	37	36	35	34	33	32	31	30	29	29	28	27	26	26	25	24
200	(90.7)	45	43	42	40	39	38	37	35	34	33	32	31	30	30	29	28	27	26	26	25	24	24
195	(88.5)	44	42	41	39	38	37	36	35	33	32	31	31	30	29	28	27	26	26	25	24	24	23
190	(86.2)	43	41	40	38	37	36	35	34	33	32	31	30	29	28	27	26	26	25	24	24	23	23
185	(83.9)	41	40	39	37	36	35	34	33	32	31	30	29	28	27	27	26	25	24	24	23	23	22
180	(81.6)	40	39	38	36	35	34	33	32	31	30	29	28	27	27	26	25	24	24	23	22	22	21
175	(79.4)	39	38	37	35	34	33	32	31	30	29	28	27	27	26	25	24	24	23	22	22	21	21
170	(77.1)	38	37	36	34	33	32	31	30	29	28	27	27	26	25	24	24	23	22	22	21	21	20
165	(74.8)	37	36	34	33	32	31	30	29	28	27	27	26	25	24	24	23	22	22	21	21	20	20
160	(72.6)	36	35	33	32	31	30	29	28	27	27	26	25	24	24	23	22	22	21	21	20	19	19
155	(70.3)	35	34	32	31	30	29	28	27	27	26	25	24	24	23	22	22	21	20	20	19	19	18
150	(68.0)	34	32	31	30	29	28	27	27	26	25	24	23	23	22	22	22	21	20	20	19	19	18
145	(65.8)	33	31	30	29	28	27	27	26	25	24	23	23	22	21	21	20	20	19	19	18	18	17
140	(63.5)	31	30	29	28	27	26	26	25	24	23	23	22	21	21	20	20	19	18	18	17	17	17
135	(61.2)	30	29	28	27	26	26	25	24	23	22	22	21	21	20	19	19	18	18	17	17	16	16
130	(59.0)	29	28	27	26	25	25	24	23	22	22	21	20	20	19	19	19	18	17	17	16	16	15
125	(56.7)	28	27	26	25	24	24	23	22	21	21	20	20	19	18	18	17	17	16	16	15	15	14
120	(54.4)	27	26	25	24	23	23	22	21	21	20	19	19	18	18	17	17	16	16	15	15	14	14
115	(52.2)	26	25	24	23	22	22	21	20	20	19	19	18	17	17	16	16	16	15	15	14	14	14
110	(49.9)	25	24	23	22	21	21	20	19	19	18	18	17	17	16	16	15	15	15	14	14	13	13
105	(47.6)	24	23	22	21	21	20	19	19	18	17	17	16	16	16	15	15	14	14	13	13	13	12
100	(45.4)	22	22	21	20	20	19	18	18	17	17	16	16	15	15	14	14	14	13	13	12	12	12
95	(43.1)	21	21	20	19	19	18	17	17	16	16	15	15	14	14	14	13	13	13	12	12	12	11
90	(40.8)	20	19	19	18	18	17	16	16	15	15	15	14	14	13	13	13	12	12	12	11	11	11
85	(38.6)	19	18	18	17	17	16	16	15	15	14	14	13	13	13	12	12	12	11	11	11	10	10
80	(36.3)	18	17	17	16	16	15	15	14	14	13	13	13	12	12	11	11	11	11	10	10	10	10

Note: BMI values rounded to the nearest whole number. BMI categories based on CDC (Centers for Disease Control and Prevention) criteria.

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BMI = Weight[kg] / (Height[m] x Height[m]) = 703 x Weight[lb] / (Height[in] x Height[in])

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Provide a Schedule Staff Maintaining the Site



Monthly Base Schedule and Water Budget

Monthly Irrigation Schedule for the Estimated Water Use Controller Controller A			Monthly ETO Values:												Total Annual
			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
			0.8	1.5	2.9	4.4	5.6	6.7	7.4	6.4	4.7	3.3	1.5	1.0	46.2
ZONE/ VALVE #	FLOW RATE Sum of all emitters in a zone in gallons per minute (GPM)	AVERAGE PRECIPITATION RATE (IN/HR) (FR x 60 Min per HR)/(Area in SF/1.6 In per SF)	Monthly Run Time in Minutes												
Landscape Areas															
1	2.0	0.43	37	69	133	202	257	308	340	294	216	152	69	46	2121
4	6.7	0.961	16	31	60	90	115	138	152	131	97	68	31	21	949
5	0.9	0.968	28	52	101	153	195	233	257	222	163	115	52	35	1605
6	0.8	0.418	25	48	92	139	177	212	234	203	149	105	48	32	1464
7	1.2	0.929	17	32	62	94	119	142	157	136	100	70	32	21	982
8	1.6	0.968	16	31	59	90	114	137	151	130	96	67	31	20	942
9	5.0	0.968	33	62	121	183	233	279	308	266	195	137	62	42	1921
10	1.0	0.968	33	62	121	183	233	279	308	266	195	137	62	42	1921
11	1.2	0.968	16	31	59	90	114	137	151	130	96	67	31	20	942
12	0.9	0.968	28	52	101	153	195	233	257	222	163	115	52	35	1605
13	2.4	0.948	17	31	60	92	117	140	154	133	98	69	31	21	962
14	1.5	0.415	26	48	93	140	179	214	236	204	150	105	48	32	1475
15	5.0	13.825	3	7	13	19	24	29	32	28	20	14	7	4	201
Special Landscape Areas															
2	2.5	0.432	111	208	403	611	778	931	1028	889	653	458	208	139	6417
3	3.0	2.323	21	39	75	114	145	173	191	165	121	85	39	26	1193
Monthly Budget for the Maximum Applied Water Allowance															
Landscape Areas															
Inches applied per month			0.4	0.8	1.6	2.4	3.1	3.7	4.1	3.5	2.6	1.8	0.8	0.6	25.4
Gallons per month			852	1598	3089	4687	5965	7137	7883	6817	5007	3515	1598	1065	49213
Average gallons per day			27.5	57.1	99.6	156.2	192.4	237.9	254.3	219.9	166.9	113.4	53.3	34.4	
Special Landscape Areas															
Inches applied per month			0.8	1.5	2.9	4.4	5.6	6.7	7.4	6.4	4.7	3.3	1.5	1.0	46.2
Gallons per month			340	637	1232	1869	2378	2845	3143	2718	1996	1402	637	425	19622
Average gallons per day			11.0	22.8	39.7	62.3	76.7	94.8	101.4	87.7	66.5	45.2	21.2	13.7	
All Landscape Areas															
Total Gallons per month			1192	2235	4321	6556	8343	9982	11026	9535	7003	4917	2235	1490	68835

Does the “End User” Know the Equipment?



Where's the waste?

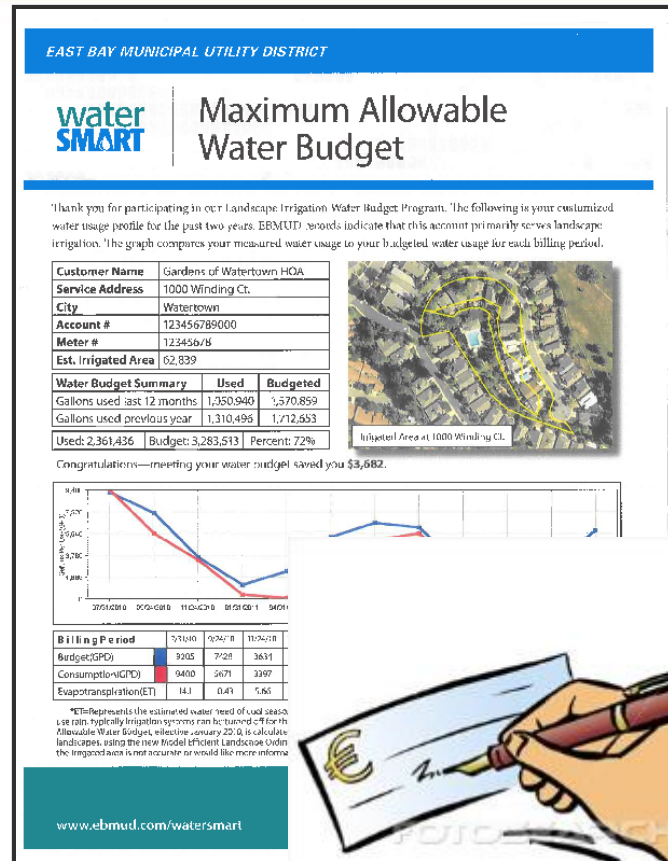
- This is what 10,000 GPD can look like – two sites
- P1. Drip irrigation or bubbler Valves “stick” or are manually opened
- P2. Overhead spray sprinklers “stuck” valve easy to see



Barriers... Information



- Who's paying the bill
- Many commercial properties use third parties to pay the bills
- Often times no connection between who receives the bill and who manages the site



Paths Forward...

Other items to review



- Overhead spray in areas less than 10 feet wide
- Is the 24 inch setback too much with high efficient nozzles
- Have the sites inspected to review if it was commissioned correctly
- Simplify the regulations
- Keep in mind who's managing these landscapes
- ...bio-swales...

Review of Customers



CUSTOMER	2018 % of Consumption vs. Budget
Cal-Trans	38%
Hospitals	87%
Cemetery	71%
BART	15%
Schools	71%
Counties	78%
RW-DERWA	64%
RW- East Bayshore	85%

CUSTOMER	2018 % of Consumption vs. Budget
Business	106%
Shop Center	150%
Hotels	183%
Senior Facilities	127%
Lawn Strips	148%
WELO	184%

Summary....



- Customers ultimately responsible for how efficiently water is being used in the landscape
- It may take years; but input from all sectors will need to be consulted
 - maintenance professions, customers, architects, cities, manufactures, etc.
- Audits and Training

THANK YOU!



East Bay Municipal Utility District
Water Conservation Division
375 11th Street, Oakland CA
510-287-1900

<http://www.ebmud.com/>
Charles.bohlig@ebmud.com

