This presentation premiered
at WaterSmart Innovations

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Controlling Water Usage on School Landscapes
Christopher J. Eppler

Eppler's Green Thumb, Inc.

Procedures

1. Site Information

2. Zone Data

3. Run Time Schedules

4. Implement

5. Compare water usage to past water department bills per area

Site Information

I.   General School Information

II.   Turf

III. Plant Material

IV. Hydrology

V. Controllers & Communication

Site Information

General School Information

- **Site:**
- **Date:**
- **Address:**
- **Staff:** (custodian, principal, etc.)
- **Contact Links:** (phone #'s, email)
- **Prepared By:**

:

Site Information

Turf

- **Variety of Grass:**
  - **2 Soil Samples and Root Zone**
- **Acres or Square Footage of Turf:**
  - **Note slope, shade, and hard to water locations**

Site Information

Plant Material

- **Define Plant Material:**
- **Irrigated with turf or independently:**
  - **Note specifics of beds (i.e. spray, drip, etc.)**
- **Soil type in garden beds if different than turf:**

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Site Information

Hydrology

- Potable or Non-potable Water:
- Water Meter:
- Service Line Size:
- Pump:
- Pump Size and specifics:
- Back Flow Size (RP) and Water Pressure at Backflow:
- Master Valve / Hydrometer:
- Size of Master Valve / Hydrometer:
- Main Line Size:
- Flow Sensor:

Site Information

Controllers and Communication

- **Controller Make, Model, and Location**
- **Number of Controllers:**
- **Central or Stand Alone:**
- **ET Based:**
- **Weather Information: (location, type)**
- **Grounding: (lightning protection)**
- **Number of Stations Turf:**
- **Number of Stations Drip:**
- **Remote Control:**
- **Sensors: (Rain Can, Wind, Flow)**
- **Communication system (i.e. Ethernet, Radio, etc.)**

Zone Data

Zone	Location	Heads	Head Type	Arc	Nozzle	Head GPM	Zone GPM	PSI	Pattern	Precip. Rate	Comment
1	NW Corner Building	8	Hunter I-25	180	Green	11.1	89	60	Rect.	.79	Full Sun, Children Play area
2	East Parking Island Teachers Parking	15	RB 1804	360	15 '	3.70	55.5	30	Rect.	1.58	Shade, 12% Grade

Virtual Audit

Microsoft Excel - Irrigation Work Sheet.xls

	Units	April	May	June	July	August	September	October
Project Name: Junior High								
School District:								
Date:								
Soil Type:								
Plant Water Requirement	U6.20nits	April	May	June	July	August	September	October
		12.56	3.22	2.54	2.38	2.59	6.30	27.71
Plant Material								
Reference Period								
Reference ET	in. per mo.	1.28	4.99	6.32	6.75	6.2	2.55	0.58
Landscape Coefficient		0.7	0.7	0.7	0.7	0.7	0.7	0.7
Allowable Stress								
Plant Water Requirement	inches	0.896	3.493	4.424	4.725	4.34	1.785	0.406
Irrigation Water Requirement								
Precipitation Rate	in. per hr.	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Distribution Uniformity		0.55	0.55	0.55	0.55	0.55	0.55	0.55
Irrigation Water Requirement	inches	1.63	6.35	8.04	8.59	7.89	3.25	0.74
Total Run Time per Period	minutes	139.64	544.36	689.45	736.36	676.36	278.18	63.27
Scheduling Requirements								
Root Zone Soil Type								
Available Water	in. per hr.	0.15	0.15	0.15	0.15	0.15	0.15	0.15
Active Root Zone Depth	inches	5	5	5	5	5	5	5
Plant Available Water	inches	0.75	0.75	0.75	0.75	0.75	0.75	0.75
Allowable Depletion		0.375	0.375	0.375	0.375	0.375	0.375	0.375
Irrigation Days per Period	days	2.39	9.31	11.80	12.60	11.57	4.76	1.08
Total Run Time per Day	minutes	58.44	58.44	58.44	58.44	58.44	58.44	58.44
Run Time per Cycle	minutes	18.63	18.63	18.63	18.63	18.63	18.63	18.63
Cycles per day								
Corrected Run Times	minutes							

Run Time Schedules

A1: Elementary

	A	B	C	D	E	F	G	H	I	J	K	L
1	Elementary											
2	Date:											
5		Root	Precip.	Cycle	Run							
6	Zones	Zone	Rate	Run Time	Time	April	May	June	July	August	September	October
25	19	4	1.47	18.63	22.26	10.04	2.58	2.03	1.90	2.07	5.84	22.17
26	20	6										
27	21	6										
28	22	6										
29	23	6	0.61	18.63	73.77	15.07	3.86	3.05	2.86	3.11	8.77	33.25
30	24	6	0.79	18.63	56.96	15.07	3.86	3.05	2.86	3.11	8.77	33.25
31	25	6	0.4	18.63	112.50	15.07	3.86	3.05	2.86	3.11	8.77	33.25
32	26	6	0.4	18.63	112.50	15.07	3.86	3.05	2.86	3.11	8.77	33.25
33	27	6	0.4	18.63	112.50	15.07	3.86	3.05	2.86	3.11	8.77	33.25
34	28	6	0.4	18.63	112.50	15.07	3.86	3.05	2.86	3.11	8.77	33.25
35	29	6	0.4	18.63	112.50	15.07	3.86	3.05	2.86	3.11	8.77	33.25
36	30	6	0.4	18.63	112.50	15.07	3.86	3.05	2.86	3.11	8.77	33.25
37	31	6	0.4	18.63	112.50	15.07	3.86	3.05	2.86	3.11	8.77	33.25
38	32	6	0.4	18.63	112.50	15.07	3.86	3.05	2.86	3.11	8.77	33.25
39	33	6	0.79	18.63	56.96	15.07	3.86	3.05	2.86	3.11	8.77	33.25
40	34	6	0.79	18.63	56.96	15.07	3.86	3.05	2.86	3.11	8.77	33.25
41	35	6	0.2	18.63	225.00	15.07	3.86	3.05	2.86	3.11	8.77	33.25
42	36											
43	37	6	0.79	18.63	56.96	15.07	3.86	3.05	2.86	3.11	8.77	33.25
44	38	4	1.47	18.63	20.41	10.04	2.58	2.03	1.90	2.07	5.84	22.17
45	39											
46	40											

Site:
Controller:
Date Updated:

Zone	Precip. Rate	Cycle Run Time	Total Run Time	April	May	June	July	Aug.	Sept.	Oct.	GPM	Gallons Per Cycle
1	.60	18.63	75	15.07	3.86	3.05	2.86	3.11	7.56	33.25	80	6000
2	.79	18.63	52.58	15.07	3.86	3.05	2.86	3.11	7.56	33.25	90	4732

High School

Gallons

40,000,000	
35,000,000	32,416,000
	31,599,000
30,000,000	26,211,000
25,000,000	21,791,712 22,535,000 24,269,000
20,000,000	21,052,000
15,000,000	
10,000,000	
5,000,000	
0	

Estimated 2006   2005   2004   2003   2002   2001
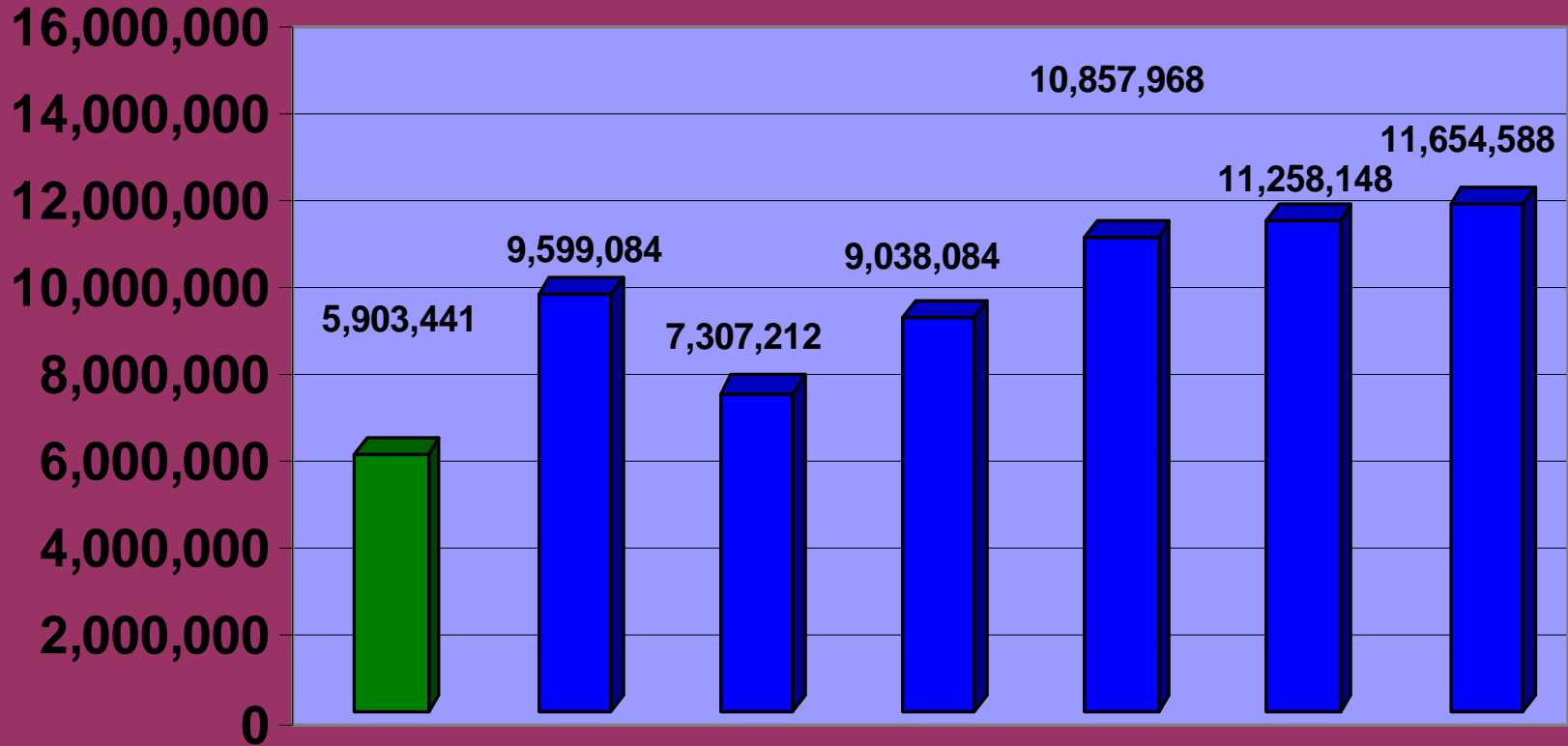
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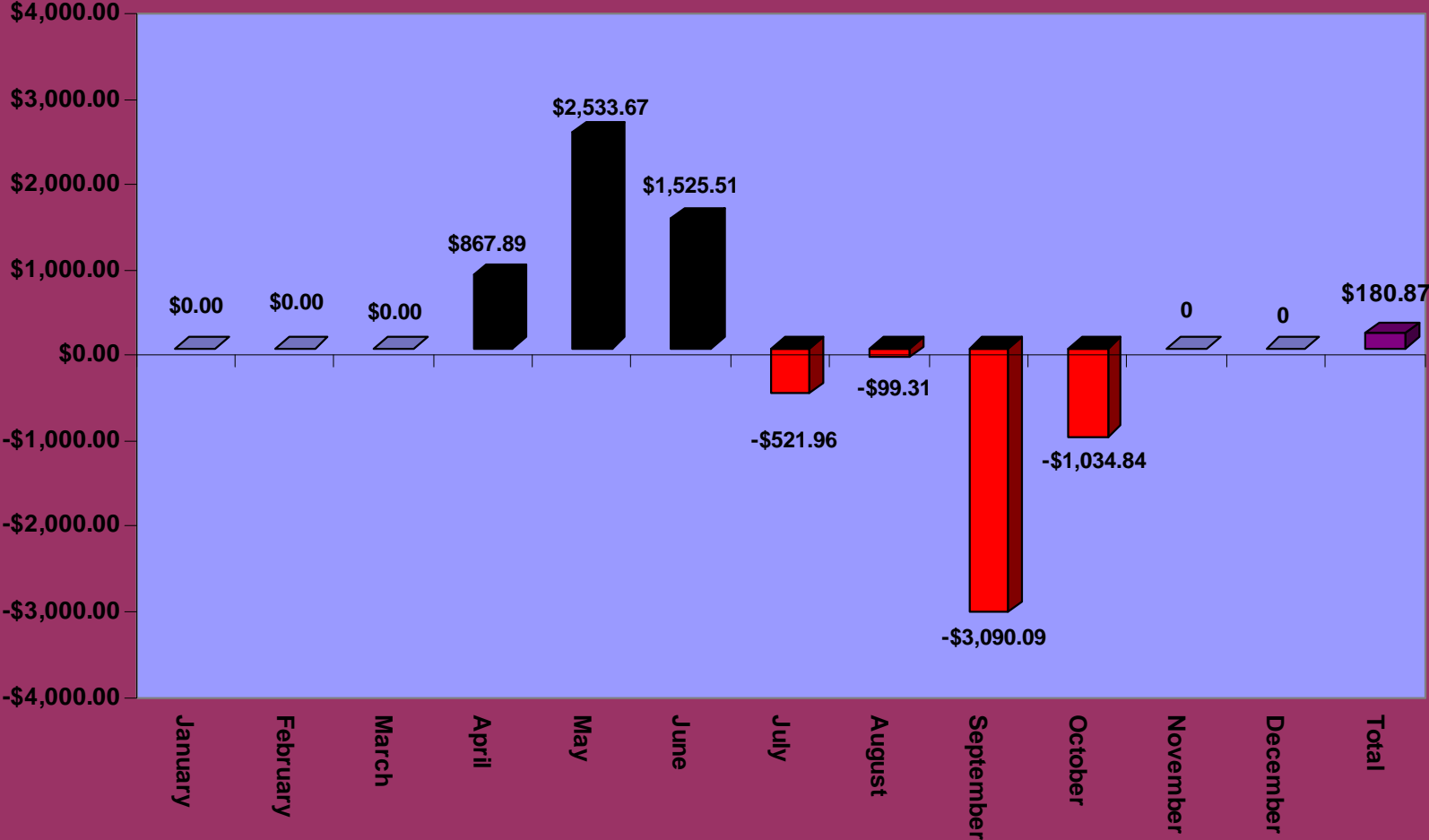
Review of Procedures

1. Site Information

2. Zone Data

3. Run Time Schedules

4. Implement

5. Compare water usage to past water department bills per area

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- 1980 B.S. Geology, University of Utah
- 24 years landscape management and irrigation experience
- CID , Certified Irrigation Designer by National Irrigation Association
- CLIA, Certified Landscape Irrigation Auditor by National Irrigation Association
- Utah Landscape Contractor
- CIC, Certified Irrigation Contractor by National Irrigation Association
- Central Control operator / owner 3 years
- Attending ITT Technical Institute studying Electronics and Technology