Higher Profits/Lower Operating Costs:

The Business Model for Sustainable Water &Energy Conservation

WESTCAS 2010 Fall Conference

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Sustainable Development

Believing that sustainable development, which implies ***meeting the needs of the present without compromising the ability of future generations to meet their own needs***, should become a central guiding principle of the United Nations, Governments and private institutions, organizations and enterprises

SOURCE: *Report of the World Commission on Environment and Development 96th plenary meeting; 11 December 1987*.

Agency Nexus (Suppler Side)

- **Reduced O&M**
- **Reduced Wastewater Discharge:**
  - Reduce Peak/Average Ratio's
  - Minimize SSO's
  - Avoid Operational Disruption & Potential Violations
- **Reduced Water Demand:**
  - Improve Supply Management
  - Reduce or Defer CIP's
  - Reduce Peak Facilities
- **More Water & Energy Savings**
  - Savings is Magnified Throughout Service Area
- **Requires Your Leadership to Guide Customers**
- **Delivers A More Sustainable Resource Pool**

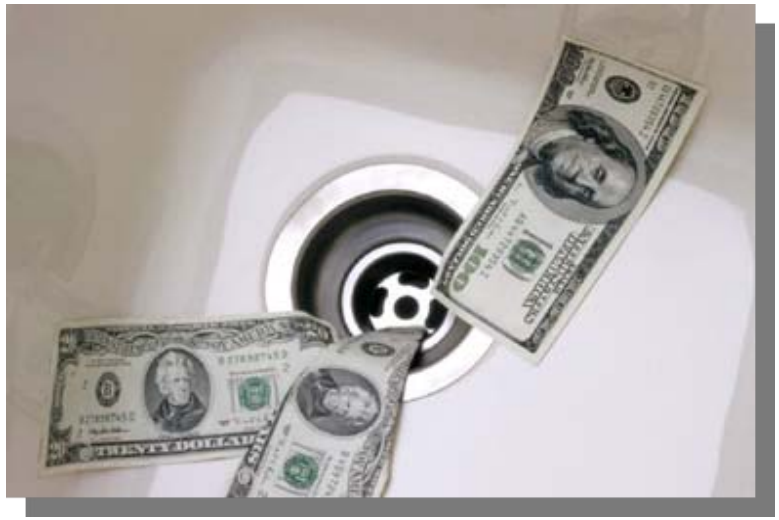
Recent Business Case Examples

Mandated Restaurant Water Conservation

Sustainability Planning for a Transportation Agency

Innovative Use of Reclaimed Water

Expanding the Toolbox



"Why This Project Now?"

Regulatory Approvals

Code Compliance

Preserve Resources

Environmental Stewardship

Environmental Leadership

Good for Business

Restaurant Water Conservation

Malibu Shoreline Location.

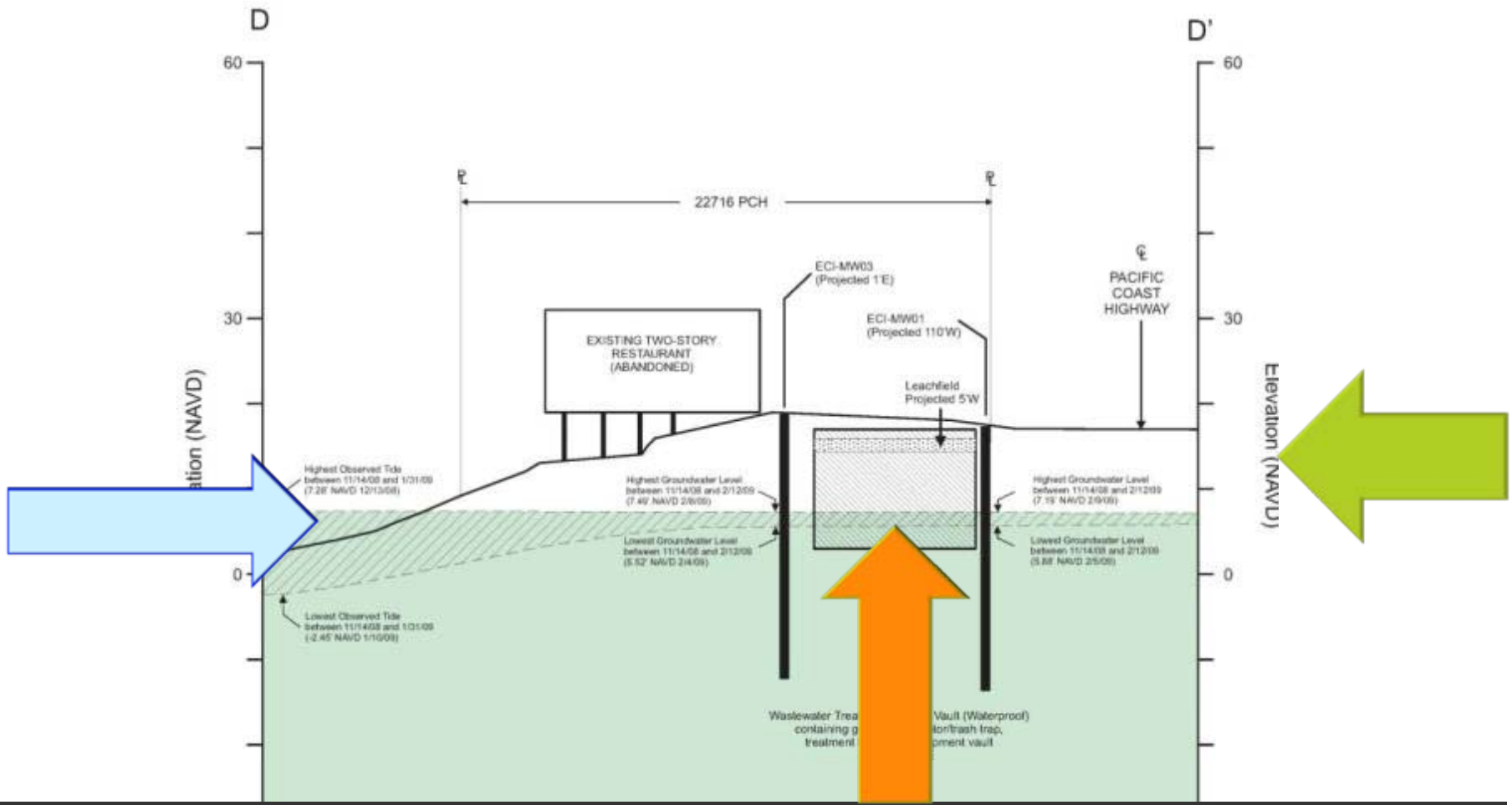
No Sewage Collection.

Required Onsite Advanced WWT.

Primary Motive Is Conditioned in Waste Discharge Requirements (WDR).

Project Setting

Malibu California



WDR Requires Protection of Designated Beneficial Uses of Receiving Waters

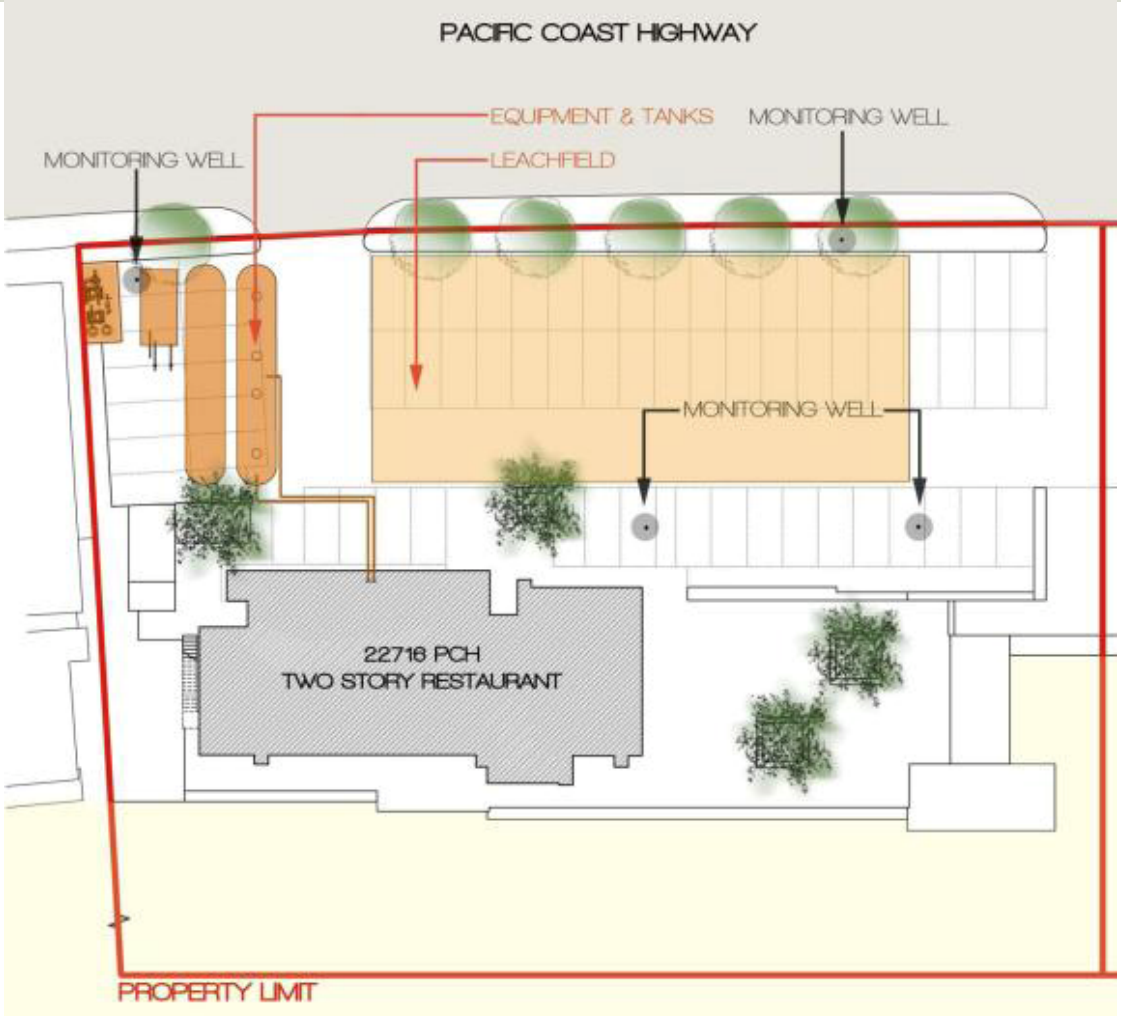
Groundwater

Ocean

4 Groundwater Monitoring Wells

Pulsating Leachfield

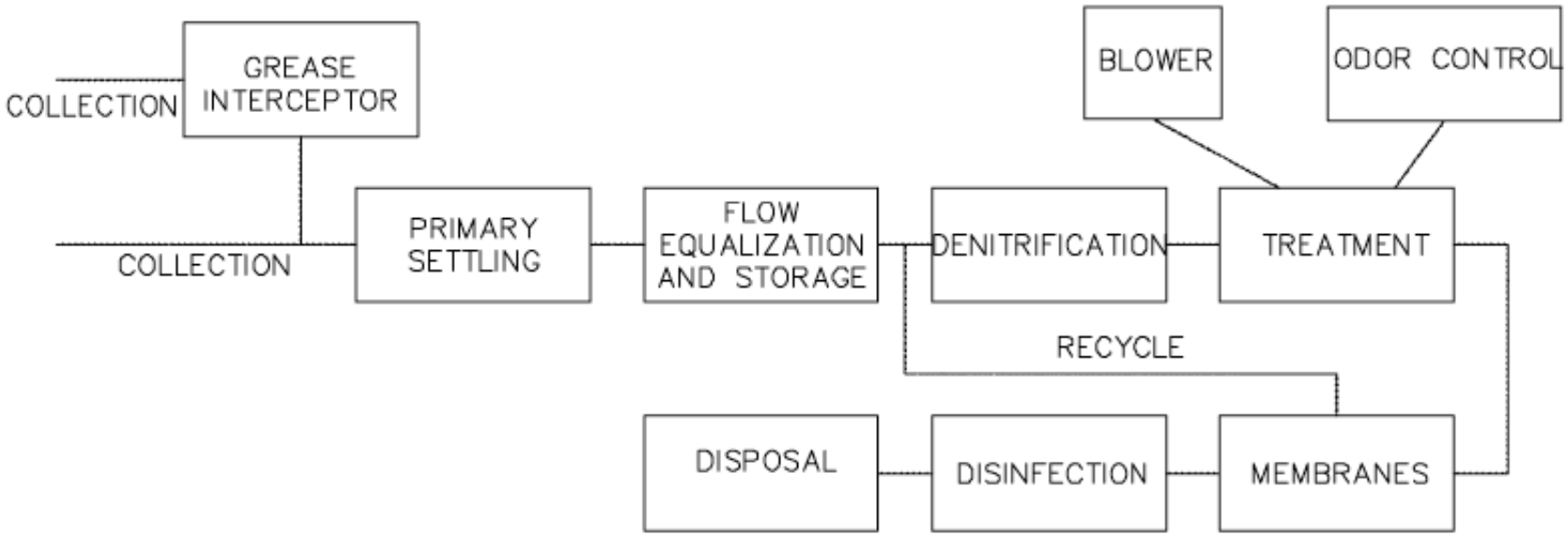
Buried MBR & Equalization Tanks



Potential To Shut-Down Operations

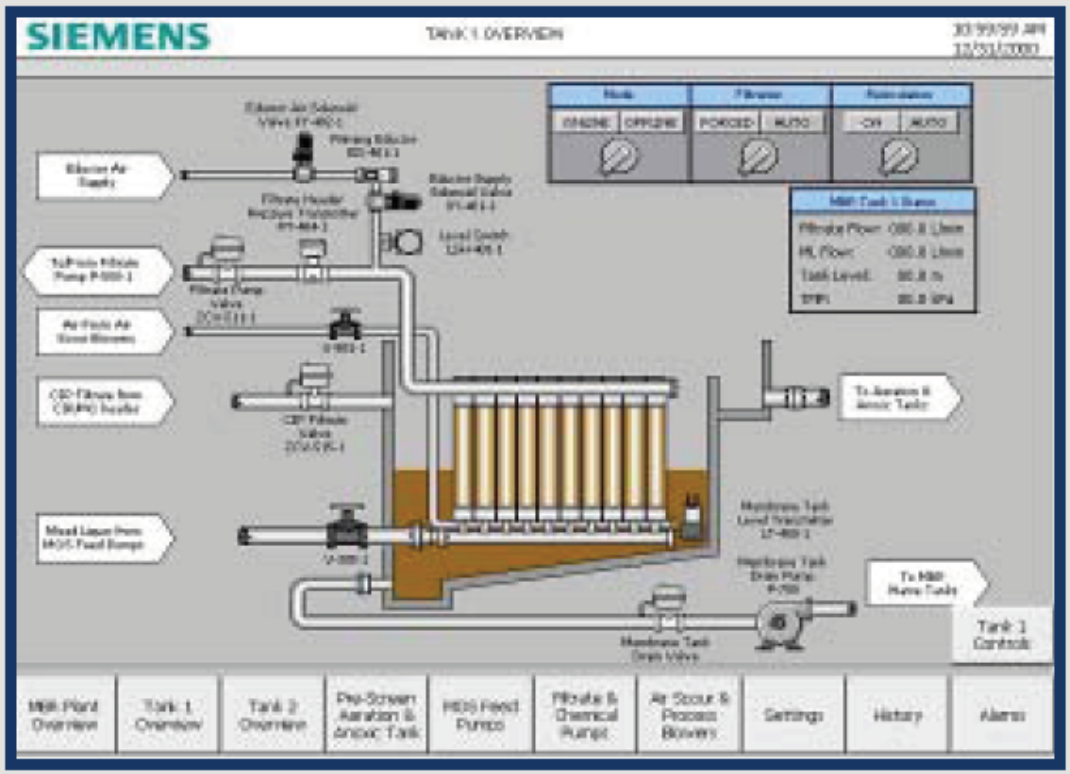
Unpredictable Business Model (Risk + Uncertainty = Economic Loss)

Process Flow



Process Control

SIEMENS SIMATIC MP 377 HMI



Data Integration

Continuous Monitoring of Groundwater Level & Discharge.

Integrating Water Total & End Use Monitoring.

Anticipate Emergency Operations & Avoid Restaurant Shutdowns.

Constituent	Units	Minimum Frequency Of Analysis
Groundwater level	Hundredth	Ongoing (recorder)
Ph	pH units	Quarterly
Total and fecal coliform	MPN/100mL	Quarterly
Enterococcus	MPN/100mL	Quarterly
E. Coli	MPN/100 mL	Quarterly
BOD_5	mg/L	Quarterly
Ammonia-N	mg/L	Monthly
Nitrate-N°	mg/L	Monthly
Nitrite-N	mg/L	Monthly
Organic nitrogen	mg/L	Monthly
Phosphorus	mg/L	Quarterly
Caffeine	mg/L	Quarterly
MBAS	mg/L	Quarterly
TOS(Total dissolved solids)	mg/L	Quarterly
Boron	mg/L	Quarterly
Chlorine	mg/L	Quarterly
Sulfate	mg/L	Quarterly
Priority pollutant scan		Annually

22 Water Conservation Strategies

General Measures
(230,800 gpy Savings)

Kitchen Operations
(3,170,382 gpy Savings)

Restrooms
(611,940 gpy Savings)

Irrigation
(270,330 gpy Savings)

Water Sense + Active Education/Training Program
(1,070,866 gpy Savings)

14 to 16 AFY
Total Water Savings

WATER SENSE/ENERGY STAR EQUIPMENT

Water-efficient equipment that meets or exceeds the standards & certifications of the Water Sense program.

Water Sense &Energy Star equipment have a water savings of up to 20 %.

NO CONTINUOUS FLOW EQUIPMENT

Prohibit continuous flow-type wash drain trays in coffee/milk/soda & beverage island equipment.

Continuous flow-type dipper wells use up to 571 gpd of water.

Efficient Ice Making

Use only air-cooled equipment.

Centralize ice making.

Monitor consumption and adjust to prevent waste.

Operate purge water for conservation or recycling.

Water-cooled ice machines use up to 1,044gpd. Air cooled ice machines use approximately 150 gpd

EFFICIENT DISHWASHING PRACTICES

Centralize operations.

Use sensing mechanism to detects dishes and provides automatic shutoff.

Maximize full-load operations.

Maximize dish scraping.

Exclude garbage disposals.

Ware Washing

Use only high-efficiency 1.6 gpm pre-rinse spray valves w/automatic shut-off nozzles.

Pre-soak utensils &dishes in static water basins.

Eliminate running water for pre-soaking.

Run food-preparation equipment through the dishwasher rather than hand washing.

Maintain water supply pressure at minimum operating for optimal performance &waste prevention.

DRY VENTILATION

Omit use of continuous water wash hood type ventilation systems.

Dry ventilation units reduce water use from approximately 0.05 gpm/ft to 0.1 gpm/ft.

REFRIGERATED THAWING

Do not use running water or defrosting &ice melting operations.

Perform all thawing gradually in a refrigerator.

Running water for defrosting &ice melting uses up to 240 gpd.

Hot Water

Minimize runs of hot water piping between generation & use to a max of 60 ft.

Use tankless heaters in the restrooms.

Use hot water return pump. Ensure full pipe insulation.

High Efficiency Sinks

All lavatory faucets will be equipped w/automatic shut-off valves (infrared or foot triggers).

Fruits & vegetables will be washed in static water rather than in a sink w/running water.

Conventional 2 gpm faucets use up to 820 gpd of water.

High-efficiency sinks minimize water use to approximately 210 gpd.

EMPLOYEE TRAINING

Employee water-conservation training & education program tailored to operation.

Includes orientation to new employees.

A “water champion” is identified.

Estimates of conventional and water conservation savings based on best professional judgment

SITE AUDITS

Annual interior &exterior audits in collaboration w/local provider.

Identify & immediately repair all non-conforming practices.

Identify & repair leaks & correct for deficiencies

Recommend adl. Improvements.

Water Service By Request

Appropriate placards placed in all food & bar service areas.

Literature says approximately 1.5 to 3 gallons saved for every glass of water avoided.

Conservative max project savings = 2 gallons per avoided glass of water.

GREEN BUSINESS CERTIFICATION

Obtain certification from a California Green Business Program Network.

Education & outreach measures are based on behavioral modification of employees& patrons

Conservation savings based on best professional judgment.

Refrigerated Cooling

HVAC system will use refrigerated cooling only.

Evaporative cooling would use up to 15 gpd

Refrigerated cooling will use approximately 3 gpd of water.

OFF-SITE LAUNDRY

All laundry cleaning, including uniforms, tablecloths, napkins, cleaning clothes, etc., will be sent to an offsite location for cleaning.

A restaurant generating 90

Lbs./day of laundry consumes an estimated 315 gpd of water.

HIGH EFFICIENCY TOILET &URINALS

Use waterless urinals.

Use piston toilets w/ 1.28 gallons per flush or less.

Conventional toilets & urinals may be up to 2,205 gpd.

Use of high efficiency units will minimize water use to approximately 515 gpd.

RESTAURANT SIGNAGE

Place appropriate water-conservation signage in the restrooms & notices in the menus.

LANDSCAPE PLAN

Minimize irrigated areas.

Use naive vegetation.

Maximize water management efficiency w/Eto or Soil Moisture Probe Controller.

Summary

RWQCB Approved WDR's

B&AP Is Working on Design of M&V (End Use)

RWQCB Has A New Water Conservation Report Standard

Transportation Agency Planning

State Motives Based on Recent California Laws

Federal Motives Based on Funding Availability

Robust Planning Process Delivering Significant Operational Cost Savings.

State Motive

AB 32 requires California to reduce GHG emissions to 1990 levels by 2020.

SB 375 is one part of achieving this requirement

Regional Transportation Plan must incorporate a Sustainable Communities Strategy that will meet a State-determined regional GHG emission target

Senate Bill 375
Sustainable Communities and Climate Protection Act of 2008

CALIFORNIA AIR RESOURCES BOARD

Requires each of California's 18 federally designated Metropolitan Planning Organizations to explicitly Consider the impact of land use patterns &transportation choices on GHG emissions.

Federal Motive

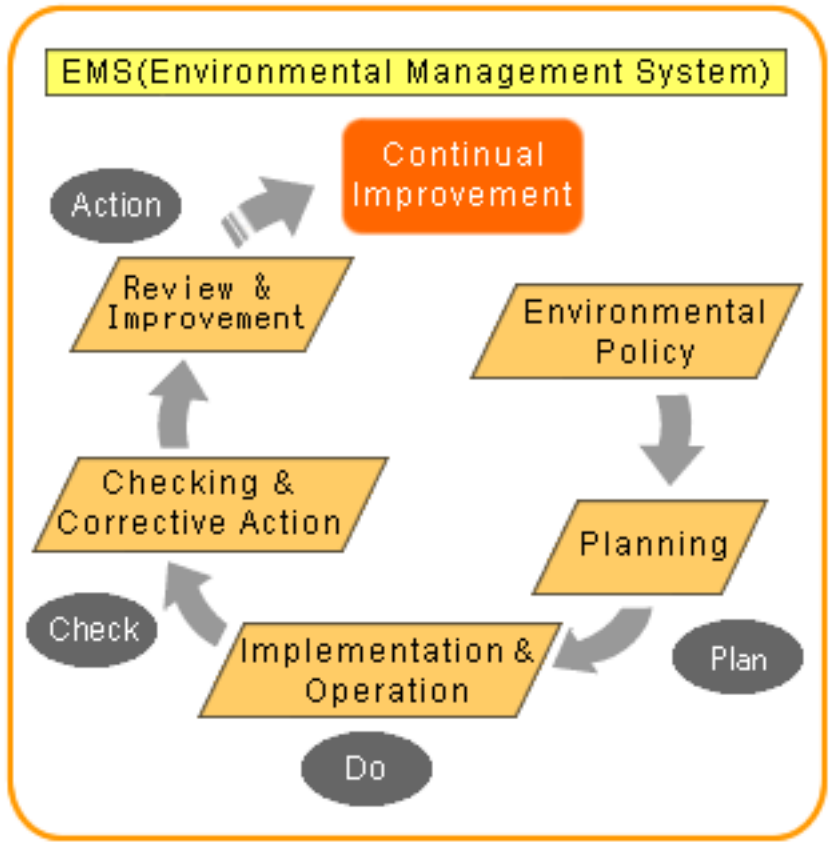
Required as a part of the program to develop and implement a Federal Transit Administration (FTA) sponsored and supported **Environmental Management System** (EMS).

ISO-14001

International Organization for Standardization (ISO) 1400l-based Environmental Management System.

An EMS is a set of operational procedures, based on an adopted Environmental Policy, to ensure compliance with federal, state &local environmental regulations,

And to facilitate environmental stewardship.



EMS Issues & Benefits

Energy Conservation,

Efficient water use,

Material recycling & Waste Minimization,

Vehicle Emissions Reduction,

Improved Fueling Operations,

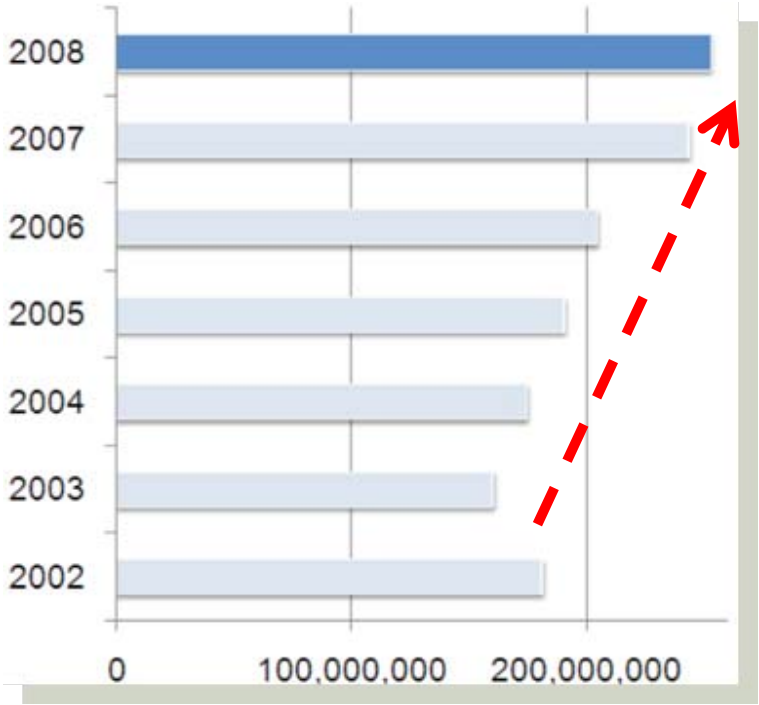
Hazardous Material Management & Substitution.

Results:

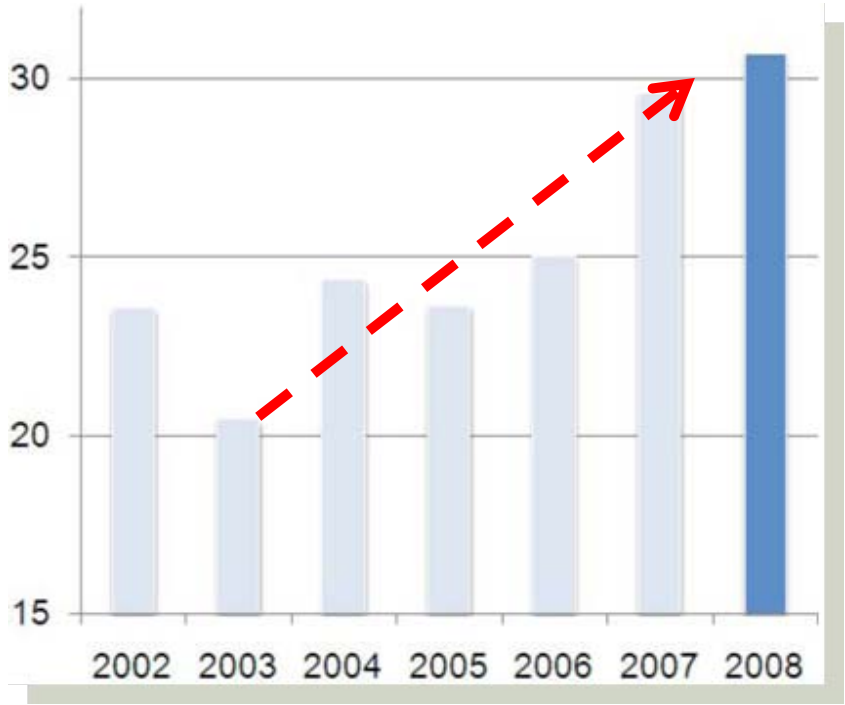
Better regulatory compliance & fine avoidance,

Advantages in financing, insurance, marketing, regulatory compliance, and other areas of planning, construction, operations, & procurement.

Water Use Motive



Gallons



Gallons/Revenue Hour

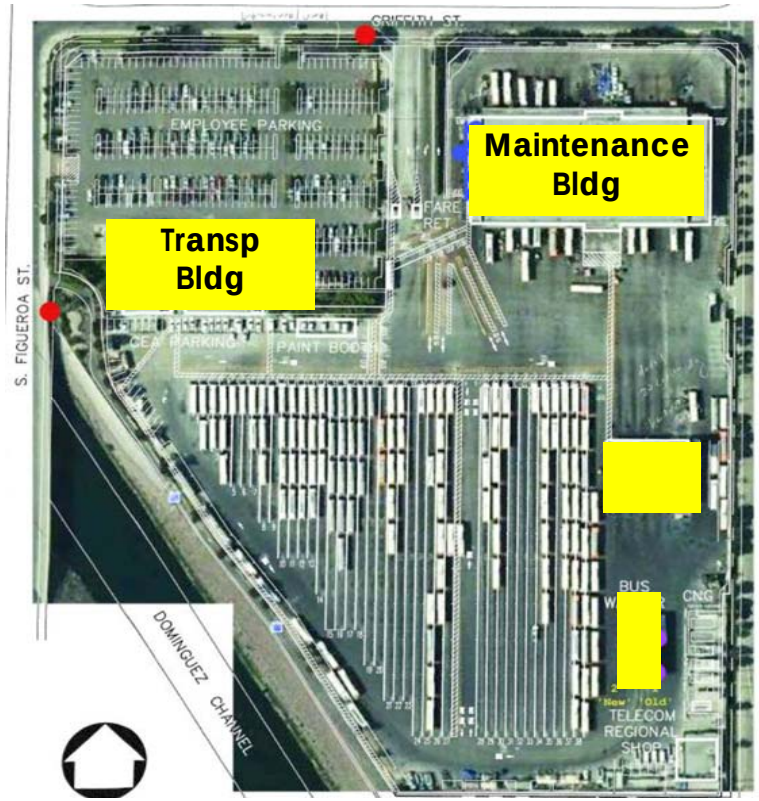
Operationally Complex

14 Bus Maintenance Divisions

4 Rail Maintenance Divisions

27 Story Administrative Office Building

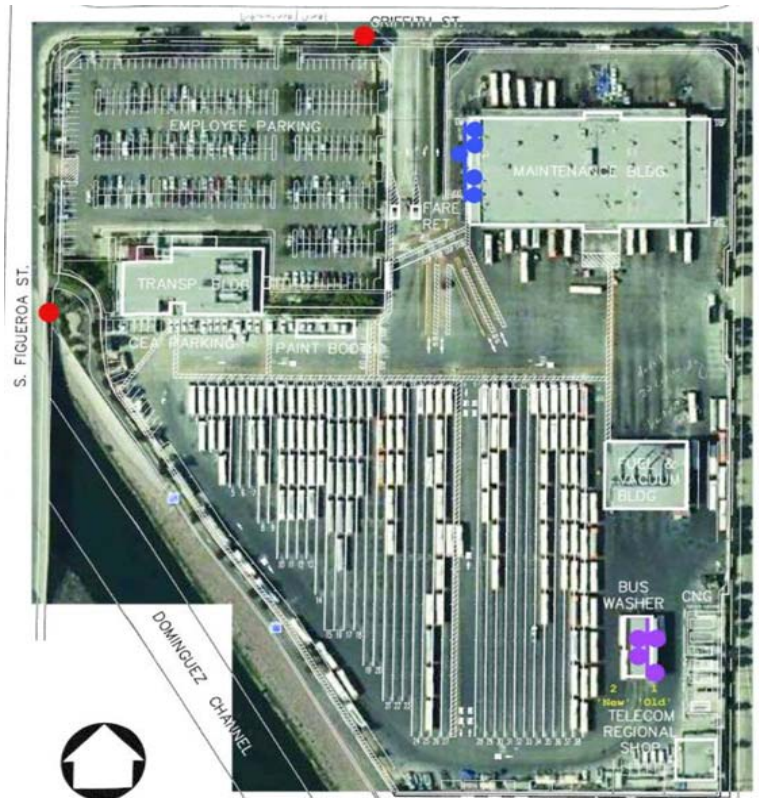
D18 Site Review



Fuel/Vac

Bus Wash Bays

D18 Site Review



Maintenance Bldg.:
(6 Sub-Meters Installed)

1 Fixed
5 Temporary

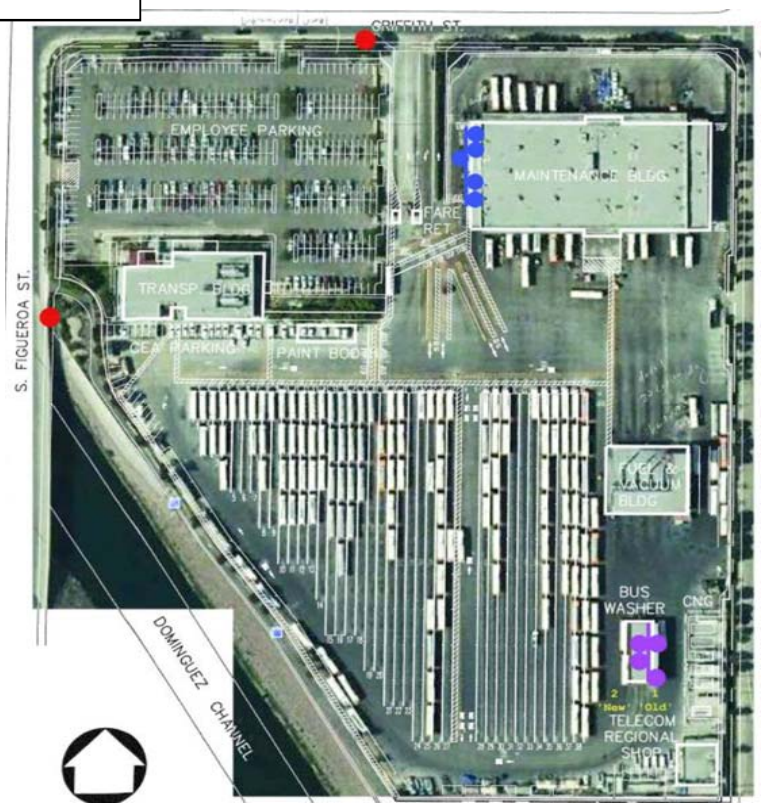
Bush Washing Bays:
(8 Sub-Meters Installed)

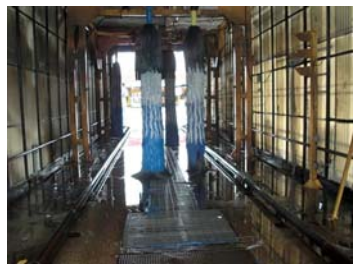
Bay 1:
2 Fixed
1 Temporary

Bay 2:
2 Fixed
3 Temporary

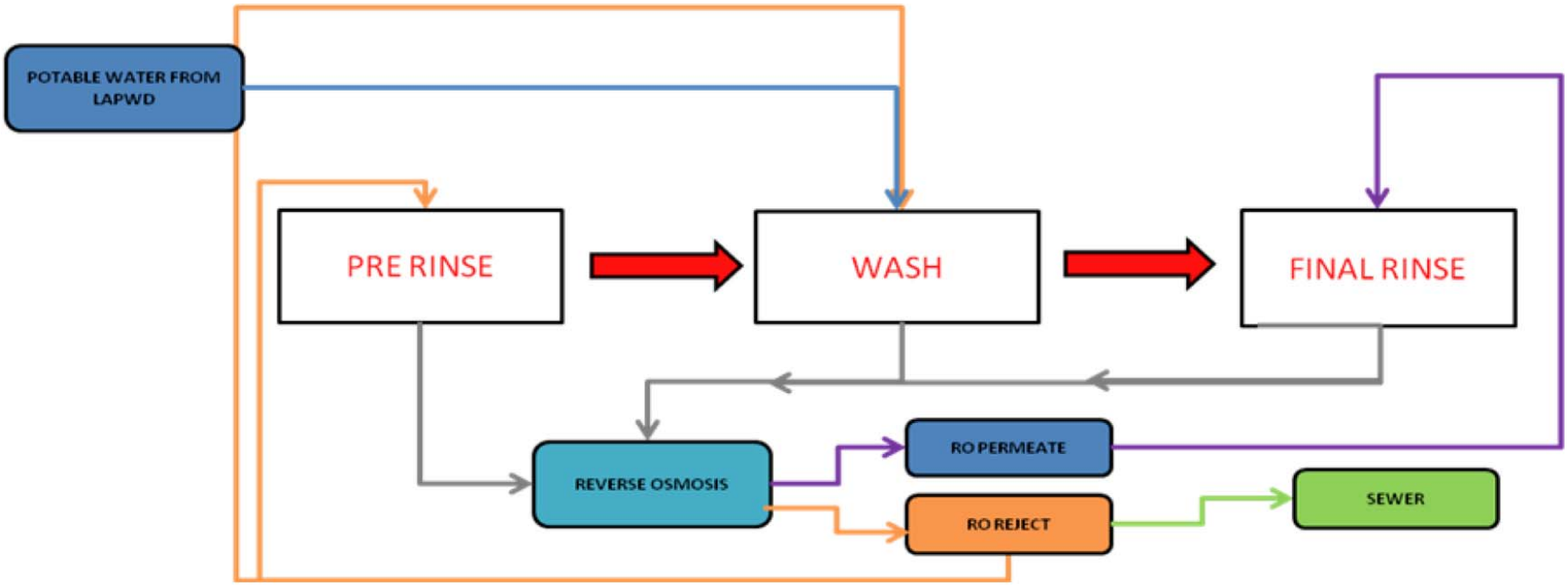
D18 Site Review

X

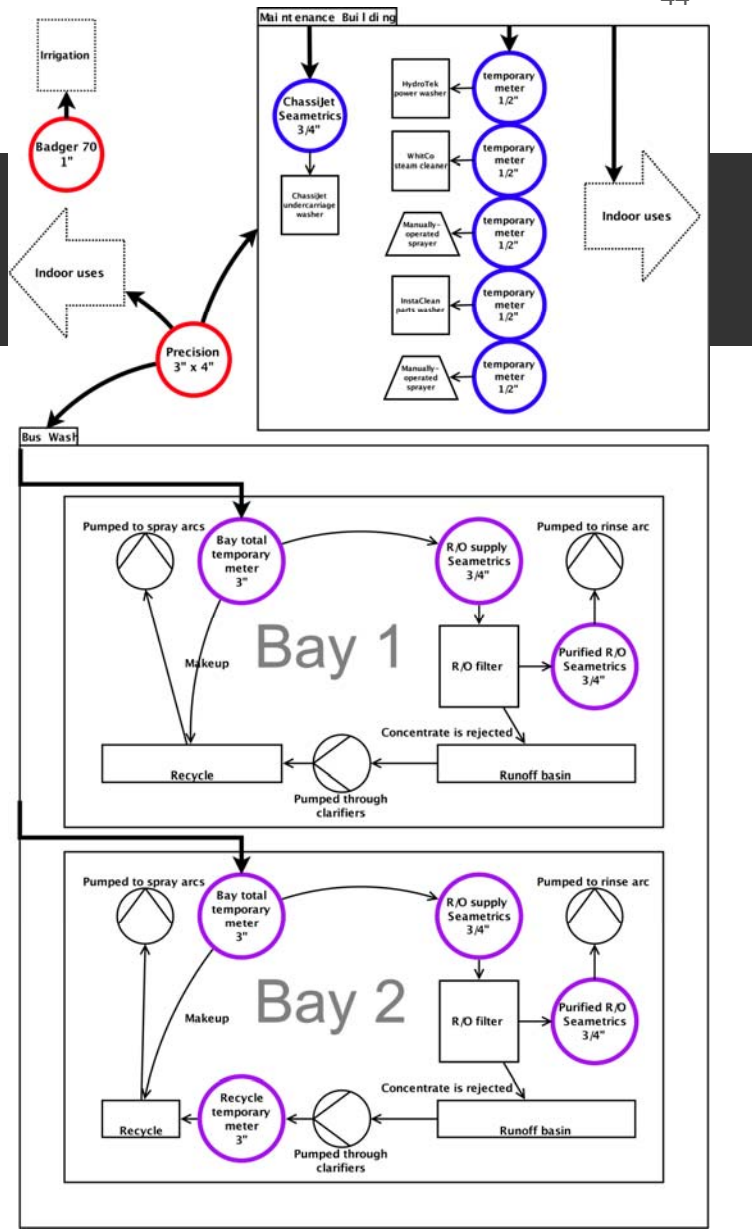




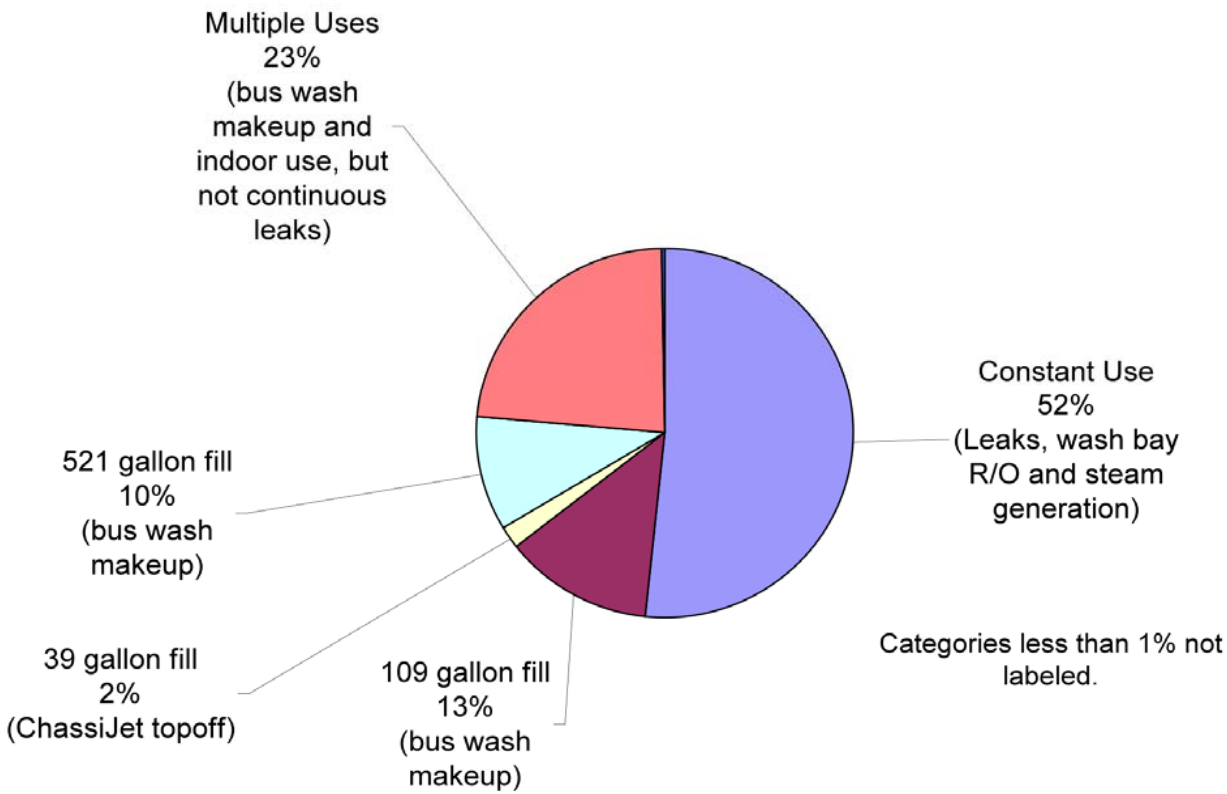
D18 Bus Wash


POTABLE WATER FROM LAPWD
PRE RINSE
WASH
FINAL RINSE
REVERSE OSMOSIS
RO PERMEATE
RO REJECT
SEWER

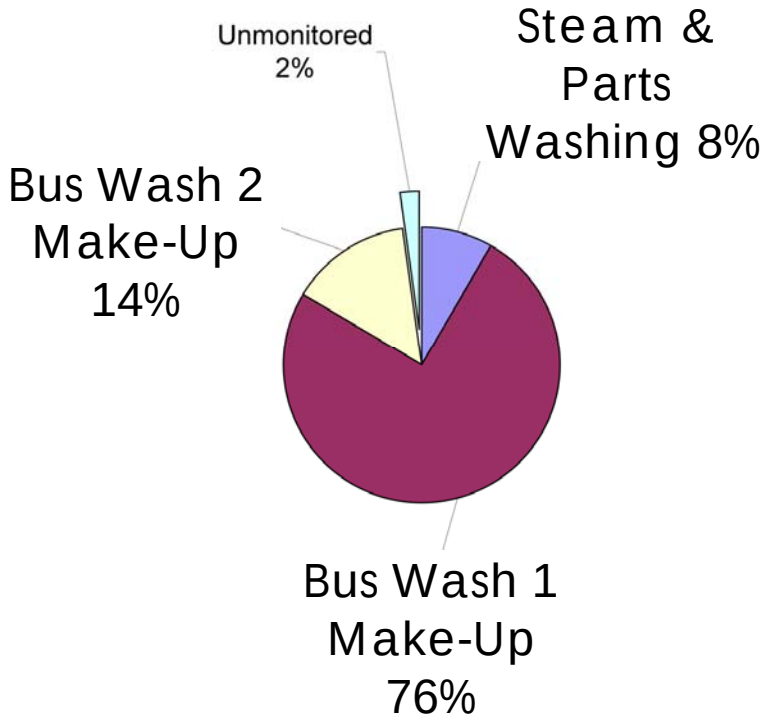
Sub-Metering @ D18 Bus Wash



D18 Data Logging Results: By Volume; Main Meter

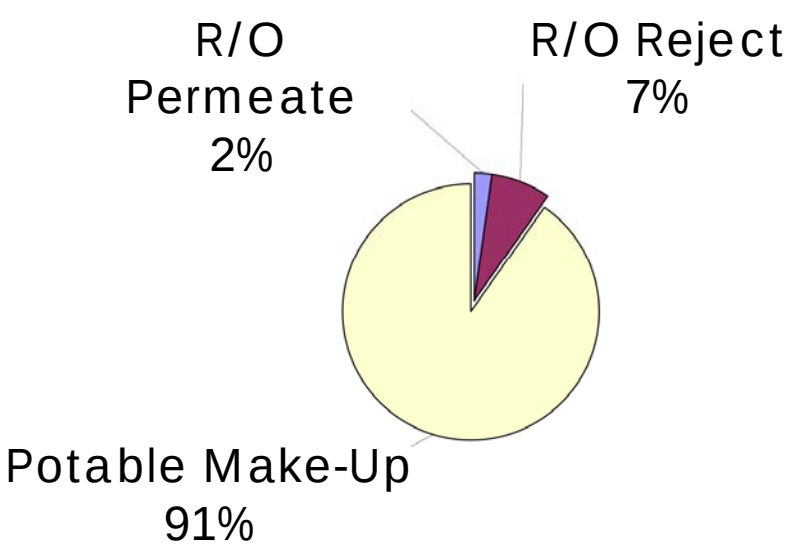


D18 Data Logging Results: By Facility

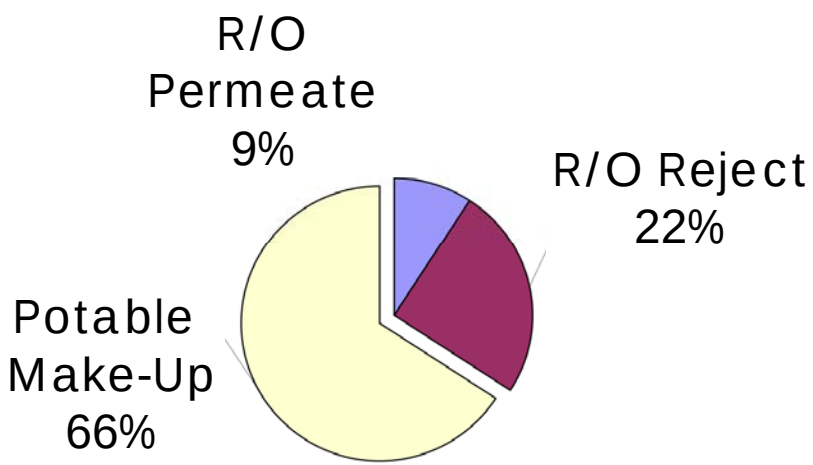


D18 Data Logging Results
Bays 1 & 2 (1,943 Buses Washed)

Bay 1
(1,561 Buses)



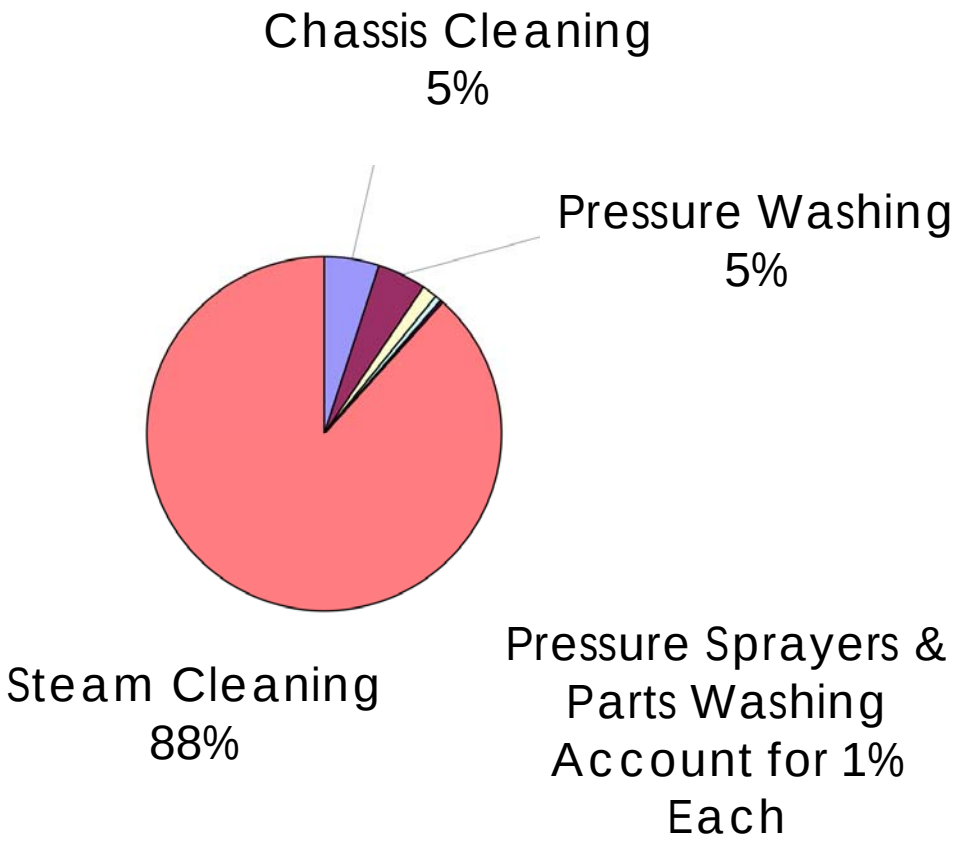
Bay 2
(382 Buses)



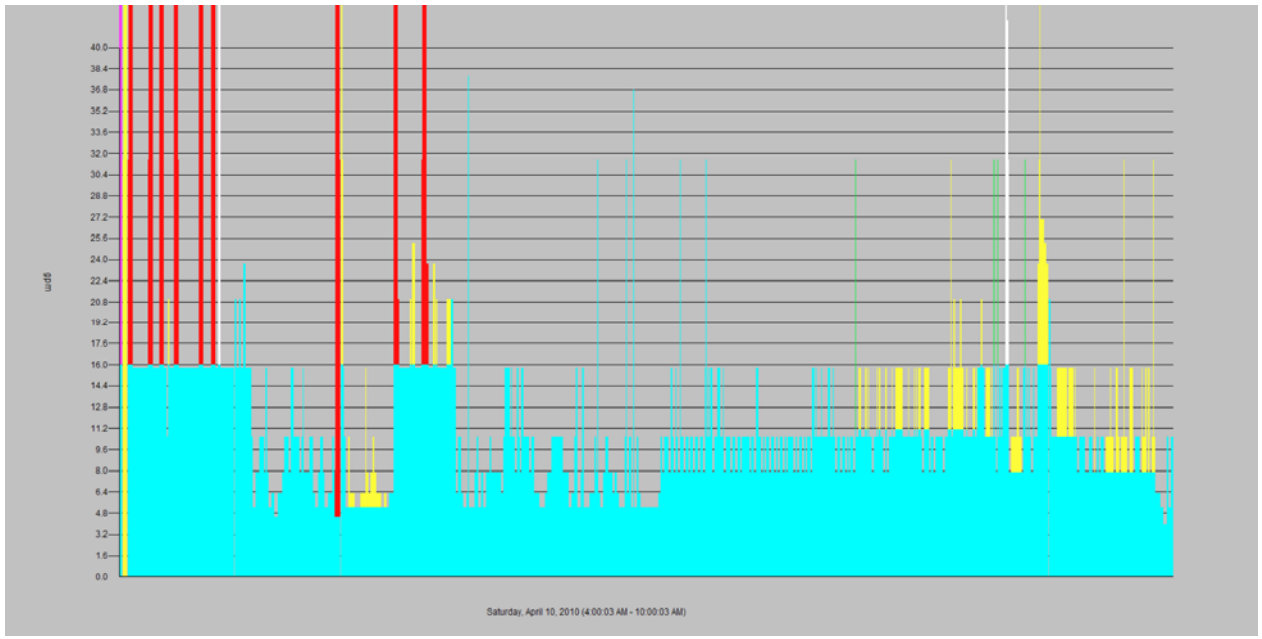
Bay 2 Improvements:

- ✓Reduced potable water make-up
- ✓Increased R/O permeate use
- ✓Increased R/O reject recycling

D18 Data Logging Results: Maintenance Bldg. End Uses

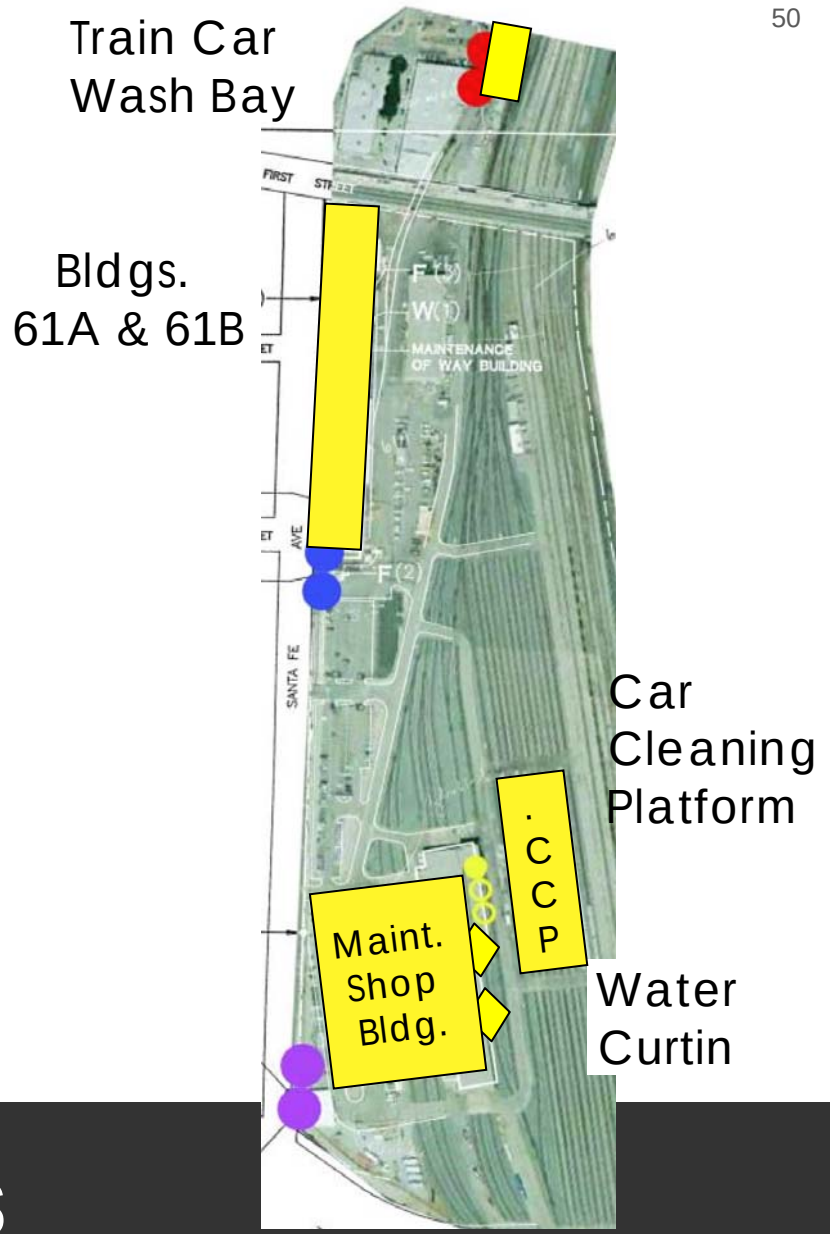


D18 Flow Trace Results

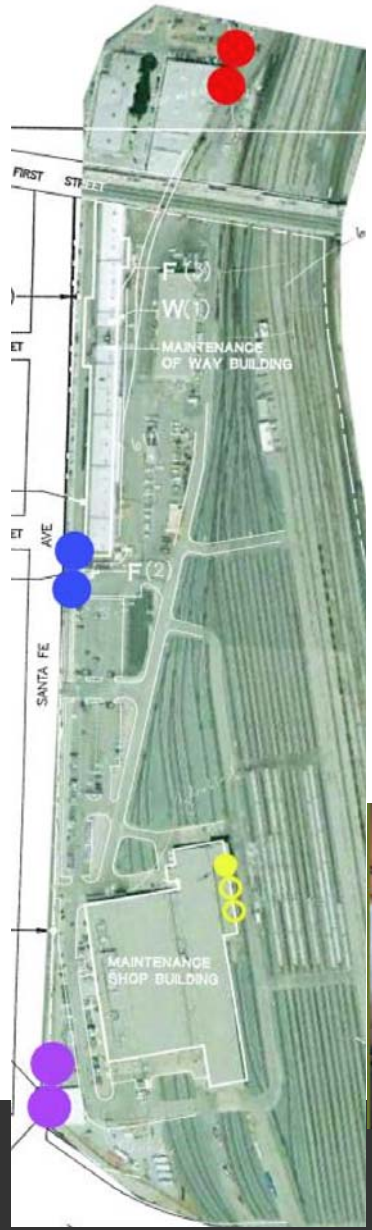


Constant Flow Observations (8 to 12 gpm):

- ✓Leaks?
- ✓Malfunction?
- ✓R/O Operation?
- ✓Other end uses?



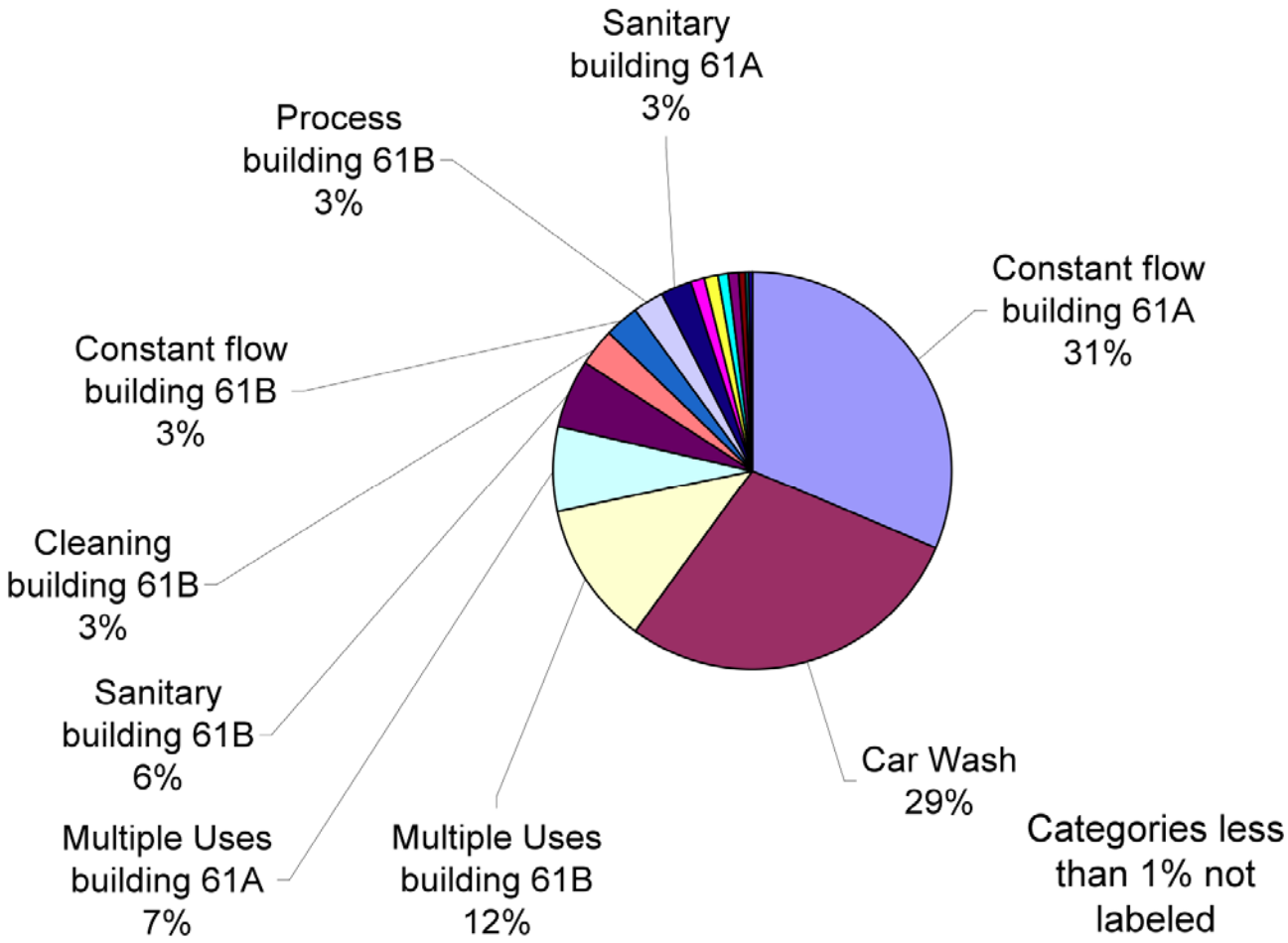
D20 Site Reviews

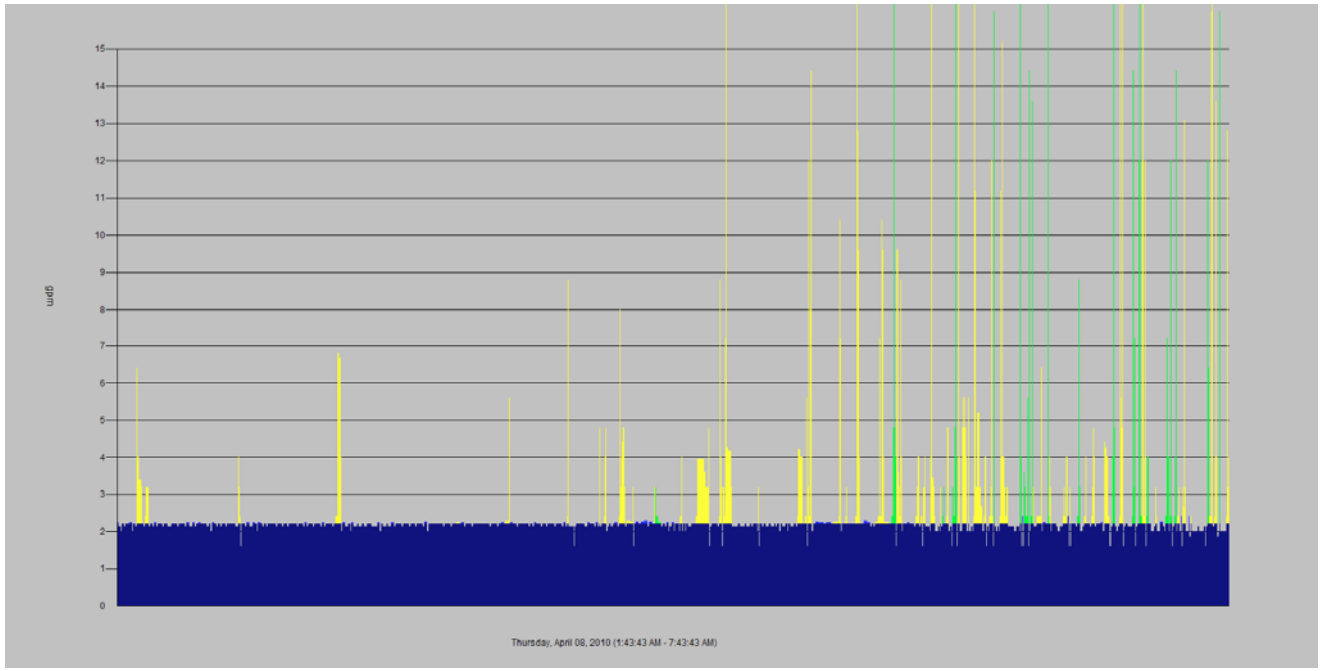

FIRST
F(3)
W(1)
MAINTENANCE
OF WAY BUILDING
AVE
SANTA FE
F(2)
MAINTENANCE
SHOP BUILDING


Water Supply Pipeline to CCP

D20 Site

D20 Data Logging Results: End Use Results





Constant Flow Observations (2 gpm):

- ✓Leaks?
- ✓Malfunction?
- ✓Leaking toilet?

D20 Flow Trace Results

Water Conservation Strategies

Opportunities & Constraints Overview

1. Municipal Recycled Water for Bus Washing

	gpy	g/RHr.	B/C	Years to Return
D18	**8,824,576**	**13.24**	**1.40**	**1.0**
Metro	**105,894,912**	**13.24**	**1.40**	**1.0**

Opportunities

- Reduced Costs
- May Synergize with #7

Constraints

- Site Specific Availability
- Additional energy for RO to remove TDS.

2. Extension of Bus Runoff Capture On-Site Reclamation

	gpy	g/RHr.	B/C	Years to Return
D18	**3,712,000**	**5.57**	**23.00**	**0.64**
Metro	**44,544,000**	**5.57**	**23.00**	**0.64**

Opportunities

- Reduces Storm Water Discharges by 188,500 gpd
- Reduces Overall Consumption

Constraints

- Yard Conditions Require Verification
- Consistent use blowers would increase power consumption.
- May Need to Address Water Quality

6. Municipal Recycled Water Substitution for Car Washing (Rail Facilities)

	gpy	g/RHr.	B/C	Years to Return
D20	**660,480**	**1.01**	**1.12**	**13.41**
Metro	**2,641,920**	**4.03**	**1.12**	**13.41**

Opportunities

- Reduced Costs
- May Synergize with #7

Constraints

- Site Specific Availability
- Additional energy for RO to remove TDS.

5. Replacement of Steamer (Bus Facilities)

	gpy	g/RHr.	B/C	Years to Return
D18	**763,489**	**1.14**	**3.63**	**6.39**
Metro	**9,161,865**	**1.15**	**3.63**	**6.39**

Opportunities

- Reduced Costs
- Decrease of 2,092 gpd per Bus Division to storm system.
- Decrease natural gas consumption

Constraints

Assessing Education & Outreach Measures (All Facilities)

	gpy	g/RHr.	B/C	Years to Return
D18	**778,140**	**1.15**	**1.96**	**2.04**
Metro	**9,732,102**	**1.12**	**2.06**	**1.94**

Opportunities

- Significant Conservation Benefit Across All Operations.
- Can Be Tailored to Specific Objectives.

Constraints

- Costs for Implementation and Continuous Training.

3. Replacement of Sanitary Fixtures

	gpy	g/RHr.	B/C	Years to Return
D18	1,038,382	1.32	1.05	10.35
D20	978,688	5.96	0.84	26.73
Metro	16,374,688	1.89	2.58	20.89

Opportunities

- Conservation Rebates Available to Decrease Costs.
- Reduces energy consumption for hot water conserved.

Constraints

4. On-Site Gray Water (Bus &Rail Facilities)

	gpy	g/RHr.	B/C	Years to Return
D18	880,000	1.32	1.05	10.35
D20	660,480	1.01	1.24	1.31
Metro	13,201,920	1.53	1.55	11.59

Opportunities

- Reduced Costs
- Decrease of 48,800 gpd discharged

Constraints

- Site Specific Plumbing Retrofits.
- May require individual permitting

7. Municipal Recycled Water for Landscape Irrigation (Bus &Rail Facilities)

	gpy	g/RHr.	B/C	Years to Return
D18	**151,552**	**0.23**	**0.22**	
Metro	**1,818,634**	**0.21**	**0.22**	

- Opportunities
  - Reduced Costs
  - May Synergize with #1 & 6
- Constraints
  - Site Specific Availability
  - Onsite Retrofits

8. Replacement of Car Wash Facility (Rail Facilities)

	gpy	g/RHr.	B/C	Years to Return
D18	**132,096**	**0.81**	**0.03**	
Metro	**528,384**	**0.81**	**0.03**	


Typical drive through train washing plant. Note special track drainage.

Opportunities

Decreases 528,384 gpd of offsite wastewater discharge

Constraints

9. Replacement of Engine Compartment Cleaner (Bus Facilities)

	gpy	g/RHr.	B/C	Years to Return
D18	**33,641**	**0.05**	**0.16**	
Metro	**403,690**	**0.05**	**0.16**	

Opportunities

Reduced Energy Consumption

Constraints

10. Replacement of Under Chassis Washer (Bus Facilities)

	gpy	g/RHr.	B/C	Years to Return
D18	**2,920**	**0.004**	**0.01**	
Metro	**34,040**	**0.004**	**0.01**	

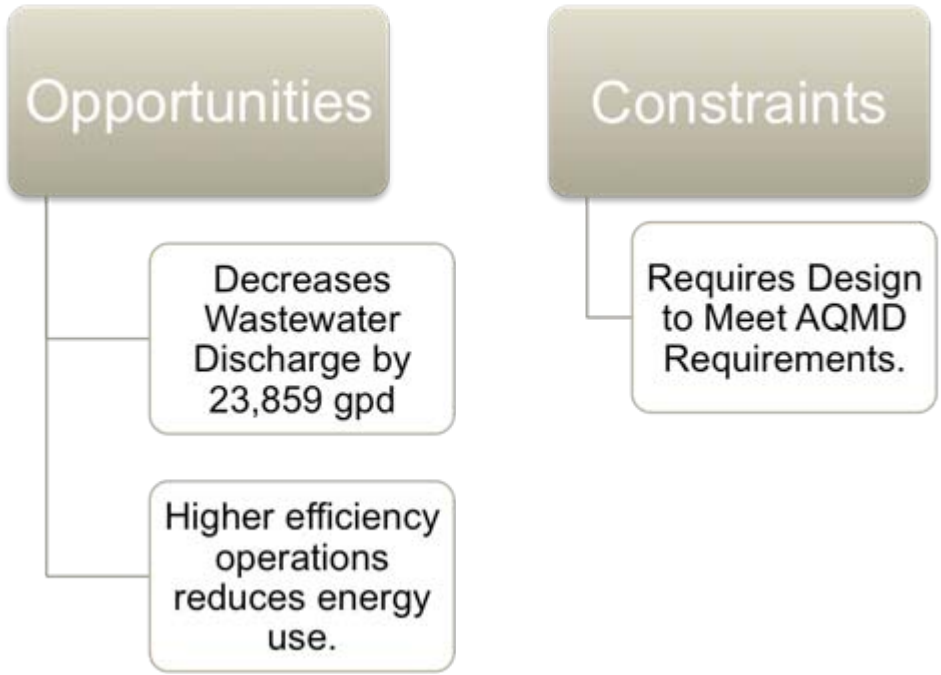
Opportunities

- Higher efficiency reduces onsite energy consumption
- Decrease wastewater discharge by 37,960 gpd.

Constraints

11. Replacement of Air Scrubbing Water Curtain (Rail Facilities)

	gpy	g/RHr.	B/C	Years to Return
D20	**5,965**	**0.04**	**0.05**	
Metro	**23,859**	**0.04**	**0.05**	



12. Replacement of Small Parts Washer (Bus Facilities)

	gpy	g/RHr.	B/C	Years to Return
D18	**1,095**	**0.002**	**0.01**	
Metro	**13,140**	**0.002**	**0.01**	

Opportunities

- Decreases Wastewater Discharge by 9,984 gpd
- Higher efficiency operations reduces energy use.

Constraints

Top Strategies: Conservation – Gallons/Revenue Hr.

Strategy	Years	G/RHr.	MG/Y
1 Recycled Water Bus Wash	1.0	13.24	105.89
2 Extend Bus Run Out	0.64	5.57	44.5
6 Recycled Water Car Wash	13.41	4.03	2.64
5 Replace Steamer	6.39	3.63	9.2
13 Education	1.94	2.06	9.7
3 Replace Sanitary Fixtures	20.89	1.89	16.4
4 Gray Water	11.59	1.55	13.2
Total			201.53

Potential Cross-Cutting Impacts

		Energy		Wastewater		Storm water	
	Water Action Plan Strategy	Onsite Use	Offsite Generation	Onsite Generation	Offsite Discharge	Onsite Capture	Offsite Discharge
1	Municipal Recycled Water Substitution for Bus Washing (Bus Facilities only)	Additional energy may be required for additional treatment at the RO treatment system to accommodate the higher TDS water.	None	None	None	None	None
2	Extension of Bus Runoff Capture On-Site Reclamation (Bus Facilities)	Consistent use of the air blowers would increase onsite power consumption.	None	Increase recycle efficiency would reduce total bus waste discharge by 188,500 gpd	Increase recycle efficiency would reduce total bus waste discharge by 188,500 gpd	Capture of addition runoff for onsite recycle would reduce discharge to storm water system by 188,500 gpd	Capture of addition runoff for onsite recycle would reduce discharge to storm water system by 188,500 gpd
3	Replacement of Sanitary Fixtures (All bus and rail facilities)	Use of low flow showerheads and faucets will reduce energy consumption consistent with the volume of hot water conserved.	Decreased treatment and pumping of 17 MGD	Approximately 17 MGD of wastewater reduction	Approximately 17 MGD of wastewater discharge reduction	None	None
4	On-Site Graywater (Bus and Rail facilities)	Onsite pumping & treatment may be required for 48,800 gpd	None	None	Decrease of 48,800 gpd discharged	None	None
5	Replacement of Steamer (Bus facilities only)	Decrease in onsite natural gas consumption will result from more efficient steam production	None	None	None	Decrease of 2,092 per Bus Division to storm system.	Decrease of 2,092 per Bus Division to storm discharge
6	Municipal Recycled Water Substitution for Car Washing (Rail Facilities only)	Additional energy may be required for additional treatment at the RO treatment system to accommodate the higher TDS water.	None	None	None	None	None
7	Municipal Recycled Water Substitution for Landscape Irrigation	None	None	None	None	None	None

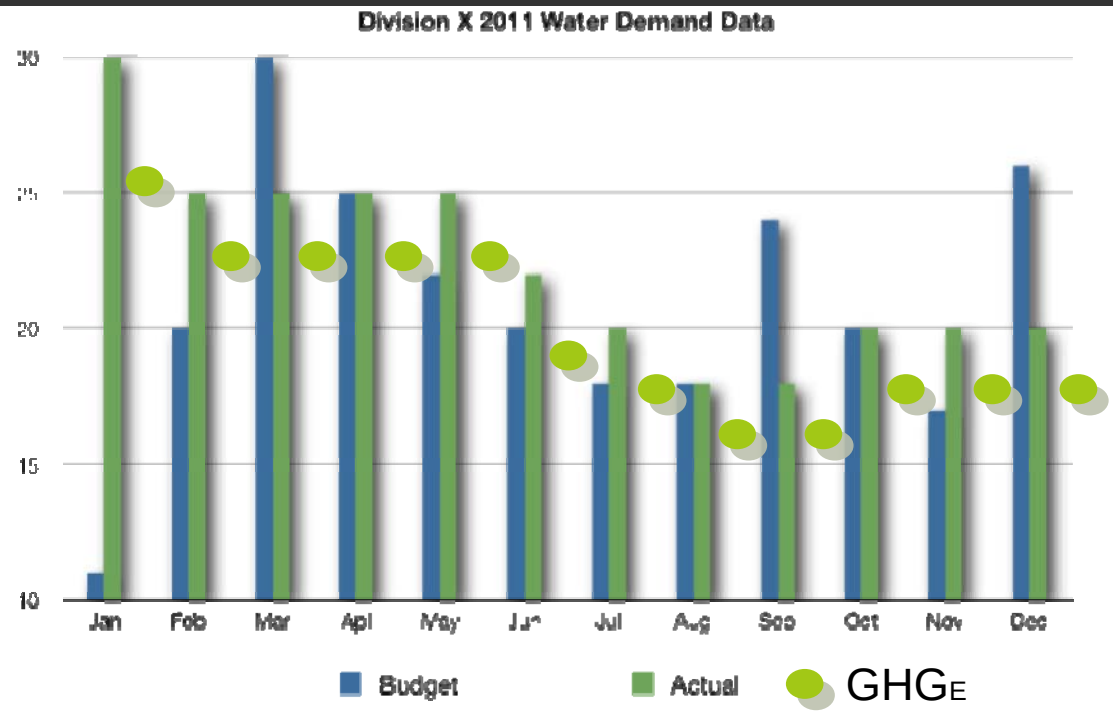
Potential Cross-Cutting Impacts Continued

		Energy		Wastewater		Storm water	
	Water Action Plan Strategy	Onsite Use	Offsite Generation	Onsite Generation	Offsite Discharge	Onsite Capture	Offsite Discharge
8	Replacement of Car Wash Facility (All Rail Facilities)	Higher efficiency operations would reduce onsite energy consumption	Treatment & pumping of 528,384 gpd would result offsite by the water purveyor.	Conservation of 528,384 gpd would decrease onsite wastewater generation	Conservation of 528,384 gpd would decrease offsite wastewater discharge	None	None
9	Replacement of Engine Compartment Cleaner (All bus facilities)	Higher efficiency operations would reduce onsite energy consumption	Treatment & pumping of 437,330 gpd would result offsite by the water purveyor.	Conservation of 437,330 gpd would decrease onsite wastewater generation	Conservation of 437,330 gpd would decrease offsite wastewater discharge	None	None
10	Replacement of Under Chassis Washer (Bus facilities only)	Higher efficiency operations would reduce onsite energy consumption	Treatment & pumping of 37,960 gpd would result offsite by the water purveyor.	Conservation of 37,960 gpd would decrease onsite wastewater generation	Conservation of 37,960 gpd would decrease offsite wastewater discharge	None	None
11	Replacement of Air Scrubbing Water Curtain (Rail Facilities)	Higher efficiency operations would reduce onsite energy consumption	Treatment & pumping of 23,859 gpd would result offsite by the water purveyor.	Conservation of 23,859 gpd would decrease onsite wastewater generation	Conservation of 23,859 gpd would decrease offsite wastewater discharge	None	None
12	Replacement of Small Parts Washer (bus facilities only)	Higher efficiency operations would reduce onsite energy consumption	Treatment & pumping of9984 gpd would result offsite by the water purveyor.	Conservation of 9984 gpd would decrease onsite wastewater generation	Conservation of 9984 gpd would decrease offsite wastewater discharge	None	None
13	Assessing Education and Outreach Measures	Not Quantified	Not Quantified	Not Quantified	Not Quantified	Not Quantified	Not Quantified

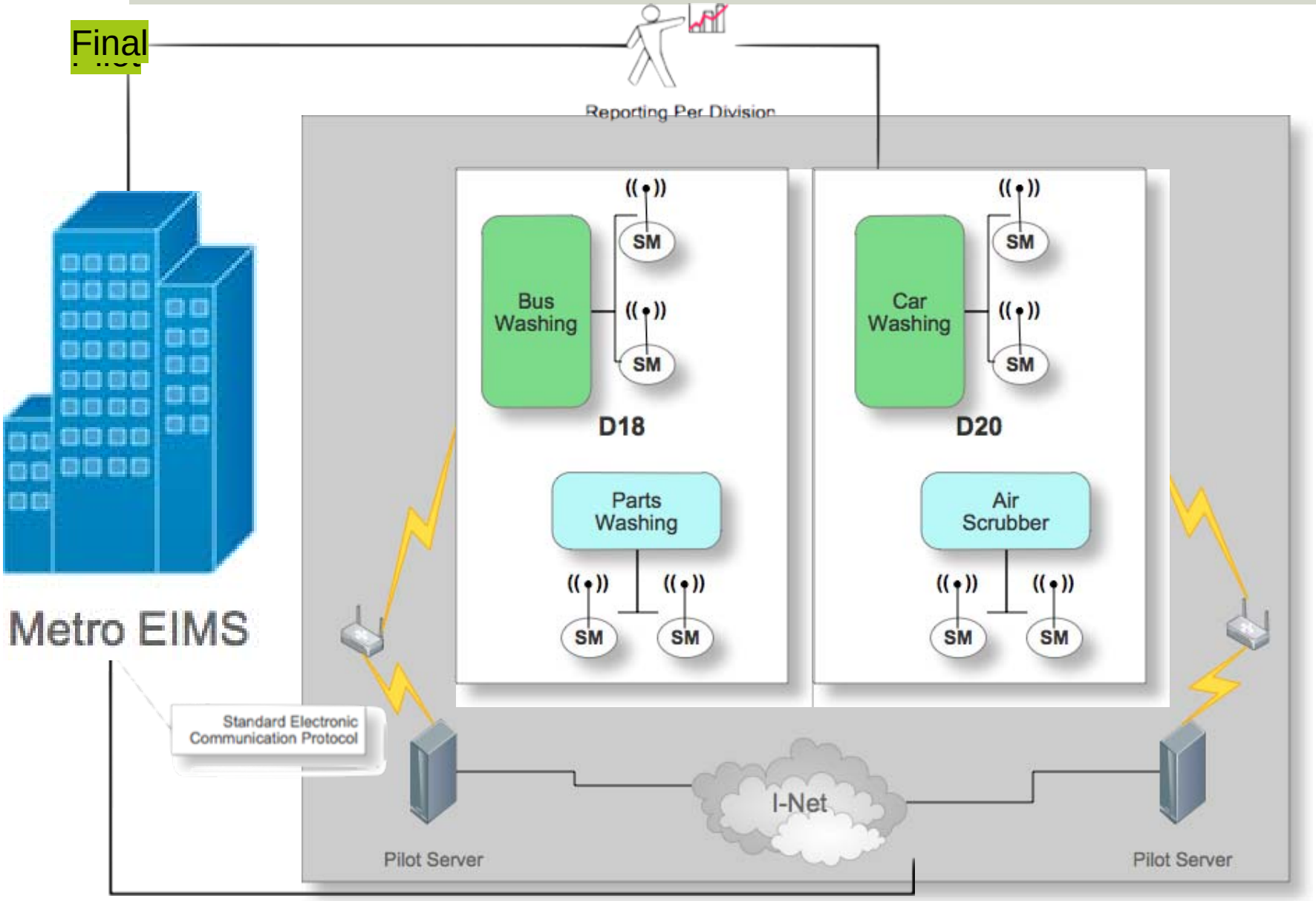
Summary

Initiating Piloting & Site Verification Across All Operations.

Example Reporting Scheme



Final


Reporting Per Division
Bus Washing
SM
SM
D18
Parts Washing
SM
SM
Car Washing
SM
SM
D20
Air Scrubber
SM
SM
Metro EIMS
Standard Electronic Communication Protocol
I-Net
Pilot Server
Pilot Server

Palm Springs Animal Control

Local Motive:
Maximize a Local Resource.

State Motive:
Comply w/Building Standards.

Ethical Motive:
Conserve, Reduce, Reuse.

Meeting Green Building Standards

Palm Springs Animal Control Facility.

Water At A Premium

Kennel Operations Have Considerable Water Demand

Proximity to Supply Source

Currently vacant parcel.

Adjacent to WWTP

Goal: Maximize Use of Reclaimed Water for Interior & Exterior Purposes.

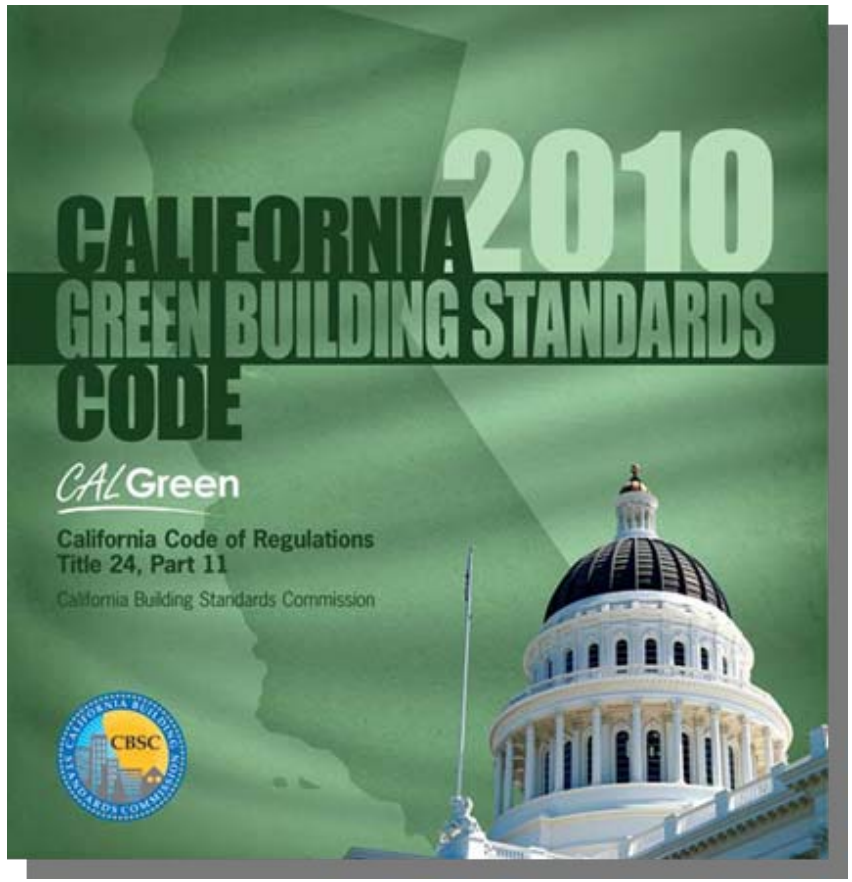
CALGreen Code

Title 24, Part 11 of the California Code of Regulations.

Reduce Water Demand by 20%.

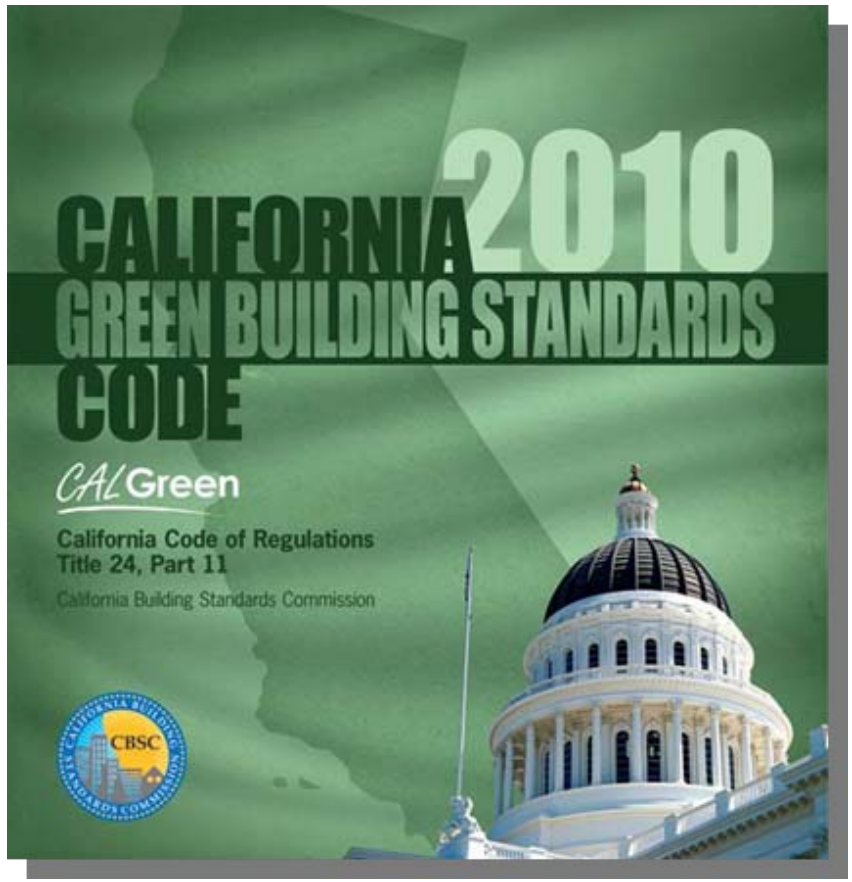
Reduce Wastewater Production by 20%.

All new building design & construction beginning on January 1, 2011.



CALGreen Code (continued)

1. Reduce GHG emissions from buildings;
2. Promote environmentally responsible, cost-effective, healthier places to live & work;
3. Reduce energy & water consumption;
4. Respond to the directives mandated in the California Global Warming Solutions Act of 2006 (Assembly Bill 32).



Planning for 11 MGY Demand in Palm Springs

DPH & RWQCB Concerns

Hot Water / Interior Use of Reclaimed Water

Legionella Is The Major Regulatory Concern

- Dead-End Pipe Runs (Bacteria Regrowth)
- Worker Safety
- Public Safety

Irrigation Design

Title 22 / Title 17 California Water Code

No Reclaimed Water for Animal Consumption

Access Control

Principle Interior Demand.

Access to reclaimed water is by key through lock box.

Control panel equipped with quick-couple connection.

Kennel Wash Down

High pressure wash-down.

Secondary spray disinfectant added for legionella.

Implementation of an ongoing training training program.

SMT (Spray Master Technologies)

Irrigation Concerns

Proper Design Techniques

Prevent Overspray, Ponding, & Runoff. Provide Adequate Separation.

Provide Signage, Appropriate Equipment.

GUIDELINES FOR THE PREPARATION OF AN ENGINEERING REPORT FOR THE PRODUCTION, DISTRIBUTION AND USE OF RECYCLED WATER

Tools in the Toolbox

ISO 14001 (EMS)

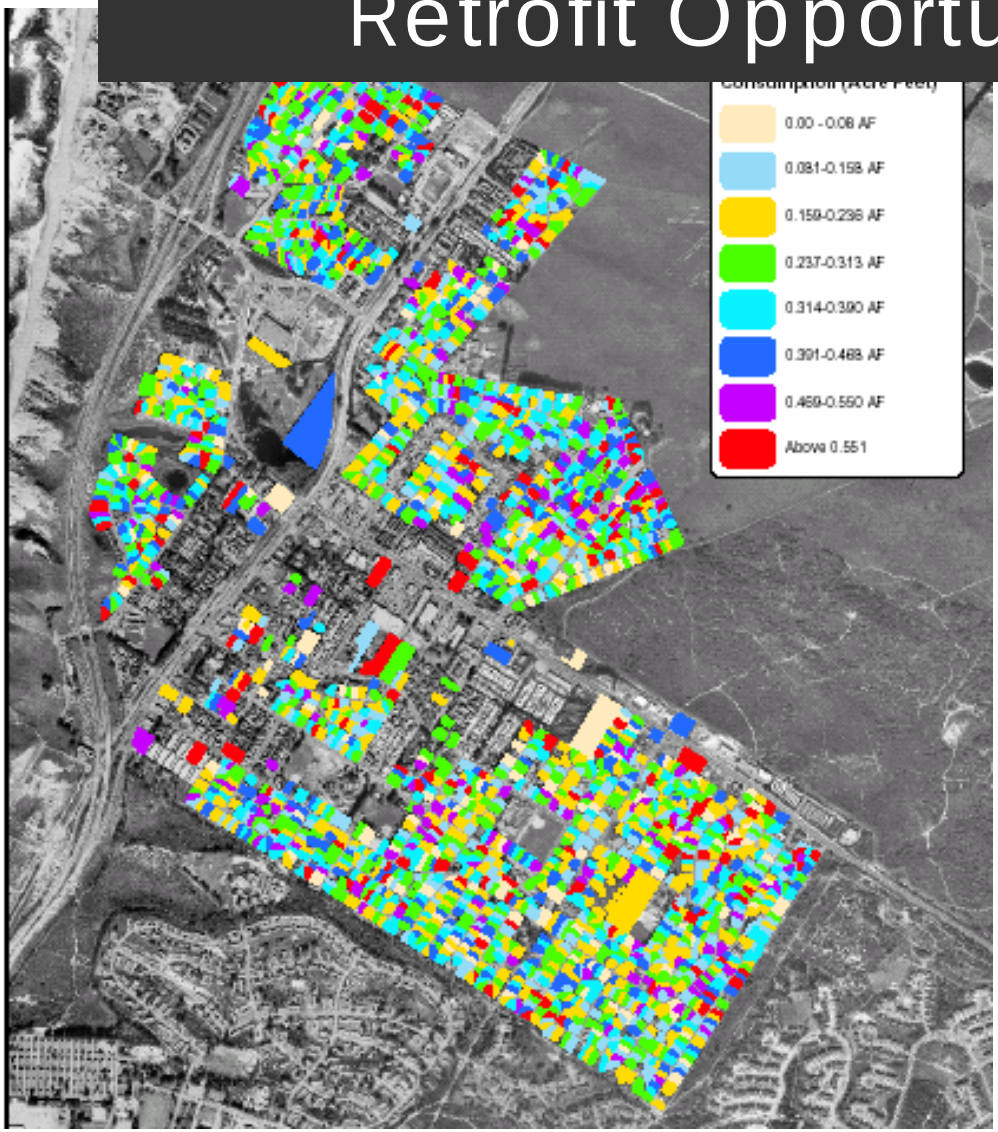
GIS

Benchmarking

Measurement & Verification

Data Logging & Disaggregated Analysis

GIS Maximizes Conservation Retrofit Opportunities



- Identify & Target High Water Use
- Potential Applicant Contribution

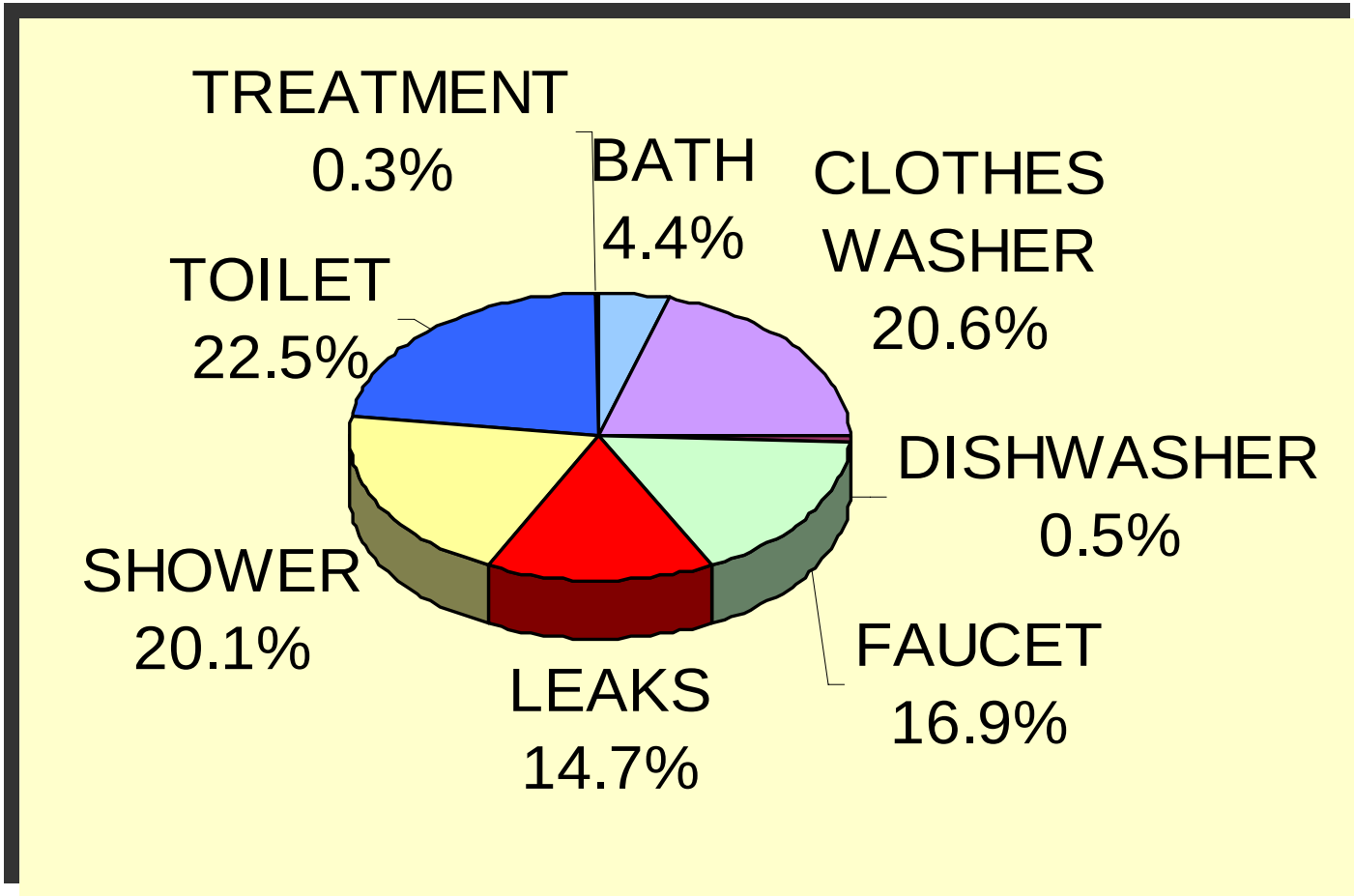
Pragmatic Demand Analysis Provides Verifiable Results

- Accurate & Verifiable Unit Water Demands
- Representative of American Canyon's Actual Conditions
- Field Measurements of Actual Current Water Demands
- Discloses Opportunities & Benefits of Conservation Retrofit

Water Use Measurement Ensures Accurate Demand Projections

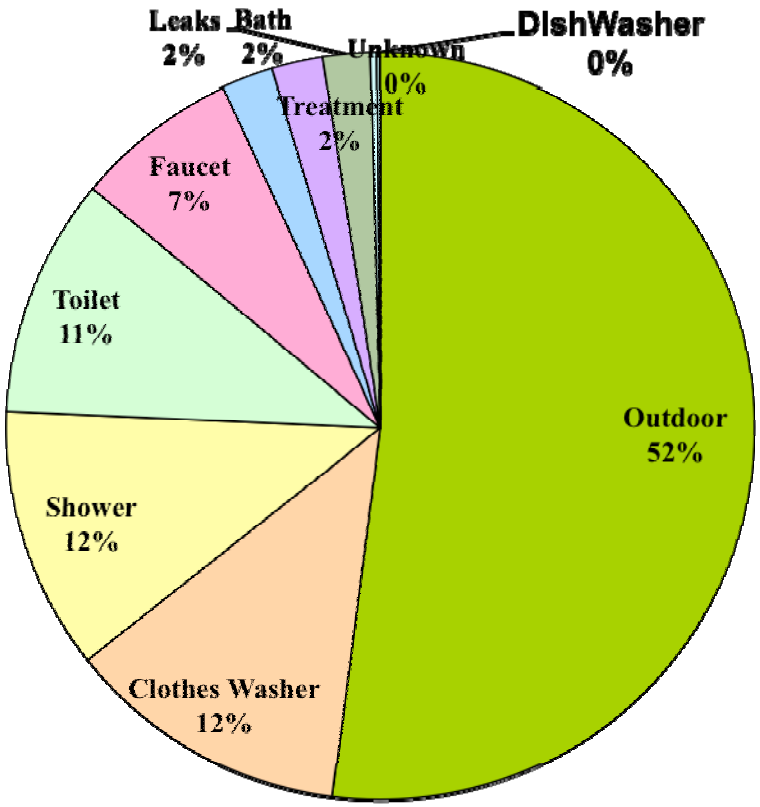
- Specific to Each Customer Class
- Demands Are “Disaggragated” by Use
- Statistically Valid Field Sampling
- Survey of Sampled Customers
- Review of Existing City Demographics
- Correlated to Metered Water Use

Demands "Disaggragated" by Use Yield Accurate Projections



Data Logging Corrects Errors in Past Estimates

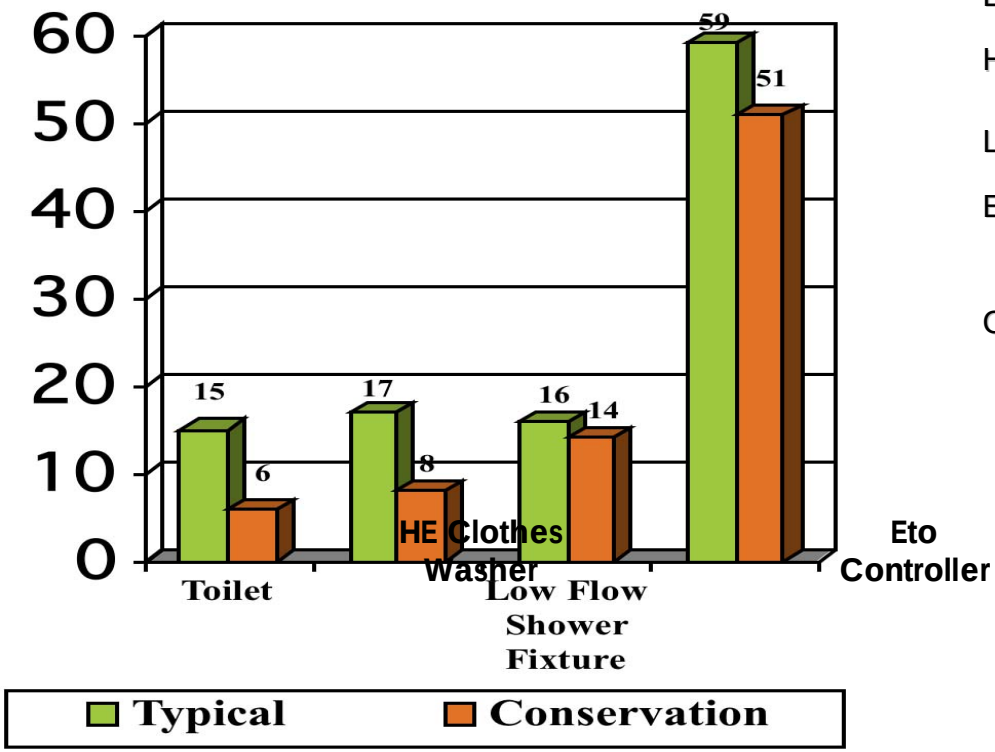
- Average total residential 176.3 gpcd
- Measured 132 gpcd
- Enabled Accurate Projects for New Development of 102 gpcd



Existing Demands Are Fine Tuned to Reflect Future Customer Profiles

- Calibration of Field Measurements
- Review of Planned Projects:
  - Town Center, Oat Hill & Others...
  - Bldg. Area, Irrigable Area
  - Requirements for Conservation Fixtures as Conditions of Approval
  - Project Approval With A Conservation Mindset

Conservation Facilities Deliver Reliable Water Savings



New Home Water Use Projections for Santa Paula, CA

Existing Home Base Rate	132 gpcd
Low Flow Toilet	- 9 gpcd
High Efficiency Clothes Washer	-10 gpcd
Low Flow Shower Fixtures	- 3 gpcd
ET_o Based Irrigation Control	-8 gpcd
Conservation Base Rate	102 gpcd

= **29% Water Use Savings**