

# This presentation premiered at WaterSmart Innovations

[watersmartinnovations.com](http://watersmartinnovations.com)



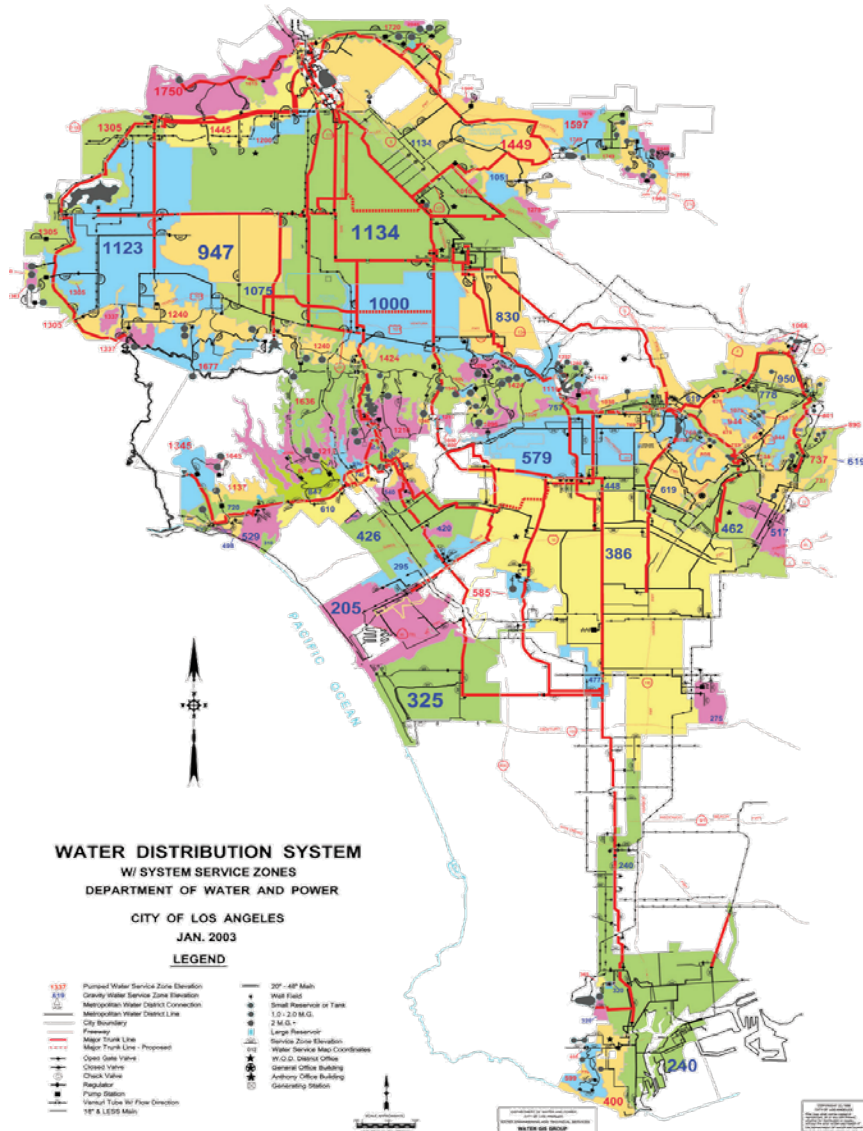
# LIGHTS, CAMERA, ACTION PLAN: THE LOS ANGELES WATER LOSS TASK FORCE

October 4, 2017

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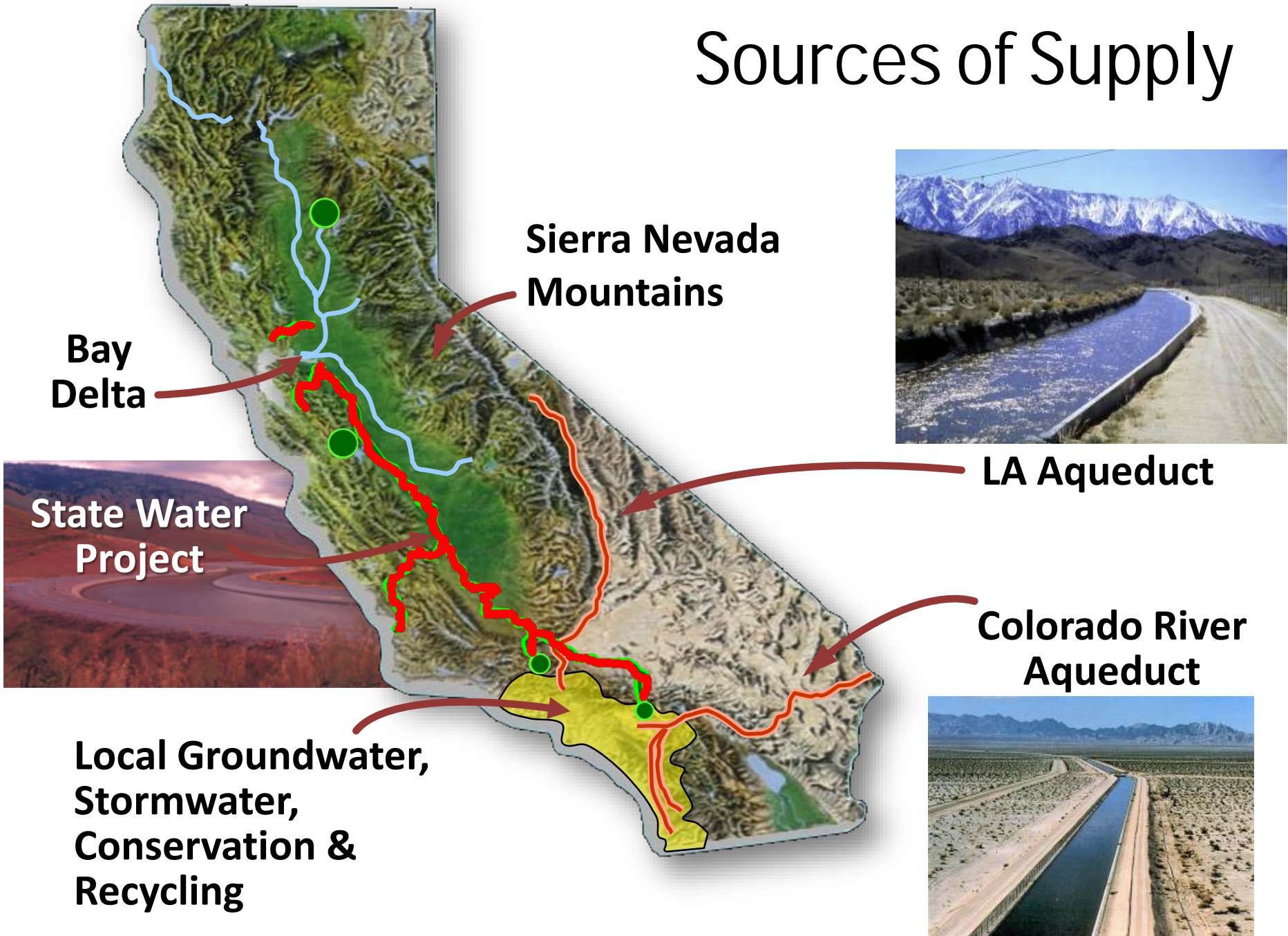
**Putting Customers First** 

# LADWP – The Nations Largest Public Utility



- 473 square miles
- 4 million people served
- 7,327 miles of mains
- 737,583 services
- 113 Pressure Zones
- 60,804 Hydrants
- 430 million gallons of water delivered per day

# Sources of Supply



**LA Aqueduct**



**State Water Project**



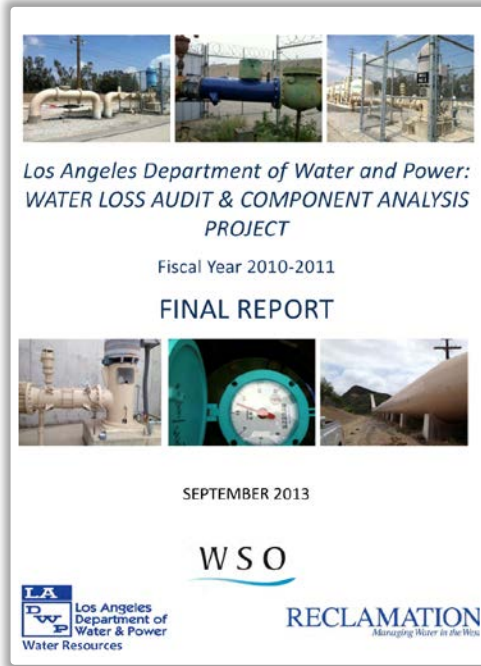
**Colorado River Aqueduct**

**Local Groundwater,  
Stormwater,  
Conservation &  
Recycling**

**Bay  
Delta**

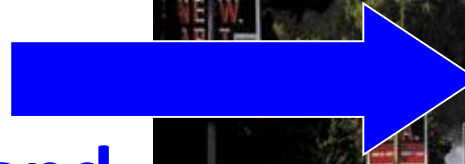
**Sierra Nevada  
Mountains**

# Why are we doing this project?



- 2013 Water Loss Audit and Component Analysis study recommendations
- State Regulatory Requirements
- Minimize production costs / maximize revenue collection

**Saving Water  
Saves money and  
property loss!!!**



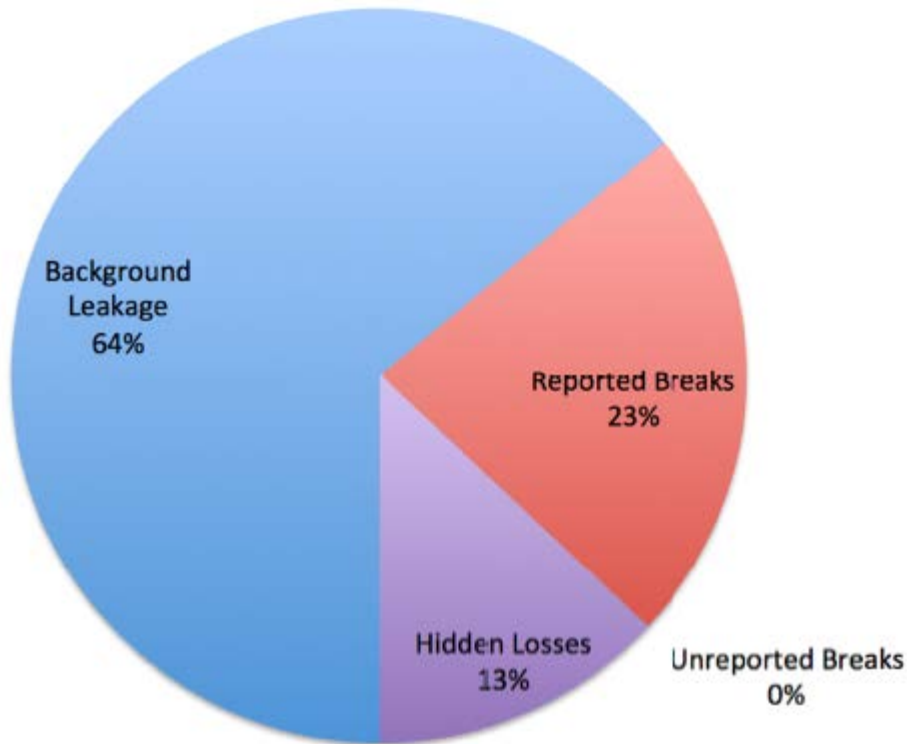
# Performance Indicators

Performance Indicator		Fiscal Year						
		10/11	11/12	12/13	13/14	14/15	15/16	Ave
Non-Revenue Water	LADWP	5.2%	8.2%	4.5%	5.6%	5.8%	7.9%	<b>6.2%</b>
	WADI Average	20%	21%	24%	24%	23%	22%	<b>22%</b>
Infrastructure Leakage Index (ILI)	LADWP	1.26	2.40	1.00	1.42	1.22	1.81	<b>1.52</b>
	WADI Average	3.49	3.03	3.61	3.61	3.26	3.30	<b>3.38</b>
Real Losses / Connection (gals)	LADWP	23	44	18	26	23	33	<b>24.5</b>
	WADI Average	59	56	70	70	65	64	<b>64</b>

WADI = Water Audit Data Initiative, American Water Works Association

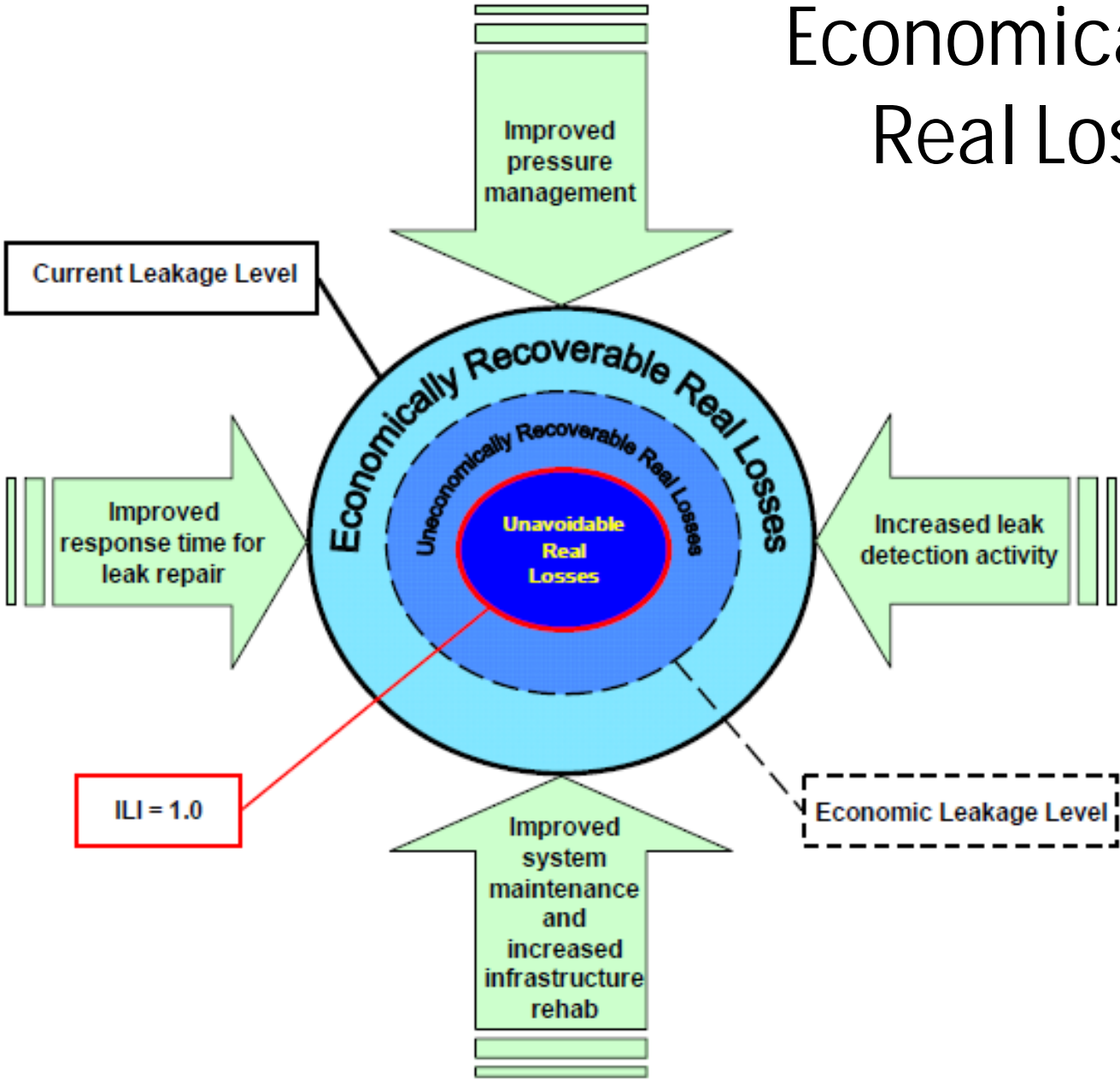


# Real Loss Component Analysis Results



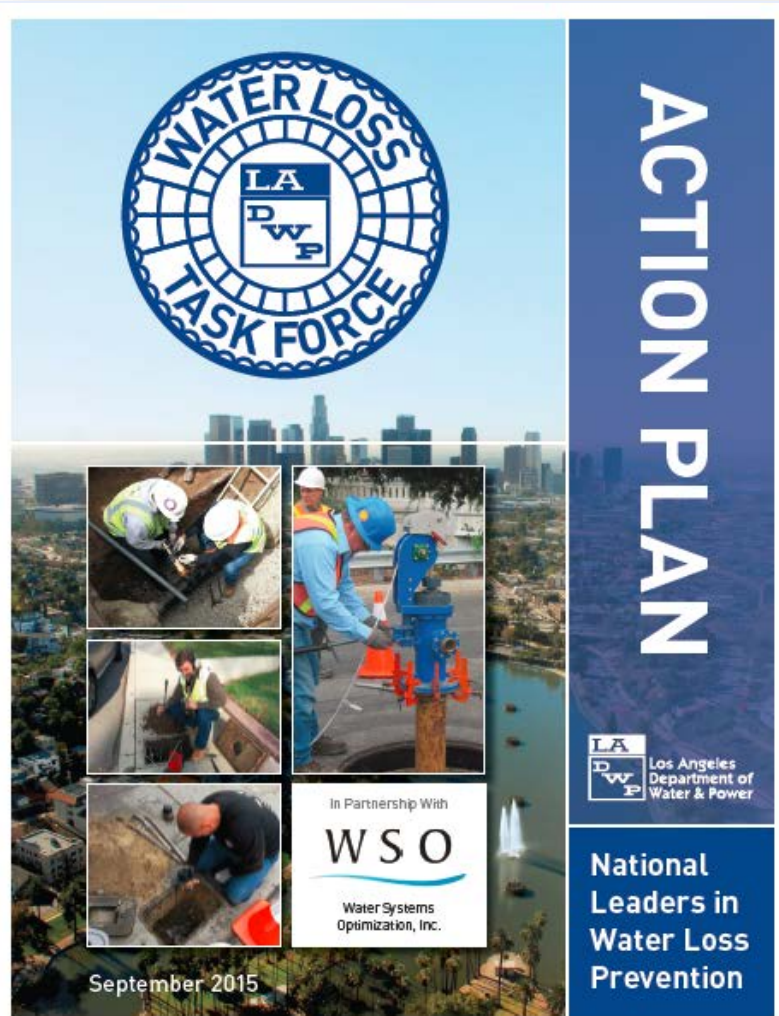
- Majority is background leakage:
  - Pressure management
  - Infrastructure renewal and rehabilitation
- Some potential to reduce hidden losses:
  - Active leak detection
- Reported breaks:
  - Reduce leak response time

# Economically Feasible Real Loss Control





# Action Plan



## Action Plan Categories

1. System Input Volume
2. Database Management
3. Meter Testing and Replacement
4. Leak Detection and Prevention
5. Unmetered and Unauthorized Use

# 1. System Input Volume

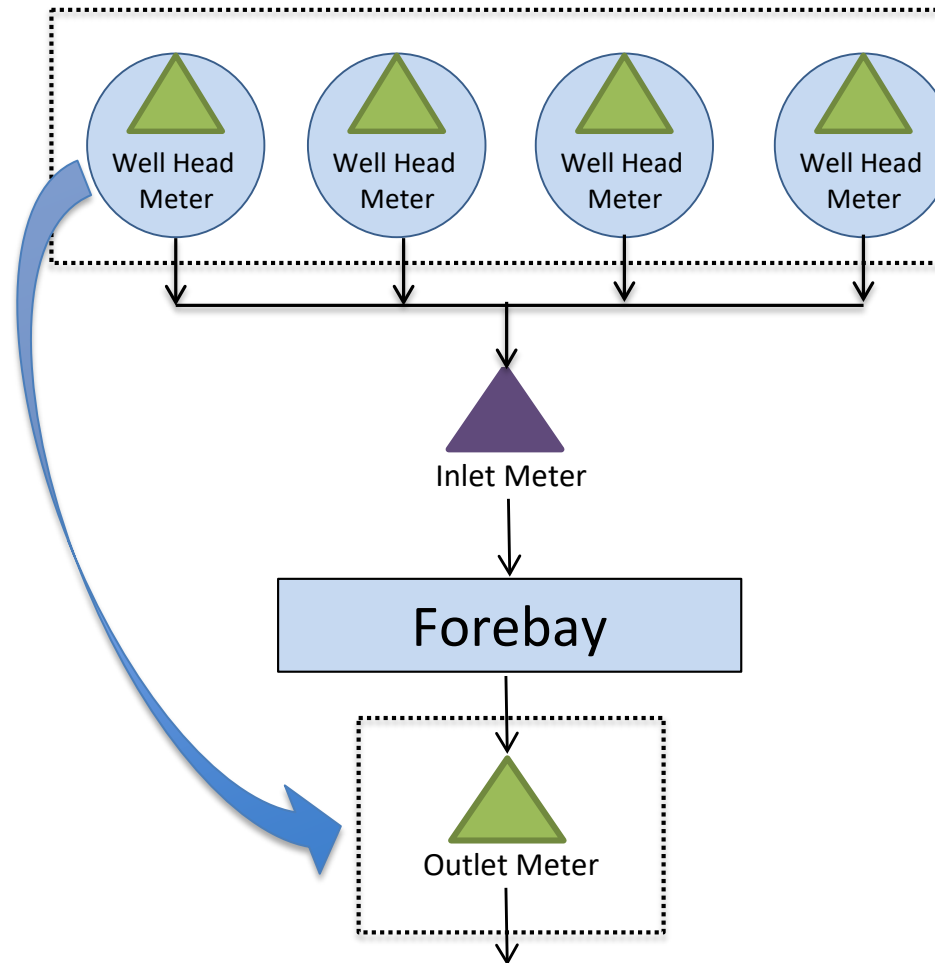
## Recommendations:

- Reevaluate which meters should be used for accurate system input volume tracking
- Improve supply meter accuracy
- Install meters on remaining unmetered supply sources



# Track Volumes Closer to Distribution System

## Well Field



LADWP POTABLE DISTRIBUTION SYSTEM

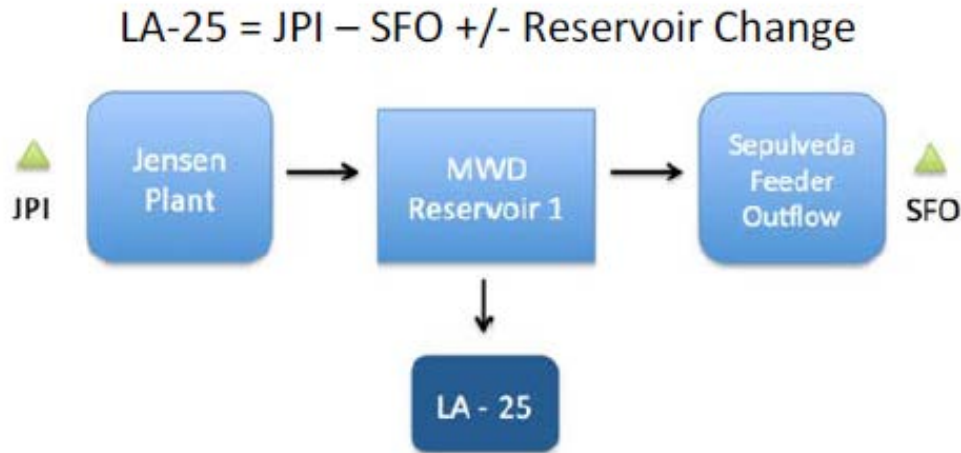
# Supply Meter Calibration Program

- Develop calibration program for 32 production meters and 20 pressure transducers, cells, floats and totalizers



- Researching feasibility of volumetric or comparative testing

# Install Supply Meters



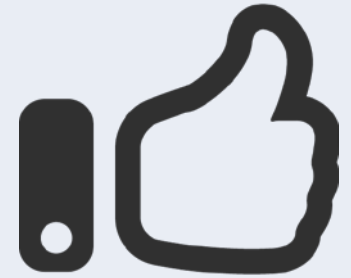
- LA-25 (99 inch dia.)
  - Connection with Metropolitan Water District (MWD)
  - Add full profile insertion magnetic meter
  - Leverage existing corrosion protection project
  - Cost estimated at \$250K



## 2. Database Management

### Recommendations:

- Centralize multiple meter and leak databases
- Improve leak reporting practices
- Address discrepancies between different databases



# Database Consolidation and Access

## SCADA Control Systems

LAWSDAC

Supports Transmission Operations

TOCC

Water Quality Control

LAAFP

LA Filtration Plant Operational Control

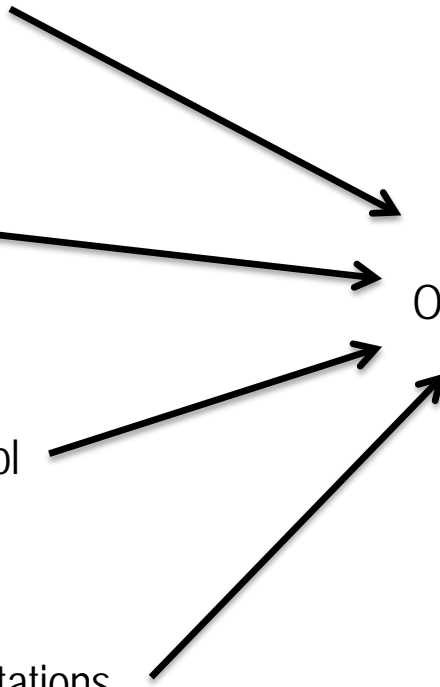
Owens Valley SCADA

Operational Control for Out-of-City Stations

## Consolidated Access

OTS

Operational Technology System



# Develop Mobile Leak Reporting Demonstration Project

- Real-time communication to management
- Improve customer outage communication
- Eliminate paper reporting
- Improve loss estimates





# 3. Meter Testing and Replacement

## Recommendations:

- Replace worst performing meters
- Prioritize meter replacement and analysis



# Improve Customer Small Meter Testing

- 1,326 meters tested in FY16/17
- Small meters 96% of total stock
- 98% overall accuracy



# 4. Leak Detection and Prevention

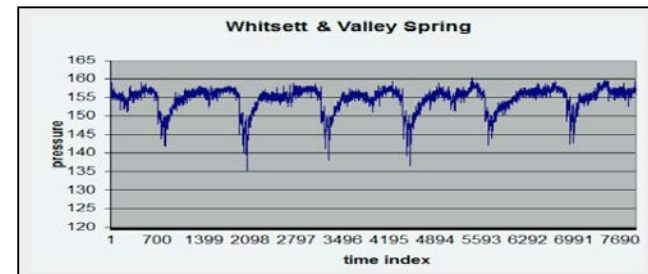
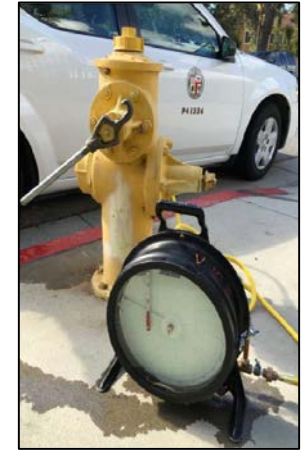
## Recommendations:

- Implement pressure management
- Reduce average time to locate and repair leaks
- Implement active leak detection programs



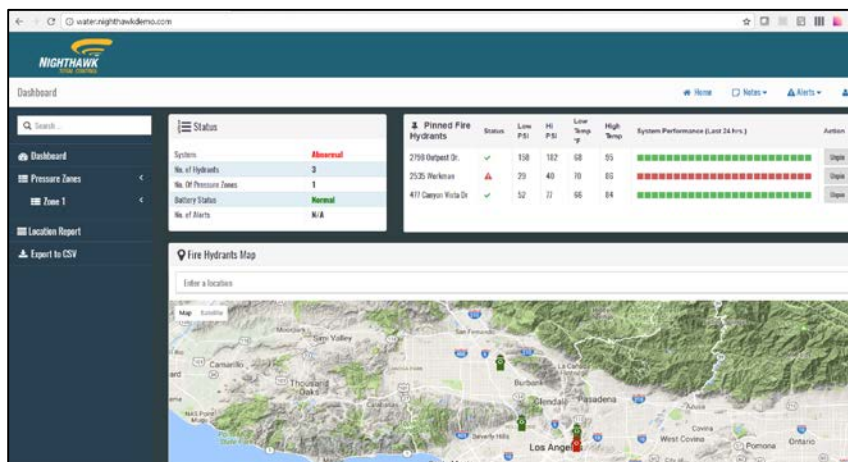
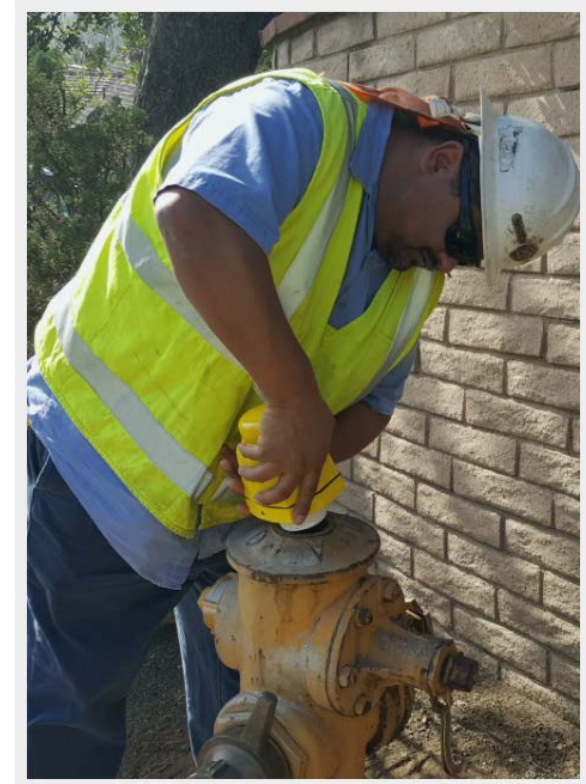
# Current Process for Monitoring Pressure

- Manual operation
- Less accurate
- Short-duration
- Data is not available in real-time



# Pressure Monitoring Pilot Program

- Pilot began in December 2016
- Worked with vendor to develop logger that can be installed on hydrant's auxiliary nut
- Pressure recorders were installed at four locations



# Benefits from Live Pressure Monitoring

- Customer Inquiries: Improve response time and cost



- Hydraulic modeling



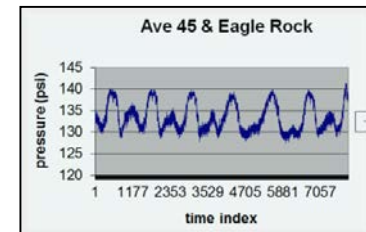
- Water Loss Task Action Plan  
(Lower pressure in the 13 leakiest zones)



- Leak detection  
(Live alerts, email & computer)



- Identify opportunities to lower system pressure



# Leak Detection Pilot Program

- **Pilot Project Objectives**

- Verify Accuracy and Effectiveness
- Evaluate Ease of Use
- Evaluate Large Scale Deployment



- **Evaluate Multiple Technologies**

- Phase 1: Fixed leak detection and monitoring (2017)
- Phase 2: Manual Leak Survey (2018)



# 5. Unmetered and Unauthorized Consumption

## Recommendations:

- Implement measures to improve tracking of theft activities
- Implement measures to improve estimates of authorized unmetered uses





# Add AMR/AMI to Fire Services

- 2013 Water Loss Study found significant consumption on fire services
- Planning to pilot AMR/AMI on these services



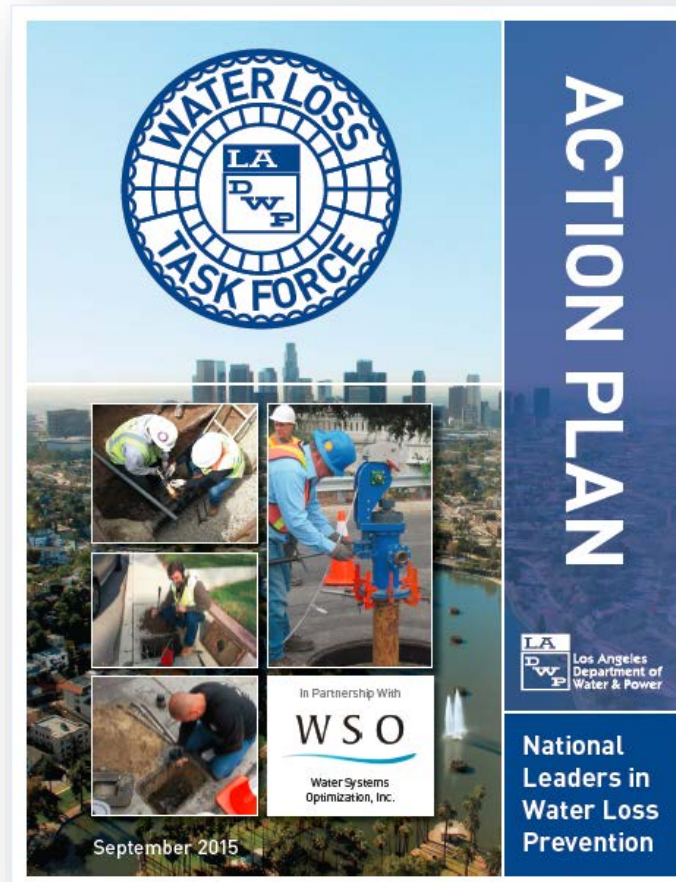
# Tracking Unmetered Uses

- Fire Fighting Methodology
  - Based on fire engine pump hours



- Main Flushing Methodology
  - Based on annual pipe installations

# Thank You!



Visit our website at: [www.ladwp.com/waterconservation](http://www.ladwp.com/waterconservation)

