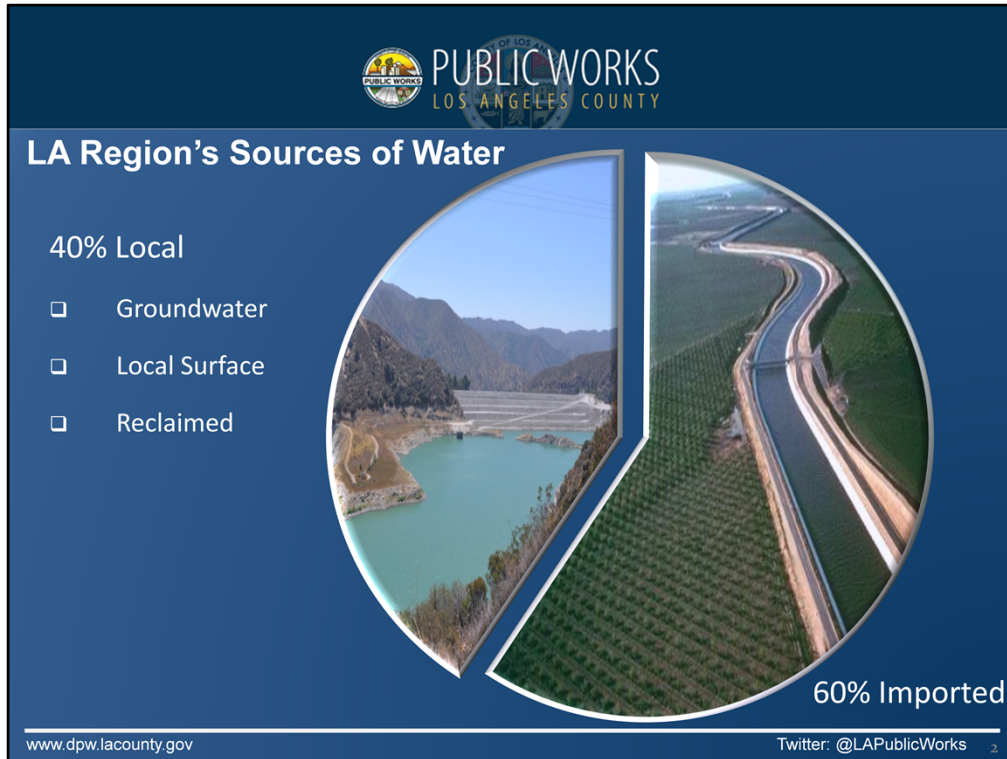


#### Drought

- Unprecedented
- Water supply in jeopardy
- Governor's mandated 25% cuts
- We need to act, look into local supplies



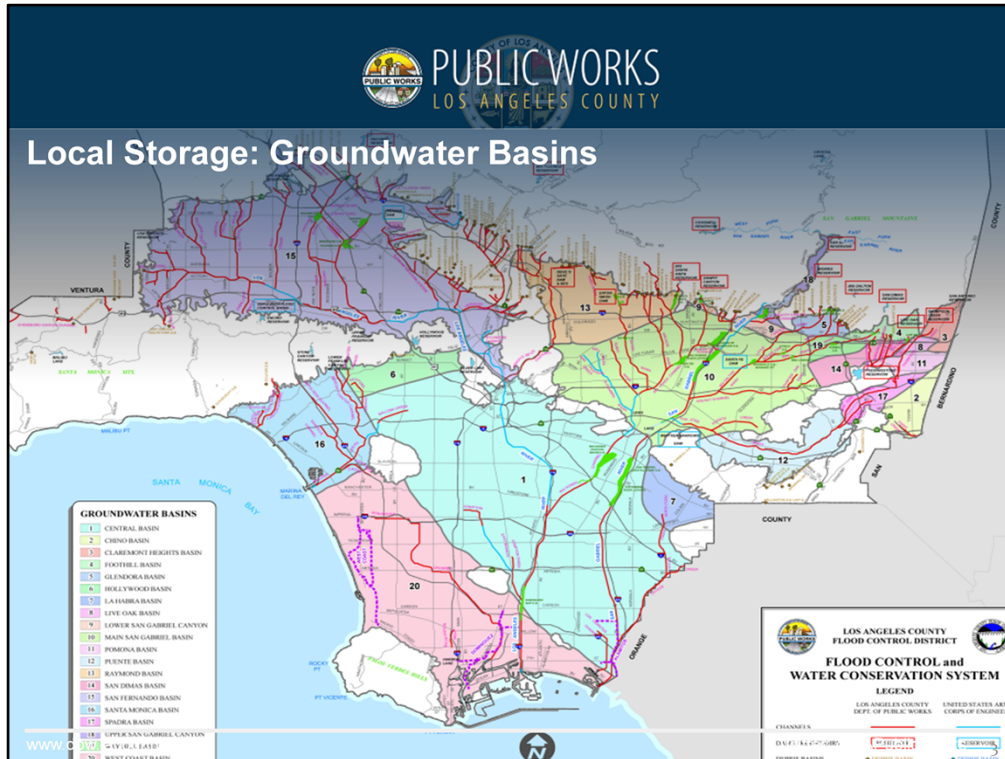
Imported water is an important piece

However, we need to develop more robust local supplies

- Will make regional supplies more resilient
- Can help reduce Greenhouse Gas

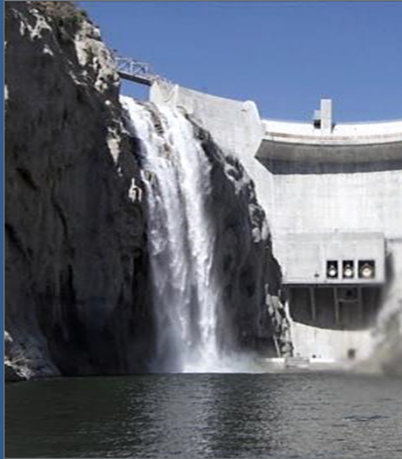
*State Water Project: 1 AF = 3,000 kwh*

*Colorado River: 1 AF = 2,000 kwh*



- Built-in “savings account” under our feet.
  - Approx 1.5 Million AF Unused storage available (Preliminary 2013 reporting from MWD)
- Need to make “deposits”
- What can we add?
  - Stormwater

## Los Angeles Basin Stormwater Conservation Study



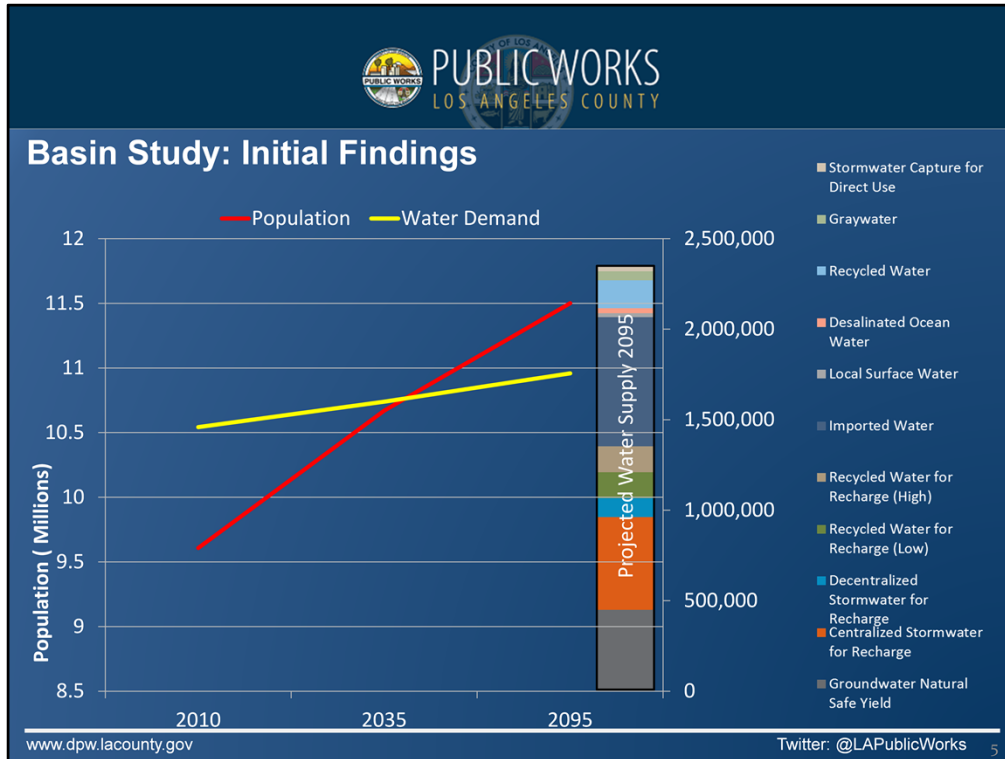
### Objectives

- 1) Evaluate *EXISTING* water conservation under *FUTURE* conditions
- 2) Evaluate *POTENTIAL NEW* facilities & operational changes for climate change

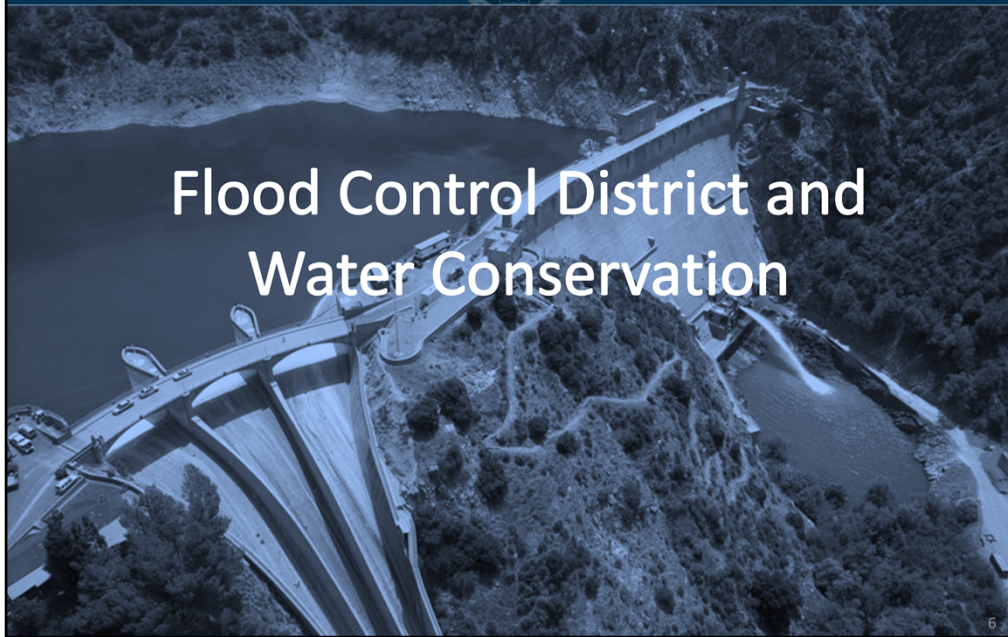


- LACFCD partnered with US Bureau of Reclamation
- Reached out to water agencies, looked at Urban Water Management Plans (UWMPs)
- Studied *existing* water conservation under *future* conditions
  - Future conditions
    - Climate change
    - Population growth





- Precipitation projections are anticipated to remain similar to present-day conditions
  - high interannual variability in total wet-season precipitation.
- **Enough potential supply**
- Can meet demands with a diversified portfolio
- Stormwater is an integral part
  - Existing infrastructure to store it
  - Less energy intensive than other sources
- **contingent upon developing** the necessary facilities, programs, and/or policies to fully utilize it



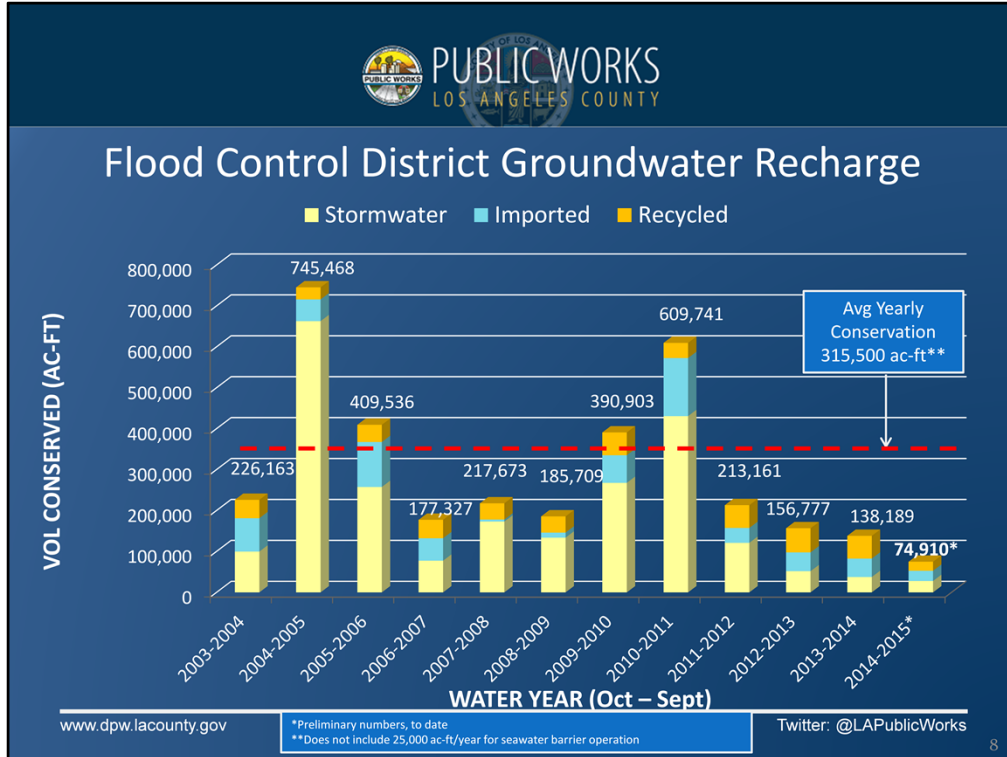
LACFCD plays a critical role in stormwater management with respect to the region's water supply

Flood Control Act established 2 main responsibilities for LACFCD:

1. Flood Risk Management
2. Water Conservation



Over 10 million people = 28% of CA population  
Over 2,200 square miles = 92 cities & communities  
14 Major Dams and Reservoirs,  
26 Spreading Grounds  
480 miles of Open Channels  
3,073 miles of Underground Storm Drains



Avg yearly conservation = 315,000 AFY

Stormwater average = 210,000 AFY

Recycled water average = 46,000 AFY

Imported water average = 59,000 AFY

Wet years

- Between 400-600,000 AF of stormwater conserved



PUBLIC WORKS  
LOS ANGELES COUNTY

## Major Dams and Reservoirs



*Morris Dam*

[www.dpw.lacounty.gov](http://www.dpw.lacounty.gov)

Twitter: @LAPublicWorks

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Store water behind dams





Water discharged from dams and reservoirs goes to Spreading Grounds

Also recharge recycled and imported water

## Soft Bottom Channels and Rubber Dams



*San Gabriel River*

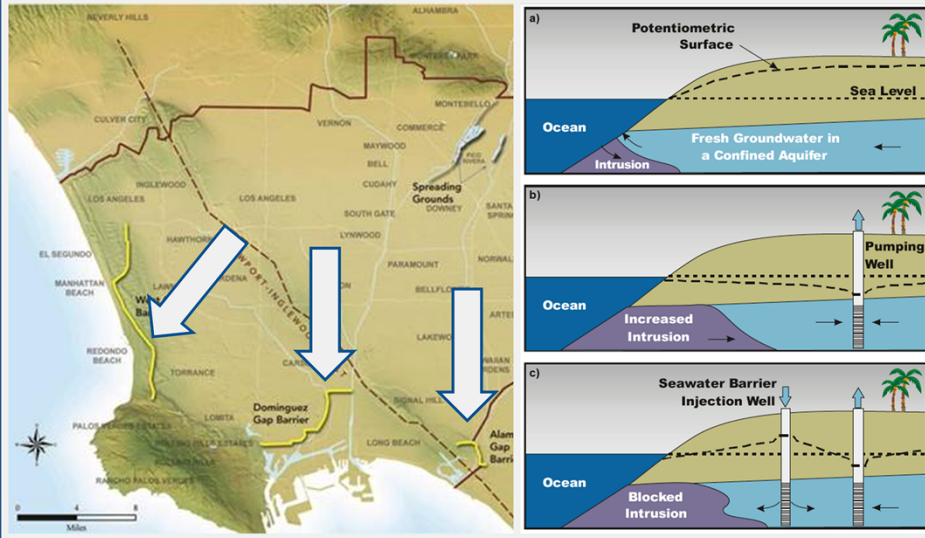
[www.dpw.lacounty.gov](http://www.dpw.lacounty.gov)

Twitter: @LAPublicWorks

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Recharge in soft bottom channels with the help of 14 rubber dams

## Seawater Barriers



Prevent salt water intrusion to groundwater



PUBLIC WORKS  
LOS ANGELES COUNTY



# Investing in Infrastructure

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## Completed Projects

- ❑ **22 Projects**  
completed since  
2007 to improve  
stormwater capture
- ❑ Increased spreading  
grounds capacity by  
**2190 AF**
- ❑ Increased Average  
Annual Water  
Conserved by  
**19,770 AF**



Hansen Spreading Grounds

Climate of alternating wet and dry periods

Agencies aware of impacts due to long periods of drought.

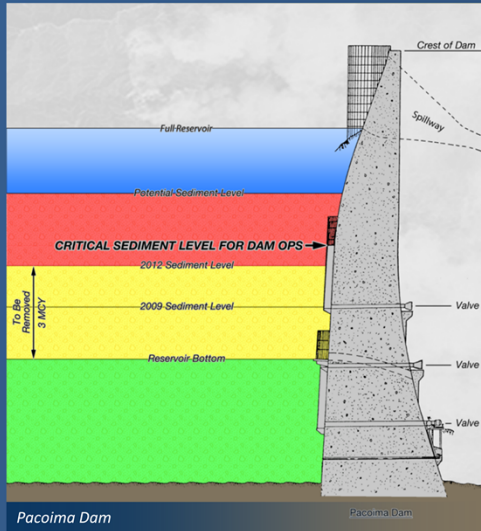
### Completed Projects

Since 2007

- 22 stormwater capture projects
- increased storage capacity by 2,190 ac-ft
- increased the average annual water conserved by 19,770 ac-ft



## Reservoir Sediment Removal Projects - Planned



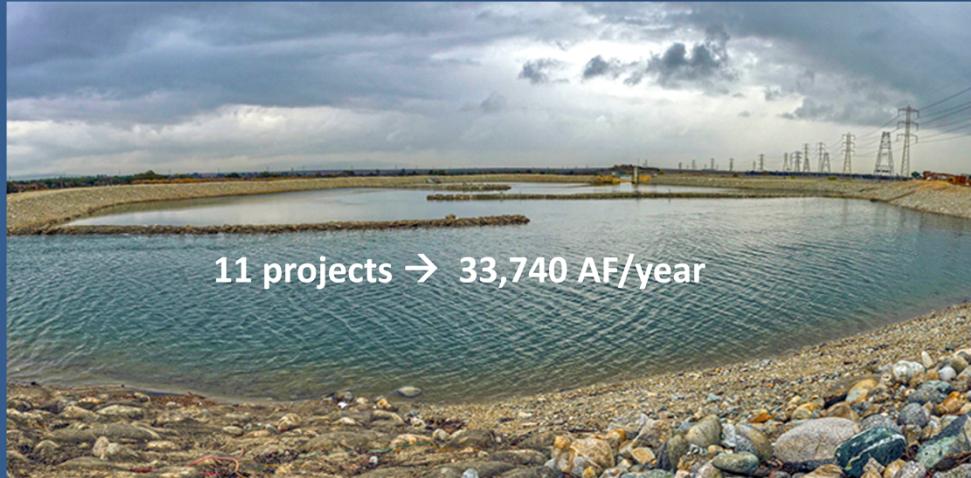
- Pacoima Reservoir
  - Restores **2,000 AF** of reservoir storage capacity
- Big Tujunga Reservoir
  - Restores **1,500 AF** of reservoir storage capacity
- Cogswell Reservoir
  - Restores **1,500 AF** of reservoir storage capacity
- Devils Gate Reservoir
  - Restores **1,500 AF** of reservoir storage capacity

### Looking Ahead

#### Sediment removal projects planned

- 4 projects
- Reservoirs were impacted by the Station Fire
- 6,500 AF capacity to be restored

## Spreading Grounds Improvements - Planned



11 projects → 33,740 AF/year

*Santa Fe Spreading Grounds*

[www.dpw.lacounty.gov](http://www.dpw.lacounty.gov)

Twitter: @LAPublicWorks 16

### Spreading Grounds

- numerous improvement projects planned
- 33,740 AF/Y benefit

### For many:

- formed cost sharing partnerships with local water agencies or
- obtained grant money through IRWMP



## Integrated & Collaborative Planning



Collaborative Planning has been Key

- Successful partnerships
- Completed projects
- Planned projects

## Multi-benefit Projects: Sun Valley Watershed Project

- Flood Protection
- Water Quality
- Water Conservation
- Recreation
- Habitat



### Sun Valley Watershed Project

Developed integrated water management plan to address a regional drainage problem

Collaboration with:

- government agencies
- non-profit organizations
- Sun Valley Watershed stakeholders



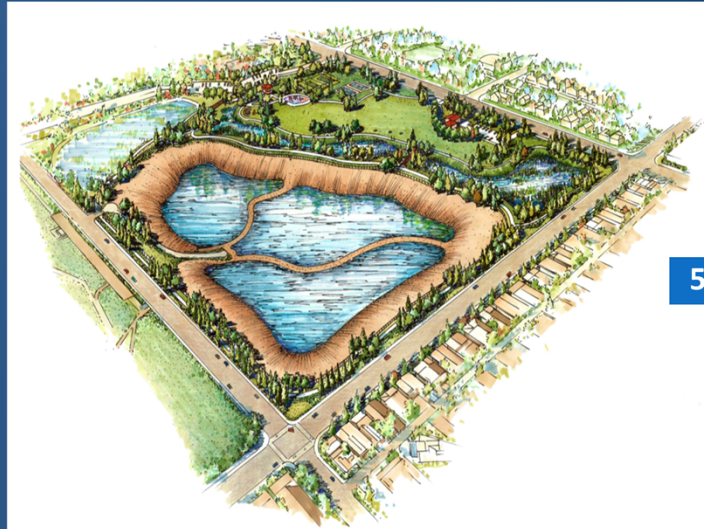


### Success Story: Sun Valley Park

- Groundwater recharge
  - The water conservation benefit of treated runoff is estimated to be **30 acre-feet per year**.
  - 2 underground infiltration basins
  
- Flood Protection
  - Localized flooding is alleviated
  - 21-acre drainage area is collected through a storm drain system constructed for the project
  
- Controls Water Pollution
  - Water quality treatment system removes suspended solids and heavy metals.
  
- Outdoor Recreation
  - new soccer and baseball fields, bleachers, sports lighting, and interpretive signage.



## Multi-benefit Projects: Rory Shaw Wetlands



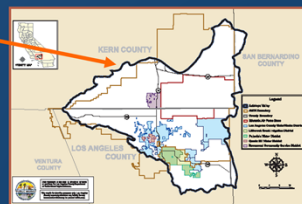
590 AFY

### Future Sun Valley Project: Rory Shaw Wetlands

- convert a 46-acre, engineered, inert landfill
- stormwater runoff from a 929-acre drainage area
- Project Components
  - Construct storm drain system
  - Construct detention ponds and wetlands to
    - capture and treat stormwater runoff
    - provide water quality enhancement.
  - Treated flows will be pumped to the adjacent Sun Valley Park for infiltration through existing infiltration basins
- water conservation benefit is expected to be **590 acre-feet per year**.

## Integrated Regional Water Management Groups

- ❑ Greater Los Angeles Integrated Regional Water Management Plan (IRWMP)
- ❑ Gateway IRWMP
- ❑ Antelope Valley IRWMP
- ❑ Santa Clara River IRWMP



Collaboration through IRWM

4 IRWM groups in LA Region

LACFCD chair of GLAC

### IRWM Grant Funding to Date

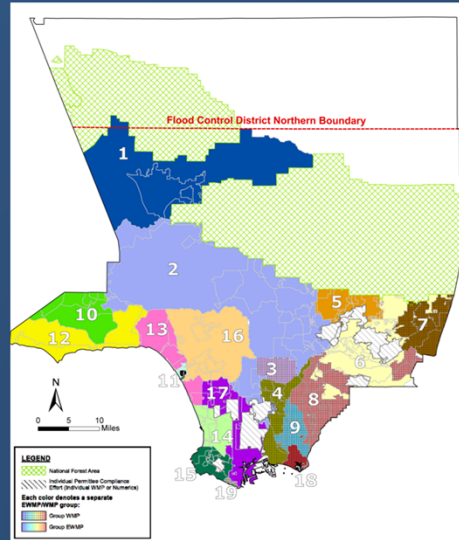
Group	# of Projects	Grant Award
Greater LA	52	\$101,047,295
Gateway	3	\$3,941,966
Antelope Valley	1	\$1,666,244
Santa Clara River	14	\$30,681,520
<b>TOTAL</b>	<b>70</b>	<b>\$137,337,025</b>

#### Grant Funding to Date

- \$137 Million in grant funds
- 70 projects

### Collaborative Watershed Planning Under the 2012 MS4 Permit

- Address water quality concerns, including 33 TMDLs
- Increase stormwater reuse
- Augment water supply



Next chapter in Water Resource Management influenced by MS4 permit

- Avg **540,000 AFY** stormwater runoff lost to ocean
- Goal is to treat, capture and infiltrate it to augment water supply



## Roosevelt Park

- ❑ Water Supply
  - Can recharge up to **127 AFY**
  - Supply 255 households
- ❑ Water Quality
  - 190.5 acre drainage area



Example: During Construction



After





www.dpw.lacounty.gov
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- Partner: County of Los Angeles Dept. of Parks and Recreation

### Project Elements

- underground water retention and infiltration system under the Park's open space
- drainage area of 190.5 acres is located within a **DAC**
- Although water quality is the primary benefit:
  - Captures 8.39 AF of stormwater
  - BMP is expected to remove about 82% of metals associated with the first flush
  - Will also remove other pollutants of concern in this area including trash, bacteria, and nutrients.
  - Sits over an unconfined aquifer.
- Estimated to augment the Central Basin by **127 acre-feet per year** through the Los Angeles Forebay.
  - enough for 255 households in a year.



## Numerous Drought Response Projects

LACDPW Drought Response Projects									
Agency	Project	Description	Public Safety	Water Supply	Estimated Cost (Millions)	Water Conservation Benefits (Acre-Foots/Year)	Estimated Start Date	Estimated End Date	
LAC FCI									
LA	Big Water Recycled Sewerline at Reservoir Project	Reserve facility capacity. The additional capacity will be used to store more wastewater which can be used to recharge the groundwater table & diversify use of the urban or trap & store into separate flood protection.	X	X	24	4,500	Summer 2016	Summer 2021	
LAC FCI	LAC FCI & LADWP	Reserve facility capacity. The additional capacity will be used to store more wastewater which can be used to recharge the groundwater table & diversify use of the urban or trap & store into separate flood protection.	X	X	50	3,000	Summer 2020	Summer 2025	
LA	LAC FCI	Reserve facility capacity. The additional capacity will be used to store more wastewater which can be used to recharge the groundwater table & diversify use of the urban or trap & store into separate flood protection.	X	X	90	1,850	Summer 2016	Summer 2023	
LA	LAC FCI	Reserve facility capacity. The additional capacity will be used to store more wastewater which can be used to recharge the groundwater table & diversify use of the urban or trap & store into separate flood protection.	X	X	22	1,200	Summer 2017	Summer 2022	
LA	LAC FCI & LADWP	Reserve facility capacity. The additional capacity will be used to store more wastewater which can be used to recharge the groundwater table & diversify use of the urban or trap & store into separate flood protection.	X	X	16	4,500	Summer 2017	Fall 2020	
LA	LAC FCI	Reserve facility capacity. The additional capacity will be used to store more wastewater which can be used to recharge the groundwater table & diversify use of the urban or trap & store into separate flood protection.	X	X	3	500	Summer 2015	Fall 2015	
LAC DH	San Gabriel Water Conservation Project	Reserve facility capacity. The additional capacity will be used to store more wastewater which can be used to recharge the groundwater table & diversify use of the urban or trap & store into separate flood protection.	X	X	7.5	13,100	Spring 2015	Summer 2016	
LAC FCI	LAC FCI	Reserve facility capacity. The additional capacity will be used to store more wastewater which can be used to recharge the groundwater table & diversify use of the urban or trap & store into separate flood protection.	X	X	4	3,500	Fall 2015	Summer 2016	
LAC FCI	LAC FCI & WWD	Reserve facility capacity. The additional capacity will be used to store more wastewater which can be used to recharge the groundwater table & diversify use of the urban or trap & store into separate flood protection.	X	X	20	13,500	Spring 2015	Summer 2016	
LAC DH	LAC FCI & LADWP	Reserve facility capacity. The additional capacity will be used to store more wastewater which can be used to recharge the groundwater table & diversify use of the urban or trap & store into separate flood protection.	X	X	30	10,500	2016	2019	
LAC FCI	LAC FCI & WWD	Reserve facility capacity. The additional capacity will be used to store more wastewater which can be used to recharge the groundwater table & diversify use of the urban or trap & store into separate flood protection.	X	X	6	5,000	Summer 2016	Summer 2017	
LA	LAC FCI & LADWP	Reserve facility capacity. The additional capacity will be used to store more wastewater which can be used to recharge the groundwater table & diversify use of the urban or trap & store into separate flood protection.	X	X	10	4,200	Summer 2015	Fall 2015	
LADWP	LAC FCI	Reserve facility capacity. The additional capacity will be used to store more wastewater which can be used to recharge the groundwater table & diversify use of the urban or trap & store into separate flood protection.	X	X	26	1,200	Winter 2015	Summer 2016	
LAC	LAC FCI	Reserve facility capacity. The additional capacity will be used to store more wastewater which can be used to recharge the groundwater table & diversify use of the urban or trap & store into separate flood protection.	X	X	1,100	1,100	Winter 2015	Summer 2016	

LAC FCI  
IRWM  
EWMP

- Many projects ready and being further developed
  - Potential for 10s if not 100s of thousands of AFY in water conservation
- Benefit to the consumer and water agencies
- Need funding and partnerships with agencies
- Need MET's participation

## Summary

- ❑ Investing in Stormwater for Local Sustainability
- ❑ Integrated, Collaborative Planning

