Water COUNTS

WATER COUNTS 2017

HOW THE DROUGHT CHANGED CALIFORNIA AND OUR VALLEY

Indio Water Authority
Your Water. Our Responsibility.

CITY OF COACHELLA
INCORPORATED 1946

MSWD

DESERT WATER

COACHELLA VALLEY
ECONOMIC PARTNERSHIP

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HOW THE DROUGHT CHANGED CALIFORNIA AND OUR VALLEY

MODERATOR:

Robert Hargreaves

BEST, BEST & KRIEGER

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HOW THE DROUGHT CHANGED CALIFORNIA AND OUR VALLEY

Erik Ekdahl

CALIFORNIA STATE WATER RESOURCES CONTROL BOARD

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Update on Urban Water Conservation

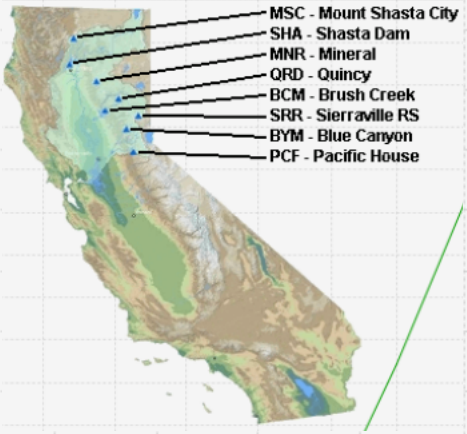
Erik Ekdahl
Director
Office of Research, Planning, and Performance

March 28, 2017

CALIFORNIA
Water Boards


2011
2012
2013
2014
2015

Northern Sierra Precipitation: 8-Station Index, March 27, 2017



Percent of Average for this Date: 204%

1982-1983 (wettest) 88.5

82.9 - Current Daily Precip.

Average (1922-1998) 50.0

31.3

19.0

Cumulative Daily/Monthly Precipitation (inches)

Total Water Year Precipitation

100 95 90 85 80 75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0

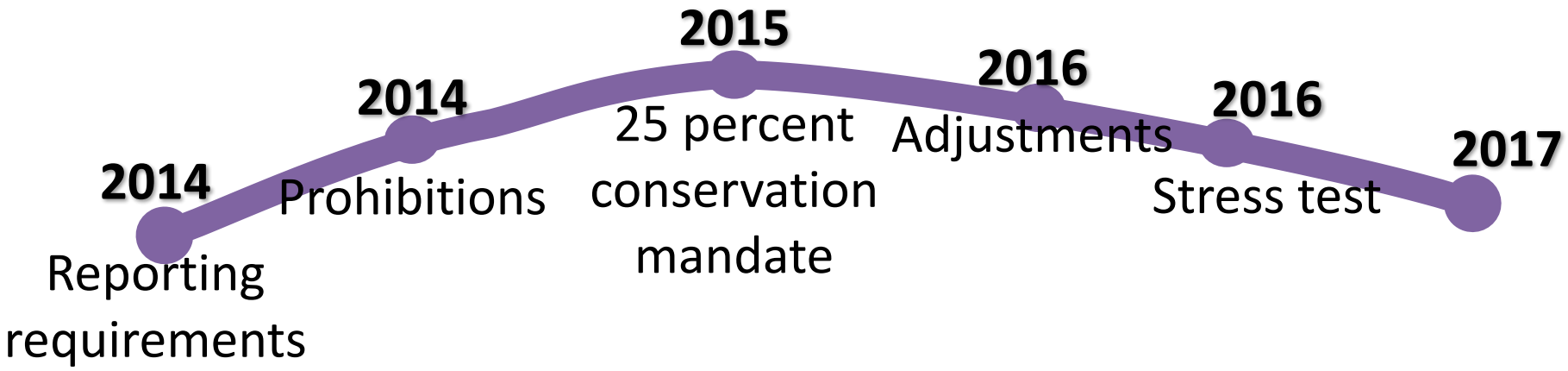
Oct 1 Nov 1 Dec 1 Jan 1 Feb 1 Mar 1 Apr 1 May 1 Jun 1 Jul 1 Aug 1 Sep 1 Oct 1

Water Year (October 1 - September 30)

Average (1922-1998) — 1976-1977 (2nd Driest) — 1982-1983 (wettest) — 2013-2014 — 2016-2017 (current)

Drought Response

- Multiple actions, including:
  - Emergency drinking water assistance
  - Fire response
  - System operations
  - Emergency conservation regulations
- Emergency conservation regulations have adapted to changing conditions




Statewide Water Conservation
Jun 2015-Jan 2017
2.51 million
acre-feet
saved
22.5% cumulative savings

Where do we go from here?

- Current regulations adopted Feb. 8
- Consider how to best prepare for the next drought
- Transition to long-term framework (Conservation as a California Way of Life)

California Hydrology and Climate Change

Groundwater

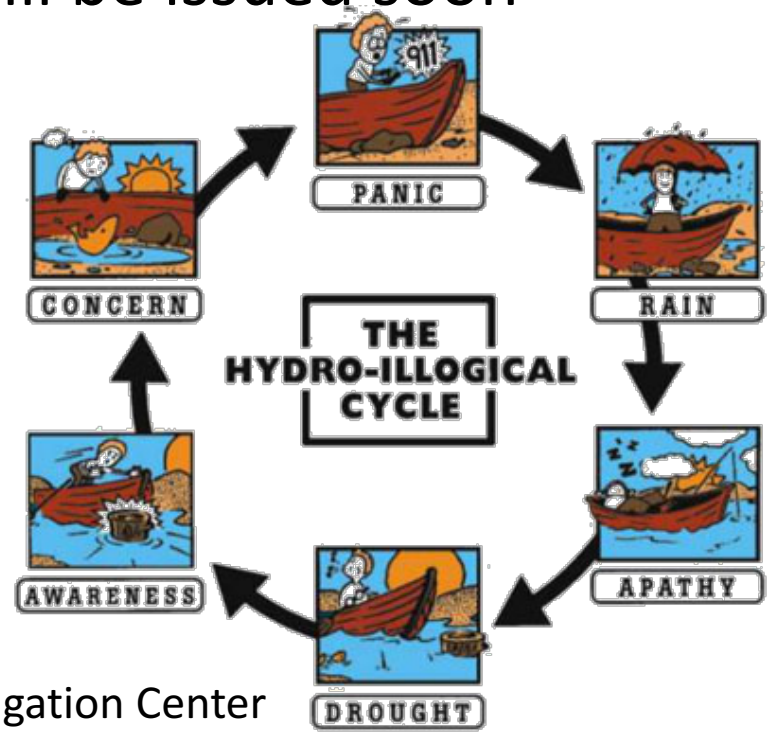
Photo Credit: USGS/Justin Brandt

http://www.water.ca.gov/waterconditions/docs/DWR_PublicUpdateforDroughtResponse_GroundwaterBasins.pdf

Making Conservation a California Way of Life

- Governor's Executive Orders in 2015 and 2016
  - EO B-37-16 establishes long-term conservation goals and improves drought planning
  - Implementation report will be issued soon

- Breaking the reactive cycle



Draft Framework Report

- Required by Executive Order B-37-16
- Draft released Nov. 30th, 2016
- Calls for new approaches to urban conservation, drought preparedness, and agricultural water management

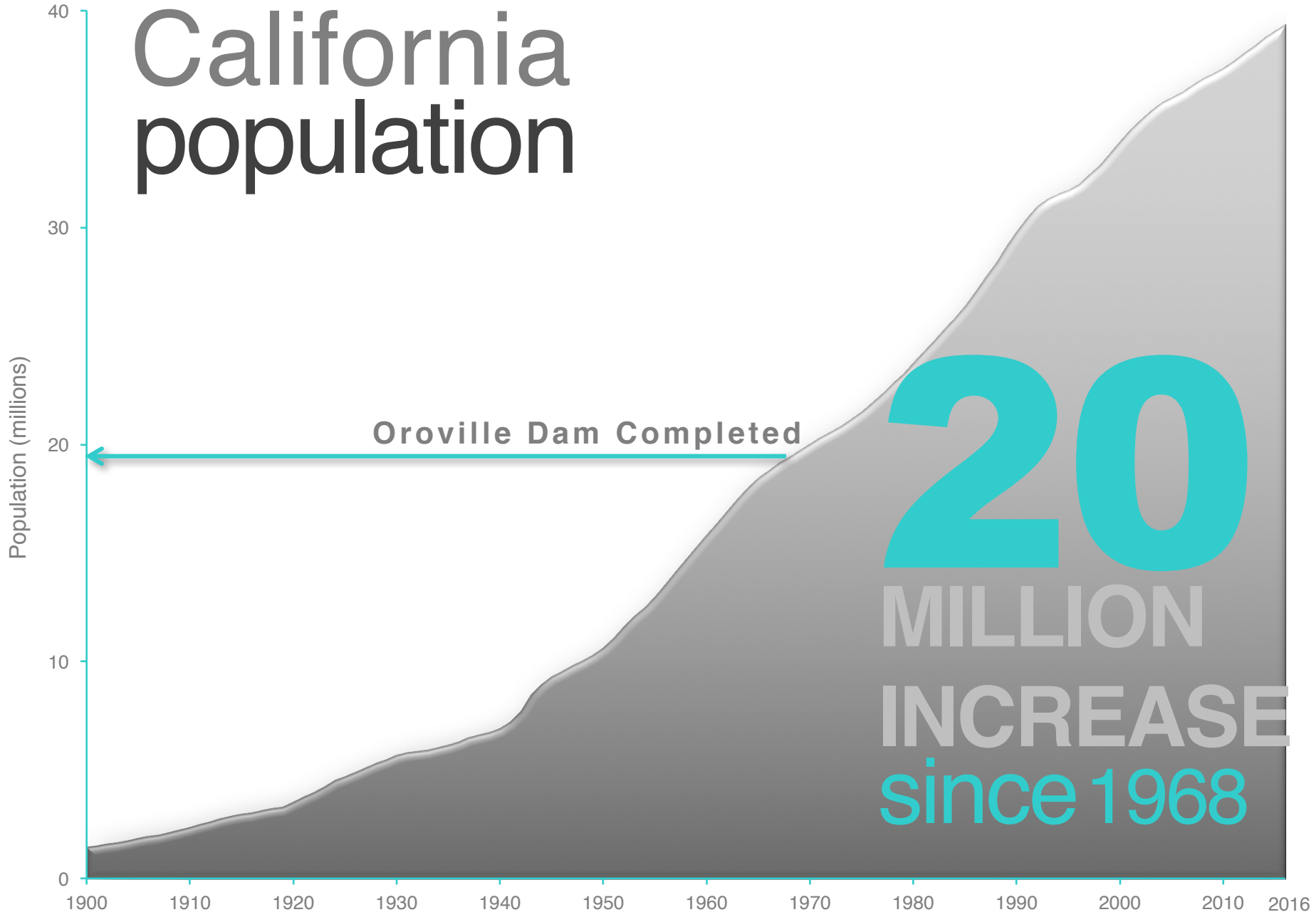
Standards-based efficiency targets (Water Budgets) by 2025

- Indoor water use (55 gpcd)
- Outdoor water use (based on local evapotranspiration)
- Water lost through leaks (SB 555 process)
- Commercial, Industrial, and Institutional (CII) performance based standards

TIMING

Achieving improved urban water efficiency on a statewide will take time. Framework recommends setting interim targets

Interim standards	Refined standards adopted	Suppliers to calculate water targets	Final compliance
2018 →	**2020** →	**2021** →	**2025**



Source: California Department of Finance estimates

Thank You!

Erik Ekdahl

Off. Of Research, Planning and Performance

Erik.Ekdahl@waterboards.ca.gov

916-341-5316

Additional Information:

DWR – http://www.water.ca.gov/wateruseefficiency/conservation/

State Board – http://www.waterboards.ca.gov/water_issues/programs/conservation_portal/

WATER COUNTS 2017

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Kathleen Tiegs

ASSOCIATION OF CALIFORNIA WATER AGENCIES (ACWA)

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ACWA

Bringing Water Together

Planning for the Next Drought

CV Water Counts

March 28, 2017

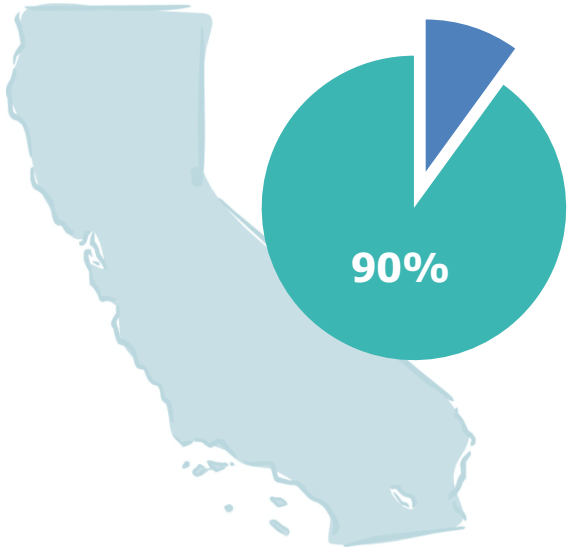
Kathleen Tiegs, ACWA President

www.acwa.com

About ACWA

Who We Represent . . .

- ACWA members responsible for 90% of the state's distributed water



Water Sources & Services

- Federal, state and local projects
- Surface and groundwater
- Agricultural, urban, industrial customers
- Wholesale, retail

ACWA

California Water Supply

"Feast or Famine"

Lake Oroville 2015

5 years of
historic drought…

Lake Oroville 2017

…followed by record
rainfall and floods

ACWA

California Water Supply

"Feast or Famine"

- Unpredictability means we can't take water for granted
- The next drought may be just around the corner

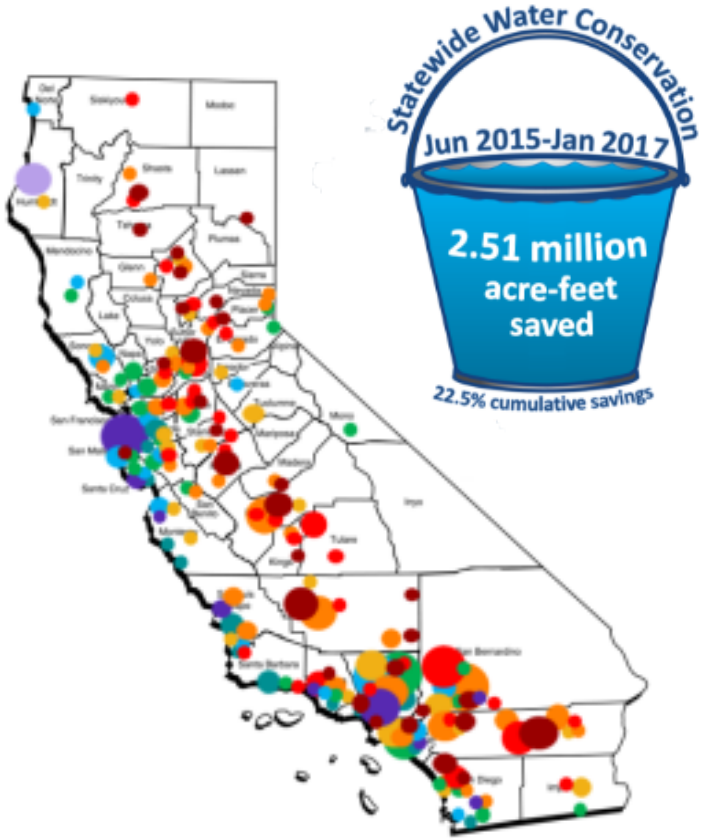
California Water Supply

"Feast or Famine"

- California water agencies aren't waiting to see what happens
- We are planning for the next drought

Drought Emergency in 2015

- State-imposed mandated conservation targets in 2015
- Water agencies, customers stepped up with significant savings



ACWA

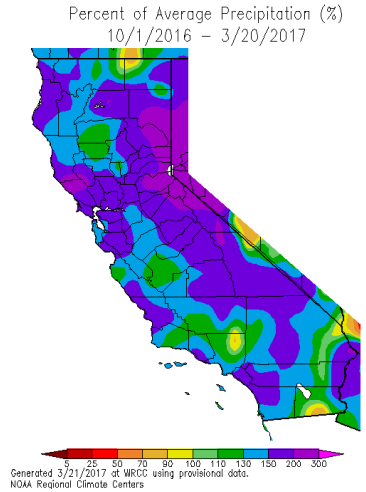
Drought Emergency in 2016

- Changing conditions allowed new approach
- ACWA supported move to "stress test" based on local supply assessment and certification
- Approach emphasizes: **DROUGHT PREPAREDNESS**

ACWA

Continued Emergency Regulation in 2017

- ACWA advocated for expiration of emergency drought regulations in 2017
- State Water Board chose to extend emergency regulations in February
- ACWA members continue to emphasize long-term efficiency and drought preparedness



ACWA

Long-Term Conservation Framework

- Brown Administration to unveil final framework to update State's approach to conservation
- ACWA policy goals:
  - Preserve local decision-making
  - Recognize local investments
  - Emphasize ongoing water-use efficiency
  - Provide local flexibility

ACWA

Planning for the Next Drought:

EXAMPLES OF LOCAL WATER DISTRICT PROJECTS

Strand Ranch Groundwater Bank

Irvine Ranch Water District

- Goal: To secure surplus water supplies during wet periods
- Captures low cost water from the State Water Project during wet years for use during drought or times of critical need
- Improves water supply reliability

Claude “Bud” Lewis Carlsbad Desalination Plant

San Diego County Water Authority

- Largest ocean desalination plant in North America
- Reduces dependence on imported water
- Provides San Diego County with 56,000 acre-feet of water per year – enough for 400,000 people

ACWA

Mesa Water Reliability Facility

Mesa Water District

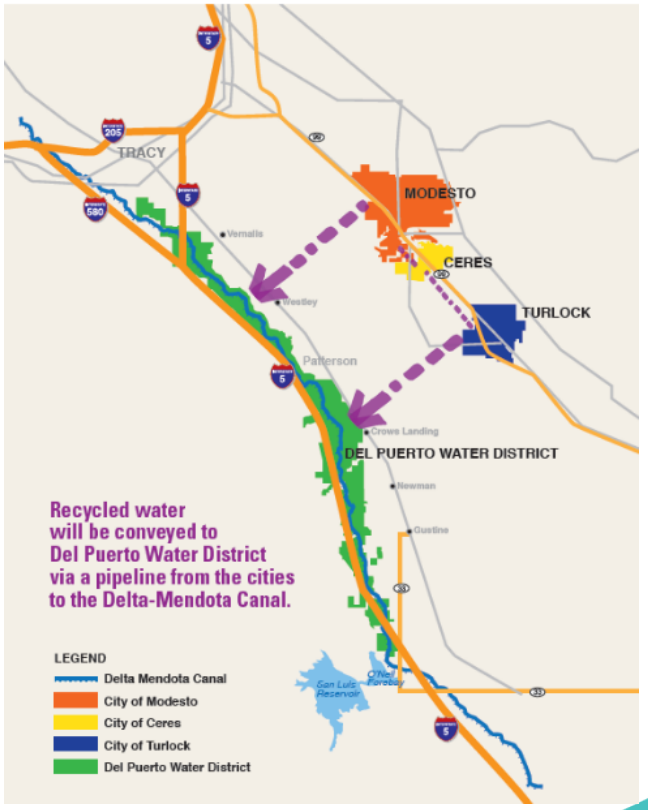
- State-of-the-art nanofiltration technology
- 8.6 million gallons per day of reliable local water supply
- Mesa Water now relies 100% on local water sources

ACWA

North Valley Regional Recycled Water Program

Del Puerto Water District partnership

- New source of water for agriculture
- Pipeline will deliver recycled water from Modesto, Ceres, Turlock to Delta-Mendota Canal
- Pipeline construction began in August 2016
- Expected completion in 2018



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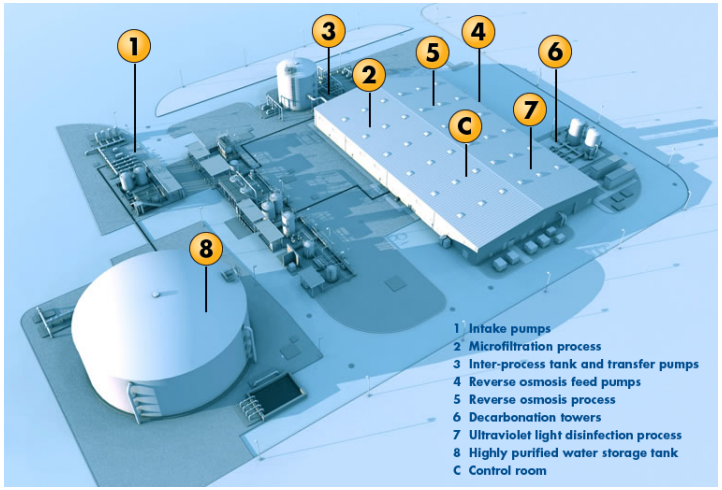
Silicon Valley Advanced Water Purification Plant

Santa Clara Valley Water District partnership

- Largest advanced water purification plant in Northern California
- Facility produces up to 8 million gallons a day
- Targeting potable reuse by 2020



ACWA

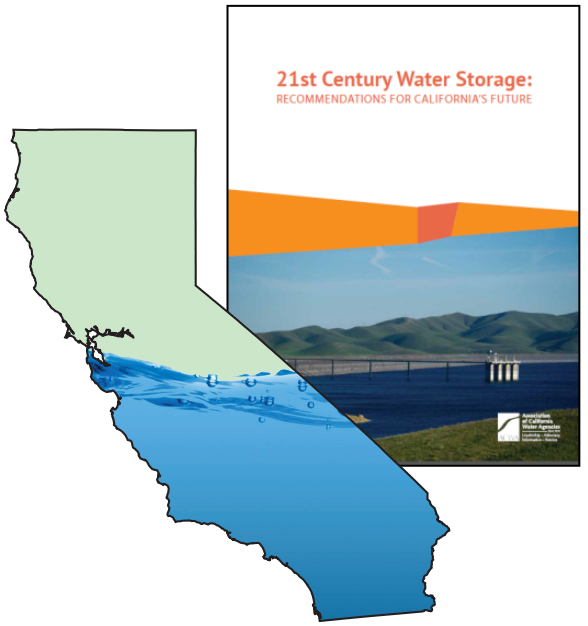
What Else is ACWA Working on?

PRIORITIES FOR 2017

Shaping Future Water Storage Investments

- State to allocate $2.7 billion from Proposition 1
- Integrating new groundwater and surface storage facilities adds most value

California WATER COMMISSION



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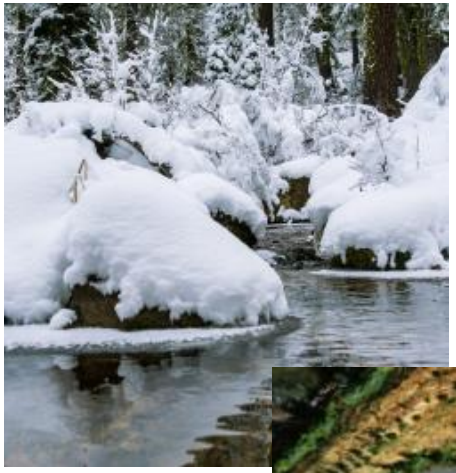
Investing in Habitats and Watersheds



CAFWA
CALIFORNIA FOREST WATERSHED ALLIANCE

- Healthy headwaters are vital to state's water supply
- Supporting legislation on forest management and funding
- Ongoing outreach and advocacy

ACWA

Drinking Water Solutions for Disadvantaged Communities

- ACWA members want to help identify solutions
- New task force and advisory committees actively meeting
- Partners will be key

Questions?

Feel free to contact me

Kathleen Tiegs, ACWA President

(916) 441-4545

www.acwa.com

KathyT@cvwdwater.com

facebook.com/acwawater

twitter.com/acwawater

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HOW THE DROUGHT CHANGED CALIFORNIA AND OUR VALLEY

Michelle Sneed

U.S. GEOLOGICAL SURVEY

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Coachella Valley Economic Partnership

UCR Palm Desert

Groundwater Resources in the Coachella Valley

Michelle Sneed
U.S. Geological Survey
California Water Science Center
March 28, 2017

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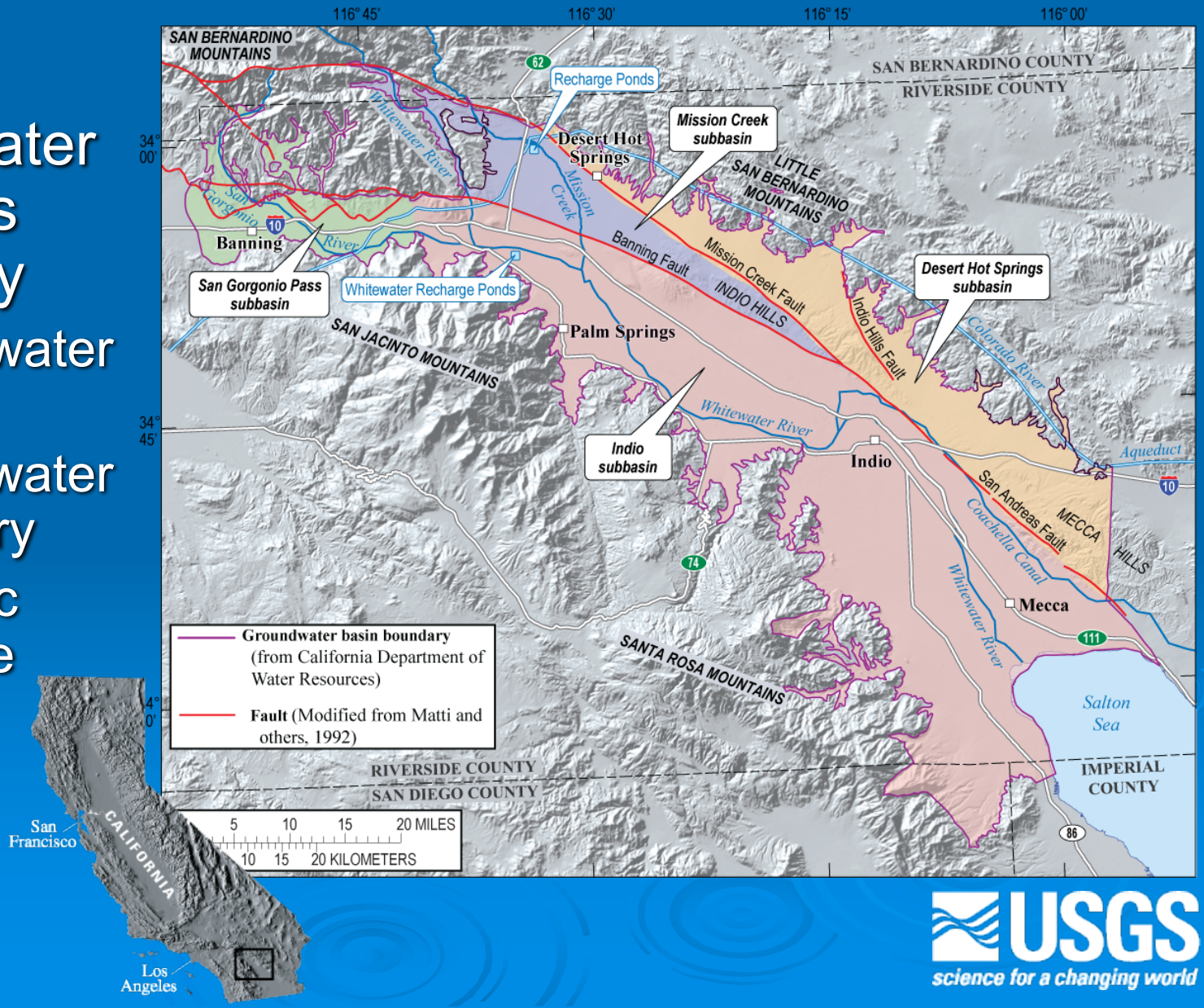
WATER DISTRICT

Groundwater Subbasins

- Groundwater subbasins defined by
  - Groundwater levels
  - Groundwater chemistry
  - Geologic structure



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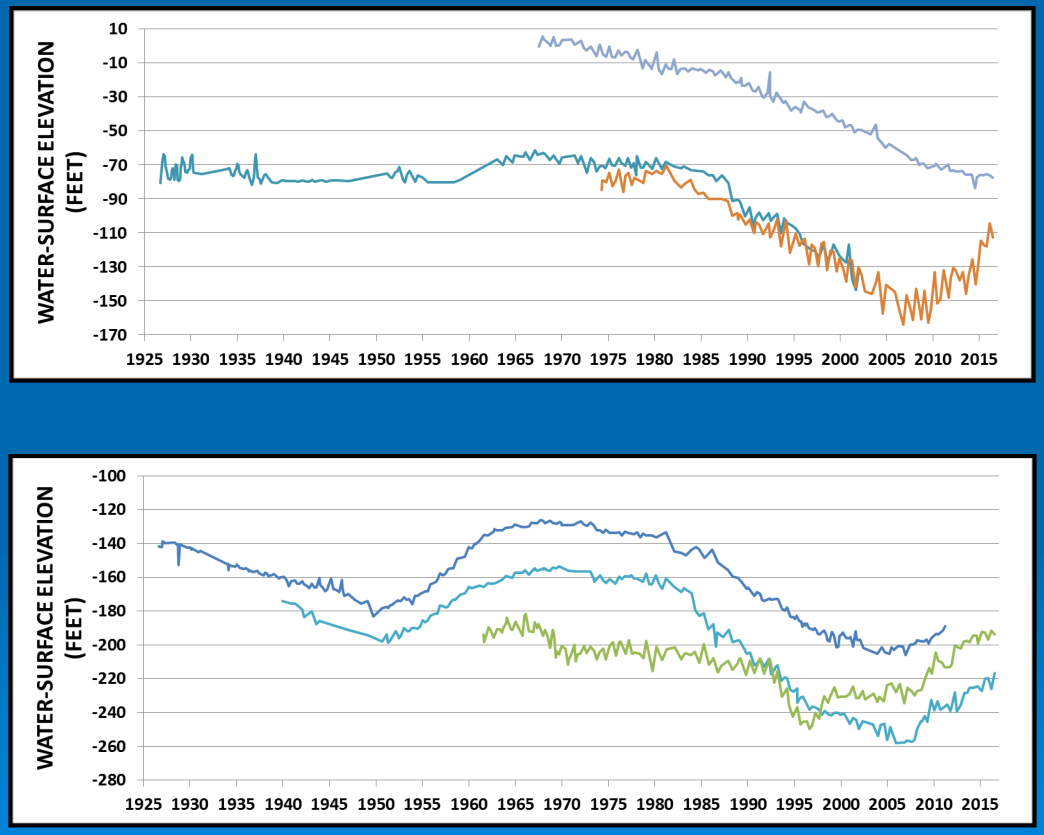
Groundwater Resources Development



Indio Subbasin Hydrographs

- Groundwater has been a major source of water supply
- Declined until 1949
- Raised 1949- ~1970
- Declined ~1970-~2009
  - Reached historically low levels
- Some rising since ~2009

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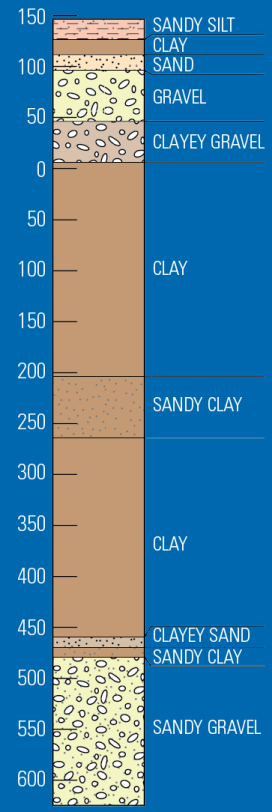

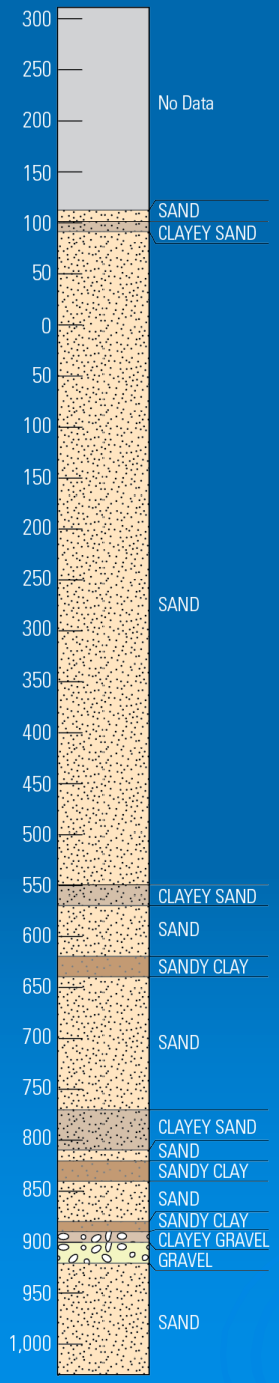

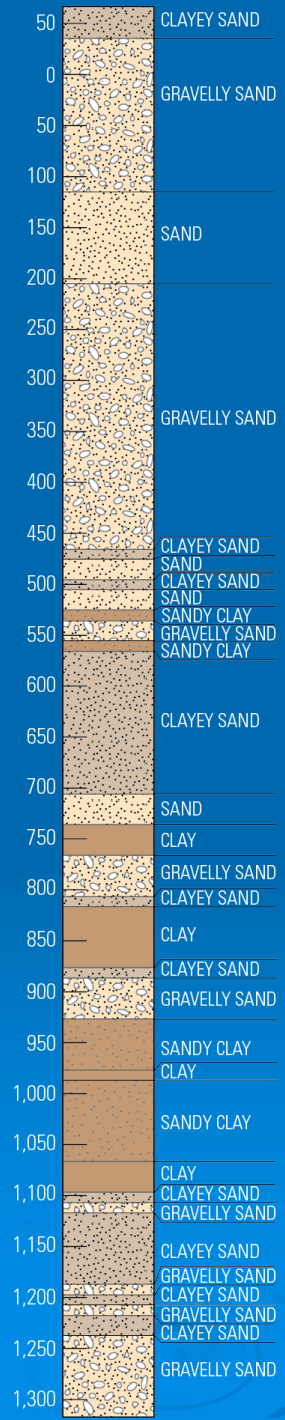

Aquifer System Composition

- Gravel
- Sand
- Silt
- Clay

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Land Subsidence

- Gradual sinking of the land surface
  - Caused by the compaction of susceptible alluvial aquifer systems that can occur when groundwater levels decline

← San Joaquin Valley

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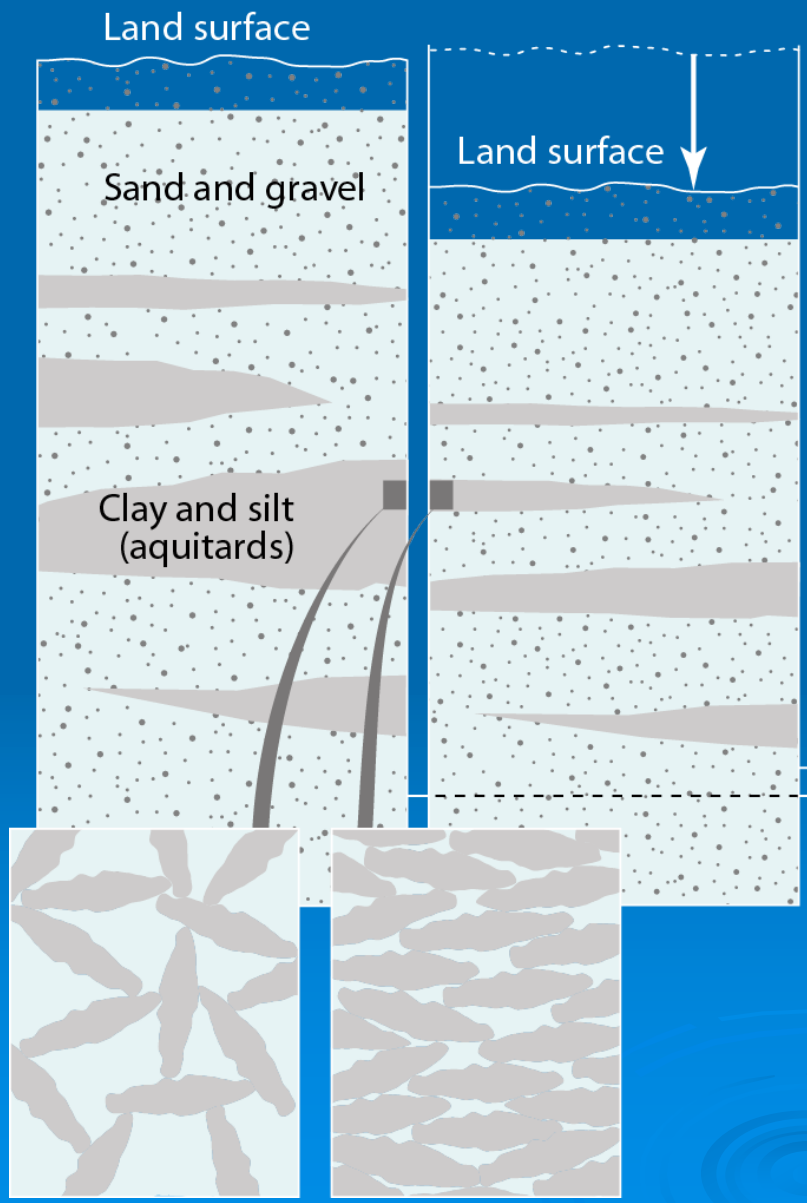
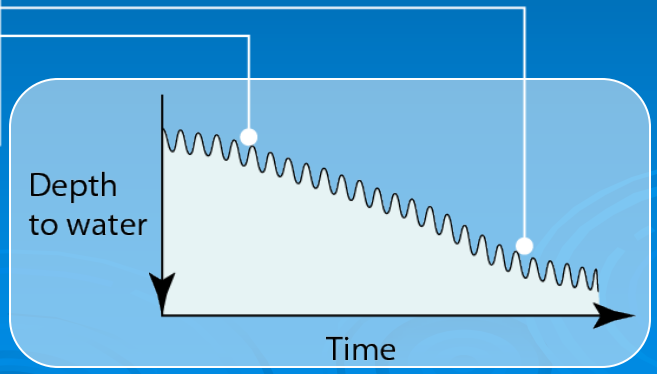
Aquifer-System Compaction



- Concentrated in the fine-grained deposits (silt and clay)
- Permanent compaction occurs when the “critical head” is exceeded
- Critical head ≈ previous lowest groundwater level
- Storage capacity is reduced



Galloway and others, 1999; USGS Circular 1182

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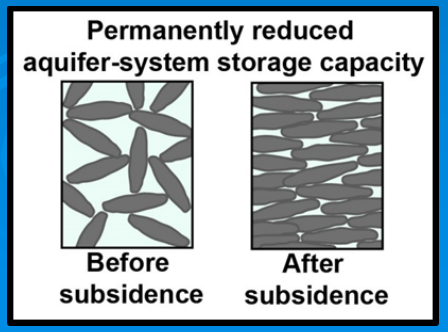
Subsidence Damages Infrastructure & Natural Resources

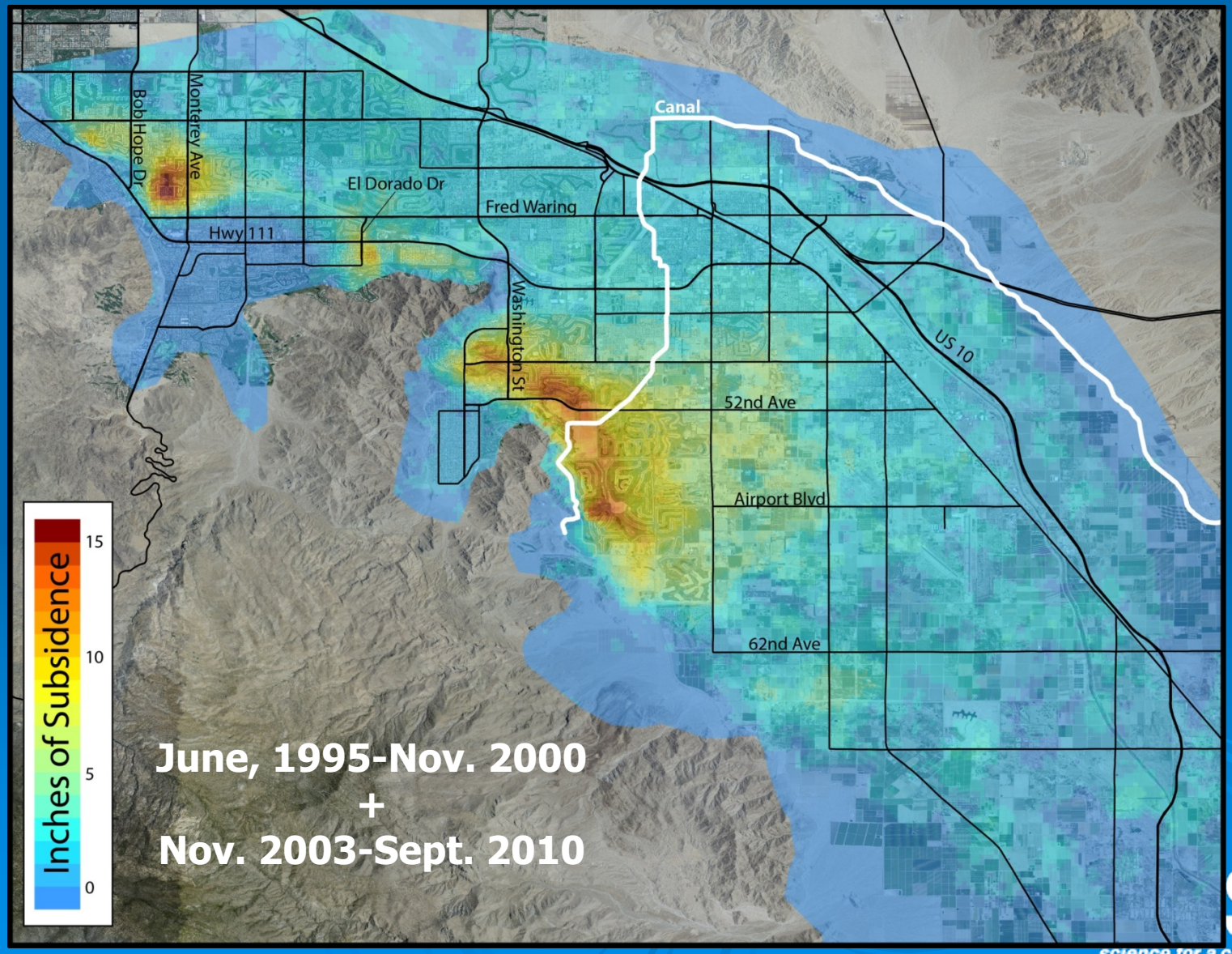
- Flood Protection and Infrastructure
  - Damage to water conveyance systems and other infrastructure

    - Reduced conveyance capacity and freeboard, liner damage; water surface and liner misalignment; erosion/deposition in unlined channels
    - Roads, rails, bridges, pipelines, wells, etc.

- Natural resources
  - Reduces aquifer-system storage capacity
  - Impacts to wetland, riparian, and aquatic ecosystems
  - Restricted land uses



Subsidence Map: That was Then



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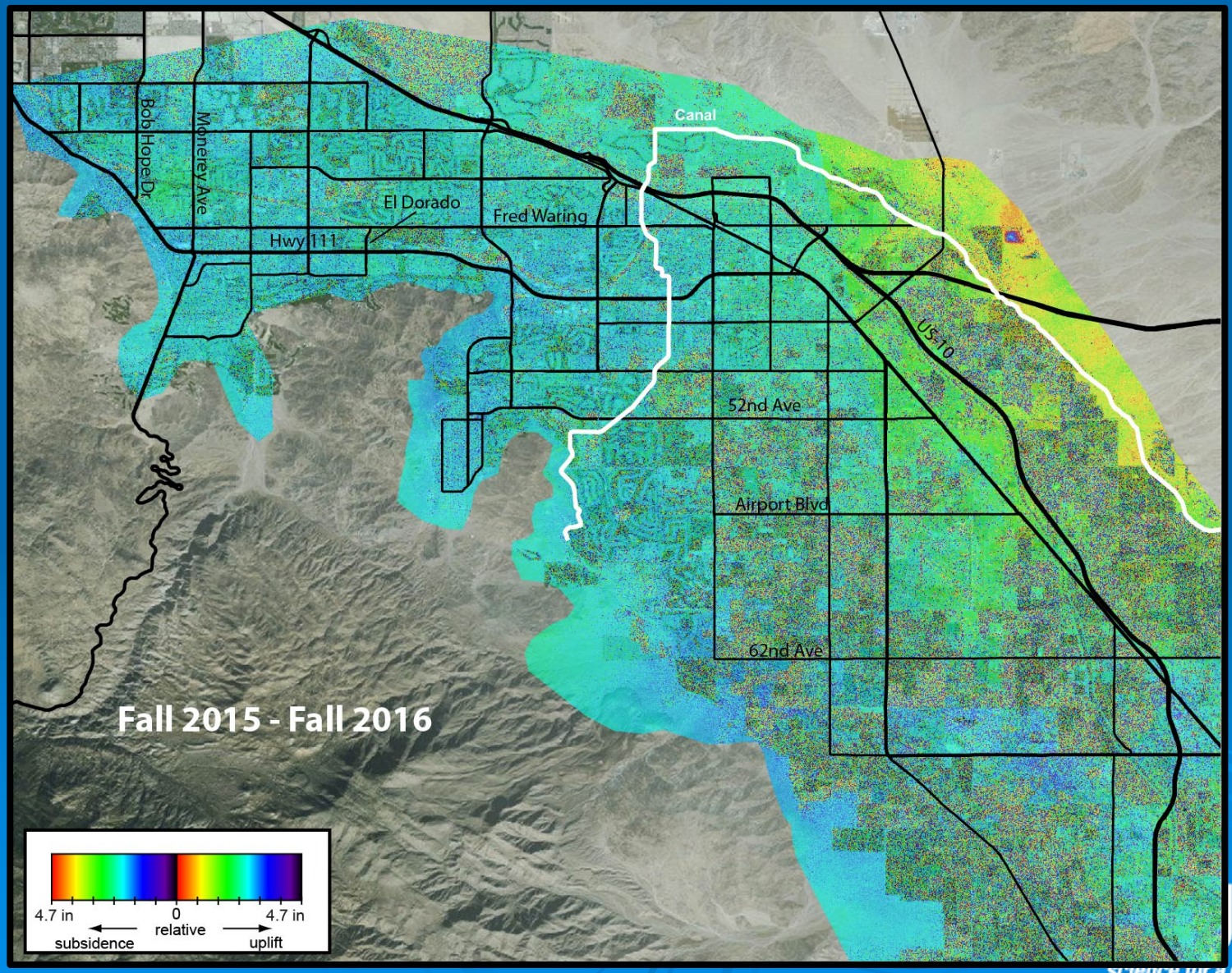
Subsidence Map: This is Now



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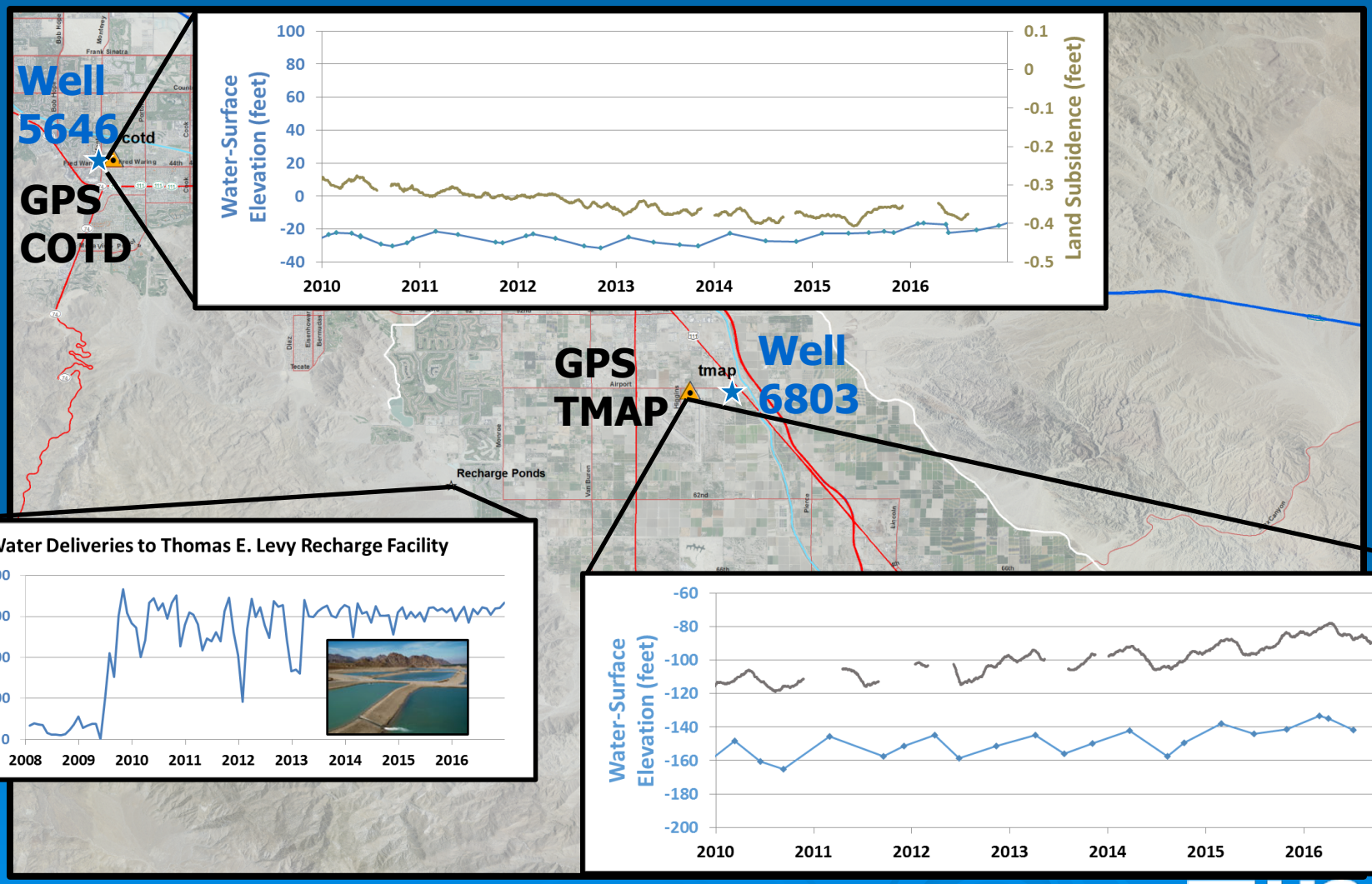
Percolation Ponds

- Whitewater River since 1973 (SWP)
- Mission Creek (near Desert Hot Springs) since 2002 (SWP)
- Martinez Canyon since 2007 (Colorado River)
- Thomas E. Levy Groundwater Replenishment Facility since October 2009 (Colorado River)

Continuous GPS



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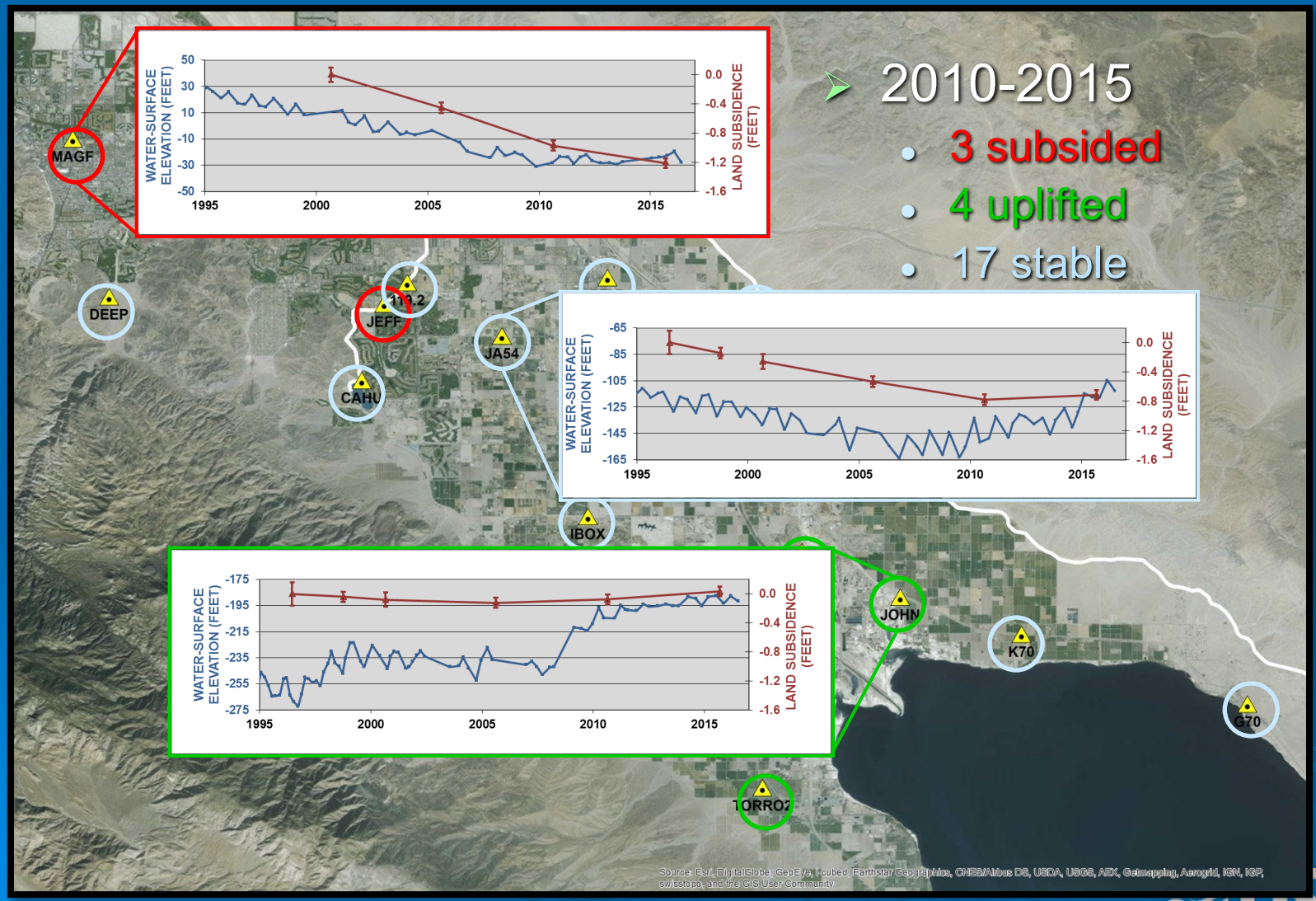
High-Precision GPS Surveys

Repeated Every 5 Years



- 2010-2015
  - 3 subsided
  - 4 uplifted
  - 17 stable

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Summary

- Periods of groundwater-level declines since the 1930s have caused land subsidence in the Coachella Valley
- Groundwater levels in many parts of the valley have stabilized or risen during the last decade
  - Largely associated with managed recharge using percolation ponds
- The stable or rising water levels have resulted in slowed or stopped subsidence

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THANKS!

For more information:

https://ca.water.usgs.gov/land_subsidence/coachella-valley-subsidence.html

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PANEL Q&A

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