

IRP Technical Process Update

IRP Member Agency Technical Workgroup
May 27, 2015

IRP Member Agency Workgroup Process

- IRP/RUWMP Kick-off April 8th
- Water Use Efficiency Meeting April 16th
- Uncertainty April 22nd
- Imported Supplies May 18th
- Water Use Efficiency Meeting May 20th

IRP Committee Items

May 26, 2015

- Mary Ann Dickinson, Alliance for Water Efficiency
 - Conservation potential
- Dr. Kenneth Baerenklau, University of California, Riverside
 - Conservation and retail rates
- Monthly IRP technical process update

IRP Technical Process Homework

- Input on IRP Issue Papers
- Local supply projects inventory

Groundwater and Stormwater Meeting 1 of 2

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May 27, 2015

Presentation Overview

- Discussion objectives
- Groundwater in the IRP
- What is sustainable groundwater management?
 - Current groundwater conditions
 - Groundwater forecast and assumptions
 - Additional factors for consideration
- Next steps

Groundwater Discussion Objectives

- Review and receive input on IRP technical approach
 - Identify additional technical refinements to be completed
- Provide an overview of groundwater and stormwater topics impacting the IRP
- Facilitate discussion of groundwater and stormwater issues
 - Identify and quantify future risk
 - Collect policy and implementation issues for consideration by the Board

IRP Sustainable GW Management

Meeting 1 of 2 – What is It?

- Update on current status of groundwater in the region
- Review of IRP groundwater projections
- Potential areas for refinement
 - Normal vs. multiple dry years
 - Stormwater recharge
 - Recycled water recharge
 - Imported water

IRP Sustainable GW Management

Meeting 2 of 2 – How do We Achieve It?

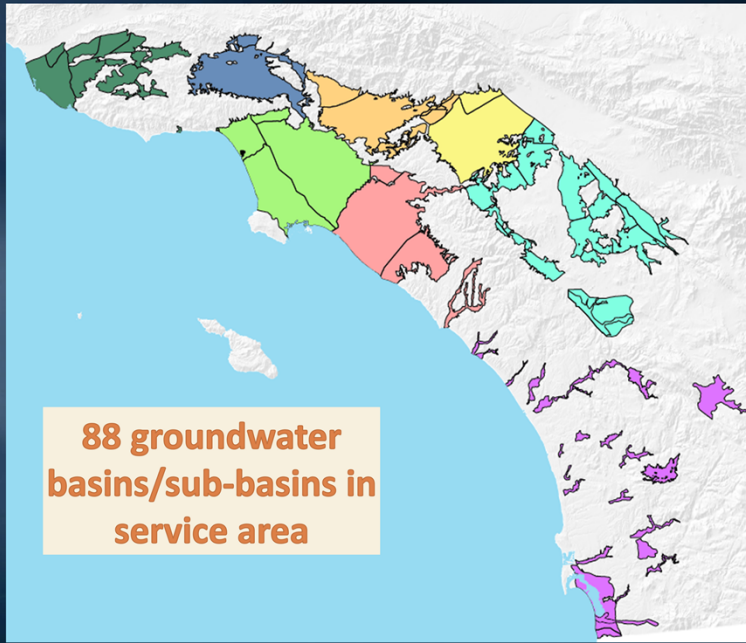
- Discuss Issue Paper input
- Discuss factors impacting groundwater sustainability
- Identify pathways for ensuring sustainable groundwater management
 - Potential policies or actions
 - Key recommendations (short and long term)

(understanding that the starting point for this IRP includes very low groundwater levels)

The Role of Groundwater in the IRP

- 2010 IRP Target
 - No explicit target set in the IRP
 - Implied level of production underlying the IRP forecast
- Identified as one of four key areas of uncertainty to monitor
 - Future Delta conditions
 - Demographic trends
 - Groundwater yields
 - Climate conditions

Groundwater Basins in MWD Service Area



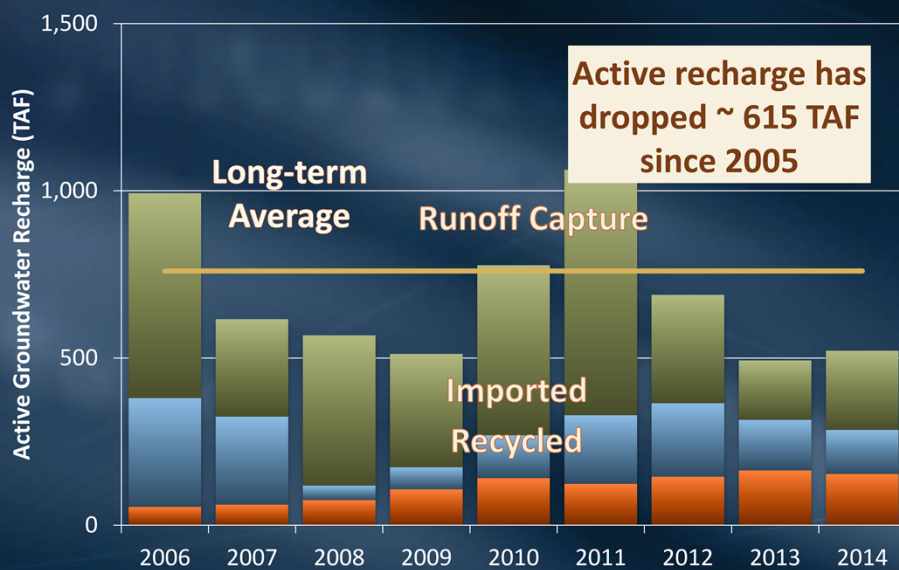
Baseline Groundwater Conditions

- Long-term Averages (1986-2005)
 - Precipitation ~ 15.2 inches/year
 - Groundwater Production ~ 1.5 MAFY
 - Active Recharge ~ 750 TAFY
 - Passive Recharge ~ 750 TAFY

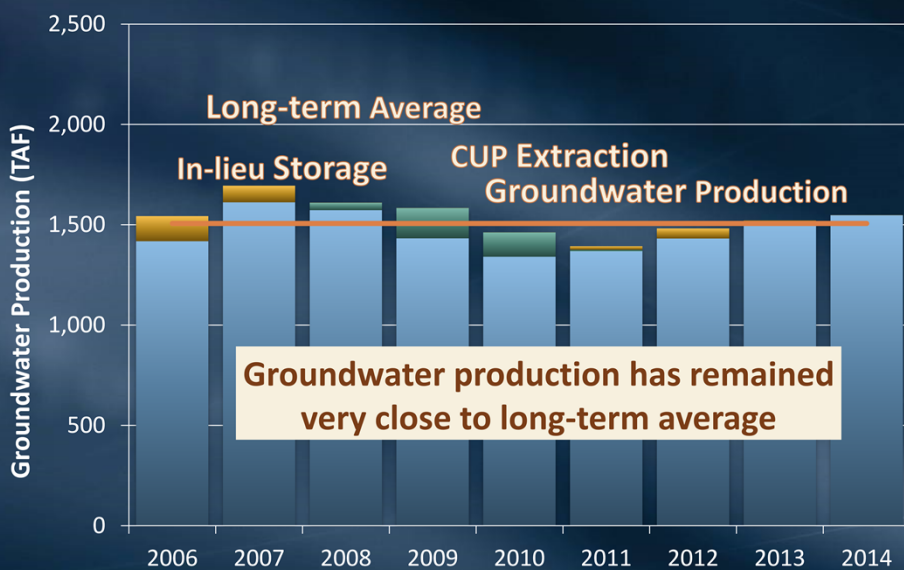
Cumulative Changes to GW since 2005

- Precipitation: Declined 44 inches
- GW Production: Unchanged since 2005
- Recharge: Declined over 1 MAF
 - Stormwater recharge declined 955 TAF
 - Active runoff capture declined 555 TAF
 - Passive recharge declined 400 TAF
 - Growth in recycled recharge offsets imported recharge decline
 - Recycled recharge increased 550 TAF
 - Imported recharge declined 610 TAF

Active Recharge has Dropped

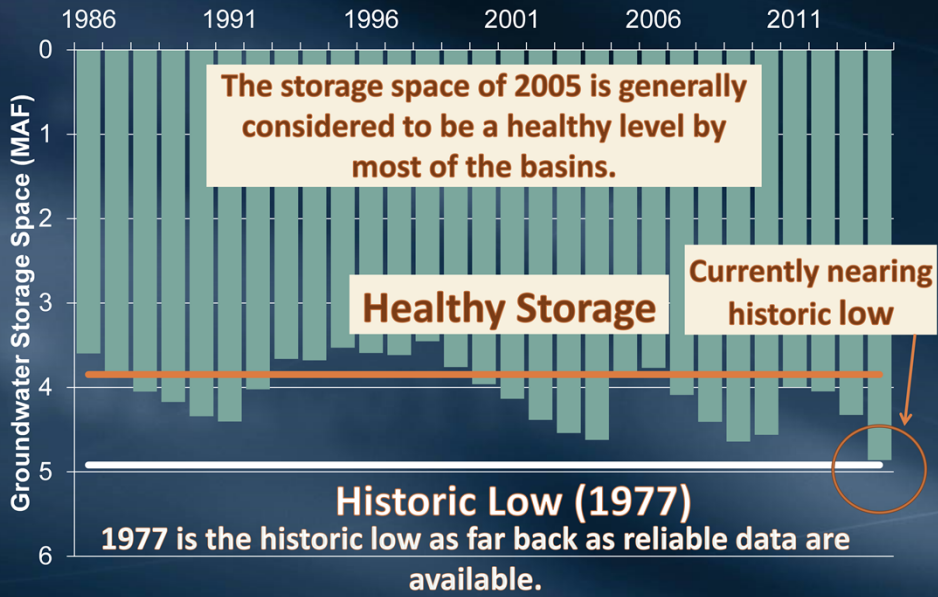


Groundwater Production Stable*



* Includes all production from Basins including GW Recovery & CUP

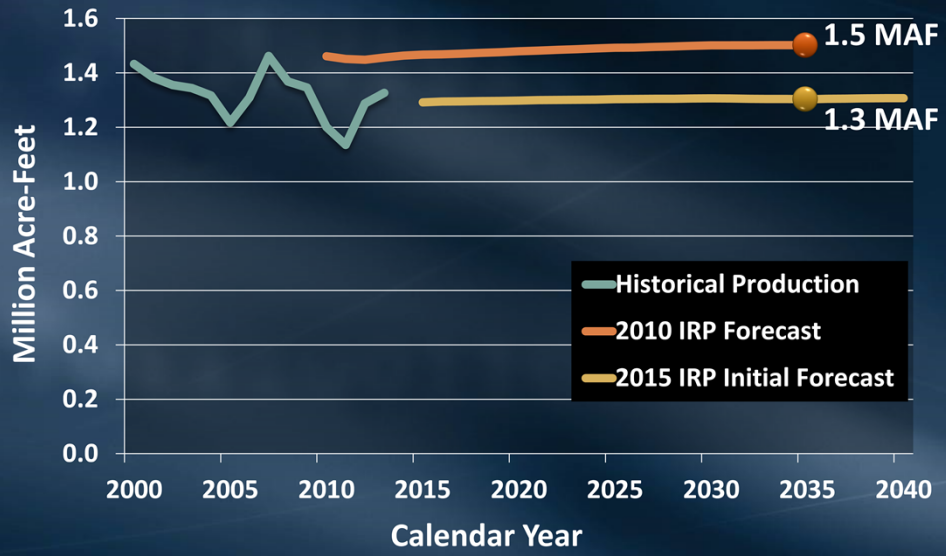
Storage Space in GW Basins



Recent Management Actions

- Amendments to adjudications to enhance storage
- Downward adjustment of safe yields
- Increased recharge of stormwater and recycled water
- Changes in way that imported water is used for direct use and recharge

Local Groundwater Production Historical and Projected



Groundwater Forecast Assumptions

- 2010 IRP
 - Member agency input
 - Adjudication/safe yield
 - Historical trends and long-term averages
- 2015 IRP initial forecast
 - Member agency input
 - 2008-12 averages

The 2010 IRP groundwater forecast were based on member agency input during the 2006/07 Integrated Area Study.

For the Orange County Basin, MWDOC provided a comprehensive projection that included groundwater production and replenishment for the Orange County agencies.

For the adjudicated basins, we assumed groundwater production at the full adjudicated amount with slight variation between normal, wet, and dry years.

The lesson we learn from assuming full adjudication in our forecast is that not every pumper produce at their full adjudicated amount.

In the 2015 IRP initial forecast, we used 2008-12 averages. The near-term averages reflects the current basin condition and demands, however, when projected to the outer years, the near-term averages may not hold true with changed conditions.

For the Orange County Basin, we assume 75% BPP in the long-term.

How to Address Multiple-Year Dry Cycle

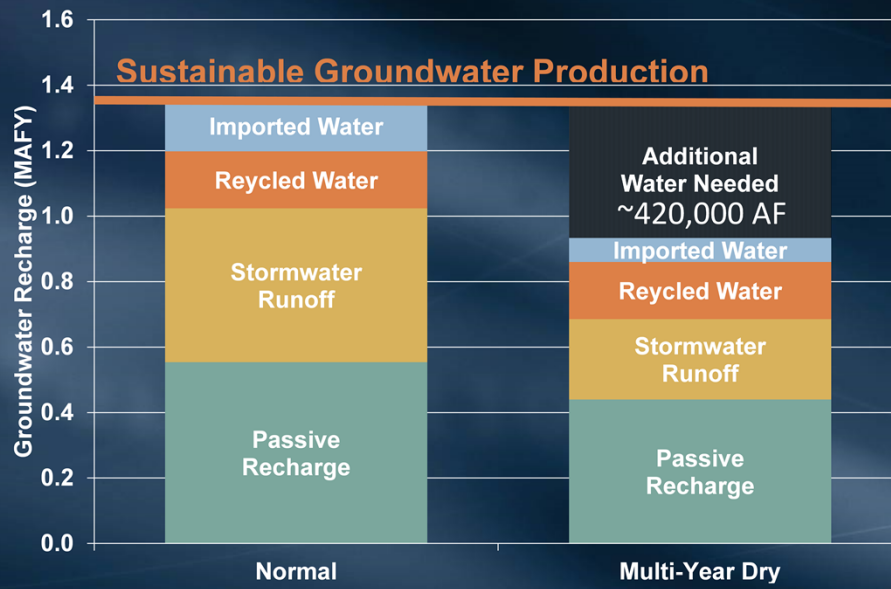
● Normal Wet-Dry Cycle

- Average annual groundwater production 2010-2013
- Average annual active recharge 1986-2005 with adjustments for known changes

● Multiple-Year Dry Cycle

- Average annual groundwater production 2010-2013
- Reduced active and passive stormwater recharge 2012-2014
- No change to recycled water recharge
- Will require an additional ~420,000 AFY to support sustainable groundwater

How to Address Multiple-Year Dry Cycle



Questions for Discussion

- Appropriate assumptions for groundwater production during extended dry periods
 - Is 3 years the limit? What happens next?
 - Is the average annual statistic sufficient?
- Changes in outdoor water use
 - Do return flows from landscape irrigation contribute to basin recharge?
 - What is the effect of drought tolerant landscapes on basin safe yield?

Questions for Discussion

- Future stormwater recharge
 - Will stormwater make additional contributions to groundwater yield and production?
- Climate change
 - Are groundwater managers making changes to assumptions about safe yield and production that should be included in MWD IRP assumptions?

Next Steps



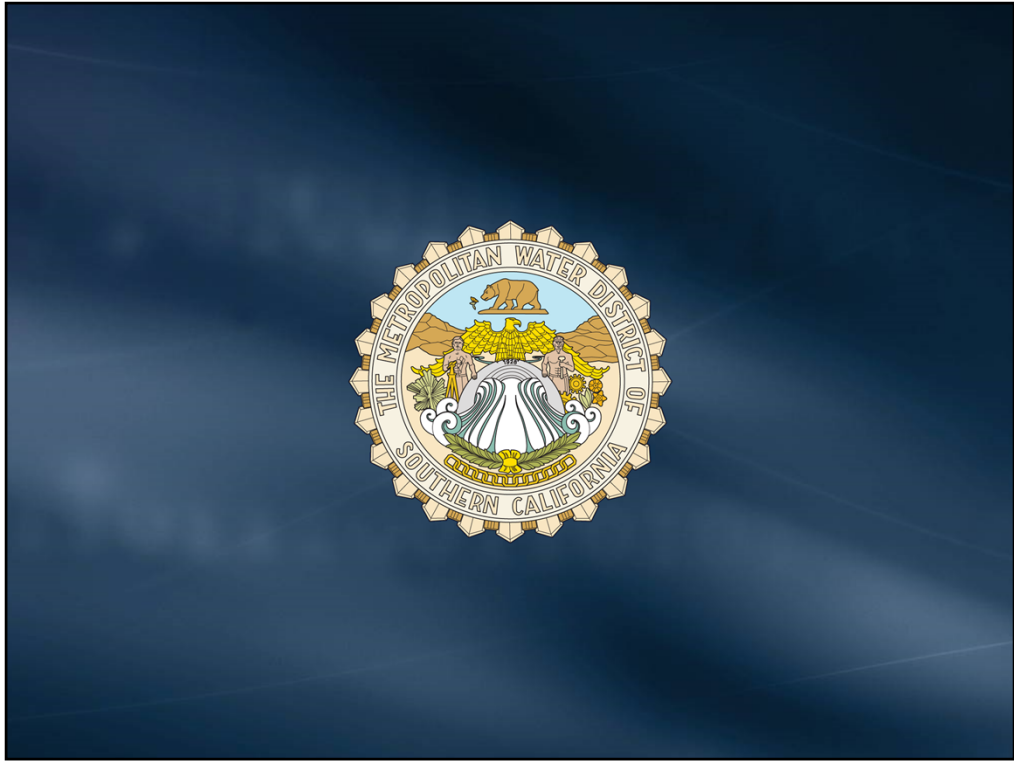
IRP Technical Update Next Steps

- Incorporate feedback from this workgroup
- Make additional technical refinements
 - Provide input on forecast assumptions
 - Review and adjust detailed groundwater assumptions for your basin (to be emailed)
 - Continue to provide input on the Issue Paper
 - Input matrix or email messages
- Return with preliminary results in early August
- Compile policy and implementation issues for Board policy process

Upcoming Technical Process Activities

June 2015

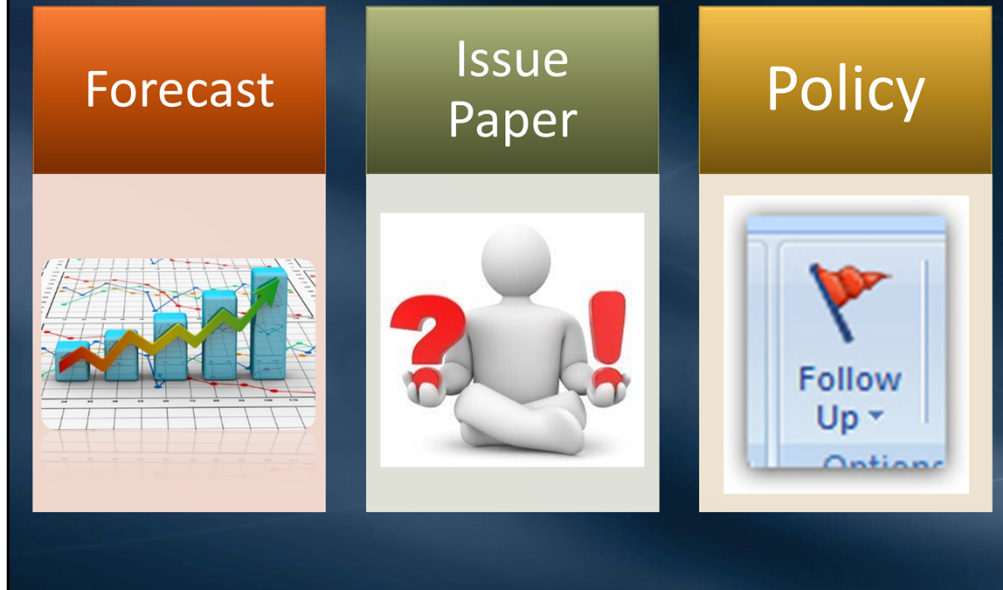
- Member Agency Workgroup June 11th
 - Groundwater/Stormwater (part 2 of 2)
- Water Use Efficiency Meeting June 18th
- IRP Committee Meeting June 23rd
 - Tony Zampello, AGWA – groundwater issues
 - Mark Pestrella, LACDPW – stormwater issues
- Member Agency Workgroup June 24th
 - Local Resources (part 1 of 2)



Next Steps

- Provide input on forecast assumptions
 - Review and adjust detailed groundwater assumptions for your basin (to be emailed)
- Continue to provide input on the Issue Paper
 - Input matrix or email messages
- Groundwater/Stormwater Recharge Workshop #2— Thursday, June 11

IRP Information Categories



Information for the IRP can be placed into three categories (information that...):

- 1) Informs the forecast
- 2) Feeds the issue paper (discuss groundwater sustainability)
- 3) Will be flagged to add to a subsequent Board discussion on policies and implementation

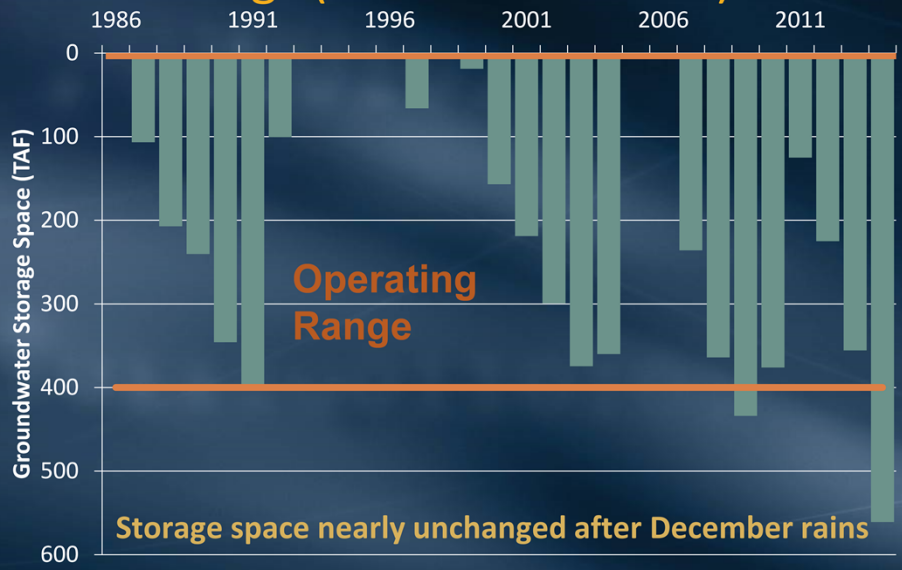
We'll be having 2 workshops specifically for Groundwater/stormwater recharge

- Workshop #1 will focus more on the technical forecast
- In Workshop #2, we will dive into a deeper discussion on groundwater sustainability

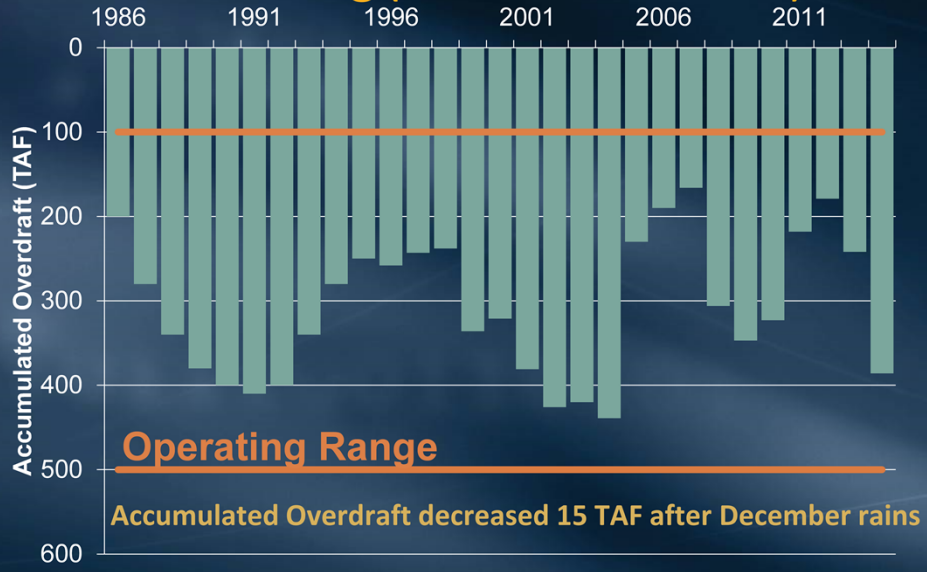
Basin Snapshots

- Storage level situations
 - Main San Gabriel Basin
 - Orange County Basin
 - Central/West Coast basins

Main San Gabriel Storage below Operating Range (as of December 26)



Orange County Basin in Operating Range but Declining (as of December 31)



Central/West Coast below Optimum Accumulated Overdraft (as of October 2014)

