

# Drought Word Search

DROUGHT  
DECLARATION  
GOVERNOR  
PRECIPITATION  
INDEX  
PERCOLATION  
AQUIFER  
GROUNDWATER  
LAKE  
STREAM  
ORDINANCE  
CONSERVATION  
WILDFIRE  
MANDATORY  
MANAGEMENT  
MITIGATION  
CDPH  
RCAC  
AGRICULTURE  
EFFICIENCY  
IRRIGATION

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Record

New Page

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Public Page

1/1

Follow

(Moderator speaking)

Audio set up wizard. If you can't hear us, click here and follow directions...

AUDIO & VIDEO



Talk

Video



PARTICIPANTS

John Hamner  
Moderator



MAIN ROOM (1)

John Hamner  
Moderator (You)

CHAT - Supervised

- You joined the Main Room. ( 12:49 PM ) -



**RCAC**

# Drought Contingency Planning



# WELCOME!

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This training is presented by RCAC with funding provided by the California State Revolving Fund (SRFCA) from the California Department of Public Health (CDPH)



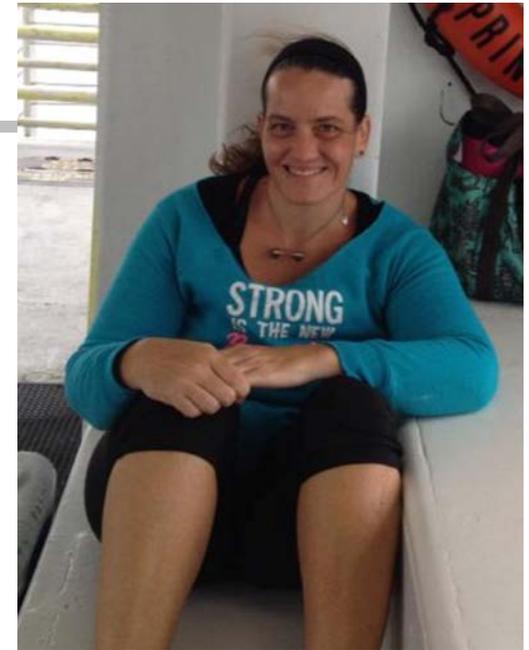
# Your Moderators Today...

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**Stevan Palmer**  
Reno NV

**Joy Gannon**  
Makawao HI



**RosAnna Noval**  
Portland OR

# The Rural Community Assistance Partnership



RCAC



Southeast Rural  
Community Assistance  
Project, Inc.



Water Is Life®



COMMUNITY  
RESOURCE GROUP





# RCAC Programs

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- Affordable housing
- Community facilities
- Water and wastewater infrastructure financing (Loan Fund)
- Classroom and online training
- On-site technical assistance
- Median Household Income (MHI) surveys

# Communication Tour

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- Introduction to the online **“Virtual Classroom”**



AUDIO & VIDEO



Talk Video

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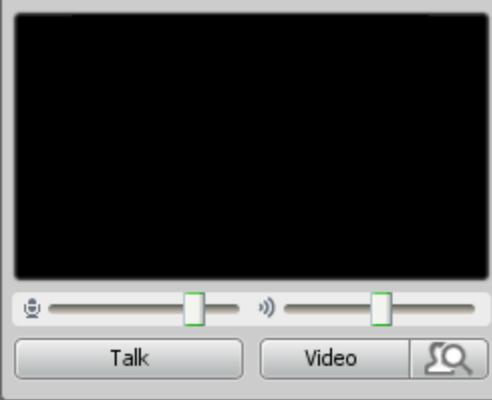
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# Audio/Volume Controls



AUDIO & VIDEO



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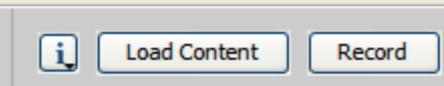


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Hand raising

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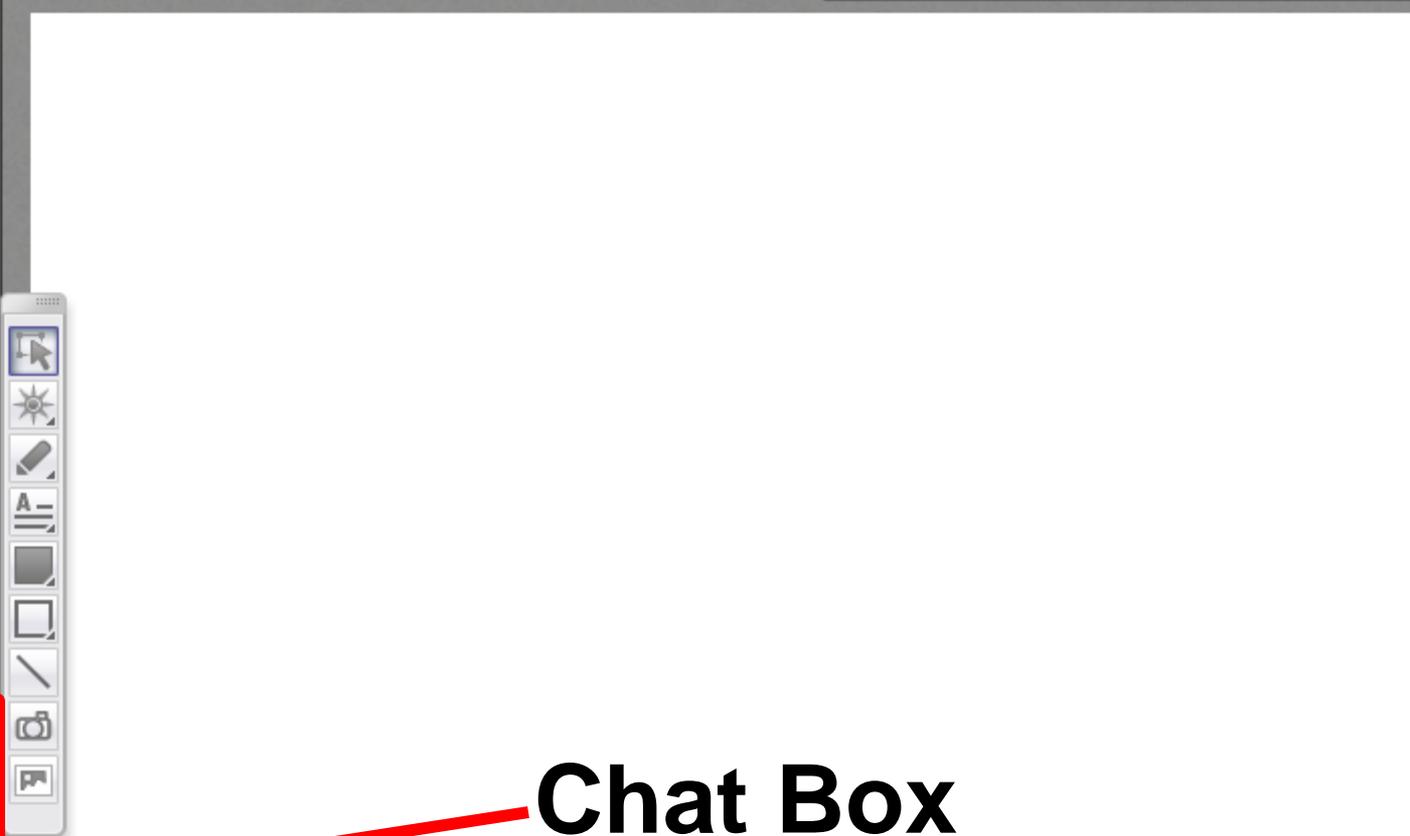
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Text input field with a smiley face icon.

Navigation icons: New Page, Delete Page, Fit Page, and a menu icon.

Buttons: Load Content, Record, and a status indicator.

Page controls: Public Page dropdown, 1/1, Follow checkbox.



Vertical toolbar with icons for pointer, eraser, highlighter, text, and other drawing tools.

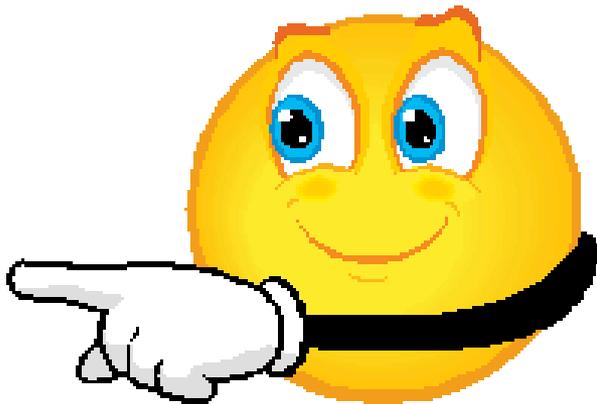
**Chat Box**

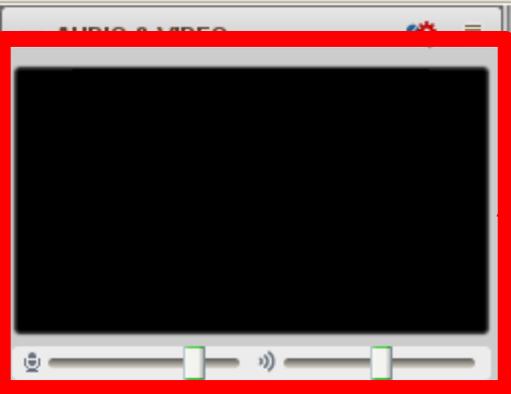
**Type questions and comments here**

# Text Chat...

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- In the chat box to the left, type one of your learning objectives for today





Navigation and control bar with icons for drawing, erasing, and erasing all. Buttons include 'New Page', 'Delete Page', 'Fit Page', 'Public Page', and 'Follow'. A 'Record' button is also present.

**Moderators live!**

Audio and video controls including 'Talk' and 'Video' buttons, and volume sliders.

**PARTICIPANTS**  
John Hamner  
Moderator  
MAIN ROOM (1)  
John Hamner  
Moderator (You)

**CHAT - Supervised**  
- You joined the Main Room. ( 12:49 PM ) -

Vertical toolbar with icons for selection, erasing, drawing, and other collaborative tools.

AUDIO & VIDEO



Talk Video

PARTICIPANTS



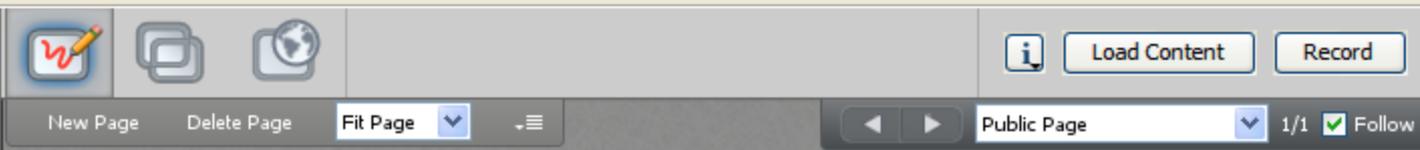
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Moderator

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**Participant List – Shows everything happening in the room**



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Talk Video

PARTICIPANTS



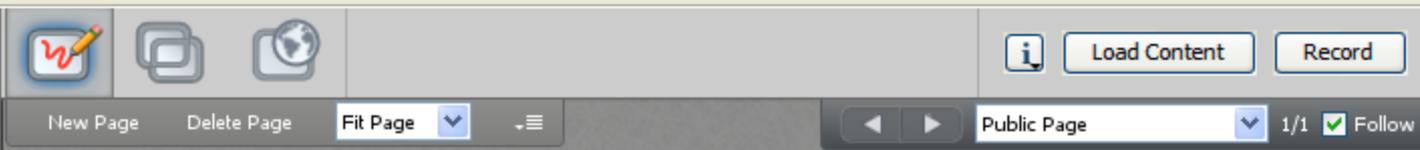
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If you need to step away

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Talk Video

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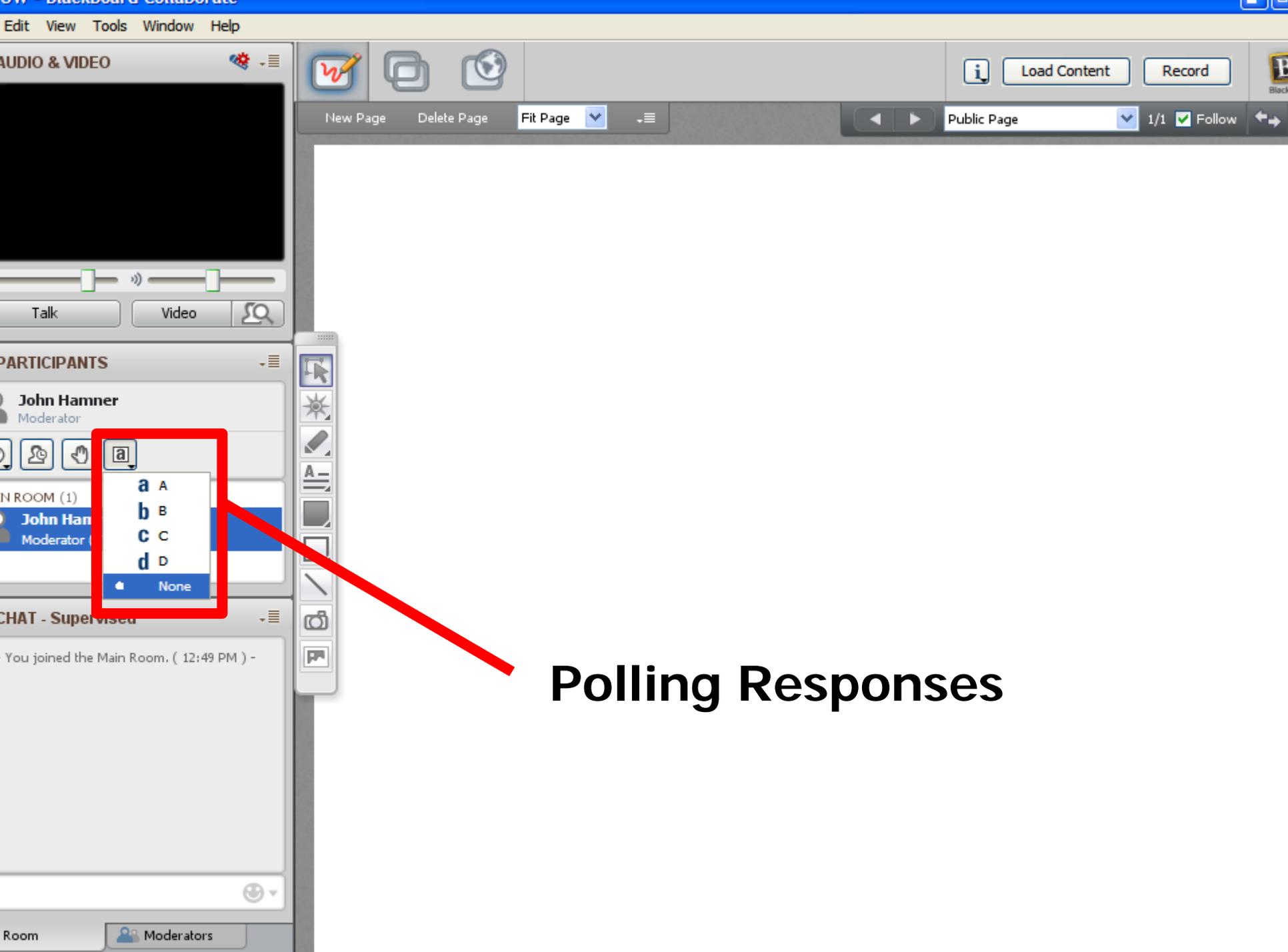
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# Emoticons

	Smiley Face
	LOL
	Applause
	Confusion
	Approval
	Disapproval
	Slower
	Faster
	None



- a A
- b B
- c C
- d D
- None

**Polling Responses**

## Poll Question...

---

How would you describe the impact of the current drought on *your* utility?

- A. An emergency
- B. A problem
- C. A concern
- D. No consequence



Talk Video

**John Hamner**  
Moderator

ROOM (1)

**John Hamner**  
Moderator (You)

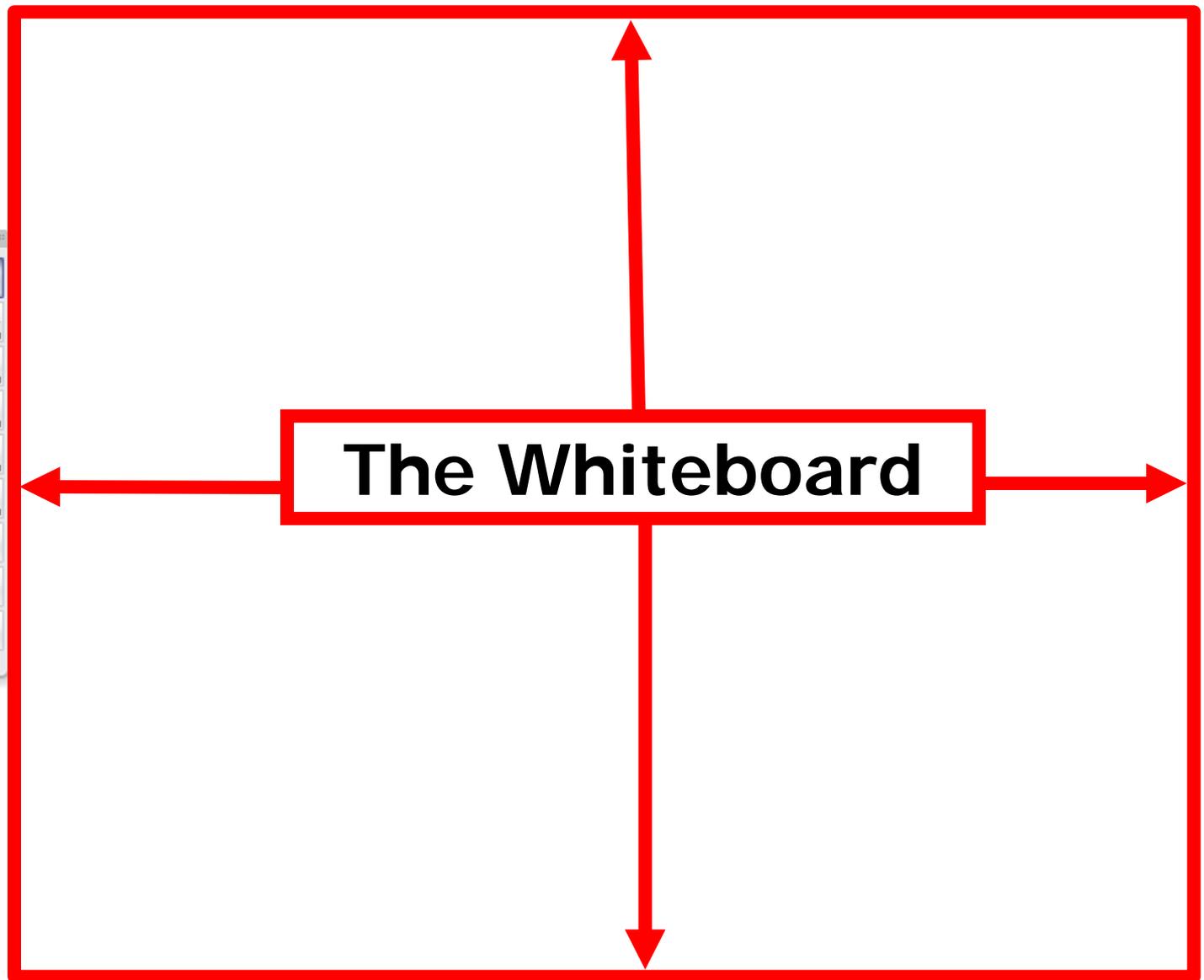
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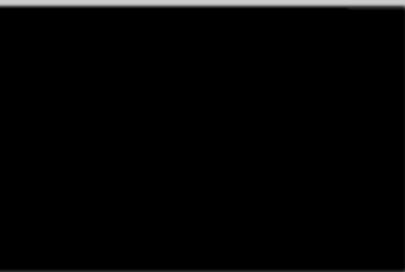
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**The Whiteboard**



John Hamner  
Moderator



John Hamner  
Moderator (You)

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# Whiteboard Tools



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Talk Video

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John Hamner Moderator (You)

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Symbols

Use the whiteboard tools to place a symbol near your location



**AUDIO & VIDEO**



Talk Video

**PARTICIPANTS**

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Moderator

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John Hamner  
Moderator (You)

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Whiteboard text entry –  
Click the LARGE letter A

AUDIO & VIDEO



Talk Video

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Public Page 1/1 Follow

Vertical toolbar with icons for selection, erasing, drawing, and text.

Choose your color

Color selection tool showing a black square, 100% opacity, and font settings.

# Who's Here Today?

Operators	
Managers	
Board Members	
Other	
Publicly Owned	
Privately Owned	
<500 Connections	
500-3000 Connections	
>3000 Connections	

AUDIO & VIDEO



Talk Video

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Vertical toolbar with icons for navigation and editing.



Hollow circle & square

▼ AUDIO & VIDEO



Talk Video

▼ PARTICIPANTS

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Moderator (You)

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100% stroke 2

Choose your color

# Circles And Squares...

## Which Countries Have You Visited?

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Iraq

India

USA

Canada

Vietnam

Ireland

Australia

Mexico

Afghanistan

New Zealand

Thailand

Indonesia

Egypt

# Tools We've Covered

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- Microphone
- Hand raising & other icons
- Text box
- Whiteboard tools
- Polling questions



# Questions?

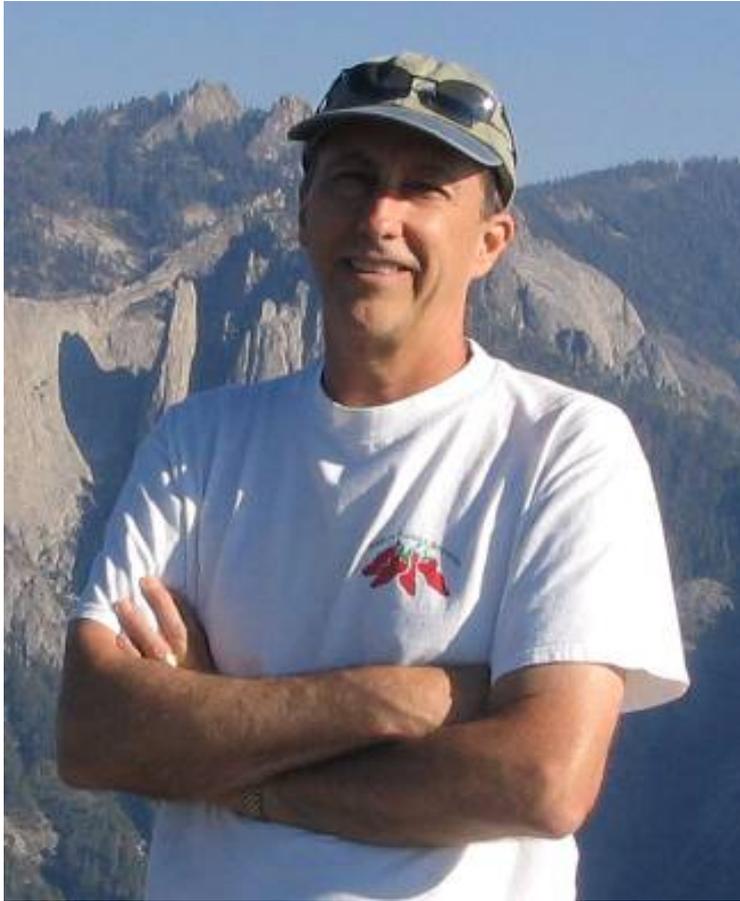
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**Text your questions and comments  
anytime during the session**

# Your Presenter Today...

---



Neil Worthen  
Las Cruces, NM

[nworthen@rcac.org](mailto:nworthen@rcac.org)

# Performance Assessment Rating Tool (PART)

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- 4 to 6 weeks from today
- Email w/ today's workshop in subject line
- 3 questions – 3 minutes maximum
- How did you use the information that was presented today?
- Funders are looking for positive changes
- Help us continue these free workshops!



**RCAC**

# Drought Contingency Planning



# What Exactly Is a “Drought”?

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- No unique definition!
- National Drought Policy Commission:
  - “*a persistent and abnormal moisture deficiency having adverse impacts on vegetation, animals, and people*”.
- **Meteorological** - rainfall deficit (supply-demand)
- **Agricultural** - topsoil moisture deficit; crop impacts
- **Hydrological** - surface or sub-surface water supply shortage

# Drought Preparedness

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- Droughts are long-term
- Droughts occur slowly and recede slowly
- Normal part of the hydrologic cycle
- Impacts are site-specific and sector-specific
- Drought conditions are directly relative to supply and demand



# California's 20th & 21st Century Statewide Droughts

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- 1918-20
- 1922-24
- 1929-34
- 1947-50
- 1959-61
- 1976-77
- 1987-92
- 2007-09

# Drought Indices

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- Numerous drought indices - all have strengths and shortcomings
  - Percent of normal precipitation
  - Standardized Precipitation Index, or SPI
  - Palmer Drought Severity Index
  - Stream flows
  - Surface and ground water storage

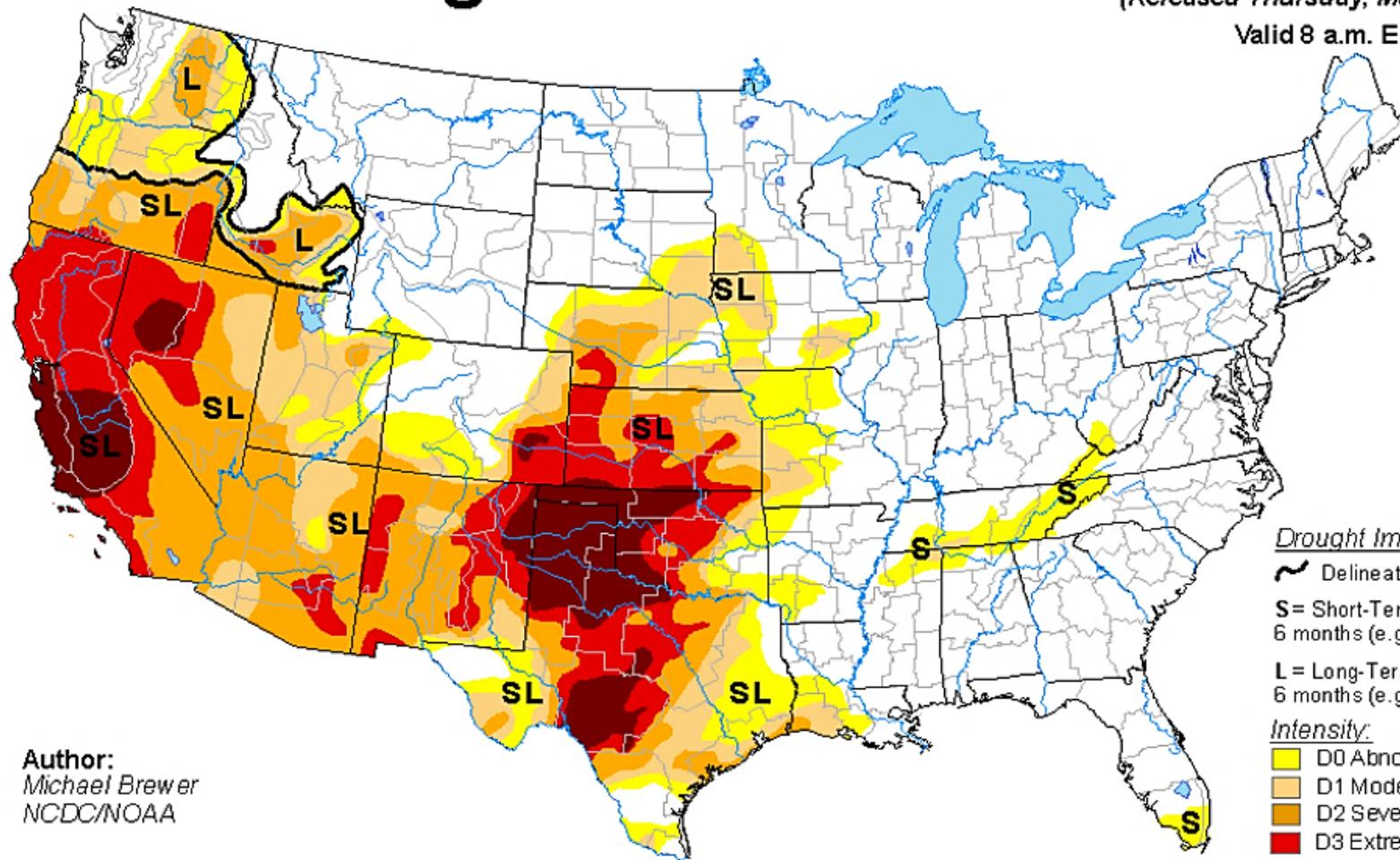


# U.S. Drought Monitor

May 20, 2014

(Released Thursday, May. 22, 2014)

Valid 8 a.m. EDT



Author:  
Michael Brewer  
NCDC/NOAA

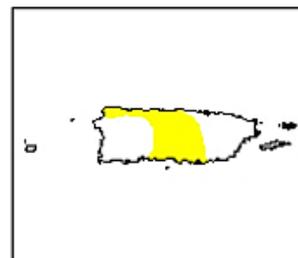
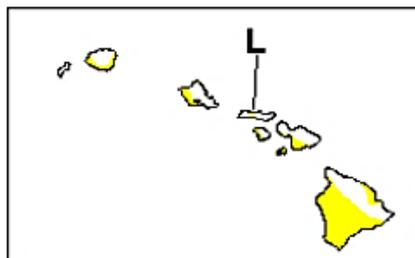
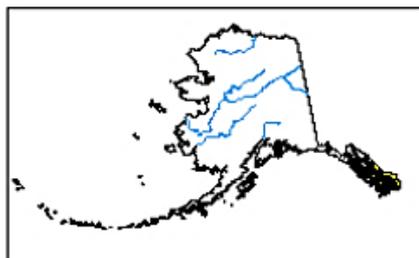
### Drought Impact Types:

- ~ Delineates dominant impacts
- S = Short-Term, typically less than 6 months (e.g. agriculture, grasslands)
- L = Long-Term, typically greater than 6 months (e.g. hydrology, ecology)

### Intensity:

- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

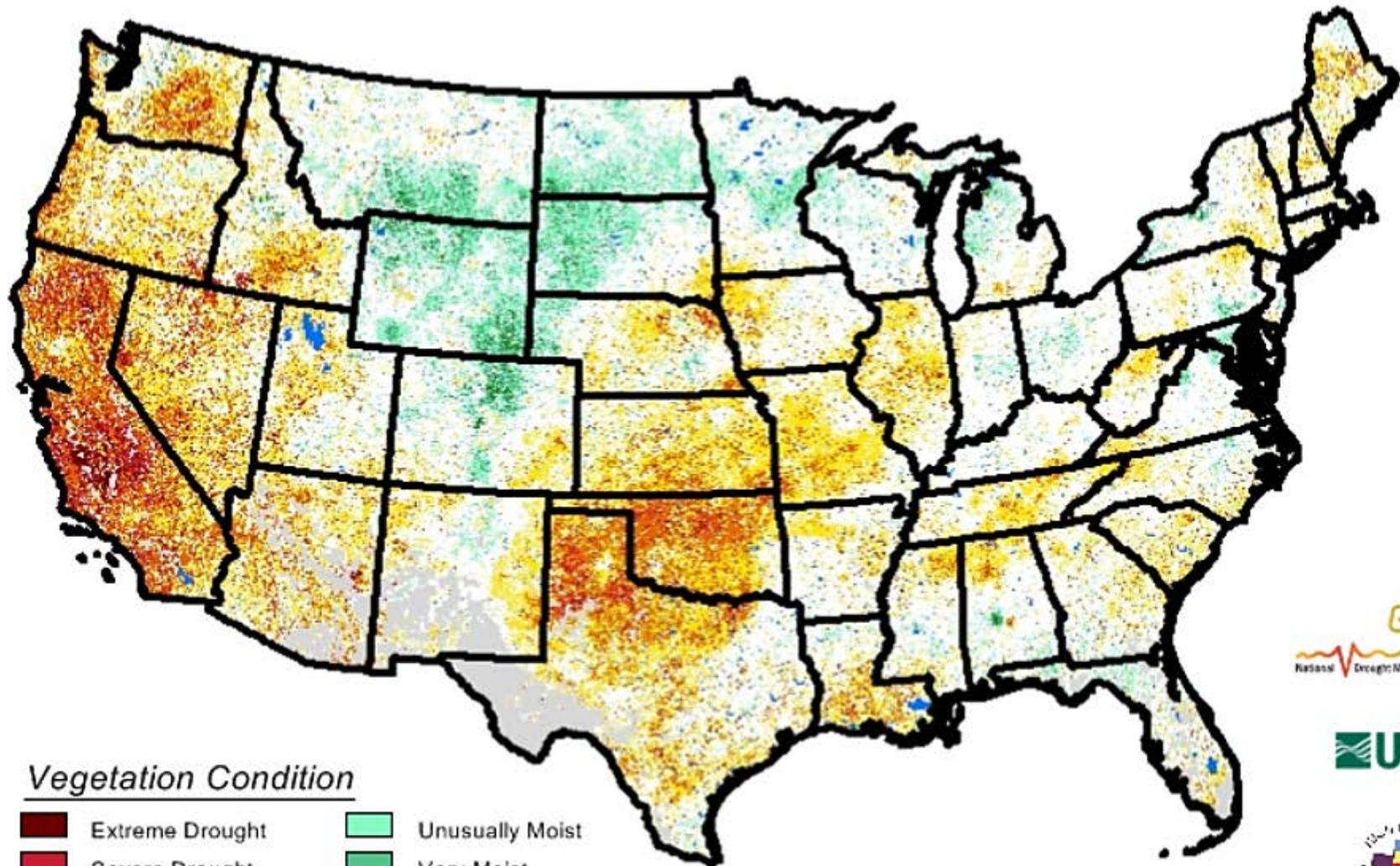
The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.



<http://droughtmonitor.unl.edu/>

# Vegetation Drought Response Index Complete

May 19, 2014



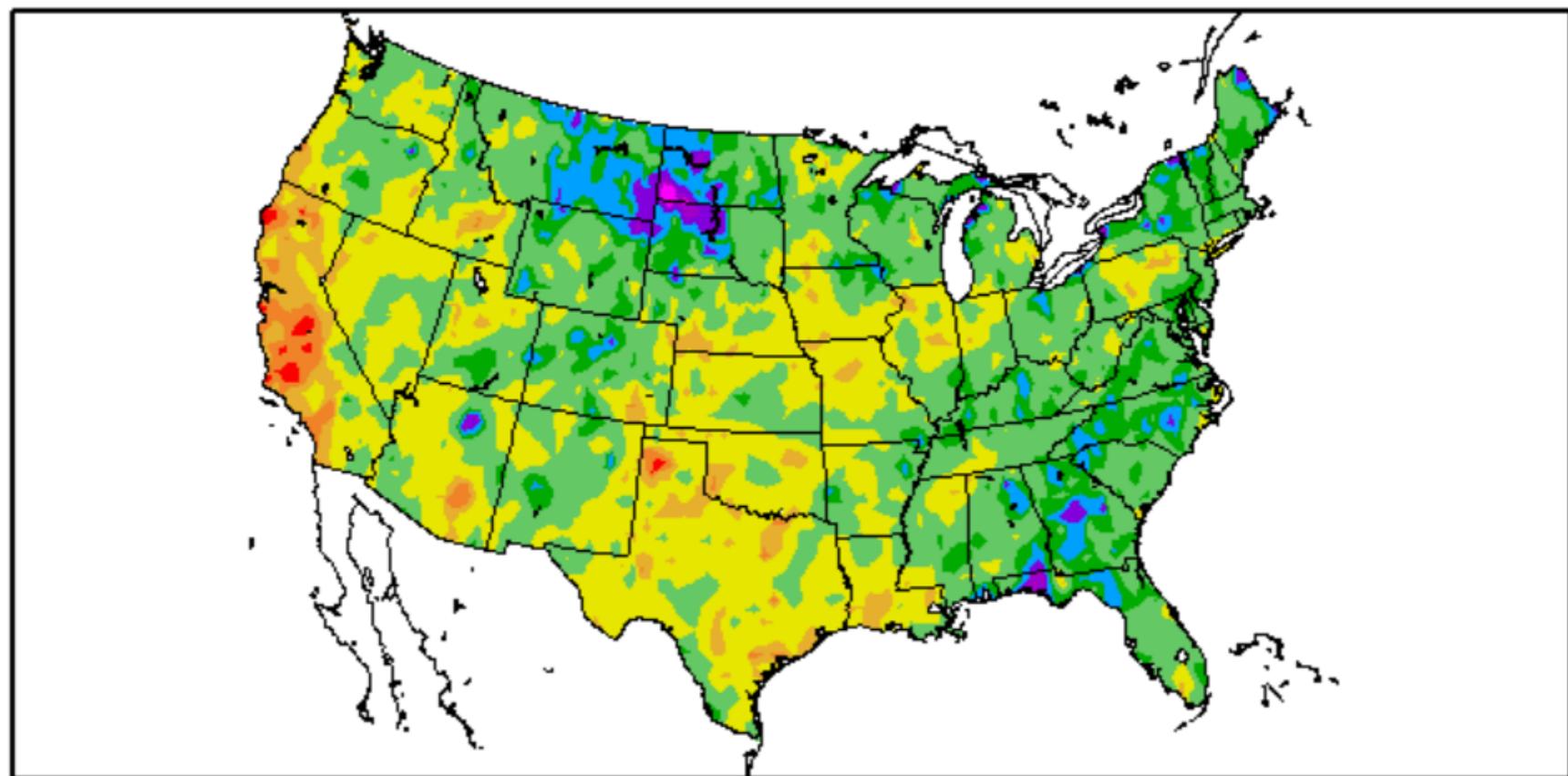
## Vegetation Condition

	Extreme Drought		Unusually Moist
	Severe Drought		Very Moist
	Moderate Drought		Extremely Moist
	Pre-Drought		Out of Season
	Near Normal		Water



# 12-Month SPI

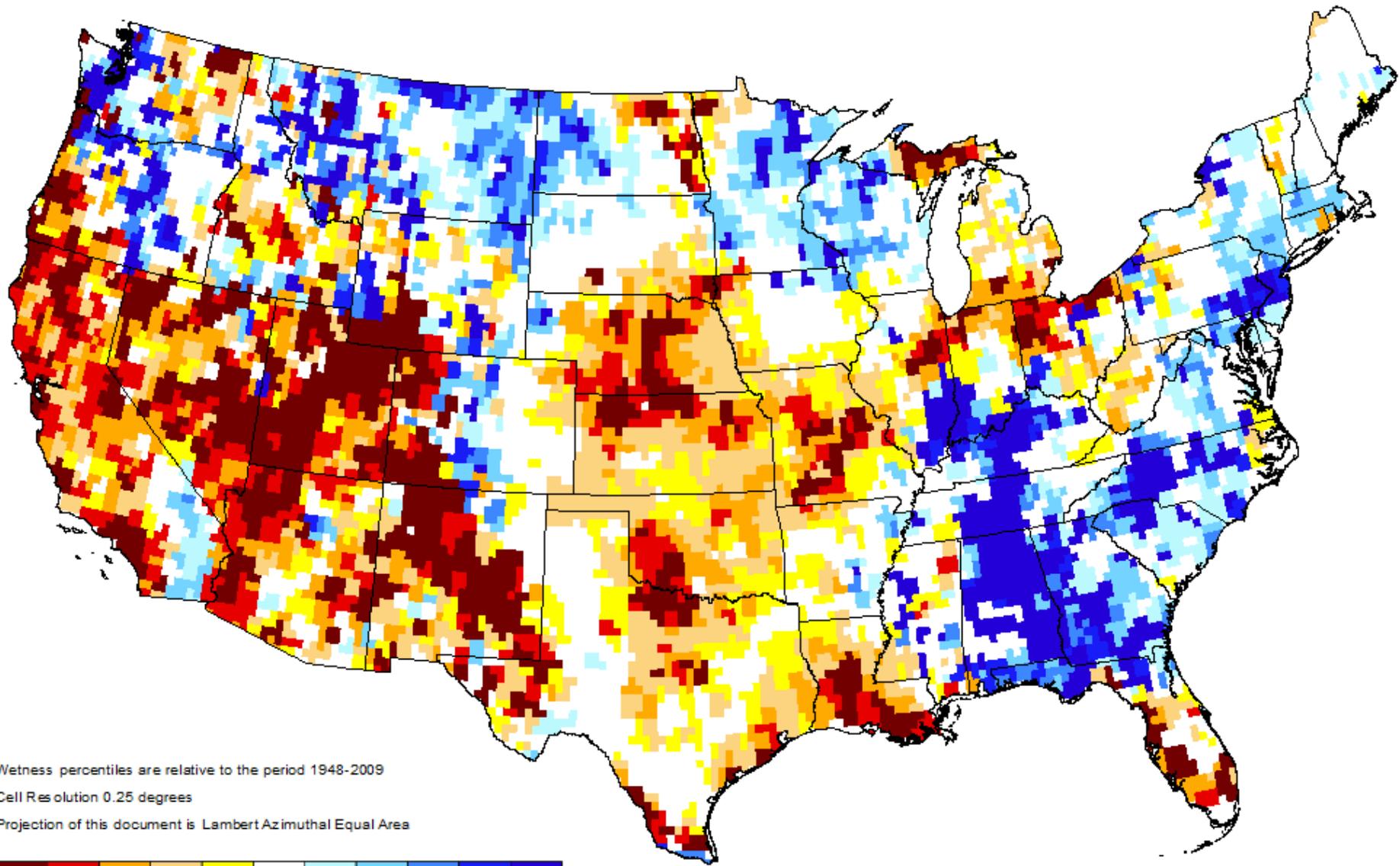
5/1/2013 - 4/30/2014



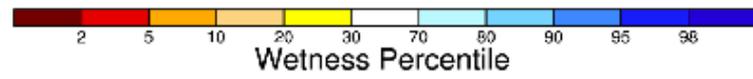


# GRACE-Based Shallow Groundwater Drought Indicator

May 19, 2014

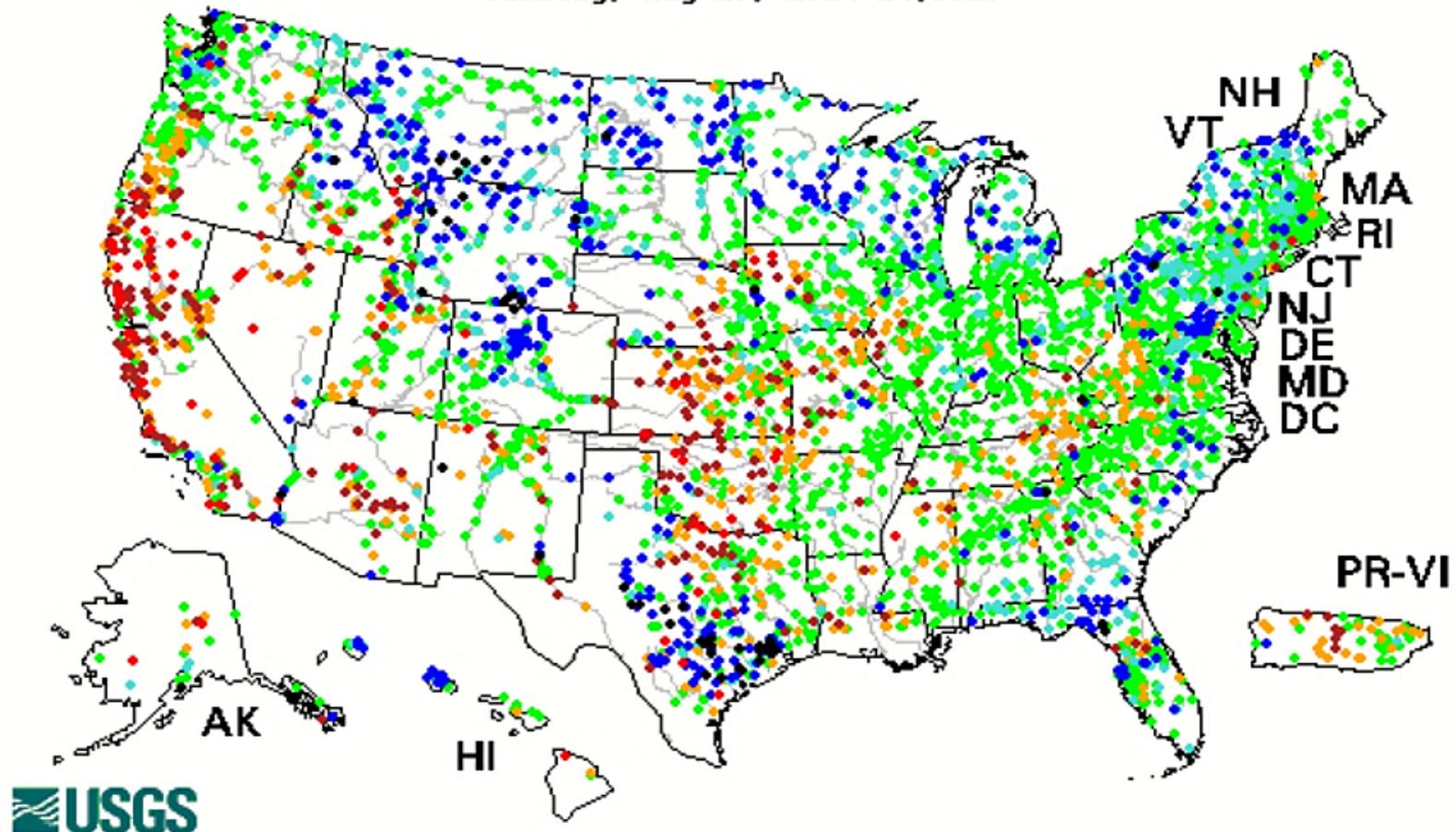


Wetness percentiles are relative to the period 1948-2009  
Cell Resolution 0.25 degrees  
Projection of this document is Lambert Azimuthal Equal Area



<http://drought.unl.edu/MonitoringTools/NASAGRACEDataAssimilation.aspx>

Tuesday, May 27, 2014 14:30ET



Choose a data retrieval option and select a location on the map

List of all stations in state,  State map, or  Nearest stations

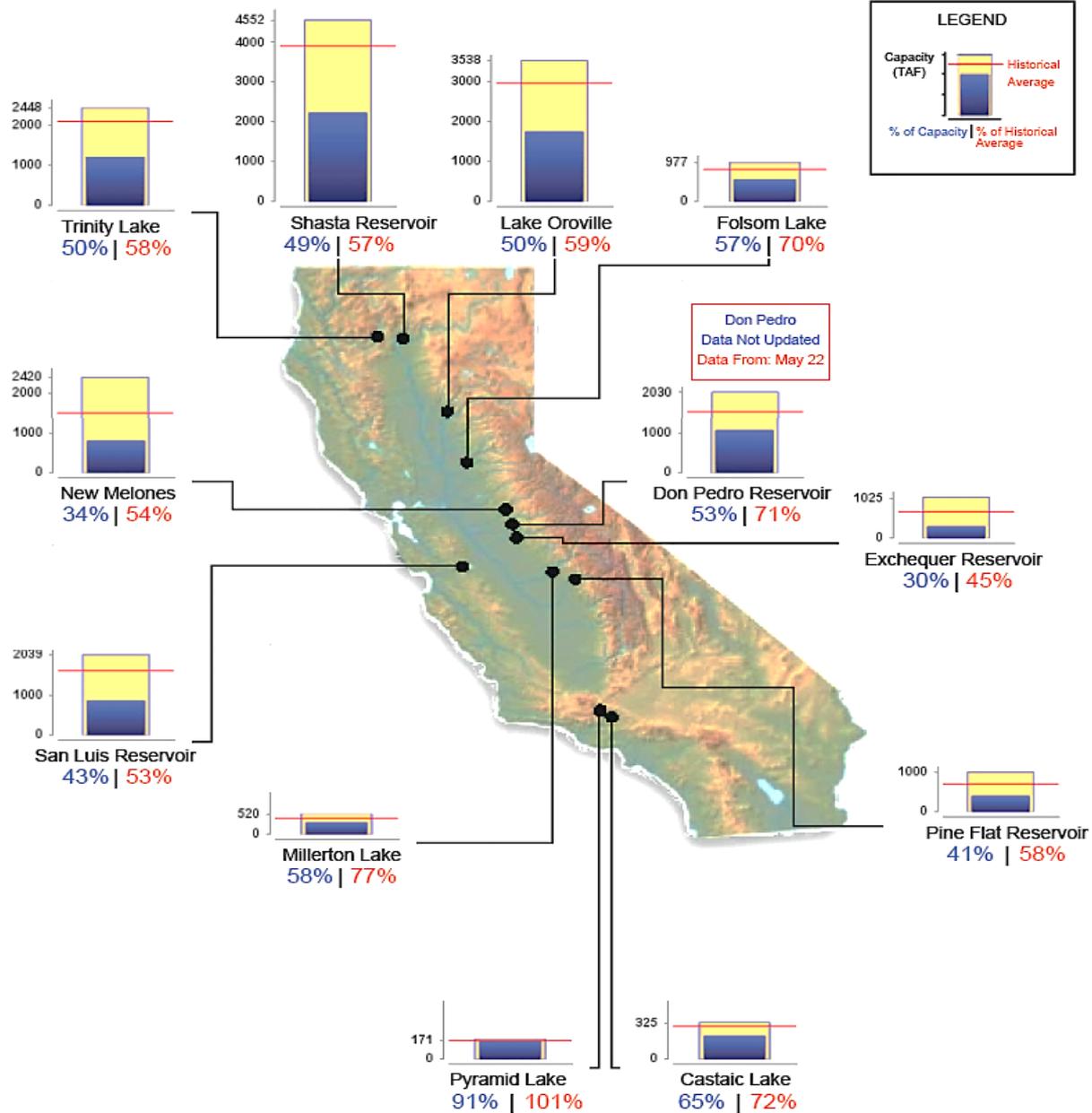
Explanation - Percentile classes						
Low	<10	10-24	25-75	76-90	>90	High
	Much below normal	Below normal	Normal	Above normal	Much above normal	

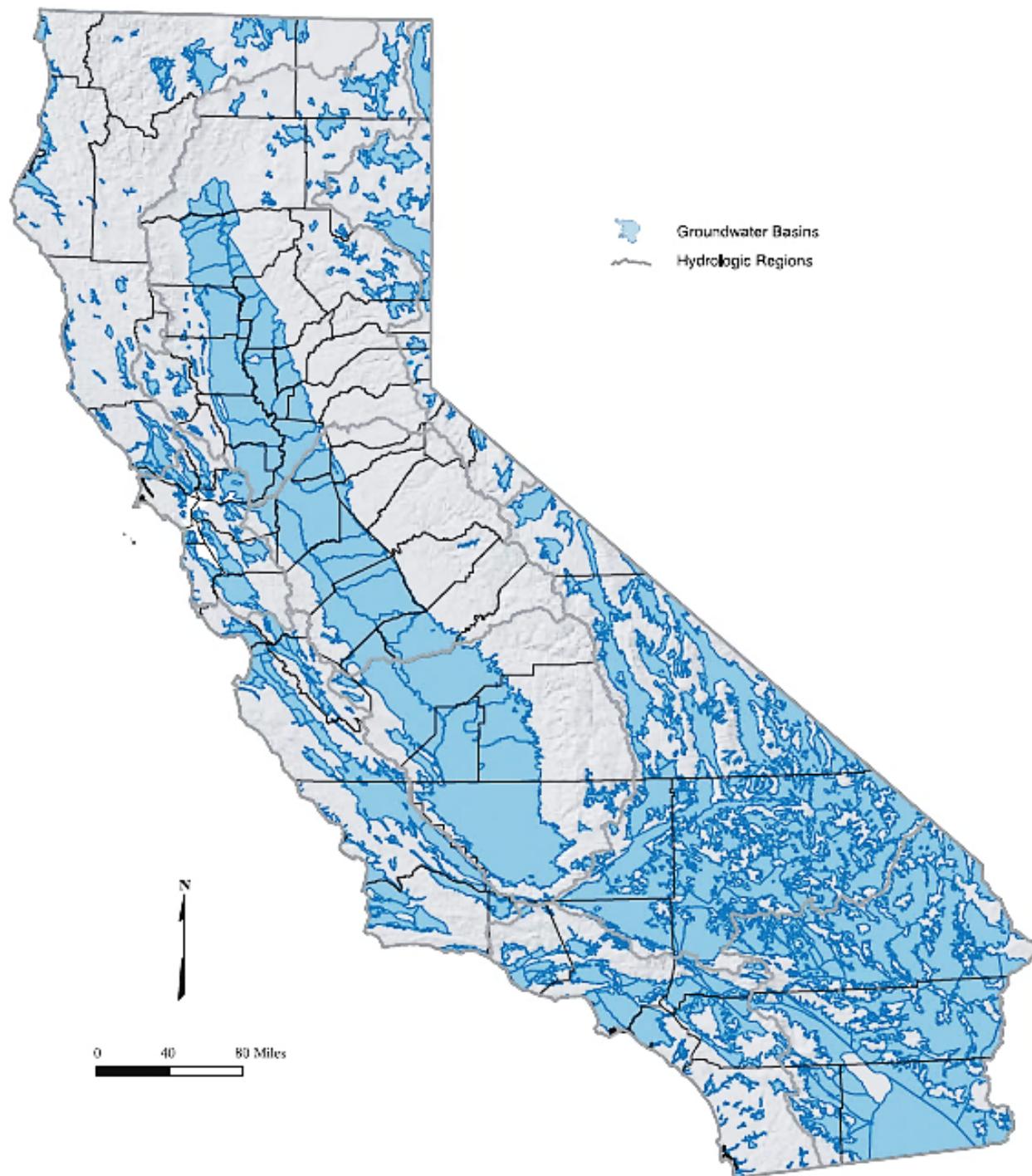
# Just How Bad Is California's Drought?

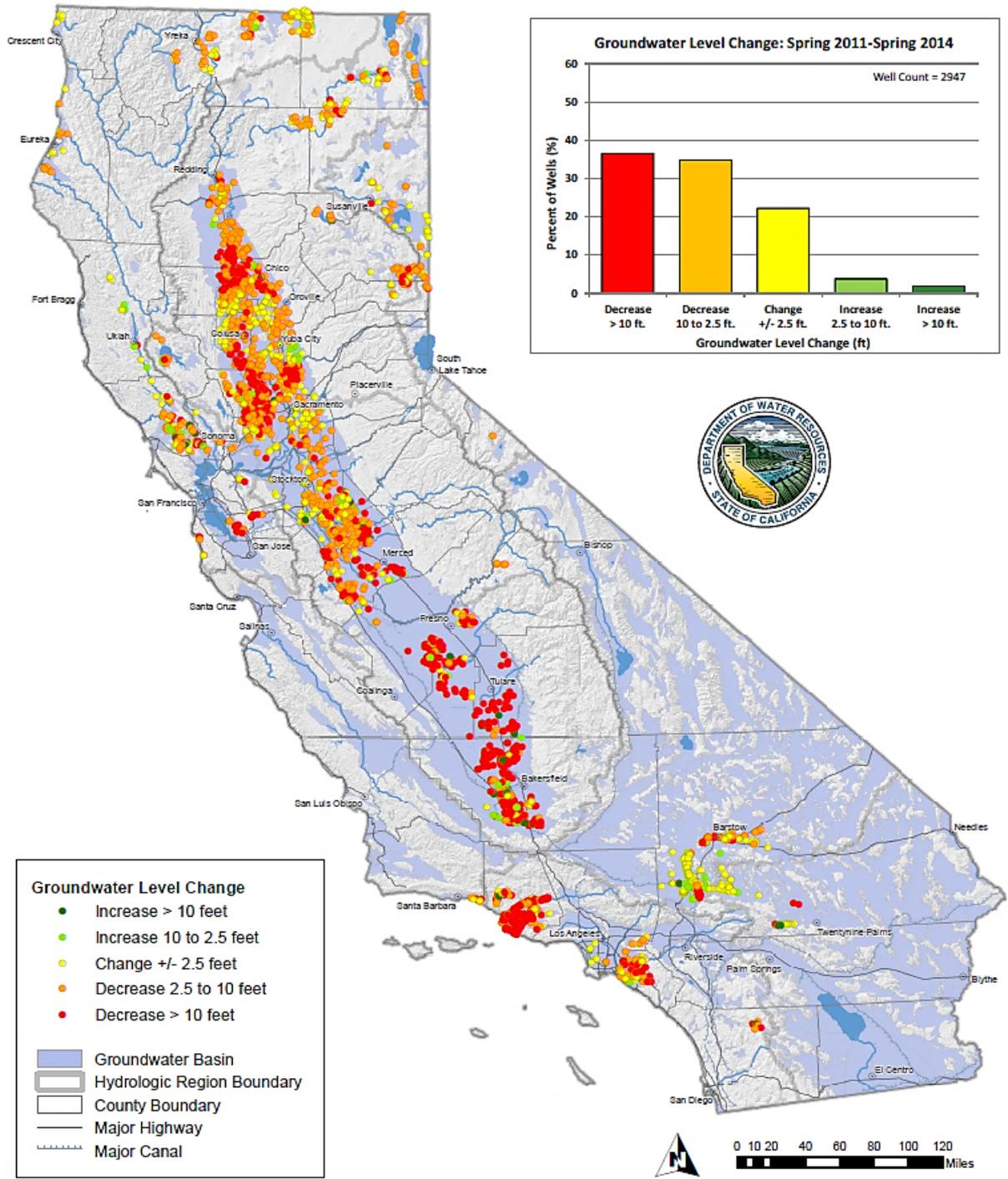
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# CURRENT RESERVOIR CONDITIONS







# Lessons Learned From Past Droughts

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- Impacts are highly site-specific
  - Ability of water systems to invest in reliability
- Small water systems on fractured rock groundwater sources are most at risk
- Larger urban water agencies can manage 3-4 years of drought with minimal impacts to their customers

# What Actions Has Your Water System Taken During Previous Droughts?

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- Adopted a water conservation ordinance
- Asked for voluntary conservation
- Adopted a drought mitigation plan
- Deepened a well
- Other
- We did nothing
- Looked for new sources
- Imposed mandatory restrictions
- Imposed excess-use surcharges
- Increased leak detection and repair

# Define “*Other*”....

(In the space below  
or in the chat box)

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# Tools For Managing Drought

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- California's water infrastructure which facilitates water transfers & exchanges
- Groundwater
- Water shortage planning (e.g. UWMPs)
- Response actions such as outreach & conservation



# Greatest Risks if 2014 Remains Dry

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- **Health & safety**
  - Catastrophic wildfires (e.g., Southern California in 2003 and 2007)
  - Impacts to small water systems in rural areas (including wildfire damage)
- **Environmental**
  - Continued San Joaquin Valley land subsidence
  - Delta spawning beds
- **Economic**
  - Minimal agricultural water allocations, particularly in the San Joaquin Valley

# Drought Challenges For Small Systems

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- Isolated rural communities
- Small groundwater basins w/ minimal recharge/storage capacities
- Typically operate with little margin
- Lack SDWA's "technical, managerial, financial" capacity



# Recent State of California Actions

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- California Water Plan Update - draft Oct 2013
- State Drought Task Force - Dec 2013
- Governor's Drought Proclamation - Jan 2014
- Water Action Plan - Jan 2014
- SB-103 & SB-104 Drought Relief Bills –  
March 2014



# Drought Legislation Summary

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**\$549 million** - Local and regional projects

**\$30 million** - Improve water use efficiency, save energy and reduce GHG emissions

**\$14 million** - Groundwater management and assistance to disadvantaged communities

**\$10 million** - Irrigation and water pumping systems that reduce water & energy use

**\$15 million** - Address emergency water shortages due to drought

**\$13 million** - Expand water use efficiency and conservation activities and to reduce fuel loads

**\$25 million** - Food assistance to those impacted by the drought

**\$21 million** - Housing related assistance for individuals impacted by the drought



# Short Term Actions

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- Conservation!
- Review / activate drought contingency plans
- Tap into local / regional information and assistance
- Expedite system improvements



# Long Term Actions

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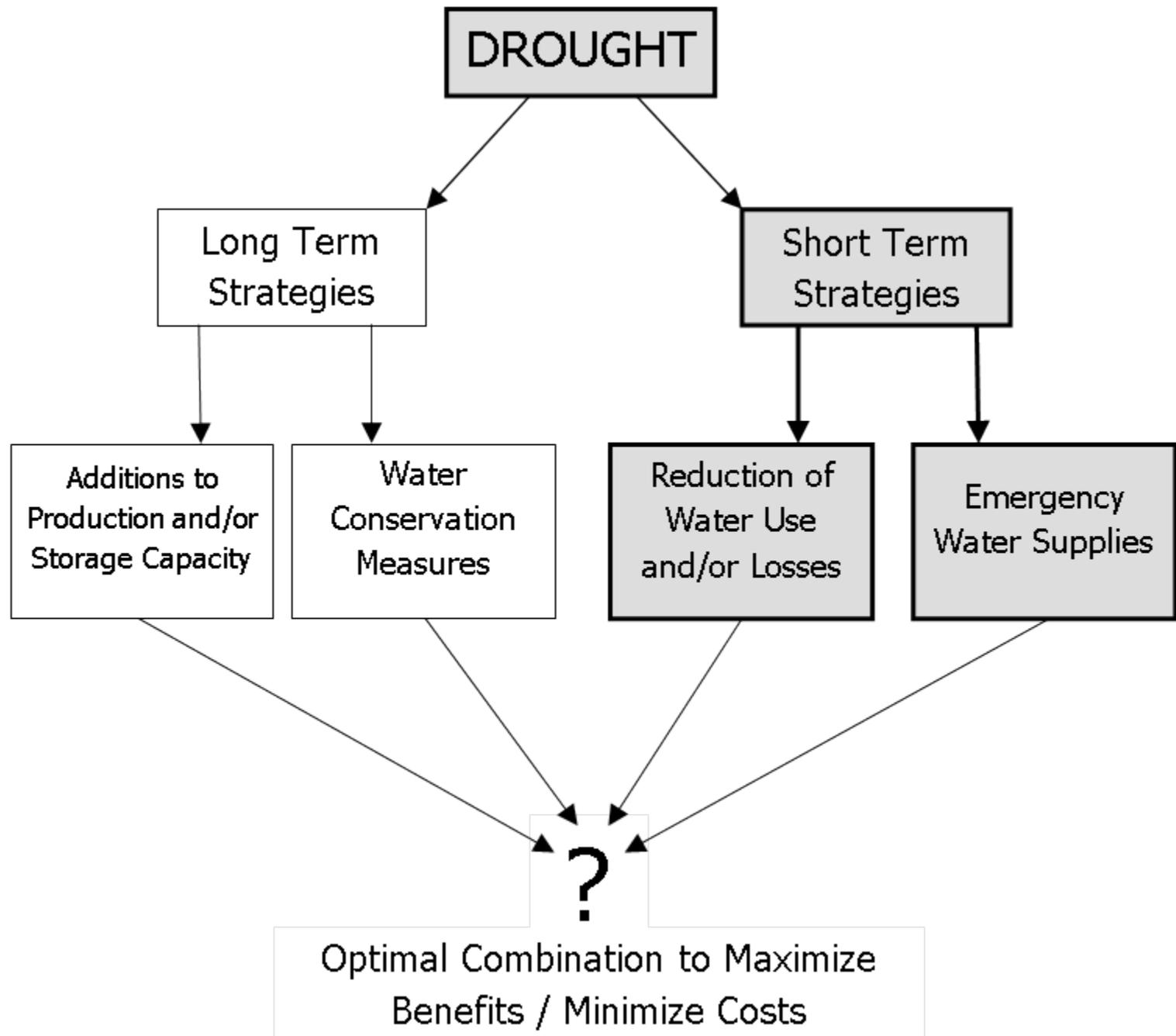
- Consolidation / interties
- Expand water portfolios
- Integrated water management actions
- Capital outlay and maintenance funding



# What Can You Do?

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- Know your water portfolio
- Know your water costs
- Assess your risks
- Assure that revenues enable sustainability
- Engage in Regional IRWM Actions
- 20% by 2020 – Go Early!
- Wave your flag
- Reward Conservation and Innovation



# Drought Preparedness

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- Difference between conservation measures and drought measures
- Assessment of supply and demand
- Key tool is a ***Drought Preparedness Management Plan***



# Drought Management Plan

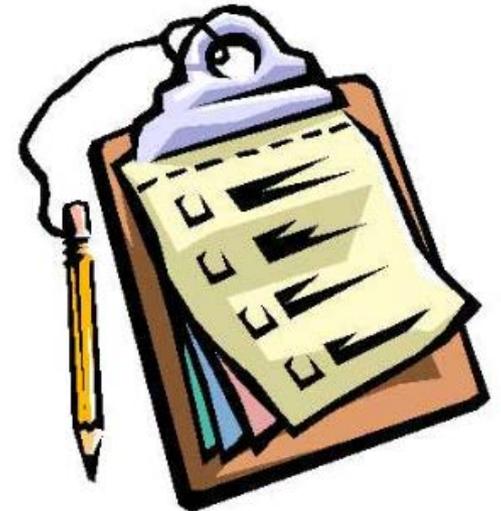
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- **Seven steps**
  1. Obtain public input and involvement
  2. Define goals and objectives
  3. Assess water supply and demand conditions
  4. Define drought indicators
  5. Identify drought mitigation measures

# Drought Management Plan

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- Seven steps (cont'd)
  6. Assess mitigation measures
  7. Develop a drought index and management strategy



# 1. Public Involvement

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- Need public “buy-in” for plan to be successful
- Create a task force or committee
- Major water users
- Other water agencies
- Civic groups
- Public agencies
  - Law Enforcement, Fire Dept., Parks Dept.
- Others? \_\_\_\_\_

## 2. Define Goals and Objectives

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- Which users can and should be restricted
- General or targeted restrictions
- Legal requirements
- Minimum flow requirements
- Some users take priority over others (fire departments, hospitals)



# 3. Assess Supply and Demand

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- Identify water supply sources
  - Who ultimately controls sources
  - Treatment infrastructure
- Determine the maximum yield of current sources



# 3. Assess Supply and Demand

---

- Determine total demand
  - Average and peak demand
  - Historic demand trends
  - Use by customer sector
  - Interior vs. Exterior use
  - Projected future demand
  - Environmental demand

# 3. Assess Supply and Demand

---

- Identify Local Conditions
  - State Water Law
  - Current Conservation Efforts
  - Third-party effects on your groundwater
- Compare water demand with supply yield
- Forecast potential deficits

# Poll Question...

---

How much reduction in water use will you need to achieve in the next 6 months?

- A. 0-10%
- B. 10-20%
- C. 20-50%
- D. Over 50%



## 4. Define *Your Own* Drought Indicators

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- Palmer Index
  - Based on soil moisture supply and demand
  - Long Term
- Reservoir Storage
  - Reflects precipitation, surface runoff, and groundwater
- Groundwater Levels
  - Well drawdown resources for gauging groundwater levels

# 5. Identify Mitigation Measures

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- Water loss reduction (audit)
- Additional/alternative supply
- Additional storage (large scale)



# 5. Identify Mitigation Measures

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- Public information and education
  - Bill stuffers/fliers
  - Advertisements
  - Press conferences
- Restrictions/bans on nonessential use
  - Ornamental use (fountains, ponds)
  - Pavement/street/car washing



# 5. Identify Mitigation Measures

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- Pricing
  - Excessive-use surcharges
  - Drought surcharges
- Rationing (limit available supply)
- Local regulations/ordinances
  - Excess-use penalties
  - Criminal penalties for noncompliance (fines)
  - Interagency cooperation



## 6. Assess Mitigation Measures

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- Anticipated water-use reduction
- Consumer acceptance
- Equity
- Cost
- Sustainability
- Legal/contractual issues
- History
- Ease of implementation

# 7. Develop Plan

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- Adapt drought index and management strategy template that works best for you
- Use data and materials collected during assessment stages
  - Statistics
  - Maps
  - Graphics
  - Charts
  - Historical data



**Table 1. Drought Preparedness Plan Summary**

Water supply conditions	Drought stage	Objective	Response actions
Normal 0% Total Supply Reduction	Drought Stage Zero - Ongoing Conservation. Water waste prohibition in effect.	Public awareness	Normal actions
Slightly Restricted Water Supplies (below normal) Up to 15% Total Supply Reduction	Drought Stage 1 – Introductory Stage. Voluntary reductions in use	Initiate public awareness of predicted water shortage and encourage conservation	Encourage voluntary measures to decrease “normal” demand up to 15%
Moderately Restricted Water Supplies Up to 30% Total Supply Reduction	Drought Stage 2 – Voluntary Phase for water use reductions and potential subsequent Mandatory Phase with restrictions on use.	Increase public understanding of worsening water supply conditions, encourage voluntary conservation measures, and enforce some mandatory conservation measures	Encourage some voluntary measures and enforce mandatory measures and implement water rationing to decrease “normal” demand up to 30%  Drought surcharge enacted (potential in-house trigger and board action)
Severely Restricted Water Supplies Up to 50% Total Supply Reduction	Drought Stage 3 – Mandatory restrictions (severe prohibitions) on use	Ensure that water use is limited to health and safety purposes	Enforce extensive restrictions on water use and implement water rationing to decrease demand up to 50% of “normal” demand

# Implementing The Plan

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- Formally adopt the Plan
  - Approval of citizen/community task force
  - Approval of local officials
  - Approval of your board of directors



# Implementing The Plan

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- Public information and education
  - Pick one person to deal with the media
  - Let water users know where to ask questions
  - Staff booths at local events
  - Bill stuffers and fliers: drought fact sheet
  - Demonstrate conservation equipment
  - Provide updates



# Implementing The Plan

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- Enforce drought restrictions
  - City/County/State ordinances
  - Incentive Programs
    - Supply retrofit devices
    - Conservation kits
    - Provide rebates for water-saving appliances
  - Disincentive programs
    - Fees/penalties

# Implementing The Plan

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- Monitoring drought restrictions
- Reactive
  - Respond to complaints made by other consumers
- Proactive
  - Actively patrol and issue warnings/fines



Wait! Stop!!  
I was just about  
to turn them off!

**NO WATERING**  
TUE, THU, FRI & SUN  
ALL DAY  
MON, WED & SAT  
10:00 a.m. - 6:00 p.m.

**NO  
WATERING**  
TUE, THU, FRI & SUN  
ALL DAY  
MON, WED, SAT  
10:00 a.m. - 6:00 p.m.

*Al's  
Towing*

*Art*

# What Actions Do You Plan To Take In Response To The Current Drought?

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- Adopt a water conservation ordinance
- Ask for voluntary conservation
- Adopt a drought mitigation plan
- Deepen a well
- Other
- Do nothing
- Look for new sources
- Impose mandatory restrictions
- Impose excess-use surcharges
- Increase leak detection and repair

Define ***“Other”***....

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(In the space below  
or in the chat box)

# Drought Preparedness

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- Proper planning can help alleviate drought impact!



# Web Tour Of CA Drought Resources

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## [Drought.CA.Gov](#): California's Drought Information Clearinghouse

Governor's [Proclamation of Drought Emergency](#)  
State's Water Conservation Campaign, [Save our Water](#)  
Local Government [Clearinghouse and Toolkit](#)

California Department of Food and Agriculture, [Drought information](#)  
California Department of Water Resources [Current Water Conditions](#)

California Data Exchange Center, [Snow Pack/Water Levels](#)

California State Water Resources Control Board, Water Rights, [Drought Info and Actions](#)

California Natural Resources Agency, [Drought Info and Actions](#)

California Department of Public Health, Drinking Water [CDPH Drinking Water Program](#)

California State Water Project, [Information](#)

USDA Drought Designations by County [CA County Designations](#)

USDA Disaster and Drought Assistance Information [USDA Programs](#)

Small Business Administration Disaster Support: [www.sba.gov/disaster](http://www.sba.gov/disaster)

# Thank You For Attending!

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We look forward to seeing you  
in future RCAC workshops!

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**Rural Community  
Assistance Corporation**

