

Welcome!

Joint Work Session

Stakeholders Advisory Committee

District Board of Directors

January 24, 2012



**Barton Springs
Edwards Aquifer**
Conservation District

Goals for This Meeting

- Characterize the problem
- Identify a range of solutions
- Discuss pros and cons of options
- Provide directors and staff a sense of future direction(s) to pursue

Tonight's Agenda

- Background info
- Approaches for dealing with the gap
- Some strategies for closing the gap
- Group discussion of those strategies
- Next steps





Some Necessary Background Info

Getting everyone on the same page in
understanding the problem

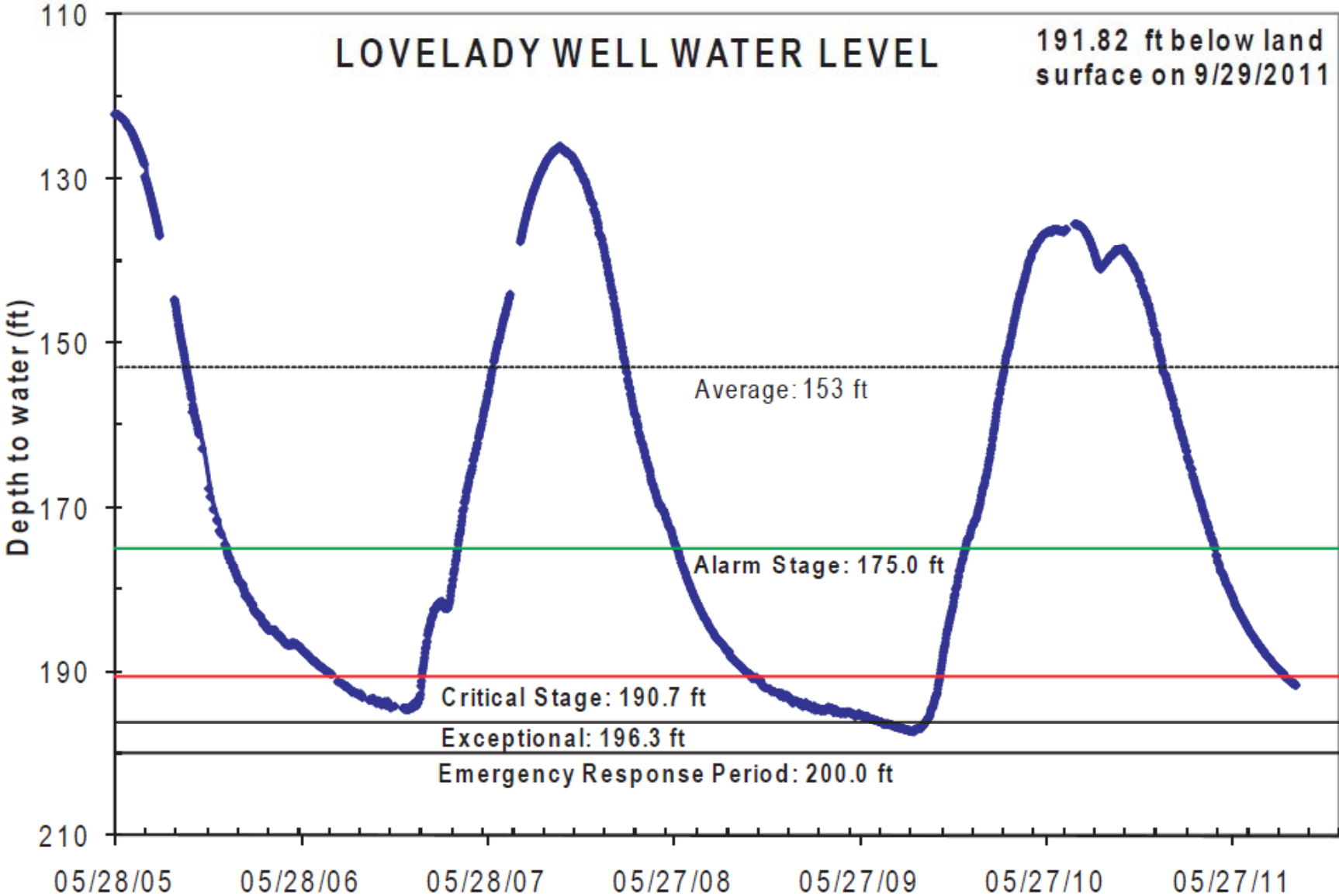
Some Relevant Facts About the Barton Springs Aquifer

- 1100 wells, but only 230 are non-exempt (under about 150 District permits, renewed annually)
- Non-exempts account for ~95% of total use.
- About 80 % of water use is public water supply or domestic/livestock; 60,000 Central Texans rely on it for supply
- Summer-time lawn irrigation is single largest use, about two-thirds of water used in District
- Barton Springs is federally protected habitat for endangered species of salamanders; will have HCP.



LOVELADY WELL WATER LEVEL

191.82 ft below land surface on 9/29/2011



Some More Relevant Facts About the Barton Springs Aquifer

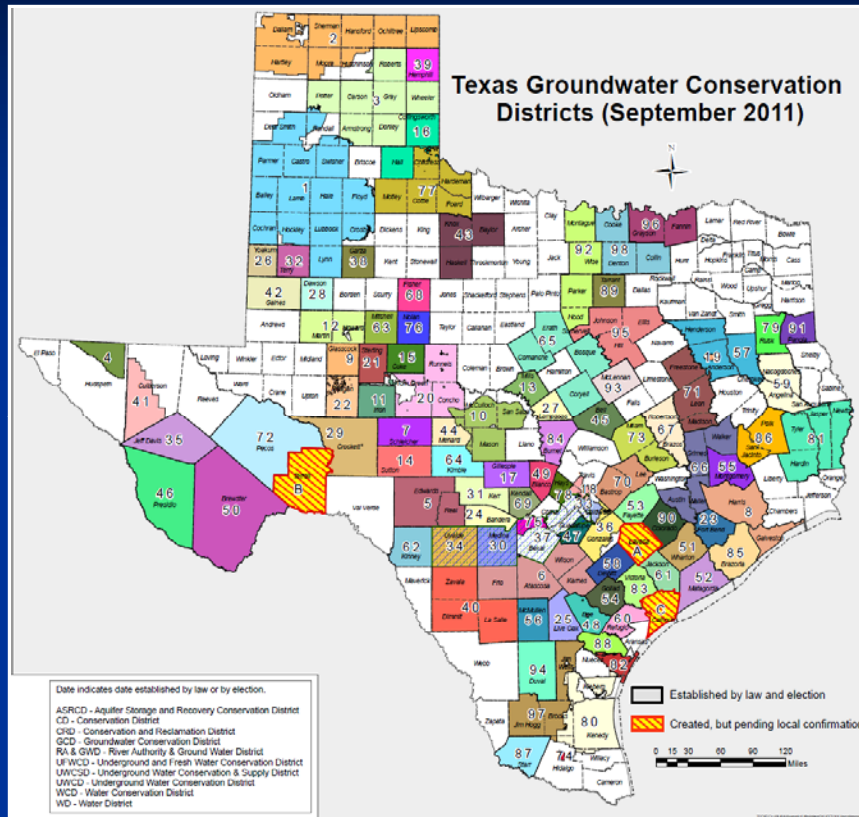
- Recharge is cyclical with wet-dry periods, but can occur quite rapidly – or not, depending on rains
- During non-drought conditions, well withdrawals are a small fraction of spring discharges
- During severe drought, well withdrawals are roughly equal to spring discharges
- 2004 study determined that during extreme drought:
 - if unrestricted, the *then*-current level of well withdrawals was beyond the aquifer's sustainable limit
 - 1:1 relationship between pumping and spring flow.

What All This Signifies for the District's Regulatory Program

- To sustain use of the aquifer as a water supply *and* to protect habitat, even the 2004 level of well withdrawals needed to be reasonably curtailed during *groundwater* drought
- New users of the aquifer during non-drought needed to be on an interruptible-supply basis, up to complete curtailment during drought
- Creation of Historical Use and Conditional Use Permits, with different curtailment schedules.

*How does our regulatory program fit in
with state and regional planning?*

GCD Overview



- Decentralized Management – Local Control
- Statutory Authority
 - Register Wells
 - Permit Pumping
 - Production Limits
 - Well Spacing/Construction
 - Prevent Waste
 - Aquifer Studies
 - Groundwater Planning
- Management Plan/Rules
- Funding
 - **Production Fees**
 - *Ad Valorem Taxes*
- 90% of groundwater withdrawals in Texas
- 98 confirmed to date

Groundwater Planning via GMAs

2001 - Senate Bill 2

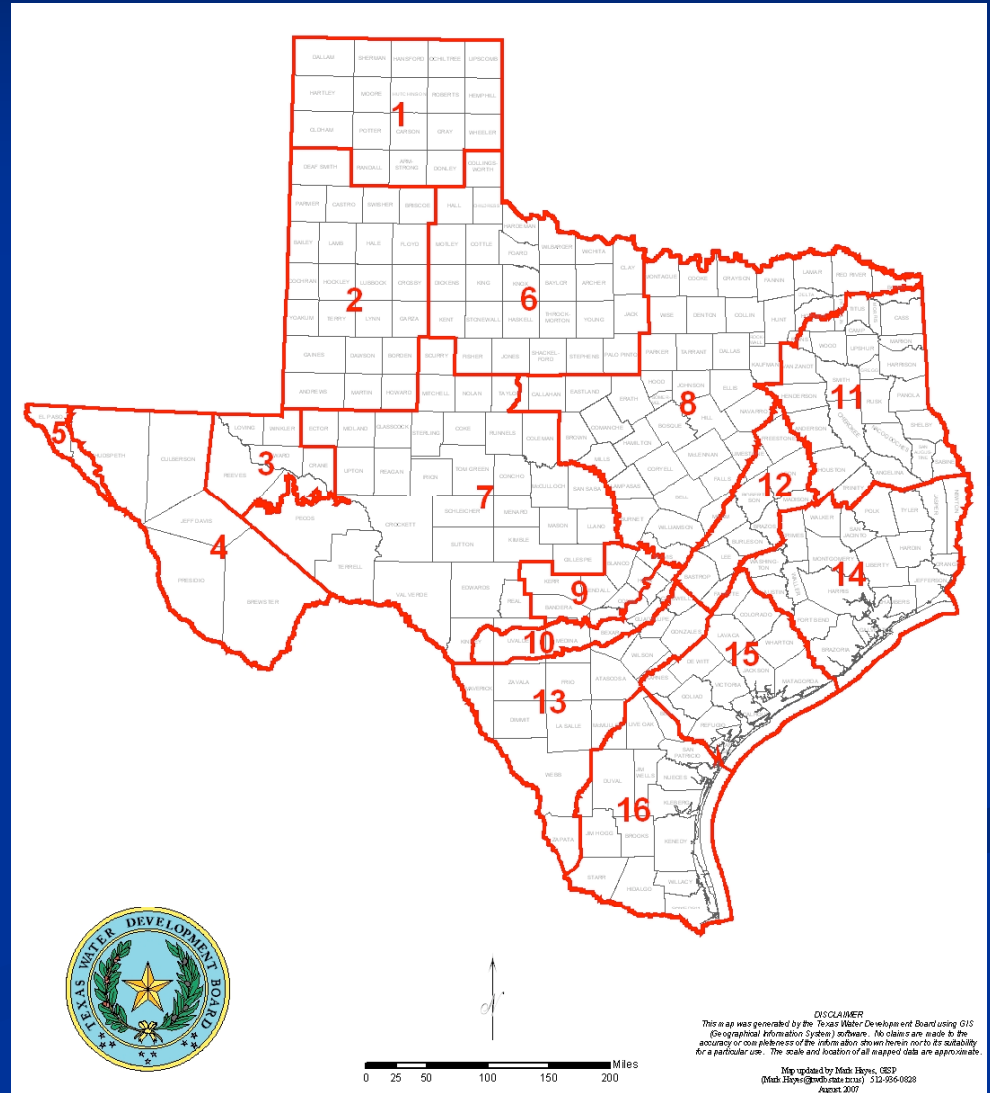
- GMAs created
- Voluntary Joint Planning

2005 – HB 1763

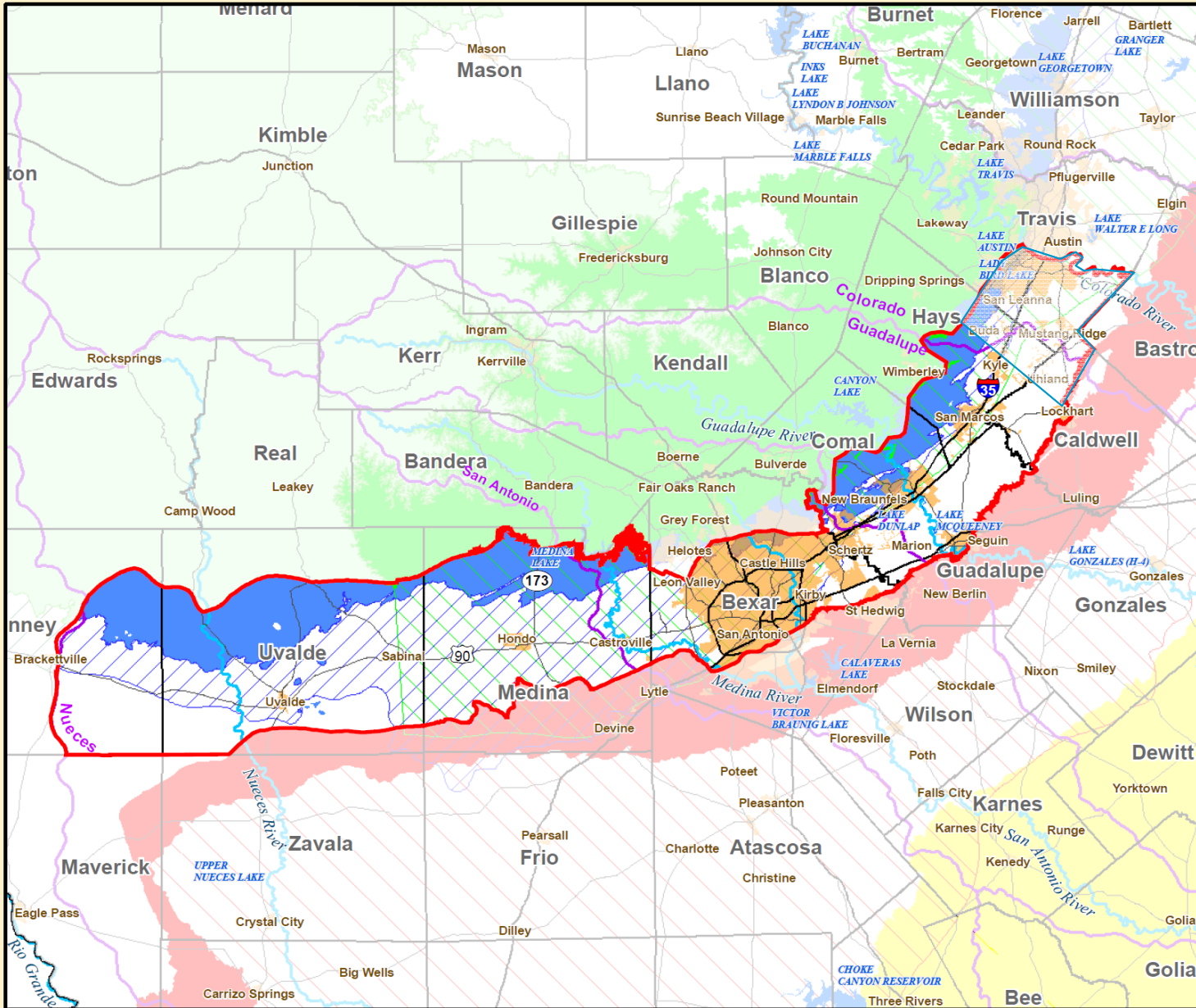
- Mandatory joint planning by GCDs
- Marries Policy with Science
- Regionalized GW availability decisions

2011 – SB 660 et al.

- Refined planning process



Groundwater Management Area #10



MAP LEGEND


- GMA #10
- Major river
- River Basin
- Existing reservoirs
- ⚡ Interstate Highway
- US Highway
- State Highway
- City
- County

Major Aquifers

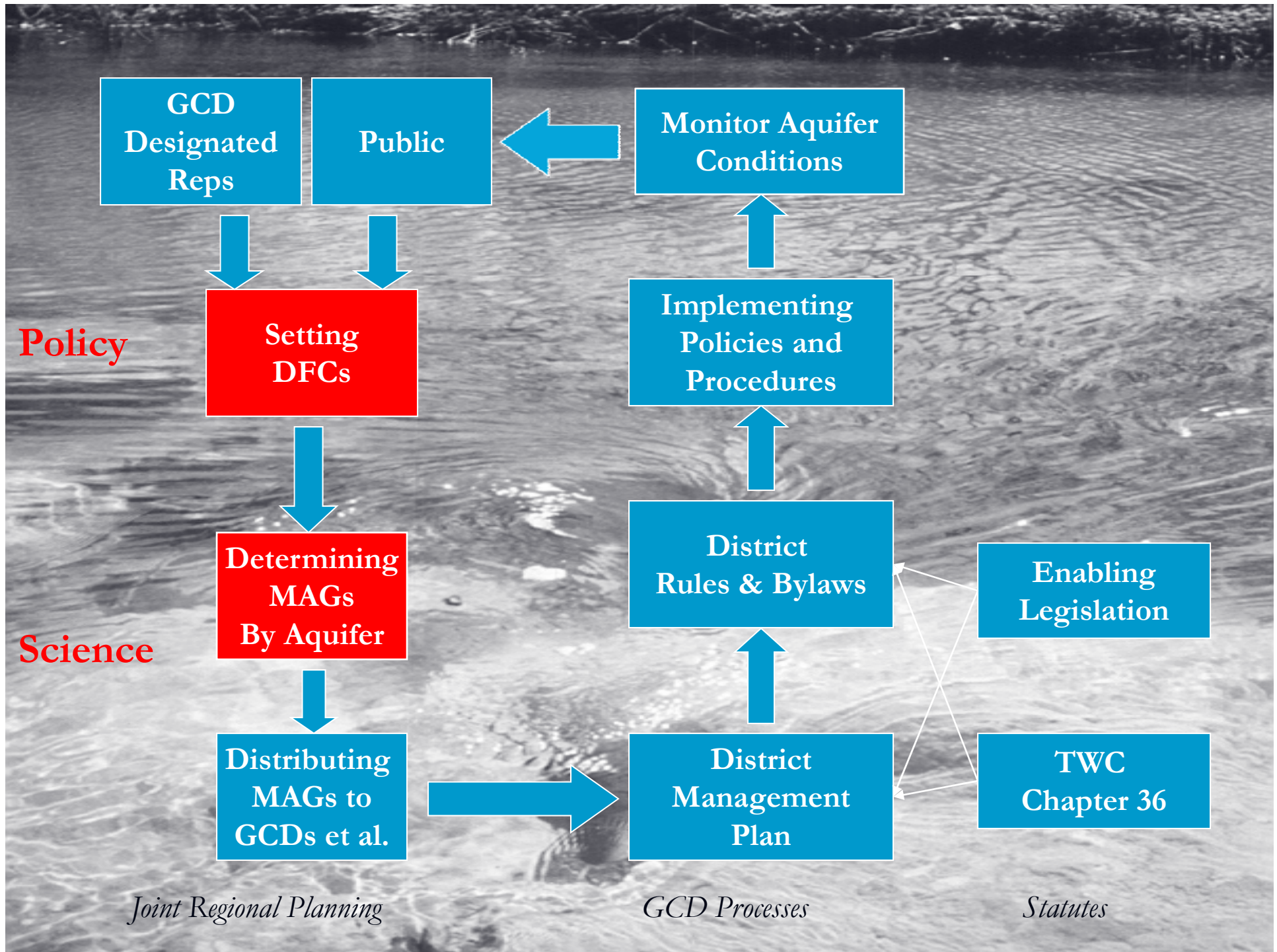
- Gulf Coast
- Carrizo - Wilcox (outcrop)
- Carrizo - Wilcox (subcrop)
- Edwards - Trinity Plateau (outcrop)
- Edwards - Trinity Plateau (subcrop)
- Edwards BFZ (outcrop)
- Edwards BFZ (subcrop)
- Trinity (outcrop)
- Trinity (subcrop)

DISCLAIMER
No claims are made to the accuracy or completeness of the data nor to its suitability for a particular use. The scale and compilation of all information shown here is approximate.

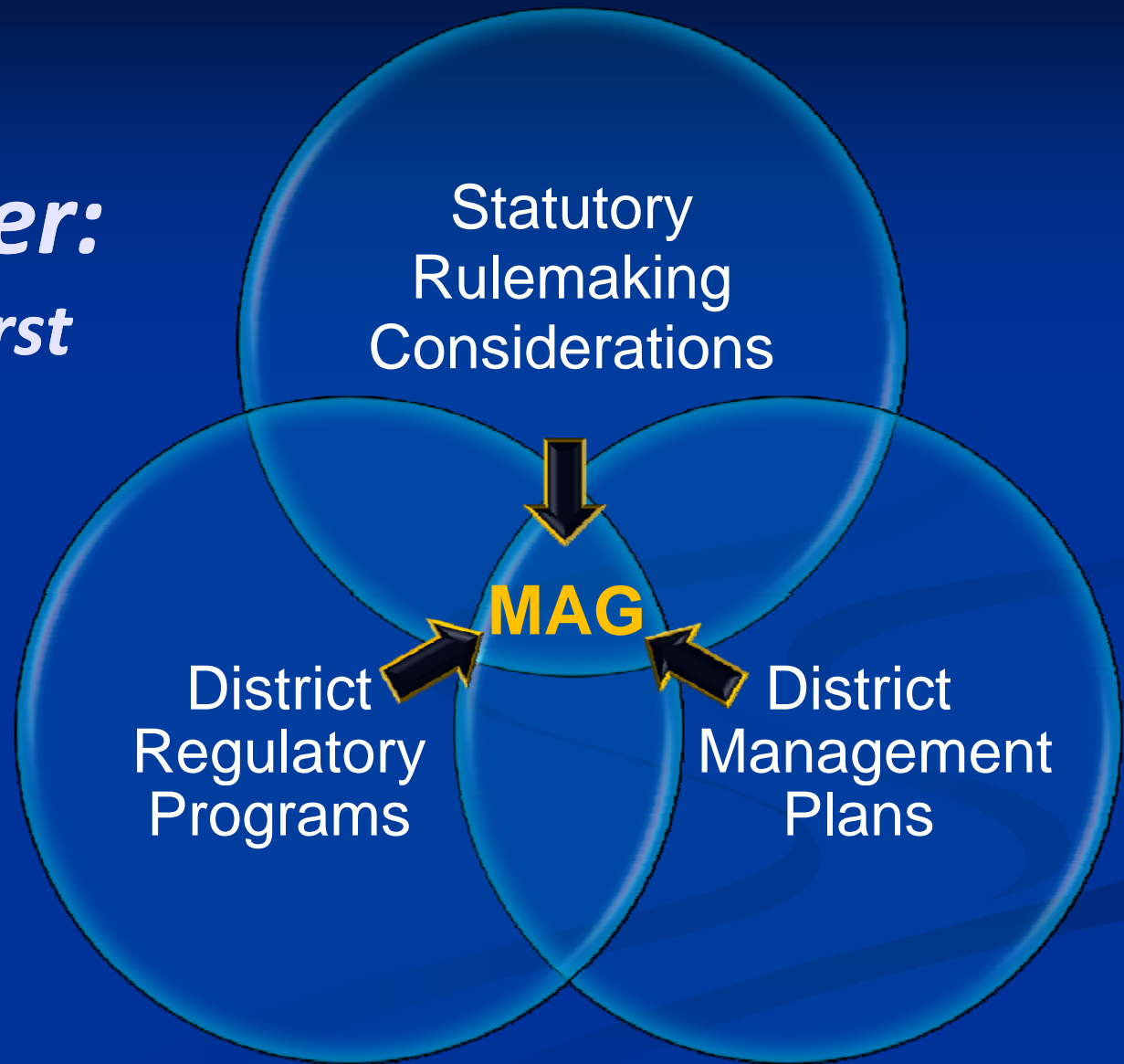
Map prepared by Mark Hayes
Texas Water Development Board
GIS Section
Updated 9/27/2007



0 6 12 18 24 Miles



*Modeled
Available
Groundwater:
An Important First
Consideration*



Permits based on Modeled Available Groundwater

- Substantially modified by SB 660, the TWDB Sunset bill
- Shifts emphasis from using MAG as a *per se* permitting cap to one of several considerations to be used in permitting decisions
- Shifts emphasis to “preserving the DFC”
- Clarifies that both exempt and non-exempt uses are to be accounted for in using the M(odeled)AG
- Emphasis is on volumes of *actual* rather than of permitted withdrawals



Permits based on Modeled Available Groundwater

- Issue permits “to extent possible” up to point that total exempt and non-exempt production volumes will achieve applicable DFCs
- Permit-based regulatory programs must provide a balance between the “maximum practicable groundwater production” and “preserving, conserving, and protecting” the groundwater resource

*So, what does that mean for BSEACD's
permitting program?*

***For the Barton Springs Aquifer, the MAG is
key to achieving the DFC***

The District's regulatory program must be based on ensuring the limitations expressed by the MAG are met.

BSEACD Permitting to Honor MAGs and Achieve DFCs

- Exempt Wells (Registered only)
- Non-exempt Wells (Annual permits)
 - Non-exempt Domestic Use General Permits
 - Historical Use Permits
 - Conditional Use Permits:
 - Class A
 - Class B
 - Class C
- Non-exempt curtailment of authorized use



CRITICAL STAGE III

September 29, 2011



Synopsis:

-Could approach Exceptional Stage IV in April or May 2012

-Critical Stage III was declared on 9/8/11

-Alarm Stage declared on 4/28/11



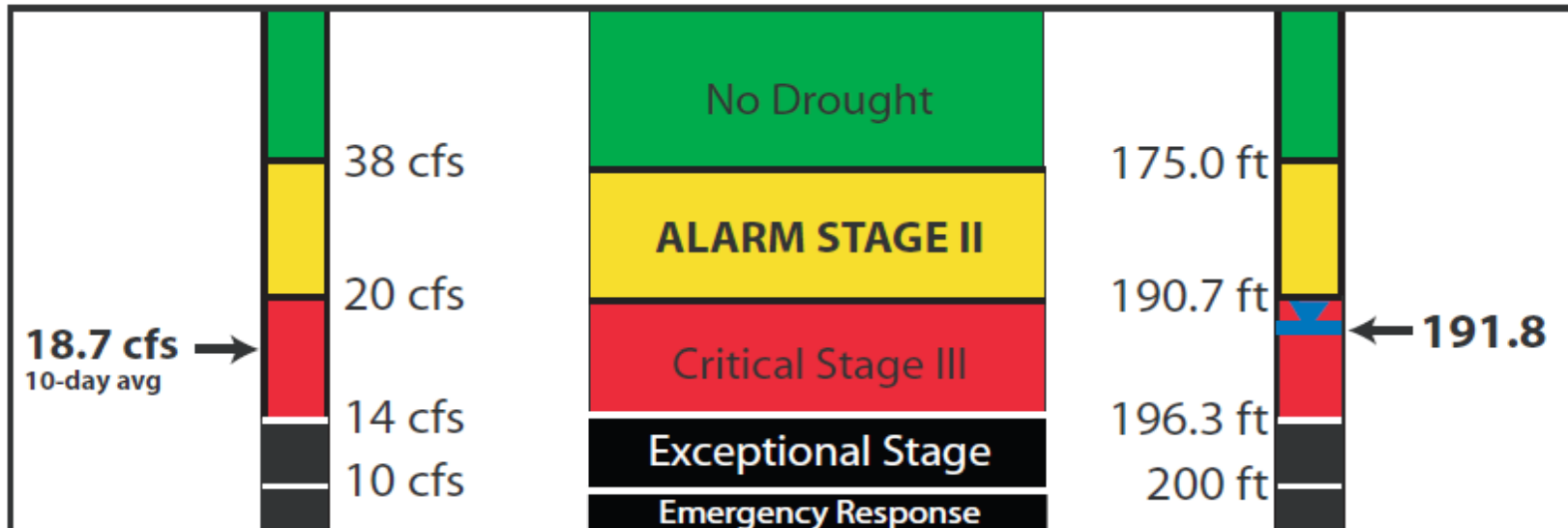
Barton Springs Discharge (cubic feet per second)

Previous value: 19 cfs on 9/19/11

Drought Status

Lovelady Monitor Well Depth to water level (feet)

Previous value: 191.4 ft on 9/19/11



Current Drought Rules


Alarm Stage II = 20%
Pumpage Reduction

Critical Stage III = 30%
Pumpage Reduction

Exceptional Stage IV = 40%
Pumpage Reduction

Emergency Response Period
= 85% (IND/Non-Ag IRG wells)




No Drought 
Please, use water wisely
BARTON SPRINGS EDWARDS AQUIFER CONSERVATION DISTRICT

Barton Springs
Flow


38 cfs



Alarm Stage 
20% Reduction in Pumping
BARTON SPRINGS EDWARDS AQUIFER CONSERVATION DISTRICT

20 cfs



Critical Stage 
30% Reduction in Pumping
BARTON SPRINGS EDWARDS AQUIFER CONSERVATION DISTRICT

14 cfs



Exceptional Drought 
40% reduction in pumping
BARTON SPRINGS EDWARDS AQUIFER CONSERVATION DISTRICT

10 cfs

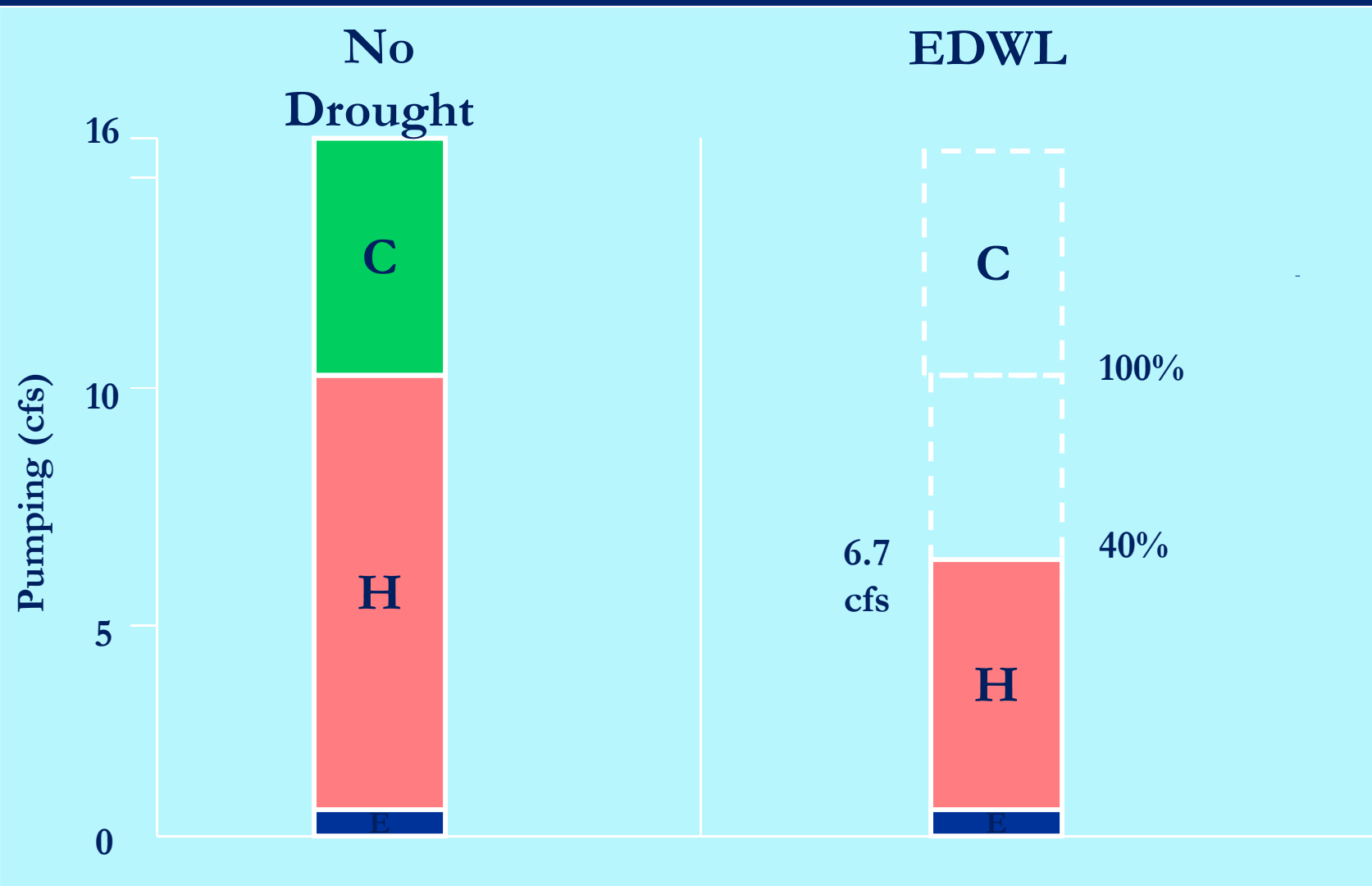


Emergency Response 
No non-essential watering
BARTON SPRINGS EDWARDS AQUIFER CONSERVATION DISTRICT

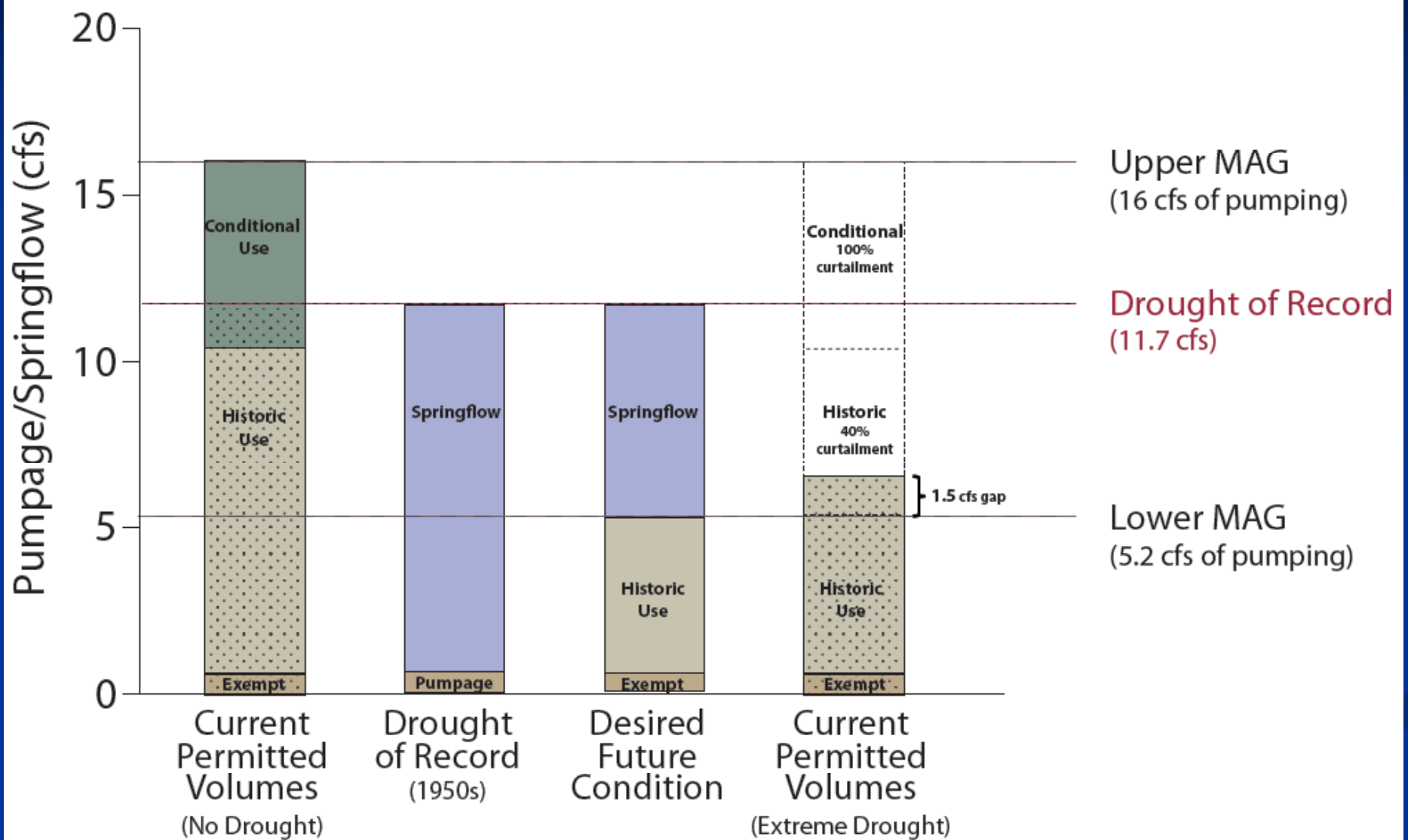
***EDWL = Extreme Drought Withdrawal
Limitation***

The total amount of water withdrawn via wells under the District's most stringent regulatory curtailment program and including exempt usage.

Current Permitting Framework



Permitted Pumpage and DOR Springflows



The Gap

A difference of 1.5 cfs (on a monthly average basis) exists between what pumping is needed to achieve the extreme drought DFC (the MAG) and what our most stringently curtailed pumping authorizes (current EDWL).



Approaches for dealing with “the gap”

The range of options available and
under consideration

General Approaches That Address the Gap

- Change DFCs/MAGs
- Use actual withdrawals, not authorized withdrawals in assessment
- “Engineered solutions”
- Increase Supply During Drought
- Decrease Demand During Drought
- Others?



General Approaches That Address the Gap

- Change DFCs/MAGs
 - Off the table, for now
 - Best science available suggests smaller DFC springflow may be disproportionately more risky
 - Changing DFCs is now a long and potentially contentious process
 - New models, new data may mandate a change, but direction is now unclear.

General Approaches That Address the Gap

- Use actual withdrawals, not authorized withdrawals in assessment
 - Basis: not every permittee will use 100% of their authorized use in the same time interval
 - Prolonged drought may minimize this difference
 - Would remove one “safety factor” against over-pumpage by a large user

General Approaches That Address the Gap

- “Engineered solutions”
 - Re-circulation of discharged water in immediate vicinity of springs
 - Subsurface re-aeration via wells in immediate vicinity of springs
 - More an “emergency stop-gap measure” than a *planned* way to close the gap
 - USFWS may not consider this a valid HCP measure to avoid jeopardy
 - Needs feasibility testing

General Approaches That Address the Gap

- Increase Supply
 - Recharge enhancement facilities
 - Import water from reservoirs and wells in other aquifers
 - Desalination, ASR
 - Effluent re-use
- Longer-term, rather expensive solutions
- No guarantee of substitution
- BSEACD actively working on these

General Approaches That Address the Gap

- Reduce demand
 - Regulatory controls
 - Improved efficiency
 - Markets/rates
- Our very stringent curtailment program has “hardened demand” during drought; makes “end-user conservation” less available once in extreme drought
- Other demand-reduction strategies may be effective in extreme drought, so...



***Taking a closer look at some strategies
for reducing demand further***

The focus for the rest of our
discussion tonight

Types of strategies for reducing demand

- Market-based Strategies
- Regulatory-based Strategies
- Others?

Strategies for reducing demand

- Market-based Strategies
 - Cap and Trade
 - Expand Temporary Transfer Permit Program
 - Cap and Retire
 - Advance Conservation Commitments

Strategies for reducing demand

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Temporary Transfer Permits

- Pumpage rights transferred from PWS to Non PWS Historical Use permittees
- For PWS permittees with alternate water supplies
- Initiated during Stage IV Exceptional Drought
- One time permit with 2-year term
- Agreement between willing buyer and seller
- May contract 75% of unused Historical Permit

Permitted Volume	—	Pumpage Reduction (40%)	×	75%	=	Transferable Volume
100 mg/y		60 mg/y				45 mg/y
		30 mg/y				22.5 mg/y

Strategies for reducing demand

- Regulatory- or Permitting-based Strategies
 - Right-sizing Production Permits – Permanent
 - Right-sizing Production Permits with Reservation Permits – Temporary
 - Proportional Adjustment
 - Current authorities
 - Differential adjustments based on type of use
 - Mandatory ERP Curtailments



Facilitated Group Discussion

What do you think about...

...Market-based Strategies:

- What other such strategies need to be considered?
- What pros and cons are missing or need to be emphasized for certain strategies?
- Which of these approaches and strategies will be most effective?
- What else needs to be discussed?

...Regulatory-based Strategies:

- What other such strategies need to be considered?
- What pros and cons are missing or need to be emphasized for certain strategies?
- Which of these approaches and strategies will be most effective?
- What else needs to be discussed?



...The Other Approaches Identified:

- What other approaches need to be pursued besides demand reduction?
- What considerations are missing or need to be emphasized?
- Which of these approaches will be most effective in protecting aquifer levels?
- What else needs to be discussed?



Where do we go from here?

Schedule and Future Meetings

Overall Process Going Forward (at pleasure of the Board)

- Use SAC inputs for next round of rulemaking under existing Management Plan/statutes (5/12)
- Revise Management Plan as needed to amend authorities and to incorporate TWDB guidance
- Use new authorities for a follow-up round of rulemaking to promulgate additional consensus measures out of work session (9/12)
- Draft and seek legislation needed to enable or to increase effectiveness of other consensus measures (2013).

Probable Activities in Near Term (at pleasure of the Board)

- 10 day comment period for more SAC inputs
- Staff creates a preliminary draft report of findings and suggestions for rulemaking scope
- Preliminary draft report reviewed by SAC members and comments sent to staff (3/12)
- Staff prepares Draft Report, with recommended additional rulemaking conceptual areas, for Board consideration (4/12)
- Board authorizes initiation of formal rulemaking

On behalf of the directors and the staff
of the District...

Thank You!

Drought Stages with Curtailment Requirements by Aquifer, Management Zone, and Permit Type

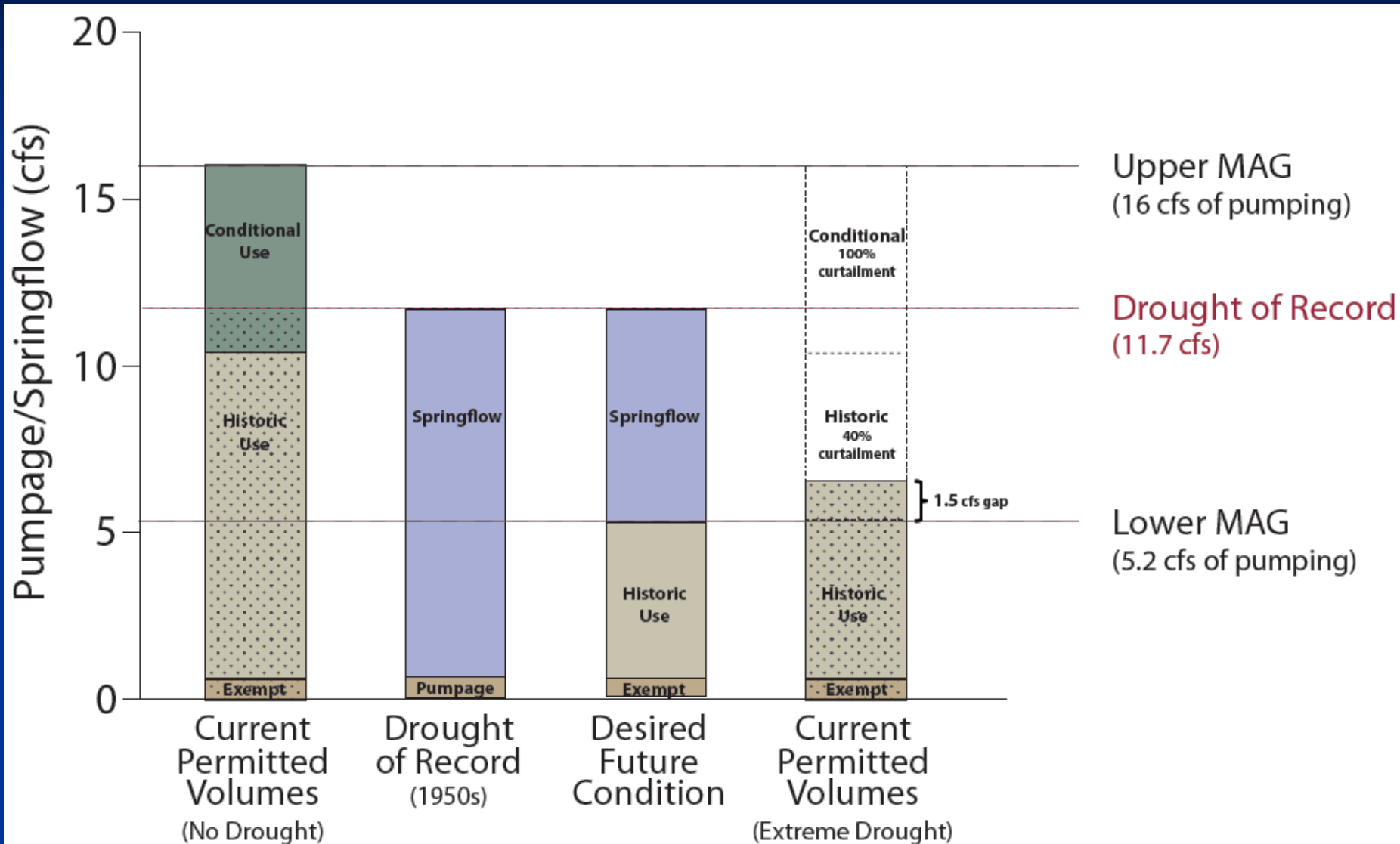
Aquifer		Edwards Aquifer						Trinity Aquifer			
		Eastern/Western Freshwater						Saline	Middle	Lower	Outcrop
Permit Type		Historical		Conditional				Hist.	Hist.	Hist.	Hist.
		PWS	IRG/IND	Class A	Class B	Class C ⁴	Class D ⁴				
Drought Stages	No Drought	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Alarm	20%	20%	20%	50%	100%	100%	20%	20%	20%	20%
	Critical	30%	30%	30%	75%	100%	100%	30%	30%	30%	30%
	Exceptional	40%	40%	50% ²	100%	100%	100%	N/A	N/A	N/A	N/A
	ERP	40%	85% ¹	>50% ³	100%	100%	100%	N/A	N/A	N/A	N/A

¹ Non-PWS curtailment maximum (effective after 9-17-13)

² Only applicable to NDUs and existing unpermitted nonexempts after A to B reclassification triggered by Exceptional Stage declaration.

³ Curtailment > 50% subject to Board discretion

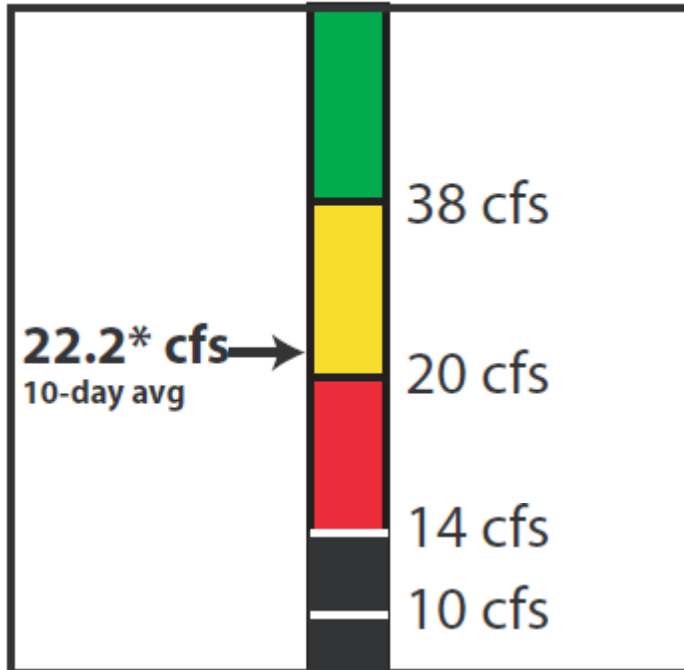
Permitted Pumpage and DOR Springflows



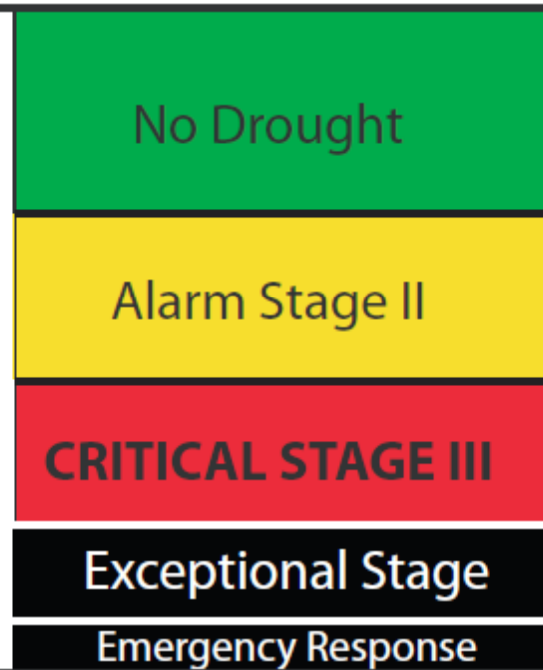
Current Aquifer Status: 1-11-12

Barton Springs Discharge (cubic feet per second)

Previous value: 19.5 cfs on 12/15/11

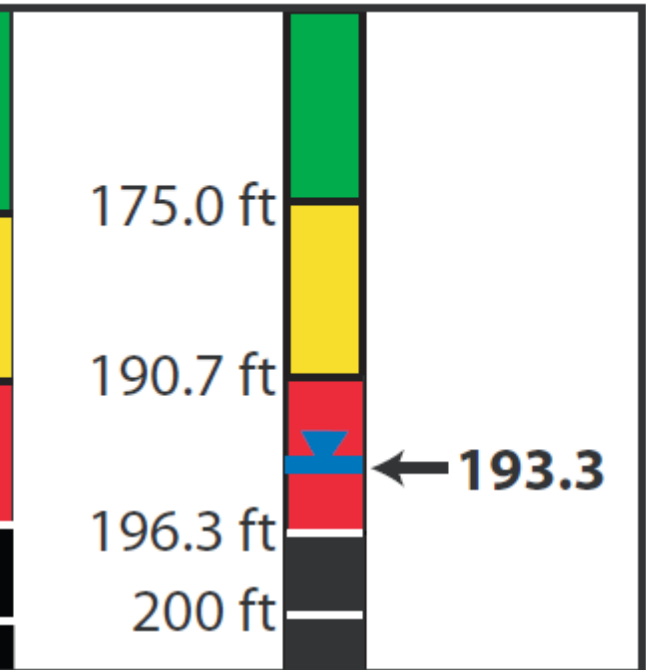


Drought Status



Lovelady Monitor Well Depth to water level (feet)

Previous value: 194.0 ft on 12/15/11



*temporary rise above critical threshold