

Division of  
WATER RESOURCES

Legislative  
Commission  
Subcommittee to  
Study Water

Winnemucca

March 9, 2016

DEPARTMENT OF  
**CONSERVATION &**  
**NATURAL RESOURCES**

# Humboldt River Basin Current Issues

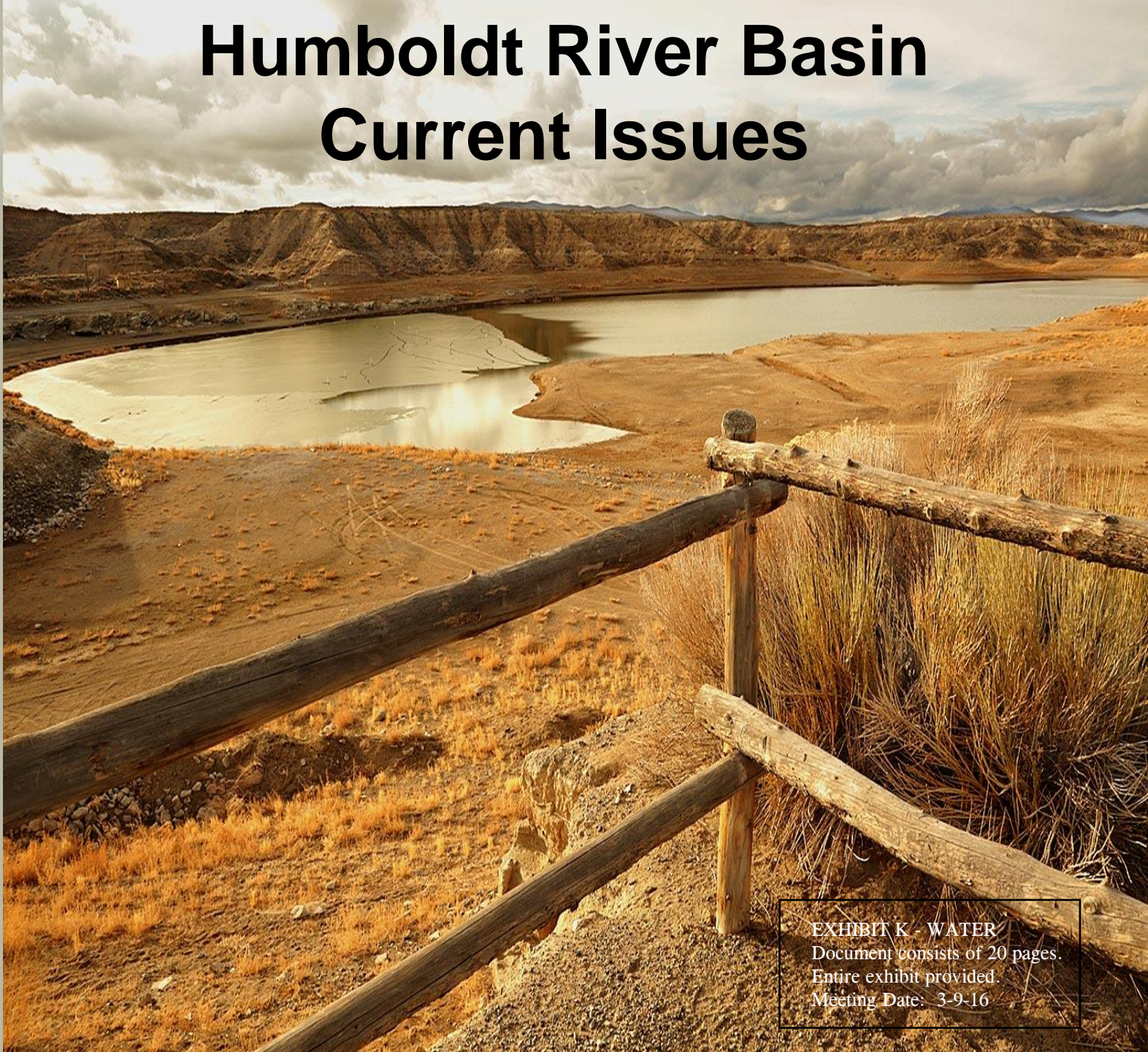


EXHIBIT K - WATER  
Document consists of 20 pages.  
Entire exhibit provided.  
Meeting Date: 3-9-16



# Review of Issues and State Engineer Actions

- PCWCD no deliveries in 2014 or 2015, minimal deliveries in 2013
- July 2014 - Listening Sessions
- Informal request for curtailment – evaluated and rejected as futile. Analyses shows no significant additional flows would result from curtailment.
- January through April, 2015 – Issued 10 Orders requiring meters on wells in Humboldt Basin.
- February and May 2015 – Public workshops, planned studies
- Entire 2015 Season: No deliveries to upstream diversified pasture
- November 2015 - Capture model introduced

# Review of Issues and State Engineer Actions

- August 2015 - PCWCD legal action
  - Seeks a Writ of Mandamus from the Pershing County District Court to require the State Engineer to:
    - Establish Critical Management Areas in over-appropriated groundwater basins to reduce appropriations to the Perennial Yield and eliminate interference with senior surface water rights
    - Regulate mining and milling as permanent appropriative rights
- Current status
  - Motions to intervene by affected parties
  - Pending

# U.S. Drought Monitor Nevada

**April 5, 2011**

*(Released Thursday, Apr. 7, 2011)*

**Valid 7 a.m. EST**

*Drought Conditions (Percent Area)*

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
<b>Current</b>	100.00	0.00	0.00	0.00	0.00	0.00
<b>Last Week</b> 3/29/2011	100.00	0.00	0.00	0.00	0.00	0.00
<b>3 Months Ago</b> 1/4/2011	86.83	13.17	0.00	0.00	0.00	0.00
<b>Start of Calendar Year</b> 1/4/2011	86.83	13.17	0.00	0.00	0.00	0.00
<b>Start of Water Year</b> 9/28/2010	4.61	95.39	28.80	0.00	0.00	0.00
<b>One Year Ago</b> 4/6/2010	10.25	89.75	40.73	13.50	0.00	0.00

## Intensity:

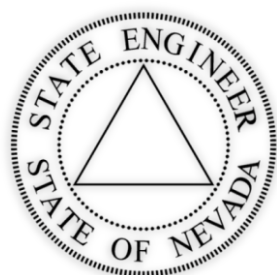
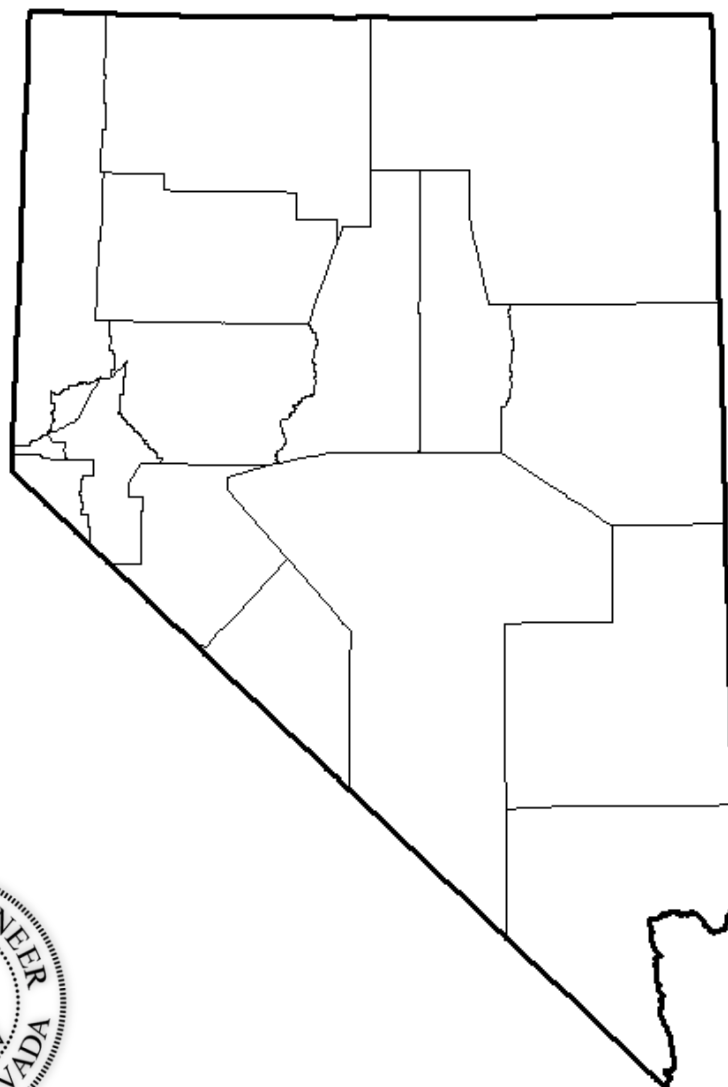
	D0 Abnormally Dry		D3 Extreme Drought
	D1 Moderate Drought		D4 Exceptional Drought
	D2 Severe Drought		

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

## **Author:**

Mark Svoboda

National Drought Mitigation Center



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

# U.S. Drought Monitor

## Nevada

**April 3, 2012**


*(Released Thursday, Apr. 5, 2012)*

Valid 7 a.m. EST

*Drought Conditions (Percent Area)*

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
<b>Current</b>	0.13	99.87	93.43	51.31	0.00	0.00
<b>Last Week</b> 3/27/2012	0.42	99.58	93.15	50.95	0.00	0.00
<b>3 Months Ago</b> 1/3/2012	18.18	81.82	32.97	0.00	0.00	0.00
<b>Start of Calendar Year</b> 1/3/2012	18.18	81.82	32.97	0.00	0.00	0.00
<b>Start of Water Year</b> 9/27/2011	89.92	10.08	0.00	0.00	0.00	0.00
<b>One Year Ago</b> 4/5/2011	100.00	0.00	0.00	0.00	0.00	0.00

### Intensity:

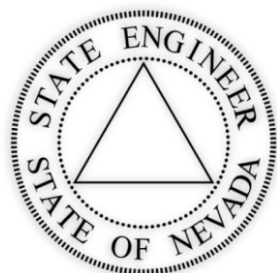
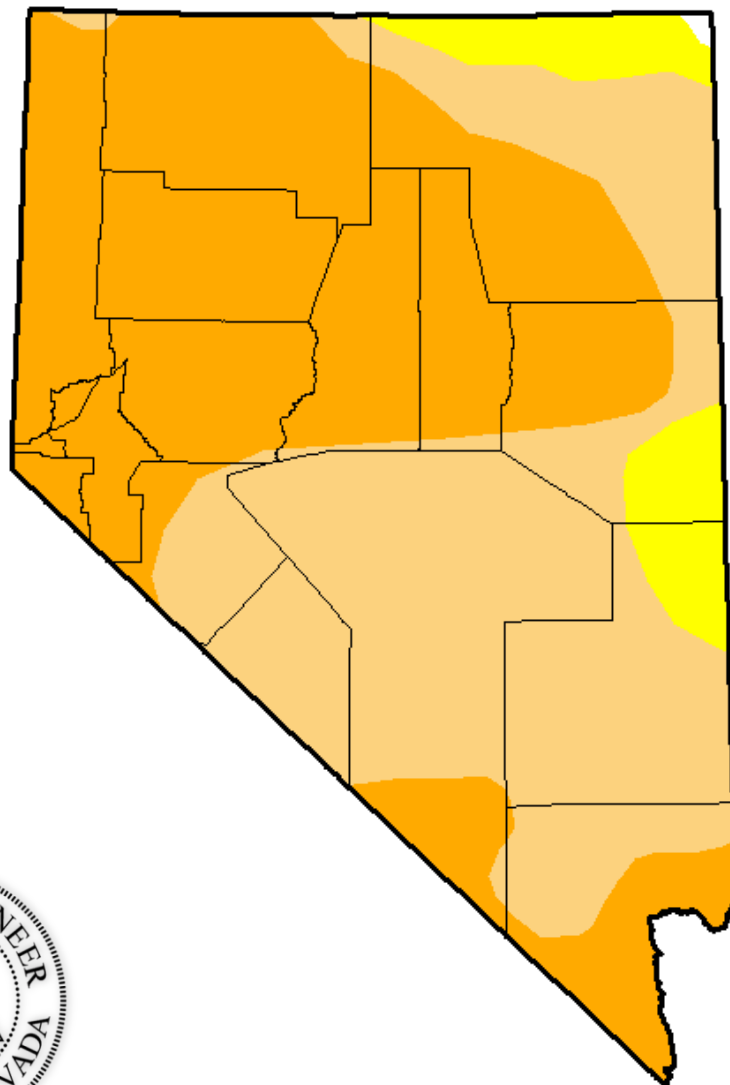
 D0 Abnormally Dry	 D3 Extreme Drought
 D1 Moderate Drought	 D4 Exceptional Drought
 D2 Severe Drought	

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### **Author:**

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

# U.S. Drought Monitor Nevada

**April 2, 2013**

*(Released Thursday, Apr. 4, 2013)*

Valid 7 a.m. EST

*Drought Conditions (Percent Area)*

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
<b>Current</b>	0.00	100.00	88.87	55.49	12.22	0.00
<b>Last Week</b> 3/26/2013	0.00	100.00	88.87	55.49	12.22	0.00
<b>3 Months Ago</b> 1/1/2013	0.00	100.00	94.13	62.22	16.46	0.00
<b>Start of Calendar Year</b> 1/1/2013	0.00	100.00	94.13	62.22	16.46	0.00
<b>Start of Water Year</b> 9/25/2012	0.00	100.00	99.24	56.05	26.78	0.00
<b>One Year Ago</b> 4/3/2012	0.13	99.87	93.43	51.31	0.00	0.00

## Intensity:

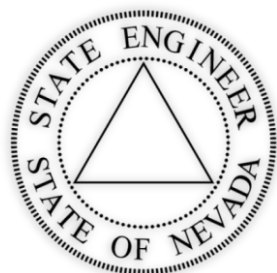
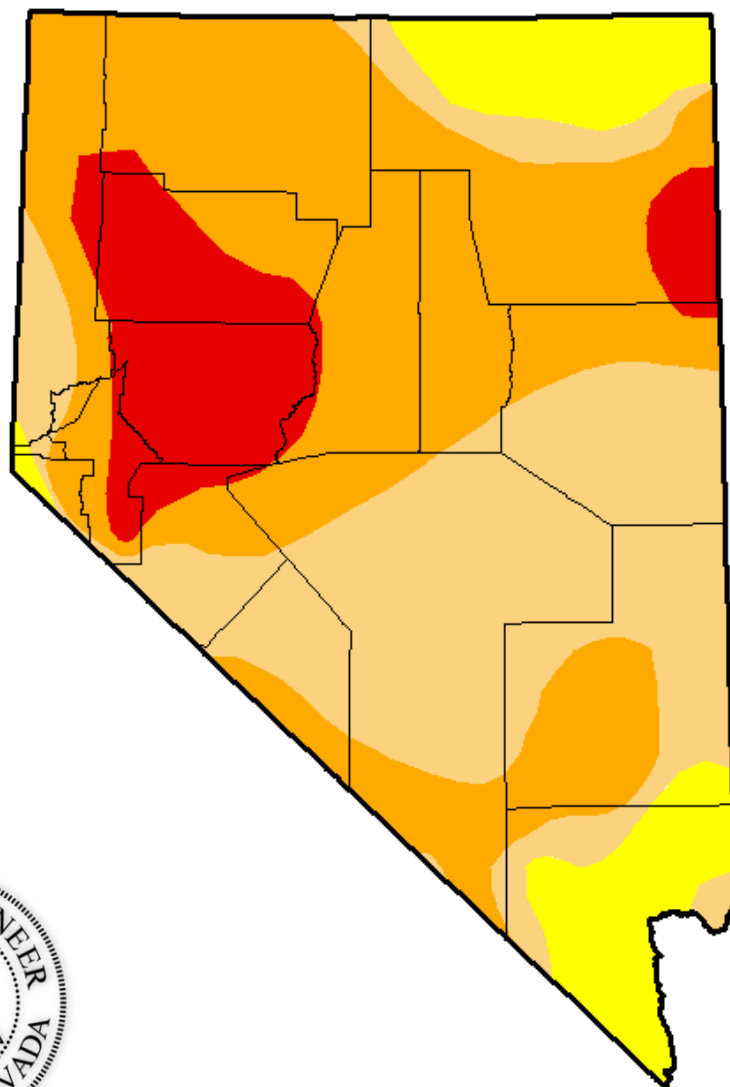


*The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.*

## **Author:**

*Richard Tinker*

*CPC/NOAA/NWS/NCEP*



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# U.S. Drought Monitor

## Nevada

**April 1, 2014**

*(Released Thursday, Apr. 3, 2014)*

Valid 8 a.m. EDT

*Drought Conditions (Percent Area)*

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
<b>Current</b>	0.00	100.00	100.00	82.21	33.54	8.24
<b>Last Week</b> 3/25/2014	0.00	100.00	100.00	82.34	33.46	8.24
<b>3 Months Ago</b> 12/31/2013	0.39	99.61	96.81	77.66	28.55	5.37
<b>Start of Calendar Year</b> 12/31/2013	0.39	99.61	96.81	77.66	28.55	5.37
<b>Start of Water Year</b> 10/1/2013	0.39	99.61	96.79	79.11	28.55	5.37
<b>One Year Ago</b> 4/2/2013	0.00	100.00	88.87	55.49	12.22	0.00

### Intensity:

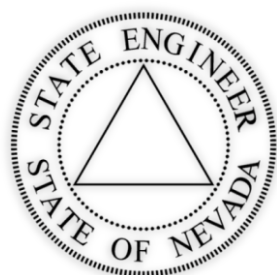
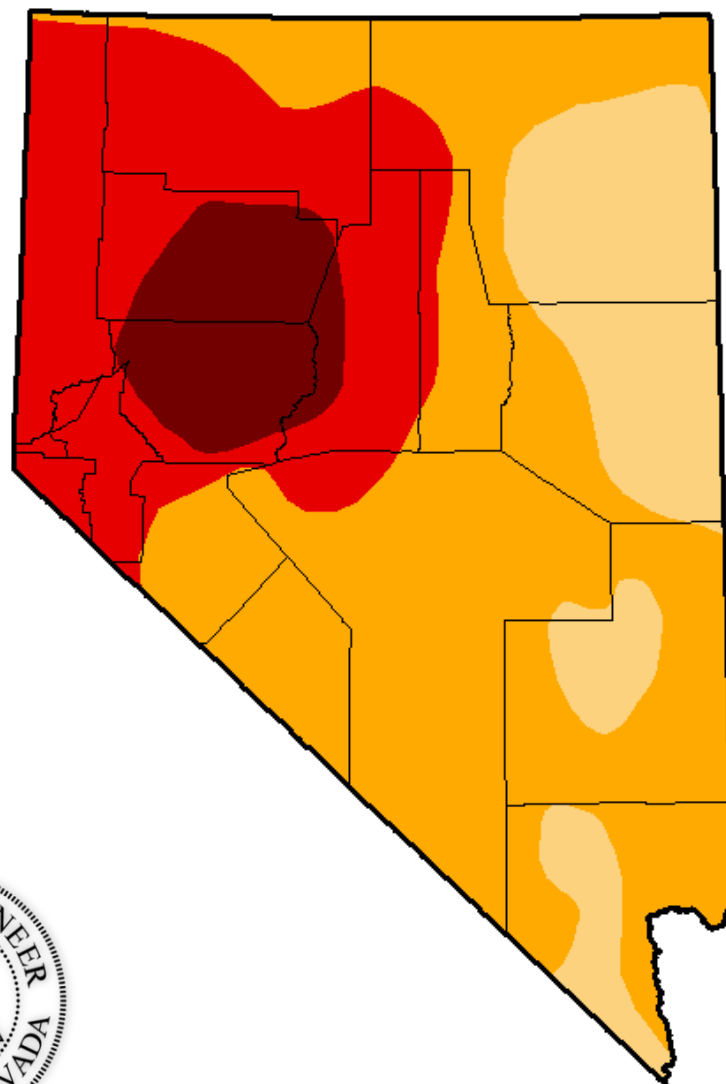
 D0 Abnormally Dry	 D3 Extreme Drought
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 D2 Severe Drought	

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### **Author:**

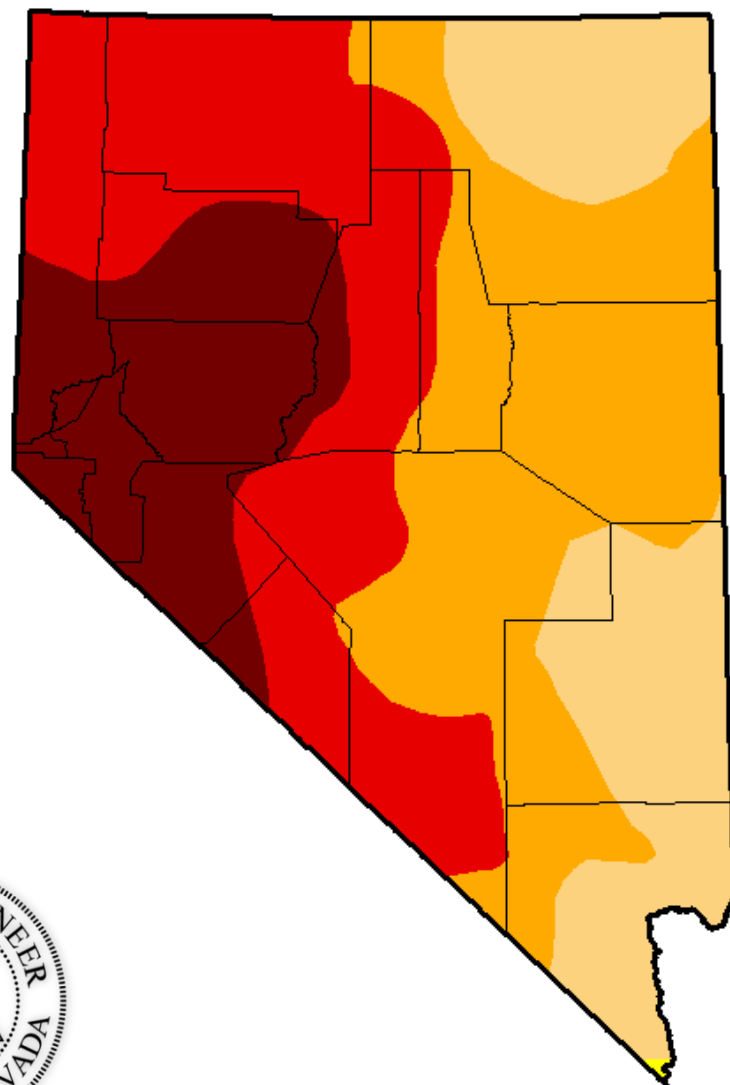
*David Simeral*

*Western Regional Climate Center*



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

# U.S. Drought Monitor Nevada



**March 31, 2015**

*(Released Thursday, Apr. 2, 2015)*

Valid 7 a.m. EST

*Drought Conditions (Percent Area)*

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
<b>Current</b>	0.00	100.00	99.93	79.50	47.96	18.38
<b>Last Week</b> <i>3/24/2015</i>	0.00	100.00	99.93	67.32	47.96	18.38
<b>3 Months Ago</b> <i>12/30/2014</i>	0.00	100.00	96.98	68.25	48.38	11.89
<b>Start of Calendar Year</b> <i>12/30/2014</i>	0.00	100.00	96.98	68.25	48.38	11.89
<b>Start of Water Year</b> <i>9/30/2014</i>	0.00	100.00	97.04	69.89	48.38	11.89
<b>One Year Ago</b> <i>4/1/2014</i>	0.00	100.00	100.00	82.21	33.54	8.24

## Intensity:

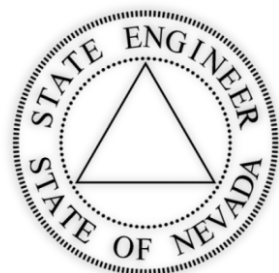
 D0 Abnormally Dry	 D3 Extreme Drought
 D1 Moderate Drought	 D4 Exceptional Drought
 D2 Severe Drought	

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

## **Author:**

*Eric Luebbehusen*

*U.S. Department of Agriculture*

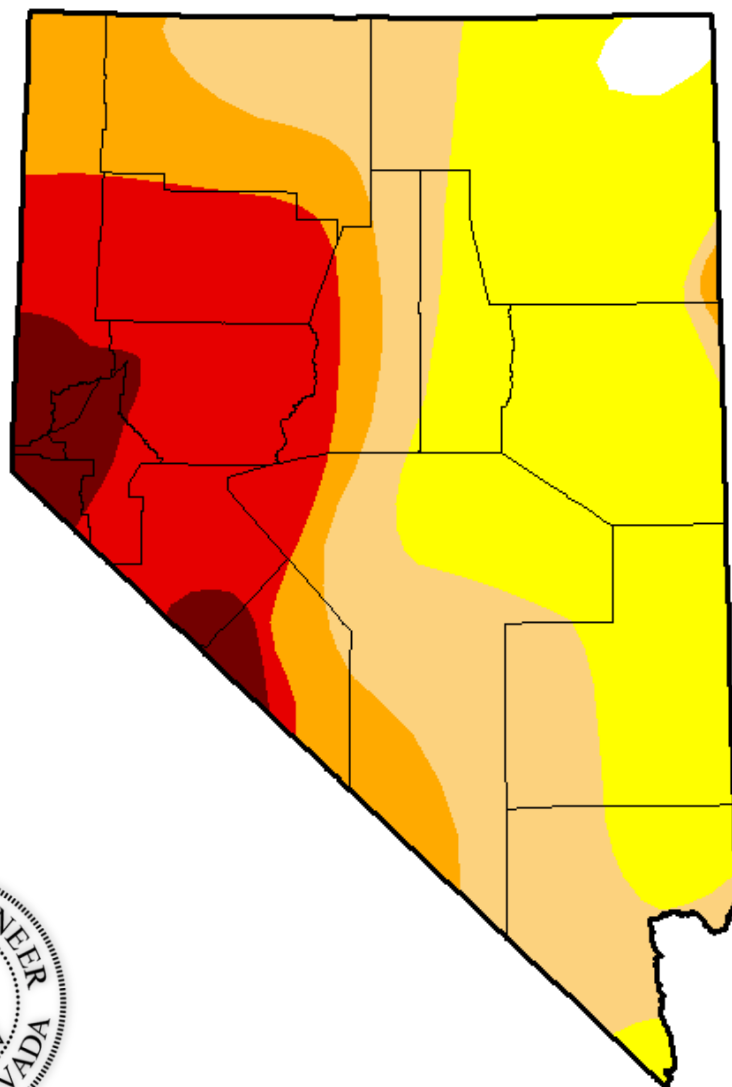


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# U.S. Drought Monitor

## Nevada



**February 16, 2016**

(Released Thursday, Feb. 18, 2016)

Valid 7 a.m. EST

*Drought Conditions (Percent Area)*

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
<b>Current</b>	1.35	98.65	62.63	37.11	23.20	4.56
<b>Last Week</b> 2/9/2016	1.35	98.65	62.63	37.11	23.20	4.56
<b>3 Months Ago</b> 11/17/2015	0.01	99.99	93.78	66.75	31.94	9.35
<b>Start of Calendar Year</b> 12/29/2015	1.34	98.66	93.08	65.49	31.74	9.35
<b>Start of Water Year</b> 9/29/2015	0.00	100.00	94.76	76.08	37.52	15.93
<b>One Year Ago</b> 2/17/2015	0.00	100.00	99.93	63.19	47.96	18.38

Intensity:

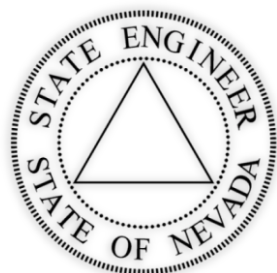


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**Author:**

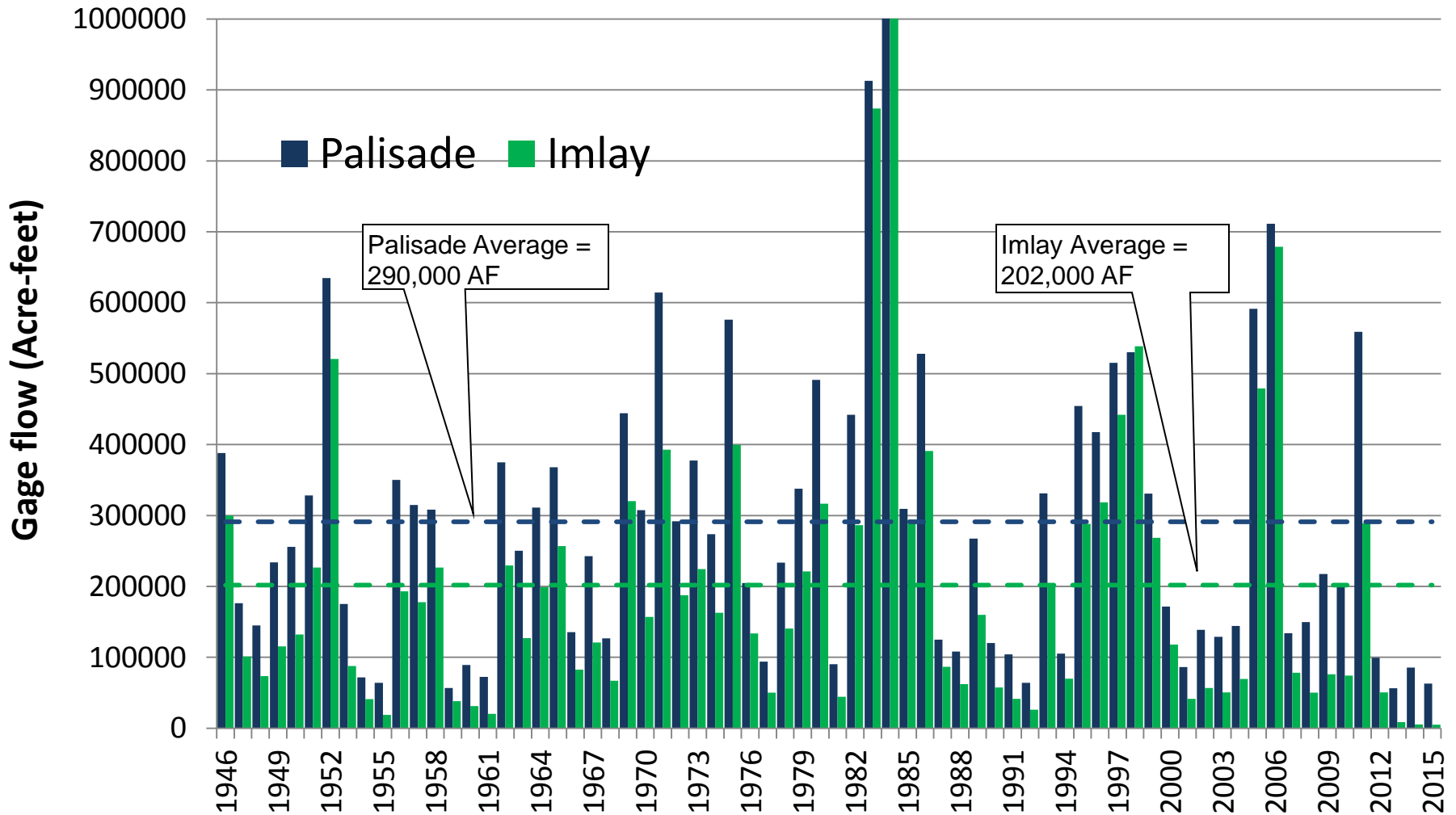
Eric Luebbehusen

U.S. Department of Agriculture

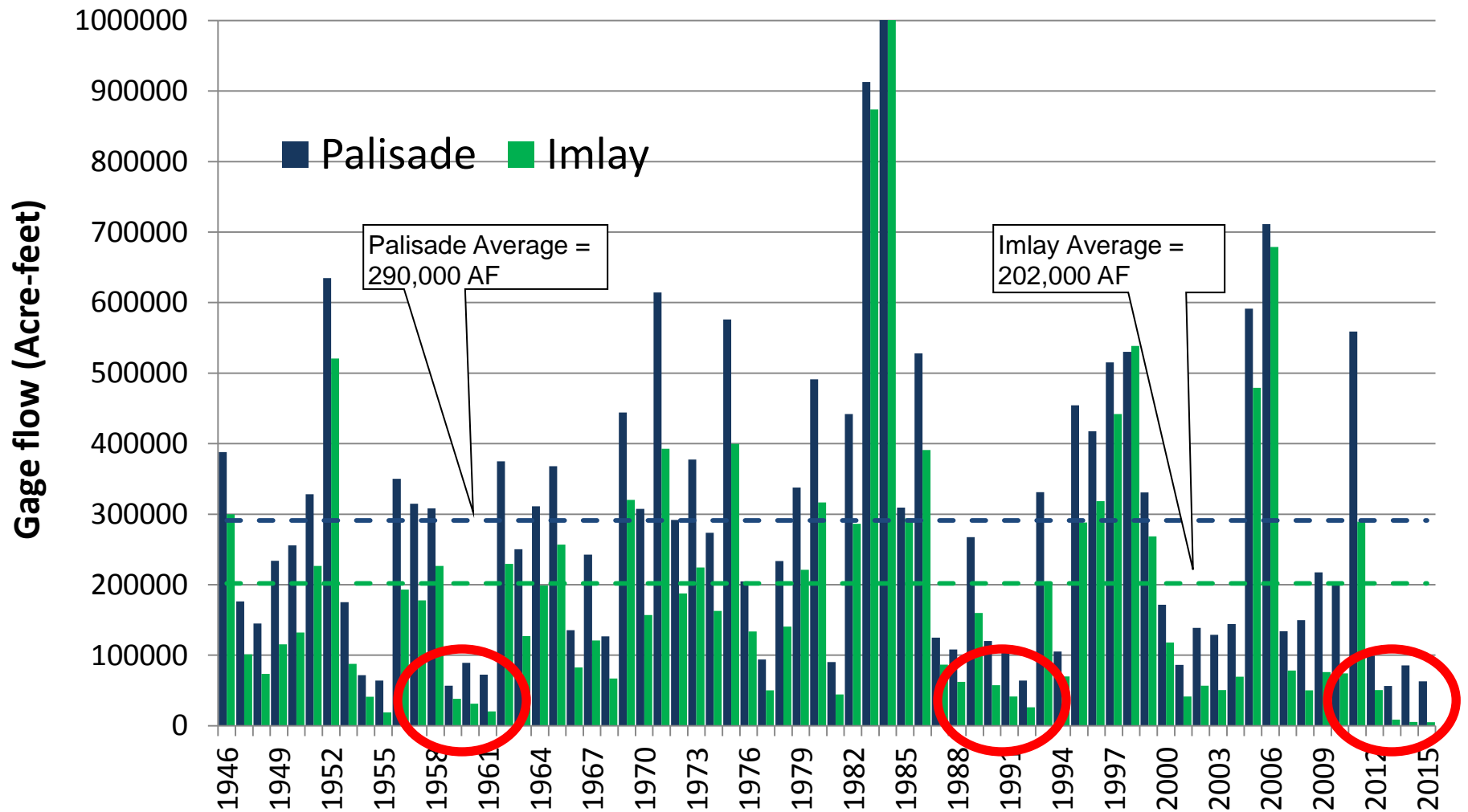


<http://droughtmonitor.unl.edu/>

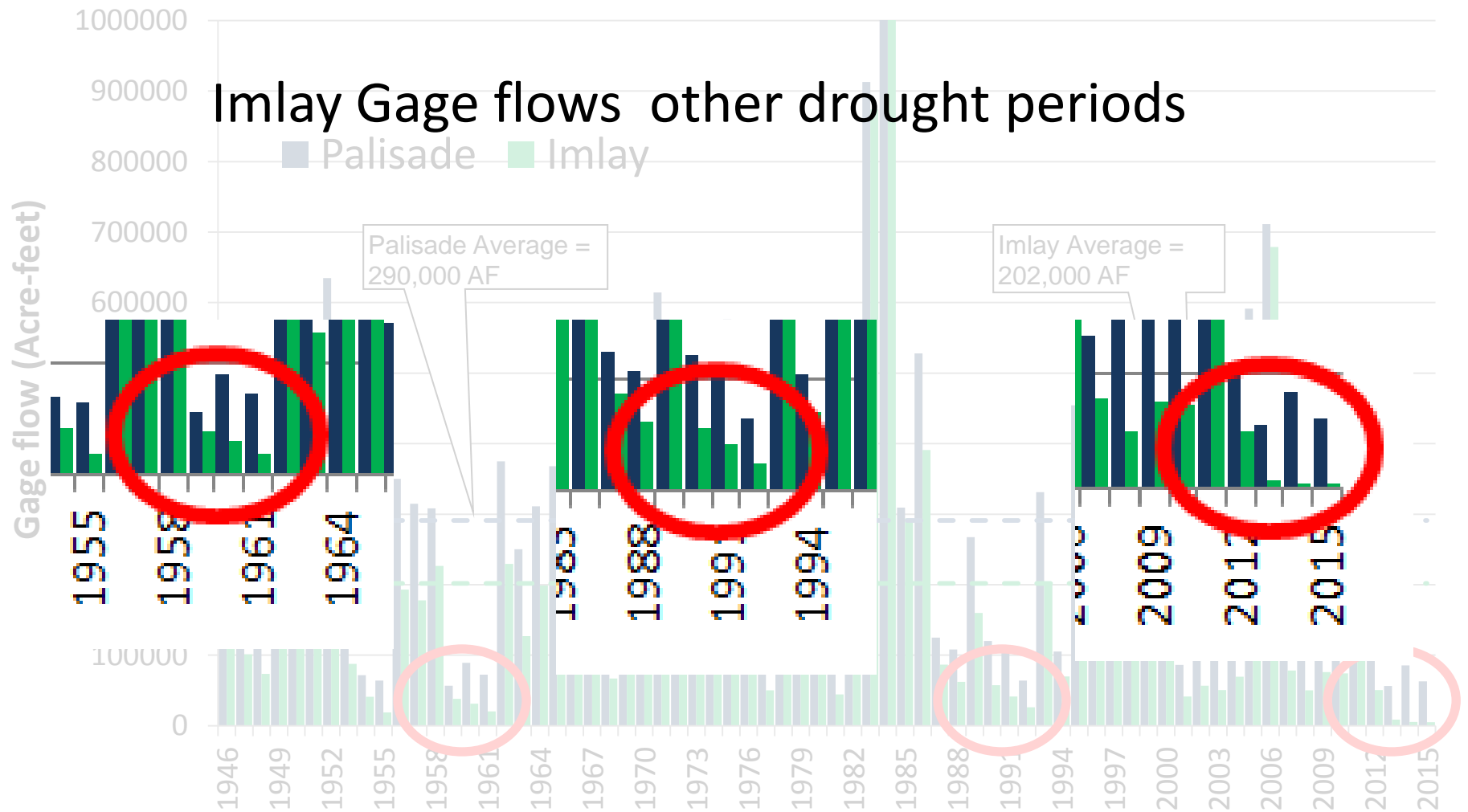
# Humboldt River Flow, 1946-2015



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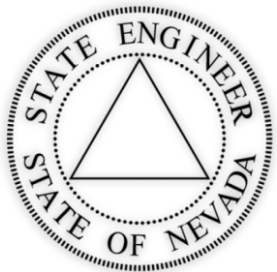




# **Humboldt River**

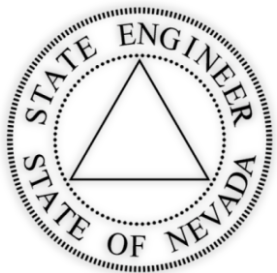
## **Capture Modeling**

### **Overview**



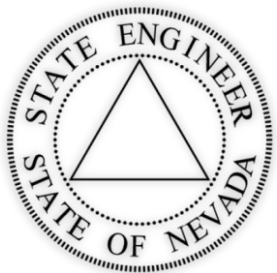
# Humboldt River Capture Modeling

- Groundwater pumping affects flow in the Humboldt River, but the magnitude and timing are not well understood.
- We need to know this as a basis for equitable, accurate and legally defensible water management strategies.
- State Engineer's Office contracting with USGS and DRI for calibrated basin-scale groundwater – surface water models from pre-development through 2015.

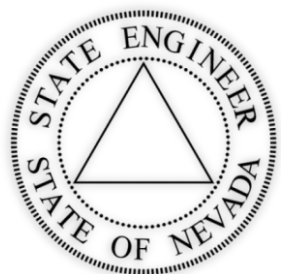


# Humboldt River Capture Modeling

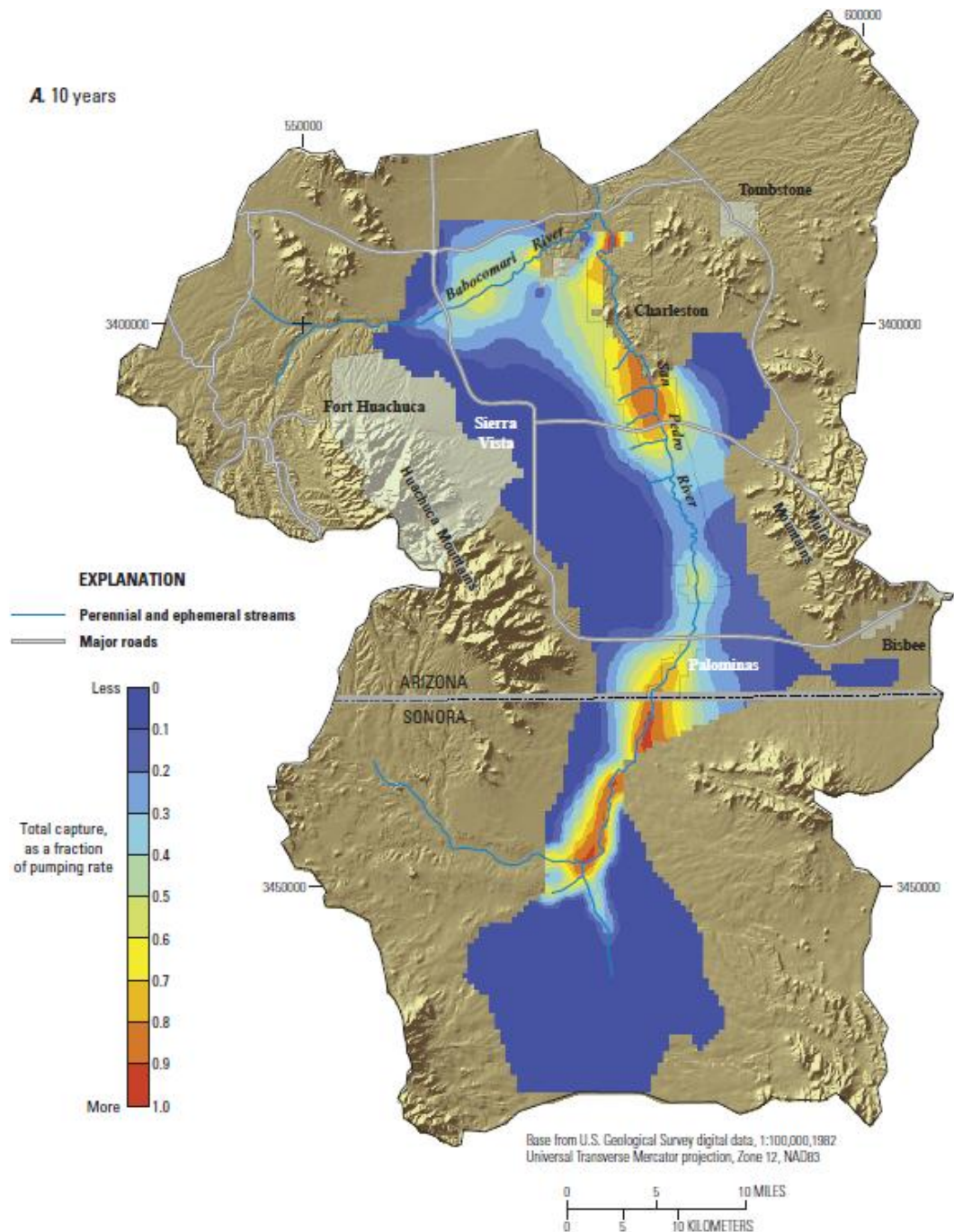
- What is a capture model?
- Groundwater flow model is foundation
  - Simulates surface and groundwater system
  - Calibrated to actual conditions ( water levels, flows)
- Used to estimate and predict river capture by groundwater pumping anywhere in the basin
- Model products are capture maps for selected time periods
- Necessary for future conjunctive management of surface and groundwater in the basin



# San Pedro River Capture Map

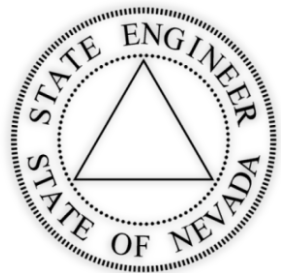


USGS SIR 2008-5207

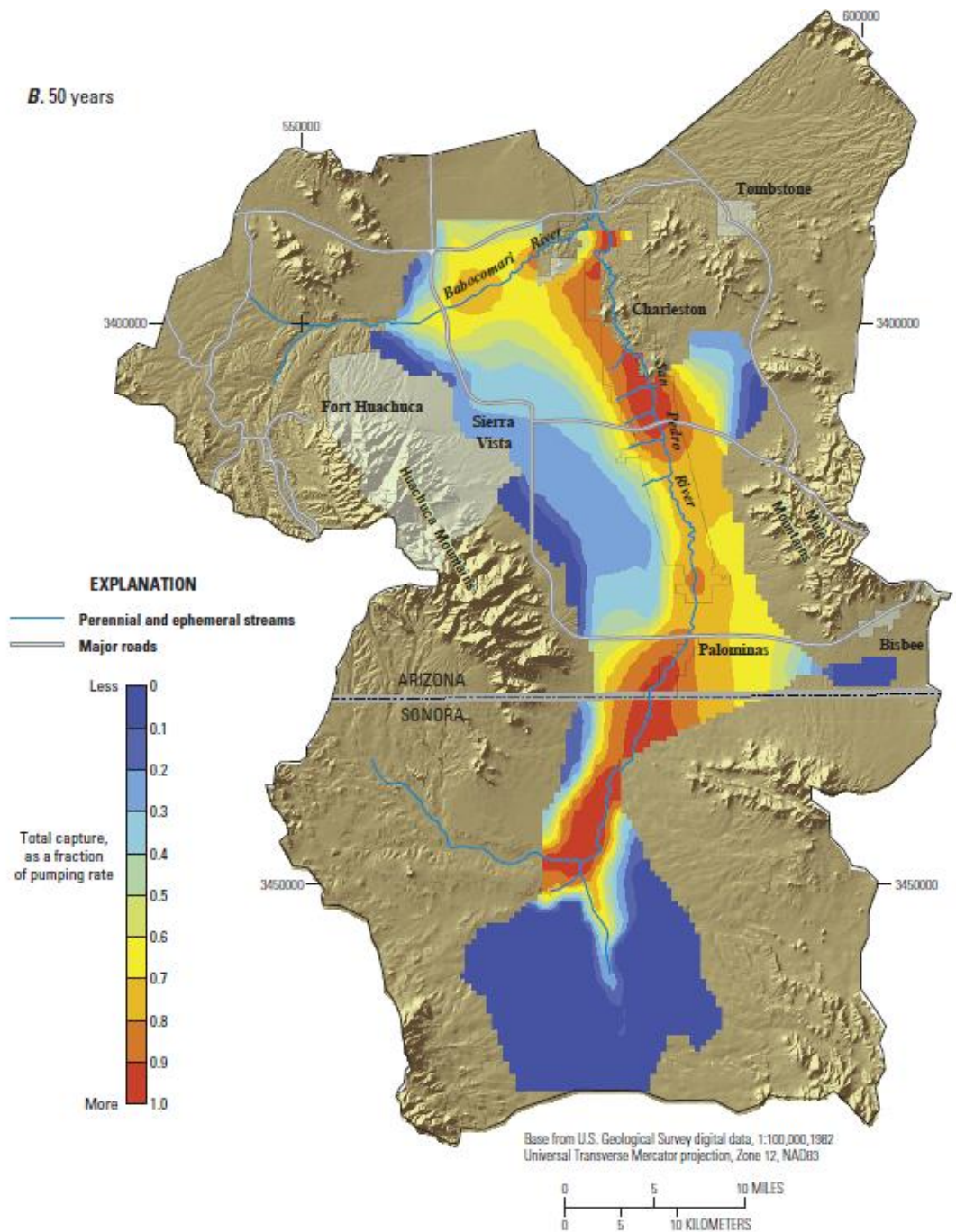




# San Pedro River Capture Map

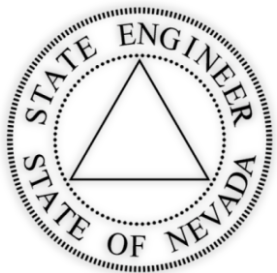


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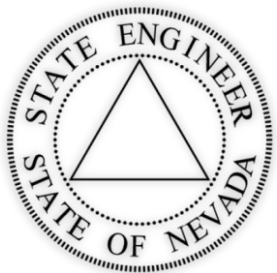
# Legislative Needs

- Conjunctive management approach is necessary. **Need regulatory support to accomplish.**
- CO: CRS 37-90-137(9)(d) On or before July 1, 1995, the state engineer shall promulgate reasonable rules ... The rules shall effectuate the maximum utilization of these aquifers through the conjunctive use of surface and groundwater resources.
- CRS 37-92-102(2) Legislative Declaration - ...the use of underground waters as an independent source or in conjunction with surface waters is necessary to the present and future welfare of the people of this state, and that the future welfare of the state depends upon a sound and flexible integrated use of all waters of the state...



# Legislative Needs

- Legislative declaration perhaps similar to CRS 37-92-102(2)
- Statutory change to NRS 533.370(2) ... where its proposed use or change conflicts with existing rights or with protectable interests in existing domestic wells ... the State Engineer shall reject the application and refuse to issue the requested permit.
- New language such as: ..provided any such conflicts cannot be mitigated to the satisfaction of the State Engineer







**Questions**