

# Skiatook Lake Drought Issues and Management

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US Army Corps of Engineers  
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# Skiatook Lake

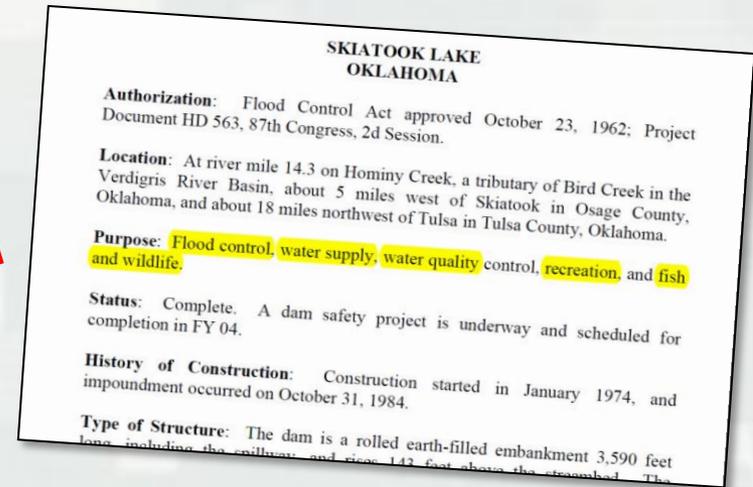
- We are in a significant, multi-year drought.
- Skiatook is a large lake with a small watershed.
- The project purposes are **flood control, water quality, water supply, fish and wildlife**, and **recreation**.
- Skiatook has significant demands on its conservation pool. Water quality and evaporation are the largest, followed by water supply.
- The Interagency Drought Management Committee recommended that we modify our lake operations to potentially reduce water quality releases.
- We are concerned about low lake levels and are open to new ideas.



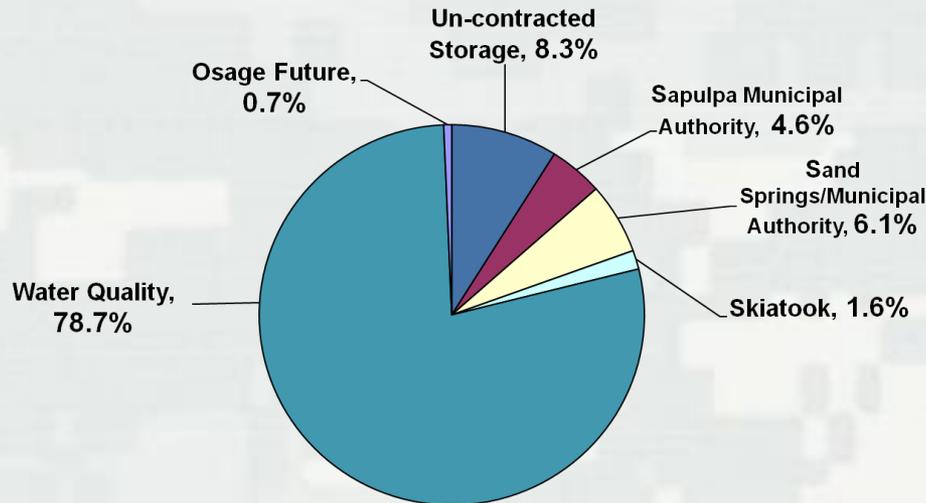
# Skiatook Lake

- Authorized purposes include:

- ▶ Flood Control \*
- ▶ Water Supply \*
- ▶ Water Quality \*
- ▶ Fish and Wildlife
- ▶ Recreation



**Skiatook Lake Conservation Storage**



\* Purposes that have allocated storage and control water management operations



# Interagency Drought Management Committee (IDMC)



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# Skiatook Lake

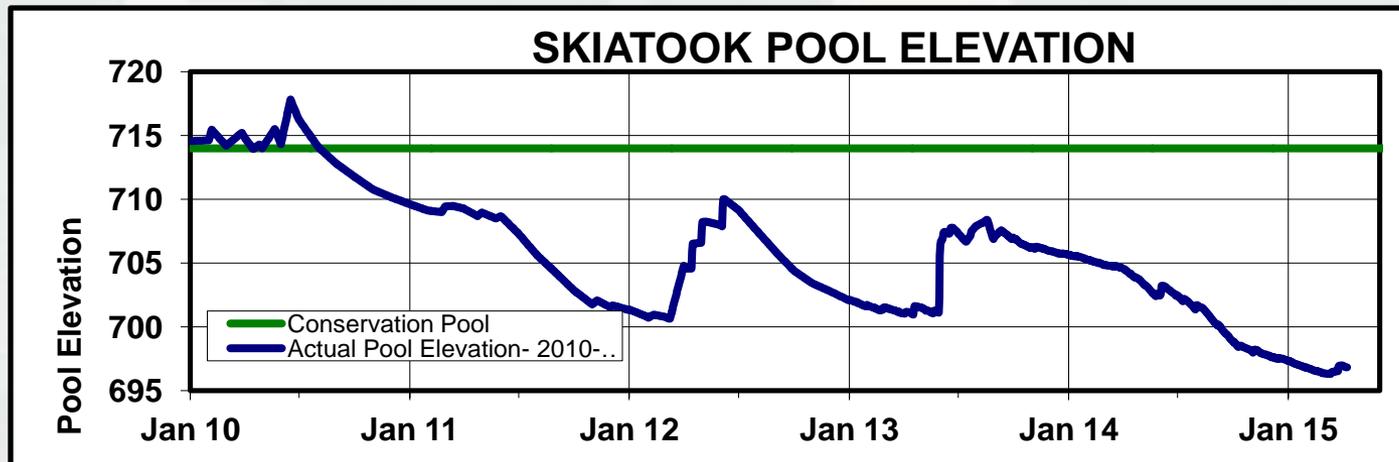
## Current Situation

- Water supply for Sapulpa, Sand Springs, Skiatook, and Osage County RWD #15 (future)
- Water quality releases required to meet permit requirements as measured at Owasso
- Conservation pool at 697.0 (down 17.0')
- 53% conservation pool

## Approved Deviation

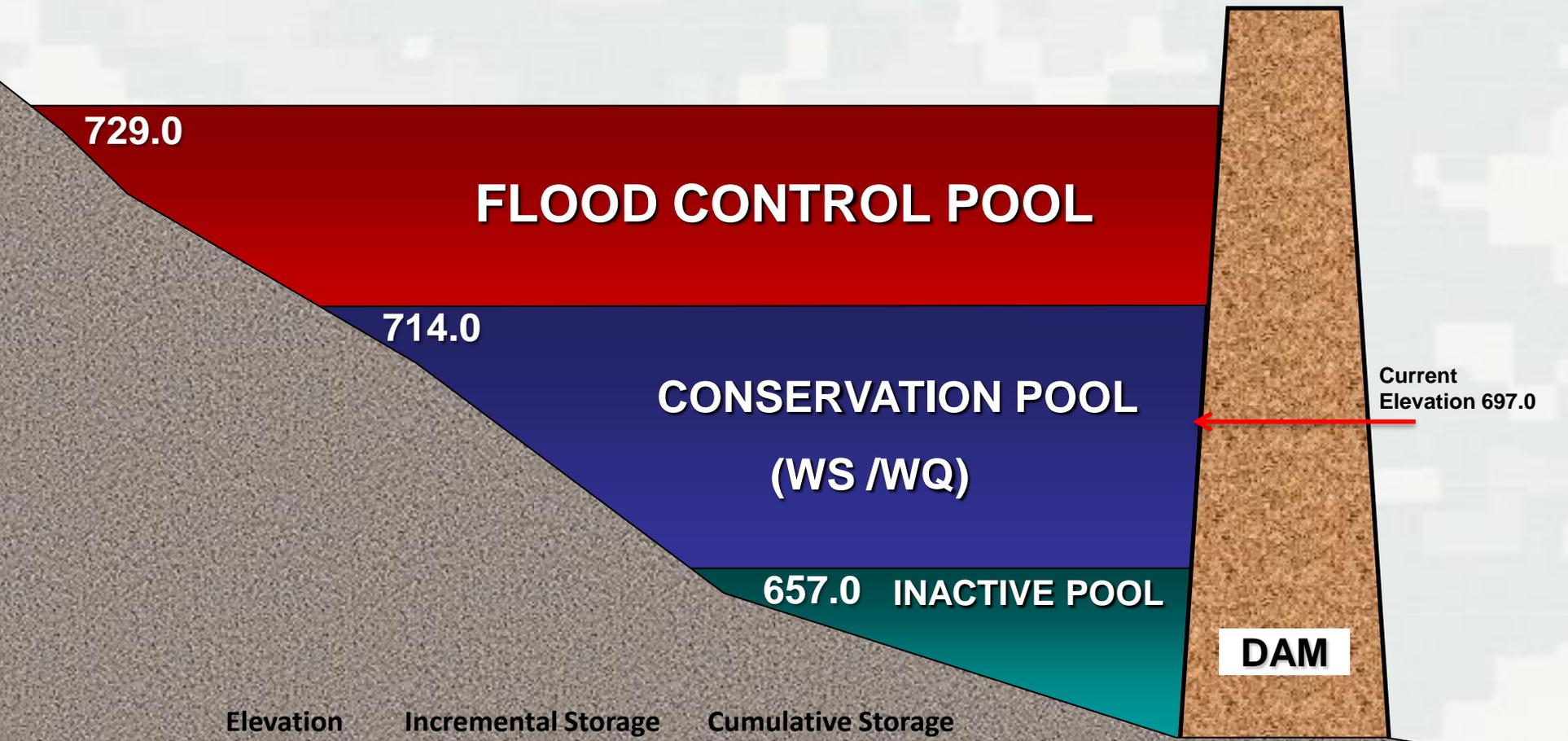
- Moved low flow monitoring point from the Sperry gage downstream to the Owasso gage (additional 110 square miles of drainage area)
- Changed low flow requirement from hourly measurement to a 3-day rolling average
- Approved 2 March 2015

## Lake Elevation During the Drought



# Storage Zones

## Skiatook Lake



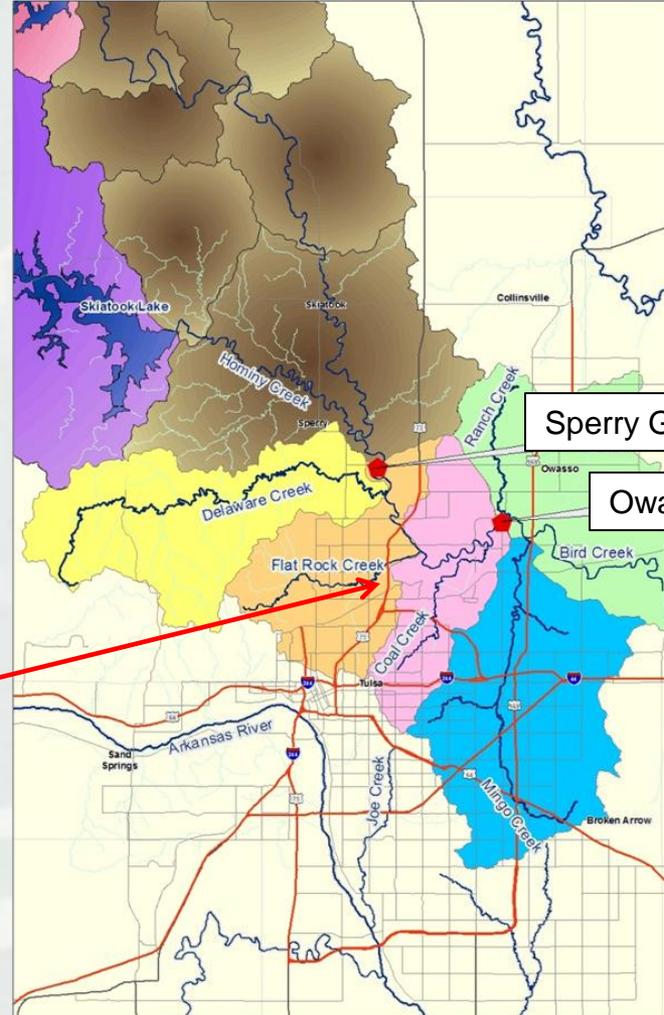
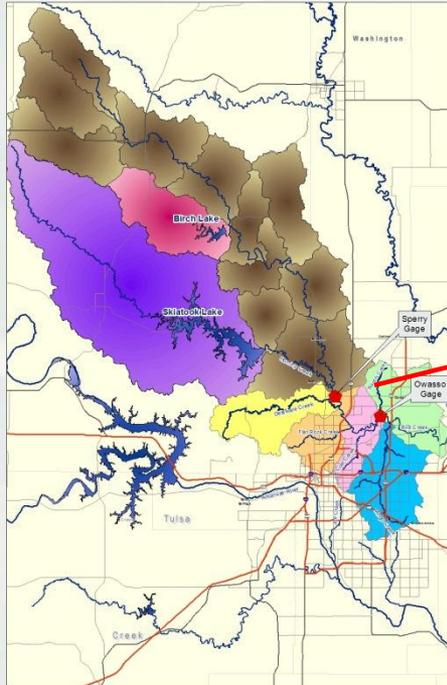
Current Elevation 697.0

**DAM**

	Elevation (feet)	Incremental Storage (acre-feet)	Cumulative Storage (acre-feet)
Flood Control Pool:	729.00	177694	499102
Conservation Pool:	714.00	310086	321408
Inactive Pool:	657.00	11322	11322

# Bird Creek Watershed

Drainage Areas	
	Square miles
Skiatook Lake	354
Birch Lake	66
Sperry Gage	907
Owasso Gage	1017



Sperry Gage

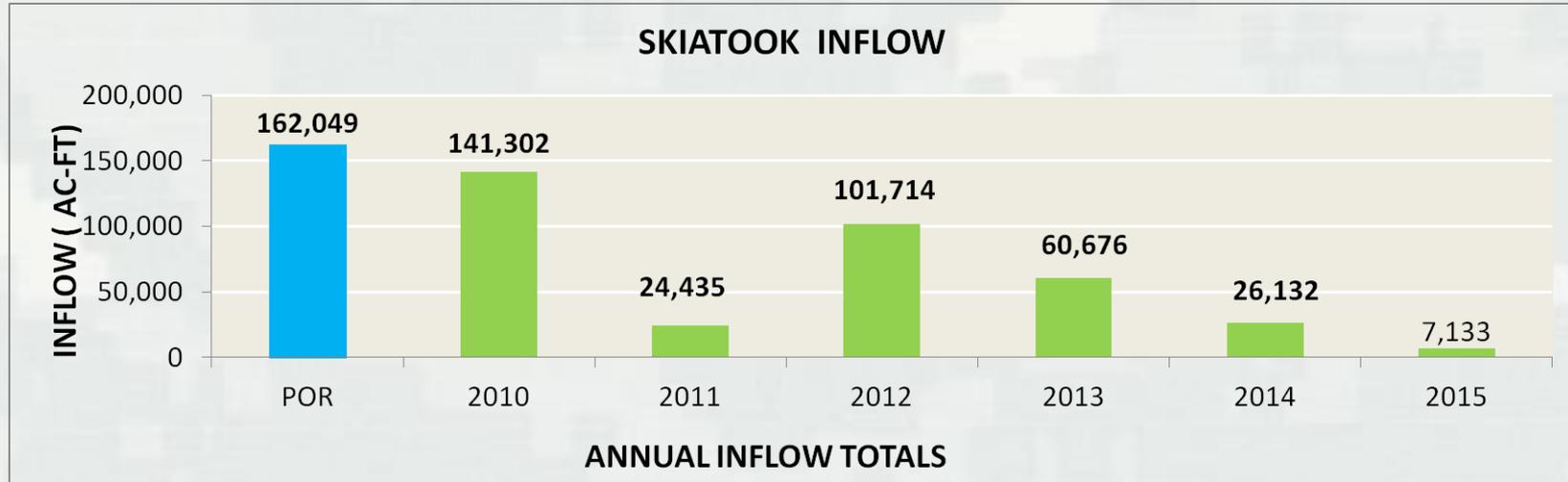
Owasso Gage



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# Skiatook Lake

## Significant Drought



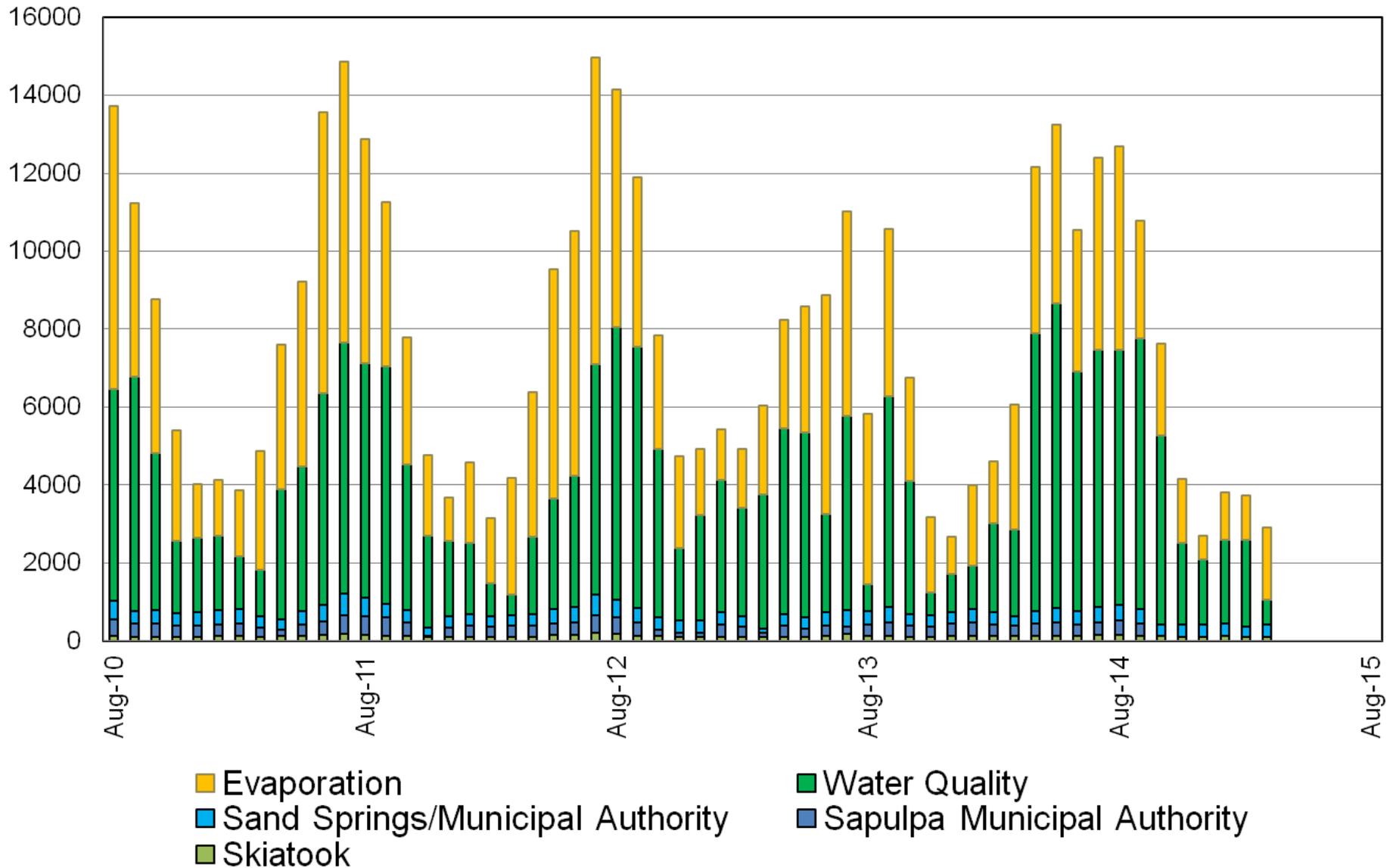
## Statistics

- Below average rainfall since 2009
- 2011-2014 - Lowest 4-yr inflow period since impoundment
- 2011- Worst single year; 2014 - 2<sup>nd</sup> worst
- **Requires nearly 8 inches of runoff over the entire watershed to refill the pool**



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# Skiatook Lake Monthly Withdrawals in Acre-Feet



# Skiatook Lake

<b>Percent of Time at or Below Pool Elevation</b>	
<b>Percent</b>	<b>Pool Elevation</b>
80%	714.0
50%	712.2
30%	710.1
20%	708.4
10%	701.9
7%	698.3
5%	694.7



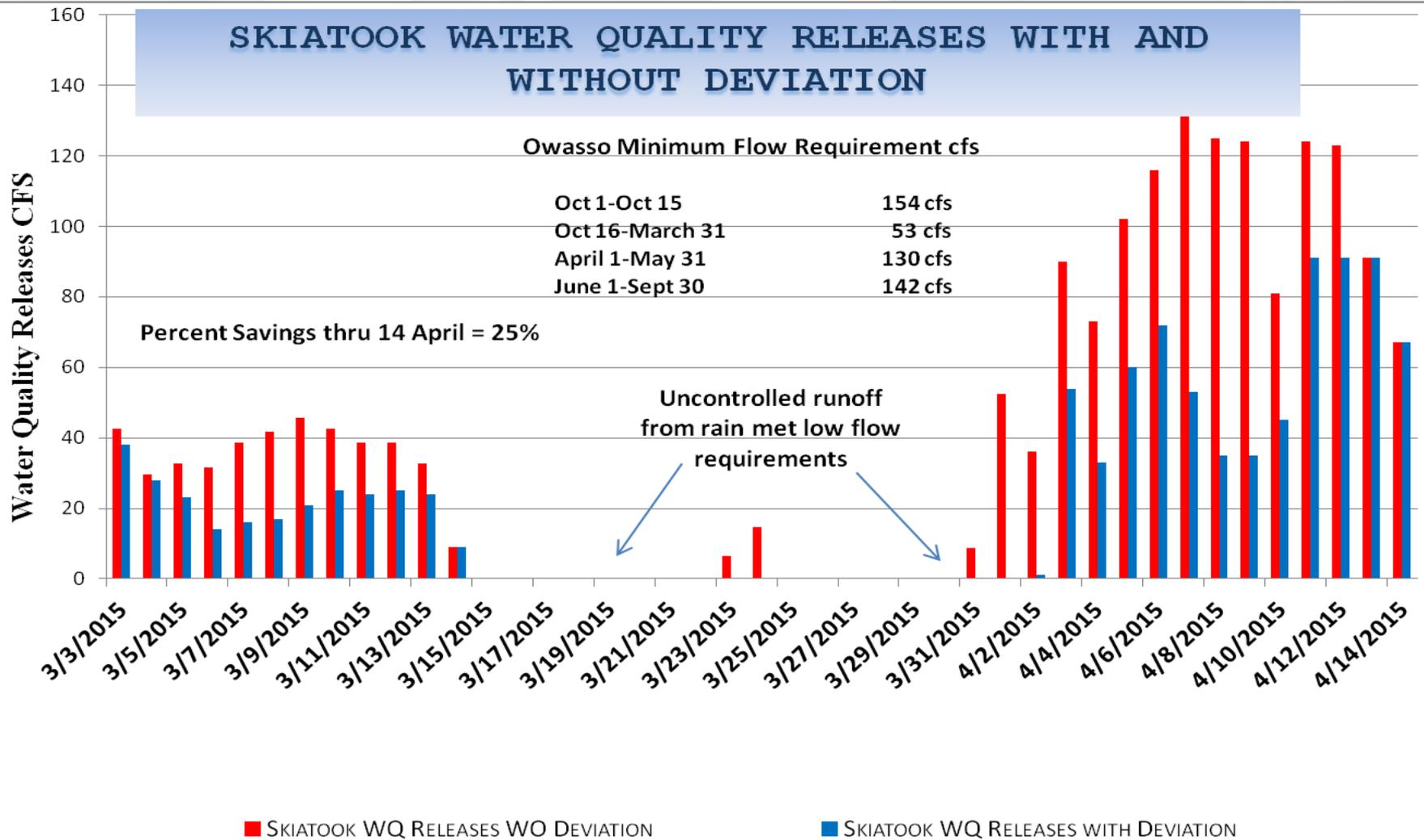
# SKIATOOK WATER QUALITY RELEASES WITH AND WITHOUT DEVIATION

Owasso Minimum Flow Requirement cfs

Oct 1-Oct 15	154 cfs
Oct 16-March 31	53 cfs
April 1-May 31	130 cfs
June 1-Sept 30	142 cfs

Percent Savings thru 14 April = 25%

Uncontrolled runoff  
from rain met low flow  
requirements



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