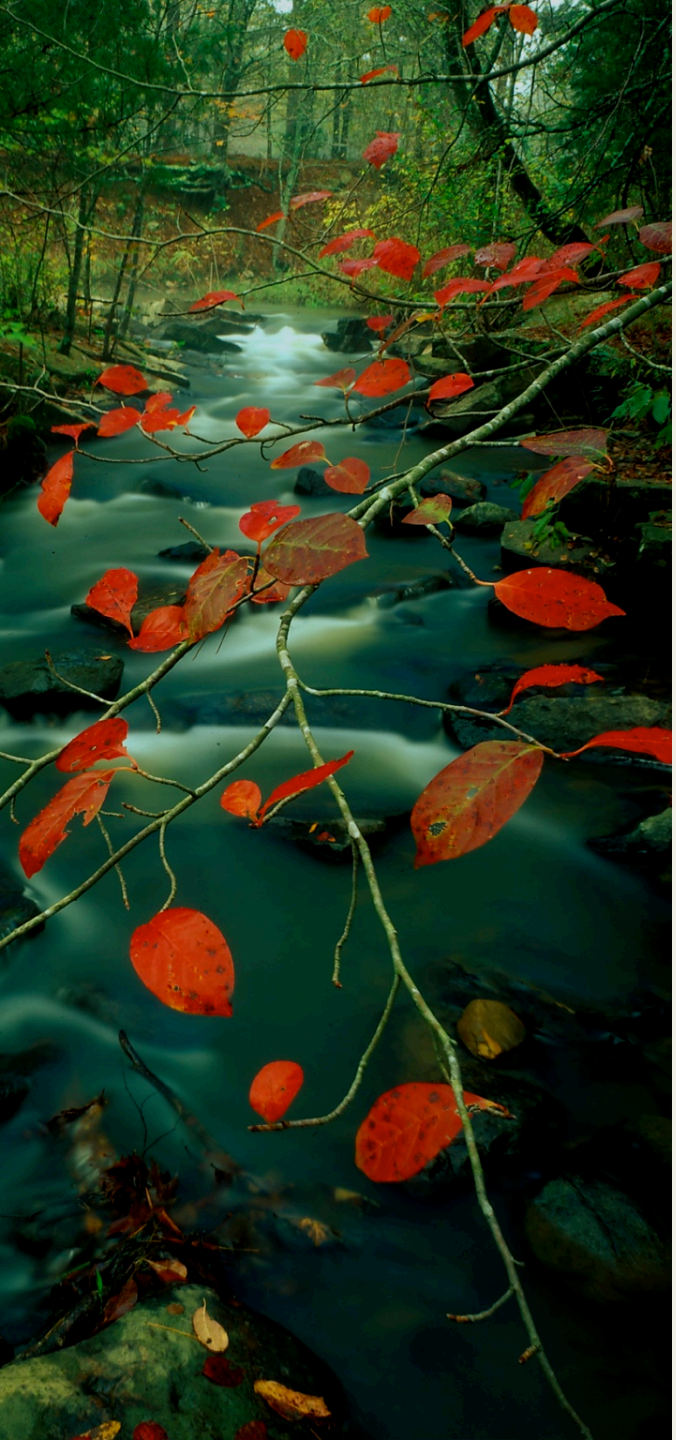
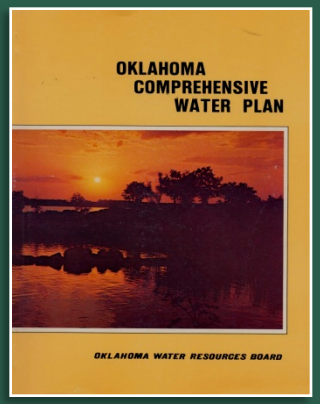


Balancing Oklahoma's Water Needs

State of Oklahoma
OWRB
WATER RESOURCES BOARD
the water agency

Bob Sandbo, Permitting Section Head
June 4, 2012

The OCWP: A Brief History



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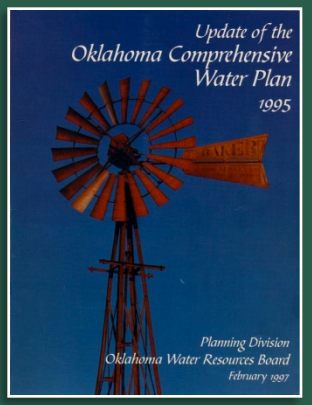


1980:

- First official statewide water plan
- Project-oriented
- Proposed statewide east/ west water transfer

1995:

- First Water Plan update
- Policy-oriented
- Great success in achieving OCWP water policy recommendations at the state level

Goals of the 2012 OCWP Update

1. Characterize Demands by Water Use Sector
2. Identify Reliable Supplies to Meet Forecasted Demands
3. Perform technical studies in support of the evaluation of emerging water management issues
4. Engage comprehensive stakeholder involvement to make recommendations regarding the management of Oklahoma's water resources
5. Ensure water resources management programs that create reliability
6. Make "implementable" recommendations regarding the future of water management in Oklahoma based upon technical evaluations and stakeholder input

Oklahoma Comprehensive Water Plan

OCWP

Robust Public Participation

Expert Technical Evaluation

Reliable Water Supply

2012 OCWP Update

- The OCWP process includes an unprecedented level of openness, collaboration, expert input and public involvement, especially in development of water policy recommendations:
  - ***Fair***
  - ***Inclusive***
  - ***Transparent***

To date, the OWRRI has hosted 86 local, regional, and statewide water planning meetings and engaged thousands of Oklahomans in the public input process. Collectively, participants have invested almost 30,000 hours in the process so far.

Oklahoma Comprehensive Water Plan

Technical Studies

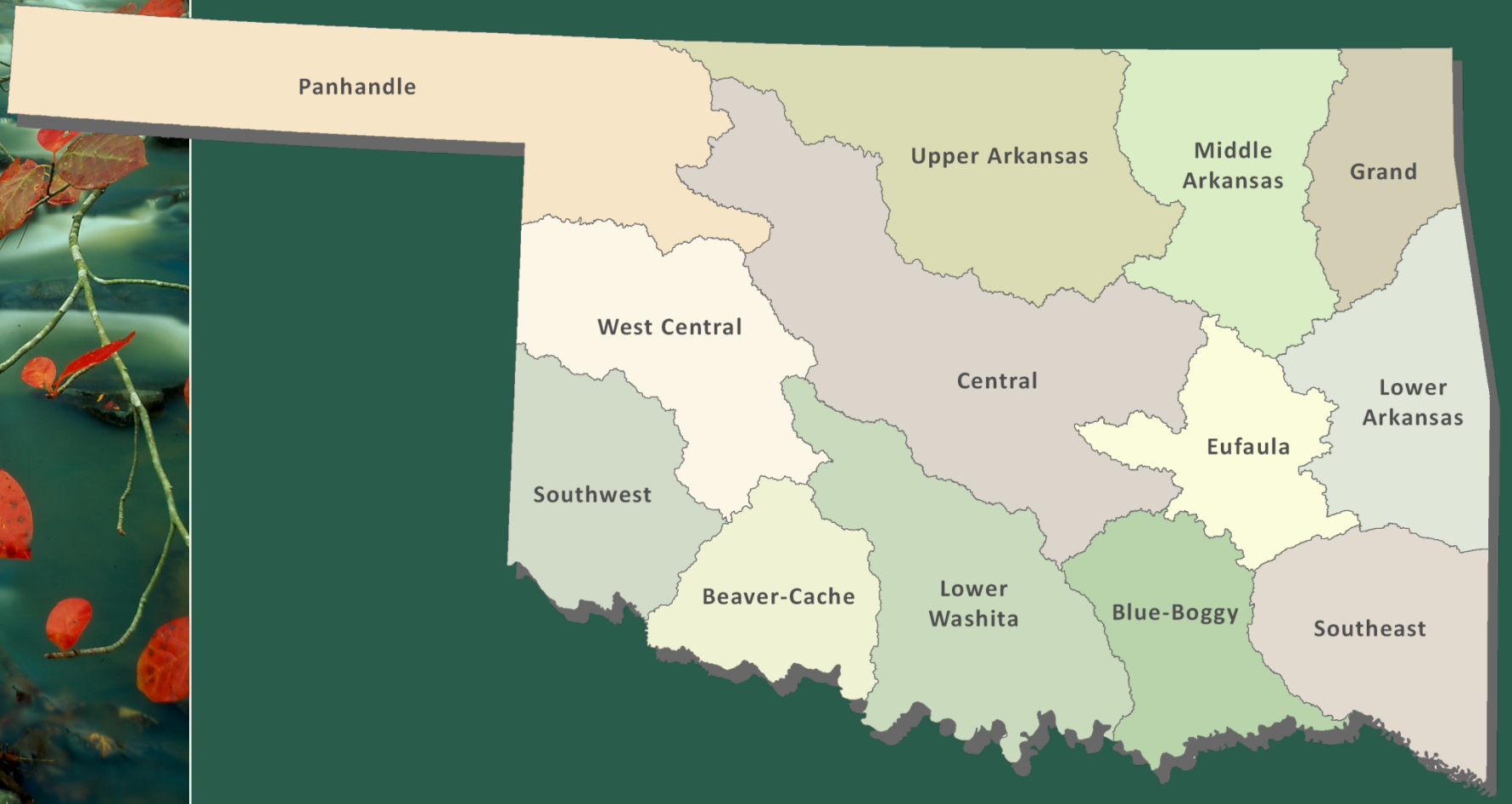
- The OCWP has collected a wealth of technical data and information that will be indispensable to water providers, policy makers, and water users in making informed water management decisions.
- Ten separate technical workgroups, including more than 100 experts, have provided invaluable input into OCWP technical methodologies and decisions.

13 Watershed Planning Regions:

- Aggregated from 82 basins delineated by hydrology and stream gage locations

82 Basins for Detailed OCWP Analyses

Aggregated into 13 Watersheds for Regional Supply Planning

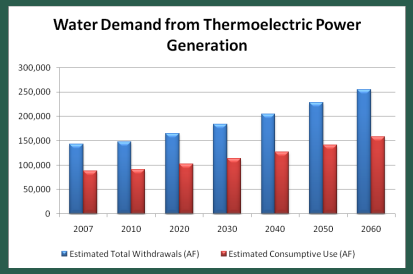


Overview of Technical Work

- Projection of demands through 2060
- Characterization of surface water and groundwater supplies
- Hydrologic variability
- Reliability of supplies
- Location, magnitude, and frequency of gaps between supply and demand
- Supply solutions
- Artificial recharge, marginal quality water, reservoir viability

Tools Developed for the OCWP Update

Supply/Demand/Options Tools



Demand Projection Model

Reservoir Yield Model

Climate Demand Model

Planning Guide

Components of the OCWP Update

Executive Report:

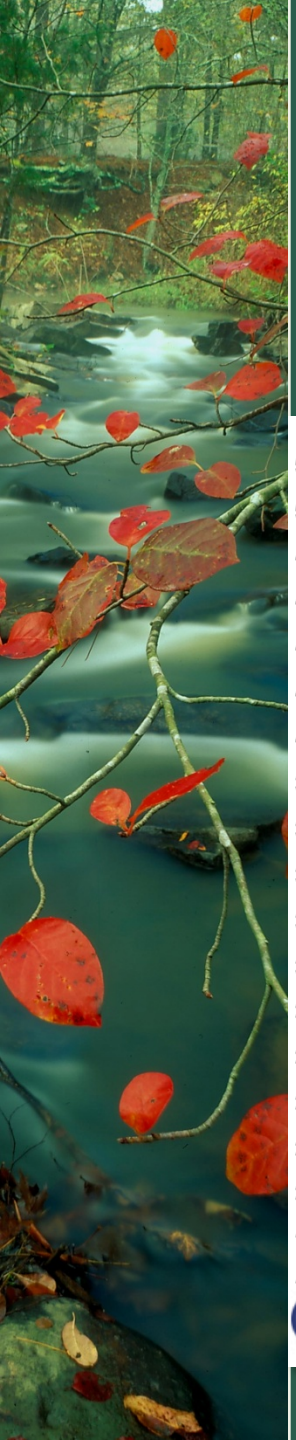
- Synthesis of OCWP Technical Studies and Results
- Water Policy Recommendations
- Statewide perspective
- Workgroup summaries

Watershed Planning Region Reports:

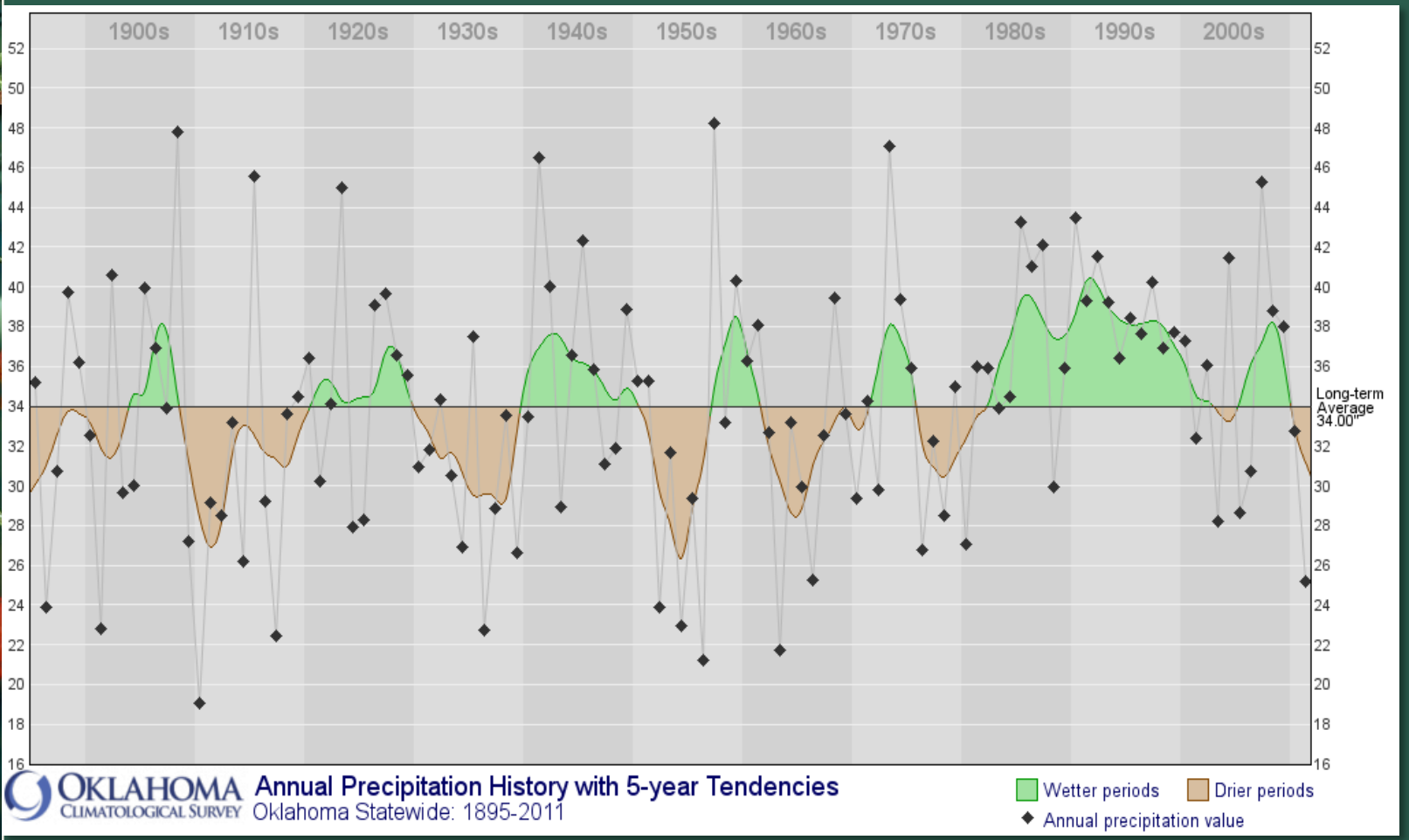
- Presents results of OCWP technical analyses, including options to address identified water shortages

Draft Priority Water Policy Recommendations for Implementation

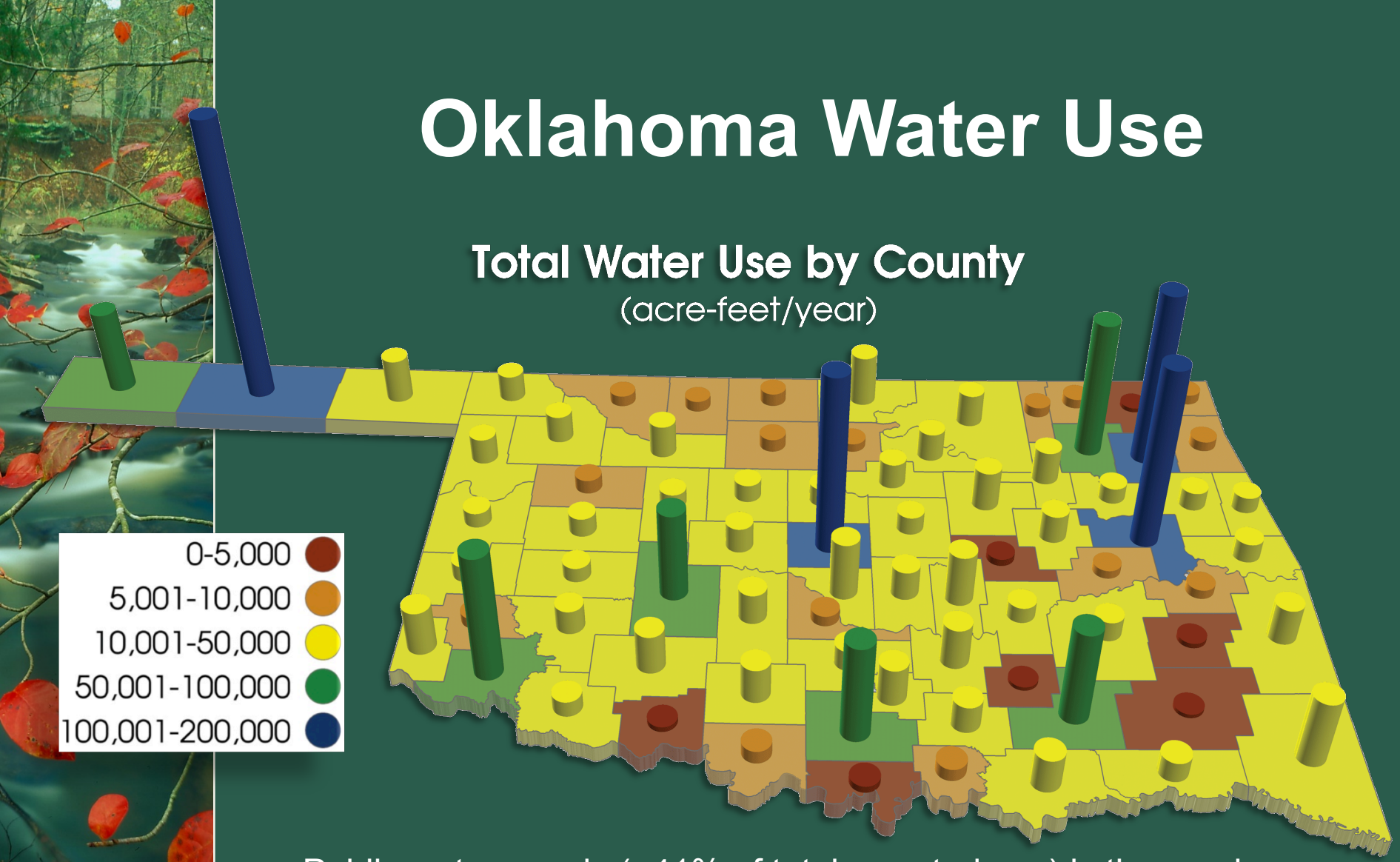
- Water Quality & Quantity Monitoring
- Instream (Environmental) Flows
- Water Efficiency & Reuse
- State/Tribal Water Consultation and Resolution
- Excess & Surplus Water
- Water Supply Reliability
- Regional Planning Groups
- Water Project & Infrastructure Funding



Oklahoma:
Cyclical flood and drought



Oklahoma Water Use

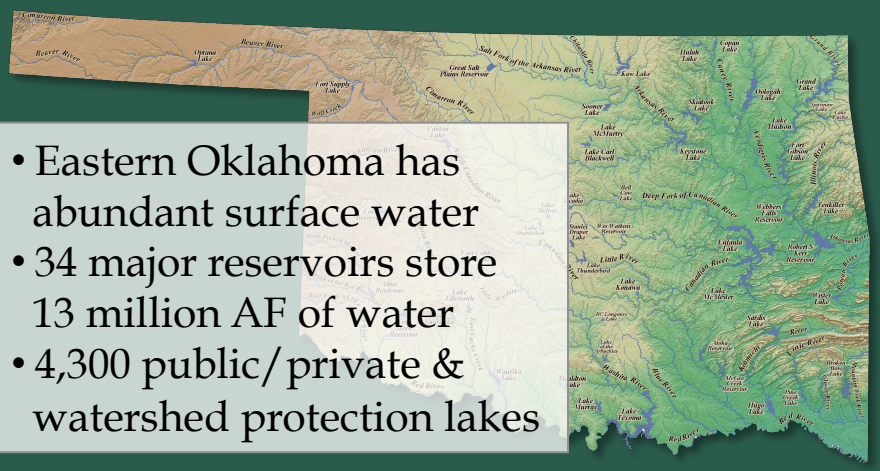


- Public water supply (~41% of total reported use) is the number one use of water in Oklahoma; irrigation (~32%) is second. Oil and gas drilling accounts for only ~2% of the states use.

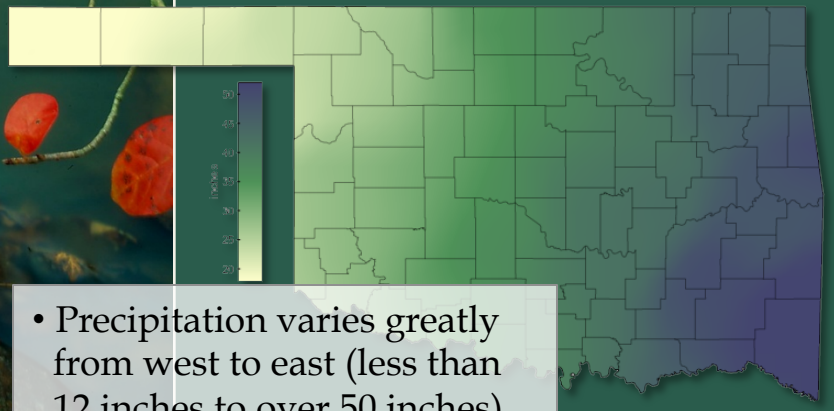
Balancing Oklahoma's Water Needs

Challenges

- Oklahoma contains plentiful water supplies.
- The problem is reliability (<u>place</u> and <u>time</u>).



- Eastern Oklahoma has abundant surface water
- 34 major reservoirs store 13 million AF of water
- 4,300 public/private & watershed protection lakes



- Precipitation varies greatly from west to east (less than 12 inches to over 50 inches)

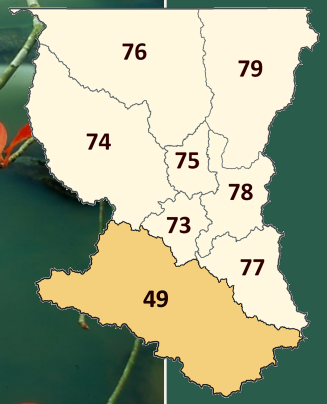
- Western Oklahoma has abundant groundwater
- 23 major groundwater aquifers store 320 million AF of water

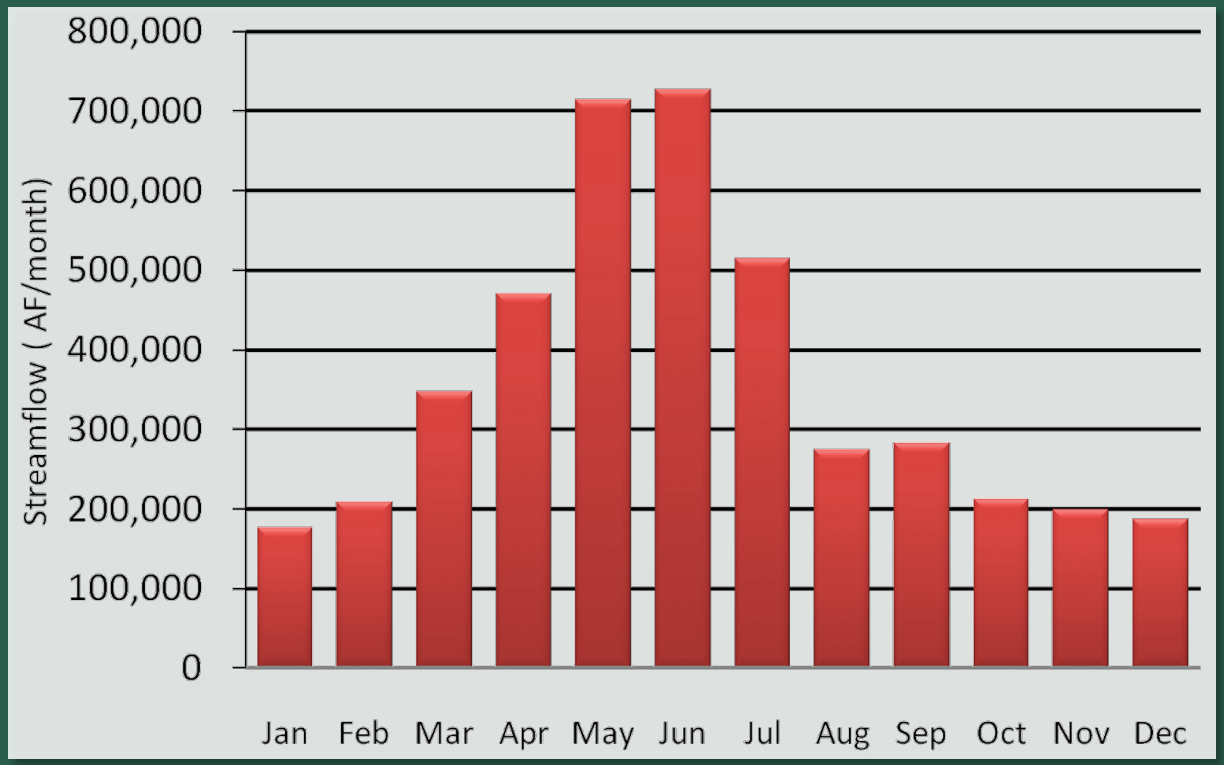
Balancing Oklahoma's Water Needs

Challenges

Middle Arkansas Region

Basin 49





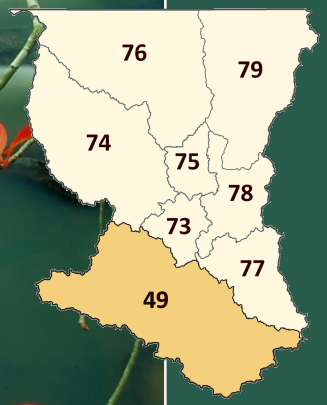
Streamflow fluctuates considerably throughout the year (hydrograph is similar across most of the state but amount of flow varies.

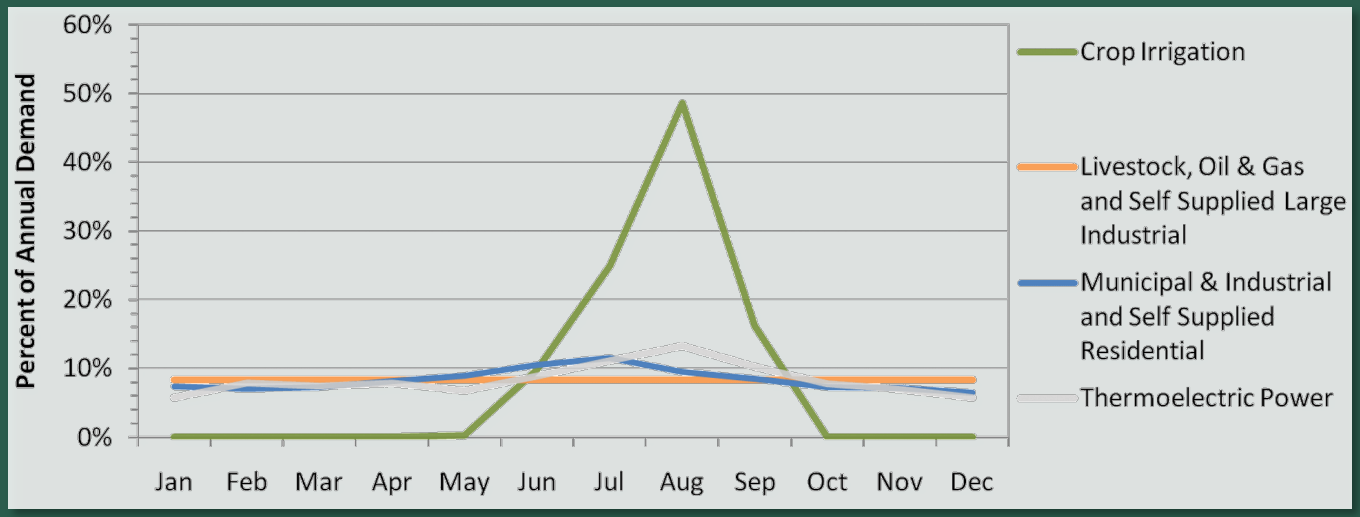
OCWP
Oklahoma Comprehensive Water Plan

Balancing Oklahoma's Water Needs
Challenges

Middle Arkansas Region

Basin 49





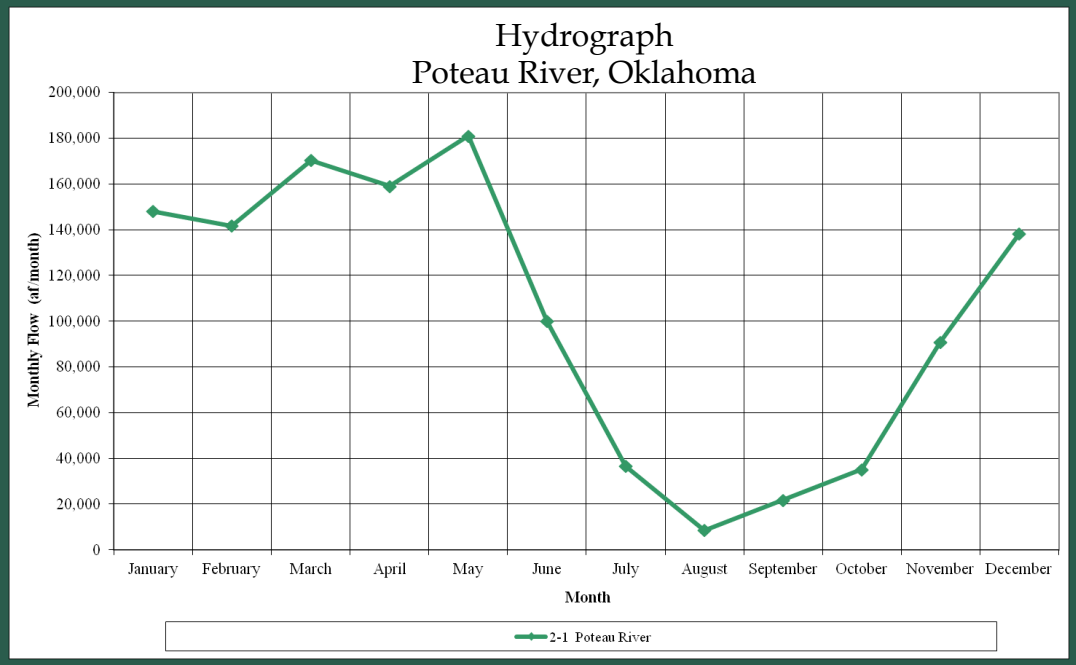
The timing of certain water demands vary throughout the year.

OCWP
Oklahoma Comprehensive Water Plan

Balancing Oklahoma's Water Needs

Challenges

- Stream water use permits are administered on an average annual "volume-based" system that overestimates water actually available during high-demand, low-flow conditions.
- Stream water is not a private property right.



Balancing Oklahoma's Water Needs Challenges

- Groundwater is a private property right
- Mining law
  - Allows for a 50% depletion of an aquifer in a 20 year period
- Default of 2 af/ac in basins that have not been studied
- Studied basins vary from 0.5 – 2.1 af/ac
- No steady funding sources for new studies or updates
- No recognition of groundwater/surface water interaction (except in EPA designated "sole source" aquifer)

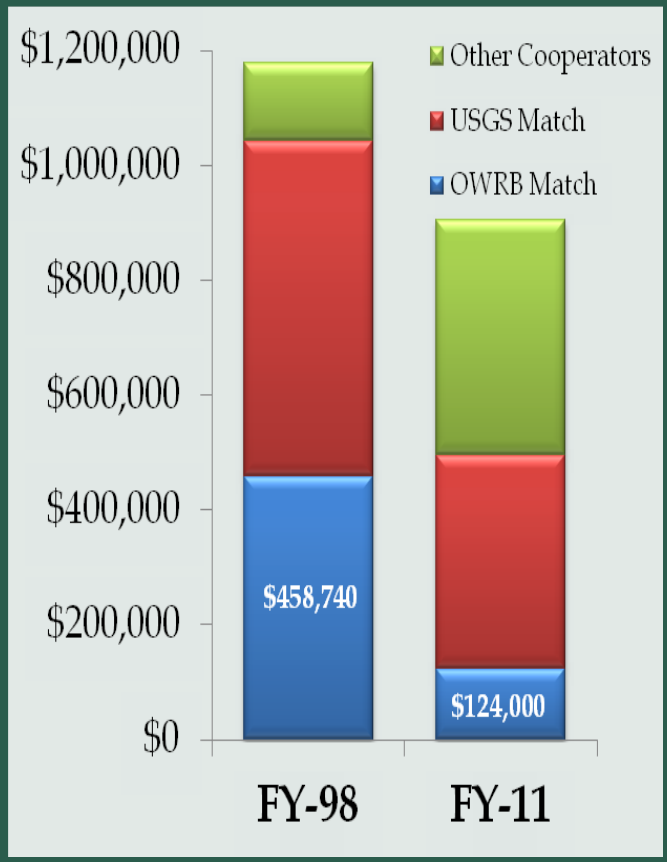
Balancing Oklahoma's Water Needs
Challenges

- Nonconsumptive Water Uses:
  - Significant interest in recognition and protection
  - Provide the basis for recreation/tourism & lake level management:
    - Recreation = Oklahoma's third largest industry
  - Provide increased ecological integrity, endangered species protection, interstate compact compliance, protect water quality standards, etc.

Balancing Oklahoma's Water Needs

Challenges

- Cooperative Stream Gaging Program:
  - Water data and data collection programs are a prerequisite to informed decisions.
  - – Reduced federal/state funding has necessitated the need for more cooperators, including private sector.



Balancing Oklahoma's Water Needs

Options: Annual Permit Administration

- Investigate transition to a "flow-based" (i.e, cubic feet per second) or seasonal permit system:
  - OK Comprehensive Water Plan (OCWP) Priority Recommendation
  - More accurate and efficient system that assures better availability
  - Reduces over-appropriation of water and need for costly enforcement/complaints response
  - Additional storage required of some irrigators, other water users
  - Concerns from agriculture, municipal, and industrial consumptive users (additional limitations on diversions, more scrutiny, more complicated burden of proof)

Balancing Oklahoma's Water Needs
Options: Nonconsumptive Uses

- Investigate establishment of instream/ environmental flows:
  - OCWP Priority Recommendation (Workgroup)
  - Current OWRB rules establishes domestic use set-aside as well as a minimum flow requirement on Barren Fork Creek (50 cfs)
- Continue to work through Lake Advisory Committees that engage local water use interests in lake management decisions (Canton Lake, Lake Texoma)
- Storage Reallocation (hydropower & water quality)

Balancing Oklahoma's Water Needs

Options: USGS Stream Gaging Program

- Find additional private sector cooperators to provide cost match funds.
- Augment program with ambient water quality/and quantity data collected in conjunction with other research (i.e., permit compliance)
- Request additional state appropriations

Balancing Oklahoma's Water Needs
Options: Mitigating Water Shortages

- Utilize conservation as a vital water management tool.
- Implement innovative and aggressive water conservation measures that result in reducing forecasted 2060 demand to current levels:
  - OCWP Priority Recommendation
  - Augment water supplies through artificial aquifer recharge projects, water reuse scenarios, and sources of marginal water quality identified in OCWP 2012 Update
  - Legislative committee has been authorized to look into conservation

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