Minimizing Drought Impacts through the Oklahoma Comprehensive Water Plan

Governor’s Water Conference & Research Symposium
October 22-23, 2013

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Executive Director
Climatologists predict that drought will only become more frequent and severe.
U.S. Billion Dollar Disasters (1980-2012)*

1. Hurricane Katrina (2005) = $148.8
2. Drought (1988) = $78.8
3. Drought (2012) = ???.?
4. Sandy (2012) = $65.7
5. Drought (1980) = $56.4

*http://www.ncdc.noaa.gov/billions; cost adjusted to 2013 CPI
Drought Conditions & Impacts in Oklahoma

Oklahoma is currently in the midst of a 3+ year drought.

Numerous water-related impacts to Agriculture, Water Systems, Industry, Navigation, Tourism, Recreation, etc.:

- Precipitation
- Streamflows
- Reservoir Levels
- Soil Moisture
- Fire Danger
Drought Conditions & Impacts in Oklahoma

- More than 37% of Oklahoma, including prime agricultural areas, continues to experience at least Moderate drought;
- Over 4% of the state is still in Extreme drought
  - Drought cost Oklahoma agriculture $2+ billion in 2011/2012

U.S. Drought Monitor
October 15, 2013
Drought Conditions & Impacts in Oklahoma

• Water Supply
  – 20-to-30 Oklahoma water systems continue rationing or other water restrictions
    • Rationing becoming a year-round water management strategy
  – Smaller water systems and rural domestic users particularly vulnerable to drought

Oklahoma has almost 700 community water systems that serve less than 1,000 customers.
2012 Update of the Oklahoma Comprehensive Water Plan

• Submitted to Governor and Legislature in February 2012
• Most technically sound and extensively vetted Water Plan ever developed in Oklahoma
• Overriding goal is to provide safe, dependable water supply to all Oklahomans
• Executive Report & 13 Watershed Planning Region Reports, including synthesis of technical studies/results and policy recommendations
2012 Update of the OCWP

Minimizing Drought Impacts

OCWP enables state water users to be more resilient to inevitable drought episodes

1. Priority and supporting recommendations

2. Technical studies and tools

How does the Water Plan combat drought?

1. Identify Vulnerabilities (Demand Studies)

2. Anticipate Climate Impacts

3. Quantify Infrastructure Requirements

4. Encourage Water System Planning

5. Conservation & Augmentation of Supplies

6. Enhance Data and Studies

7. Update State Drought Plan
2012 Update of the OCWP

Minimizing Drought Impacts

Identifying Vulnerabilities

- 50-year water demand projections for major water use sectors
  - Surface water “gaps”
  - Groundwater “depletions”

12 “Hot Spots” identified as having greatest water supply challenges
2012 Update of the OCWP

Minimizing Drought Impacts

Identifying Vulnerabilities

- Assessed factors limiting the use of the three major supply categories
  - surface water
  - alluvial groundwater
  - bedrock groundwater
2012 Update of the OCWP
Minimizing Drought Impacts

Identifying Vulnerabilities

– Evaluated options and their effectiveness in addressing projected water shortages
2012 Update of the OCWP
Minimizing Drought Impacts

Anticipating Climate Impacts

– Assessed potential future climate variability impacts on water supply and demand down to county/system level
2012 Update of the OCWP
Minimizing Drought Impacts

Quantifying Infrastructure Requirements
– OCWP projected a $82 billion infrastructure need by 2060
  • will particularly impact smaller systems

2060 Water System Need
2012 Update of the OCWP
Minimizing Drought Impacts

Quantifying Infrastructure Requirements
– Water Infrastructure Credit Enhancement Reserve Fund created through SQ 764

Drinking Water Project Need vs. Capacity

<table>
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<th>Billions</th>
<th>Present to 2020</th>
<th>2021 -2040</th>
<th>2041 - 2060</th>
<th>Total Period</th>
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OCWP Priority
2012 Update of the OCWP
Minimizing Drought Impacts

Encouraging Water System Planning

– OCWP Public Water Supply Planning Guide
  • Prepared to assist especially small water suppliers in strengthening their long-term water management capabilities
2012 Update of the OCWP
Minimizing Drought Impacts

Conservation & Augmentation

• Evaluated both “Moderate” and “Substantial” scenarios for the two major water use sectors

| M&I and Agriculture Statewide Demand Projections & Water Savings for Conservation Scenarios (AFY) |
|---|---|---|---|---|---|---|
| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 |
| Baseline | 1,377,318 | 1,455,309 | 1,523,273 | 1,587,406 | 1,642,069 | 1,711,392 |
| Scenario I | N/A | 1,301,816 | 1,332,781 | 1,388,603 | 1,435,807 | 1,496,643 |
| Scenario II | N/A | 1,155,397 | 1,170,248 | 1,209,372 | 1,244,123 | 1,295,569 |
2012 Update of the OCWP

Minimizing Drought Impacts

Conservation & Augmentation

— “Water For 2060” law arising from OCWP statewide goal of consuming no more fresh water in 2060 than we consume today

— Advisory Council now studying innovative solutions to forecasted water shortages
  — voluntary programs/policies
  — financial incentives
  — education
2012 Update of the OCWP
Minimizing Drought Impacts

Conservation & Augmentation

– Investigation of marginal quality sources (brackish groundwater, treated wastewater, oil/gas production water, stormwater runoff, etc.)
2012 Update of the OCWP

Minimizing Drought Impacts

Conservation & Augmentation

- Study of potential artificial aquifer recharge sites
2012 Update of the OCWP

Minimizing Drought Impacts

Conservation & Augmentation

– Study of potentially viable reservoir sites
2012 Update of the OCWP

Minimizing Drought Impacts

Enhancing Data and Studies

– Increased funding for data collection and modeling of surface and groundwater sources

OCWP Priority

2013 GMAP Sites
What’s Next?

– Work more directly with Oklahoma water systems and establish resources to create “Drought-Proof Communities”

  • Encourage regionalization of supplies, where feasible
  • Provide financing for leak detection projects, conservation, construction of reservoir storage, etc.