

# Maximizing Southwest Oklahoma's Water Supply Reliability



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# Southwest Oklahoma

(Major Water Supplies & Suppliers)



# About Altus...

- The economic hub of SW Oklahoma
- Altus Air Force Base:
  - Primary employer at 4,250 jobs
  - \$350 million/year economic impact
- Agriculture Industry:
  - \$200+ million/year in cotton production
  - Altus-area production facilities



# SW Oklahoma Water Supply

**Mountain Park  
Master Conservancy  
District**

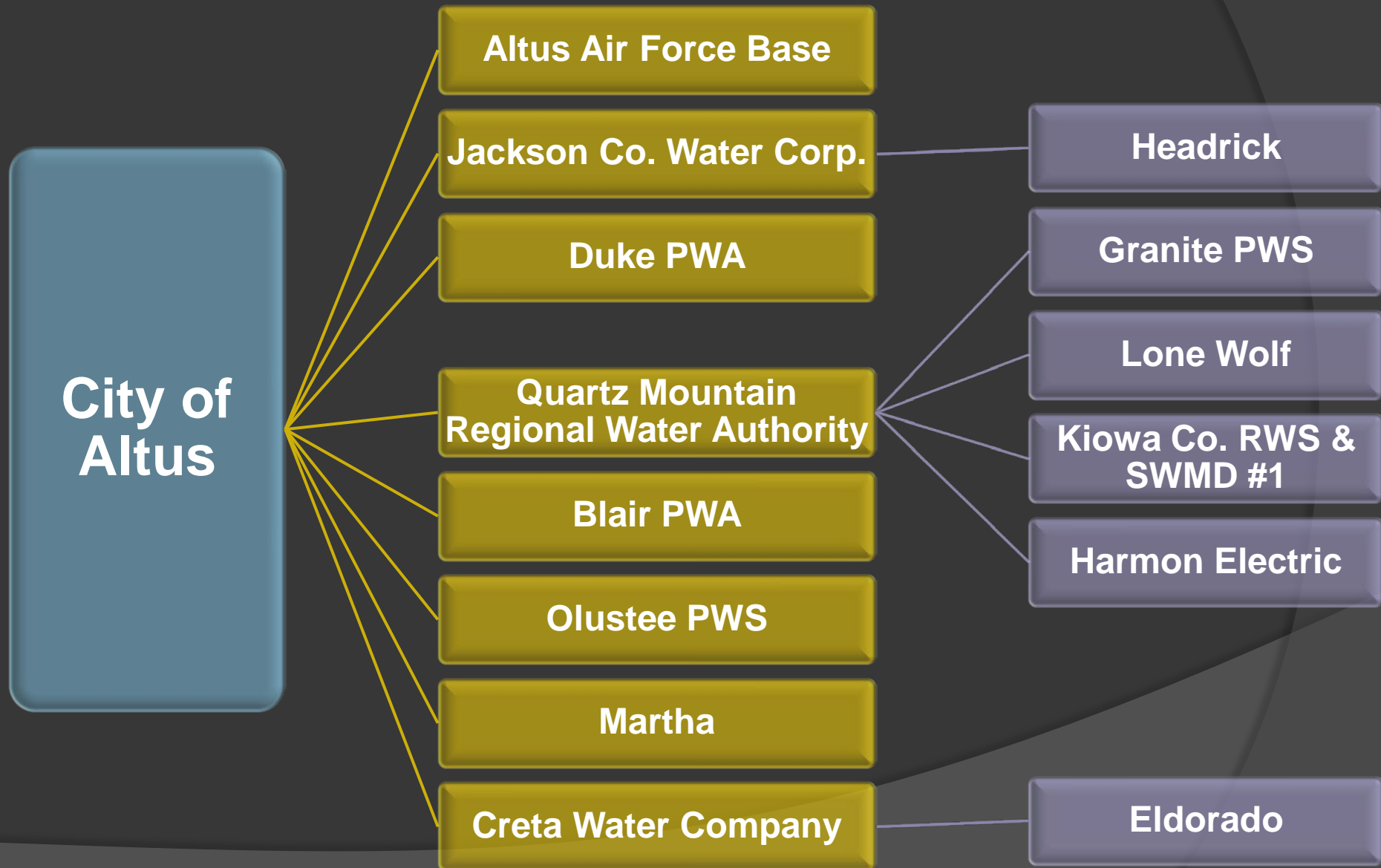
**Southwest Oklahoma's  
Primary Public Water  
Supplier**

**Altus**

**Snyder**

**Frederick**

# SW Oklahoma Water Supply



# SW Oklahoma Water Supply

**Lugert-Altus Irrigation  
District**

**Fuels Southwest Oklahoma's  
Chief Economic Sector**

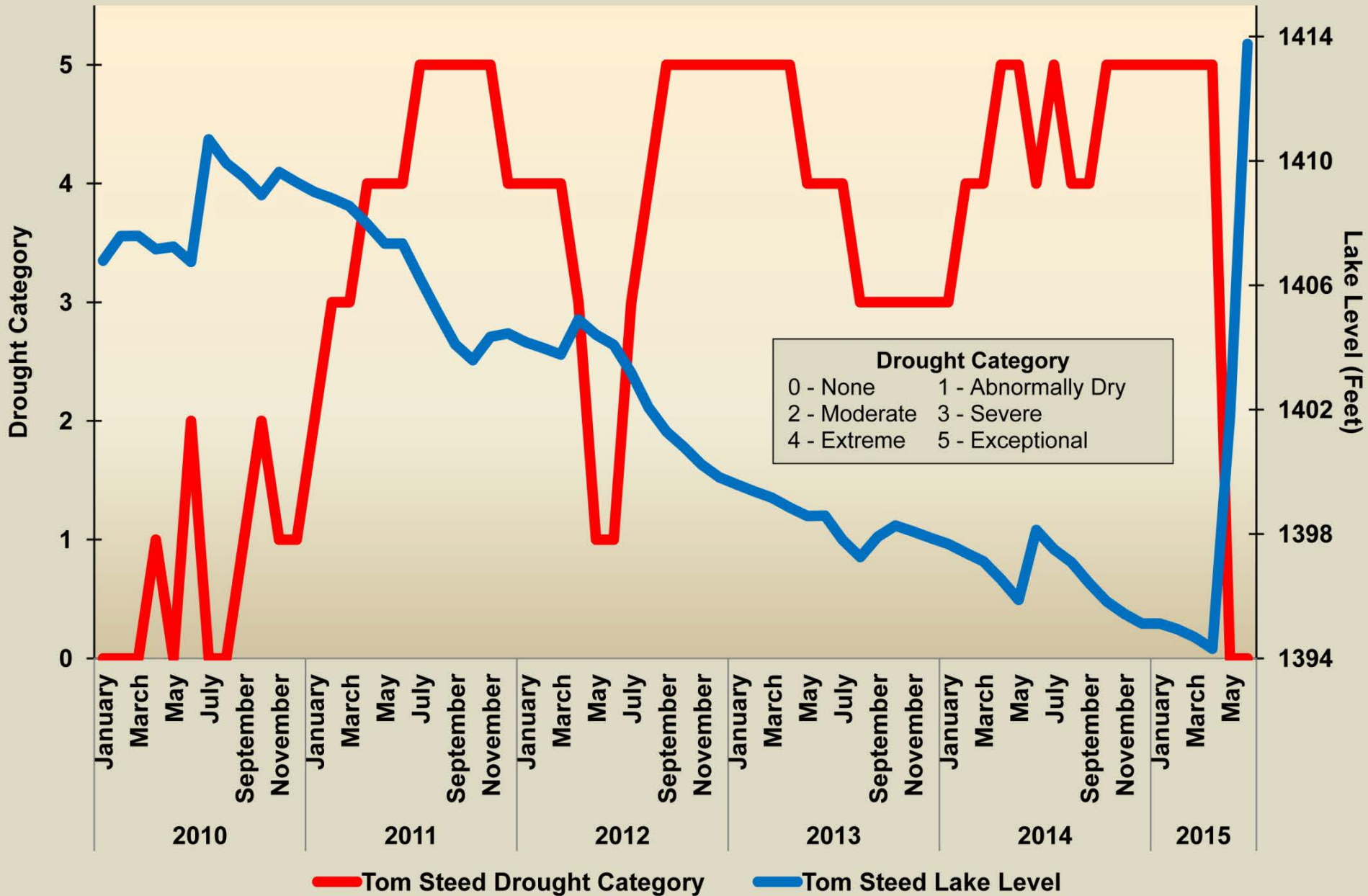
**47,000 Acres of  
Irrigated  
Agriculture  
(Hundreds of  
Members)**

# The 2010-15 Drought

- More than 5 years of progressively worsening precipitation deficits
- Severe impacts to all economic sectors
- Drastic lake level reductions decimated municipal/agricultural water supplies:
  - Tom Steed
  - Lugert-Altus Reservoir

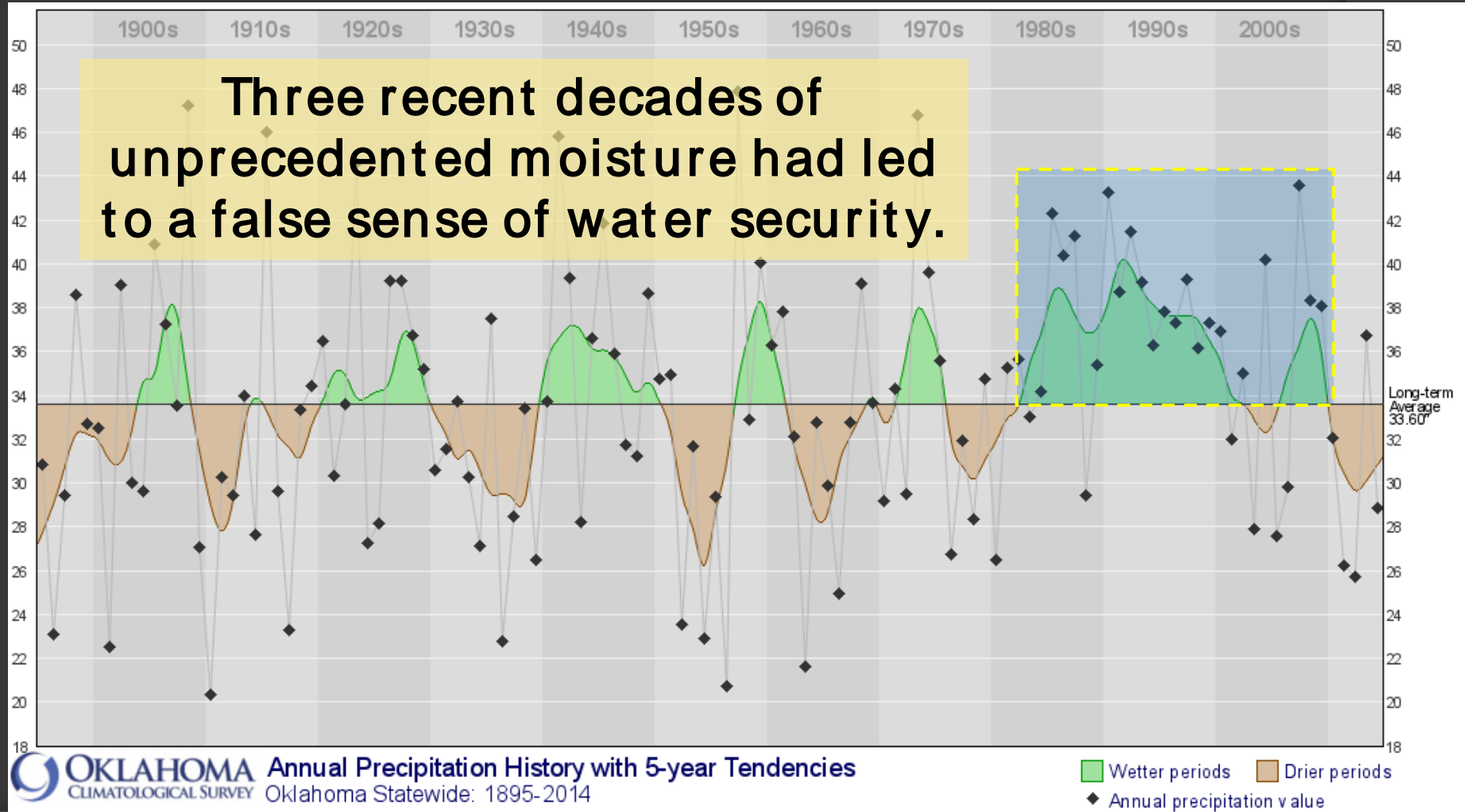


# Tom Steed Drought Conditions & Lake Level 2010 - 2015



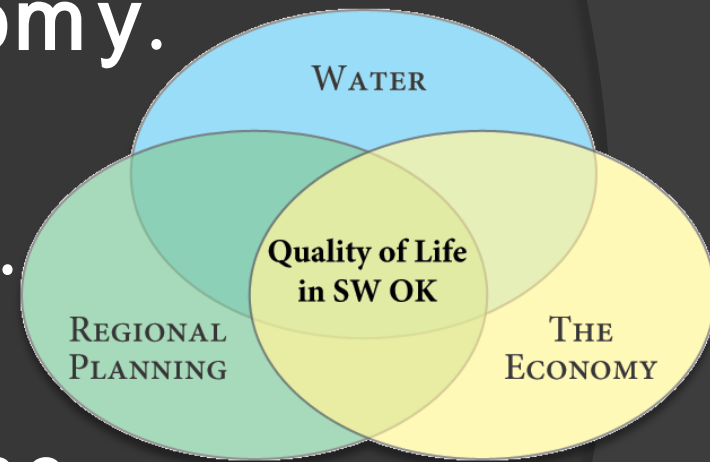


# Oklahoma's Precipitation History



# The 2010-15 Drought: What we learned...

- Drought has the power to devastate SW OK's economy.
- We must minimize our **vulnerability** to drought.
- Water managers should assume that dryness is the "new normal" and plan accordingly in cooperation with all **regional stakeholders**.



# The 2010-15 Drought:

## Our response...

- Improve southwest Oklahoma's water supply reliability.
- Unify stakeholders & leverage common water supply and economic development goals:
  - SW OK Water Supply Task Force (2013>):
    - City of Altus
    - Mountain Park Master Conservancy District
    - Lugert-Altus Irrigation District
    - Altus Air Force Base
    - Agriculture, Industry, and Business

# SW Oklahoma Water Supply Task Force

- Initiated regular meetings in 2013 to develop a long-term plan with phased Action Strategies
- Permanent organization

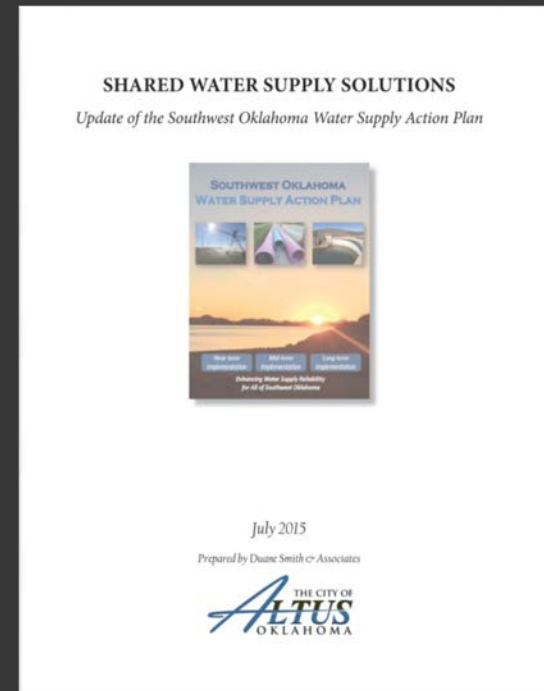


# Southwest Oklahoma Water Supply Action Plan (SWAP)

● Completed May 2014



● Updated July 2015



FACILITATION &  
ENGINEERING SUPPORT

Duane  
**SMITH**  
& Associates

**carollo**  
Engineers...Working Wonders With Water™  
Engineers...Working Wonders With Water™

# Southwest Oklahoma Water Supply Action Plan



## Key Findings

- Region is over-reliant on limited surface water supplies
- More reliable groundwater supplies are available



# Southwest Oklahoma Water Supply Action Plan



## Primary Goals for Altus

- Balance water supply
- Increase reliability of Tom Steed
- Decrease the pressure on Tom Steed
- Expand the city's groundwater supply
- Mitigate THMs

# SWAP Strategies:

## Maximizing Water Reliability

### NEAR-TERM

Groundwater  
Supplies

Water  
Conservation

Unified Drought  
Response

SWAP Advisory  
Committee

### MID-TERM

Divert Flows to  
Storage

Interconnection  
of Systems

Non-Potable  
Reuse

Altus Lake  
Rehabilitation

### LONG-TERM

Reservoir  
Development

Potable Reuse

Transbasin  
Sources

# Implementation

\$2.3 million  
OWRB loan

\$575,000 OWRB  
Drought Grant

## Additional Groundwater Supplies

- Develop additional wells and infrastructure to bring up to 2 MGD of groundwater into Altus municipal system:
  - ✓ Reactivate Round Timber and Holloway well fields (Texas)
  - ✓ Provide supply redundancy
  - ✓ Blending to reduce THMs

# Implementation

Funded by  
City of Altus

## Treatment Plant Renovation

- Bring Altus RO plant back online to enhance treatment of Lugert-Altus Reservoir water, address THM concerns and provide for future GW supply treatment:
  - ✓ redesign and retrofit plant to accommodate conventional pretreatment

# Ongoing Implementation

Funded by  
City of Altus  
(\$1.2 million)

## Additional Groundwater Supplies (Augmentation)

- New wells downstream of Tom Steed dam will increase Mountain Park delivery capacity (>20%):
  - Blending (THMs)
  - Supply distributed to Altus and/or Snyder through direct transmission via existing raw water lines
  - 2016

# Ongoing Implementation

**Divert  
Additional  
Flows to  
Existing  
Storage  
(Tom Steed)**

- Investigation by Bureau of Reclamation
- Supplement supply at Tom Steed Reservoir
- Widen existing Bretch Diversion Canal and divert more flows from Elk Creek
- 2016/2017



# Ongoing Implementation: Water Conservation

## City of Altus

- New restrictions/Ordinance
- Restructure water/utility rates
- Investigating leak detection study
- Smart meters

## Mountain Park

- Customers have reduced use by 40%

## Altus AFB

- Exemplary water use habits
- THM Monitoring

## LAI Efficiencies

- Drip irrigation systems
- Tailwater pits catch and retain runoff
- Reuse



# Ongoing Implementation

## Cable Mountain Reservoir Project

- Downstream of Lugert-Altus on North Fork
- Estimated yield 100,000-120,000 AFY
- \$300 million (estimated)
- Augment LAID supply through pumping plant, pipeline and canal
- Companion **chloride control** project will improve quality
- Potential regional water supply source (OK/TX cities and military installations)
- Reclamation will fund engineering study; previously studied by COE

# Future Implementation

## Other Initiatives

- ◎ Unified Drought Response Plan:
  - Early stages of development
- ◎ Interconnection of Water Systems:
  - Investigating opportunities
- ◎ Non-Potable Reuse:
  - Potential at City of Altus, AFB & LAID
- ◎ Potable Reuse:
  - Possibly augment Tom Steed/LAID supply with reclaimed wastewater
- ◎ Other Reservoir Development:
  - Trico Project on North Fork upstream of Lugert-Altus
- ◎ Transbasin Sources

# Questions?

