

Maximizing Southwest Oklahoma's Water Supply Reliability



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GREER

KIOWA

*Lugert-Altus
Reservoir*

*Tom Steed
Reservoir*

Lugert-Altus
Irrigation
District

Mountain
Park MCD

Altus
Air Force
Base

Altus

HARMON

JACKSON

TILLMAN

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**

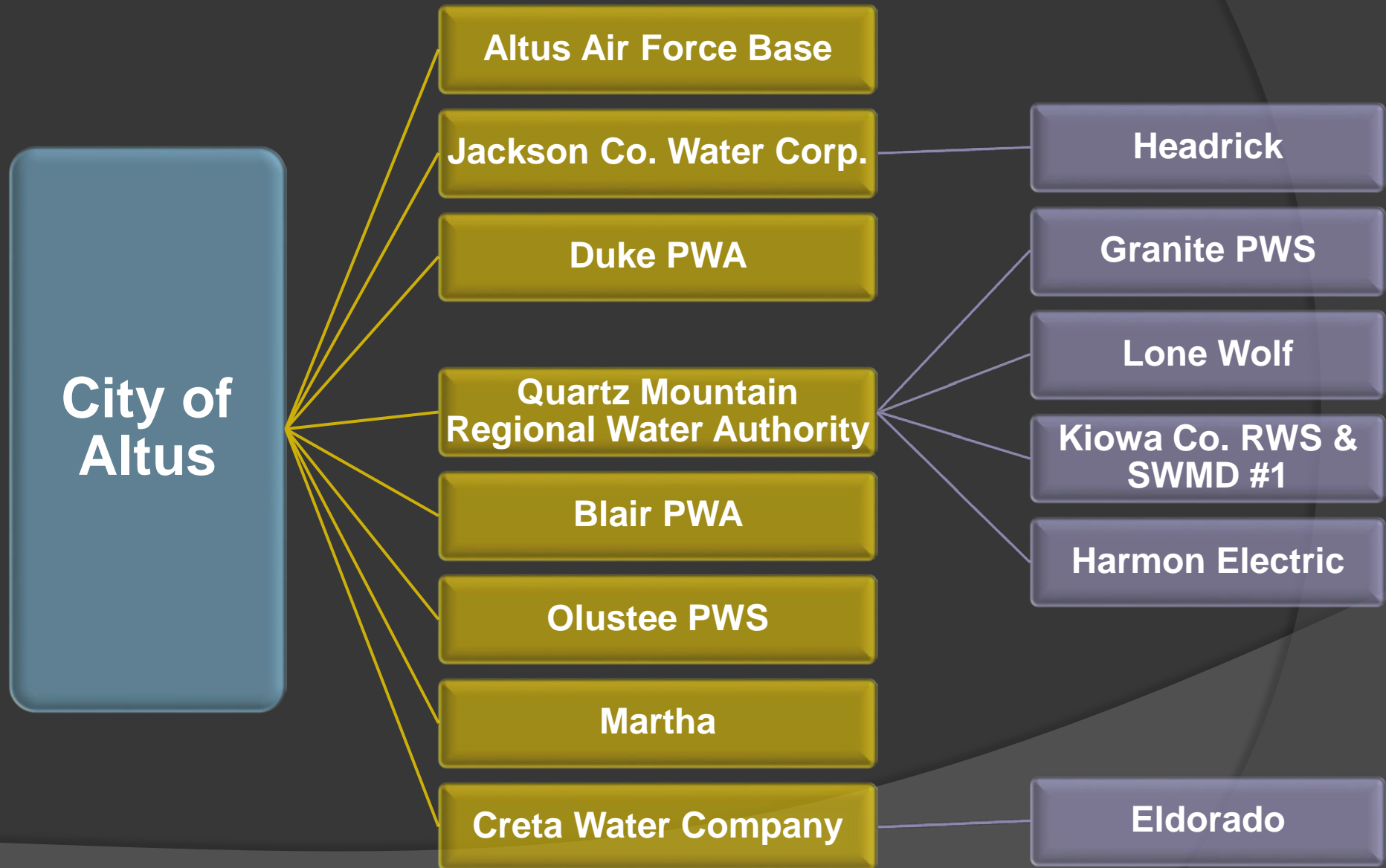
**Southwest Oklahoma's
Primary Public Water
Supplier**

Altus

Snyder

Frederick

SW Oklahoma Water Supply



SW Oklahoma Water Supply

**Lugert-Altus Irrigation
District**

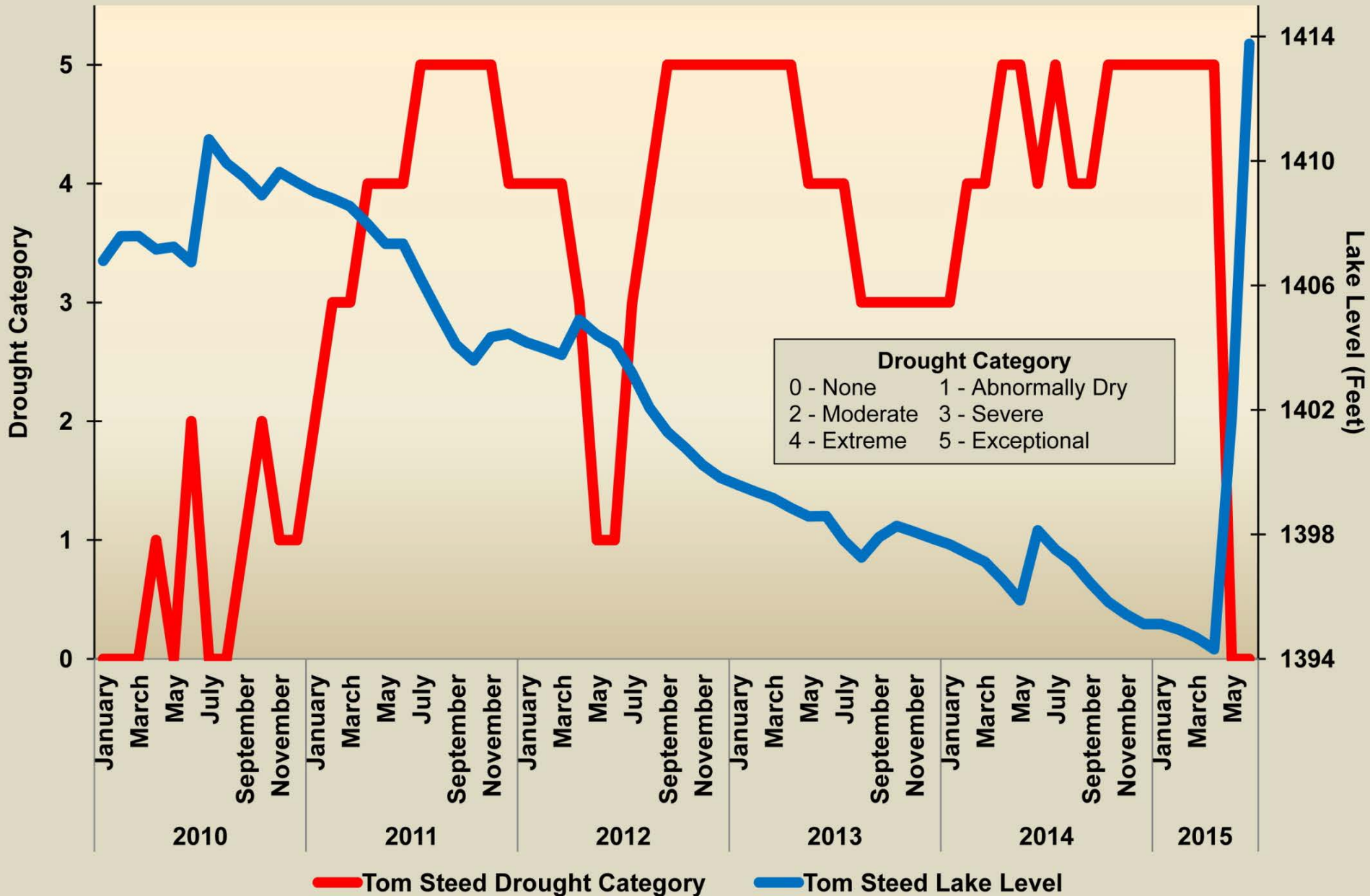
**Fuels Southwest Oklahoma's
Chief Economic Sector**

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

The 2010-15 Drought

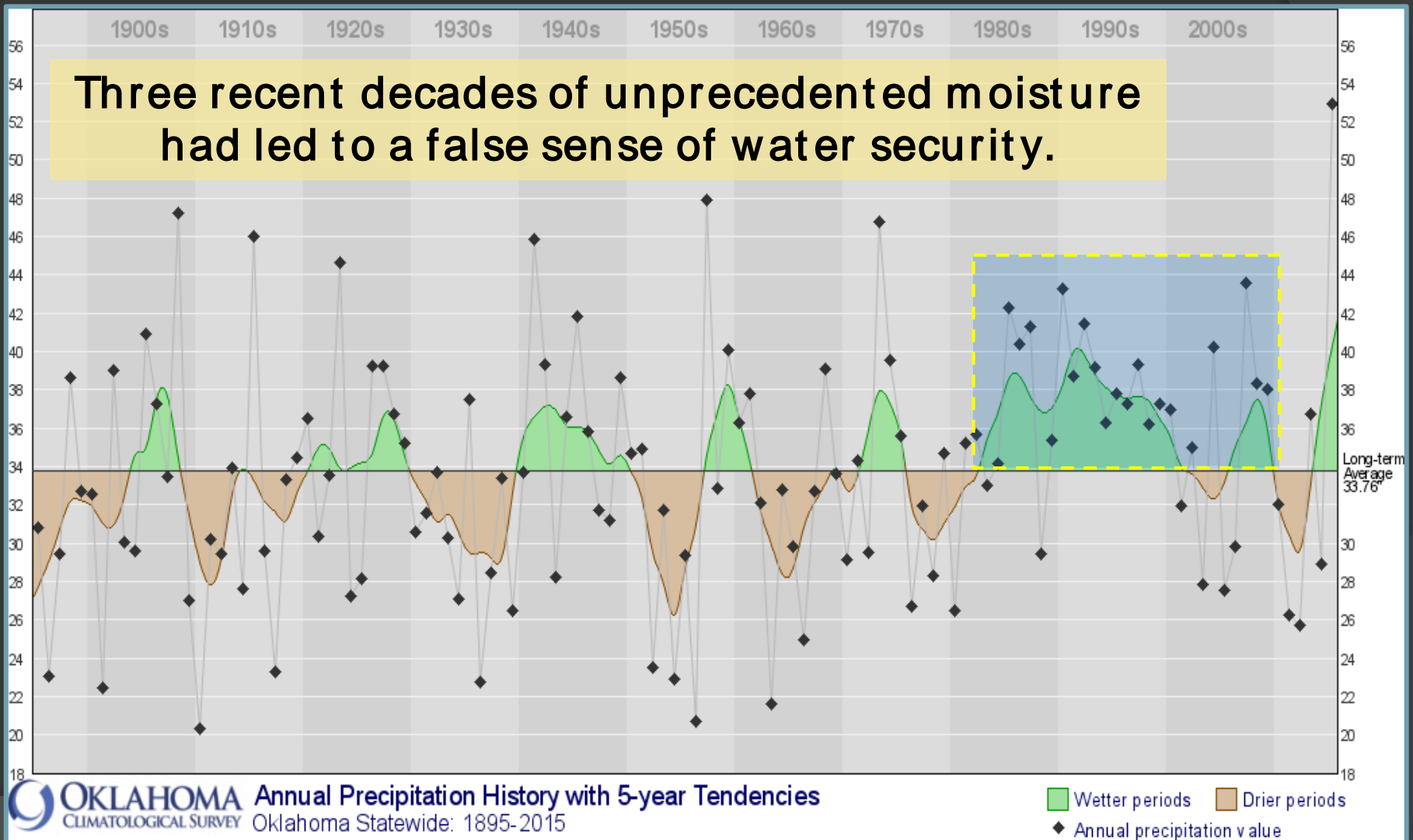
- ⦿ More than 5 years of progressively worsening precipitation deficits
- ⦿ Severe impacts to all economic sectors
- ⦿ Drastic lake level reductions decimated municipal/agricultural water supplies:
 - Tom Steed
 - Lugert-Altus Reservoir

Tom Steed Drought Conditions & Lake Level 2010 - 2015



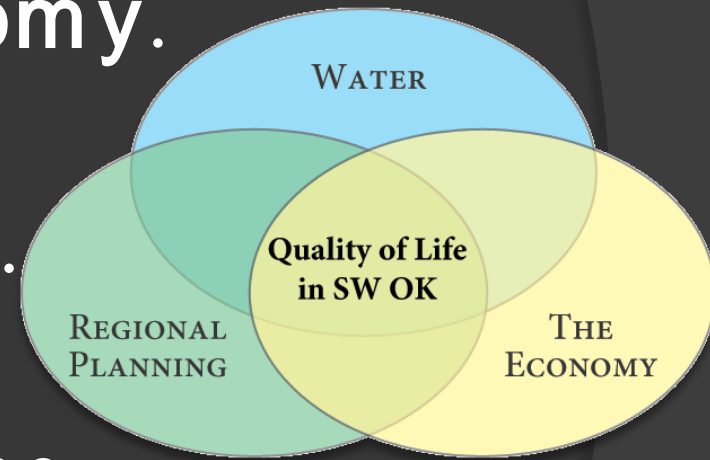
Oklahoma's Precipitation History

Three recent decades of unprecedented moisture had led to a false sense of water security.



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

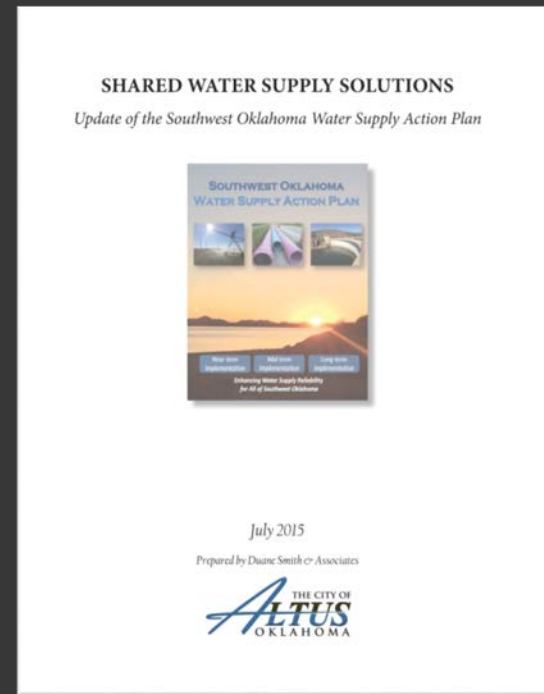


Southwest Oklahoma Water Supply Action Plan (SWAP)

● 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?

