WATER SUPPLY UPDATE

Denise Hickey, NTMWD Public Relations and Water Conservation Manager
North Texas Municipal Water District
October 25, 2014
WATER is more than a quality of life issue

LIFE cannot exist without it,
Nor can our ECONOMY!
NTMWD Vision

Regional Service Through Unity…
Meeting our Region’s needs
Today and Tomorrow
NORTH TEXAS MUNICIPAL WATER DISTRICT
BACKGROUND
NTMWD: A RESPONSIBLE AUTHORITY

- Serves 61 cities, communities, and water supply cooperation's
- Provides services through contracts with municipalities
- NTMWD services provided at cost
- NTMWD does not levy or spend tax money for capital or operating expenses
- Water, Wastewater, and Solid Waste Systems are completely separate financially
HISTORY OF NTMWD

- 1956 - First Delivery of Treated Water
- 1970s - Expanded to Wastewater Service
- 1980s - Expanded to Solid Waste Service
PLANNING FOR GROWTH
STATE WATER PLANNING

- Senate Bill 1
- “Bottom Up” Water Planning Process
- Texas Water Development Board
  - Adopted Water Planning Rules
  - 16 Regional Planning Areas
TEXAS POPULATION PROJECTIONS

- **2000**: 21 million
- **2030**: 34 million
- **2060**: 46 million
REGION C WATER PLANNING GROUP

- Region C represents the Metroplex and surrounding area
- All or part of 16 counties
- **About ¼ of Texas’ population**
- 90% of water use for municipal
- 90% is surface water
NEW SUPPLIES – 2012 WATER PLAN

- New Major Reservoir: 17%
- Connection/Reallocation of Existing Supplies: 34%
- Groundwater: 9%
- Reuse: 10%
- Conservation: 24%
- Other: 6%
UNIT COSTS OF POTENTIALLY FEASIBLE MAJOR STRATEGIES FOR REGION C

<table>
<thead>
<tr>
<th>Raw Water</th>
<th>Treated Water</th>
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<tbody>
<tr>
<td>TRWD Wetlands</td>
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<tr>
<td>Main Stem Trinity PS</td>
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<tr>
<td>Lewisville Reuse</td>
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<tr>
<td>Ray Hubbard Reuse</td>
<td></td>
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<tr>
<td>Lower Bois d'Arc Creek</td>
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<tr>
<td>Parkhouse North</td>
<td></td>
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<tr>
<td>TRWD Integrated Pipeline</td>
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<tr>
<td>Texoma Not Auth. (Blend)</td>
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<tr>
<td>New Lake Texoma (Blend)</td>
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<tr>
<td>Lake Ralph Hall and Reuse</td>
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<tr>
<td>Tawakoni Pipeline</td>
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<tr>
<td>Parkhouse South</td>
<td></td>
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<tr>
<td>Marvin Nichols Reservoir</td>
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<tr>
<td>Oklahoma Water</td>
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<tr>
<td>Wright Patman - Raise Pool</td>
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<tr>
<td>Lake Columbia</td>
<td></td>
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<td>Lake Palestine</td>
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<td>Lake Livingston</td>
<td></td>
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<tr>
<td>Toledo Bend Reservoir</td>
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<tr>
<td>Wright Patman - Texarkana</td>
<td></td>
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<tr>
<td>Wright Patman - System</td>
<td></td>
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<tr>
<td>Lake Texoma Desalinate</td>
<td></td>
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<tr>
<td>Lake Not Authorized (Desalinate)</td>
<td></td>
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<tr>
<td>Tehuacana Reservoir</td>
<td></td>
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<tr>
<td>Carrizo-Wilcox (Brazos Co.)</td>
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<tr>
<td>Ogallala Groundwater</td>
<td></td>
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<tr>
<td>Neches River Run-of-River Diversion</td>
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<tr>
<td>Gulf of Mexico</td>
<td></td>
</tr>
</tbody>
</table>

Unit Cost (per Thousand Gallons)
## Socio-Economic Impacts in Region C of Not Meeting Projected Demands

<table>
<thead>
<tr>
<th>Year</th>
<th>Income ($ Millions)</th>
<th>State and Local Taxes ($ Millions)</th>
<th>Jobs Lost</th>
<th>Population Losses</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>$2,682.23</td>
<td>$129.50</td>
<td>23,808</td>
<td>12,490</td>
</tr>
<tr>
<td>2020</td>
<td>6,668.39</td>
<td>340.74</td>
<td>52,165</td>
<td>28,278</td>
</tr>
<tr>
<td>2030</td>
<td>15,687.26</td>
<td>847.87</td>
<td>131,257</td>
<td>73,478</td>
</tr>
<tr>
<td>2040</td>
<td>24,553.45</td>
<td>1,287.96</td>
<td>206,836</td>
<td>111,021</td>
</tr>
<tr>
<td>2050</td>
<td>33,440.87</td>
<td>1,671.87</td>
<td>270,935</td>
<td>148,215</td>
</tr>
<tr>
<td>2060</td>
<td>$61,457.79</td>
<td>$3,059.54</td>
<td>546,676</td>
<td>244,179</td>
</tr>
</tbody>
</table>
PLANNING FOR DROUGHT
INITIATE DROUGHT PLANS
NTMWD / MEMBER CITIES & CUSTOMERS

- Stage 3
- 10%
- Need upwards of 15% - 20% through the summer
- Actually achieved 28% water use reductions

- Limits watering with automatic irrigation systems/sprinklers to
  Once every TWO weeks
- Turn System OFF
- Water only if needed
- Be mindful of weather conditions
DROUGHT

- Texoma coming online – Good Thing!
- Drought conditions still exist in Lavon and Chapman
- Extending Stage 3 helps delay implementing Stage 4

- Drought is temporary – there is an end to drought – just don’t know when that will be

- Preserve supplies for:
  - Public Health
  - Sanitation
  - Fire Suppression Capabilities
 CONDITIONS IMPACTING SUPPLY

- Climatological Condition
  - Types of Drought
    - Meteorological – less than average precipitation
    - Agricultural – affects crop production
    - Hydrological – reservoirs fall below statistical average
Drought Impact on Texas Surface Water

September 9, 2014

Drought Severity Index
- Nothing
- D0 - Abnormally Dry
- D1 - Drought - Moderate
- D2 - Drought - Severe
- D3 - Drought - Extreme
- D4 - Drought - Exceptional

Sources
- NDMC
- USDA
- NOAA
- TCEQ Office of Water

Drought Monitor Dataset developed by the National Drought Mitigation Center (NDMC)
U.S. Department of Agriculture (USDA) and National Oceanic & Atmospheric Administration (NOAA)
U.S. Seasonal Drought Outlook
Drought Tendency During the Valid Period
Valid for August 21 - November 30, 2014
Released August 21, 2014

**KEY:**
- **Red**: Drought persists or intensifies
- **Light Brown**: Drought remains but improves
- **Green**: Drought removal likely
- **Tan**: Drought development likely

Author: David Miskus, Climate Prediction Center, NOAA

Depicts large-scale trends based on subjectively derived probabilities guided by short- and long-range statistical and dynamical forecasts. Short-term events -- such as individual storms -- cannot be accurately forecast more than a few days in advance. Use caution for applications -- such as crops -- that can be affected by such events. "Ongoing" drought areas are approximated from the Drought Monitor (D1 to D4 intensity).

For weekly drought updates, see the latest U.S. Drought Monitor.

NOTE: The tan area areas imply at least a 1-category improvement in the Drought Monitor intensity levels by the end of the period although drought will remain.
The Green areas imply drought removal by the end of the period (D0 or none)
In summary, a second year of drought in Texas is likely. Whether the drought will end after two years or last three years or beyond is impossible to predict with certainty, but what is known is that **Texas is in a period of enhanced drought susceptibility due to global ocean temperature patterns and has been since at least 2000.**
The good news is that these global patterns tend to reverse themselves over time, probably leading to an extended period of wetter weather for Texas, though this may not happen for another three to fifteen years. Looking into the distant future, the safest bet is that global temperatures will continue to increase, causing Texas droughts to be warmer and more strongly affected by evaporation.
Summary.....Current drought could last through the end of the decade
THE IMPORTANCE OF CONSERVATION AND THE EFFICIENT USE OF WATER
THE IMPORTANCE OF CONSERVATION AND THE EFFICIENT USE OF WATER

- Conservation and Efficiency Reduces Demand
  - Delays Capital Improvements
  - Saves money
- Avoids running out of water during times of drought

- Conservation and Efficiency is REQUIRED in Permitting New Supplies
# NTMWD Reservoir Elevations

**October 22, 2014**

<table>
<thead>
<tr>
<th>Reservoir</th>
<th>Conservation Pool Elevation</th>
<th>Current Elevation</th>
<th>Down</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Lavon</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30%</td>
<td>492.0’</td>
<td>479.48’</td>
<td>-12.52’</td>
</tr>
<tr>
<td></td>
<td>(Last full on 5-14-12)</td>
<td></td>
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</tr>
<tr>
<td><strong>Chapman</strong></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>15%</td>
<td>440.0’</td>
<td>428.44’</td>
<td>-11.56’</td>
</tr>
<tr>
<td></td>
<td>(Last full on 4-14-10)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Tawakoni</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8%</td>
<td>437.5’</td>
<td>426.22’</td>
<td>-11.28’</td>
</tr>
<tr>
<td><strong>Texoma</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>28%</td>
<td>617.0’</td>
<td>610.82’</td>
<td>-6.18’</td>
</tr>
</tbody>
</table>
WHAT YOU CAN’T PLAN FOR IS
THE LOSS OF 28%
OF YOUR TOTAL WATER SUPPLY
Project Now Online

May 15, 2014 – started small pump
May 19, 2014 – started large pump
Began with 10 MGD flow
Slow ramp up to 75 MGD
Currently online:

In service:
WTPs III/IV – May 2014
WTP I/II – June 2014
## OVERALL PROJECT COST SUMMARY

<table>
<thead>
<tr>
<th>Item</th>
<th>Current (Million)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CMAR/Construction</td>
<td>$280</td>
</tr>
<tr>
<td>Engineering</td>
<td>$17</td>
</tr>
<tr>
<td>Land</td>
<td>$9</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$306 +/-</strong></td>
</tr>
</tbody>
</table>
NTMWD STRATEGIES
LAKE JIM CHAPMAN DREDGING OF INTAKE CHANNEL
LAKE JIM CHAPMAN PROJECT STATUS

Scope

- Restores bottom of channel to elev. 412
  - Current silt elev. is 422
- Removal of sediment from 4,200 LF of intake channel
- Access from exposed shoreline near pump station
LAKE JIM CHAPMAN PROJECT STATUS

Schedule:
- Contract time bid: 140 days
- Estimated Completion: July 2014

Cost:
- $1.8 Million
LAVON LAKE DREDGING OF INTAKE CHANNEL
Dredging at RWPS 2 and RWPS 3

Schedule:
- Design/Permitting/Board Action: September 2014
- Completion: May 2015
DALLAS WATER SUPPLY
DALLAS WATER SUPPLY CONTRACT

- Approved and contract signed by both Dallas and NTMWD
- NTMWD to purchase up to 60 million gallons per day
- Begin pumping water on May 13, 2013
- Requesting an extension to the contract
Water My Yard

A project of the North Texas Municipal Water District-Water IQ Program and the Irrigation Technology Program of Texas A&M Agrilife Extension Service.

A HEALTHY LANDSCAPE ACTUALLY REQUIRES LESS WATER THAN YOU MAY THINK. The "Water My Yard" program has been established as a tool to assist you in determining an adequate amount of supplemental water that is needed to maintain healthy grass.

It only takes a few short steps to begin receiving a weekly email to know how much water your landscape actually requires based on local weather conditions - effective rainfall, solar radiation, relative humidity and wind.

What is ET?
Start here: Select your service area: ▼

To begin, click on the map where your home is located. Help?
<table>
<thead>
<tr>
<th></th>
<th>Image</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drip</td>
<td><img src="image-url" alt="Drip Image" /></td>
<td>Applies water through dripping emitters in a buried hose in the lawn’s root zone.</td>
</tr>
<tr>
<td>Multi-stream</td>
<td><img src="image-url" alt="Multi-stream Image" /></td>
<td>Applies water in multiple moving streams across the lawn, typically in either a circle, half circle, or quarter circle pattern.</td>
</tr>
<tr>
<td>Rotor</td>
<td><img src="image-url" alt="Rotor Image" /></td>
<td>Applies a single stream of water that rotates in a circular pattern over the lawn.</td>
</tr>
<tr>
<td>Spray</td>
<td><img src="image-url" alt="Spray Image" /></td>
<td>Applies a solid continuous fan of water across the lawn, typically in either a circle, half circle, or quarter circle pattern.</td>
</tr>
<tr>
<td>Custom</td>
<td><img src="image-url" alt="Custom Image" /></td>
<td>If you know your precipitation rate you can enter it here.</td>
</tr>
</tbody>
</table>
Email Settings

- I have an account and would like to save my current settings
- I want to create an account based on the current settings
- I forgot my password, please email me a new one

Email:  
Confirm Email:  
Password:  
Confirm Password:  
First Name:  
Last Name:  

Create my account
QUESTIONS