



golf industry show

GCSAA Education Conference | Trade Show | GCSAA Golf Championships
San Diego Convention Center | February 6-11, 2016



PRESENTING PARTNERS



PARTICIPATING PARTNERS





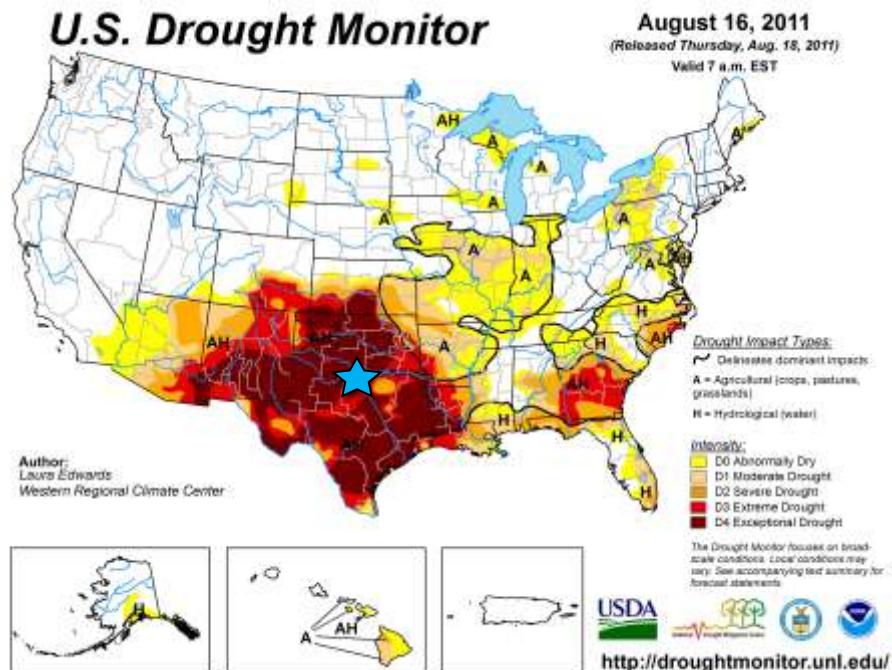
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Drought Planning for
Imposed Water Restrictions
by
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Summer of 2011

- Semi-arid climate, high ET rates
 - 28.5" yearly average rainfall
- Wichita Falls 2011 weather stats:
 - Avg. temp 91.9
 - 12 days 110+
 - 20 days 105+
 - 100 days over 100, with 52 consecutive
 - 115 days over 95, with 73 consecutive
 - 25 record setting highs
 - 11.87" rainfall in 2011



Imposed mandatory water restrictions

- City of Wichita Falls uses multiple lakes for their water supply
- City established a drought contingency plan based on lake levels for the community
 - Stage 1 – reduce water consumption 30%
 - Stage 2 – water one day per week
 - Stage 3 – further outdoor watering reductions
 - Stage 4 – total ban on outdoor watering
- Additional water surcharge for each stage

2011 - Managing with 30% less water

- Identified areas to reduce watering
 - Increased native areas
- Irrigation audit
 - Level irrigation heads
 - Nozzle configuration
- Handwatering!!
 - Use of moisture meters
 - Target hand watering in specific areas in play and monitor



2011 - Managing with 30% less water

- Increased mowing height by 25%
- Increased aerification program
- Adjusted fertilization programs
 - Applied organics
- Adjusted pre-emergent programs
 - Oxadiazon products



2011 - Managing with 30% less water



2012 - City imposed water restrictions

- Golf courses can only water one day per week
 - Greens can be watered for no more than 5 min with irrigation heads
- Goal was to reduce water usage by additional 50%
 - Homeowners and businesses had same restrictions
- All management decisions revolved around the irrigation day



2012 - Management under single day irrigation

- Incorporated wetting agents:
 - Applied the day before the irrigation event
- Fertigation was incorporated with irrigation events
- Solid tine aerify tees and fairways
- Main goal was all about moisture movement into the profile to sustain plant health



2012 - Management under single day irrigation

- Cart Restrictions
 - Followed 90 degree rule in mornings
 - Afternoons were cart path only
 - Friday and Saturday were normal cart rules
 - HOC were still raised
- Goal was to keep people golfing



2012 -Management under single day irrigation



2013 – Managing under severe water restrictions

- City entered into Stage 3 drought
 - “Survival mode”
 - Greens can be watered for no more than 5 min with irrigation heads
 - Tees can be watered for one day per week
 - Fairways and rough could NOT be watered
 - Were still able to handwater



2013 – Managing under severe water restrictions

- Raise mowing heights as much as possible (0.600+)
- Utilize moisture when possible
 - Apply wetting agents and/or fertilizers around rain events
 - We were fortunate to get some timely rainfall
- Applied pigments to fairways for definition





May 2013



June 2013



July 2013



August 2013

Preparations for Stage 4 and the future

- Located and drilled for water wells
- Switched over to well water to fill irrigation ponds
- Applied with state to use water from stream running through the course
- Additional expansion of native grass areas
- Discussed with city officials about effluent water
- Stage 4 – total ban on outdoor watering with city water



Trees and Water Quality

- Bi-Monthly water testing
 - Definitely increased bicarbonates
- Trees were affected for several years
- Staff used water tanks to fill gator bags



Greens program

- Moisture Meters
 - Find your number, see how low you can go
 - Live by the hose
- Venting and hydroject during summer
- Use of wetting agents
- Regular aerification program
- Regular topdressing program
- Spoon feed fertility and PGRs



Communication

- Develop a drought plan with your facility
 - Members/owner/officials/etc.
- Know your numbers: water and cost
- Get involved with the policy
 - Member of a Water Task Force group with city officials
- Stay positive and proactive
 - Be in front of the situation (members, officials, GM/Pro's)

Public Perception

- A community wide issue that everyone had to deal with
 - Lake levels were monitored weekly by the city
- Any outdoor watering was a negative
 - City had officers to monitor any illegal use of water
- Keep involved and communicate with city officials
- Keep the member/golfer using the facility

What I learned...

- Plan and prepare for the worst case scenario
- Managing moisture
 - Value in moisture meters and mapping soil moisture
- Wetting agent types and how they work
 - Find the best for your situation
- Resiliency of the turf and how dry it can be maintained
- Being involved and positive communication!!
- Every drop of water is important