

# The Woodlands Township Impact of Weather/Drought



August 24, 2022

# Presentation Outline

- Weather/Drought Information
- Water Conservation
- Homeowner and Drought
  - Trees/Landscape
  - Fire Hazards
  - Tree Removal
- Township and Drought
  - Streetscapes
  - Forest Health
  - Parks/Ponds



# Weather/Drought Information

## Texas Water Board (8/22)

- Severe Drought
- Updated/Changes weekly

## Water Weekly

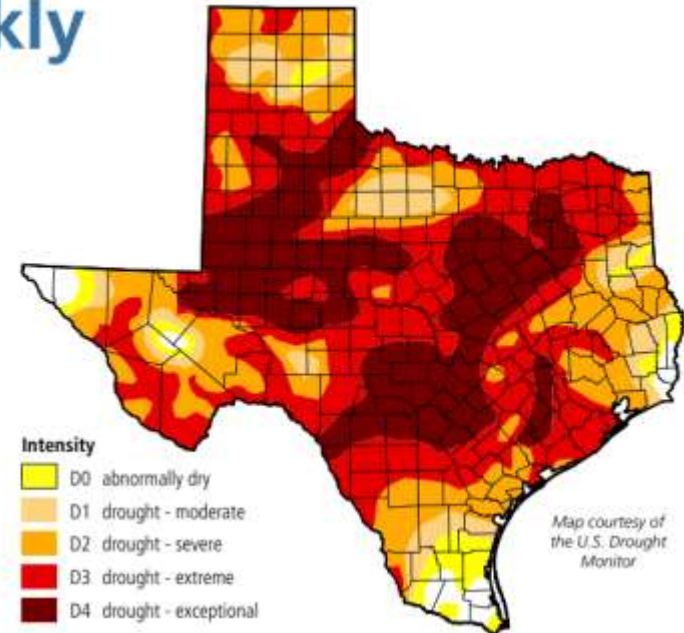
For the week of 08/22/22

### Water conditions

The drought map for August 16 conditions shows two categories of improvement in parts of South Texas after Invest 98L, a low-pressure system from the Gulf of Mexico, brought significant rain to that region. The area of the state in drought contracted three percentage points from the previous week.

### Drought conditions

- ◆ 93% now
- ◆ 96% a week ago
- ◆ 81% three months ago
- ◆ 1% a year ago

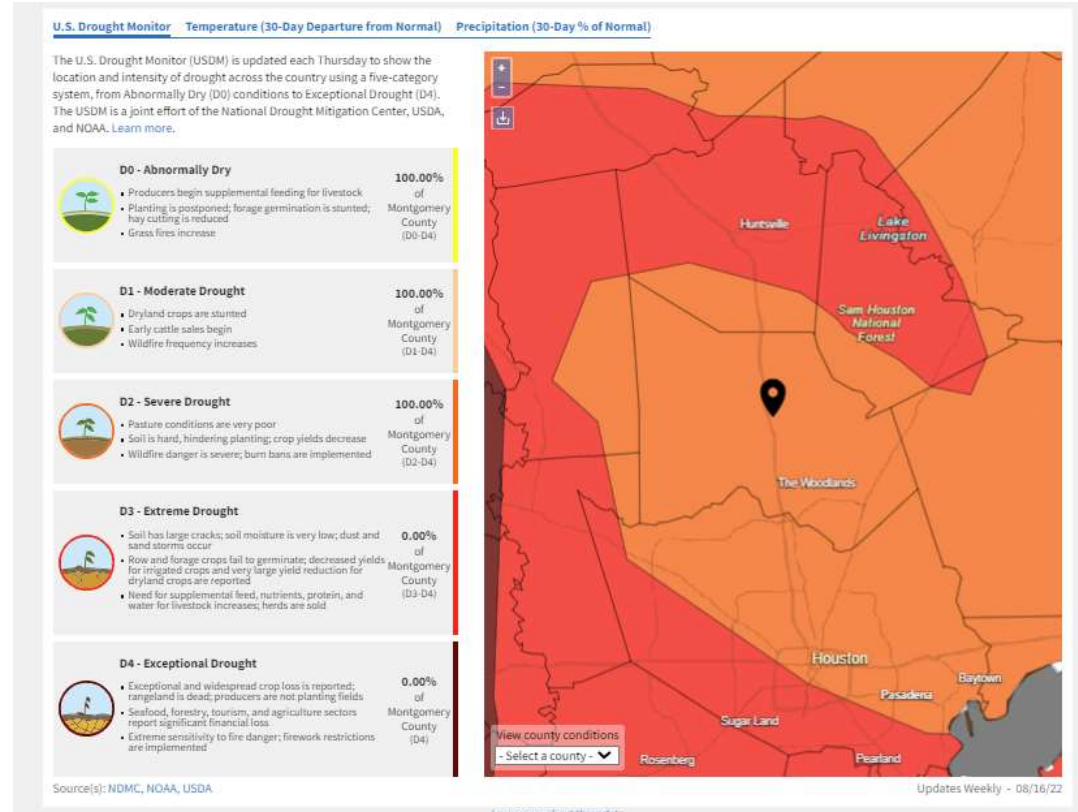


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# Weather/Drought Information

Drought.gov (8/22)

- 0%- Exceptional Drought
- 0%- Extreme Drought
- 100%- Severe Drought



# Weather/Drought Information

## Temperatures and Rainfall



### Comparison 2011 to 2022

	Production		Rain Fall in inches		Average Temperature	
	2011	2022	2011	2022	2011	2022
January	299,756,000	302,460,000	4.04	4.48	47.6	48.48
February	304,191,000	261,629,000	0.62	1.53	51.6	48.1
March	489,937,000	327,110,000	0.36	3.71	62.1	58.5
April	724,787,000	462,202,000	0.42	2.85	70.2	69.9
May	878,189,000	546,504,000	0.67	5.97	73.3	78.7
June	974,133,000	768,321,000	1.45	0.03	84.3	84.3
July	916,335,000	903,608,000	2.17	0.68	85.37	86.95
<b>Total</b>	<b>3,670,993,000</b>	<b>2,668,226,000</b>	<b>9.73</b>	<b>19.25</b>	<b>67.8</b>	<b>67.8</b>

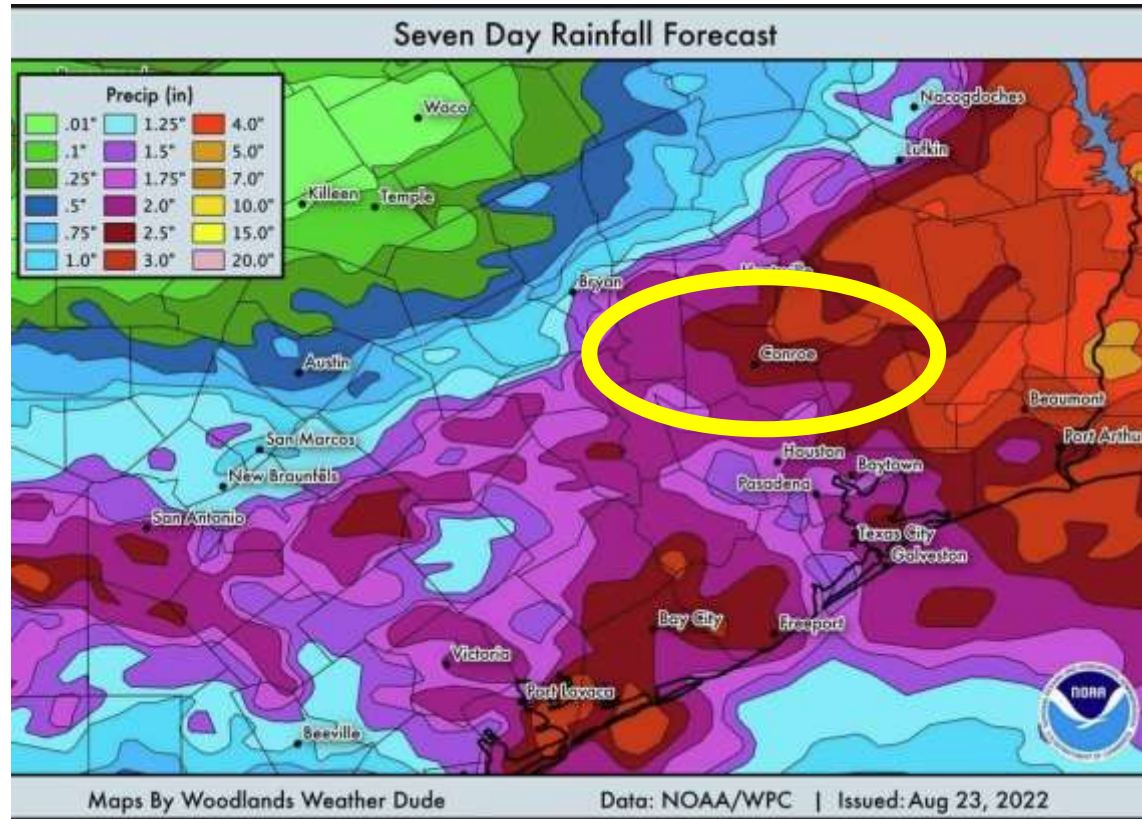
\*Note: Drought began in 2010 and continued in 2011\*



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# Weather/Drought Information



# Water Conservation

## Why Water Conservation?

- Push enhanced in 2009 - 2012
- Conservation/Best practice
- Limits on pumping
- Subsidence concerns
- Example for the community
- Per person per day use dropped to 91 gallons per day, a 43% decline over 10 years.



# Water Conservation

## Woodlands Water/MUD 386

- MUD 386 Voluntary Restrictions (Harris County portion only)- odd/even, two days per week
- Woodlands Water - Defined irrigation - Odd/Even, two days per week
  - W.I.S.E Guys





# Water Conservation- Township

- Computer irrigation system
- Removal of irrigation zones
- Drip zone irrigation
- Rainwater harvesting
- Water reclamation - Lake Paloma
- 810,000 square feet of all-weather turf (24.3 million gallons per year)
- Re-fill ponds, if at 50%, to maintain aquatic health/structural integrity
- Water Education Specialist
- Drought Management Plan



# Homeowner and Drought

- Landscape/Trees
- Safety - Woodlands Fire Department
- Dead trees- Covenant Administration



# Homeowner - Landscape

- General water restrictions
- Ability to water landscape/trees
- Dormant trees

*“The best way to test if trees need added water is to push a screwdriver into the soil surrounding the trunk of the tree. If the screwdriver passes easily, the soil is still moist. If it takes a little bit for the screwdriver, the soil is dry and it is a sign a tree needs watering.” (<https://www.healthytrees.com/>)*



# Homeowner - Fire Safety

Woodlands Fire Department

- Remove dead plants and trees
- Remove dry leaves and pine needles from yard, roof and rain gutters





# Homeowner - Covenants

## Covenant Administration- Dead/Dying tree removal

- Obtain a permit to remove tree
- May require a written statement from a third-party certified arborist/qualified individual
- Tree topping is prohibited





# Township and Drought

- Drought Management Plan
- Forest/Reforestation
- Ponds



# Drought Management Plan

- Drought Management Plan - 2011- updated as needed
- Use limitations - WJPA/MUD 386/permitting
- Examined uses of water, tiered use, best practices
- Encompasses park/streetscape irrigation, pond fountains, pond fill, spray grounds, pressure washing, etc.

Watering Restriction Stage		Tier A Parks- Parks with Sportsfields- (Northshore, Town Green, ABSF, BBSF, Gosling, Lakeside)
Irrigation Start Dates- Warm Season Grass		NA
Irrigation End Dates- Warm Season Grass		NA
1	Turf	Regularly monitor for leaks, irrigation breaks
	Reforestation/planting	Reforestation/planting as needed
	Planting Beds	Once per week watering of native/forest beds
2	Turf	Reduce watering of internal parking medians/common areas (once per week)-
	Reforestation/Planting	No reforestation/planting
	Planting Beds	Limited watering of planting/shrub beds (every 10 days)
3	Turf	No watering of internal parking medians/common areas
	Reforestation/planting	No reforestation/planting
	Planting Beds	Limited watering of planting/shrub beds (once per two weeks)
4	Turf	No Watering. Move all field rentals to all weather turf.
	Trees	No Watering - except "significant" trees
	Planting Beds	No Watering

# Drought Management Plan

## Parks/Streetscapes

- Currently under Level 1 Restrictions
- Work with Woodlands Water/MUD 386 where restrictions are not feasible
- Large number of zones/water window
- May water areas daily, but individual zones - in compliance
- Lake Paloma area parks/streetscapes uses reclaimed water
- Mid-day watering occurs primarily on Sports Turf that receives added services that require a thorough watering of necessary product

Watering Restriction Stage		Streetscape
Irrigation Start Date- Warm Season Grass		March 15th
Irrigation End Date- Warm Season Grass		October 31st
1	Turf	Regularly monitor for leaks, irrigation breaks
	Reforestation/planting	Reforestation/planting as needed
	Planting Beds	Twice per week watering of native/forest beds
2	Turf	Watering turf to two times per week
	Reforestation/Planting	No reforestation/planting
	Planting Beds	Limited watering of planting/shrub beds (every 7 days)
3	Turf	Reduce watering of all turf to one time per week
	Reforestation/planting	No reforestation/planting
	Planting Beds	Limited watering of planting/shrub beds (once per two weeks)
4	Turf	No Watering
	Trees	No Watering
	Planting Beds	No Watering



# Drought Management Plan

## Forest health/reforestation

- Dead/dying tree - Call/311 app
- Each tree is inspected
- Dormant - Re-review spring
- Three contractors/multiple crews
- 2022 (YTD) - 532 trees removed
- Ability to grow contractor base
- Watering reserves not practical- 2,800 acres
- Watering reforestation trees (250+ hours per week)



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# Drought Management Plan

## Forest Health/Reforestation

- Since the 2009 - 2012 Drought- 330,981 trees planted (March 2022).
- Seedlings/5 - 100 gallon trees
- Oaks, Loblolly Pine, Longleaf Pine, Wax Myrtle, Yaupon, Green Ash, Elderberry and Red Maple.
- November to March - Planting season





# Drought Management Plan

## Lakes and Ponds

- Lake and Pond Management Plan
- 9 wells/run off - 9.5 million gallons permitted by LSGCD
- 37 meter/run off
- 19 storm water/run off
- 2 golf course/run off
- Fill at 50%, *if needed* to support aquatic health or ensure pier integrity (since 2011)

Watering Restriction Stage		Pond Fills
1		Fill at 50%, if needed to support aquatic health or ensure amenity (pier) structural integrity
2		Fill at 50%, if needed to support aquatic health or ensure amenity (pier) structural integrity
3		Fill at 50%, if needed to support aquatic health or ensure amenity (pier) structural integrity
4		Only to support aquatic life.



Terrace Mill 2011



Terrace Mill 2022



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# Drought Management Plan

## Why 50%

- Conservation/Visible reminder for conservation
- Prioritization of water for other purposes (bathing, drinking)
- Evaporation rates
- Consistency between lakes and ponds /residents

LAKE NAME	Village	Address	Water Source	Acres of Water	1 Foot (Gallons)
COKEBERRY POND PARK	GM	1829 Nursery Rd.	Well	3.91	1274077.41
COPPER SAGE PARK	CC	75 Golden Shadow	Well	2.04	664736.04
FOREST LAKE PARK	CC	4900 Shadowbend Pl.	Well	2.00	651702.00
MYSTIC LAKE PARK	CC	5100 Research Forest Dr.	Well	3.03	987328.53
PASTORAL POND PARK	GM	105 Red Sable Dr.	Well	4.29	1397900.79
REEDY POND PARK	IS	4727 Woodlands Parkway	Well	3.65	1189356.15
SHADOW LAKE MARSH	CC	5050 Lake Woodlands Dr.	Well	5.43	1769370.93
SHADOWPOINT PARK	CC	119 E. Shadowpoint Cir.	Well	3.12	1016655.12
SUMMER CLOUD	CC	78 N. Summer Cloud Dr.	Well	3.00	977553.00
			<b>Total Acres</b>	<b>30.47</b>	<b>9928679.97</b>



# Drought Management Plan

## Fish and turtles?

- Lakes and ponds inspected weekly
- Water quality analysis
- Dissolved oxygen
- Fish, turtles and other animals are adaptable



*To date, while there have been ponds with a turtle and fish deaths, the Township and contractors are not seeing large scale impacts on the fish and turtles due to lack of water depth.*



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# Drought Management Plan

## Burditt LandPlace

*“It is our recommendation that The Woodlands Township should continue to monitor the pond conditions with regard to fish and wildlife die-offs and vegetation growth and maintain the current draw-down policy. Although some ponds are as much as 1-2 feet below normal pool level, there is no significant impact to pond health at this time. If drought conditions continue through September-October, selected ponds may require some supplemental water.” –Paul Howard*



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# Questions/Comments





# Lake and Pond

- Lake Pro checks D.O. once a month per contract and before each chemical application
- D.O. levels are in good ranges. DO levels fluctuate several times per day and therefore alone are not great indicators to forecast fish kills.
- Lake Pro will continue to monitor DO at Ponds with more sever water loss more than the 1x per month
- Lake Pro stated critical depth of concern for ponds is 3feet and below
- Fountains run in up to 4 foot depth of water, no need to turn them off and we can use this as a measure of depth in those affected ponds with fountains.
- Biggest threat to a pond fish kill is a cold rain on a low DO level pond. This would be more the reason for fish kills than depth problems.

