



7

Drought Response Information, Activities, and Recommendations

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Chapter 7: Drought Response Information, Activities, and Recommendations

[31 TAC §357.42]

Droughts are of great importance to the planning and management of water resources in Texas. Drought generally means periods of less than average precipitation over a certain period. Associated definitions include meteorological drought (abnormally dry weather), agricultural drought (adverse impact on crop or range production), and hydrologic drought (below-average water content in aquifers and/or reservoirs). Drought is generally when there is less than 75 percent of normal precipitation. Therefore, droughts, especially the drought of record (DOR), are of great importance for planning and water management.

Although droughts can occur in all climatic zones, they have the greatest potential to become catastrophic in dry or arid regions such as the High Plains. Mild droughts commonly occur over short periods in Texas; however, there is no certain way to predict how long or severe a drought will be while it is occurring. This uncertainty necessitates planning and preparation for worst-case scenarios in drought-prone areas such as the Llano Estacado Region. Planning and preparation includes understanding historical droughts and drought patterns. With growing water demands, planning is even more important to prevent shortages, deterioration of water quality, and lifestyle/financial impacts on water suppliers and users.

7.1 Drought Indicators

Several drought indicators have been developed to assess the effect of a drought through parameters such as severity, duration, and spatial extent. There are numerous ways that the “worst drought” can be defined. Therefore, it is important to consider multiple indices. The Palmer Drought Severity Index (PDSI), historic reservoir storage volumes, surface water modeling, and groundwater aquifer decline are drought indices that can be incorporated into planning efforts and are discussed in more detail below.

One of the best tools in drought preparedness is a thorough understanding of the DOR, or the worst drought to occur for a particular area during the available period of hydrologic data. However, there are many ways that the “worst drought” can be defined (degree of dryness/severity, duration, relative soil moisture content, agricultural impacts, socioeconomic impacts, etc.). Regional water planning focuses on hydrological drought, which is typically the type of drought associated with the largest shortfalls in surface and/or subsurface water supply. The frequency and severity of hydrological drought is often defined on a watershed or river basin scale, although it could be different from one area to the next, even within a planning region.

7.1.1 Palmer Drought Severity Index

The PDSI, first published in 1965²²⁹, was one of the first comprehensive efforts using precipitation and temperature for estimating moisture. Using monthly temperature and precipitation data along with the moisture capacity of soils, the PDSI takes into account previous months' water balances to more accurately track drought over time. The National Oceanic and Atmospheric Administration (NOAA) publishes weekly and monthly PDSI maps by climate division for the contiguous United States, going as far back as 1895. This availability makes it a widely used and robust tool to monitor long-term droughts. PDSI values can range from -10 to 10, with negative values indicating dry conditions. The approximate ranges are shown in Table 7-1.

Table 7-1. PDSI Value Ranges

PDSI Value Range	Drought/Moisture Level
Less than -4	Extreme Drought
-4 to -3	Severe Drought
-3 to -2	Moderate Drought
-2 to 2	Mid-Range
2 to 3	Moderately Moist
3 to 4	Very Moist
Greater than 4	Extremely Moist

NOAA²³⁰ divides Texas into ten climate divisions by representing areas with consistent climatological characteristics (Figure 7.1). Figure 7.2 shows the climate divisions within the Llano Estacado Region, which lies primarily within Climate Division 1 (High Plains), but also intersects Division 2 (Low Rolling Plains) to the east. It is necessary to consider these divisions as drought indices are calculated based on characteristics of each climate division.

Figure 7.3 and Figure 7.4 show annual PDSI values²³¹ for Divisions 1 and 2. During the 1950s and again in the 2010s, the PDSI was less than -4, indicating extreme drought. The PDSI indicates that conditions in 2011 were the most severe and that drought conditions in the 1950s lasted the longest with seven consecutive years with a PDSI value less than zero. The PDSI also indicates that the droughts in the 1950s and the 2010s were extreme for the Llano Estacado Region. However, the PDSI alone does not provide enough information to determine which drought event should be considered the DOR.

²²⁹ Palmer, W. C, 1965: Meteorological Drought. Res. Paper No.45, 58pp, Dept. of Commerce, Washington, D.C.

²³⁰ NOAA: U.S. Climate Divisions, National Climatic Data Center, www.ncdc.noaa.gov/monitoring-references/maps/us-climate-divisions.php

²³¹ NOAA: National Environmental Satellite, Data, and Information Service [database], National Climatic Data Center, Retrieved from <https://www7.ncdc.noaa.gov/CDO/CDODivisionalSelect.jsp#>

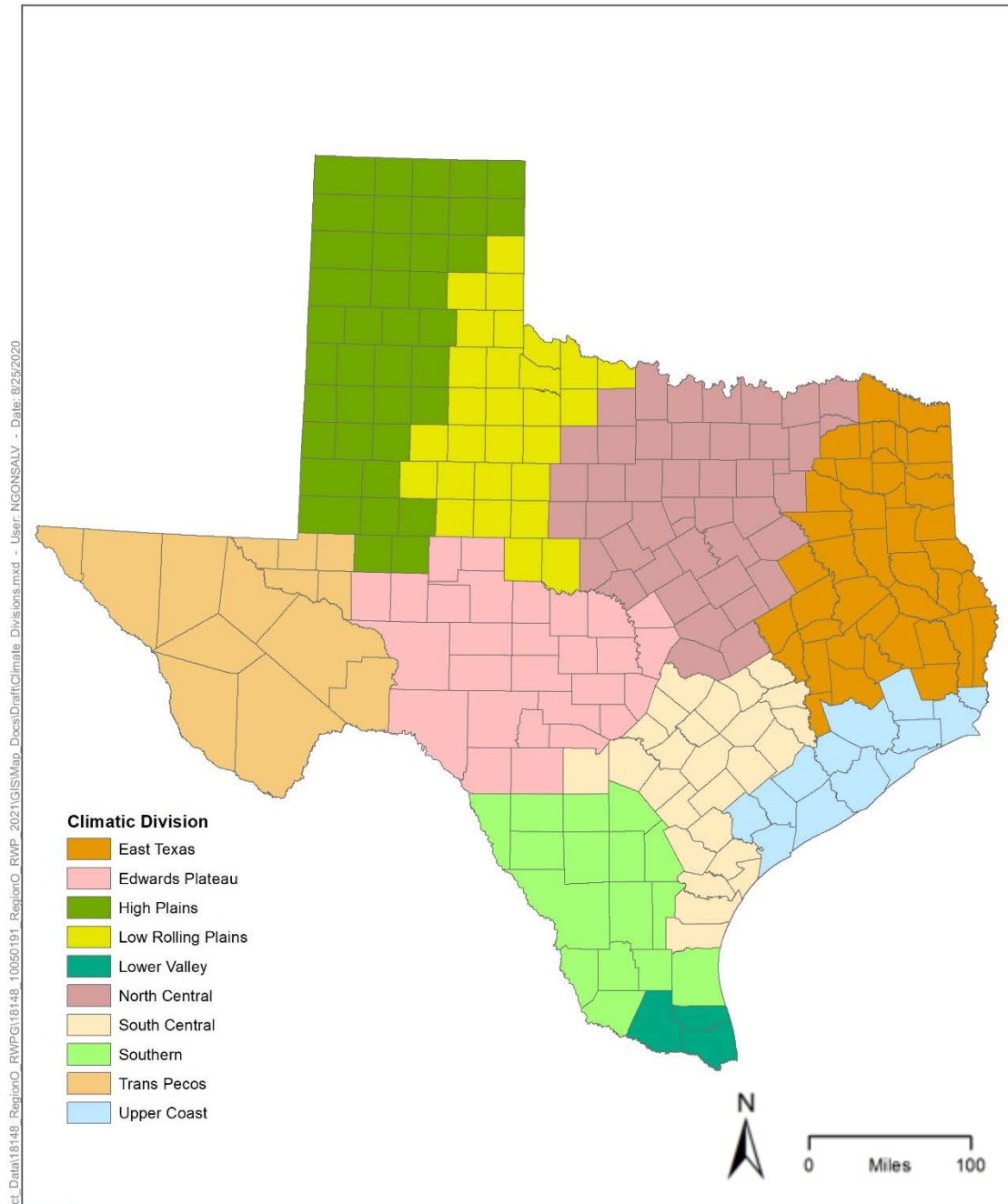
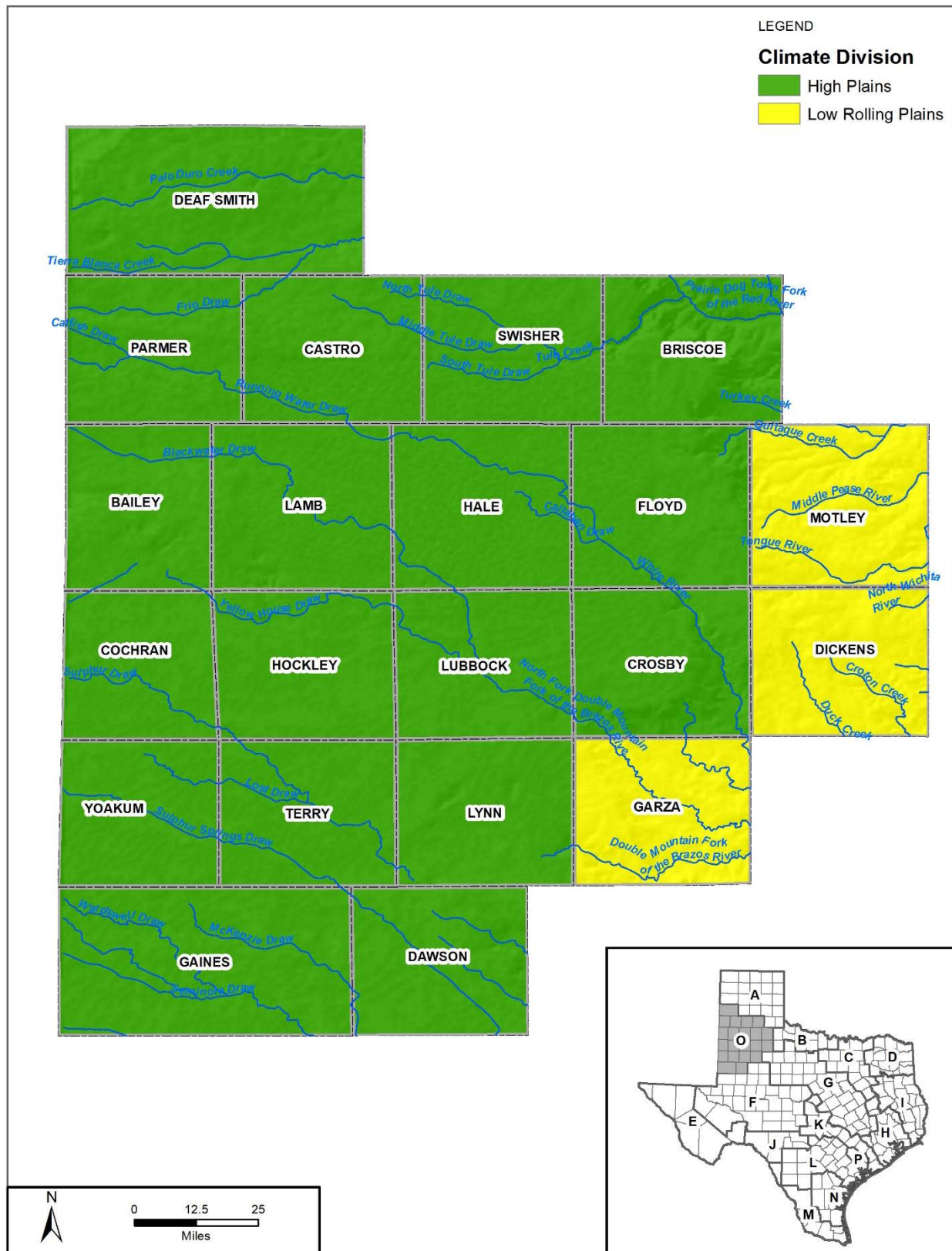


Figure 7.1. NOAA Climate Divisions in Texas



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Figure 7.2. Climate Division within the Llano Estacado Region

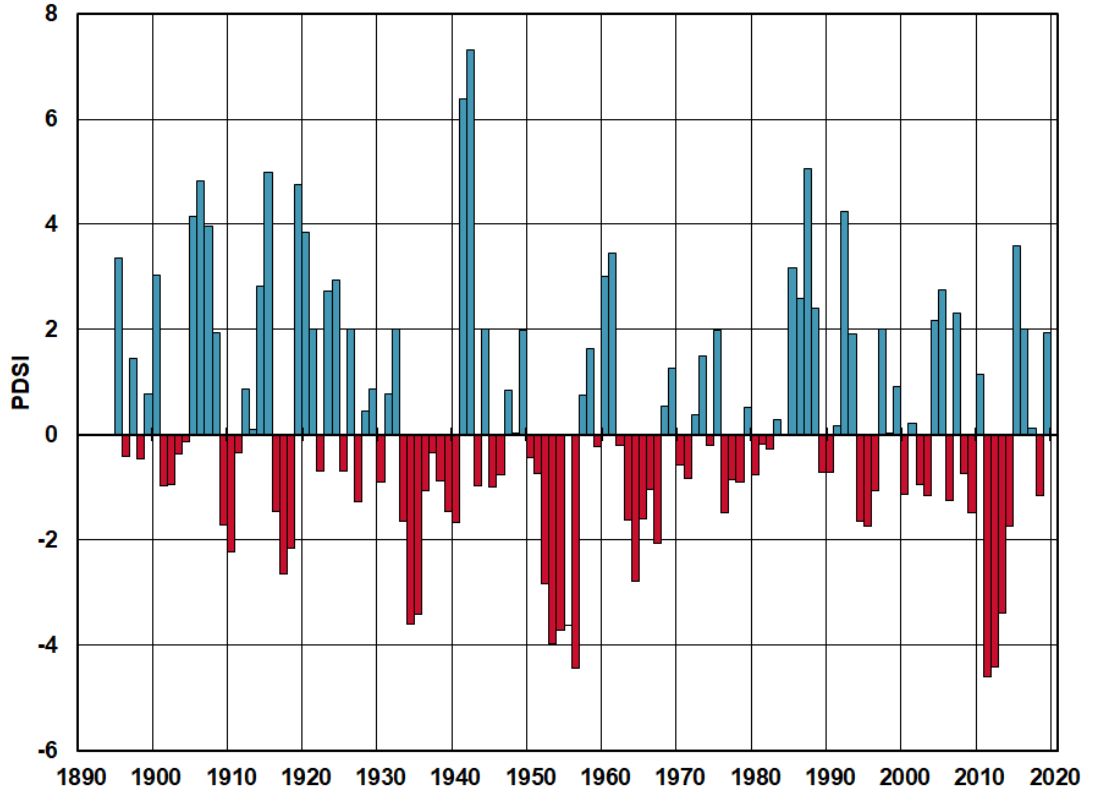


Figure 7.3. Palmer Drought Severity Index: Division 1

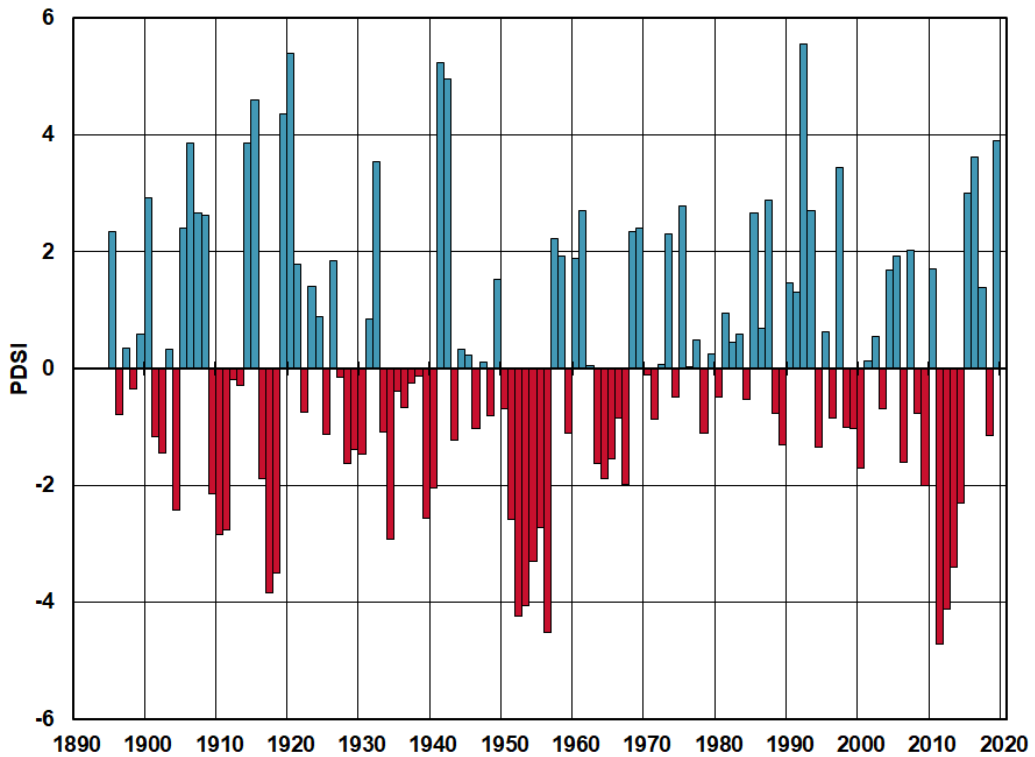


Figure 7.4. Palmer Drought Severity Index: Division 2



7.1.2 Historic Reservoir Storage Volumes

Development of surface water supply sources has been limited in the Llano Estacado Region simply because the area has few significant flowing streams. Four water storage projects are located in or near the Llano Estacado Region. These four water storage projects are Lake Alan Henry (LAH), Lake Meredith, Lake Mackenzie, and White River Lake.

The historical reservoir storage volumes for the four water storage projects are shown in Figure 7.5, Figure 7.6, Figure 7.7, and Figure 7.8. The lakes have rarely exceeded their conservation capacities. The lake storage volumes dropped to low values during the 2010s drought. Although these lakes did not exist in the 1950s, given that the 1950s drought lasted longer than the 2010s drought, reservoir storage volumes for these conditions would have likely dropped to near zero.

The conservation capacities of LAH and White River changed due to the results of volumetric surveys. For LAH, the Brazos River Authority (BRA) states that the area of the lake is 2,884 acres at conservation pool elevation. The results of the Texas Water Development Board (TWDB) 2005 Survey indicate LAH has a volume of 94,808 acre-feet (ac-ft) and encompasses 2,741 acres at conservation pool elevation, 2,220 feet above mean sea level. The TWDB 2005 survey indicates a 5 percent, or 143-acre loss in surface area at the conservation pool elevation²³².

Upon completion of the White River, the capacity of the lake was calculated to be 38,650 ac-ft. Of this total, 650 ac-ft was dead storage, which resulted in 38,000 ac-ft of conservation storage. Sediment filled the lower 7.6 feet of the lake. The estimated reduction in storage capacity is 13,141 ac-ft, or 29 percent less than that previously conceived on the permit, results in a conservation capacity of 25,509 ac-ft. Due to potential sediment movement and improved data and calculation techniques, the conservation capacity was revised. The resulting effective conservation storage volume for White River Lake is therefore estimated to be 29,880 ac-ft²³³.

²³² TWDB. 2006. http://www.twdb.texas.gov/hydro_survey/alanhenry/2005-07/AlanHenry2005_FinalReport.pdf

²³³ TWDB. 2003. http://www.twdb.texas.gov/hydro_survey/whiteriver/1992-10/WhiteRiver1993_FinalReport.pdf

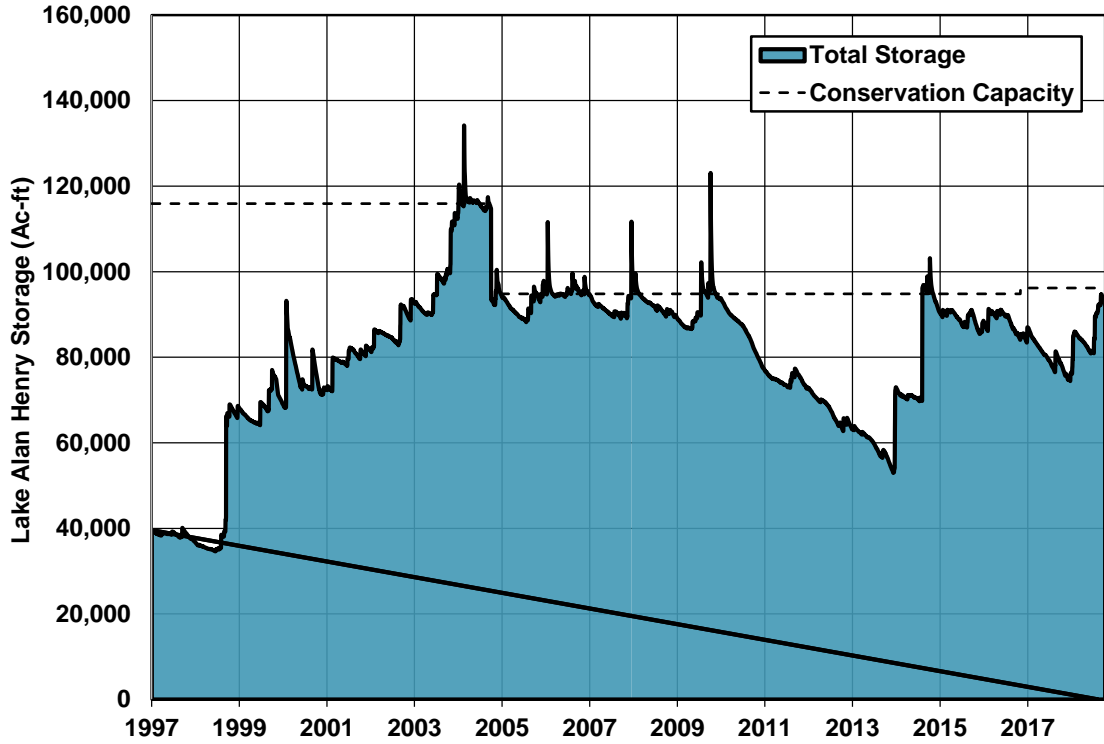


Figure 7.5. Lake Alan Henry Storage

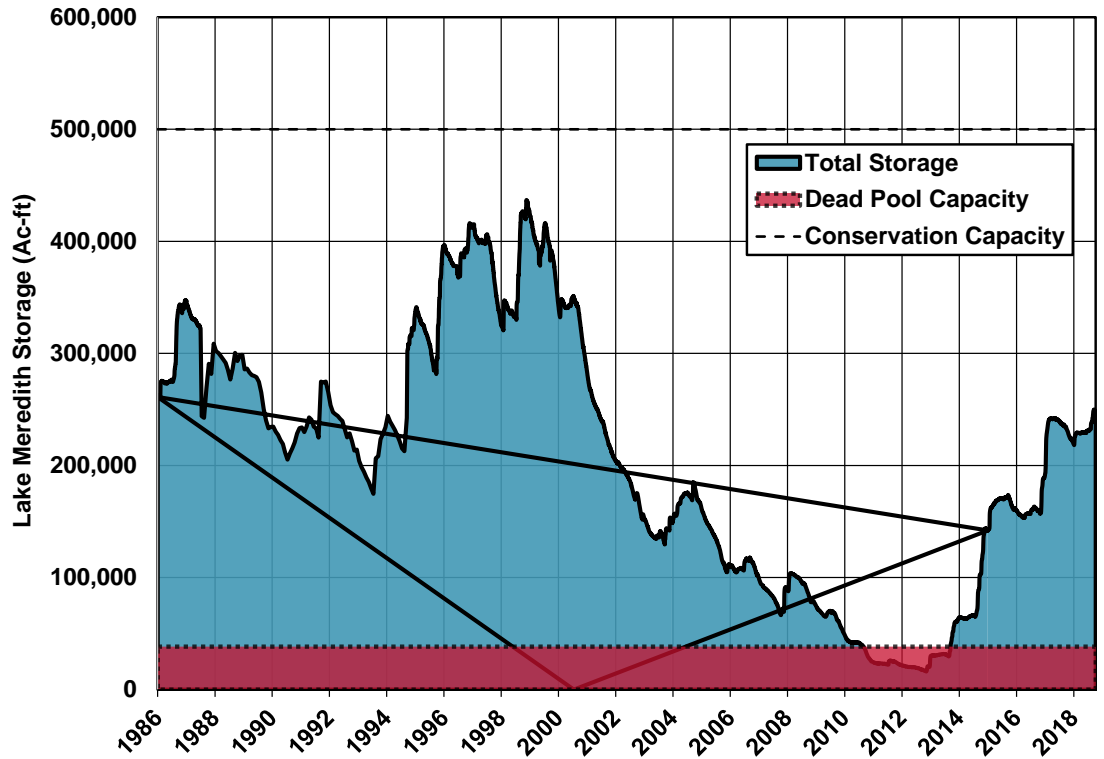


Figure 7.6. Lake Meredith Storage

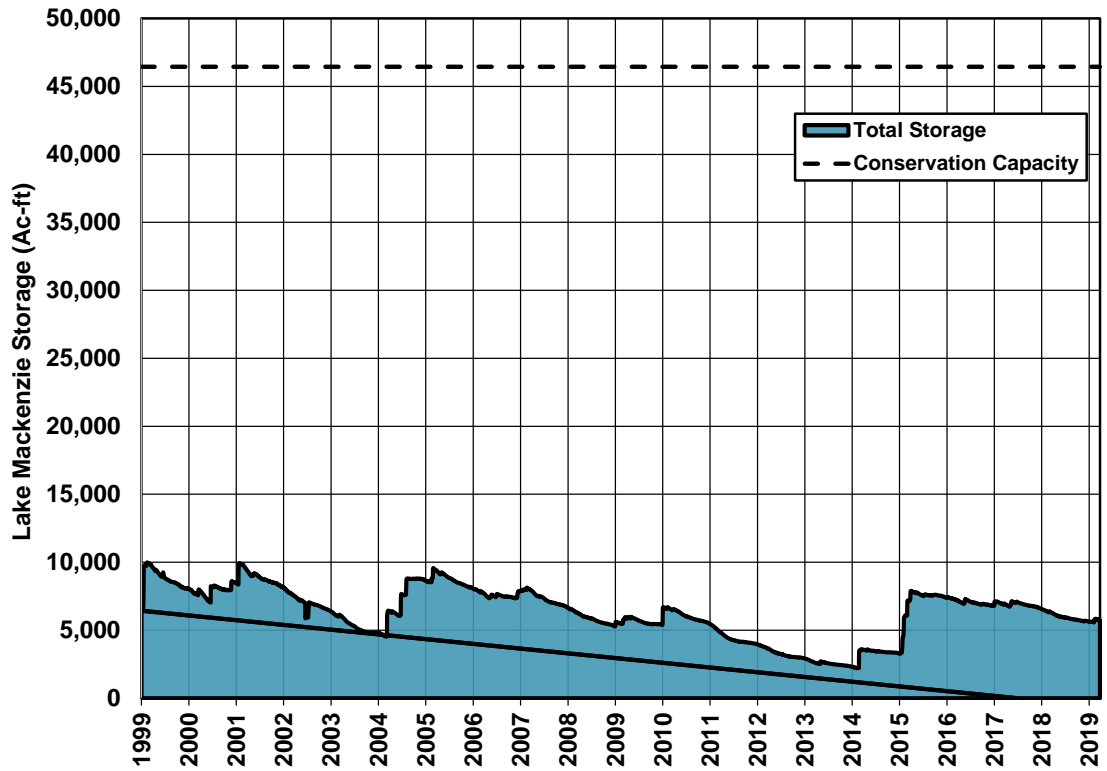


Figure 7.7. Lake Mackenzie Storage

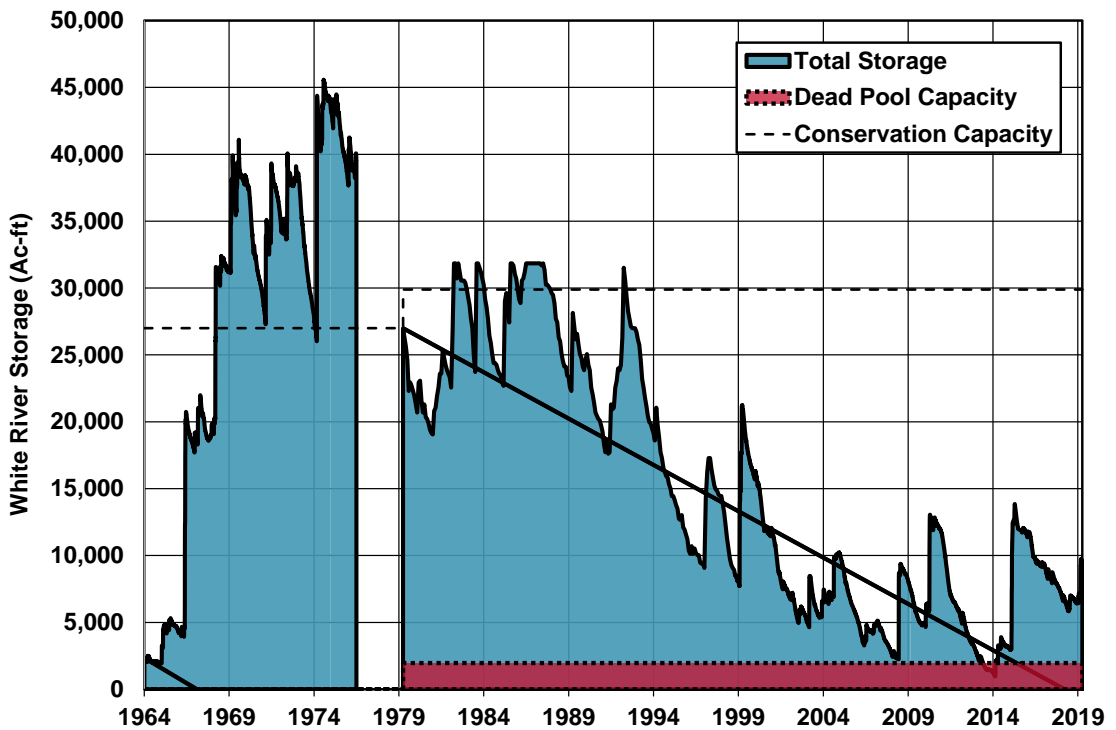


Figure 7.8. White River Lake Storage



7.1.3 Surface Water Modeling

Engineers and planners often use surface water models to demonstrate the effects of historical droughts on water supply. Surface water effects are more readily observed than groundwater effects. Reservoir supplies that were not in place during historic droughts can be assessed using historic hydrology and these modeling tools.

The primary tool used in regional planning in Texas to observe the performance of reservoirs under historic drought conditions is the Texas Commission on Environmental Quality (TCEQ) water availability model (WAM). The WAM is the same tool used to determine the available flow, firm yield, and safe yield of surface water projects in the 2021 LERWP. The Brazos River Basin WAM (Brazos WAM) includes hydrologic information from 1940 to 1997 and supports the use of the 1950s drought for most reservoirs in the Brazos River Basin.

RiverWare modeling software is a related tool developed by the Center for Advanced Decision Support for Water and Environmental Systems used to model the LAH Reservoir and uses hydrology through 2016. The model was used to estimate yield and summarize three periods when drought conditions existed. Table 7-2 shows the firm, 1-year, 18-month, and 2-year safe yields for the 1950s, 1990s and 2010s²³⁴. This analysis indicates a predicted decline to low yields during these periods.

Table 7-2. Summary of LAH Yields (acre-feet/year)

Yield Basis	1950's (Nov 1942 - Sep 1955)	1990's (Jul 1992 - May 2001)	2010's (Aug 2010 - May 2015)
Firm	22,725	22,210	20,800
1-Year Safe	19,650	18,770	16,125
18-Month Safe	18,325	17,320	14,400
2-Year Safe	17,200	16,100	13,000

7.1.4 Groundwater Aquifer Levels

Groundwater data is another way engineers and planners look at the effects of drought and the corresponding long-term, drought-induced water use on water supply. In the Llano Estacado Region, groundwater makes up a significant portion of the area's water supply. Therefore, it can be useful to analyze drought with respect to the groundwater system to provide a more complete picture of the connection between drought and the Llano Estacado Region's water supply.

In most observation wells, groundwater levels, or heads, fluctuate continuously based on a number of stresses, including precipitation, evaporation, surface water levels, and pumping. As such, a time series of groundwater heads can provide important information on how a particular aquifer will respond to pumping based on drought, or the severity of drought within an aquifer. Five wells with long-term records located within the Llano

²³⁴ HDR, Inc., Update of Lake Alan Henry Yield and 5-Year Projections, City of Lubbock Water Supply Support, August 2015.



Estacado Region were selected as representative of the long-term decline in water levels (Figure 7.9).

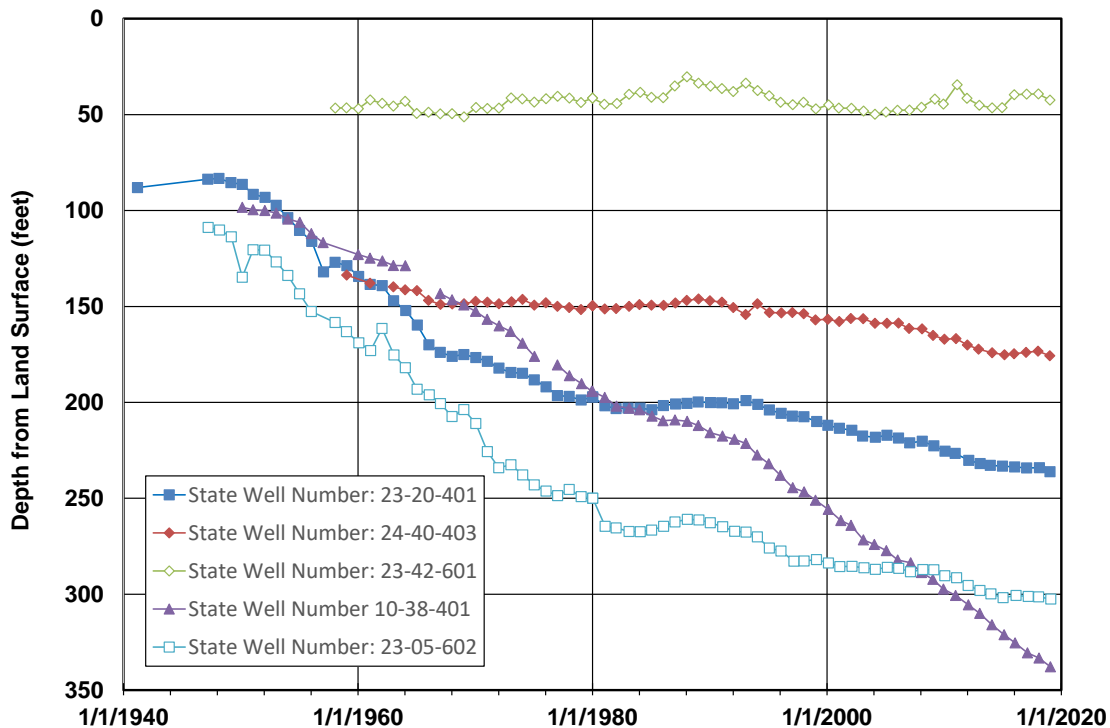


Figure 7.9. Representative Wells with Long-term Records Demonstrating Declining Water Levels

7.1.5 Climate

Most of the planning region is identified as a cold, steppe climate (BSk) under the Köppen climate classification system²³⁵. This climate is characterized by large variations in the magnitude of ranges in daily temperature extremes, low relative humidity, and irregularly spaced rainfall of moderate amounts. The predominant feature of this climate is dry with mild winters²³⁶; annual evaporation typically exceeds precipitation in these areas²³⁷. A summary of climatological conditions for the region is provided in Table 7-3.

²³⁵ Kottek, M.J., Grieser, C., Beck, B., Rubel, F., 2006. World Map of the Köppen-Geiger climate classification updated. Meteorol. Z., 15, 259-263.

²³⁶ Larson, T.J., Bomar, G.W. 1983. Climatic atlas of Texas. Texas Water Development Board, LP-192.

²³⁷ Bailey, R.G. 1980. Description of the ecoregions of the United States. U.S. Department of Agriculture, Miscellaneous Publication 1391.



Table 7-3. Historical Climatological Data (1945 to 2018) for the Llano Estacado Region^{238 239}

County	Precipitation			Temperature					Annual Net Lake Surface Evaporation (inches)
	Mean Annual (inches)	Wettest Month	Driest Month	Mean Annual (°F)	Mean Daily Minimum		Mean Daily Maximum		
					Jan (°F)	July (°F)	Jan (°F)	July (°F)	
Bailey	17	Aug	Feb	57	21	63	53	92	46
Briscoe	20	June	Jan	59	23	67	51	92	45
Castro	19	June	Feb	56	21	63	51	91	46
Cochran	17	July	Jan	58	23	64	54	92	47
Crosby	21	May	Jan	60	25	67	53	93	45
Dawson	17	Sept	Jan	61	26	67	55	94	51
Deaf Smith	18	Aug	Feb	57	21	63	51	92	46
Dickens	21	May	Jan	62	27	69	55	95	46
Floyd	20	June	Jan	59	24	67	52	92	45
Gaines	16	Sept	Dec	61	27	66	56	94	54
Garza	20	May	Jan	63	28	70	55	94	46
Hale	18	June	Jan	59	24	65	52	91	45
Hockley	18	June	Feb	59	24	65	54	92	47
Lamb	17	June	Jan	58	22	64	53	92	46
Lubbock	18	June	Jan	56	26	68	54	93	46
Lynn	19	May	Jan	61	26	67	54	93	46
Motley	22	June	Jan	62	28	70	54	95	44
Parmer	18	Aug	Feb	57	22	63	51	91	46
Swisher	20	June	Dec	58	22	64	51	92	45
Terry	18	May	Dec	60	25	66	54	93	48
Yoakum	16	Sept	Jan	59	25	64	54	92	41

°F = degrees Fahrenheit

In an average year, 70 to 80 percent of the annual precipitation total occurs during the warm season (May through October). A summary of the mean monthly precipitation as a percentage of mean annual precipitation is presented in Table 7-4. Monthly rainfall quantities ordinarily decline markedly in the colder months of the year, when frequent

²³⁸ PRISM Climate Group - Northwest Alliance for Computation Science and Engineering, 2019. Historical Past and Recent Years Datasets for Precipitation and Temperature. <http://www.prism.oregonstate.edu/>

²³⁹ Texas Water Development Board, 2019. Water Data for Texas: Lake Evaporation and Precipitation. <https://waterdatafortexas.org/lake-evaporation-rainfall>



periods of cold, dry air from North American Polar Regions surge southward and cut off the supply of moisture from the Gulf of Mexico.

Table 7-4. Percentage of Mean Annual Precipitation Occurring by Month (1945 to 2018) 240

County	Percentage of Mean Annual Precipitation											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Bailey	3%	3%	4%	5%	12%	14%	14%	16%	13%	9%	3%	3%
Briscoe	3%	4%	5%	8%	14%	17%	11%	12%	11%	9%	4%	3%
Castro	3%	3%	4%	5%	13%	16%	13%	15%	11%	9%	4%	3%
Cochran	3%	3%	4%	5%	12%	13%	15%	15%	14%	9%	4%	3%
Crosby	3%	4%	5%	7%	14%	14%	12%	11%	13%	10%	4%	4%
Dawson	3%	4%	4%	6%	14%	13%	12%	10%	15%	10%	4%	4%
Deaf Smith	3%	3%	5%	5%	12%	15%	15%	16%	11%	9%	4%	3%
Dickens	3%	4%	5%	8%	15%	13%	11%	11%	12%	10%	4%	4%
Floyd	3%	3%	5%	7%	14%	16%	11%	11%	13%	9%	4%	3%
Hale	3%	3%	5%	6%	14%	16%	12%	12%	12%	9%	4%	3%
Hockley	3%	3%	4%	5%	13%	14%	13%	13%	14%	9%	4%	3%
Gaines	4%	4%	4%	5%	13%	12%	13%	12%	15%	10%	4%	4%
Garza	3%	4%	5%	7%	14%	13%	11%	11%	13%	10%	5%	4%
Lamb	3%	3%	4%	5%	13%	16%	13%	14%	12%	9%	4%	3%
Lubbock	3%	4%	4%	6%	14%	15%	12%	11%	13%	10%	4%	3%
Lynn	3%	4%	4%	6%	15%	13%	12%	11%	13%	10%	4%	4%
Motley	3%	4%	5%	8%	14%	15%	10%	11%	12%	9%	4%	4%
Parmer	3%	3%	4%	5%	12%	15%	15%	16%	11%	9%	3%	3%
Swisher	3%	3%	5%	7%	14%	17%	12%	13%	11%	9%	4%	3%
Terry	3%	3%	4%	6%	14%	14%	13%	11%	14%	10%	4%	3%
Yoakum	3%	3%	4%	5%	12%	13%	14%	13%	15%	9%	4%	4%

Mean annual precipitation in the region ranges from a low of approximately 16 inches in southwestern Gaines and Yoakum Counties to a high of approximately 22 inches in eastern Motley County. The magnitude of annual precipitation generally increases moving from the west to the east across the region. An illustration of mean annual precipitation is presented in Figure 7.10. Minimum and maximum annual precipitation totals across the region are provided in Figure 7.11 and Figure 7.12, respectively. Precipitation is the only reoccurring/renewable water supply for the Llano Estacado Region. Precipitation meets about 60 percent of urban landscape water and irrigated

²⁴⁰ PRISM Climate Group - Northwest Alliance for Computation Science and Engineering, 2019. Historical Past and Recent Years Datasets for Precipitation and Temperature. <http://www.prism.oregonstate.edu/>



crop demands and contributes the water available for surface reservoirs, rangeland and dryland crop production, wildlife, and natural recharge to the region's aquifers.

Less than 1 percent of the precipitation escapes from the region in the form of runoff in streams or rivers. The remainder of runoff is collected in approximately 14,000 playa basins located within the Llano Estacado Region²⁴¹. Playas comprise approximately 2 percent of the total land surface within the region. Most playa basins are ephemeral, holding water only during and for a short period after rains, unless augmented by irrigation tailwater. Agricultural activities converted most of the playas into production with some of the playas planted to crops, some left fallow, and some grazed. This conversion also modified approximately 70 percent of the playas to have pits for recovering rainfall runoff for irrigation or creating a water reserve for grazing livestock or wildlife when the bulk of the water collected in the basin from rainfall runoff has soaked into the soil or evaporated. Values for annual net lake surface evaporation range from a high of 54 inches per year for the southern portion of the region to a low of 45 inches per year in the north.

²⁴¹ Guthery, F.S., F.C. Bryant, B. Kramer, A. Stoecker, and M. Dvoracek, "Playa Assessment Study", U.S. Water and Power Resources Service, Southwest Region, Amarillo, Texas, 1981.

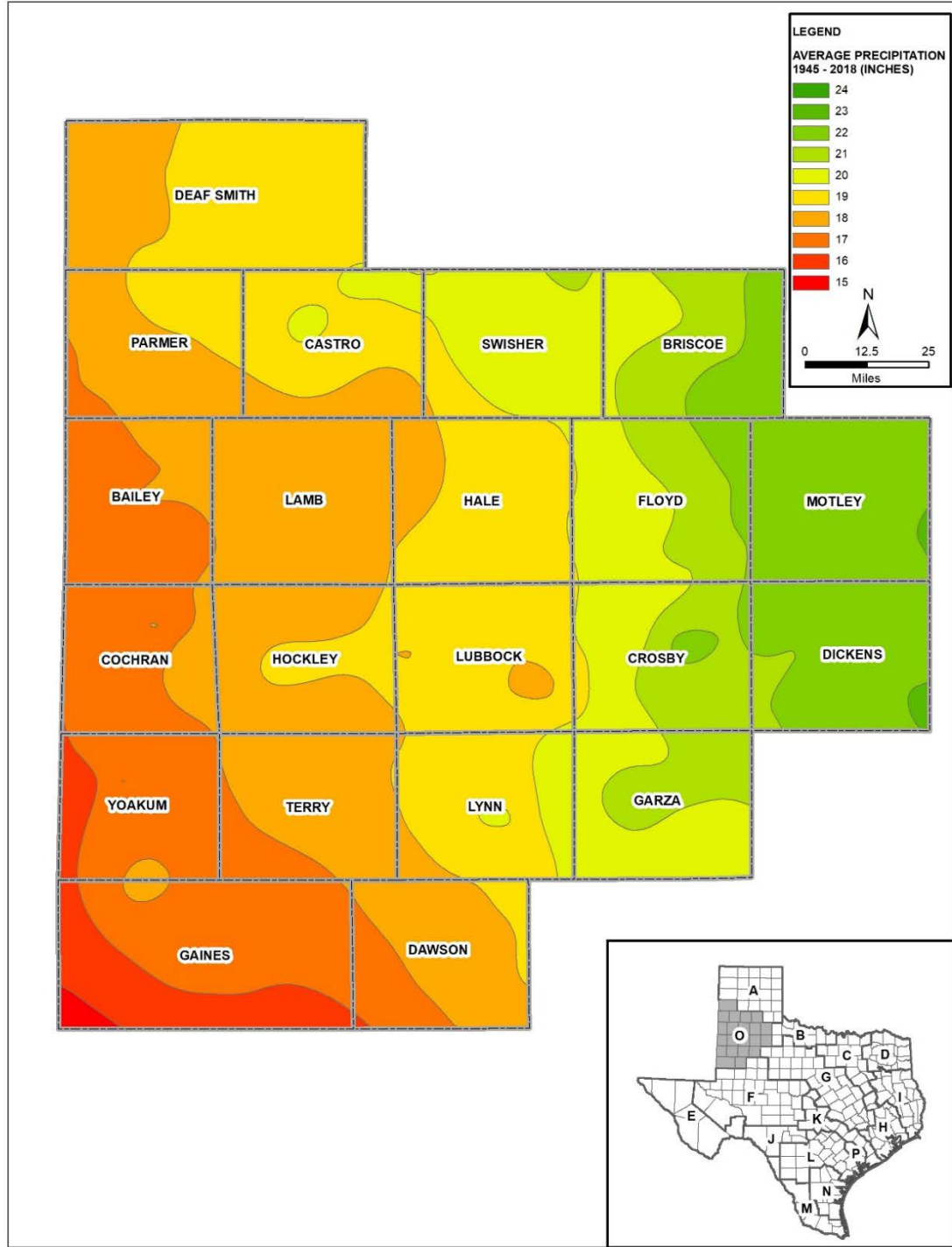


Figure 7.10. Average Annual Precipitation of the Llano Estacado Region 1945-2018²⁴²

²⁴² PRISM Climate Group - Northwest Alliance for Computation Science and Engineering, 2019. Historical Past and Recent Years Datasets for Precipitation and Temperature. <http://www.prism.oregonstate.edu/>

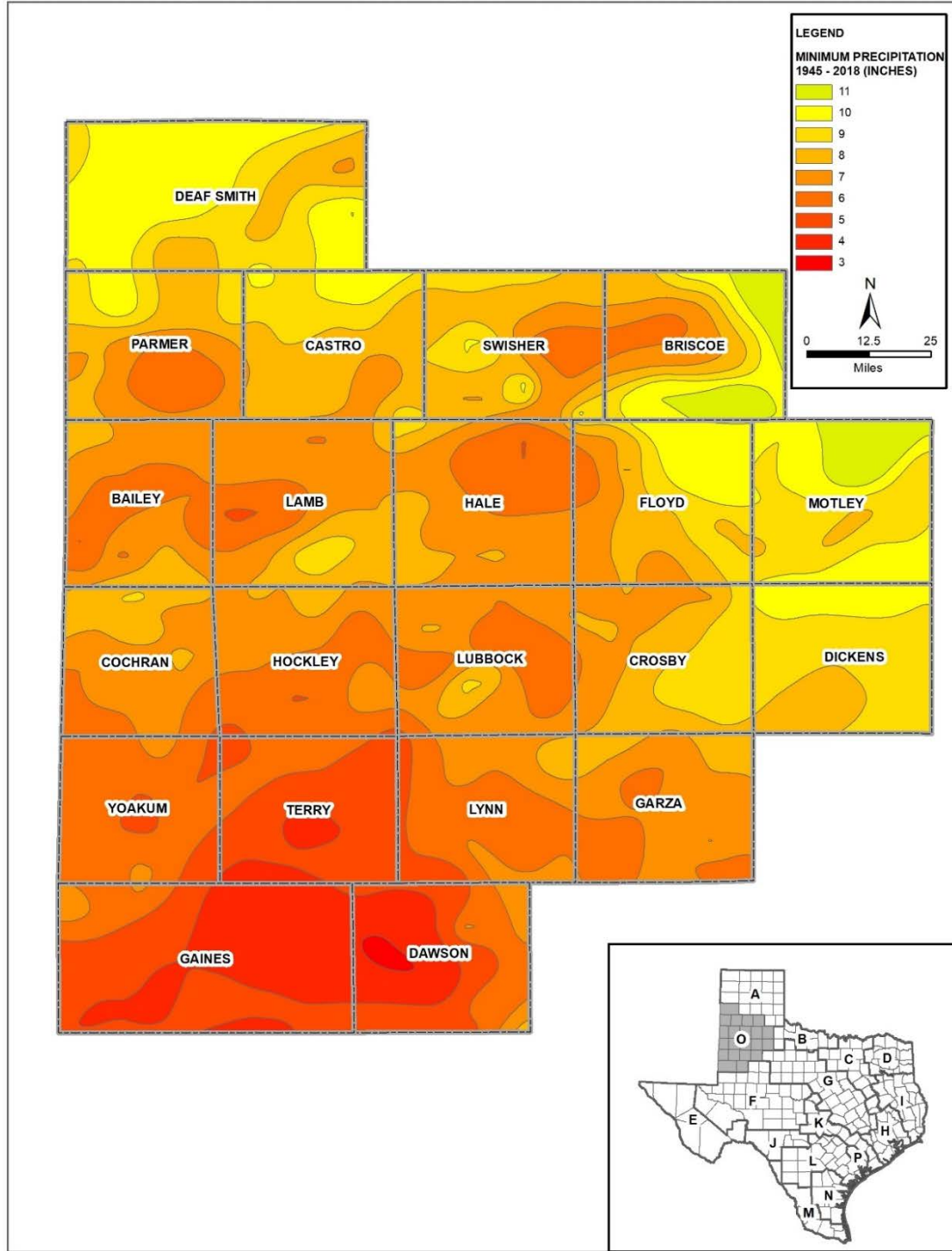


Figure 7.11. Minimum Annual Precipitation of the Llano Estacado Region: 1945-2018 ²⁴³

²⁴³ PRISM Climate Group - Northwest Alliance for Computation Science and Engineering, 2019. Historical Past and Recent Years Datasets for Precipitation and Temperature. <http://www.prism.oregonstate.edu/>

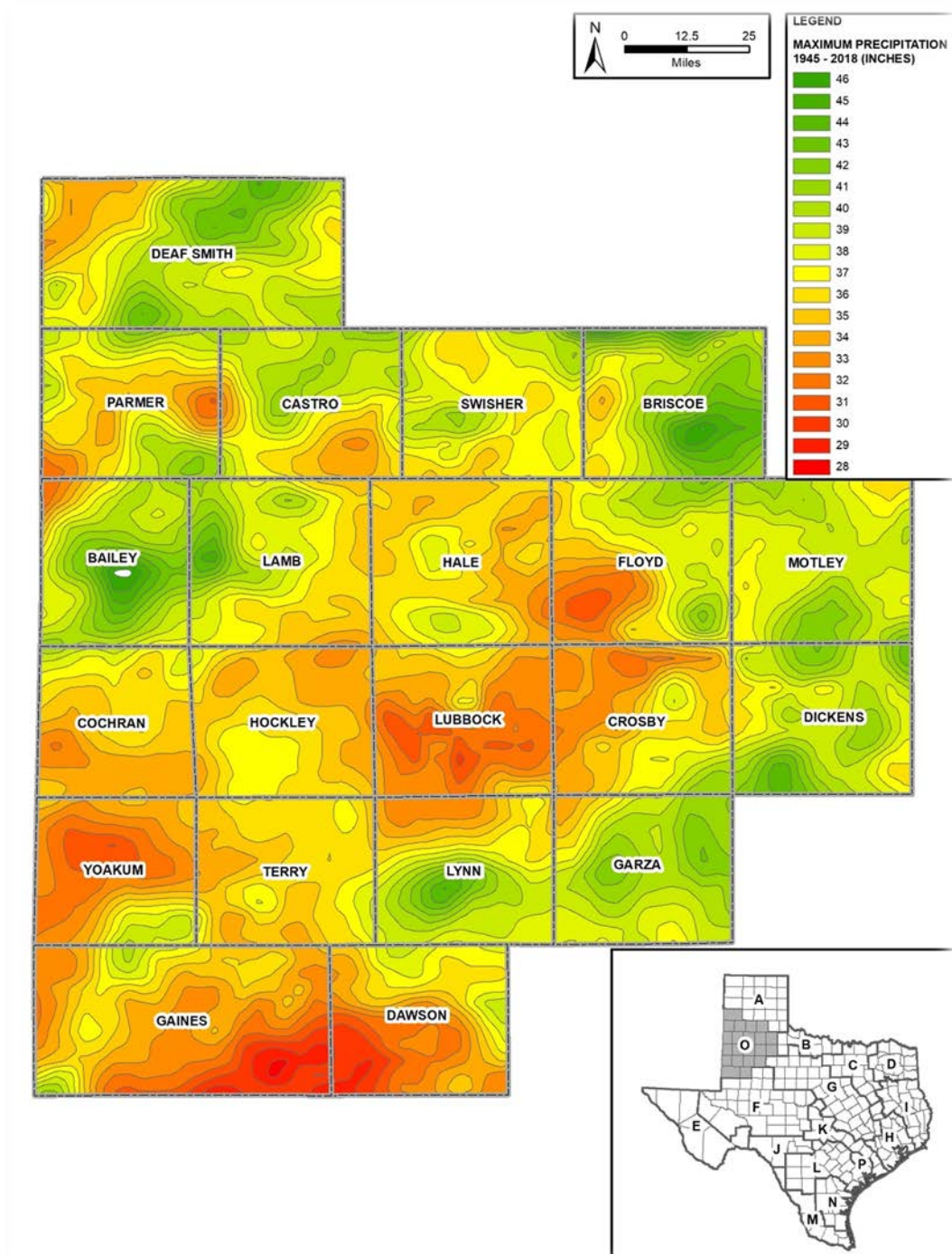


Figure 7.12. Maximum Annual Precipitation of the Llano Estacado Region: 1945-2018 ²⁴⁴

²⁴⁴ PRISM Climate Group - Northwest Alliance for Computation Science and Engineering, 2019. Historical Past and Recent Years Datasets for Precipitation and Temperature. <http://www.prism.oregonstate.edu/>

7.2 Droughts of Record in the Llano Estacado Region

7.2.1 Drought of Record

In terms of severity and duration, the devastating drought of the 1950s is considered the DOR for most of Texas. By 1956, 244 of the 254 counties in the state were considered disaster areas. At that time, the 1950s drought included the second, third, and eighth driest years on record (1956, 1954, and 1951, respectively). This drought lasted almost a decade in many places and affected numerous states across the nation. The 1950s drought served as a catalyst for Texas' water supply planning effort and has been used by water resource engineers and managers as a benchmark drought for water supply planning.

7.2.2 Recent Droughts

The Llano Estacado Region has experienced two recent droughts centered around 1996 and 2011 that were significant enough to be used for planning.

Drought indicators do not show the 1990s drought to be an extreme drought, but it was a period of decreased moisture.

The 2010s drought (2010 through 2015) is the most recent drought. In 2011, severely decreased precipitation resulted in substantial declines in streamflow throughout Texas. Record high temperatures also occurred June through August leading to an increase in evaporation rates. The evaporation was so great that by August 4, 2011, state climatologist John Nielson-Gammon declared 2011 to be the worst 1-year drought on record in Texas²⁴⁵. The 2011 water year statewide annual precipitation was 11.27 inches, more than 2 inches less than the previous record low of 13.91 inches in 1956. In Lubbock the total precipitation recorded was 5.86 inches²⁴⁶.

More recently in 2018, the region faced another period of low rainfall and high temperatures. The ninth warmest year on record for the region was in 2018. Precipitation was intermittent and sparse through the spring and summer in many areas. During 2018, Lubbock recorded 15.27 inches of precipitation (much of it occurring in the fall), which was the 41st driest in the historical record, almost 4 inches below average. Therefore, many entities, including the cities of Lubbock and Wolfforth, enacted mandatory water use restrictions. Some entities, including Lubbock, now have mandatory water use restrictions in place during the summer months regardless of drought conditions. Each entity in the Llano Estacado Planning Region will implement mandatory water use restrictions, as needed, during times of drought to help curtail water use and to extend the supply of water available to them.

²⁴⁵ Winters, K.E., 2013, A historical perspective on precipitation, drought severity, and streamflow in Texas during 1951-56 and 2011: U.S. Geological Survey Scientific Investigations Report 2013-5113, p. 1
<http://pubs.usgs.gov/sir/2013/5113>

²⁴⁶ <https://www.weather.gov/lub/events-2011-20111231-summary>



7.3 Current Drought Preparations and Response

7.3.1 Current Drought Preparations and Responses

Predicting the timing, severity, and length of a drought is an inexact science; however, it is safe to assume that it is an inevitable component of the Texas climate. For this reason, it is critical to plan for these occurrences with policy outlining adjustments to the use, allocation, and conservation of water in response to drought conditions. Drought and other circumstances that interrupt the reliable supply or water quality of a source often lead to water shortages. During a drought, there generally is a greater demand on the already decreased supply as individuals attempt to maintain landscape vegetation through irrigation because less rainfall is available. This can further exacerbate a water supply shortage situation.

TCEQ requires public wholesale water providers (WWPs), retail public water suppliers serving 3,300 connections or more, and irrigation districts to submit drought contingency plans (DCPs). In accordance with the requirements of Texas Administrative Code (TAC) §288(b), DCPs must be updated every 5 years and adopted by retail public water providers. The TCEQ defines a DCP as “A strategy or combination of strategies for temporary supply and demand management responses to temporary and potentially recurring water supply shortages and other water supply emergencies.”²⁴⁷ According to a TCEQ handbook²⁴⁸, the underlying philosophy of drought contingency planning is that

- while often unpreventable, short-term water shortages and other water supply emergencies can be anticipated;
- the potential risks and impacts of drought or other emergency conditions can be considered and evaluated in advance of an actual event; and, most importantly,
- response measures and best management practices (BMPs) can be determined with implementation procedures defined, again in advance, to avoid, minimize, or mitigate the risks and impacts of drought-related shortages and other emergencies.

Model DCPs are available on TCEQ’s website; however, it is not possible to create a single DCP that will adequately address local concerns for every entity throughout Texas. The conditions that define a water shortage can be very location specific and depend on the water supply source. For example, some communities rely on the level of LAH, yet others rely on various groundwater aquifer systems that are considered at risk under location-specific conditions. While the approach to planning may be different between entities, DCPs should include the following.

- Specific, quantified targets for water use reductions,
- Drought response stages,

²⁴⁷ http://www.twdb.texas.gov/conservation/training/archives/more-than-a-drop-workshop/doc/5_%20TCEQ%20Rules.pdf

²⁴⁸ TCEQ. 2005. Handbook for Drought Contingency Planning for Retail Public Water Suppliers, Austin, Texas. April 2005.

- Triggers to begin and end each stage,
- Supply management measures,
- Demand management measures,
- Descriptions of drought indicators,
- Notification procedures,
- Enforcement procedures,
- Procedures for granting exceptions,
- Public input to the plan,
- Ongoing public education,
- Adoption of plan, and
- Coordination with regional water planning groups.

7.3.2 Overall Assessment of Local Drought Contingency Plans

For water suppliers such as those in the Llano Estacado Region, the primary goal of DCP development is to have a plan that can provide an uninterrupted supply of water in an amount that can satisfy essential human needs. A secondary but also important goal is to minimize negative impacts on quality of life, the economy, and the local environment. In order to meet these goals, action needs to be taken in an expedient, pre-determined procedure, requiring that an approved DCP be in place before drought conditions occur.

In accordance with TAC, most Llano Estacado Region entities have developed DCPs or water conservation plans (WCPs) to be implemented when local shortages occur. The Llano Estacado Region was able to obtain DCPs for multiple water user groups (WUGs) and WWPs. These plans identify multiple triggers for initiation and termination of drought stages, responses to be implemented, and reduction targets based on each stage. The plans also include information regarding public notification procedures and enforcement measures. Some WUGs or WWPs have included a method of granting a variance should the need arise.

7.3.3 Summary of Existing Triggers and Responses

Through timely implementation of drought response measures, it is possible to meet the goals of the DCP by avoiding, minimizing, or mitigating risks and impacts of water shortages and drought. In order to accomplish this, DCPs are built around a collection of drought responses and triggers based on various drought stages. Stages are generally similar for DCPs, but can vary from entity to entity. Stage one will normally represent mild water shortage conditions and the severity of the situation will increase through the stages until emergency water conditions are reached and, in some cases, a water allocation stage is determined.

The Llano Estacado Regional Water Planning Group (LERWPG) compiled stage, trigger, and response information for 17 DCPs/WCPs in the region, including those from WWPs, WUGs, and county-other suppliers. Compliance in most of the DCPs in the region is voluntary under Stage I and mandatory under Stage II and Stage III. Most entities included a Stage IV and a few plans specify a Stage V and/or Stage VI scenario. Target



reductions, triggers, and responses are included for most stages. As summary of these in the DCPs/WCPs can be found for Llano Estacado Region entities in Table 7-5.

In accordance with House Bill 807 (HB 807), passed by the 86th Texas Legislature in 2019, and codified in Texas Water Code (TWC) §16.053(e)(3)(E), “RWPGs [regional water planning groups] should identify unnecessary or counterproductive variations in specific drought response strategies, including outdoor watering restrictions, among user groups in the regional water planning area (RWPA) that may confuse the public or otherwise impede drought response efforts,” are to be identified in the Llano Estacado Region. In the Llano Estacado Region, the prevailing attitude is for conservation because of the constant threat of drought and the relatively low amount of precipitation received in the region. As the largest city in the region, the City of Lubbock sets an example throughout the planning area with its progressive conservation and drought planning.²⁴⁹ In addition, water users in the region base their drought triggers uniformly on available supply. For example, drought triggers are not set on varying reservoir levels because of the lack of surface water in the region. Through the process of assessing the region’s DCPs and existing drought triggers and responses, no unnecessary or counterproductive variations in specific drought response strategies were identified.

Table 7-5. Common Drought Response Measures

Entity Name	DCP/ WCP Date	Stage Number	Triggers									Responses								
			Contamination	Demand/Capacity Based	Failure	Groundwater Level	Production Rate	Reservoir Level	Supply Based	Wholesale Provider	Other	Assessment and Identification	Irrigation Schedule	Mandatory Reduction	Notification of Entities	Prohibited Use	Restrictions	Curtailment	Water Allocation	Other
City of Anton	4/1/2015	1		X					X				X							X
		2		X					X				X		X	X				
		3		X					X				X		X	X				
		4		X					X				X		X	X				
		5	X		X				X				X		X					X
City of Brownfield	4/18/2019	1						X		X		X								X
		2	X		X				X				X		X	X				
		3	X	X					X				X		X	X				
City of Lamesa	3/19/2019	1						X		X		X								X
		2							X		X		X		X	X				

²⁴⁹ <https://www.lubbockonline.com/news/20200131/lubbocks-stingy-water-usage-buying-time-on-infrastructure-projects>



Table 7-5. Common Drought Response Measures

Entity Name	DCP/ WCP Date	Stage Number	Triggers								Responses								
			Contamination	Demand/Capacity Based	Failure	Groundwater Level	Production Rate	Reservoir Level	Supply Based	Wholesale Provider	Other	Assessment and Identification	Irrigation Schedule	Mandatory Reduction	Notification of Entities	Prohibited Use	Restrictions	Curtailment	Water Allocation
		3	X	X					X	X		X			X	X			
		4							X	X		X			X	X			
		5	X		X				X			X			X				X
City of Littlefield	8/1/2014	1		X				X	X		X								X
		2						X	X		X			X	X				
		3		X	X				X	X		X			X	X			
		4	X		X				X			X			X	X			
		5		X	X				X	X		X			X				X
City of Lubbock	4/23/2019	1		X				X			X	X			X				X
		2		X				X			X	X			X				X
		3		X				X			X	X			X				X
		4	X	X	X			X	X			X	X		X	X			X
City of New Deal	5/3/2017								X									X	
City of Plainview	4/23/2019	1		X			X			X							X		
		2		X	X		X			X		X			X				
		3		X	X		X			X					X				
		4	X							X		X			X				X
City of Post	8/11/2009	1		X			X			X		X							X
		2		X			X			X		X	X		X				
		3		X			X			X					X	X			
		4	X	X	X		X			X	X			X					X
City of Ropesville	2/13/2019	1				X		X				X							X
		2		X				X				X			X	X			X
		3		X								X			X				
		4		X								X			X	X			
		5	X		X				X			X			X	X			
		6		X					X									X	



Table 7-5. Common Drought Response Measures

Entity Name	DCP/ WCP Date	Stage Number	Triggers								Responses									
			Contamination	Demand/Capacity Based	Failure	Groundwater Level	Production Rate	Reservoir Level	Supply Based	Wholesale Provider	Other	Assessment and Identification	Irrigation Schedule	Mandatory Reduction	Notification of Entities	Prohibited Use	Restrictions	Curtailment	Water Allocation	Other
City of Seagraves	4/1/2015	1					X					X							X	
		2		X			X		X			X		X	X					
		3			X	X	X					X				X				
		4						X				X			X	X				
		5	X		X				X			X			X	X				
City of Seminole	8/1/2019									X									X	
City of Shallowater	9/1/2018									X									X	
City of Silverton	4/1/2014	1									X									X
		2									X					X				
		3									X		X			X				
		4									X									X
City of Tahoka	9/8/2014	1		X		X		X	X			X	X			X				X
		2		X	X	X			X			X	X			X				X
		3		X	X	X			X			X	X			X				X
		4	X	X	X			X	X			X	X		X					X
Mackenzie Municipal Water Authority	3/19/2019																		X	
Red River Authority of Texas	7/1/2019	1		X			X													X
		2		X			X													X
		3		X			X							X				X		
		4		X			X							X				X		
Valley Water Supply Corporation	10/4/2019	1									X									X
		2										X				X				
		3										X				X				

DCP = drought contingency plan; WCP = water conservation plan

7.4 Existing and Potential Emergency Interconnects

A regional planning goal is to provide a connected supply that meets or exceeds DOR demands for the next 50 years. However, it is also important to plan for emergency supplies in the event of a prolonged drought or an interruption/impairment of supply from an existing source. An interconnection between two collaborating municipal WUGs can serve as an alternative means of providing emergency drinking water in lieu of trucking in supply or other expensive options.

In compliance with TAC, Chapter 357 Regional Water Planning Guidelines, available information on existing major water infrastructure facilities that may be used for interconnections in event of an emergency shortage of water was collected. For the Llano Estacado Region, municipal WUGs and WWP's were sent a survey in September 2019 regarding their water supply and use (Appendix G). The survey was used as the method to collect emergency interconnections information.

As part of the survey, water providers were asked to confirm or update information regarding the existence of emergency interconnections integrated with their system, and the providers of the potential emergency supply. Of the 74 WUGs in Llano Estacado Region, 29 responded to the survey.

In accordance with TWC §16.053(r), the information gathered, such as specific connections, is considered confidential and was submitted to the executive administrator but not included in the regional plan. Some circumstances that would require the use of an emergency interconnect system to be operated could affect an entire body of water or aquifer, such as drought or contamination. It is important to know the source of the emergency interconnect provider's supply for this reason. The source to each provider was determined using the TCEQ Water Watch database and surface water (SW) or groundwater (GW) designation. Information on existing and potential interconnect supply capacity or location was not available from either source.

The DCPs do not include making emergency interconnections as planned responses to the drought trigger stages. Emergency interconnections would be an extraordinary response to extreme drought conditions.

A summary table of the existing and potential emergency interconnects in the Llano Estacado Region and the emergency provider's source of supply is presented in Table 7-6.



Table 7-6. Emergency Interconnects

Entity Receiving Supply	Entity Providing Supply	Providers Sources			
		Source #1	Source #2	Source #3	Source #4
Existing Emergency Connections					
Dickens	Spur (resale of White River Municipal Water District (MWD) water)	White River Reservoir	Ogallala Aquifer		
Littlefield	Lubbock	Mix of Lubbock sources	Lake Alan Henry	Ogallala Aquifer	Purchased from CRMWA in Region A
Mackenzie MWD (supply for Silverton)	Tulia	Dockum Aquifer	Ogallala Aquifer		
Seth Ward Water Supply Corporation (WSC)	Plainview	Ogallala Aquifer			
Potential Emergency Connections					
Abernathy	CRMWA	Purchased from CRMWA in Region A			
Abernathy	Shallowater	Ogallala Aquifer	Mix of Lubbock sources	Purchased from CRMWA in Region A	
Amherst	Lubbock	Ogallala Aquifer			
Amherst	Sudan	Ogallala Aquifer			
Anton	Lubbock	Ogallala Aquifer			
Dimmit	Hereford	Ogallala Aquifer			
Dimmit	Friona	Ogallala Aquifer			
Dimmit	Bovina	Ogallala Aquifer			
Dimmit	Farwell	Ogallala Aquifer			



Entity Receiving Supply	Entity Providing Supply	Providers Sources			
		Source #1	Source #2	Source #3	Source #4
Dougherty WSC	Floydada	Ogallala Aquifer	Mackenzie Reservoir		
Earth / Springlake / Olton (Connection between systems)		Ogallala Aquifer			
Farwell	Clovis, NM	Ogallala Aquifer	Kings River		
Flomot	Dougherty WSC	Ogallala Aquifer			
Grassland	Post	White River Reservoir	Ogallala Aquifer	Purchased from CRMWA in Region A	
Hale Center	CRMWA	Purchased from CRMWA in Region A			
Hale Center	Plainview	Purchased from CRMWA in Region A			
Happy	Tulia	Dockum Aquifer			
Hereford	Canyon	Ogallala Aquifer			
Idalou	Lubbock	Mix of Lubbock sources			
Justiceburg	South Garza Water Supply	Lake Alan Henry			
Justiceburg	Lake Alan Henry Water District	Lake Alan Henry			
Kress	CRMWA	Purchased from CRMWA in Region A			
Kress	Tulia	Mackenzie Reservoir	Dockum Aquifer	Ogallala Aquifer	



Entity Receiving Supply	Entity Providing Supply	Providers Sources			
		Source #1	Source #2	Source #3	Source #4
Lorenzo	Idalou	Ogallala Aquifer			
Morton / White Face (Connection between systems)		Ogallala Aquifer			
Muleshoe	Lubbock	Ogallala Aquifer			
Nazareth	Hart	Ogallala Aquifer			
Petersburg	Lubbock, Plainview, Floydada	Ogallala Aquifer r			
Plains / Denver City / Seagraves / Seminole (Connection between systems)		Ogallala Aquifer			
Post/White River MWD	Lubbock	Lake Alan Henry			
Post/White River MWD	Southland ISD	Ogallala Aquifer			
Quitaque	Silverton, Turkey, or Floydada	Ogallala Aquifer			
Roaring Springs	Matador	Other Aquifer			
Ropesville	Meadow	Purchased from CRMWA in Region A			
Ropesville	Wolfforth	Ogallala Aquifer			
Shallowater	Lubbock	Mix of Lubbock sources			
Slaton	Southland ISD	Ogallala Aquifer			
Sudan	Lubbock	Ogallala Aquifer			
Sundown	White Face	Ogallala Aquifer			
Tulia/Mackenzie MWA	CRMWA	Purchased from CRMWA in Region A			



Entity Receiving Supply	Entity Providing Supply	Providers Sources			
		Source #1	Source #2	Source #3	Source #4
Wellman	Brownfield	Ogallala Aquifer	Purchased from CRMWA in Region A		
White Face	Levelland	Purchased from CRMWA in Region A			
Wilson	Slaton	Purchased from CRMWA in Region A			
Wilson	Tahoka	Purchased from CRMWA in Region A			
Wolfforth	Lubbock	Mix of Lubbock sources			



7.5 Emergency Response to Local Drought Conditions or Loss of Municipal Supply

The regional and state water plans aim to prepare entities for severe drought scenarios based on the DOR. However, entities may find themselves in a local drought or facing a loss of municipal supply. While rare, it is important to have a backup plan in case of infrastructure failure or water supply contamination. This is especially important for smaller entities that rely on a sole source of supply. While many entities and WWP's have DCPs, it is less common for small municipalities to have these emergency plans.

A WUG relying on groundwater is considered sole source if its entire supply comes from the same aquifer regardless of varying groundwater districts or combination of contractual and local development supplies. A WUG relying on surface water is considered sole-source if their yield comes from one river intake or one reservoir, regardless of the number of contracts in place. A WUG with a supply contract was not considered sole-source due to system operations. WUGs with both groundwater and surface water supplies were not included, with the exception of county-other entities.

A broad range of emergency situations could result in a loss of reliable municipal supply, and it is not possible to plan one solution to meet any possible emergency. Accordingly, a range of possible responses were selected for each entity based on source type and location. A WUG using groundwater was analyzed for potential additional fresh water and brackish water wells, based on the existence of appropriate aquifers in the area. Modeled available groundwater (MAG) availability was not considered because the wells are assumed temporary over the course of an emergency.

Table 7-7 presents temporary emergency responses that may or may not require permanent infrastructure. For municipal WUGs, a nearby entity that could provide supply in the case of an isolated incident was identified. Existing interconnects for municipal WUGs including the 21 county-other WUGs are included in the analysis. The addition of a local groundwater well and trucking in water are considered as an emergency supply option for all municipal WUGs under severe circumstances. Entities providing municipal supplies to WUGs were assumed to have 180 days or less of municipal supply.



Table 7-7. Emergency Response to Local Drought Conditions or Loss of Municipal Supply for WUGs in the Llano Estacado Region

Entity				Potential Emergency Water Supply Sources						Implementation Requirements				
Water User Group	County	2020 Population	2020 Demand (Ac-ft/yr)	Release From Upstream Reservoir	Curtailment of Upstream/Downstream Water Rights	Local Groundwater Well	Brackish Groundwater Desalination	Trucked-in Water	Supply from Nearby Entity	Existing Emergency Interconnect	Potential Entity Providing Supply	Other Local Entities Required to Participate/Coordinate	Emergency Agreements/Arrangements Already in Place	Type of Infrastructure Required
ABERNATHY	HALE	3,049	722			X		X	X		CRMWA, SHALLOWATER			Well, Pipeline, Transportation
AMHERST	LAMB	799	102			X		X	X		LUBBOCK, SUDAN			Well, Pipeline, Transportation
ANTON	HOCKLEY	1,235	160			X		X	X		LUBBOCK			Well, Pipeline, Transportation
BOVINA	PARMER	2,082	373			X		X	X		FRIONA			Well, Pipeline, Transportation
BROWNFIELD	TERRY	10,000	1,604			X		X	X		SEAGRAVES			Well, Pipeline, Transportation
COUNTY-OTHER, BAILEY	BAILEY	2,243	277			X		X	X		MULESHOE			Well, Pipeline, Transportation
COUNTY-OTHER, BRISCOE	BRISCOE	499	159			X		X	X		SILVERTON			Well, Pipeline, Transportation
COUNTY-OTHER, CASTRO	CASTRO	2,519	368			X		X	X		DIMMITT			Well, Pipeline, Transportation
COUNTY-OTHER, COCHRAN	COCHRAN	822	306			X		X	X		MORTON			Well, Pipeline, Transportation
COUNTY-OTHER, CROSBY	CROSBY	1,269	150			X		X	X		RALLS			Well, Pipeline, Transportation
COUNTY-OTHER, DAWSON	DAWSON	4,924	606			X		X	X		LAMESA			Well, Pipeline, Transportation
COUNTY-OTHER, DEAF SMITH	DEAF SMITH	5,001	590			X		X	X		HEREFORD			Well, Pipeline, Transportation
COUNTY-OTHER, DICKENS	DICKENS	1,078	145			X		X	X	X	SPUR (RESALE OF WHITE RIVER MWD WATER)			Well, Pipeline, Transportation
COUNTY-OTHER, FLOYD	FLOYD	1,598	192			X		X	X		FLOYDADA			Well, Pipeline, Transportation
COUNTY-OTHER, GAINES	GAINES	11,656	1,400			X		X	X		SEMINOLE			Well, Pipeline, Transportation
COUNTY-OTHER, GARZA	GARZA	1,065	135			X		X	X		POST			Well, Pipeline, Transportation
COUNTY-OTHER, HALE	HALE	7,923	1,031			X		X	X		PLAINVIEW			Well, Pipeline, Transportation
COUNTY-OTHER, HOCKLEY	HOCKLEY	7,518	921			X		X	X		LEVELLAND			Well, Pipeline, Transportation
COUNTY-OTHER, LAMB	LAMB	2,783	401			X		X	X		LITTLEFIELD			Well, Pipeline, Transportation
COUNTY-OTHER, LUBBOCK	LUBBOCK	29,236	3,797			X		X	X		LUBBOCK			Well, Pipeline, Transportation
COUNTY-OTHER, LYNN	LYNN	2,682	311			X		X	X		TAHOKA			Well, Pipeline, Transportation
COUNTY-OTHER, MOTLEY	MOTLEY	546	98			X		X	X		MATADOR			Well, Pipeline, Transportation



Entity				Potential Emergency Water Supply Sources							Implementation Requirements			
Water User Group	County	2020 Population	2020 Demand (Ac-ft/yr)	Release From Upstream Reservoir	Curtailment of Upstream/Downstream Water Rights	Local Groundwater Well	Brackish Groundwater Desalination	Trucked-in Water	Supply from Nearby Entity	Existing Emergency Interconnect	Potential Entity Providing Supply	Other Local Entities Required to Participate/Coordinate	Emergency Agreements/Arrangements Already in Place	Type of Infrastructure Required
COUNTY-OTHER, PARMER	PARMER	3,398	661			X		X	X		FRIONA			Well, Pipeline, Transportation
COUNTY-OTHER, SWISHER	SWISHER	2,729	357			X		X	X		TULIA			Well, Pipeline, Transportation
COUNTY-OTHER, TERRY	TERRY	3,599	445			X		X	X		BROWNFIELD			Well, Pipeline, Transportation
COUNTY-OTHER, YOAKUM	YOAKUM	2,146	263			X		X	X		PLAINS			Well, Pipeline, Transportation
CROSBYTON	CROSBY	1,922	301			X		X	X		RALLS			Well, Pipeline, Transportation
DENVER CITY	YOAKUM	5,072	1,423			X		X	X		PLAINS, SEAGRAVES, SEMINOLE			Well, Pipeline, Transportation
DIMMITT	CASTRO	4,825	1,091			X		X	X		HEREFORD, FRIONA, BOVINA, FARWELL			Well, Pipeline, Transportation
EARTH	LAMB	1,099	191			X		X	X		SPRINGLAKE, OLTON			Well, Pipeline, Transportation
FARWELL	PARMER	1,507	393			X		X	X		CLOVIS, NM			Well, Pipeline, Transportation
FLOYDADA	FLOYD	3,242	572			X		X	X		LUBBOCK			Well, Pipeline, Transportation
FRIONA	PARMER	4,437	801			X		X	X		BOVINA			Well, Pipeline, Transportation
HALE CENTER	HALE	2,252	281			X		X	X		CRMWA, PLAINVIEW			Well, Pipeline, Transportation
HAPPY	SWISHER	649	99			X		X	X		TULIA			Well, Pipeline, Transportation
HART MUNICIPAL WATER SYSTEM	CASTRO	1,194	175			X		X	X		DIMMITT			Well, Pipeline, Transportation
HEREFORD	DEAF SMITH	17,150	3,857			X		X	X		CANYON			Well, Pipeline, Transportation
IDALOU	LUBBOCK	2,425	434			X		X	X		LUBBOCK			Well, Pipeline, Transportation
LAMESA	DAWSON	9,755	2,240			X		X	X		O'DONNELL			Well, Pipeline, Transportation
LEVELLAND	HOCKLEY	14,839	2,441			X		X	X		WHITE FACE			Well, Pipeline, Transportation
LITTLEFIELD	LAMB	6,642	987			X		X	X	X	LUBBOCK		X	Well, Pipeline, Transportation
LOCKNEY	FLOYD	2,029	277			X		X	X		FLOYDADA			Well, Pipeline, Transportation
LORENZO	CROSBY	1,260	231			X		X	X		IDALOU			Well, Pipeline, Transportation
LUBBOCK	LUBBOCK	261,706	46,775			X		X						Well, Transportation
MATADOR	MOTLEY	643	224			X		X	X		DICKENS			Well, Pipeline, Transportation



Entity				Potential Emergency Water Supply Sources							Implementation Requirements			
Water User Group	County	2020 Population	2020 Demand (Ac-ft/yr)	Release From Upstream Reservoir	Curtailment of Upstream/Downstream Water Rights	Local Groundwater Well	Brackish Groundwater Desalination	Trucked-in Water	Supply from Nearby Entity	Existing Emergency Interconnect	Potential Entity Providing Supply	Other Local Entities Required to Participate/Coordinate	Emergency Agreements/Arrangements Already in Place	Type of Infrastructure Required
MORTON PWS	COCHRAN	2,168	477			X		X	X		LUBBOCK			Pipeline, Transportation
MULESHOE	BAILEY	5,769	1,173			X		X	X		LUBBOCK			Well, Pipeline, Transportation
NAZARETH	CASTRO	352	134			X		X	X		HART			Well, Pipeline, Transportation
NEW DEAL	LUBBOCK	869	113			X		X	X		LUBBOCK, PLAINVIEW, FLOYDADA			Well, Pipeline, Transportation
ODONNELL	DAWSON	893	124			X		X	X		LAMESA			Well, Pipeline, Transportation
OLTON	LAMB	2,250	466			X		X	X		PLAINVIEW			Well, Pipeline, Transportation
PETERSBURG MUNICIPAL WATER SYSTEM	HALE	1,252	321			X		X	X		LUBBOCK			Well, Pipeline, Transportation
PLAINS	YOAKUM	1,702	438			X		X	X		DENVER CITY, SEAGRAVES, SEMINOLE			Well, Pipeline, Transportation
PLAINVIEW	HALE	24,624	4,587			X		X	X		LUBBOCK			Well, Pipeline, Transportation
POST	GARZA	6,012	792			X		X	X		LUBBOCK			Well, Pipeline, Transportation
QUITAQUE	BRISCOE	420	106			X		X	X		SILVERTON, TURKEY, FLOYDADA			Well, Pipeline, Transportation
RALLS	CROSBY	2,075	311			X		X	X		CROSBYTOWN			Well, Pipeline, Transportation
RANSOM CANYON	LUBBOCK	1,171	336			X		X	X		LUBBOCK			Well, Pipeline, Transportation
RED RIVER AUTHORITY OF TEXAS	DICKENS	68	17			X		X	X		SPUR			Well, Pipeline, Transportation
SEAGRAVES	GAINES	2,558	423			X		X	X		PLAINS, DENVER CITY, SEMINOLE			Well, Pipeline, Transportation
SEMINOLE	GAINES	7,102	2,348			X		X	X		PLAINS, DENVER CITY, SEAGRAVES			Well, Pipeline, Transportation
SHALLOWATER	LUBBOCK	2,820	422			X		X	X		LUBBOCK			Well, Pipeline, Transportation
SILVERTON	BRISCOE	754	128			X		X	X	X	TULIA		X	Well, Pipeline, Transportation
SLATON	LUBBOCK	6,179	745			X		X	X		SOUTHLAND ISD			Well, Pipeline, Transportation
SPUR	DICKENS	1,041	180			X		X	X		DICKENS			Well, Pipeline, Transportation
SUDAN	LAMB	1,042	250			X		X	X		LUBBOCK			Well, Pipeline, Transportation
SUNDOWN	HOCKLEY	1,538	417			X		X	X		WHITE FACE			Well, Pipeline, Transportation
TAHOKA PUBLIC WATER SYSTEM	LYNN	2,832	476			X		X	X		LUBBOCK			Well, Pipeline, Transportation



Entity				Potential Emergency Water Supply Sources							Implementation Requirements			
Water User Group	County	2020 Population	2020 Demand (Ac-ft/yr)	Release From Upstream Reservoir	Curtailment of Upstream/Downstream Water Rights	Local Groundwater Well	Brackish Groundwater Desalination	Trucked-in Water	Supply from Nearby Entity	Existing Emergency Interconnect	Potential Entity Providing Supply	Other Local Entities Required to Participate/Coordinate	Emergency Agreements/Arrangements Already in Place	Type of Infrastructure Required
TULIA	SWISHER	4,879	865			X		X	X		CRMWA			Well, Pipeline, Transportation
WHITEFACE	COCHRAN	501	118			X		X	X		LEVELLAND, MORTON			Well, Pipeline, Transportation
WOLFFORTH	LUBBOCK	4,577	765			X		X	X		LUBBOCK			Well, Pipeline, Transportation

7.6 Region-Specific Drought Response Recommendations and Model Drought Contingency Plans

The LERWPG acknowledges that DCPs are a useful drought management tool for entities with both surface and groundwater sources and recommends that entities consider having a current DCP in preparation for drought conditions. The region also recommends that, in accordance with TCEQ guidelines, entities update their DCPs every 5 years as triggers can change as wholesale and retail water providers reassess their contracts and supplies. The LERWPG obtained 17 DCP or WCP documents from across the region.

7.6.1 Drought Response Recommendations for Surface Water

Surface water accounts for a minority of projected 2070 municipal supplies in the Llano Estacado Region (see Chapter 3). With a variety of local supply sources, it is difficult to create a set of triggers and responses that fit the needs of each WUG in the regional planning area. The LERWPG recognizes that supplies are understood best by the water system operators and suggests that WUGs without DCPs look to the DCPs of their water providers as examples, if available.

For entities without DCPs, which supply themselves with local surface water, the LERWPG suggests reviewing the drought responses and recommendations used by similar entities in the region. An example of triggers and responses from the DCPs in the region is presented below (Table 7-8). These were selected as common and representative examples. The triggers depend on parameters such as treatment plant use, storage levels, reservoir elevations, and system failures. The responses include categories ranging from home irrigation limits to commercial and industrial use reductions.

7.6.2 Drought Response Recommendations for Groundwater

Groundwater accounts for most projected 2070 municipal supplies (see Chapter 3). With such a variety of supply sources, it is difficult to create a set of triggers and responses that fit the needs of each WUG in the regional planning area. The LERWPG recognizes that supplies are understood best by the operators and suggests that WUGs without DCPs look to the DCPs of their water providers and groundwater conservation districts as examples, if available.

For entities without DCPs supplying themselves with local groundwater, the LERWPG suggests reviewing the drought responses and recommendations used by similar entities in the region. An example of triggers and responses from the DCPs in the region is presented below (Table 7-8). These were selected as common and representative examples. The DCP includes five water stages ranging from “Mild” to “Water Emergency”. The triggers depend on parameters such as season, ground storage levels,



contamination, and system failures. The responses include categories ranging from residential irrigation limits to commercial and industrial use reductions.

Table 7-8. Common Llano Estacado Region Drought Contingencies

Drought Stage	Trigger	Actions
Stage I – MILD	Water use exceeds 80% of available capacity	<ul style="list-style-type: none"> City reduces water main flushing. Voluntary limit on irrigation to 2 days a week at designated times. Customers are requested to minimize or discontinue non-essential water use.
Stage II – MODERATE	Water use exceeds 90% of available capacity	<ul style="list-style-type: none"> Mandatory limit on irrigation to 2 days a week at designated times or by hand held hose or 5 gallon bucket. Vehicle washing allowed only with hand held bucket or hose. Filling of pools or Jacuzzis limited to watering days/times. Non-circulating ponds or fountains are prohibited unless supporting aquatic life. Use of water from fire hydrants shall be limited to firefighting activities or other activities necessary to maintain public health, safety and welfare. All restaurants are prohibited from serving water unless requested. Non-essential uses are prohibited.
Stage III – SEVERE	Water use exceeds 100% of available capacity	<ul style="list-style-type: none"> All actions listed in Stage II. Irrigation limited to hand held hose or less than 5 gallons of faucet water is used during designated watering days and times. The use of water for construction from designated hydrants under special permit is discontinued.
Stage IV – CRITICAL	Water use exceeds 105% of available capacity	<ul style="list-style-type: none"> All actions listed in Stages II and III. Only washing of mobile equipment in the critical interest of the public health or safety is allowed. Commercial car washes can be used during designated hours. Filling of swimming pools or fountains is prohibited. No applications for new, additional or expanded water service infrastructure shall be approved.
Stage V – EMERGENCY	Water shortage due to infrastructure break, contamination, and/or system outage	<ul style="list-style-type: none"> All actions described in previous stages. Irrigation of landscaped areas is absolutely prohibited. Use of water to wash any vehicle is absolutely prohibited.

7.6.3 Example Drought Contingency Plans

TCEQ has prepared example DCPs for wholesale and retail water suppliers. The examples provide guidance and suggestions with regard to preparing DCPs. The TCEQ example DCPs may be available on TCEQ’s website or otherwise available by contacting one of their offices. Appendix H contains model DCPs for cities with populations smaller than 15,000 and larger than 15,000.

7.7 Drought Management Water Management Strategies

The regional water plan is developed to meet projected water demands during a drought of severity equivalent to the DOR. The LERWPG sees the purpose of the planning as ensuring that sufficient supplies are available to meet future water demands. Therefore, drought management recommendations have not been made by the LERWPG as a WMS for specific WUG needs. Reducing water demands during a drought as a defined WMS does not mean that sufficient supplies will be available to meet the projected water demands, but simply eliminates the demands. While the LERWPG encourages entities in the region to promote demand management during a drought, it should not be identified as a “new source” of supply. Drought management does not make more efficient use of existing supplies, as does conservation, but instead proposes that water will not be available when the water is needed most. Drought management prioritizes which future water demands are not met under drought conditions.

While drought management WMSs are not supported by the LERWPG, DCPs are encouraged for all entities and the region supports the implementation of the drought responses outlined in these DCPs when corresponding triggers occur. While the relief provided from these DCP responses can prolong supply and reduce impacts to communities, they are not considered to be reliable for all entities under all potential droughts

7.8 Other Drought Recommendations

7.8.1 Texas Drought Preparedness Council and Drought Preparedness Plan

In accordance with TWDB rules, all relevant recommendations from the Drought Preparedness Council were considered in this chapter. The Texas Drought Preparedness Council is composed of representatives from multiple state agencies and plays an important role in monitoring drought conditions, advising the governor and other groups on significant drought conditions, and facilitating coordination among local, state, and federal agencies in drought response planning. The council meets regularly to discuss drought indicators and conditions across the state and releases situation reports summarizing their findings.

Additionally, the council has developed the *State Drought Preparedness Plan*, which sets forth a framework for approaching drought in an integrated manner in order to minimize impacts to people and resources. The Llano Estacado Region supports the ongoing efforts of the Texas Drought Preparedness Council and recommends that water providers and other interested parties regularly review the situation reports as part of their drought monitoring procedures. The council provided two recommendations to all RWPGs, which are addressed in this chapter.

- Follow the outline template for Chapter 7 provided to the regions by the TWDB in April of 2019, making an effort to fully address the assessment of current drought



preparations and planned responses, as well as planned responses to local drought conditions or loss of municipal supply.

- Develop region-specific model DCPs for all water use categories in the region that account for more than 10 percent of water demands in any decade over the 50-year planning horizon.

To meet these recommendations, this chapter corresponds with the sections of the outline template. The Llano Estacado Region has also developed a model DCP for water use categories that exceed 10 percent of the demands. For the Llano Estacado Region, these use categories include irrigation only.

The Llano Estacado Region does not recommend any drought management strategies as a long-term supply solution. Instead, it reserves these types of strategies for unanticipated emergency situations only.

7.8.2 Model Updates

It is of utmost importance that RWPGs have the most up-to-date information available to make decisions. For example, the Brazos WAM that covers portions of Llano Estacado Region is used to determine both the DOR and the firm yield of reservoirs, but has not been updated in almost 20 years. The LERWPG recommends that the Texas Legislature approve a budget for TCEQ to pursue updated WAMs before the next regional planning cycle.

7.8.3 Monitoring and Assessment

The LERWPG recommends that entities monitor the drought situation around the state and locally in order to prepare for and facilitate decisions. Several state and local agencies are monitoring and reporting on conditions with up to date information. A few informative sources are listed below.

- PSDI: <http://www.ncdc.noaa.gov/temp-and-precip/drought/historical-palmers/>
- TWDB Drought Information: <http://waterdatafortexas.org/drought/>
- TCEQ Drought Information: <https://www.tceq.texas.gov/response/drought>

In addition, the LERWPG supports the efforts of the Texas Drought Preparedness Council administered by the Texas Department of Public Safety, and recommends that entities review information developed by the council. The Texas Drought Preparedness Council was established by the Texas Legislature in 1999 and is composed of 15 representatives from several state agencies. The council is responsible for assessing and public reporting of drought monitoring and water supply conditions, advising the governor on drought conditions, and ensuring effective coordination among agencies. More information on the Texas Drought Preparedness Council can be found here:

<http://www.txdps.state.tx.us/dem/CouncilsCommittees/droughtCouncil/stateDroughtPrepCouncil.htm>



G

Water User Group Information Verification Survey

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Appendix G: Water User Group Information Verification Survey



Water User Group (WUG) Information Verification Survey

Date: Tuesday, September 03, 2019

Project: 2021 Llano Estacado Regional Water Plan

To: Water Utility Manager

From: HDR, Inc. on behalf of the Llano Estacado Regional Water Planning Group and the South Plains Association of Governments (SPAG)

Subject: Water User Group (WUG) Information Verification Survey

The Llano Estacado Regional Water Planning Group (Region O) is in the process of developing water management strategies, conservation, and drought recommendations for use in the 2021 Llano Estacado Regional Water Plan (2021 Plan).

This is a follow-up survey to the previous one sent in September 2017. In this survey, we are requesting confirmation of water supplies and needs, water management strategies, emergency water supply connections, and drought planning information for your water user group (WUG).

Please direct your response to Kelly Davila, 806.762.8721 or Kdavila@spag.org before September 20, 2019.

If no feedback is received by you for your utility, then we will use the information currently available, based primarily on the 2016 Plan. If you have received this information in error, or if there is a more appropriate contact for our use, please contact Kelly Davila.

We appreciate your assistance in sharing information about your utility, and we look forward to working with you as we develop the 2021 Llano Estacado Regional Water Plan. Region O, the South Plains Association of Governments and our technical consultant, HDR, are committed to assisting you in the regional water planning process.

For information regarding the planning process and to access the former 2016 Llano Estacado Regional Water Plan, please visit the Region O webpage at www.llanoplan.org.

Water User Group (WUG) Information Verification Survey

Please complete the survey, scan or take a photo of your survey, and send your response to Kelly Davila, 806.762.8721 or Kdavila@spag.org by September 20, 2019.

Water Supplies

1. Please describe any current water reuse projects, including capacity and supply.



Water User Group (WUG) Information Verification Survey

2. Check any special constraints your utility's current water supply system experiences.
 - Difficulty meeting peak day demands / summer seasonal usage
 - Water quality issues (please explain) _____
 - Cost of existing supplies are increasing and becoming too high
 - Leaks / Water loss issues / Aging infrastructure
 - Other (please specify): _____
 - No special constraints.
 - We expect good water quality and sufficient quantity through at least Year _____
(insert future year)
3. Do you have a Water Conservation Plan? Yes / No
 If yes, who is responsible for implementing the Plan? _____
 If yes, has the plan been sent to the Texas Commission on Environmental Quality (TCEQ)? Yes / No
4. Please send a copy of your utility's Water Conservation Plan to Kelly Davila, SPAG, at kdavila@spag.org

Aging Infrastructure / Asset Management

5. Does your utility have higher than normal water use that could indicate leaks? Yes / No
6. Could your utility could benefit from financing? Yes / No
7. Would you be interested in low-interest loans from the TWDB, if available? Yes / No
8. Are your utility's meters manually or automatically read (through AMI)? Automated / Manual

Conservation

9. Has your utility found it difficult to implement water conservation efforts?
 If yes, please explain _____
10. Is public awareness / buy-in for water conservation a problem for your utility? Yes / No
11. Does your utility have difficulty in balancing revenue vs. water conservation? Yes / No

Water Management Strategies

12. Please indicate potential, future sources of water supply for your utility and indicate if these are being actively pursued or are only being considered, check those that apply.

Strategy	Considered	Actively Being Pursued
_____	<input type="checkbox"/>	<input type="checkbox"/>
_____	<input type="checkbox"/>	<input type="checkbox"/>
_____	<input type="checkbox"/>	<input type="checkbox"/>



Water User Group (WUG) Information Verification Survey

Drought Response Measures

13. How has your utility prepared for future drought conditions? (Check all that apply)

- Adoption of Safe Yield as a basis for supply
- Emergency Connections
- Supply System Redundancy
- Implementation of drought plan/water restrictions
- Other (please specify): _____

14. Do you have a Drought Contingency Plan? Yes / No

If yes, who is responsible for implementing the Plan? _____

15. Please send a copy of your utility's Drought Contingency Plan to Kelly Davila, SPAG, at kdavila@spag.org

Emergency Water Use Connections

16. Does your utility currently have emergency water supply connections? Yes / No

If yes, with whom? _____

If no, what provisions does your utility take in case of emergency water supply needs?

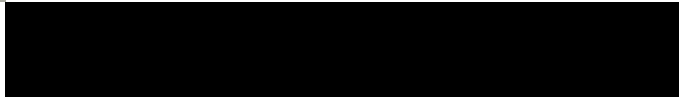
If no, is your utility pursuing opportunities to develop emergency connections? Yes / No

If yes, with whom? _____



H

Region O Model Drought
Contingency Plan for a Small
Retail Public Water Supplier
Sole Source Local
Groundwater



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**Region O Model
Drought Contingency Plan
For a Small (population less than 15,000)
Retail Public Water Supplier
Sole Source Local Groundwater**

Disclaimer: The following form is a model drought contingency plan for a retail public water supplier with a sole water source from groundwater that was developed by the Region O regional water planning group as a part of the 2016 regional water planning process. This model is supplied for your convenience as a template and includes more than the state requires. Not all items may apply to your utility’s situation, but this template may be modified as needed to address your specific issues. At a minimum the **red text** portions of this model plan should be thoroughly reviewed and updated with appropriate information for your utility. Your utility will be responsible for making sure that your completed drought contingency plan is approved by the Texas Commission on Environmental Quality (TCEQ).

(Name of Utility)

(Address, City, Zip Code)

(CCN#)

(PWS #s)

(Date)

Section I: Declaration of Policy, Purpose, and Intent

In order to conserve the available water supply and protect the integrity of water supply facilities—with particular regard for domestic water use, sanitation, and fire protection—and to protect and preserve public health, welfare, and safety and minimize the adverse impacts of water supply shortage or other water supply emergency conditions, the **(name of water supplier)** hereby adopts the following regulations and restrictions on the delivery and consumption of water through an ordinance and/or resolution **(cite or attach ordinance/or resolution)**.

Water uses regulated or prohibited under this Drought Contingency Plan (the Plan) are considered to be non-essential, and continuation of such uses during times of water shortage or other emergency water supply condition are deemed to constitute a waste of water that subjects the offender(s) to penalties as defined in Section XI of this Plan.

Section II: Public Involvement

Opportunity for the public to provide input into the preparation of the Plan was provided by the (name of water supplier) by means of (describe methods used to inform the public about the preparation of the plan and provide opportunities for input; for example, scheduling and providing public notice of a public meeting to accept input on the Plan).

Section III: Public Education

The (name of water supplier) will periodically provide the public with information about the Plan as developed under their continuing public education program along with information regarding this drought contingency plan. The drought information will include the conditions under which each stage of the Plan is to be initiated or terminated and the drought response measures to be implemented in each stage. This information will be provided by means of (describe methods to be used to provide information to the public about the Plan; for example, public events, press releases or utility bill inserts).

Section IV: Coordination with Regional Water Planning Groups

The service area of the (name of water supplier) is located within the Llano Estacado Regional Water Planning Group (Region O), and (name of water supplier) has provided a copy of this Plan to the Llano Estacado Regional Water Planning Group.

Section V: Authorization

The (designated official; for example, the mayor, city manager, utility director, general manager, etc.) or his/her designee is hereby authorized and directed to implement the applicable provisions of this Plan upon determination that such implementation is necessary to protect public health, safety, and welfare. The (designated official) or his/her designee shall have the authority to initiate or terminate drought or other water supply emergency response measures as described in this Plan.

Section VI: Application

The provisions of this Plan shall apply to all persons, customers, and property utilizing water provided by the (name of water supplier). The terms “person” and “customer” as used in the Plan include individuals, corporations, partnerships, associations, and all other legal entities.

Section VII: Definitions

For the purposes of this Plan, the following definitions shall apply:

Aesthetic water use: water use for ornamental or decorative purposes such as fountains, reflecting pools, and water gardens.

Commercial and institutional water use: water use that is integral to the operations of commercial and non-profit establishments and governmental entities such as retail establishments, hotels and motels, restaurants, and office buildings.

Conservation: those practices, techniques, and technologies that reduce the consumption of water, reduce the loss or waste of water, improve the efficiency in the use of water, or increase the recycling and reuse of water so that a supply is conserved and made available for future or alternative uses.

Customer: any person, company, or organization using water supplied by (name of water supplier).

Domestic water use: water use for personal needs or for household or sanitary purposes such as drinking, bathing, heating, cooking, sanitation, or for cleaning a residence, business, industry, or institution.

Even-numbered address: street addresses, box numbers, or rural postal route numbers ending in 0, 2, 4, 6, or 8 and locations without addresses.

Firm system capacity: the system delivery capacity with the largest single water well or production unit out of service.

Industrial water use: the use of water in processes designed to convert materials of lower value into forms having greater usability and value.

Landscape irrigation use: water used for the irrigation and maintenance of landscaped areas, whether publicly or privately owned, including residential and commercial lawns, gardens, golf courses, parks, and rights-of-way and medians.

Non-essential water use: water uses that are not essential nor required for the protection of public, health, safety, and welfare, including:

- (a) irrigation of landscape areas, including parks, athletic fields, and golf courses, except as otherwise provided under this Plan;
- (b) use of water to wash any motor vehicle, motorbike, boat, trailer, airplane, or other vehicle;
- (c) use of water to wash down any sidewalks, walkways, driveways, parking lots, tennis courts, or other hard-surfaced areas;
- (d) use of water to wash down buildings or structures for purposes other than immediate fire protection;
- (e) flushing of gutters or permitting water to run or accumulate in any gutter or street;
- (f) use of water to fill, refill, or add to any indoor or outdoor swimming pools or Jacuzzi-type pools;
- (g) use of water in a fountain or pond for aesthetic or scenic purposes except where necessary to support aquatic life;

- (h) failure to repair a controllable leak(s) within a reasonable period after having been given notice directing the repair of such leak(s); and
- (i) use of water from hydrants for construction purposes or any other purposes other than fire fighting.

Odd-numbered address: street addresses, box numbers, or rural postal route numbers ending in 1, 3, 5, 7, or 9.

Total system peak capacity: the maximum system delivery capacity with all water wells and production units in service.

Section VIII: Criteria for Initiation and Termination of Drought Response Stages

The **(designated official)** or his/her designee shall monitor water supply and/or demand conditions on a **daily** basis and shall determine when conditions warrant initiation or termination of each stage of the Plan, that is, when the specified “triggers” are reached.

The triggering criteria described below are based on **state and local regulation, pertaining to the water supplied by city wells and the water system capacity, and analysis of the vulnerability of the water source under drought of record conditions.**

Drought Response Triggers

Stage 1 Triggers — MILD Water Shortage Conditions

Requirements for initiation

Customers shall be requested to **voluntarily** conserve water and adhere to the prescribed restrictions on certain water uses, defined in Section VII-Definitions, when:

- *Weather conditions, time of year and system pressures indicate that a mild drought condition exists.*
- *The daily water use exceeds 75 percent of the total system peak capacity for 10 consecutive days.*
- *The static water level in the (name of water supplier) well(s) is more than xxx feet below the measuring point.*
- *The total daily water demand equals or exceeds xxx million gallons for 10 consecutive days.*

The public water supplier may devise other triggering criteria that are tailored to its system.

Requirements for termination

Stage 1 of the Plan may be rescinded when all of the conditions listed as triggering events have ceased to exist for a period of **5** consecutive days.

Stage 2 Triggers — MODERATE Water Shortage Conditions

Requirements for initiation

Customers shall be required to comply with the requirements and restrictions on certain non-essential water uses provided in Section IX of this Plan when:

- *The daily water use exceeds 85 percent of the total system peak capacity for 10 consecutive days.*
- *The static water level in the (name of water supplier) well(s) is more than xxx feet below the measuring point.*
- *The total daily water demand equals or exceeds xxx million gallons for 10 consecutive days.*

The public water supplier may devise other triggering criteria that are tailored to its system.

Requirements for termination

Stage 2 of the Plan may be rescinded when all of the conditions listed as triggering events have ceased to exist for a period of 5 consecutive days. Upon termination of Stage 2, Stage 1 restrictions will apply.

Stage 3 Triggers — SEVERE Water Shortage Conditions

Requirements for initiation

Customers shall be required to comply with the requirements and restrictions on certain non-essential water uses for Stage 3 of this Plan when:

- *The daily water use exceeds 95 percent of the total system peak capacity for 5 consecutive days.*
- *The static water level in the (name of water supplier) well(s) is more than xxx feet below the measuring point.*
- *The total daily water demand equals or exceeds xxx million gallons for 5 consecutive days.*

The public water supplier may devise other triggering criteria that are tailored to its system.

Requirements for termination

Stage 3 of the Plan may be rescinded when all of the conditions listed as triggering events have ceased to exist for a period of 3 consecutive days. Upon termination of Stage 3, Stage 2 restrictions will apply.

Stage 4 Triggers — CRITICAL Water Shortage Conditions

Requirements for initiation

Customers shall be required to comply with the requirements and restrictions on certain non-essential water uses for Stage 4 of this Plan when:

- *Water demand exceeds the firm system capacity for 5 consecutive days. As a result, supply cannot keep up with demand, and primary wells or storage facilities do not recover sufficiently to allow for continued pumping into the system.*

The public water supplier may devise other triggering criteria that are tailored to its system.

Requirements for termination

Stage 4 of the Plan may be rescinded when all of the conditions listed as triggering events have ceased to exist for a period of 3 consecutive days. Upon termination of Stage 4, Stage 3 restrictions will apply.

Stage 5 Triggers — EMERGENCY Water Shortage Conditions

Requirements for initiation

Customers shall be required to comply with the requirements and restrictions for Stage 5 of this Plan when (**designated official**) or his/her designee determines that a water supply emergency exists based on:

- Major water line breaks or pump or system failures that cause unprecedented loss of capability to provide water service; *or*
- Natural or man-made contamination of the water supply source(s).

Requirements for termination

Stage 5 of the Plan may be rescinded when all of the conditions listed as triggering events have ceased to exist for a period of 3 consecutive days. Upon termination of Stage 5, Stage 4 restrictions will apply.

Stage 6 Triggers — WATER ALLOCATION

***Note:** The inclusion of WATER ALLOCATION as part of a drought contingency plan may not be required in all cases. For example, for a given water supplier, an analysis of water supply availability under drought of record conditions may indicate that there is essentially no risk of water supply shortage. Hence, a drought contingency plan for such a water supplier might only address facility capacity limitations and emergency conditions (e.g., supply source contamination and system capacity limitations).*

Requirements for initiation

Customers shall be required to comply with the water allocation plan prescribed in Section IX of this Plan and comply with the requirements and restrictions for Stage 6 of this Plan when:

- *Water demand exceeds the firm system capacity for more than 10 consecutive days despite the restrictions in place under Stage 5. As a result, supply cannot keep up with demand, and primary wells or storage facilities do not recover sufficiently to allow for continued pumping into the system.*

Requirements for termination

The water allocation plan prescribed in Section IX may be rescinded when all of the conditions listed as triggering events have ceased to exist for a period of 3 consecutive days. Upon termination of Stage 6, Stage 5 restrictions will apply.

Section IX: Drought Response Stages

The (**designated official**), or his/her designee, shall monitor water supply and/or demand conditions on a daily basis and, in accordance with the triggering criteria set forth in Section VIII of this Plan, shall determine that a mild, moderate, severe, critical, emergency, or water allocation condition exists and shall implement the following notification procedures:

Drought Response Notification

Notification of the Public:

The (**designated official**) or his/ her designee shall notify the public by means of:

- *publication in a newspaper of general circulation;*
- *direct mail to each customer;*
- *public service announcements;*
- *signs posted in public places; and/or*
- *take-home fliers at schools.*

Additional Notification:

The (**designated official**) or his/ her designee shall notify directly, or cause to be notified directly, the following individuals and entities:

- *Mayor / Chairman and members of the City Council / Utility Board*
- *Fire Chief(s)*
- *City and/or County Emergency Management Coordinator(s)*
- *County Judge and Commissioner(s)*
- *State Disaster District / Department of Public Safety*
- *TCEQ (required when mandatory restrictions are imposed or when going to a less restrictive stage)*
- *Major water users*

- *Critical water users (e.g., hospitals)*
- *Parks / street superintendents and public facilities managers*

Note: The plan should specify direct notice only as appropriate to respective drought stages.

Drought Responses

Stage 1 Response — MILD Water Shortage Conditions

Target: Achieve a **voluntary 10 percent reduction in daily water demand.**

Best Management Practices for Supply Management:

Describe measures, if any, to be implemented directly by (name of water supplier) to manage limited water supplies and/or reduce water demand. Examples include:

- *Reduction of flushing of water mains (if more than required monthly frequency).*
- *Reduction of watering in public landscaped areas (e.g., parks).*
- *Reduction of water usage during fire training exercises.*
- *Activation and use of an alternative supply source(s).*

Voluntary Water Use Restrictions for Reducing Demand:

- (a) Water customers are requested to voluntarily limit the irrigation of landscaped areas to Sundays and Thursdays for water customers with an even-numbered address and Saturdays and Wednesdays for water customers with an odd-numbered address, and to irrigate landscapes only between the hours of 12:00 midnight and 10:00 a.m. and between 8:00 p.m. and 12:00 midnight on designated watering days.
- (b) All operations of the **(name of water supplier)** shall adhere to water use restrictions prescribed for Stage 2 of the Plan.
- (c) Water customers are requested to practice water conservation and to minimize or discontinue water use for non-essential purposes.

Stage 2 Response — MODERATE Water Shortage Conditions

Target: Achieve a **25 percent reduction in daily water demand.**

Best Management Practices for Supply Management:

Describe additional measures, if any, to be implemented directly by (name of water supplier) to manage limited water supplies and/or reduce water demand. Examples include:

- *Temporary discontinuation of flushing of water mains except for monthly flushing.*
- *Temporary discontinuation of watering in public landscaped areas (e.g., parks).*
- *Use of an alternative supply source(s).*
- *Use of reclaimed water for non-potable purposes.*

Mandatory Water Use Restrictions for Demand Reduction:

Under threat of penalty for violation, the following water use restrictions shall apply to all persons:

- (a) Irrigation of landscaped areas with hose-end sprinklers or automatic irrigation systems shall be limited to Sundays or Thursdays for customers with an even-numbered address and Saturdays or Wednesdays for water customers with an odd-numbered address, and irrigation of landscaped areas is further limited to the hours from 12:00 midnight until 10:00 a.m. and from 8:00 p.m. to 12:00 midnight on designated watering days. However, irrigation of landscaped areas is permitted at any time if it is by means of a hand-held hose, a faucet-filled bucket or watering can of 5 gallons or less, or a drip irrigation system.
- (b) Use of water to wash any motor vehicle, motorbike, boat, trailer, airplane or other vehicle is prohibited except between the hours of 12:00 midnight and 10:00 a.m. and between 8:00 p.m. and 12:00 midnight on designated watering days. Such washing, when allowed, shall be done with a hand-held bucket or a hand-held hose equipped with a positive shutoff nozzle for quick rinses. Vehicle washing may be done at any time on the immediate premises of a commercial car wash or commercial service station. Further, such washing may be exempted from these regulations if the health, safety, and welfare of the public is contingent upon frequent vehicle cleansing, such as garbage trucks and vehicles used to transport food and perishables.
- (c) Use of water to fill, refill, or add to any indoor or outdoor swimming pools, wading pools, or Jacuzzi-type pools is prohibited except on designated watering days between the hours of 12:00 midnight and 10:00 a.m. and between 8:00 p.m. and 12:00 midnight.
- (d) Operation of any ornamental fountain or pond for aesthetic or scenic purposes is prohibited except where necessary to support aquatic life or where such fountains or ponds are equipped with a recirculation system.
- (e) Use of water from hydrants shall be limited to firefighting-related activities or other activities necessary to maintain public health, safety, and welfare, except that use of water from designated fire hydrants for construction purposes may be allowed under special permit from the (name of water supplier).
- (f) Use of water for the irrigation of golf course greens, tees, and fairways is prohibited except on designated watering days between the hours of 12:00 midnight and 10:00 a.m. and between 8:00 p.m. and 12:00 midnight. If the golf course utilizes a water source other than that provided by the (name of water supplier), the facility shall not be subject to these regulations.

- (g) All restaurants are prohibited from serving water to patrons except upon request of the patron.
- (h) The following uses of water are defined as non-essential and are prohibited:
 - 1. Wash down of any sidewalks, walkways, driveways, parking lots, tennis courts, or other hard-surfaced areas;
 - 2. Use of water to wash down buildings or structures for purposes other than immediate fire protection;
 - 3. Use of water for dust control (with the exception of non-potable water);
 - 4. Flushing of gutters or permitting water to run or accumulate in any gutter or street; and
 - 5. Failure to repair a controllable leak(s) within a reasonable period after having been given notice directing the repair of such leak(s).

Stage 3 Response — SEVERE Water Shortage Conditions

Target: Achieve a 50 percent reduction in daily water demand.

Best Management Practices for Supply Management:

Describe additional measures, if any, to be implemented directly by (name of water supplier) to manage limited water supplies and/or reduce water demand. Examples include:

- *Reduce flushing of water mains to when required only.*
- *Cease watering in public landscaped areas (e.g., city parks).*
- *Cease use of water for fire training.*

Mandatory Water Use Restrictions for Demand Reduction:

All requirements of Stage 2 shall remain in effect during Stage 3 with the following additional restrictions:

- (a) Irrigation of landscaped areas shall be limited to one designated watering day per two week period (based on address number) between the hours of 12:00 midnight and 10:00 a.m. and between 8:00 p.m. and 12:00 midnight and shall be by means of hand-held hoses, hand-held buckets, drip irrigation, or permanently installed automatic sprinkler system only. The use of hose-end sprinklers is prohibited at all times.
- (b) The watering of golf course tees is prohibited unless the golf course utilizes a water source other than that provided by the **(name of water supplier)**.
- (c) The use of water for construction purposes from designated fire hydrants under special permit is prohibited.

- (d) The filling, refilling, or adding of water to swimming pools, wading pools, and Jacuzzi-type pools is prohibited.

Stage 4 Response — CRITICAL Water Shortage Conditions

Target: Achieve a 75 percent reduction in daily water demand.

Best Management Practices for Supply Management:

Describe additional measures, if any, to be implemented directly by (name of water supplier) to manage limited water supplies and/or reduce water demand. Examples include:

- *Minimize unnecessary water uses in and around the system.*
- *Monitor progress of actions.*
- *Prohibit outside water use.*

Mandatory Water Use Restrictions for Reducing Demand:

All requirements of Stage 2 and 3 shall remain in effect during Stage 4 with the following additional restrictions:

- (a) Irrigation of landscaped areas shall be limited to the hours between 6:00 a.m. and 10:00 a.m. and between 8:00 p.m. and 12:00 midnight on one designated watering day per month (based on address number) and shall be by means of hand-held hoses, hand-held buckets, or drip irrigation only. The use of hose-end sprinklers or permanently installed automatic sprinkler systems are prohibited at all times.
- (b) Use of water to wash any motor vehicle, motorbike, boat, trailer, airplane or other vehicle not occurring on the premises of a commercial car wash and commercial service stations and not in the immediate interest of public health, safety, and welfare is prohibited. Further, such vehicle washing at commercial car washes and commercial service stations shall occur only between the hours of 6:00 a.m. and 10:00 a.m. and between 6:00 p.m. and 10:00 p.m.
- (c) No application for new, additional, expanded, or increased-in-size water service connections, meters, service lines, pipeline extensions, mains, or water service facilities of any kind shall be approved, and time limits for approval of such applications are hereby suspended for such time as this drought response stage or a higher-numbered stage shall be in effect.

Stage 5 Response — EMERGENCY Water Shortage Conditions

Target: Achieve a 90 percent reduction in daily water demand.

Best Management Practices for Supply Management:

Describe additional measures, if any, to be implemented directly by (name of water supplier) to manage limited water supplies and/or reduce water demand. Examples include:

- *Eliminate all unnecessary water uses in and around the system.*
- *Limit water use by fire department to firefighting only.*

Mandatory Water Use Restrictions for Reducing Demand:

All requirements of Stage 2, 3, and 4 shall remain in effect during Stage 5 with the following additional restrictions:

- (a) Irrigation of landscaped areas is absolutely prohibited.
- (b) Use of water to wash any motor vehicle, motorbike, boat, trailer, airplane or other vehicle is absolutely prohibited.

Stage 6 Response — WATER ALLOCATION

Note: The drought contingency plan must include specific, quantified targets for water use reductions to be achieved during periods of water shortage and drought. The entity preparing the plan shall establish the targets. The goals established by the entity under this subparagraph for WATER ALLOCATION are not enforceable.

In the event that water shortage conditions threaten public health, safety, and welfare, the **(designated official)** is hereby authorized to allocate water according to the following water allocation plan:

Single-Family Residential Customers

The allocation to residential water customers residing in a single-family dwelling shall be as follows:

Persons per Household	Gallons per Month
1 or 2	6,000
3 or 4	7,000
5 or 6	8,000
7 or 8	9,000
9 or 10	10,000
11 or more	12,000

“Household” means the residential premises served by the customer’s meter. “Persons per household” include only those persons currently physically residing at the premises and expected to reside there for the entire billing period. It shall be assumed that a particular customer’s household is comprised of 2 persons unless the customer notifies the **(name of water supplier)** of a greater number of persons per household on a form prescribed by the **(designated official)**. The **(designated official)** shall give his/her best effort to see that such forms are mailed, otherwise provided, or made available to every residential customer. If, however, a customer does not receive such a form, it shall be the customer’s responsibility to

go to the **(name of water supplier)** offices to complete and sign the form claiming more than 2 persons per household.

New customers may claim more persons per household at the time of applying for water service on the form prescribed by the **(designated official)**. When the number of persons per household increases so as to place the customer in a different allocation category, the customer may notify the **(name of water supplier)** on such form and the change will be implemented in the next practicable billing period. If the number of persons in a household is reduced, the customer shall notify the **(name of water supplier)** in writing within 2 days.

In prescribing the method for claiming more than 2 persons per household, the **(designated official)** shall adopt methods to ensure the accuracy of the claim. Any person who knowingly, recklessly, or with criminal negligence falsely reports the number of persons in a household or fails to timely notify the **(name of water supplier)** of a reduction in the number of person in a household shall be fined not less than \$25.00.

Residential water customers shall pay the following surcharges:

- \$10.00 for the first 1,000 gallons over allocation.
- \$25.00 for the second 1,000 gallons over allocation.
- \$50.00 for the third 1,000 gallons over allocation.
- \$75.00 for each additional 1,000 gallons over allocation.

Surcharges shall be cumulative.

Master-Metered Multi-Family Residential Customers

The allocation to a customer billed from a master meter that jointly measures water to multiple permanent residential dwelling units (e.g., apartments, mobile homes) shall be allocated 6,000 gallons per month for each dwelling unit. It shall be assumed that such a customer's meter serves two dwelling units unless the customer notifies the **(name of water supplier)** of a greater number on a form prescribed by the **(designated official)**. The **(designated official)** shall give his/her best effort to see that such forms are mailed, otherwise provided, or made available to every such customer. If, however, a customer does not receive such a form, it shall be the customer's responsibility to go to the **(name of water supplier)** offices to complete and sign the form claiming more than 2 dwellings. A dwelling unit may be claimed under this provision whether it is occupied or not.

New customers may claim more dwelling units at the time of applying for water service on the form prescribed by the **(designated official)**. If the number of dwelling units served by a master meter is reduced, the customer shall notify the **(name of water supplier)** in writing within 2 days.

In prescribing the method for claiming more than 2 dwelling units, the **(designated official)** shall adopt methods to ensure the accuracy of the claim. Any person who knowingly, recklessly, or with criminal negligence falsely reports the number of dwelling units served by a master meter or fails to timely notify the **(name of water supplier)** of a reduction in the number of person in a household shall be fined not less than **\$25.00**.

Customers billed from a master meter under this provision shall pay the following monthly surcharges:

- **\$10.00** for the first 1,000 gallons over allocation.
- **\$25.00** for the second 1,000 gallons over allocation.
- **\$50.00** for the third 1,000 gallons over allocation.
- **\$75.00** for each additional 1,000 gallons over allocation.

Surcharges shall be cumulative.

Commercial Customers

A monthly water allocation shall be established by the **(designated official)**, or his/her designee, for each non-residential commercial customer other than an industrial customer who uses water for processing purposes. A non-residential customer whose monthly usage is less than **5,000** gallons shall be allocated **5,000** gallons. For non-residential customers with higher monthly usage, the allocation shall be approximately **75** percent of the customer's usage for the corresponding month's billing period during the previous 12 months. If the customer's billing history is shorter than 12 months, the monthly average for the period for which there is a record shall be used for any monthly period for which no history exists. The **(designated official)** shall give his/her best effort to see that notice of each non-residential customer's allocation is mailed to such customer. If, however, a customer does not receive such notice, it shall be the customer's responsibility to contact the **(name of water supplier)** to determine the allocation.

Upon request of the customer or at the initiative of the **(designated official)**, the allocation may be reduced or increased if (1) the designated period does not accurately reflect the customer's normal water usage, (2) one non-residential customer agrees to transfer part of its allocation to another non-residential customer, or (3) other objective evidence demonstrates that the designated allocation is inaccurate under present conditions. A customer may appeal an allocation established hereunder to the **(designated official, or alternatively, a special water allocation review committee)**.

Non-residential commercial customers shall pay the following surcharges:

- **\$10.00** for the first 1,000 gallons over allocation.
- **\$25.00** for the second 1,000 gallons over allocation.
- **\$75.00** for the third 1,000 gallons over allocation.

- \$100.00 for each additional 1,000 gallons over allocation.

The surcharges shall be cumulative.

Industrial Customers

A monthly water allocation shall be established by the (designated official), or his/her designee, for each industrial customer that uses water for processing purposes. The industrial customer's allocation shall be approximately 90 percent of the customer's water usage baseline. Ninety (90) days after the initial imposition of the allocation for industrial customers, the industrial customer's allocation shall be further reduced to 85 percent of the customer's water usage baseline. The industrial customer's water use baseline will be computed on the average water use for the 12 month period ending prior to the date of implementation of Stage 2 of the Plan. If the industrial water customer's billing history is shorter than 12 months, the monthly average for the period for which there is a record shall be used for any monthly period for which no billing history exists. The (designated official) shall give his/her best effort to see that notice of each industrial customer's allocation is mailed to such customer. If, however, a customer does not receive such notice, it shall be the customer's responsibility to contact the (name of water supplier) to determine the allocation, and the allocation shall be fully effective notwithstanding the lack of receipt of written notice.

Upon request of the customer or at the initiative of the (designated official), the allocation may be reduced or increased if (1) the designated period does not accurately reflect the customer's normal water use because the customer had shut down a major processing unit for repair or overhaul during the period, (2) the customer has added or is in the process of adding significant additional processing capacity, (3) the customer has shut down or significantly reduced the production of a major processing unit, (4) the customer has previously implemented significant permanent water conservation measures such that the ability to further reduce water use is limited, (5) the customer agrees to transfer part of its allocation to another industrial customer, or (6) other objective evidence demonstrates that the designated allocation is inaccurate under present conditions. A customer may appeal an allocation established hereunder to the (designated official, or alternatively, a special water allocation review committee). Industrial customers shall pay the following surcharges:

- \$20.00 for the first 1,000 gallons over allocation.
- \$50.00 for the second 1,000 gallons over allocation.
- \$150.00 for the third 1,000 gallons over allocation.
- \$200.00 for each additional 1,000 gallons over allocation.

The surcharges shall be cumulative.

Section X: Enforcement

- (a) No person shall knowingly or intentionally allow the use of water from the (name of water supplier) for residential, commercial, industrial, agricultural, governmental, or any other purpose in a manner contrary to any provision of this Plan, or in an amount in excess of that permitted by the drought response stage in effect at the time pursuant to action taken by (designated official), or his/her designee, in accordance with provisions of this Plan.
- (b) Any person who violates this Plan is guilty of a misdemeanor and upon conviction shall be punished by a fine of not less than \$50.00 and not more than \$500.00. Each day that one or more of the provisions in this Plan is violated shall constitute a separate offense. If a person is convicted of three or more distinct violations of this Plan, the (designated official) shall, upon due notice to the customer, be authorized to discontinue water service to the premises where such violations occur. Services discontinued under such circumstances shall be restored only upon payment of a reconnection charge, hereby established at \$50.00, and any other costs incurred by the (name of water supplier) in discontinuing service. In addition, suitable assurance must be given to the (designated official) that the same action shall not be repeated while the Plan is in effect. Compliance with this plan may also be sought through injunctive relief in the district court.
- (c) Any person, including a person classified as a water customer of the (name of water supplier), in apparent control of the property where a violation occurs or originates shall be presumed to be the violator, and proof that the violation occurred on the person's property shall constitute a rebuttable presumption that the person in apparent control of the property committed the violation; however, any such person shall have the right to show that he/she did not commit the violation. Parents shall be presumed to be responsible for violations of their minor children, and proof that a violation committed by a child occurred on property within the parents' control shall constitute a rebuttable presumption that the parent committed the violation; however, any such parent may be excused if he/she proves that he/she had previously directed the child not to use the water as it was used in violation of this Plan and that the parent could not have reasonably known of the violation.
- (d) Any employee of the (name of water supplier), police officer, or other City employee designated by the (designated official) may issue a citation to a person he/she reasonably believes to be in violation of this Ordinance. The citation shall be prepared in duplicate and shall contain the name and address of the alleged violator, if known, and the offense charged, and shall direct him/her to appear in the municipal court or local equivalent on the date shown on the citation, which shall not be less than 3 days nor more than 5 days from the date the citation was issued. The alleged violator shall be served a copy of the citation. Service of the citation shall be complete upon delivery of the citation to the alleged violator, to an agent or employee of a violator, or to a person over 14 years of age who is a member of the violator's immediate family or is a resident of the violator's residence. The alleged violator shall appear in municipal court or local equivalent to enter a plea of guilty or not guilty for the violation of this Plan. If the alleged violator fails to appear in municipal court or local equivalent, a warrant for his/her arrest may be issued. A summons to appear may be issued

in lieu of an arrest warrant. These cases shall be expedited and given preferential setting in **municipal court or local equivalent** before all other cases.

Section XI: Variances

The **(designated official)**, or his/her designee, may, in writing, grant temporary variance for existing water uses otherwise prohibited under this Plan if it is determined that failure to grant such variance would cause an emergency condition adversely affecting the health, sanitation, or fire protection for the public or the person requesting such variance and if one or more of the following conditions are met:

- (a) Compliance with this Plan cannot be technically accomplished during the duration of the water supply shortage or other condition for which the Plan is in effect.
- (b) Alternative methods can be implemented that will achieve the same level of reduction in water use.

Persons requesting an exemption from the provisions of this Ordinance shall file a petition for variance with the **(name of water supplier)** within 5 days after the Plan or a particular drought response stage has been invoked. All petitions for variances shall be reviewed by the **(designated official)**, or his/her designee, and shall include the following:

- (a) Name and address of the petitioner(s).
- (b) Purpose of water use.
- (c) Specific provision(s) of the Plan from which the petitioner is requesting relief.
- (d) Detailed statement as to how the specific provision of the Plan adversely affects the petitioner or what damage or harm will occur to the petitioner or others if petitioner complies with this Ordinance.
- (e) Description of the relief requested.
- (f) Period of time for which the variance is sought.
- (g) Alternative water use restrictions or other measures the petitioner is taking or proposes to take to meet the intent of this Plan and the compliance date.
- (h) Other pertinent information.

**Region O Model
Drought Contingency Plan
For a Midsize (population between 15,000 and 250,000)
Retail Public Water Supplier
Groundwater and Surface Water Sources**

Disclaimer: The following form is a model drought contingency plan for a retail public water supplier with both groundwater and surface water sources that was developed by the Region O regional water planning group as a part of the 2016 regional water planning process. This model is supplied for your convenience as a template and includes more than the state requires. Not all items may apply to your utility’s situation, but this template may be modified as needed to address your specific issues. At a minimum the red text portions of this model plan should be thoroughly reviewed and updated with appropriate information for your utility. Your utility will be responsible for making sure that your completed drought contingency plan is approved by the Texas Commission on Environmental Quality (TCEQ).

(Name of Utility)

(Address, City, Zip Code)

(CCN#)

(PWS #s)

(Date)

Section I: Declaration of Policy, Purpose, and Intent

In order to conserve the available water supply and protect the integrity of water supply facilities—with particular regard for domestic water use, sanitation, and fire protection—and to protect and preserve public health, welfare, and safety and minimize the adverse impacts of water supply shortage or other water supply emergency conditions, the (name of water supplier) hereby adopts the following regulations and restrictions on the delivery and consumption of water through an ordinance and/or resolution (cite or attach ordinance/or resolution).

Water uses regulated or prohibited under this Drought Contingency Plan (the Plan) are considered to be non-essential, and continuation of such uses during times of water shortage or other emergency water supply condition are deemed to constitute a waste of water that subjects the offender(s) to penalties as defined in Section XI of this Plan.

Section II: Public Involvement

Opportunity for the public to provide input into the preparation of the Plan was provided by the (name of water supplier) by means of (describe methods used to inform the public about the preparation of the plan and provide opportunities for input; for example, scheduling and providing public notice of a public meeting to accept input on the Plan).

Section III: Public Education

The (name of water supplier) will periodically provide the public with information about the Plan as developed under their continuing public education program along with information regarding this drought contingency plan. The drought information will include the conditions under which each stage of the Plan is to be initiated or terminated and the drought response measures to be implemented in each stage. This information will be provided by means of (describe methods to be used to provide information to the public about the Plan; for example, public events, press releases or utility bill inserts).

Section IV: Coordination with Regional Water Planning Groups

The service area of the (name of water supplier) is located within the Llano Estacado Regional Water Planning Group (Region O), and (name of water supplier) has provided a copy of this Plan to the Llano Estacado Regional Water Planning Group.

Section V: Authorization

The (designated official; for example, the mayor, city manager, utility director, general manager, etc.) or his/her designee is hereby authorized and directed to implement the applicable provisions of this Plan upon determination that such implementation is necessary to protect public health, safety, and welfare. The (designated official) or his/her designee shall have the authority to initiate or terminate drought or other water supply emergency response measures as described in this Plan.

Section VI: Application

The provisions of this Plan shall apply to all persons, customers, and property utilizing water provided by the (name of water supplier). The terms “person” and “customer” as used in the Plan include individuals, corporations, partnerships, associations, and all other legal entities.

Section VII: Definitions

For the purposes of this Plan, the following definitions shall apply:

Aesthetic water use: water use for ornamental or decorative purposes such as fountains, reflecting pools, and water gardens.

Commercial and institutional water use: water use that is integral to the operations of commercial and non-profit establishments and governmental entities such as retail establishments, hotels and motels, restaurants, and office buildings.

Conservation: those practices, techniques, and technologies that reduce the consumption of water, reduce the loss or waste of water, improve the efficiency in the use of water or increase the recycling and reuse of water so that a supply is conserved and made available for future or alternative uses.

Customer: any person, company, or organization using water supplied by (name of water supplier).

Domestic water use: water use for personal needs or for household or sanitary purposes such as drinking, bathing, heating, cooking, sanitation, or for cleaning a residence, business, industry, or institution.

Even-numbered address: street addresses, box numbers, or rural postal route numbers ending in 0, 2, 4, 6, or 8 and locations without addresses.

Firm system capacity: the system delivery capacity with the largest single water well or production unit out of service.

Industrial water use: the use of water in processes designed to convert materials of lower value into forms having greater usability and value.

Landscape irrigation use: water used for the irrigation and maintenance of landscaped areas, whether publicly or privately owned, including residential and commercial lawns, gardens, golf courses, parks, and rights-of-way and medians.

Non-essential water use: water uses that are not essential nor required for the protection of public, health, safety, and welfare, including:

- (a) irrigation of landscape areas, including parks, athletic fields, and golf courses, except as otherwise provided under this Plan;
- (b) use of water to wash any motor vehicle, motorbike, boat, trailer, airplane, or other vehicle;
- (c) use of water to wash down any sidewalks, walkways, driveways, parking lots, tennis courts, or other hard-surfaced areas;
- (d) use of water to wash down buildings or structures for purposes other than immediate fire protection;
- (e) flushing of gutters or permitting water to run or accumulate in any gutter or street;
- (f) use of water to fill, refill, or add to any indoor or outdoor swimming pools or Jacuzzi-type pools;
- (g) use of water in a fountain or pond for aesthetic or scenic purposes except where necessary to support aquatic life;
- (h) failure to repair a controllable leak(s) within a reasonable period after having been given notice directing the repair of such leak(s); and

- (i) use of water from hydrants for construction purposes or any other purposes other than fire fighting.

Odd-numbered address: street addresses, box numbers, or rural postal route numbers ending in 1, 3, 5, 7, or 9.

Total system peak capacity: the maximum system delivery capacity with all water wells and production units in service.

Section VIII: Criteria for Initiation and Termination of Drought Response Stages

The **(designated official)** or his/her designee shall monitor water supply and/or demand conditions on a **daily** basis and shall determine when conditions warrant initiation or termination of each stage of the Plan, that is, when the specified “triggers” are reached.

The triggering criteria described below are based on **state and local regulation, pertaining to the water supplied by city wells, surface water reservoir levels, and the entire water system capacity, and analysis of the vulnerability of the available water sources under drought of record conditions.**

Drought Response Triggers

Stage 1 Triggers — MILD Water Shortage Conditions

Requirements for initiation

Customers shall be requested to **voluntarily** conserve water and adhere to the prescribed restrictions on certain water uses, defined in Section VII-Definitions, when:

- *Weather conditions, time of year and system pressures indicate that a mild drought condition exists.*
- *Surface water reservoir storage capacity is between 70 and 80 percent.*
- *Surface water source is not able to supply entire demand and it is necessary to use groundwater supply.*
- *The daily water use exceeds 75 percent of the total system peak capacity for 10 consecutive days.*
- *The static water level in the (name of water supplier) well(s) is more than xxx feet below the measuring point.*
- *The total daily water demand equals or exceeds xxx million gallons for 10 consecutive days.*
- *Notification is received, pursuant to requirements specified in the (name of water supplier) wholesale water purchase contract with (name of wholesale water supplier), requesting initiation of Stage 1 of the Drought Contingency Plan.*
- *Treated water reservoir levels continue falling without refilling above xxx percent overnight (e.g., based on an evaluation of minimum treated water storage required to avoid system outage).*

The public water supplier may devise other triggering criteria that are tailored to its system.

Requirements for termination

Stage 1 of the Plan may be rescinded when all of the conditions listed as triggering events have ceased to exist for a period of 5 consecutive days.

Stage 2 Triggers — MODERATE Water Shortage Conditions

Requirements for initiation

Customers shall be required to comply with the requirements and restrictions on certain non-essential water uses provided in Section IX of this Plan when:

- *The daily water use exceeds 85 percent of the total system peak capacity for 10 consecutive days.*
- *Surface water reservoir storage capacity is between 50 and 69 percent.*
- *Surface water source is not able to supply entire demand and it is necessary to use groundwater supply.*
- *The static water level in the (name of water supplier) well(s) is more than xxx feet below the measuring point.*
- *The total daily water demand equals or exceeds xxx million gallons for 10 consecutive days.*
- *Notification is received, pursuant to requirements specified in the (name of water supplier) wholesale water purchase contract with (name of wholesale water supplier), requesting initiation of Stage 2 of the Drought Contingency Plan.*
- *Treated water reservoir levels continue falling without refilling above xxx percent overnight (e.g., based on an evaluation of minimum treated water storage required to avoid system outage).*

The public water supplier may devise other triggering criteria that are tailored to its system.

Requirements for termination

Stage 2 of the Plan may be rescinded when all of the conditions listed as triggering events have ceased to exist for a period of 5 consecutive days. Upon termination of Stage 2, Stage 1 restrictions will apply.

Stage 3 Triggers — SEVERE Water Shortage Conditions

Requirements for initiation

Customers shall be required to comply with the requirements and restrictions on certain non-essential water uses for Stage 3 of this Plan when:

- *The daily water use exceeds 95 percent of the total system peak capacity for 5 consecutive days.*
- *Surface water reservoir storage capacity is between 30 and 49 percent.*

- *Surface water source is not able to supply entire demand and it is necessary to use groundwater supply.*
- *The static water level in the (name of water supplier) well(s) is more than xxx feet below the measuring point.*
- *The total daily water demand equals or exceeds xxx million gallons for 5 consecutive days.*
- *Notification is received, pursuant to requirements specified in the (name of water supplier) wholesale water purchase contract with (name of wholesale water supplier), requesting initiation of Stage 3 of the Drought Contingency Plan.*
- *Treated water reservoir levels continue falling without refilling above xxx percent overnight (e.g., based on an evaluation of minimum treated water storage required to avoid system outage).*

The public water supplier may devise other triggering criteria that are tailored to its system.

Requirements for termination

Stage 3 of the Plan may be rescinded when all of the conditions listed as triggering events have ceased to exist for a period of 3 consecutive days. Upon termination of Stage 3, Stage 2 restrictions will apply.

Stage 4 Triggers — CRITICAL Water Shortage Conditions

Requirements for initiation

Customers shall be required to comply with the requirements and restrictions on certain non-essential water uses for Stage 4 of this Plan when:

- *Surface water reservoir storage capacity is between 20 and 29 percent. Termination of surface water reservoir water supply source will be initiated when the reservoir capacity drops below 15 percent.*
- *Water demand exceeds the firm system capacity for 5 consecutive days. As a result, supply cannot keep up with demand and primary wells or storage facilities do not recover sufficiently to allow for continued pumping into the system.*

The public water supplier may devise other triggering criteria that are tailored to its system.

Requirements for termination

Stage 4 of the Plan may be rescinded when all of the conditions listed as triggering events have ceased to exist for a period of 3 consecutive days. Upon termination of Stage 4, Stage 3 restrictions will apply.

Stage 5 Triggers — EMERGENCY Water Shortage Conditions

Requirements for initiation

Customers shall be required to comply with the requirements and restrictions for Stage 5 of this Plan when (**designated official**) or his/her designee determines that a water supply emergency exists based on:

- Major water line breaks or pump or system failures that cause unprecedented loss of capability to provide water service; *or*
- Natural or man-made contamination of the water supply source(s).

Requirements for termination

Stage 5 of the Plan may be rescinded when all of the conditions listed as triggering events have ceased to exist for a period of **3** consecutive days. Upon termination of Stage 5, Stage 4 restrictions will apply.

Stage 6 Triggers — WATER ALLOCATION

Note: The inclusion of WATER ALLOCATION as part of a drought contingency plan may not be required in all cases. For example, for a given water supplier, an analysis of water supply availability under drought of record conditions may indicate that there is essentially no risk of water supply shortage. Hence, a drought contingency plan for such a water supplier might only address facility capacity limitations and emergency conditions (e.g., supply source contamination and system capacity limitations).

Requirements for initiation

Customers shall be required to comply with the water allocation plan prescribed in Section IX of this Plan and comply with the requirements and restrictions for Stage 6 of this Plan when:

- *Water demand exceeds the firm system capacity for more than 10 consecutive days despite the restrictions in place under Stage 5. As a result, supply cannot keep up with demand, and primary wells or storage facilities do not recover sufficiently to allow for continued pumping into the system.*

Requirements for termination

The water allocation plan prescribed in Section IX may be rescinded when all of the conditions listed as triggering events have ceased to exist for a period of **3** consecutive days. Upon termination of Stage 6, Stage 5 restrictions will apply.

Section IX: Drought Response Stages

The (**designated official**) or his/her designee, shall monitor water supply and/or demand conditions on a daily basis and, in accordance with the triggering criteria set forth in Section VIII of this Plan, shall determine that a mild, moderate, severe, critical, emergency, or water allocation condition exists and shall implement the following notification procedures:

Drought Response Notification

Notification of the Public

The (**designated official**) or his/ her designee shall notify the public by means of:

- *publication in a newspaper of general circulation;*
- *direct mail to each customer;*
- *public service announcements;*
- *signs posted in public places; and/or*
- *take-home fliers at schools.*

Additional Notification

The (**designated official**) or his/ her designee shall notify directly, or cause to be notified directly, the following individuals and entities:

- *Mayor / Chairman and members of the City Council / Utility Board*
- *Fire Chief(s)*
- *City and/or County Emergency Management Coordinator(s)*
- *County Judge and Commissioner(s)*
- *State Disaster District / Department of Public Safety*
- *TCEQ (required when mandatory restrictions are imposed or when going to a less restrictive stage)*
- *Major water users*
- *Critical water users (e.g., hospitals)*
- *Parks / street superintendents and public facilities managers*

Note: The plan should specify direct notice only as appropriate to respective drought stages.

Drought Responses

Stage 1 Response — MILD Water Shortage Conditions

Target: Achieve a **voluntary 10 percent reduction in daily water demand.**

Best Management Practices for Supply Management:

Describe measures, if any, to be implemented directly by (name of water supplier) to manage limited water supplies and/or reduce water demand. Examples include:

- *Reduction of flushing of water mains (if more than required monthly frequency).*
- *Reduction of watering in public landscaped areas (e.g., parks).*
- *Reduction of water usage during fire training exercises.*
- *Activation and use of an alternative supply source(s).*

Voluntary Water Use Restrictions for Reducing Demand:

- (a) Water customers are requested to voluntarily limit the irrigation of landscaped areas to Sundays and Thursdays for water customers with an even-numbered address and Saturdays and Wednesdays for water customers with an odd-numbered address, and to irrigate landscapes only between the hours of 12:00 midnight and 10:00 a.m. and between 8:00 p.m. and 12:00 midnight on designated watering days.
- (b) All operations of the **(name of water supplier)** shall adhere to water use restrictions prescribed for Stage 2 of the Plan.
- (c) Water customers are requested to practice water conservation and to minimize or discontinue water use for non-essential purposes.

Stage 2 Response — MODERATE Water Shortage Conditions

Target: Achieve a **25 percent reduction in daily water demand.**

Best Management Practices for Supply Management:

Describe additional measures, if any, to be implemented directly by (name of water supplier) to manage limited water supplies and/or reduce water demand. Examples include:

- *Temporary discontinuation of flushing of water mains except for monthly flushing.*
- *Temporary discontinuation of watering in public landscaped areas (e.g., parks).*
- *Use of an alternative supply source(s).*
- *Use of reclaimed water for non-potable purposes.*

Mandatory Water Use Restrictions for Demand Reduction:

Under threat of penalty for violation, the following water use restrictions shall apply to all persons:

- (a) Irrigation of landscaped areas with hose-end sprinklers or automatic irrigation systems shall be limited to Sundays or Thursdays for customers with an even-numbered address and Saturdays or Wednesdays for water customers with an odd-numbered address, and irrigation of landscaped areas is further limited to the hours from 12:00 midnight until 10:00 a.m. and from 8:00 p.m. to 12:00 midnight on designated watering days. However, irrigation of landscaped areas is permitted at any time if it is by means of a hand-held hose, a faucet filled bucket or watering can of 5 gallons or less, or a drip irrigation system.
- (b) Use of water to wash any motor vehicle, motorbike, boat, trailer, airplane, or other vehicle is prohibited except between the hours of 12:00 midnight and 10:00 a.m. and between 8:00 p.m. and 12:00 midnight on designated watering days. Such washing, when allowed, shall be done with a hand-held bucket or a hand-held hose equipped with a positive shutoff nozzle for quick rinses. Vehicle washing may be done at any time on the immediate premises of a commercial car wash or commercial service

station. Further, such washing may be exempted from these regulations if the health, safety, and welfare of the public is contingent upon frequent vehicle cleansing, such as garbage trucks and vehicles used to transport food and perishables.

- (c) Use of water to fill, refill, or add to any indoor or outdoor swimming pools, wading pools, or Jacuzzi-type pools is prohibited except on designated watering days between the hours of 12:00 midnight and 10:00 a.m. and between 8:00 p.m. and 12:00 midnight.
- (d) Operation of any ornamental fountain or pond for aesthetic or scenic purposes is prohibited except where necessary to support aquatic life or where such fountains or ponds are equipped with a recirculation system.
- (e) Use of water from hydrants shall be limited to firefighting-related activities or other activities necessary to maintain public health, safety, and welfare, except that use of water from designated fire hydrants for construction purposes may be allowed under special permit from the (name of water supplier).
- (f) Use of water for the irrigation of golf course greens, tees, and fairways is prohibited except on designated watering days between the hours of 12:00 midnight and 10:00 a.m. and between 8:00 p.m. and 12:00 midnight. If the golf course utilizes a water source other than that provided by the (name of water supplier), the facility shall not be subject to these regulations.
- (g) All restaurants are prohibited from serving water to patrons except upon request of the patron.
- (h) The following uses of water are defined as non-essential and are prohibited:
 - 1. Wash down of any sidewalks, walkways, driveways, parking lots, tennis courts, or other hard-surfaced areas;
 - 2. Use of water to wash down buildings or structures for purposes other than immediate fire protection;
 - 3. Use of water for dust control (with the exception of non-potable water);
 - 4. Flushing of gutters or permitting water to run or accumulate in any gutter or street; and
 - 5. Failure to repair a controllable leak(s) within a reasonable period after having been given notice directing the repair of such leak(s).

Stage 3 Response — SEVERE Water Shortage Conditions

Target: Achieve a 50 percent reduction in daily water demand.

Best Management Practices for Supply Management:

Describe additional measures, if any, to be implemented directly by (name of water supplier) to manage limited water supplies and/or reduce water demand. Examples include:

- *Reduce flushing of water mains to when required only.*
- *Cease watering in public landscaped areas (e.g., city parks).*
- *Cease use of water for fire training.*

Mandatory Water Use Restrictions for Demand Reduction:

All requirements of Stage 2 shall remain in effect during Stage 3 with the following additional restrictions:

- (a) Irrigation of landscaped areas shall be limited to one designated watering day per two week period (based on address number) between the hours of 12:00 midnight and 10:00 a.m. and between 8:00 p.m. and 12:00 midnight and shall be by means of hand-held hoses, hand-held buckets, drip irrigation, or permanently installed automatic sprinkler system only. The use of hose-end sprinklers is prohibited at all times.
- (b) The watering of golf course tees is prohibited unless the golf course utilizes a water source other than that provided by the (name of water supplier).
- (c) The use of water for construction purposes from designated fire hydrants under special permit is prohibited.
- (d) The filling, refilling, or adding of water to swimming pools, wading pools, and Jacuzzi-type pools is prohibited.

Stage 4 Response — CRITICAL Water Shortage Conditions

Target: Achieve a 75 percent reduction in daily water demand.

Best Management Practices for Supply Management:

Describe additional measures, if any, to be implemented directly by (name of water supplier) to manage limited water supplies and/or reduce water demand. Examples include:

- *Minimize unnecessary water uses in and around the system.*
- *Monitor progress of actions.*
- *Prohibit outside water use.*

Mandatory Water Use Restrictions for Reducing Demand:

All requirements of Stage 2 and 3 shall remain in effect during Stage 4 with the following additional restrictions:

- (a) Irrigation of landscaped areas shall be limited to the hours between 6:00 a.m. and 10:00 a.m. and between 8:00 p.m. and 12:00 midnight on one designated watering day per month (based on address number) and shall be by means of hand-held hoses, hand-held buckets, or drip irrigation only. The use of hose-end sprinklers or permanently installed automatic sprinkler systems are prohibited at all times.
- (b) Use of water to wash any motor vehicle, motorbike, boat, trailer, airplane or other vehicle not occurring on the premises of a commercial car wash and commercial service stations and not in the immediate interest of public health, safety, and welfare is prohibited. Further, such vehicle washing at commercial car washes and commercial service stations shall occur only between the hours of 6:00 a.m. and 10:00 a.m. and between 6:00 p.m. and 10:00 p.m.
- (c) No application for new, additional, expanded, or increased-in-size water service connections, meters, service lines, pipeline extensions, mains, or water service facilities of any kind shall be approved, and time limits for approval of such applications are hereby suspended for such time as this drought response stage or a higher-numbered stage shall be in effect.

Stage 5 Response — EMERGENCY Water Shortage Conditions

Target: Achieve a 90 percent reduction in daily water demand.

Best Management Practices for Supply Management:

Describe additional measures, if any, to be implemented directly by (name of water supplier) to manage limited water supplies and/or reduce water demand. Examples include:

- *Eliminate all unnecessary water uses in and around the system.*
- *Limit water use by fire department to firefighting only.*

Mandatory Water Use Restrictions for Reducing Demand: All requirements of Stage 2, 3, and 4 shall remain in effect during Stage 5 with the following additional restrictions:

- (a) Irrigation of landscaped areas is absolutely prohibited.
- (b) Use of water to wash any motor vehicle, motorbike, boat, trailer, airplane or other vehicle is absolutely prohibited.

Stage 6 Response -- WATER ALLOCATION

Note: The drought contingency plan must include specific, quantified targets for water use reductions to be achieved during periods of water shortage and drought. The entity preparing the plan shall establish the targets. The goals established by the entity under this subparagraph for WATER ALLOCATION are not enforceable.

In the event that water shortage conditions threaten public health, safety, and welfare, the (designated official) is hereby authorized to allocate water according to the following water allocation plan:

Single-Family Residential Customers

The allocation to residential water customers residing in a single-family dwelling shall be as follows:

Persons per Household	Gallons per Month
1 or 2	6,000
3 or 4	7,000
5 or 6	8,000
7 or 8	9,000
9 or 10	10,000
11 or more	12,000

“Household” means the residential premises served by the customer’s meter. “Persons per household” include only those persons currently physically residing at the premises and expected to reside there for the entire billing period. It shall be assumed that a particular customer’s household is comprised of 2 persons unless the customer notifies the (name of water supplier) of a greater number of persons per household on a form prescribed by the (designated official). The (designated official) shall give his/her best effort to see that such forms are mailed, otherwise provided, or made available to every residential customer. If, however, a customer does not receive such a form, it shall be the customer’s responsibility to go to the (name of water supplier) offices to complete and sign the form claiming more than 2 persons per household.

New customers may claim more persons per household at the time of applying for water service on the form prescribed by the (designated official). When the number of persons per household increases so as to place the customer in a different allocation category, the customer may notify the (name of water supplier) on such form and the change will be implemented in the next practicable billing period. If the number of persons in a household is reduced, the customer shall notify the (name of water supplier) in writing within 2 days.

In prescribing the method for claiming more than 2 persons per household, the (designated official) shall adopt methods to ensure the accuracy of the claim. Any person who

knowingly, recklessly, or with criminal negligence falsely reports the number of persons in a household or fails to timely notify the **(name of water supplier)** of a reduction in the number of person in a household shall be fined not less than **\$25.00**.

Residential water customers shall pay the following surcharges:

- **\$10.00** for the first 1,000 gallons over allocation.
- **\$25.00** for the second 1,000 gallons over allocation.
- **\$50.00** for the third 1,000 gallons over allocation.
- **\$75.00** for each additional 1,000 gallons over allocation.

Surcharges shall be cumulative.

Master-Metered Multi-Family Residential Customers

The allocation to a customer billed from a master meter that jointly measures water to multiple permanent residential dwelling units (e.g., apartments, mobile homes) shall be allocated 6,000 gallons per month for each dwelling unit. It shall be assumed that such a customer's meter serves two dwelling units unless the customer notifies the **(name of water supplier)** of a greater number on a form prescribed by the **(designated official)**. The **(designated official)** shall give his/her best effort to see that such forms are mailed, otherwise provided, or made available to every such customer. If, however, a customer does not receive such a form, it shall be the customer's responsibility to go to the **(name of water supplier)** offices to complete and sign the form claiming more than 2 dwellings. A dwelling unit may be claimed under this provision whether it is occupied or not.

New customers may claim more dwelling units at the time of applying for water service on the form prescribed by the **(designated official)**. If the number of dwelling units served by a master meter is reduced, the customer shall notify the **(name of water supplier)** in writing within 2 days.

In prescribing the method for claiming more than 2 dwelling units, the **(designated official)** shall adopt methods to ensure the accuracy of the claim. Any person who knowingly, recklessly, or with criminal negligence falsely reports the number of dwelling units served by a master meter or fails to timely notify the **(name of water supplier)** of a reduction in the number of person in a household shall be fined not less than **\$25.00**. Customers billed from a master meter under this provision shall pay the following monthly surcharges:

- **\$10.00** for the first 1,000 gallons over allocation.
- **\$25.00** for the second 1,000 gallons over allocation.
- **\$50.00** for the third 1,000 gallons over allocation.
- **\$75.00** for each additional 1,000 gallons over allocation.

Surcharges shall be cumulative.

Commercial Customers

A monthly water allocation shall be established by the **(designated official)**, or his/her designee, for each non-residential commercial customer other than an industrial customer who uses water for processing purposes. A non-residential customer whose monthly usage is less than **5,000** gallons shall be allocated **5,000** gallons. For non-residential customers with higher monthly usage, the allocation shall be approximately **75** percent of the customer's usage for the corresponding month's billing period during the previous 12 months. If the customer's billing history is shorter than 12 months, the monthly average for the period for which there is a record shall be used for any monthly period for which no history exists. The **(designated official)** shall give his/her best effort to see that notice of each non-residential customer's allocation is mailed to such customer. If, however, a customer does not receive such notice, it shall be the customer's responsibility to contact the **(name of water supplier)** to determine the allocation.

Upon request of the customer or at the initiative of the **(designated official)**, the allocation may be reduced or increased if (1) the designated period does not accurately reflect the customer's normal water usage, (2) one non-residential customer agrees to transfer part of its allocation to another nonresidential customer, or (3) other objective evidence demonstrates that the designated allocation is inaccurate under present conditions. A customer may appeal an allocation established hereunder to the **(designated official or alternatively, a special water allocation review committee)**.

Nonresidential commercial customers shall pay the following surcharges:

- Customers whose allocation is **1,000** gallons through **25,000** gallons per month:
 - **\$10.00** for the first 1,000 gallons over allocation.
 - **\$25.00** for the second 1,000 gallons over allocation.
 - **\$75.00** for the third 1,000 gallons over allocation.
 - **\$100.00** for each additional 1,000 gallons over allocation.
- Customers whose allocation is **25,000** gallons per month or more:
 - **1.50** times the block rate for each 1,000 gallons in excess of the allocation up through 5 percent above allocation.
 - **2.00** times the block rate for each 1,000 gallons from 5 percent through 10 percent above allocation.
 - **2.50** times the block rate for each 1,000 gallons from 10 percent through 15 percent above allocation.
 - **3.00** times the block rate for each 1,000 gallons more than 15 percent above allocation.

The surcharges shall be cumulative. As used herein, “block rate” means the charge to the customer per 1,000 gallons at the regular water rate schedule at the level of the customer’s allocation.

Industrial Customers

A monthly water allocation shall be established by the (designated official), or his/her designee, for each industrial customer that uses water for processing purposes. The industrial customer’s allocation shall be approximately 90 percent of the customer’s water usage baseline. Ninety (90) days after the initial imposition of the allocation for industrial customers, the industrial customer’s allocation shall be further reduced to 85 percent of the customer’s water usage baseline. The industrial customer’s water use baseline will be computed on the average water use for the 12 month period ending prior to the date of implementation of Stage 2 of the Plan. If the industrial water customer’s billing history is shorter than 12 months, the monthly average for the period for which there is a record shall be used for any monthly period for which no billing history exists. The (designated official) shall give his/her best effort to see that notice of each industrial customer’s allocation is mailed to such customer. If, however, a customer does not receive such notice, it shall be the customer’s responsibility to contact the (name of water supplier) to determine the allocation, and the allocation shall be fully effective notwithstanding the lack of receipt of written notice.

Upon request of the customer or at the initiative of the (designated official), the allocation may be reduced or increased if (1) the designated period does not accurately reflect the customer’s normal water use because the customer had shut down a major processing unit for repair or overhaul during the period, (2) the customer has added or is in the process of adding significant additional processing capacity, (3) the customer has shut down or significantly reduced the production of a major processing unit, (4) the customer has previously implemented significant permanent water conservation measures such that the ability to further reduce water use is limited, (5) the customer agrees to transfer part of its allocation to another industrial customer, or (6) other objective evidence demonstrates that the designated allocation is inaccurate under present conditions. A customer may appeal an allocation established hereunder to the (designated official, or alternatively, a special water allocation review committee). Industrial customers shall pay the following surcharges:

- Customers whose allocation is 1,000 gallons through 25,000 gallons per month:
 - \$20.00 for the first 1,000 gallons over allocation.
 - \$50.00 for the second 1,000 gallons over allocation.
 - \$150.00 for the third 1,000 gallons over allocation.
 - \$200.00 for each additional 1,000 gallons over allocation.
- Customers whose allocation is 25,000 gallons per month or more:
 - 1.50 times the block rate for each 1,000 gallons in excess of the allocation up through 5 percent above allocation.

- 2.00 times the block rate for each 1,000 gallons from 5 percent through 10 percent above allocation.
- 2.50 times the block rate for each 1,000 gallons from 10 percent through 15 percent above allocation.
- 3.00 times the block rate for each 1,000 gallons more than 15 percent above allocation.

The surcharges shall be cumulative. As used herein, “block rate” means the charge to the customer per 1,000 gallons at the regular water rate schedule at the level of the customer’s allocation.

Section X: Enforcement

- (a) No person shall knowingly or intentionally allow the use of water from the (name of water supplier) for residential, commercial, industrial, agricultural, governmental, or any other purpose in a manner contrary to any provision of this Plan, or in an amount in excess of that permitted by the drought response stage in effect at the time pursuant to action taken by (designated official), or his/her designee, in accordance with provisions of this Plan.
- (b) Any person who violates this Plan is guilty of a misdemeanor and, upon conviction shall be punished by a fine of not less than \$50.00 and not more than \$500.00. Each day that one or more of the provisions in this Plan is violated shall constitute a separate offense. If a person is convicted of three or more distinct violations of this Plan, the (designated official) shall, upon due notice to the customer, be authorized to discontinue water service to the premises where such violations occur. Services discontinued under such circumstances shall be restored only upon payment of a reconnection charge, hereby established at \$50.00, and any other costs incurred by the (name of water supplier) in discontinuing service. In addition, suitable assurance must be given to the (designated official) that the same action shall not be repeated while the Plan is in effect. Compliance with this plan may also be sought through injunctive relief in the district court.
- (c) Any person, including a person classified as a water customer of the (name of water supplier), in apparent control of the property where a violation occurs or originates shall be presumed to be the violator, and proof that the violation occurred on the person’s property shall constitute a rebuttable presumption that the person in apparent control of the property committed the violation; however, any such person shall have the right to show that he/she did not commit the violation. Parents shall be presumed to be responsible for violations of their minor children, and proof that a violation committed by a child occurred on property within the parents’ control shall constitute a rebuttable presumption that the parent committed the violation; however, any such parent may be excused if he/she proves that he/she had previously directed the child not to use the water as it was used in violation of this Plan and that the parent could not have reasonably known of the violation.
- (d) Any employee of the (name of water supplier), police officer, or other City employee designated by the (designated official), may issue a citation to a person he/she reasonably

believes to be in violation of this Ordinance. The citation shall be prepared in duplicate and shall contain the name and address of the alleged violator, if known, and the offense charged, and shall direct him/her to appear in the **municipal court or local equivalent** on the date shown on the citation, which shall not be less than 3 days nor more than 5 days from the date the citation was issued. The alleged violator shall be served a copy of the citation. Service of the citation shall be complete upon delivery of the citation to the alleged violator, to an agent or employee of a violator, or to a person over 14 years of age who is a member of the violator's immediate family or is a resident of the violator's residence. The alleged violator shall appear in **municipal court or local equivalent** to enter a plea of guilty or not guilty for the violation of this Plan. If the alleged violator fails to appear in **municipal court or local equivalent**, a warrant for his/her arrest may be issued. A summons to appear may be issued in lieu of an arrest warrant. These cases shall be expedited and given preferential setting in **municipal court or local equivalent** before all other cases.

Section XI: Variances

The (**designated official**), or his/her designee, may, in writing, grant temporary variance for existing water uses otherwise prohibited under this Plan if it is determined that failure to grant such variance would cause an emergency condition adversely affecting the health, sanitation, or fire protection for the public or the person requesting such variance and if one or more of the following conditions are met:

- (a) Compliance with this Plan cannot be technically accomplished during the duration of the water supply shortage or other condition for which the Plan is in effect.
- (b) Alternative methods can be implemented that will achieve the same level of reduction in water use.

Persons requesting an exemption from the provisions of this Ordinance shall file a petition for variance with the (**name of water supplier**) within 5 days after the Plan or a particular drought response stage has been invoked. All petitions for variances shall be reviewed by the (**designated official**), or his/her designee, and shall include the following:

- (a) Name and address of the petitioner(s).
- (b) Purpose of water use.
- (c) Specific provision(s) of the Plan from which the petitioner is requesting relief.
- (d) Detailed statement as to how the specific provision of the Plan adversely affects the petitioner or what damage or harm will occur to the petitioner or others if petitioner complies with this Ordinance.
- (e) Description of the relief requested.
- (f) Period of time for which the variance is sought.
- (g) Alternative water use restrictions or other measures the petitioner is taking or proposes to take to meet the intent of this Plan and the compliance date.
- (h) Other pertinent information.