West Central Planning Region

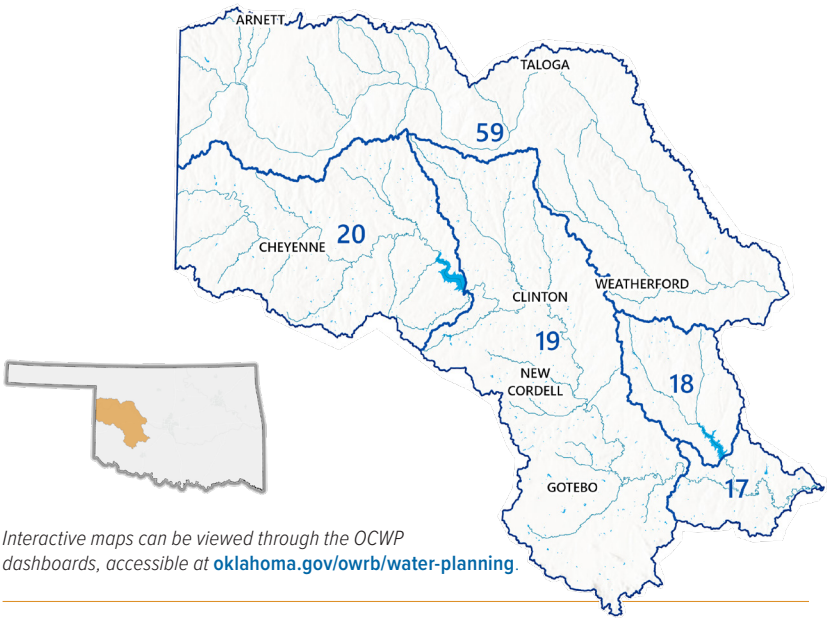
Summary

- West Central Region demands are supplied by a combination of surface water, groundwater, and out-of-basin supplies.
- Water demand (withdrawal) is projected to increase by 26,586 acre-feet per year (21%) between 2020 and 2075.
- Physical water shortages are projected for surface water and groundwater as early as 2030 and will continue through 2075.
- Surface water is projected to remain legally available for permitting through 2075 in all West Central Region basins except Basin 20. Groundwater is legally available for permitting in all West Central Region basins.
- In addition to the Statewide Recommendations, West Central Region stakeholders expressed the need to consider conjunctive water management, reforming crop insurance, and investing in irrigation districts.

OWRB Water Planning Page

oklahoma.gov/owrb/water-planning

The West Central Region represents 2% of the state's 2075 projected population and 7% of the state's total 2075 water demand projections.



Interactive maps can be viewed through the OCWP dashboards, accessible at **oklahoma.gov/owrb/water-planning**.

Reliable water supplies must be physically available (wet water available at the time and place it's needed), legally available (having a permit to use the water), of suitable quality for its intended purpose, and have the necessary infrastructure to divert, convey, and treat the water if necessary. For the West Central Region, to mitigate projected water supply shortages, the following strategies will typically be most effective:

- Reduce water demand through conservation, water loss reduction, and other activities (PS, SSI, OG, TE). WSS
- Reduce water demand through agricultural water saving options (CI, LS). WSS
- In some basins, where existing and traditional strategies are unable to meet future demands, water transfers (all sectors) and water reuse (PS, SSI) may be effective. WM WSS

Options to address water quality concerns include expanding source water protection programs and expanding water quality studies. WSS WDI

Infrastructure limitations can be addressed through additional water funding. Possible sources of new funding include providers setting appropriate water rates, public-private partnerships, state programs, and federal programs. WIW

Water Demand Sectors: PS = Public Supply, SSI = Self-supplied Industrial, OG = Oil & Gas, TE = Thermoelectric Power, CI = Crop Irrigation, LS = Livestock, SSD = Self-supplied Domestic

OCWP Statewide Recommendations: The recommendations are designed to address current and anticipated water supply challenges. Areas where the OCWP Statewide Recommendations specifically address this region's challenges are noted throughout this fact sheet with the following icons: WIW Water Infrastructure & Workforce, WM Water Management, WSS Water Supplies & Storage, and WDI Water Data & Information

OKLAHOMA Water Resources Board

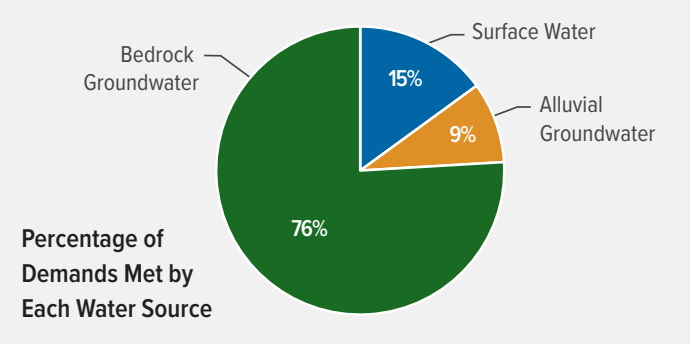
Population

2020	2030	2035	2045	2060	2075
65,516	68,882	69,850	71,952	77,668	81,670

Water Demand Projections

Water demands (withdrawals) are projected to increase by 21% between 2020 and 2075.

The West Central Region's largest demand sector is Crop Irrigation, representing 84% of the region's 2075 water demands. The second largest demand sector is Public Supply, representing 9% of the region's 2075 water demands.



Water demand refers to the amount of water that needs to be withdrawn from surface waters and/or groundwater to meet the needs of people, communities, industry, agriculture, and other users. Changes in water demands correspond to growth or decline in population, agriculture, industry, or related economic activity. Demands were projected through 2075 for seven distinct consumptive water demand sectors.

In the West Central Region, Self-supplied Domestic, Crop Irrigation, Public Supply, and Thermoelectric Power demands will increase while Livestock demands will decrease between 2020 and 2075. There are no Self-supplied Industrial demands. There is no change in Oil & Gas demands.

Total Demand by Sector (AFY)

	2020	2030	2035	2045	2060	2075
Self-supplied Domestic	773	816	811	808	824	832
Self-supplied Industrial	-	-	-	-	-	-
Crop Irrigation	104,300	115,339	117,158	119,953	124,287	128,547
Livestock	6,043	5,892	5,891	5,764	5,587	5,450
Oil & Gas	3,058	3,058	3,058	3,058	3,058	3,058
Public Supply	11,672	12,261	12,441	12,813	13,773	14,451
Thermoelectric Power	1,042	708	671	865	1,010	1,135
Total	**126,887**	**138,073**	**140,032**	**143,262**	**148,539**	**153,473**

AFY = acre-feet per year; Small differences may result due to rounding.

Physical Water Shortages WIW WM WSS

To quantify physical surface water gaps and groundwater storage depletions through 2075, use of existing surface water and groundwater supplies was assumed to continue in current proportions while out-of-basin supplies will be used up to permit amounts or projected demands, whichever is less.

The West Central Region is projected to experience surface water gaps (where demand exceeds supplies) and groundwater depletions (where water use exceeds the rate of recharge), as detailed in the tables below. The magnitude of shortages is projected for all planning years, and the frequency (probability) of a shortage occurring is estimated for 2075 demand conditions. Bedrock groundwater frequencies are constant because of the lack of direct connection to surface water hydrology. Frequent shortages with large magnitudes are indicative of the greatest need to implement alternative water management strategies.

SURFACE WATER GAP	2030	2035	2045	2060	2075	2075
Basin	**Magnitude (AFY)**					**Frequency**
17	-	-	-	-	-	0%
18	-	-	-	-	-	0%
19	405	435	470	548	601	8%
20	112	111	100	89	80	18%
59	147	200	286	482	632	52%

AFY = acre-feet per year

ALLUVIAL GROUNDWATER DEPLETION	2030	2035	2045	2060	2075	2075
Basin	**Magnitude (AFY)**					**Frequency**
17	-	-	-	--	-	0%
18	-	-	-	-	-	No AGW Demand
19	238	243	249	261	270	8%
20	524	524	526	531	534	46%
59	397	538	822	1,298	1,831	59%

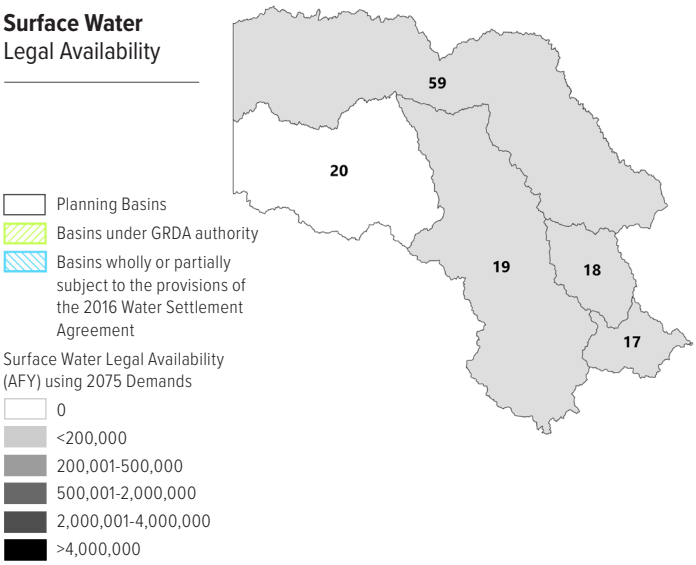
AFY = acre-feet per year

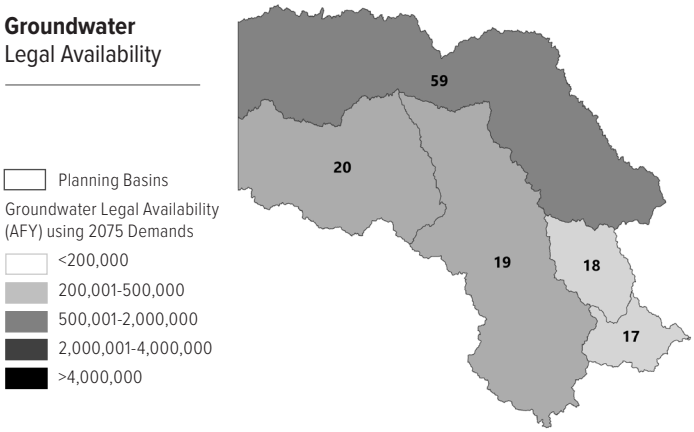
BEDROCK GROUNDWATER DEPLETION	2030	2035	2045	2060	2075
Basin	**Magnitude (AFY)**				
17	1,743	1,792	1,795	1,795	1,798
18	30,269	30,583	30,566	30,536	30,508
19	-	-	-	-	125
20	2	2	1	1	31
59	6,642	7,385	8,878	11,773	14,868

AFY = acre-feet per year

Legal Water Availability WM WSS

Surface water is projected to remain legally available for permitting through 2075 in all of the basins within the West Central Region except Basin 20. Groundwater is legally available for permitting in all of the West Central Region basins.





Legal water availability projected in 2075 varies across the region, with darker shading indicating more water available for appropriation.

Fort Cobb Reservoir

Surface Water Resources

WIW WM WSS WDI

The OCWP uses historical monthly streamflow data (1950-2021), which reflects current natural and human-created conditions (runoff, diversions and use of water, and impoundments and reservoirs), to represent the water that may be physically available to meet projected demand. The maximum amount of water a reservoir can dependably supply during a critical drought period is referred to as its yield. The table below provides information about remaining water supply yield that is available for permitting from existing reservoirs in the region.

Reservoir	Estimated Remaining Water Supply Yield to be Permitted (AFY)
Crowder	---
Fort Cobb	0
Clinton	---
Dead Warrior	---
Foss	366

--- Indicates no information is available.
AFY = acre-feet per year
Estimated remaining water supply yield as of July 2025.

Groundwater Resources

WIW WM WSS WDI

For the OCWP physical water availability analyses, alluvial aquifers are defined as aquifers comprised of river alluvium and terrace deposits, occurring along rivers and streams and consisting of unconsolidated deposits of sand, silt, and clay. Alluvial aquifers are more hydrologically connected with surface water features (streams, rivers, lakes) than bedrock aquifers. Bedrock aquifers consist of consolidated (solid) or partially consolidated rocks, such as sandstone, limestone, dolomite, and gypsum. Bedrock aquifers are typically replenished slowly by recharge from surface infiltration (precipitation) and from adjacent aquifers.

Aquifer	Type	Class	Equal Proportionate Share (AFY/Acre)
Arbuckle-Timbered Hills	Bedrock	Major	temporary 2.0
Canadian River	Alluvial	Major	temporary 2.0
Elk City	Bedrock	Major	1.0
Hennessey-Garber	Bedrock	Minor	1.6
Ogallala Northwest	Bedrock	Major	1.4
Ogallala Roger Mills	Bedrock	Major	temporary 2.0
Rush Springs	Bedrock	Major	temporary 2.0
Southwestern Oklahoma	Bedrock	Minor	temporary 2.0
Washita River Reach 1	Alluvial and Terrace	Major	2.0
Washita River Reach 3	Alluvial and Terrace	Major	1.5
Western Oklahoma	Bedrock	Minor	temporary 2.0

AFY = acre-feet per year

Bedrock aquifers with typical yields greater than 50 gallons per minute (gpm) and alluvial aquifers with typical yields greater than 150 gpm are considered major aquifers.

Water Quality

WIW WDI

Groundwater: Groundwater comes from an assortment of major bedrock and alluvial aquifers. Elevated nitrate levels are a concern, especially in the Rush Springs aquifer.

Lakes: Water quality in this region is impacted by elevated levels of nutrients, Chlorophyll-a, and turbidity - factors that directly affect both recreational and water supply uses. Lakes in this area are classified as eutrophic or hypereutrophic, indicating high productivity and potential water quality concerns. These conditions contribute to a heightened risk of harmful algal blooms (HABs), increased water treatment costs, taste and odor issues, and diminished recreational value—impacting both recreational and water supply beneficial uses.

Streams: Rivers and streams are impacted by erosion, high mineral concentrations, drought-flood cycling, increased sedimentation, and increased nutrient concentrations. These factors contribute to habitat degradation, water insecurity, and increased treatment costs.

Water Infrastructure Needs

WIW

OWRB compiled near-term wastewater project needs, water supply project needs, and state flood plan project needs as part of developing the 2025 OCWP. Near-term costs include drinking water and wastewater projects by public utilities (various system sizes) and other entities (such as conservancy districts, department of wildlife, regional councils, and tourism). All flood mitigation projects in the database were identified by public water suppliers in the State Flood Plan.

Near-term Drinking Water Cost (2024 dollars)	Near-term Wastewater Cost (2024 dollars)	Near-term Stormwater Cost (2024 dollars)
$393M	**$273M**	**$0M**

M = million

For drinking water, costs were projected for the next 20 years for public suppliers. While it is difficult to anticipate all the changes that may occur within this extended timeframe, it is beneficial to evaluate the order of magnitude of the long-range potential costs of meeting demands. Estimated costs include rehabilitation of existing water infrastructure and construction of new water infrastructure for growth and regulatory compliance. The costs are categorized according to system sizes:

- Small systems serve less than 3,300 people;
- Small-medium systems serve 3,301 to 10,000 people;
- Medium-large systems serve 10,001-100,000 people; and
- Large systems serve more than 100,000 people.

System Size	Near-term Drinking Water Cost (2024 dollars)	Future Drinking Water Costs through 2035 (2025 dollars)[1]	Future Drinking Water Costs through 2045 (2025 dollars)[2]
Small	$48M	$856M	$1.23B
Small-Medium	$67M	$117M	$60M
Medium-Large	$37M	$8.1M	$178M
Large	N/A	N/A	N/A
Non-Public suppliers	$240M	N/A	N/A
Total	**$393M**	**$981M**	**$1.47B**

M = million; B = billion; N/A = not applicable

1. Not inclusive of near-term costs.
2. Not inclusive of near-term or future drinking water costs through 2035.

Visit OWRB Water Planning page [(https://oklahoma.gov/owrb/water-planning.html)](https://oklahoma.gov/owrb/water-planning.html) for more information on region water quality and trend analysis.