

Regional Water Planning: Water Availability and Existing Water Supply

What is water availability and existing water supply?

Water availability in regional water planning refers to the maximum amount of raw water that could be produced by a water source (such as a reservoir or aquifer) during a repeat of the drought of record. Availability does not account for whether the supply is connected to or legally authorized for use by a specific water user group (WUG).

Existing water supply is the maximum amount of water that is physically and legally accessible from existing sources for immediate use by a WUG, under drought of record conditions. This is a subset of the water availability volume that is already connected to WUGs. By definition, existing water supplies associated with a particular source cannot exceed the total availability for that same source.

How is water availability determined?

Water availability is determined using a source-based analysis. Regional water planning groups (RWPGs) consider availability of three source types: surface water, groundwater, and reuse.

Surface Water

Surface water availability is determined using the Texas Commission on Environmental Quality's water availability models (WAMs), specifically the unmodified WAM RUN 3. WAM RUN 3 includes all water rights at full authorization; ensures all applicable permit conditions, such as flow requirements, are met; and includes no return flows. RWPGs add anticipated sedimentation to the WAM RUN 3 model analysis for reservoirs with storage greater than 5,000 acre-feet.

For surface water withdrawals that do not require permits, such as for domestic and livestock uses, RWPGs estimate these local annual water availability volumes under drought of record

conditions based on the most current accessible information, for example, historical water use data.

Groundwater

Groundwater availability is estimated through a combination of policy decisions, made primarily by groundwater conservation districts (GCDs), and aquifer characteristics, such as the ability of an aquifer to transmit water to wells.

The TWDB uses the desired future conditions (DFCs) established by groundwater management areas to determine a modeled available groundwater (MAG) value for an aquifer or portion of an aquifer. The MAG value is the volume of groundwater production on an average annual basis that will achieve the DFC.

RWPGs are required to use MAG values for the availability of all aquifers with a DFC. RWPGs may develop their own availability estimates for aquifers that do not have DFCs, such as non-relevant aquifers and local groundwater areas.

Reuse

Reuse availability is estimated based on a population-dependent infrastructure concept. The availability of wastewater treated for reuse is limited only by the amount of wastewater generated by water users at a given time unless a source water permit or agreement states otherwise.

Hydrologic Variances

With approval from the Executive Administrator of the TWDB, RWPGs may use alternative methodologies to evaluate water availability to more accurately reflect hydrologic conditions anticipated to occur under drought of record conditions. Examples may include using a one-year safe yield for a surface water reservoir or a MAG Peak Factor, which allows higher pumping in dry years and lower pumping in wet years for an aquifer.

Is water availability static?

Source water availability is not necessarily static. Surface water availability may be increased through certain water management strategies, for example building storage with a new reservoir, or dredging an existing reservoir. Conversely, new droughts of record may reduce source availability.

Groundwater availability may increase or decrease through changes in policy, for example, revising a DFC that changes an annual MAG volume. The only water management strategies that could increase groundwater availability for planning purposes are aquifer recharge projects and brackish groundwater production zones that are not accounted for in a MAG.

How are existing supplies determined?

RWPGs estimate existing supplies using an entity-based analysis that evaluates the share of available water at each source that can be immediately accessed by end users to meet water demands in a drought.

Existing supply analysis considers each WUG's legal and physical limitations to supplies and is influenced by many factors. For example, even if a reservoir has a large water availability volume, the existing water supplies that can actually be delivered from the reservoir to water users are limited by the current pipeline and treatment plant capacities that connect communities to the water resource.

Examples of other factors include declines in source availability, declines in groundwater levels relative to current well pump intake, shallow reservoir intake levels, groundwater quality degradation, and expiring water supply contracts.

Existing supplies cannot exceed a source's availability without the risk of a water user running short of water in a drought of record. If existing supplies exceed availability, they are over-allocated, which is strictly prohibited in regional water planning. To ensure that RWPGs do not assign more

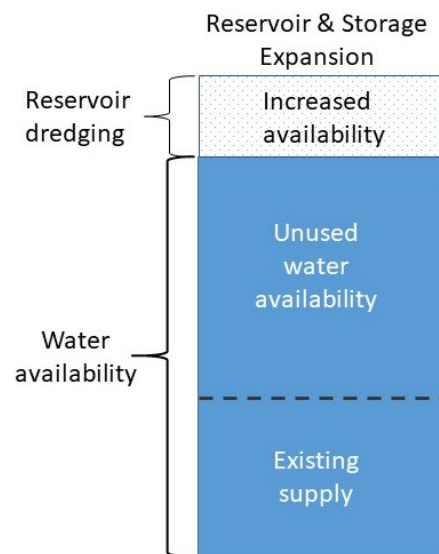
water supply to a water source than the source could provide in a drought, the TWDB performs a detailed, statewide accounting of all assigned existing water supply volumes.

What is unused water availability and how much is available for future development?

Unused water availability refers to the portion of available water that is not connected as existing supply and could be allocated for future supplies through a water management strategy.

Determining the amount of unused water available to support future projects is not always straightforward and can be limited by factors, such as permitting requirements or physical accessibility of available water.

Figure 1: Water availability and existing supply



Additional Resources

2017 State Water Plan, Chapter 6:

<http://www.twdb.texas.gov/waterplanning/swp/2017/doc/SWP17-Water-for-Texas.pdf>

For additional information on the regional water planning process and current activities, please call 512-936-2387 or visit

www.twdb.texas.gov/waterplanning/rwp/index.asp.