New Mexico Interstate Stream Commission - Regional Water Planning Program

The *Administrative Water Supply* Approach

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Background

The Administrative Water Supply method was developed in order to apply a consistent technical approach to estimate both current and future water supplies in all of New Mexico's 16 water planning regions. Application of a consistent approach is necessary to support increased cooperation among planning regions as well as to allow for integration of regional plans into an updated State Water Plan.

Data Sources

Statewide data for 2010 diversions were obtained from the NM Office of the State Engineer (OSE) *Water Use by Categories* report. The OSE staff compiles these data from a range of sources including: OSE meter records, input from OSE district offices, surveys from agricultural extension agents, delivery records from irrigation districts, surveys from public water suppliers, population data, and surveys sent to other water users. Please see the 2010 report for more detailed information.

Method

The Administrative Water Supply method as applied statewide uses 2010 diversion records to represent both current supply (water that was hydrologically and legally available) and current demand (estimates of actual use). Future supply is projected from 2010 through 2060 based on the following considerations:

Source	Average Conditions	Drought Conditions
Surface Water	Assumed stable	Adjusted based on stream gage records
Groundwater *Stream-connected*	Assumed stable	Assumed stable
Groundwater *Non stream-connected*	Adjusted based on modeled and/or observed drawdown	Adjusted based on predicted impacts of a 20-year drought where no recharge occurs from 2020-2040

(Future demand is projected through 2060 based on 2010 diversion records and estimates of changes in population in addition to other factors. See each regional update for more detailed information.)

Discussion

Data Quality - The 2010 OSE *Water Use by Categories* report is the most complete, statewide data set that currently exists. However, as with most data sets, especially those that rely on multiple independent sources, some quality concerns exist. Estimates of land in irrigation were verified as much as possible in the process of preparing these regional water plan updates. Improving the quality of the data inputs used in future planning efforts will require more meters and staff, and improved estimates of irrigation efficiency and consumptive use. The OSE Water Use and Conservation Bureau is currently working to improve water use data, including the use of satellite-based data for estimates of irrigated acreage.

2010 - The year 2010 was selected because it is the most recent statewide data set available. OSE *Water Use by Categories* reports are completed based on data collected every 5 years. Precipitation in 2010 was very close to average for most of the state based on regionally available periods of record.

Groundwater - In this method stream-connected and non stream-connected groundwater basins are treated differently in projections of future water supply. Stream depletions occur in stream-connected groundwater basins which lessen the observed drawdown to a relatively minor amount in comparison to the saturated thickness and therefore water in storage. Non stream-connected basins typically have much less saturated thickness and the loss in supply due to water level declines can be much more significant. This does not mean that some stream-connected basins are not stressed. Methods for accounting for these stresses, especially for priority basins, may be developed for future planning efforts.

In stream-connected groundwater basins future groundwater supply is assumed to be stable in both average and drought conditions. Eight of New Mexico's 16 planning regions source their groundwater from stream-connected groundwater basins only (Jemez y Sangre, Taos, Mora-San Miguel-Guadalupe, Colfax, Lower Pecos Valley, Middle Rio Grande, Rio Chama and Socorro-Sierra). For these regions drought corrections were applied to surface water supplies only.

In non stream-connected basins future groundwater supply is assumed *not* to be stable in both average and drought conditions. Five of New Mexico's 16 planning regions obtain some portion of their groundwater from non stream-connected basins (Northeast, Southwest, Tularosa-Great Salt-Sacramento, Northwest, and Lower Rio Grande). Two regions have no surface water and obtain all of their water supply from non stream-connected groundwater basins (Estancia and Lea County). Although the Socorro-Sierra Water Planning Region also obtains groundwater from portions of non stream-connected basins, currently observed water levels are not declining. Wherever an existing groundwater model was available, the model was used to create groundwater supply projections. If a model was not available, a water level decline method based on observed groundwater level decline and an assumed reduction in recharge was used. For several regions it was necessary to use both groundwater models and the water level decline method.

Surface Water - Drought projections for surface water supplies are based on stream gage data. Gages were selected based on the length of record and location. The minimum ratio of annual yield to 2010 yield from each region's gages was multiplied by the 2010 surface diversion record to represent the drought supply for all surface water supplies within that region. Under average conditions surface water supplies are assumed to be stable and therefore equal to the surface water diversions in 2010.

Moving Forward

The OSE is working to improve available water use data. In addition, a number of considerations were not fully addressed in this approach, including: municipal reserves and conjunctive use portfolios, the use of supplemental wells to augment surface water supplies during drought, additional climate change scenarios, permitted compared to actual diversions in 2010, and a comparison of the drought surface water supply to drought surface water demands. Except for regions with non stream-connected groundwater basins, this approach was applied to the water planning regions, rather than hydrologically-defined watersheds or groundwater basins.

This common technical approach is an important first step toward creating a methodology that better supports regional coordination and integration within a State Water Plan. The NM Interstate Stream Commission looks forward to working with stakeholders and other partners to further develop the technical approach used in subsequent rounds of New Mexico water planning.

Please contact Tom Morrison to address any additional questions: Tom.Morrison@state.nm.us