



# Hydrologic Variance Request

Agenda Item 6.8.1

February 7, 2018



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## Overview

- RWPGs shall use unmodified TCEQ WAM RUN 3 (plus anticipated sedimentation) to estimate reservoir yields and water available to run-of-river diversions to determine existing water supplies.
- If RWPG would like to use an alternative methodology to evaluate water availability, RWPG may submit written request to TWDB Executive Administrator (EA) for hydrologic variance to modify default hydrologic assumptions.
- If EA finds hydrologic variance necessary and/or appropriate to more accurately reflect existing water supplies, the EA provides approval.



## Hydrologic Variance Request

- In general, RWPG hydrologic variance requests must be submitted in writing to EA and include:
  1. Description of alternative availability assumptions being requested;
  2. Documentation justifying basis for request;
  3. How modification will affect associated annual availability volume(s) in RWP;
  4. Date RWPG approved submittal of request to TWDB EA.



## Surface Water Hydrologic Variances

- For surface water availability and supply analyses, RWPGs shall use the most current WAMs from TCEQ.
- RWPGs may use better, more representative water availability modeling assumptions or better site-specific information with written approval from EA.
- RWPGs should always consider requesting hydrologic variance for hydrologic assumption modification for any issue that is expected to have significant effect on determining existing supply.



### TCEQ Water Availability Model (WAM) – Run 3 WAM

- Conservative analysis of water available
- Analyzes water available to ~1,300 individual water rights
- Period of record hydrology (1940 – 1997)
  - Not yet fully updated to include 2011 drought
- As-permitted reservoir storage – no sedimentation assumed
- Full authorized diversions of existing, perpetual water rights
- Strict application of prior-appropriation doctrine
  - No subordination agreements
- No return flows (wastewater effluent discharges)
- All diversions lakeside
- Used to determine legal water availability for permitting decisions



### Supplies from Surface Water Availability Analysis

- Run-of-River Water Rights
  - Minimum annual diversion
- Reservoirs
  - Firm yield – Possum Kingdom and downstream
  - Safe yield – Upstream of PK and also Lake Palo Pinto
    - 0.5, 1-year, 2-year safe yield, depending on reservoir owner
    - Assumption that must be approved by TWDB
- Supplies applied to individual water rights (~ 1,300 in the Brazos Basin)
- Supplies assigned to WUGs and WWP's based on water right ownership and type of use
  - Municipal, Industrial/Manufacturing, Irrigation, Steam-Electric, Livestock, Mining
- Supplies further assigned based on contractual commitments



## Suggested Revisions to WAM for Regional Planning

- Utilize recent hydrologic extension of WAM completed by BRA
  - Extends period of record through 2015
  - Naturalized flows not fully adjusted – only for rights exceeding 1,000 acft/yr
    - Not as accurate post-1997, but provides longer period of record
    - Resulting naturalized flows likely more conservative (smaller) than if full adjustment made
    - Extended period of record more important than precision of extended naturalized flows
- Assumptions from 2006, 2011 and 2016 Plans
  - Include conservative amount of return flows
    - Used for 2006, 2011 and 2016 Plans
    - Confirm and update for 2021 Plan
  - Model BRA contracts at actual diversion locations
  - Include subordination agreements
  - ?Use Brazos G Mini-WAM for Clear Fork Basin to Possum Kingdom?
    - Full update of naturalized flows through 2015
    - Evaluate/compare then decide on best approach
  - Utilize same safe yield assumptions as utilized in 2016 Plan
- Request to use water supply model for strategy evaluations
  - TWDB may require some adjustments back to Run 3



## Possible Action

*The Brazos G Regional Water Planning Group adopts the surface water availability modeling assumptions recommended by HDR for use in determining surface water supplies for the 2021 Brazos G Plan as described above, and directs HDR to formally request that the TWDB approve this hydrologic variance.*

