

FY16 NM WRRI Research Progress Report Form

Report Due Date: January 1, 2016

- **Project Title:** A Dynamic Statewide Water Budget for New Mexico
- **Investigators:** *Principal:* Jesse Roach Ph.D., Tetra Tech Inc. *Unfunded Collaborators:* Vince Tidwell Ph.D., Sandia National Laboratories, Bruce Thompson Ph.D., University of New Mexico. *Other researcher:* Kenneth Peterson M.S., New Mexico State University
- **Description:** The dynamic, statewide water budget (DSWB) is synthesizing water supply and demand information from across the state into a single, easily accessible location, and in such a way that users can view information at a variety of spatial scales. The overall objective of the project is a holistic view of water resources in the state to help support local and regional education and planning to improve stewardship of New Mexico's limited and critically important water resources.
- **Methodology:** The DSWB is being built by pulling existing information from a variety of sources, predominately the New Mexico Office of the State Engineer / Interstate Stream Commission's Regional Water Plans (NM-OSE-ISC, 1999-2008), the New Mexico Office of the State Engineer's Water Use reports (Longworth, Valdez, Magnuson, & Richard, 2013) and USGS stream gage information.
- **Results to Date and Work Remaining:**
 - a. Results from 2014-2015 work include development of a monthly timestep mass balance accounting of water stocks and flows in New Mexico by major river basins of the state from 1975 through 2013 are summarized in the Phase I final project report (Peterson, Roach, and Thompson, 2015).
 - b. Results from Q1 (July – September 2015) as reported in the October 1st Quarterly Report and December 1st Progress Report.
 - Water Planning Region (WPR) spatial scale calculations set up and initial data developed.
 - WPR spatial scale completed.
 - Draft of county level mass balance terms completed. J
 - County spatial scale completed.
 - c. Results since December 1st 2015
 - Work during December has been focused on ensuring reasonable consistency between the WPR and County level spatial scales. Particular attention has gone to the MRG planning region where at a WPR scale the Middle Rio Grande Conservancy District conveyance infrastructure (water flow in ditches and drains) is internal, but at a County level there is significant water entering and leaving Counties not in the river, but in conveyance infrastructure. Various methods were attempted to account for conveyance flows and disaggregate WPR values to County level balances while maintaining reasonable groundwater storage change in each County. This task proved challenging and after several false starts

ultimately resulted in a new conceptual approach to calculating the terms. Specifically, for WPRs that are a sum of Counties, instead of scaling the values from the WPR down to the County level the budget for the Counties will be calculated first and summed up to get the WPR values. The WPRs that are more watershed based will continue to be calculated as described in the October 1st Progress Report, and the county numbers will be disaggregated from those.

- Additionally, we have set up a presentation at the January 7th 2016 New Mexico Water Dialogue in Albuquerque will Ken will present the methods and preliminary results to attendees. The focus of this year's Dialogue is "Planning: How Can It Make a Difference?", so our work is very appropriate. This opportunity will help fulfill some of this year's Outreach goals.

d. Remaining work to be completed by June 30, 2016:

- Quantification and display of uncertainty
- Water energy nexus information
- Graphic User Interface enhancements
- Future base case scenario analysis
- Outreach and support

6. **Student participation:** None

7. **Special recognition awards or notable achievements:** None.

8. **References:**

Longworth, J. W., Valdez, J. M., Magnuson, M. L., & Richard, K. (2013). *New Mexico Water Use by Categories 2010*. Santa Fe: New Mexico Office of the State Engineer.

NM-OSE-ISC. (1999-2008). *New Mexico Regional Water Plans*. Santa Fe: New Mexico Office of the State Engineer / Interstate Stream Commission.

Peterson, K., Roach, J., Thompson, B. (2015). *A Dynamic Statewide Water Budget for New Mexico: Phase I - Major River Basins*. New Mexico Water Resources Research Institute Draft Technical Completion Report Index # 124273. Las Cruces

9. **Progress toward uploading data to a common/standardized platform:** The model and report from 2014-2015 have been made available on the internet via the WRRRI website. We have open communication with Fereshteh Soltani and Jon Williams at NMSU about the type of data the model produces. Generally, the output from the DSWB is available in Microsoft EXCEL file format.

10. **Provide two PP slides that provide summary information on your project appropriate for viewing by state legislators.**