

# FY16 NM WRRI Research Progress Report Form

Report Due Date: October 1, 2015

1. **Project Title:** A Dynamic Statewide Water Budget for New Mexico
2. **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
3. **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.
4. **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.
5. **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. Addition of the Water Planning Region (WPR) spatial scale to the model: There are 16 New Mexico Interstate Stream Commission defined WPRs which are hydro-political units that tend to be defined in reference to both hydrologic river basins and political Counties, and creation of water budget information for these regions represents a challenge on both the supply and use side of things. The mass balance stocks and fluxes are estimated for each WPR using the same general conceptual approach as was used for the river basins (Peterson, Roach, and Thompson, 2015). Challenges at the WPR scale include limited availability of surface water gage data at WPR boundaries, and lack of information on groundwater flow across WPR boundaries. Advantages include availability of WPR specific reports from the New Mexico Regional Water Plans (NM-OSE-ISC, 1999-2008), and in some cases availability of groundwater storage change estimates, which have been used to help refine the WPR mass balance terms. The structure of calculations and initial data have been developed for all WPRs, and the data is currently being evaluated and refined.

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

- Addition of County spatial scales
- 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.**