

FY15 NM WRI Research Progress Report Form

Report Due Date: September 8, 2014

1. **Project Title:** A Dynamic Statewide Water Budget for New Mexico by Major River Basin
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) will synthesize 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. We have summarized data availability in the Regional Water Plans, including creation of a matrix summarizing the temporal and spatial resolution and extents covered by the reports and presence or lack thereof of quantitative water budgets in the reports. The temporal resolution of data in 15 of 16 reports is annual, and 11 of 16 reports include a quantitative water budget.
 - b. We have summarized data availability in the New Mexico Water Use Reports from 1975 through 2010 including creation of a matrix summarizing water use categories tracked through time. Based on these reports have settled on five water use categories that will be tracked in the DSWB. These categories are slight aggregations of eight of the categories tracked in the New Mexico Water Use Reports since 1990, and are:
 - Commercial, Public Water, Industrial
 - Domestic
 - Agriculture and Livestock
 - Mining
 - Power
 - c. We have settled on a working conceptual model for the DSWB with eight external (to or from outside each mass balance unit) fluxes, seven internal fluxes (exchange between stocks within each mass balance unit), and five stocks: available surface water, practically unavailable surface water, available groundwater, practically unavailable groundwater, and human storage and distribution systems.
 - d. We have also started to build the numerical model which will serve as the framework for the DSWB. At this point, the model can estimate human population by County or Water Planning Region for any month from 1950 through 2010 in historic mode, and from 2010

forward in scenario mode. Construction of the model is serving as a capacity building exercise.

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.

9. **Progress toward uploading data to a common/standardized platform:** We have spoken with Fereshteh Soltani at NMSU about the type of data we expect to produce. Generally, the output from the DSWB will be available in Microsoft EXCEL file format.

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