

FY16 NM WRRI Research Progress Report Form

Quarterly Report for April – June 2016

1. **Project Title:** Implementing a Web-based Streamflow Statistics Tool for New Mexico (StreamStats)

2. **Investigators (names, university/agency):** Nathan Myers and Matt Ely), U.S. Geological Survey New Mexico Water Science Center; Tara Gross, U.S. Geological Survey Colorado Water Science Center

3. **Brief description of project, research objectives, and impacts on New Mexico (provide performance measures and outcomes):** An assessment of statewide water resources would be incomplete without consideration of surface water. Estimates of streamflow are needed for a wide variety of applications, including water-resources planning and management, flood-plain mapping, and instream flow determinations for pollution and habitat studies. Surface water is the primary source of water for irrigators along major stream corridors in New Mexico and is increasingly being utilized by large municipalities, such as Albuquerque and Santa Fe, for potable water supply.

While streamflow statistics for gaged sites are readily available from existing sources, streamflow statistics are needed for ungaged sites where no observed flow data are available. Quantification of streamflow at ungaged locations will provide information that State water planners and managers need to ensure a secure water future for New Mexico.

The proposed work will provide an interactive web-based tool to determine streamflow statistics for stream locations in New Mexico for which streamflow regression equations are available. The web tool will be available to Federal, State, and local agencies, as well as the public, so that information about basin characteristics and streamflow statistics can be quickly obtained. It will provide commonly needed hydrologic information that can quickly be accessed to provide scientifically defensible results in a uniform and non-biased manner. The web-based tool will provide basin delineation results as Geographic Information System (GIS) shapefiles and basin characteristics and streamflow estimates as text files.

4. **Brief description of methodology:** The proposed work will consist of the compilation of a streamflow statistics database, development of digital map-base layers, and the construction of the web-based GIS hydrologic framework.

5. **Brief description of results to date and work remaining:** New Mexico StreamStats should be ready to be pushed to the production server for public use in late July 2016. Implementation was delayed due to the release of StreamStats Version 4. Because of compatibility issues between Version 4 and the older San Juan Basin pilot area, New Mexico StreamStats will remain with Version 3 until the San Juan Basin pilot area is incorporated into the rest of New Mexico StreamStats. All basin characteristics are functioning properly and peak flow equations have been implemented. Implementation of the low-flow equations was delayed by the lack of an accurate GIS file defining perennial vs non perennial streams for New Mexico. The National Hydrologic GIS Dataset, which was created based on 1:24,000 USGS topographic maps and which is one of the basic elements of StreamStats, does not accurately represent perennial

streams in New Mexico. For example, the Rio Grande is not classified as a perennial stream. Perennial versus non-perennial is important because the low-flow equations implemented in NM StreamStats are valid only for perennial streams. On a 6/9/16 conference call with the National StreamStats team we made the decision that for now NM StreamStats will compute low-flow statistics for any stream, but there will be a disclaimer saying that the results are only valid for perennial streams and that the user is responsible for determining if a stream is perennial or not. The low-flow statistics part of NM StreamStats should be implemented and available at the DRAFT New Mexico StreamStats website by the end of next week (June 24). QA/QC of peak flow and low-flow equations and verification that everything is working properly will take until late July. When all the QA/QC checks are completed the New Mexico StreamStats application will be made public.

A Fact Sheet describing StreamStats for New Mexico has been provided as slide 4 of the Powerpoint file accompanying this progress report. In addition, the USGS National StreamStats Team published a Fact Sheet describing StreamStats (FS-2008-3067) which is available at: <http://pubs.usgs.gov/fs/2008/3067/>.

6. **Student participation:** None at this time.
7. **Provide special recognition awards or notable achievements as a result of the research:**
None at this time.
8. **Include references as needed:**
None.
9. **Provide a few sentences on progress toward uploading data to a common/standardized platform, if applicable.** None at this time. All data and interactive tools will be hosted by the USGS and NM WRRI can provide links. Specific data sets used by other study components can be uploaded upon their completion.