

2018 Annual WSF Report – URNRD Groundwater Modeling, #5184



Sponsor: Upper Republican Natural Resources District

Grant Award: \$243,000

Inception: Nov. 28, 2017

Project Overview

The Upper Republican NRD (URNRD) will develop groundwater modeling tools and capabilities to help project aquifer reactions to varying levels of withdrawals for irrigation. The primary intent is to better understand the usable life of the aquifer throughout the URNRD under both current rates of water withdrawals for irrigation, and the usable life assuming different withdrawal rates that could be dictated by revised regulations and/or creation of new programs designed to reduce groundwater pumping.

Modeling efforts will aid our ability to implement programs and regulations that achieve our goal of eventually stabilizing groundwater levels in the District. Knowing the consequences of different management actions using the best available information is vital to our efforts to attain this goal.

In order to develop and operate a useful model, additional data collection such as aquifer saturated thickness throughout the URNRD will be needed. We also plan to use the model to help predict movement and fate of nitrates in the groundwater supply to aid our efforts to mitigate the presence of and domestic exposure to nitrates.

Project Activities, 2017-Current

Most project-related work during the reporting period involved analysis of different available groundwater models to determine which one would best achieve project goals. URNRD staff leading the project identified three potential models, spent several months learning all aspects of them and conducting preliminary operations of each, and are currently in the process of selecting a model to use. During this process, staff worked with USGS and developers and operators of the Republican River Compact Model, among others. The URNRD purchased and used a software

package for groundwater flow modeling to help inform decisions on irrigation retirement within a confined area of the district.

2018 Project Activities

A model for the project will be selected and a groundwater modeler on staff will develop expertise in its use. The extent of the need for outside consultants, software and other tools for the project will be dependent to some extent on model selection. Data collection for model use will be initiated. Towards the end of the year, the district may also begin a public-information campaign to better inform constituents of our intended use of the model and our desire for them to become involved in the evaluation of the eventual results of its use.