Using runoff collectors to understand surface runoff in remote Nevada catchments

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Population growth in Nevada and climate change are placing greater demands on water resources in an already arid region. Future water demands in Nevada will increasingly rely on groundwater, yet data to estimate groundwater recharge are extremely limited in most areas of the state. Surface water contributions to groundwater recharge from ephemeral, remote catchments are difficult and expensive to measure, and are often estimated using modeling techniques based on limited or no actual measured runoff or precipitation data. Understanding runoff is important because if runoff exists, it can move the location of recharge, affect the distribution of plant and wildlife communities, as well as impact the water balance of surface water resources.

In this study, runoff collectors have been installed at 12 sites in the Snake and Sheep Ranges in Nevada to quantify runoff over time. The collectors were deployed at monitoring transect sites in the Snake and Sheep Ranges that are part of the Nevada NSF EPSCoR Climate Change Project. Thus, temperature, precipitation, soil moisture, and other data will also be collected in the vicinity of the runoff collectors. Rainfall simulation experiments were completed at one of the Sheep Range sites to simulate different sizes of storms and their impacts on surface runoff. Data from the runoff collectors and rainfall simulation experiments will be used to understand the storm characteristics and conditions that result in runoff and test the hypothesis that predicted changes in climate will result in more surface runoff in Nevada.