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RECENT non-point pollution legislation (PL 92-500 and PL 95-192) has added an important new dimension to rangeland research—development of best management practices to preserve the natural resources and protect the environment.

Using data from experimental areas in Arizona and New Mexico, scientists at the Center study the quality and quantity of water from Southwestern rangelands. This information aids in determining water-resource potentials; in establishing soil, water and grazing management systems for increasing and stabilizing forage production; in providing design concepts and criteria for flash flood and sedimentation control; and in monitoring the movement of non-point source pollutants.

Extensive studies based on records from dense recording raingage networks show variability in both time and space of thunderstorm rainfall in the Southwest. This extreme rainfall variability over relatively short distances indicates that grazing units should be much smaller than those customarily used in much of the Southwest. Small units, like small herds within ranches, would allow more efficient use of the

**THIS FLUME**, with a maximum measuring capacity of 1050 m³/sec (22,000 cfs), measures streamflow at the outlet of the 150 km² experimental area.

**RUNOFF** from the limited-extent thunderstorms is often measured several times within the watershed. Dry alluvium in the streambed absorbs much of the water.
THIS LAND IMPRINTER, developed at the Center, is being used to prepare seedbeds which concentrate runoff from the right cylinder into the depressions of the left center, where the seed is placed.

WITH THIS EQUIPMENT, water-sediment chemical samples are obtained at several locations. The system is powered by a solar panel which drives a moving slot, diverting an aliquot of the flow onto the stationary slots at the flume overfall.
is minimized. Concerns about downstream pollution and water resources are
shifted to range resources. This range
for maximum productivity of the
water supplies to manage herds of
domestic livestock. More effective
range planning will minimize
settlement patterns, and
resources can provide
adequate irrigation facilities.
Our goal is to develop water-
social
acceptable erosion of the shallow
steep land slopes and channels.
The low vegetation density plus the
vegetation to help reduce soil
loss.
Developing dense growth on
other studies are focusing on
can solutions to these situations.
Our researchers are working
planets. Our researchers are working
transportation from upstream and
reach the regional groundwater
reduced. Some water does
efficiency. While some water does
water to downstream points.
Southwestern streams do not carry
periods of high precipitation
during the antithetical period of
higher precipitation during
available source without degrading

ISOHYETAL MAP of a typical summer thunderstorm on the 150 km² Walnut Gulch Experimental Watershed in southeastern Arizona.

Each circle represents a rain gauge location.