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A TALE OF COOPERATION, RIPARIAN BUFFERS, AND AFFECTED RUN-OFF ACREAGE IN THE ILLINOIS RIVER WATERSHED

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ABSTRACT: The Illinois River Watershed is listed as impaired by the Environmental Protection Agency. To help address issues of non-point source pollution in this watershed, the Oklahoma Conservation Commission spearheaded a Conservation Reserve Enhancement Program (CREP) in June 2007 and a 319 Program in 2008. Both CREP and 319 cost-share with producers to implement installation of Best Management Practices (BMPs) that protect water quality. The significant differences between the two programs make them highly complementary to each other. CREP BMP installation is limited to practices directly related to riparian zones whereas 319 monies can be used to enroll wooded riparian acreage or address other BMP needs a producer might have. The success of water quality protection in this watershed is greatly enhanced by having these two programs working together. So far this cooperation has protected and restored several hundred acres of riparian buffers. Riparian buffers are proven to reduce non-point source pollution by filtering runoff entering streams. Therefore, it is important to know the amount of surface area draining into and filtered by buffers. Our goal was to develop a method for calculating surface runoff acreage for each buffer. The hydrology toolbox in ArcMap 9.2 was used to create a flow direction layer from a watershed DEM. A flow accumulation layer was created to determine stream paths. The watershed tool was used to place a pour point at the downstream end of a riparian buffer. The resulting output showed the drainage of all lands upslope of the pour point. A second pour point was added to the upstream end of the buffer. The two outputs could then be subtracted from each other leaving only the area draining into the riparian buffer. Confirmation of accuracy was addressed using topographic maps. This method visually demonstrated drainage areas for each buffer, and calculated the total land surface draining into CREP and 319 Program buffers.

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