

**LOCATING AND EVALUATING SALINE TRIBUTARIES TO IMPAIRED  
STREAMS IN SEVERAL SOUTHERN OKLAHOMA OILFIELDS**

**Patricia Billingsley\***

Oklahoma Corporation Commission  
Oil & Gas Conservation Division, Room 256

P.O. Box 52000

Oklahoma City, OK 73152-2000

Voice: 405-522-2758

Fax: 405-521-3099

[p.billingsley@occemail.com](mailto:p.billingsley@occemail.com)

The Oklahoma Corporation Commission, with the assistance of the Oklahoma Water Resources Board and the Oklahoma Conservation Commission, began monitoring streams in old oil and gas fields in Oklahoma in 1997. By 2002 we know that the three main streams (Upper Caddo Creek, Wildhorse Creek, and Rush Creek) in a 33X34 mile (1,000 square mile) area in Garvin, Grady, Stephens, and Carter Counties were salinity impaired. Area produced water has chlorides up to 100,000 mg/l. In 2005 we contracted the Oklahoma Conservation Commission to sample 298 stream locations on 189 different streams and tributaries where a county or state road crossed a stream/tributary every other month for a year. An additional 6 months of sampling was done in upstream locations and tributaries to streams found to be impaired in the first sampling round and in streams that went dry in the 2005-2006 drought.

Questions needing answers were: Was there extensive area pollution from many saline sources, or just a few sources affecting many miles downstream? What types of sources? Where?

Eighteen months of sampling determined that salinity in Rush Creek was mainly from a few upstream tributaries in one oilfield. However, about thirty separate large and small tributaries were impacted in the Caddo and Wildhorse watersheds, necessitating a difficult ~400 square mile search for sources. This presentation will detail which tributaries in which areas had elevated salinity levels, and our efforts to locate the actual salinity sources.

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