

# The Carrizo Aquifer of Smith County, East Texas

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## Extended Abstract

The Carrizo aquifer is the main source of ground water for municipal and industrial withdrawals in Smith County. Since the 1940's, pumping levels in many of the county's water wells have fallen hundreds of feet. During the drought of July/August 1993, several rural municipal water companies recorded significant drops in the aquifer's water table. The Texas Water Development Board has, at the request of the 69th Texas Legislature, identified Smith County as a county that either has critical ground-water problems, or has the potential for such problems within the next 20 years (Preston and Moore, 1991).

Sidewall cores recovered from the Texaco 60 Sand Flat Unit, in the north-central part of the county, indicate that the Carrizo Sand has porosities ranging between 29 and 37% and permeabilities ranging between 702 and 1,105 millidarcys. Density log values range from 36 to 38%. Analysis of 123 water well logs and records and 538 petroleum industry logs indicate that the Carrizo Sand (net ft) ranges from 0 to 285 ft thick. The depositional environment of the earlymost Carrizo Formation is proposed to have been fluvial/deltaic, whereas the mid-late Carrizo is proposed to have been a barrier bar/strandplain system that developed on a stable sand-rich shelf. Longshore currents and reworking of the Carrizo Sands by the Reklaw transgressive seas produced a northeast-to-southwest strike of the barrier bar/strandplain sands.

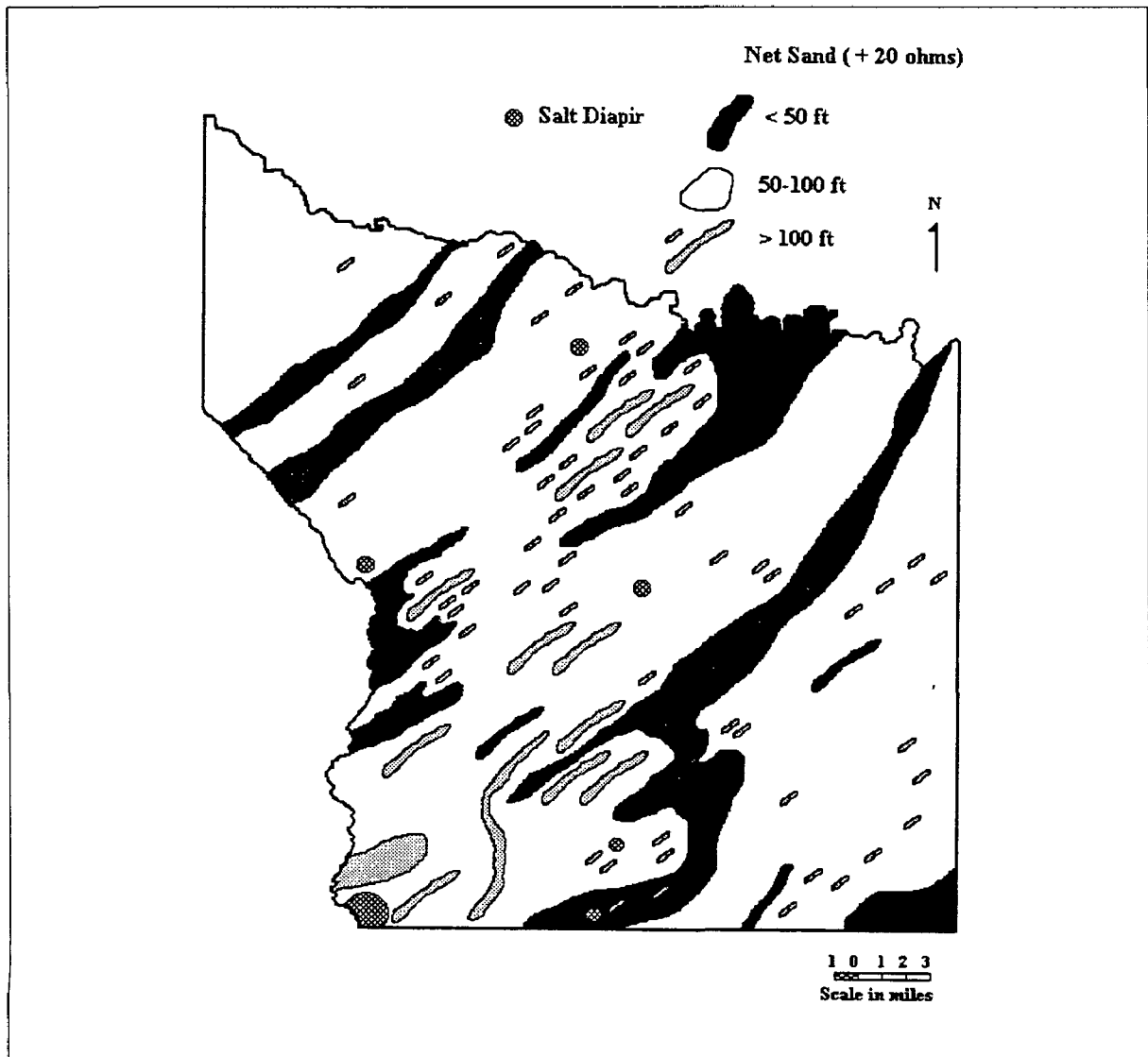


Figure 1. Net-sand map of the Carrizo Sand in Smith County, East Texas.

## Acknowledgments

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## Reference

Preston, R. D., and Moore, S. W., 1991, Evaluation of ground-water resources in the vicinity of the cities of Henderson, Jacksonville, Kilgore, Lufkin, Nacogdoches, Rusk, and Tyler in East Texas: Texas Water Development Board Report 327, p. v.