

TR-97

Silvicultural Activities in Relation to Water Quality in Texas: An Assessment of Potential Problems and Solutions

W. H. Blackburn, C. A. Hickman, J. E. deSteiguer, B. D. Jackson, T. A. Blume, M. G. DeHaven

- [Full Text](#)

Southern forests are expected to supply a large portion of the Nation's future timber requirement. Projected demands on southern forests continue to exceed allowable cut. As an outgrowth of this demand, intensive management of pine forests enabled the South to produce 45 percent of the Nation's timber harvest in 1970 (USDA, Forest Service, 1973). The Southern Forest Resource Analysis Committee (1969) stated that, if projected timber needs of the year 2000 are to be met, at least ten million acres of bare or poorly stocked land must be planted with pine by 1985 and another twenty million acres converted from low-grade hardwoods to pine. The challenge facing forestry in the South is how to meet this increased demand and maintain an acceptable forest environment in the face of increased taxes, rising labor and equipment costs and predicted petroleum shortages.

Undisturbed forests are generally recognized as primary sources of high quality water. Although the Federal Water Pollution Control Act Amendments of 1972 (Public Law No. 92-500) make pollution from forest practices increasingly more important, the effects of these practices on water quality are not known for East Texas.

The quality of streamflow from forested watersheds fluctuates constantly in response to natural stress, and can be influenced greatly by man's activities. Forest management practices can potentially influence the following water quality parameters: (1) sediment, (2) nutrients, (3) temperature, (4) dissolved oxygen/organic matter, and (5) introduced chemicals.

It must be realized from the onset that sediment due to geologic erosion is a natural component of fresh water streams and that high concentrations may have occurred naturally for short periods due to perturbations in the ecosystem such as wildfires. Sediment is not necessarily a pollutant and only becomes one when it can be

demonstrated that it is exceeding natural levels and is interfering with the beneficial use of water. A certain amount of sediment and nutrients are needed in Gulf Bays and Estuaries to maintain their productivity (Mathewson and Minter, 1976; Diener, 1964; Ketchum, 1967).

Texas does not have a stream water quality standard for sediment and due to the complexities involved will probably not develop one. Thus, sediment as used in this report, becomes important: (1) as a carrier of plant nutrients and forest chemicals, and (2) in that practices which reduce sediment loss will usually reduce nutrient, organic matter and introduced chemical losses and prevent water temperature increases, as well.

This report is the result of an interagency contract between Texas Department of Water Resources, Texas Agricultural Experiment Station and Texas Water Resources Institute to: (1) develop an overview of commercial forests and forestry operations in Texas, (2) identify, describe and characterize control strategies for nonpoint sources of pollution from silvicultural activities, and (3) develop and demonstrate a methodology for selecting control strategies in given problem situations. The following topics are covered: (1) an overview of forestry in East Texas, (2) silvicultural practices and nonpoint sources of pollution, (3) control strategies, (4) methodology for the selection of control strategies, (5) institutional aspects of controlling silvicultural nonpoint source pollution, (6) ongoing research and research needs, and (7) hydrology of East Texas.

It is important to recognize that this report does not specify that nonpoint pollution from forestlands in East Texas is a problem. Likewise, the report does not set pollution control goals or criteria that should be met by a control plan, since this is the responsibility of the State.

In areas where a potential nonpoint pollution problem exists; the suggested control strategies should be useful in selecting control measures that are appropriate to the special conditions imposed by differences in climate, soil, topography, and forest practice.

Texas Water Resources Institute

1500 Research Parkway A110
2260 TAMU
College Station, TX 77843-2260

Phone:
979.845.1851
Fax: 979.845.0662
Email:
twri@tamu.edu

TWRI and the [Texas A&M Institute of Renewable Natural Resources](#) are working together to foster and communicate research and educational outreach programs focused on water and natural resources science and management issues in Texas and beyond.

[Compact with Texans](#) | [Privacy and Security](#) | [Accessibility Policy](#) | [State Link Policy](#) | [Statewide Search](#) | [Plug-ins](#) | [Veterans Benefits](#)
[Military Families](#) | [Texas Homeland Security](#) | [Open Records/Public Information](#) | [Equal Opportunity Statement](#) | [Risk, Fraud & Misconduct Hotline](#)

© 2013 All rights reserved. Problem with this page? Contact: twri-webmaster@tamu.edu

 [SSO](#) | [CANOPY](#)

