

PURPOSE

This document reports on Phase 1 of a 3-phase project. The overall effort was envisioned to consist of an assessment of ground-water aquifer sensitivity in the state of New Mexico to contamination from pesticides. The project was divided into components: Phase 1) pilot-study area aquifer sensitivity assessment, initial Best Management Practices (BMP) evaluation, and preliminary aquifer sensitivity assessment; Phase 2) validation of BMPs, incorporation of ground-water model, final sensitivity assessment for pilot study area, and priority assessment for other areas of the state; and Phase 3) program initiation to extend the system into other priority areas of the state and ultimately to produce ground-water aquifer sensitivity maps and BMP libraries for pesticides statewide. Map information and environmental data for New Mexico were to be compiled and used. Ground-water aquifer sensitivity maps at appropriate scale for use by regulatory programs were planned. These map products and BMPs would provide state and local governments, as well as landowners, a valuable decision-making tool for identifying geographic areas most susceptible to ground-water contamination and report on identified and evaluated BMPs that then could be implemented to minimize the potential for ground-water contamination from agricultural pesticide use. This effort continues the development of a State Management Plan for Pesticides by the New Mexico Department of Agriculture (NMDA). The project was conducted by a project team assembled by the New Mexico Water Resources Research Institute (WRI).

GOALS

Project goals were to produce: 1) GIS-based pesticide specific ground-water aquifer sensitivity maps for appropriate areas of the state to aid in decision making relative to water-quality management, and 2) a library of BMPs evaluated for effectiveness in preventing ground-water contamination for inclusion in state regulatory/nonregulatory programs.

Phase 1 would identify data sources required for producing the necessary base maps, the methods for spatial and tabular manipulation and preprocessing, and the analytic procedures required for generating the map and attribute products for the pilot study area; incorporate data into a modified DRASTIC model for ground-water aquifer sensitivity assessment; run the process models to evaluate selected BMPs for the pilot study area; and produce preliminary ground-water aquifer sensitivity maps and BMP library for the pilot study area.

Phase 2 would validate the process models by incorporating feedback from a ground-water model, produce final ground-water aquifer sensitivity maps and BMP library for the pilot study area, establish other state priority areas and identify data sources, refine the methods for spatial and tabular manipulation and preprocessing, and identify final analytic procedures required for generating the final map and attribute products for other priority areas of the state.

Phase 3 would extend the system developed in the pilot study to priority areas of the state to provide managers/regulators mapped and corresponding tabular information relating the sensitivity of ground-water aquifers to contamination from pesticide use and BMP libraries necessary to maintain ground-water quality.