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# Chapter 15

# Computer Software and Models

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**651.1500 Introduction**

The planning of an Agricultural Waste Management System (AWMS) as well as component design require evaluation of alternatives. The Natural Resources Conservation Service (NRCS) has approved the use of computer software that may speed and enhance this process. This software includes several pollutant loading models and a component design program. This chapter of the Agricultural Waste Management Field Handbook provides a brief description of available computer software and the method of its procurement.

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**651.1501 Pollutant loading models**

Field scale and watershed scale pollutant loading models can be useful in planning an AWMS, especially in evaluating the fate of nutrients from land-applied waste. Approved field scale models include the Groundwater Loading Effects of Agricultural Management Systems (GLEAMS), the Environmental Policy Integrated Climate (EPIC), and the Nitrate Leaching and Economic Analysis Package (NLEAP). These models allow the user to evaluate the water quality effects of timing and rate of land application.

Approved watershed scale pollutant loading models include the Agricultural Non-Point Source Pollution model (AGNPS) and the Simulator for Water Resource in Rural Basins-Water Quality (SWRRBWQ). These models give a broader, but less precise, evaluation of the effect of land application of wastes. AGNPS also includes routines for evaluation of loadings and water quality effects of feedlots.

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## 651.1502 Animal waste management software tool

The Animal Waste Management Software Tool (AWM) computer program was developed to automate the design of animal waste management system components: waste storage facility, waste treatment lagoon, and waste utilization. The software is a compiled DOS program written in MS Quick BASIC. It is bundled, which means it is compressed with other programs. The software includes a user's guide, data bases, and editing features.

The AWM software provides assistance with the calculations that are necessary in design of waste management system components. In this way it supports the design of waste storage ponds, waste storage tanks, and waste stacking facilities. The program also supports the design of anaerobic and aerobic lagoons with single or multiple cells and operated either alone or in combination with a waste storage facility. Options for anaerobic lagoon design include the NRCS Agricultural Waste Management Field Handbook procedure, Clyde Barth's Rational Method, and a biogas optimization method. The waste utilization portion of the program allows the user to allocate nutrients by field based on the selected limiting nutrient—nitrogen, phosphorus, or potassium.

The program allows the user to customize software generated reports by using design variables imbedded in the report. The user can specify the output to include a listing of more usual operation and maintenance items for waste system components.

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## 651.1503 Software procurement

NRCS makes its approved pollutant loading models and agricultural waste management programs available on an FTP server in Fort Collins, Colorado. Because these programs are under continual development, it is highly recommended that the latest version of the program be obtained from the FTP server. Software in addition to those mentioned in this chapter are also available on the server.

Field personnel wishing to use the programs should contact their appropriate state office personnel to acquire the data bases and for user assistance.

Fact sheets on newly approved software and new versions of currently approved software are generally distributed when the software is installed on the server.