LISTINGS OF MODEL INPUT AND SELECTED OUTPUT VALUES FOR THE SIMULATION OF GROUND-WATER FLOW NEAR LOS ALAMOS, NORTH-CENTRAL NEW MEXICO

Supplement to Water-Resources Investigations Report 95-4091

By Peter F. Frenzel

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CONTENTS

	Page
Abstract	1
Introduction	1
Listings of model input and selected output values	2
References	3

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ABSTRACT

This report contains listings of model input and selected output values for the simulation of ground-water flow near Los Alamos, north-central New Mexico. This simulation was developed by the U.S. Geological Survey in cooperation with Los Alamos National Laboratory (Frenzel, P.F., 1995, Geohydrology and simulation of ground-water flow near Los Alamos, north-central New Mexico: U.S. Geological Survey Water-Resources Investigations Report 95-4091). The simulation used the U.S. Geological Survey modular flow model code (McDonald, M.G., and Harbaugh, A.W., 1988, A modular three-dimensional finite-difference ground-water flow model: Techniques of Water-Resources Investigations of the United States Geological Survey, book 6, chap. A1). The listings in this report are in compressed format on a 1.44-megabyte IBM-PC[1] compatible floppy disk. Software is included for decompression to ASCII format.

INTRODUCTION

An existing model (McAda and Wasiolek, 1988) was modified (Frenzel, 1995) in recognition of new geohydrologic interpretations and adjusted to simulate water-level changes in the Los Alamos area. The Chaquehui formation (informal usage of Purtymun, 1995) is the main new feature of recent geohydrologic interpretations for the Los Alamos area. Model modification included splitting the four layers of the McAda-Wasiolek model into eight layers to better simulate vertical ground-water movement. Other model modifications were limited as much as possible to the area of interest near Los Alamos and consisted mainly of adjusting hydraulic-conductivity values and adjusting simulated recharge along the Pajarito Fault Zone west of Los Alamos. Adjustments were based mainly on simulation of fluctuations in measured hydraulic heads near Los Alamos. The simulation used the U.S. Geological Survey modular flow model code of McDonald and Harbaugh (1988).

Drawdowns were simulated by the modified model using two scenarios suggested by Los Alamos National Laboratory: the renewal of the Guaje well field with four new wells replacing existing production wells, or the abandonment of Guaje well field with its former production made up by additional withdrawals from other well fields. Details of model modifications and results are given in Frenzel (1995).

This report provides listings of model input. The selected output listings are part of what might be expected as model output and are provided for comparison purposes. Other model outputs will be generated by the model.

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[1]Use of trade names in this report is for identification purposes only and does not constitute endorsement by the U.S. Geological Survey.

LISTINGS OF MODEL INPUT AND SELECTED OUTPUT VALUES

Each input listing is in a compressed format on the 1.44-megabyte IBM-PC compatible floppy disk (in pocket). Software and instructions are included for decompression to ASCII format. Each listing contains values for a particular modular-model package as defined and described by McDonald and Harbaugh (1988). The listing name indicates the package and Fortran unit number. Listing name prefixes indicate usage in the steady-state (ss) or transient (tr) simulations; names without prefixes (including trans.23) are used in both simulations. The steady-state input listings call for Fortran unit numbers 6, 17, 31, 32, and 33 as model output. Unit 6 is general model output, unit 17 is an output of hydraulic-head values used for starting heads in the transient simulation, unit 31 is cell by cell output, unit 32 is river output, and unit 33 is hydraulic-head output. Similarly, the transient input listings call for Fortran unit numbers 6, 17, 31, 32, 33, and 34. Unit 34 is output of drawdown values, and the other units are as already described. Unit 6 is in ASCII format. Unit 17 is in a compact format readable by the model code. The other output units are in compact formats and are readable using codes such as that of Scott (1990). Model input listings contained in this report are as follows:

Listing name	Package or description
	Input for the steady-state simulation
ssbas.5	Basic package
ssbcf.11	Block-centered flow package
sswel.12	Well package
ssoc.29	Basic package, output control option
	Input for the transient simulation
trbas.5	Basic package
trbcf.11	Block-centered flow package
trwel.12	Well package
trstor.22	Block-centered flow package storage coefficients
troc.29	Basic package, output control option
	Input for steady-state and transient simulations
rch.18	Recharge package
riv.14	River package
trans.23	Block-centered flow package transmissivity values
bottom.24	Block-centered flow package bottom altitude, layer 1
vcont.25	Block-centered flow package leakance values
sip.19	Strongly implicit procedure package
	Output
ssout.6	Steady-state
trout.6	Transient

REFERENCES

Frenzel, P.F., 1995, Geohydrology and simulation of ground-water flow near Los Alamos, north-central New Mexico: U.S. Geological Survey Water-Resources Investigations Report 95-4091, 92 p.

McAda, D.P., and Wasiolek, Maryann, 1988, Simulation of the regional geohydrology of the Tesuque aquifer system near Santa Fe, New Mexico: U.S. Geological Survey Water-Resources Investigations Report 87-4056, 71 p.

McDonald, M.G., and Harbaugh, A.W., 1988, A modular three-dimensional finite-difference ground-water flow model: Techniques of Water-Resources Investigations of the United States Geological Survey, book 6, chap. A1, variously paged.

Purtymun, W.D., 1995, Geologic and hydrologic records of observation wells, test holes, test wells, supply wells, springs, and surface water stations in the Los Alamos area: Los Alamos National Laboratory LA-12883-MS, 339 p.

Scott, J.C., 1990, A statistical processor for analyzing simulations made using the modular finite-difference ground-water flow model: U.S. Geological Survey Water-Resources Investigations Report 89-4159, 218 p.