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COMPUTER INPUT AND OUTPUT FILES ASSOCIATED WITH GROUND-WATER-FLOW SIMULATIONS OF THE ALBUQUERQUE BASIN, CENTRAL NEW MEXICO, 1901-94, WITH PROJECTIONS TO 2020

(SUPPLEMENT ONE TO U.S. GEOLOGICAL SURVEY WATER-RESOURCES INVESTIGATIONS REPORT 94-4251)

U.S. GEOLOGICAL SURVEY

Open-File Report 96–208

Prepared in cooperation with the

CITY OF ALBUQUERQUE PUBLIC WORKS DEPARTMENT

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1998

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Abstract

This report presents the computer input files required to run the three-dimensional ground-water-flow model of the Albuquerque Basin, central New Mexico, documented in Kernodle and others (Kernodle, J.M., McAda, D.P., and Thorn, C.R., 1995, Simulation of ground-water flow in the Albuquerque Basin, central New Mexico, 1901-1994, with projections to 2020: U.S. Geological Survey Water-Resources Investigations Report 94-4251, 114 p.). Output files resulting from the computer simulations are included for reference.

INTRODUCTION

This report presents the computer input files required to run the three-dimensional ground-water-flow model of the Albuquerque Basin, central New Mexico, documented in Kernodle and others (1995). Output files resulting from the computer simulations are included for reference. This report was prepared in cooperation with the City of Albuquerque Public Works Department.

COMPUTER INPUT AND OUTPUT FILES

When the information is restored from the tape, the directory and file structure reflect the sequence of predevelopment, historical transient, and projected future model runs documented in Kernodle and others (1995). There is one directory each for the predevelopment simulation; the historical simulations to 1960, 1979, and spring 1994; and the various projections to 2020; and two directories for simulations without City of Albuquerque pumpage (for superposition comparisons). The 11 directories should be loaded into a common area. The total space needed to load the directories is slightly less than 1 gigabyte. The directory names and their approximate individual sizes, in megabytes, and brief descriptions are:

modflow	1.8	Source codes and scripts
predevelopment	27.9	Predevelopment simulation
transient1	60.8	Historical simulation for 1901-60
transient2	95.0	Historical simulation for 1961-79
transient3	148.6	Historical simulation for 1980-94
proj_line	90.2	Projected current growth for 1994-2020
proj_mid	96.8	Projected medium growth for 1994-2020
proj_cons	104.8	Projected medium growth with conservation for 1994-2020
proj_riv	90.2	Projected medium growth with new wells near river for 1994-2020
no_city	138.1	Historical simulations without Albuquerque pumpage
proj_nocity	88.4	Projection for 1994-2020 without Albuquerque pumpage
	942.7	Total on tape

Table 1 is a detailed listing of the files contained in each directory.

The scripts to run the simulations end in the suffix "run" in each of the directories. Each directory contains an output file that may be used for reference. A final directory contains the model source code (McDonald and Harbaugh, 1988) and ancillary support

programs and macro-language scripts. Two Arc Macro Language scripts, "modelgrid.aml" and "modarray.aml," are included for the convenience of the user (the proprietary software ARC/INFO is required to run these macros). All computer programs are written in ANSI 77 Fortran. The scripts are either standard AT&T Unix System 5 or Arc Macro Language.

Source codes probably will have to be recompiled on the host computer system. A minimum x-array dimension (McDonald and Harbaugh, 1988, p. 3-22 and 3-23) of about 10 million is required to run the simulations. The size of the x-array dimension dictates the need for a minimum of about 64 megabytes of random access memory. A free space of about 2 gigabytes of output media provides a reasonable margin for storing input and writing output files.

REFERENCES CITED

Kernodle, J.M., McAda, D.P., and Thorn, C.R., 1995, Simulation of ground-water flow in the Albuquerque Basin, central New Mexico, 1901-1994, with projections to 2020: U.S. Geological Survey Water-Resources Investigations Report 94-4251, 114 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 U.S. Geological Survey, book 6, chap. A1, variously paged.

Table 1.--Description of files included on tape

Directory	File name	File size, in bytes	Description
modflow	sourcepcg10	439,996	Model executable code
modflow	amls_tar	540,672	Tar file of AML's
modflow/help/arc	modelgrid	1,716	Modelgrid help file
modflow/help/arc	smartpoly	698	Smartpoly help file
modflow/help/arc	modarray	1,168	Modarray help file
modflow	grid_specs	163	Grid-specification file
modflow/atool/arc	modelgrid.aml	7,556	Modelgrid AML
modflow/atool/arc/modelgrid	gridder.f	11,493	Grid-generator source code
modflow/atool/arc/modelgrid	modelgrid.aml	7,556	Modelgrid AML
modflow/atool/arc/modelgrid	modelgrid	1,716	Modelgrid help file
modflow/atool/arc/modelgrid	gridder	95,704	Grid-generator executable code
modflow/atool/arc/modelgrid	gridder_200	95,704	Grid-generator executable code
modflow/atool/arc	smartpoly.aml	6,846	Smartpoly AML
modflow/atool/arc/smartpoly	smartpoly.aml	6,846	Smartpoly AML
modflow/atool/arc/smartpoly	smartpoly	698	Smartpoly help file
modflow/atool/arc	modarray.aml	9,806	Modarray AML
modflow/atool/arc/modarray	wavrg	160,808	Weighted average executable code
modflow/atool/arc/modarray	o.wavrg.f	29,996	Weighted average source code
modflow/atool/arc/modarray	wavrg.f	31,961	Weighted average source code
modflow/atool/arc/modarray	modarray	1,168	Modarray help file
modflow/atool/arc/modarray	modarray.aml	9,806	Modarray AML
modflow/atool/arc/modarray	modarray.bak	9,469	Modarray AML backup
modflow	readme.text	8,267	Read file
modflow	sourcepcg10.f	275,901	Modflow source code
predevelopment	output	8,375,515	Output file
predevelopment	basin.1	4,840,561	Basic input file
predevelopment	bcfin.11	13,203,032	Block-centered flow input file
predevelopment	welin.12	74,857	Well input file
predevelopment	rivin.14	39,377	River input file
predevelopment	rchin.18	440,015	Recharge input file
predevelopment	sipin.19	52	Strongly implicit input file (not used)
predevelopment	outctrl.22	83	Output-control file
predevelopment	pcgin.23	72	Preconditioned-conjugent gradient input file
predevelopment	evtin.15	880,039	Evapotranspiration input file
predevelopment/	steady_state_run	367	Run script

Table 1.--Description of files included on tape--Continued

Directory	File name	File size, in bytes	Description
transient1	basin.1	4,840,909	Basic input file
transient1	bcfin.11	14,523,383	Block-centered flow input file
transient1	welin.12	973,538	Well input file
transient1	drnin.13	94,071	Drain input file
transient1	rivin.14	415,669	River input file
transient1	rchin.18	5,279,850	Recharge input file
transient1	pcgin.23	72	Preconditioned-conjugent gradient input file
transient1	outctrl.22	14,334	Output-control file
transient1	evtin.15	880,907	Evapotranspiration input file
transient1	output	33,717,928	Output file
transient1	transient1_run	361	Run script
transient2	transient2_run	389	Run script
transient2	basin.1	4,841,498	Basic input file
transient2	output	62,377,902	Output file
transient2	drnin.13	116,764	Drain input file
transient2	rivin.14	405,236	River input file
transient2	rchin.18	8,359,745	Recharge input file
transient2	outctrl.22	19,816	Output-control file
transient2	evtin.15	880,907	Evapotranspiration input file
transient2	welin.12	17,943,431	Well input file
transient3	output	98,309,755	Output file
transient3	evtin.15	6,600,949	Evapotranspiration input file
transient3	rchin.18	12,319,610	Recharge input file
transient3	outctrl.22	27,154	Output-control file
transient3	rivin.14	3,739,322	River input file
transient3	transient3_run	388	Run script
transient3	basin.1	4,841,405	Basic input file
transient3	welin.12	22,446,563	Well input file
transient3	drnin.13	254,151	Drain input file
proj_line	output	69,540,780	Output file
proj_line	line_run	460	Run script
proj_line	welin.12	20,603,305	Well input file
proj_mid	output	69,498,724	Output file
proj_mid	medium_run	388	Run script
proj_mid	basin.1	4,841,402	Basic input file

Table 1.--Description of files included on tape--Concluded

Directory	File name	File size, in bytes	Description
proj_mid	welin.12	20,603,305	Well input file
proj_mid	drnin.13	137,694	Drain input file
proj_mid	rivin.14	269,825	River input file
proj_mid	rchin.18	440,345	Recharge input file
proj_mid	outctrl.22	27,905	Output-control file
proj_mid	evtin.15	880,969	Evapotranspiration input file
proj_cons	output	69,230,079	Output file
proj_cons	welin.12	20,538,019	Well input file
proj_cons	bcfin.11	14,963,417	Block-centered flow input file
proj_cons	conservation_run	447	Run script
proj_riv	output	69,516,365	Output file
proj_riv	river_run	460	Run script
proj_riv	welin.12	20,621,449	Well input file
no_city	welin80-93.12	21,677,873	Well input file
no_city	output80-93	97,053,397	Output file
no_city	welin01-60.12	1,792,197	Well input file
no_city	nocity01-60_run	530	Run script
no_city	nocity61-79_run	516	Run script
no_city	welin61-79.12	17,510,081	Well input file
no_city	nocity80-93_run	526	Run script
proj_nocity	output2020	67,709,266	Output file
proj_nocity	basin.1	971,052	Basic input file
proj_nocity	welin2020.12	19,685,089	Well input file
proj_nocity	nocity2020_run12	509	Run script