

**WATER-LEVEL MEASUREMENTS FOR SELECTED WELLS IN THE
JACKSON, MISSISSIPPI, AREA, AUGUST 1997-JUNE 1998**

By Eric W. Strom and William T. Oakley

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CONTENTS

	Page
Abstract	1
Introduction	1
Methods	1
Results	2

ILLUSTRATIONS

Figure 1. Map showing location of selected Cockfield and Sparta aquifer wells in the Jackson, Mississippi, area	4
2-12. Hydrographs of selected wells:	
2. M094	5
3. M112	6
4. G059	7
5. H155	8
6. H163	9
7. H164	10
8. H196	11
9. N092	12
10. V029	13
11. W069	14
12. Diagrammatic plot showing the depth of sand and clay intervals for selected well logs, Jackson, Mississippi, area	15

TABLE

Table 1. Data for selected wells, Jackson, Mississippi, area.....	3
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CONVERSION FACTORS AND VERTICAL DATUM

<u>Multiply</u>	<u>By</u>	<u>To obtain</u>
foot	0.3048	meter
mile	1.609	kilometer

Sea level: In this report "sea level" refers to the National Geodetic Vertical Datum of 1929—a geodetic datum derived from a general adjustment of the first-order level nets of both the United States and Canada, formerly called Sea Level Datum of 1929.

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ABSTRACT

The U.S. Geological Survey collects, on a systematic basis, data needed to determine and evaluate the ground-water resources of the City of Jackson, Mississippi. This report presents data for water levels measured in selected wells in Hinds and Madison Counties from August 1997 through June 1998 with associated historical water-level data.

INTRODUCTION

The U.S. Geological Survey (USGS) collects, on a systematic basis, data needed to determine and evaluate the ground-water resources of the City of Jackson, Mississippi. The USGS measures water levels in wells completed in the Cockfield and Sparta aquifers underlying the Jackson, Mississippi, area to assess water-level trends. The purpose of this report is to present data for water levels measured in wells from August 1997 through June 1998 and associated historical water-level data. In addition, the subsurface sand and clay intervals at each well were determined and reported.

METHODS

Water-level measurements were made in two wells owned by the City of Jackson, wells M094 and M112 completed in the Sparta aquifer. In addition, water-level measurements were made in eight other wells in the Jackson area (fig. 1) to provide additional information on water-level trends. Measurements were made monthly from August 1997 through June 1998 using a graduated steel tape and battery-operated water-level indicator. Hydrographs were constructed (figs. 2-11) based on recent and historical water-level data. Measurements separated by a time period of greater than 2 years are shown as points on the hydrographs. In pumped wells, the water-level measurements were made after the well pump had been turned off and, generally, water levels were

allowed to recover to near static conditions. However, short-term fluctuations in water levels can be seen on some hydrographs as dips, probably caused by insufficient recovery time of a pumped well, or by drawdown from nearby pumping wells. These dips do not represent the static water level and generally should be used with caution when evaluating the overall water-level trend.

The subsurface sand and clay intervals at most wells in the Jackson area were determined from geophysical logs (fig. 12). For this report, sand is used to indicate aquifer material (fine to coarse sand and gravel); clay is used to indicate confining material (clay, shale, and silt). It should be noted that logged intervals may be deeper or shallower than the interval in which the well was screened.

RESULTS

The results of the water-level measurements made in wells completed in the Cockfield and Sparta aquifers are shown as hydrographs on figures 2-11. Additional information for each well is listed in table 1. All of the hydrographs show an overall decline in water levels since the first measurements were made. The rates of water-level decline were calculated by using the hydrographs of several wells. Rates of water-level decline were determined from hydrographs using static water levels and were not simply the maximum difference in water levels over the period of record, which may not be representative due to effects of nearby pumping wells. Water levels in the two City of Jackson wells completed in the Sparta aquifer in southwest Jackson declined at a rate of about 3 feet per year over the last 8 years in well M094, and a rate of about 3 to 4 feet per year over the last 5 years in well M112. In well V069, one of the northernmost wells completed in the Sparta aquifer, water levels declined at a rate of about 4 feet per year over the last 5 years. Water levels in the Sparta aquifer declined at a rate of about 4 feet per year over the last 5 years in well H164. Rates of water-level decline were difficult to determine for the other Sparta wells that were measured. The least rates of water-level decline were calculated for wells completed in the Cockfield aquifer (G059, H155, H196 and N092) and ranged from about ½ to 1½ feet per year for the period during which they were measured.

Table 1. Data for selected wells, Jackson, Mississippi, area
 [Altitude in feet; USGS, U.S. Geological Survey]

Well	Aquifer	Latitude	Longitude	Altitude	Landnet location	Listed owner
G059	Cockfield	322115	902040	320	T. 06 N., R. 01 W., Sec. 09	Clinton
H155	Cockfield	321951	901058	330	T. 06 N., R. 01 E., Sec. 27	Miss. Geological Survey
H163	Sparta	322223	901328	354	T. 06 N., R. 01 E., Sec. 08	Tri State Brick
H164	Sparta	322212	900957	298	T. 06 N., R. 01 E., Sec. 11	Homewood Manor
H196	Cockfield	322011	900933	290	T. 06 N., R. 01 E., Sec. 25	Miss. Ag Museum
M094	Sparta	321452	901603	360	T. 05 N., R. 01 W., Sec. 26	Jackson
M112	Sparta	321422	901801	330	T. 05 N., R. 01 W., Sec. 28	Jackson
N092	Cockfield	321752	901026	271	T. 05 N., R. 01 E., Sec. 02	Fairgrounds
V029	Sparta	322415	900944	355	T. 07 N., R. 01 E., Sec. 35	Tougaloo College
W069	Sparta	322514	900809	350	T. 07 N., R. 02 E., Sec. 30	Ridgeland

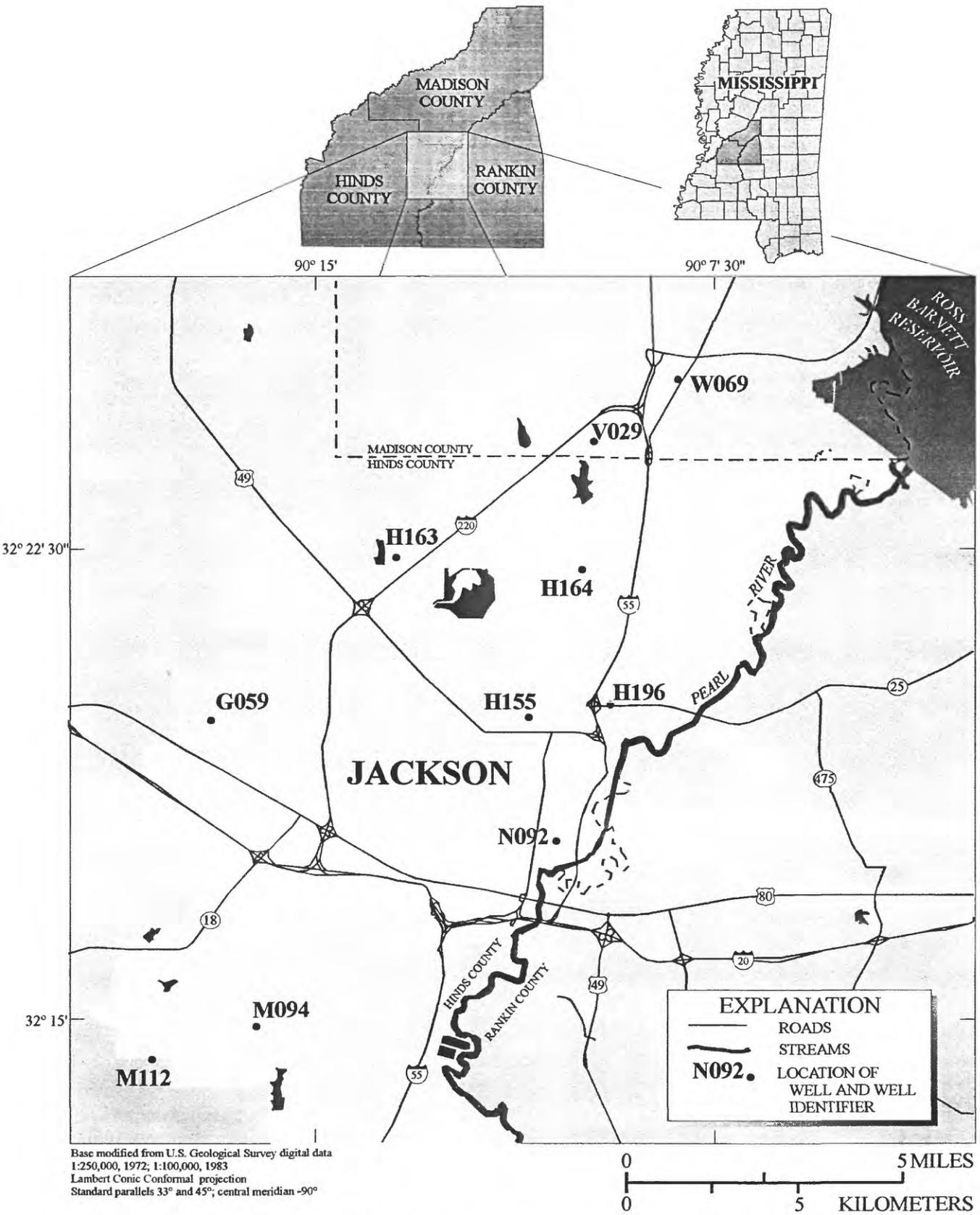


Figure 1. Location of selected Cockfield and Sparta aquifer wells in the Jackson, Mississippi, area.

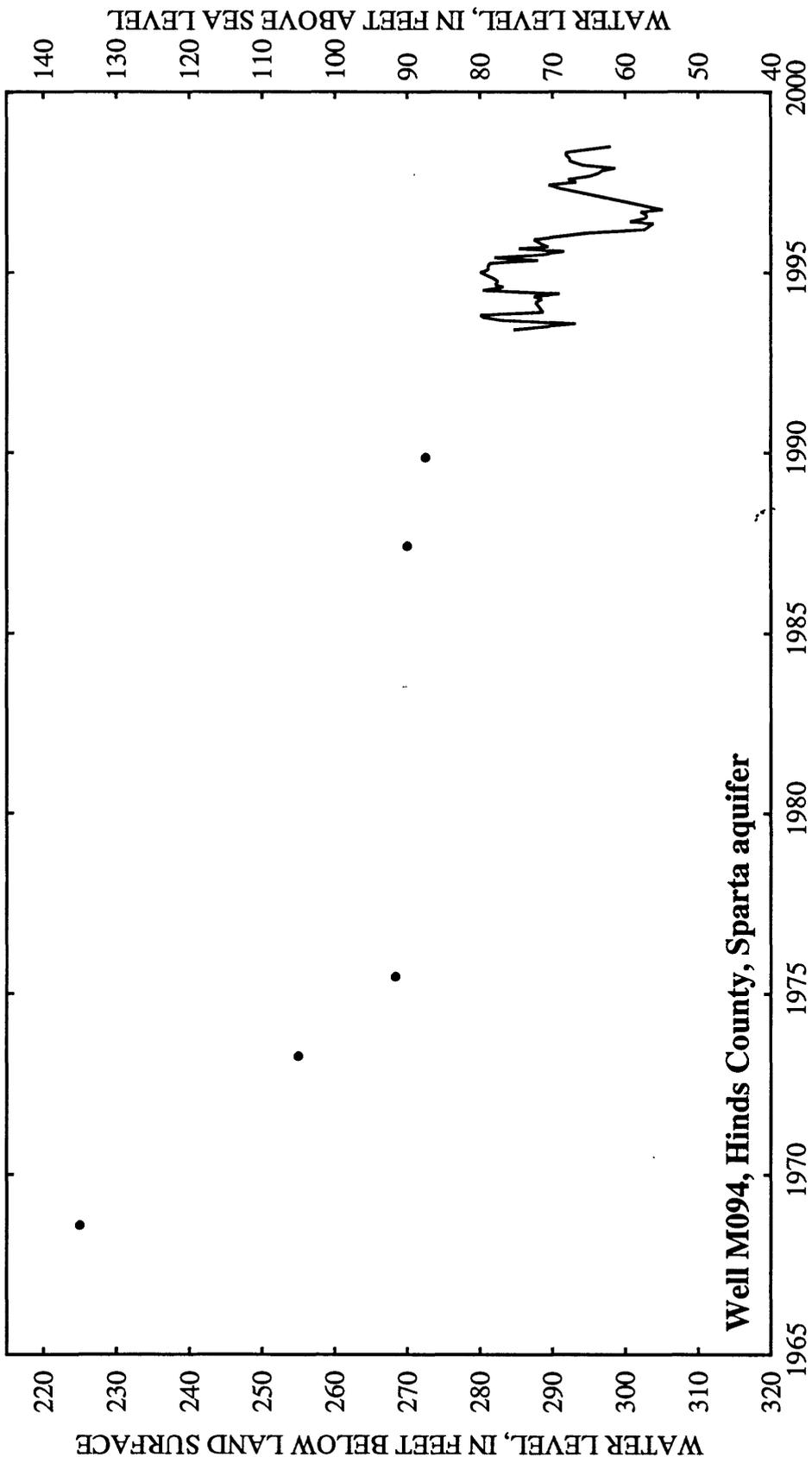


Figure 2. Hydrograph of well M094.

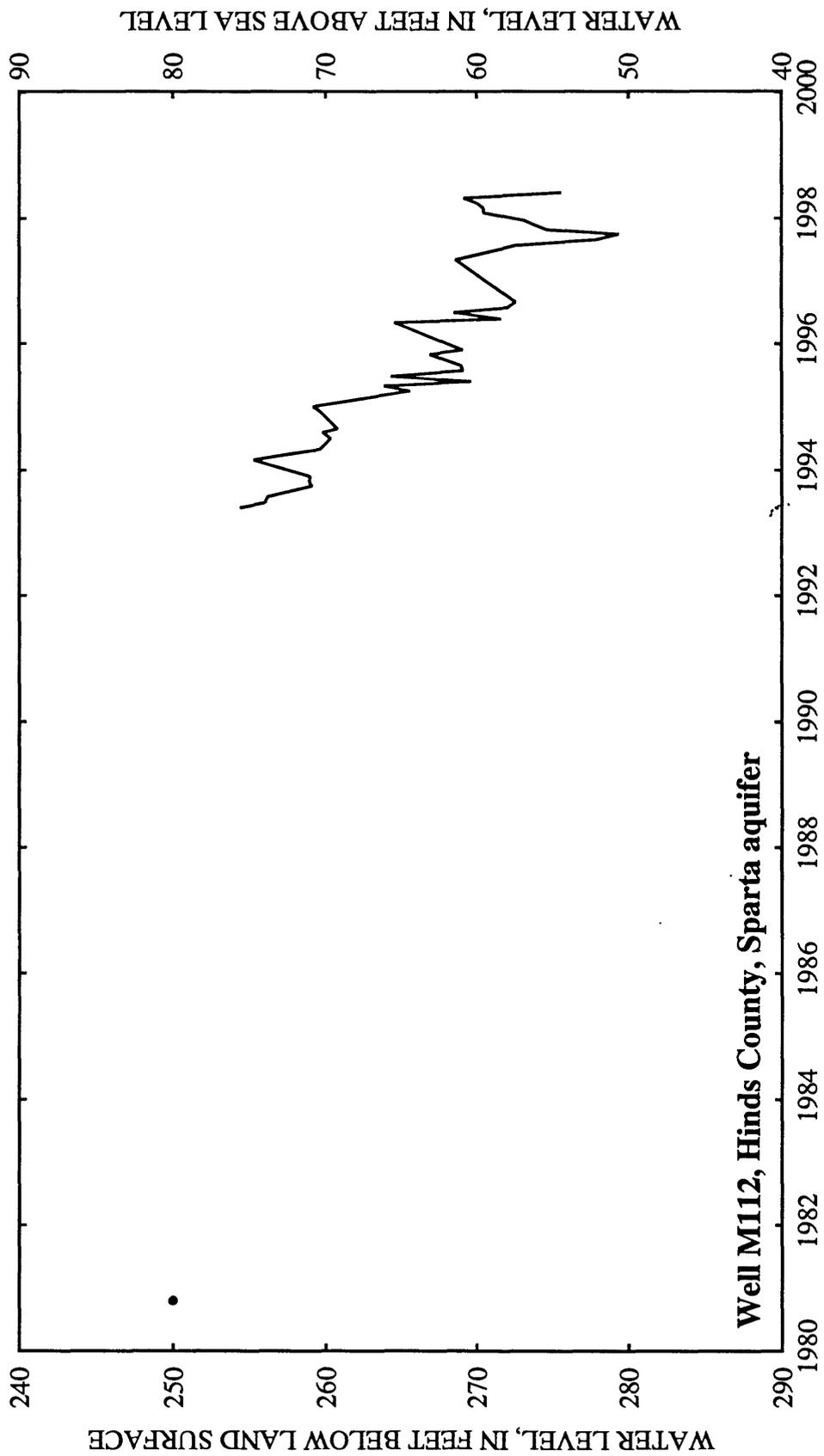


Figure 3. Hydrograph of well M112.

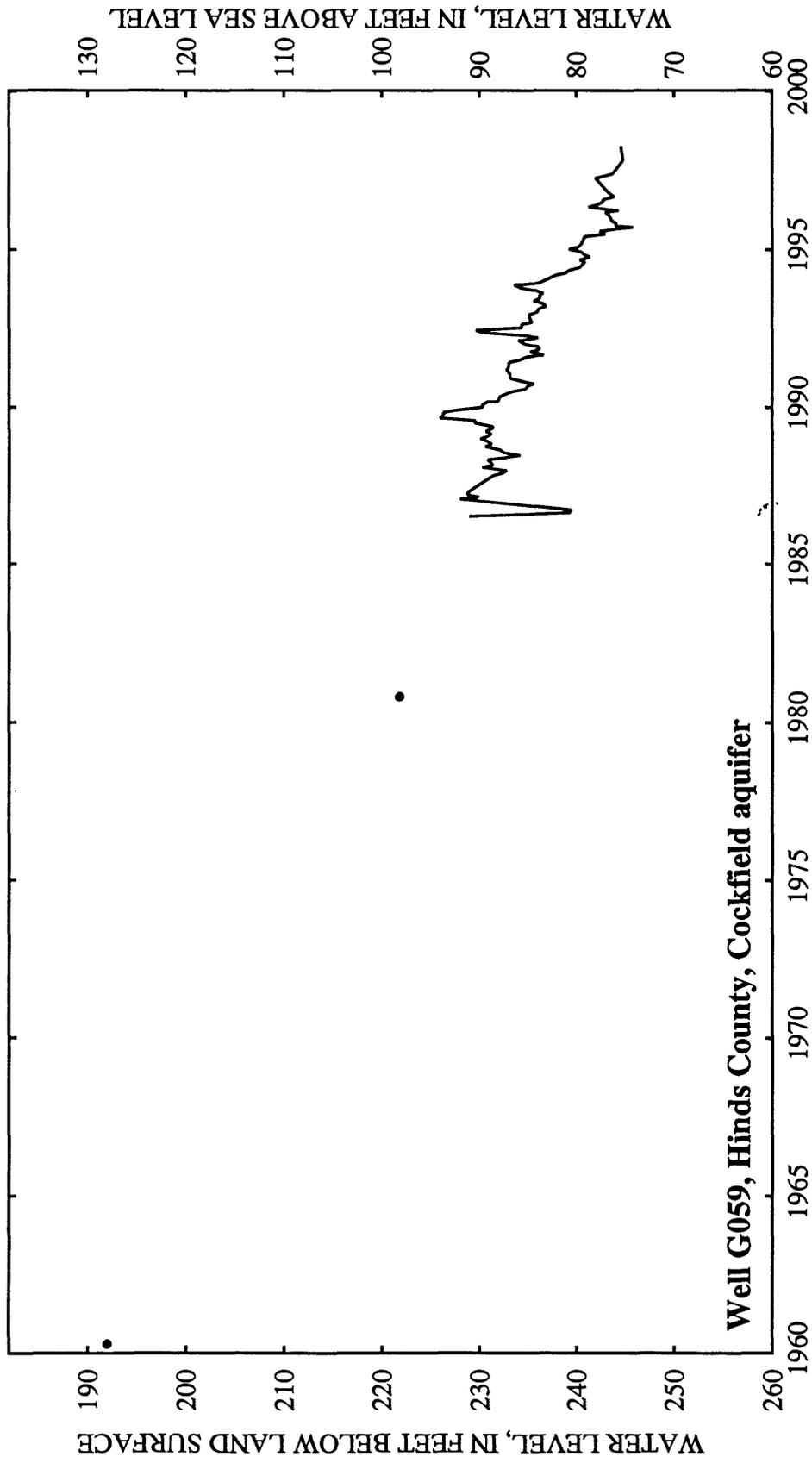


Figure 4. Hydrograph of well G059.

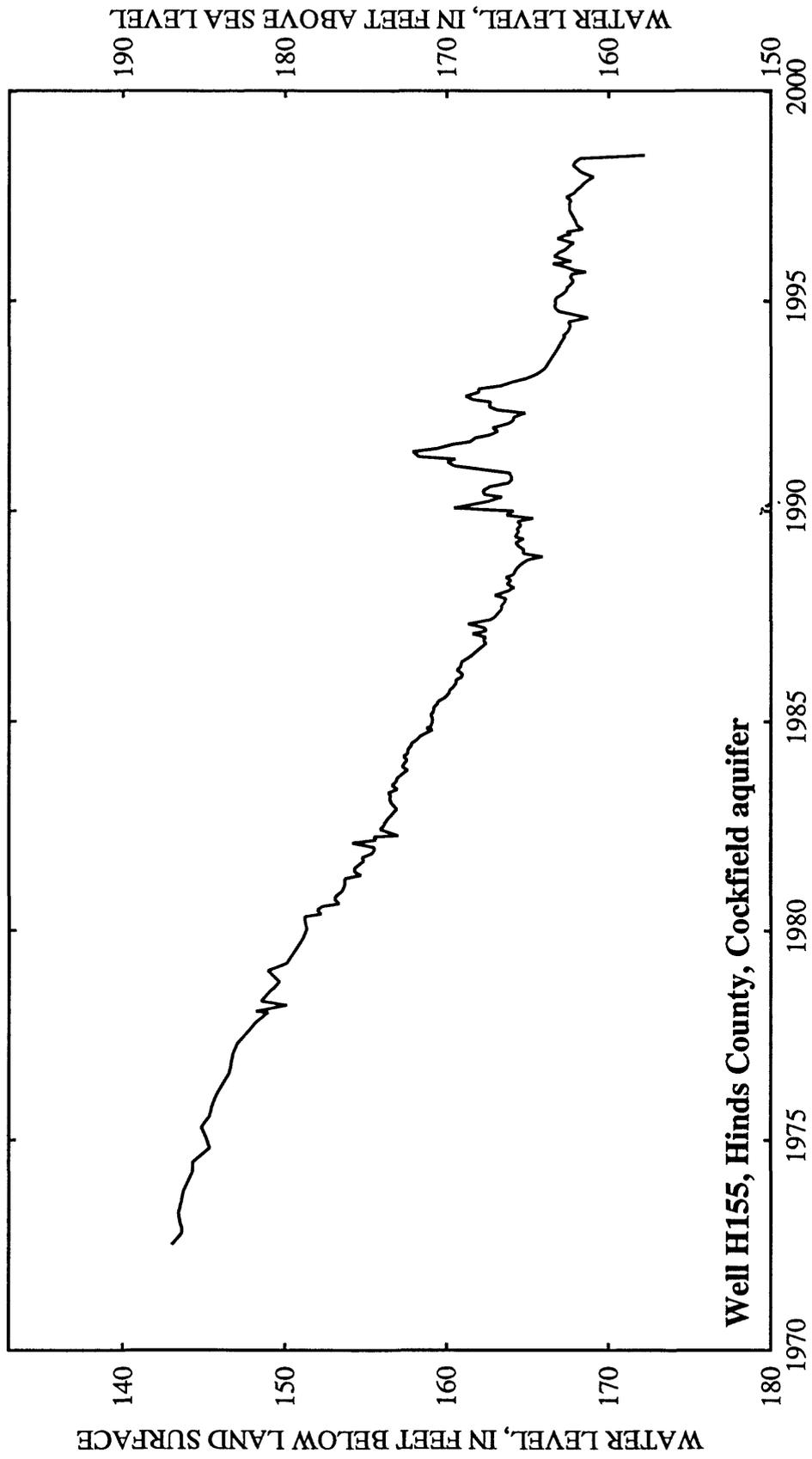


Figure 5. Hydrograph of well H155.

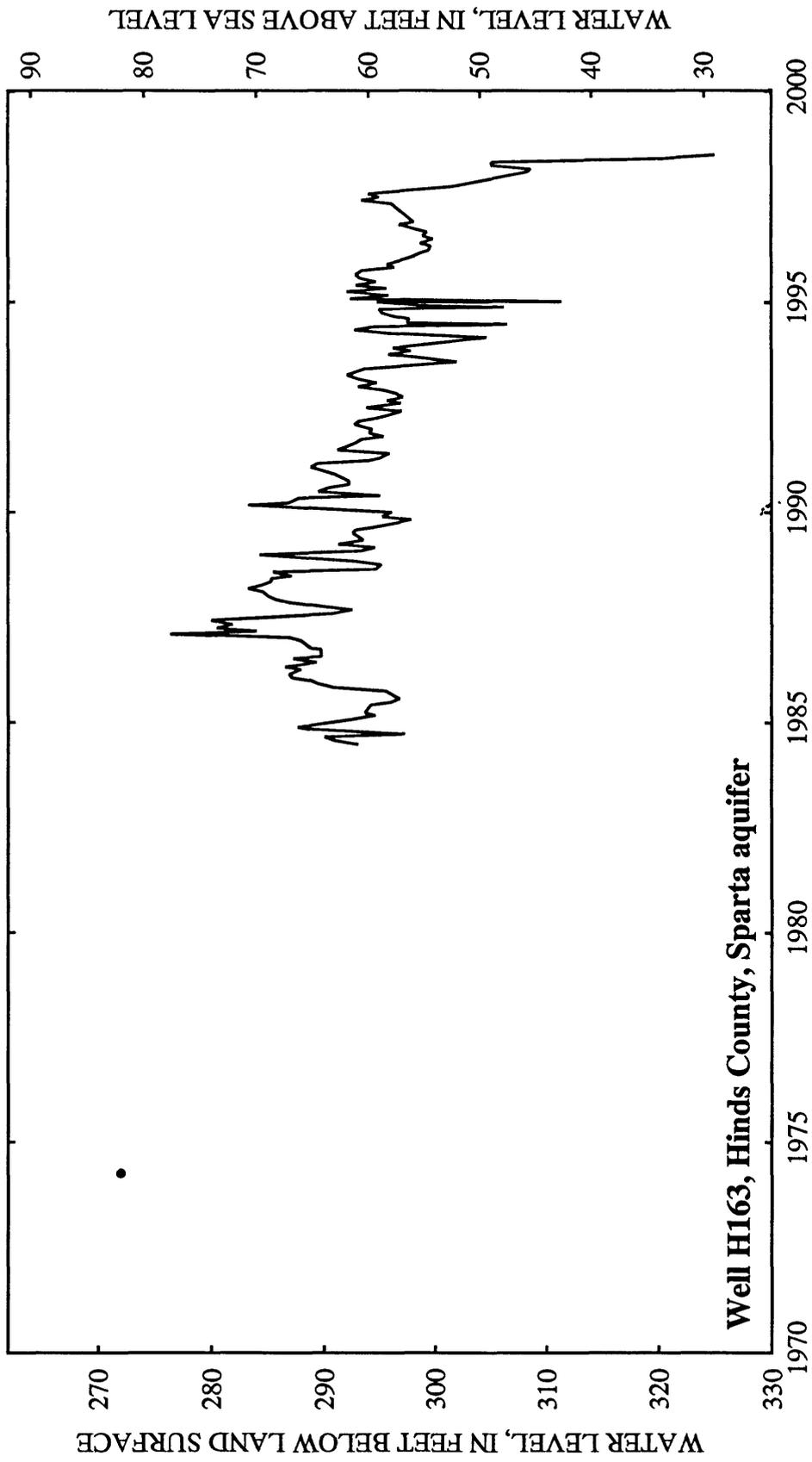


Figure 6. Hydrograph of well H163.

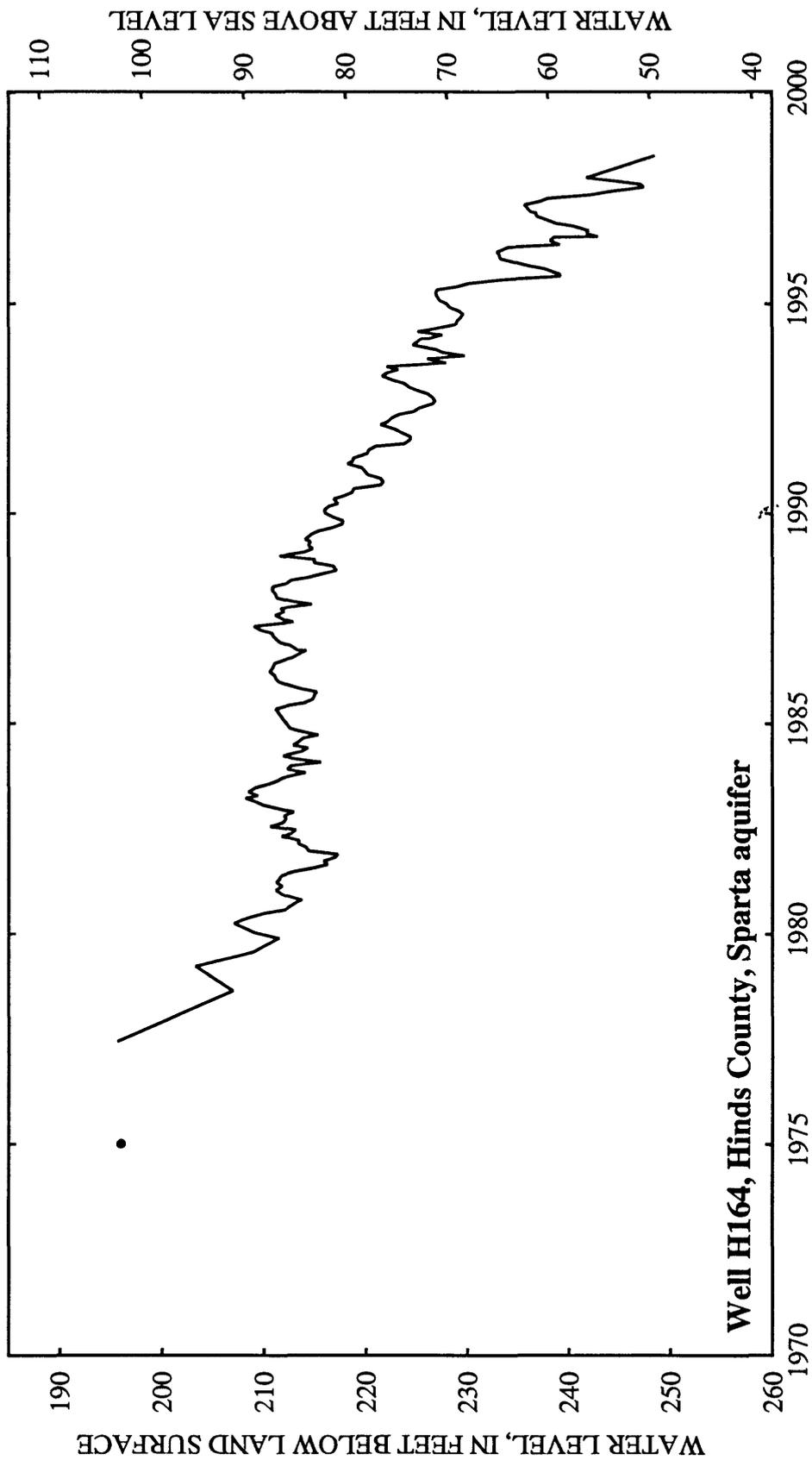


Figure 7. Hydrograph of well H164.

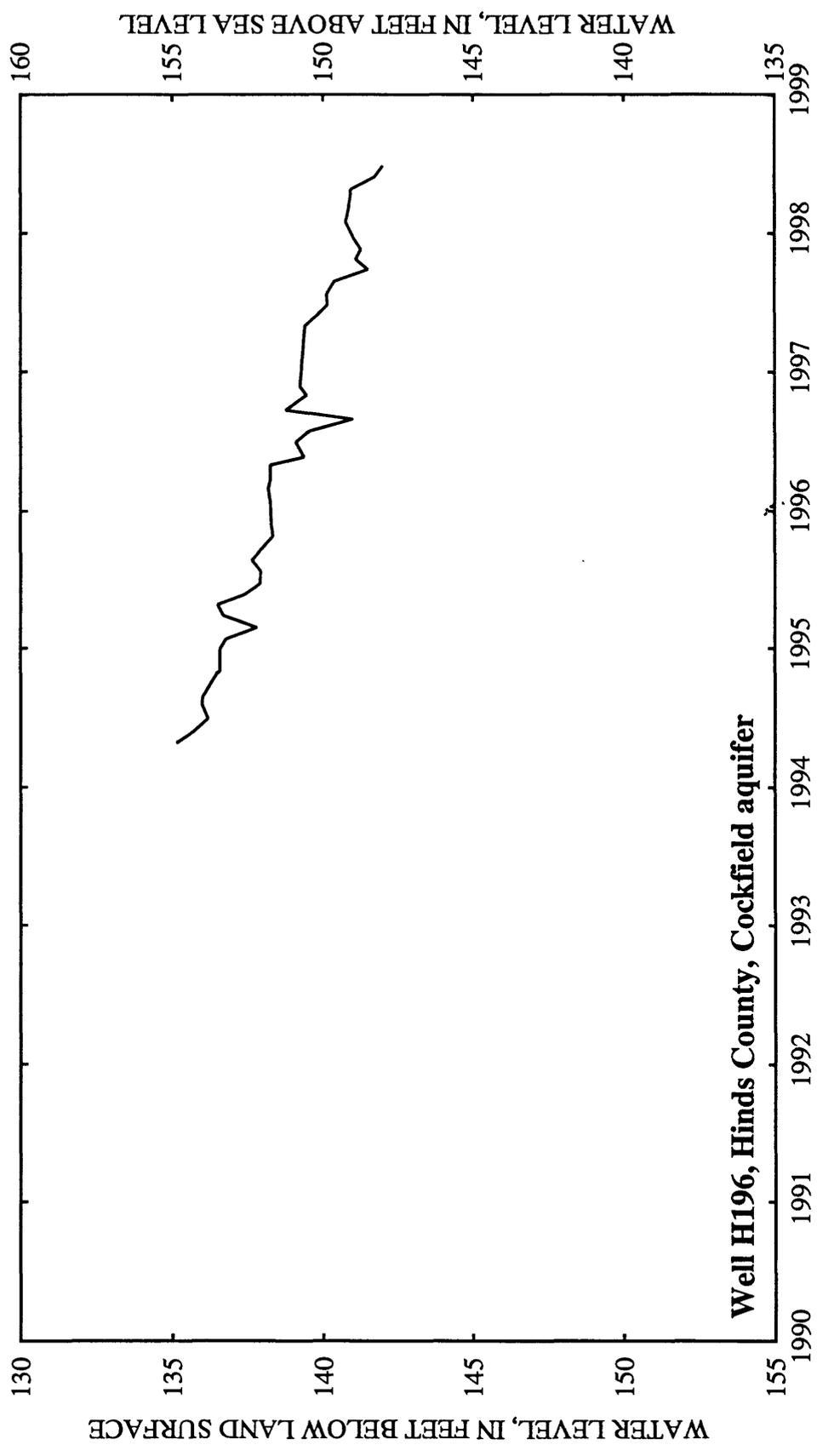


Figure 8. Hydrograph of well H196.

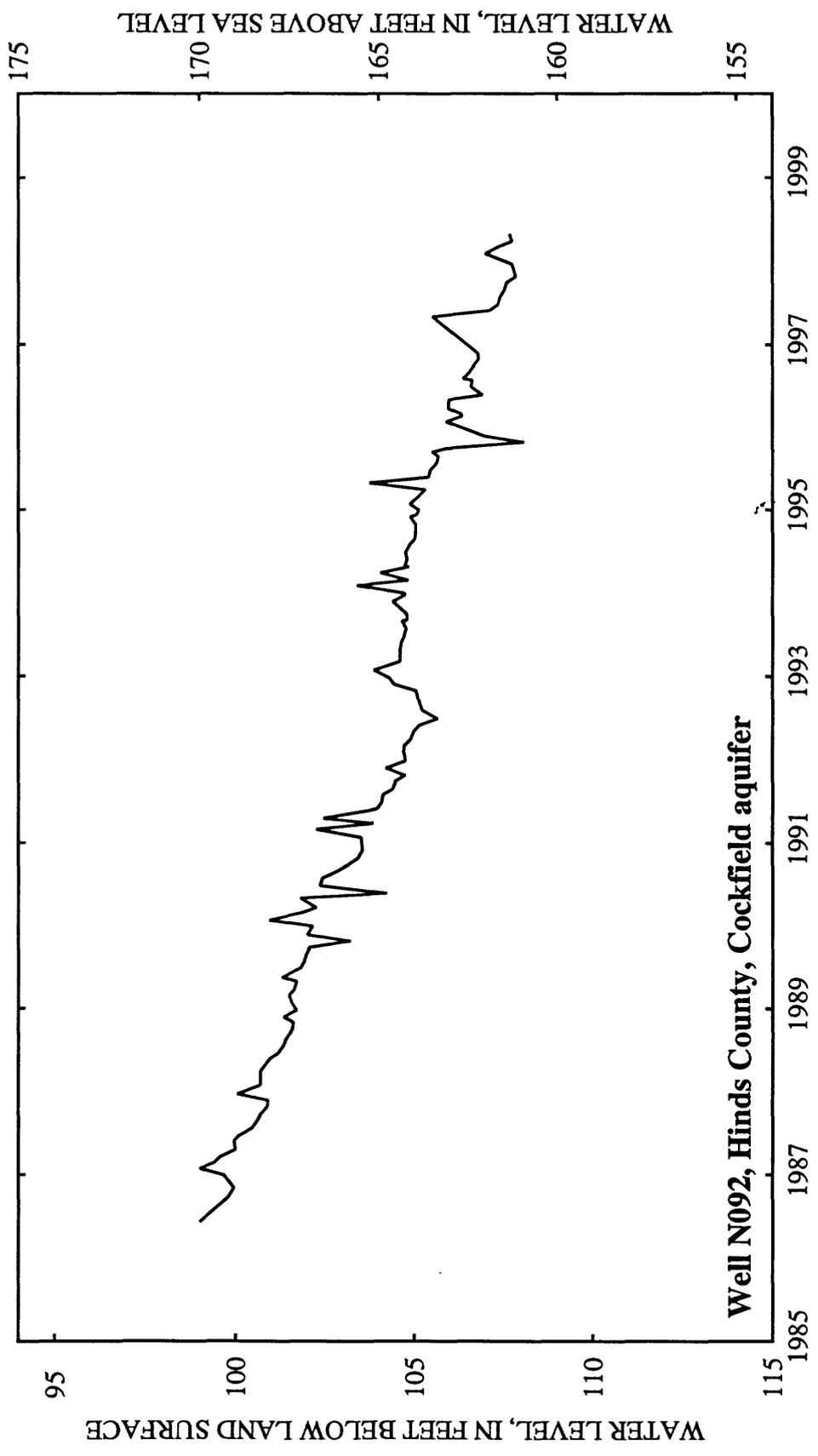


Figure 9. Hydrograph of well N092.

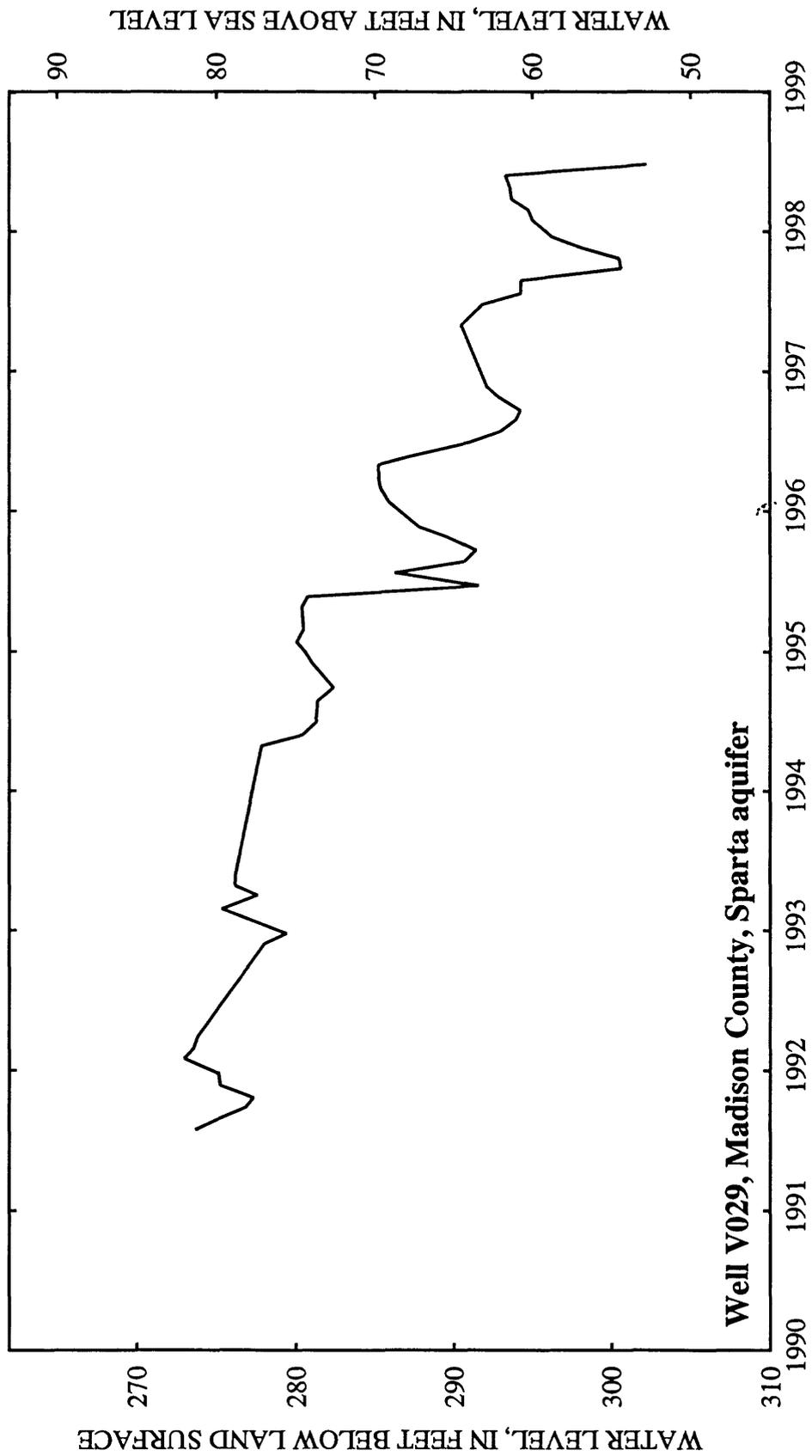


Figure 10. Hydrograph of well V029.

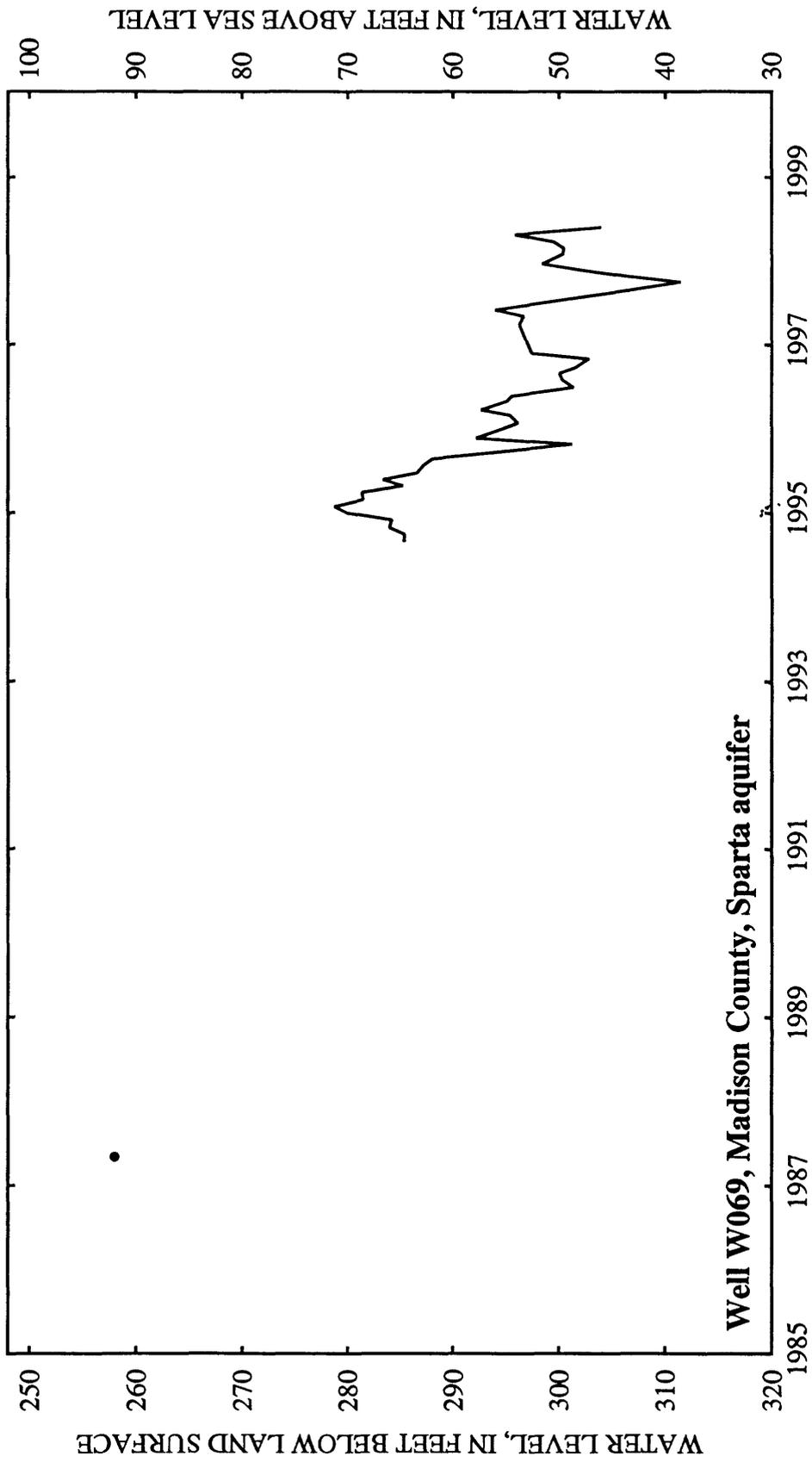


Figure 11. Hydrograph of well W069.

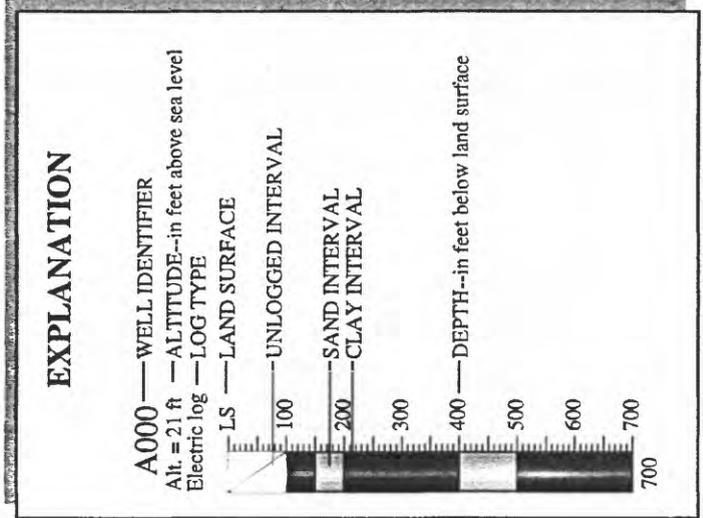
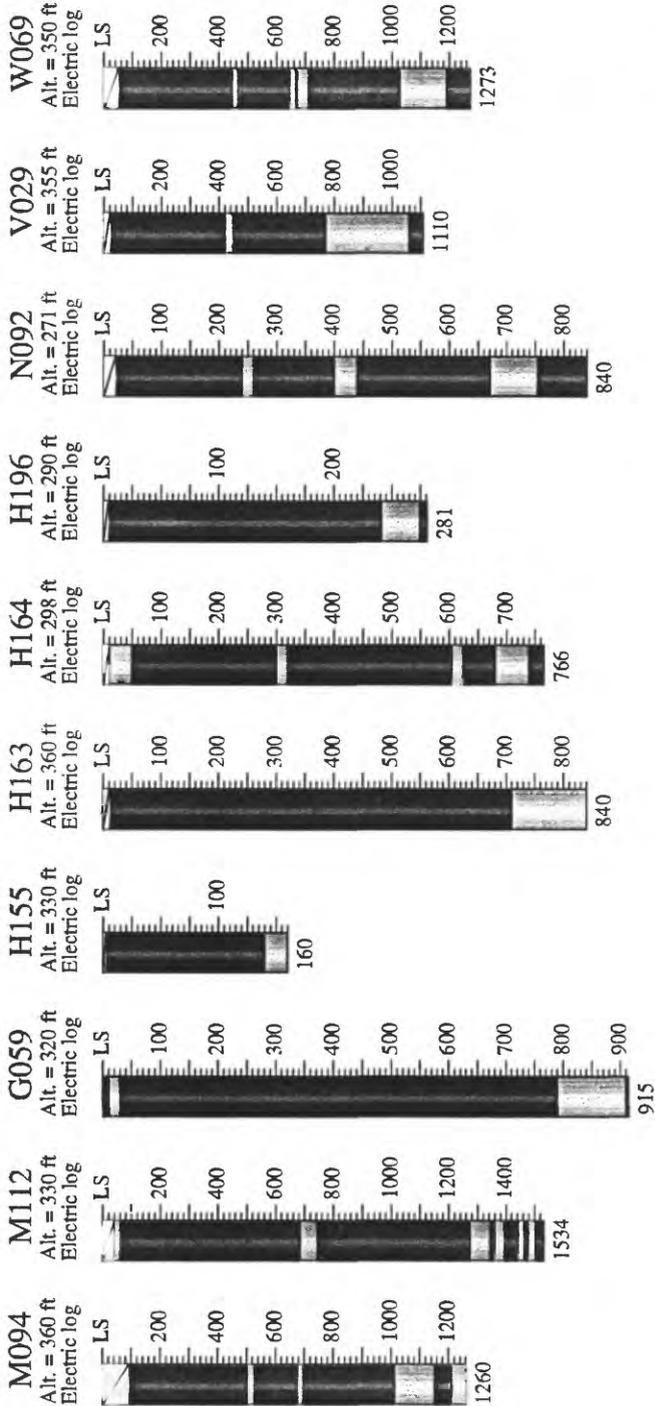


Figure 12. Depth of sand and clay intervals for selected well logs, Jackson, Mississippi, area.