GROUND WATER SUPPLEMENT

TABLE OF CONTENTS

TABLE OF CONTENTS (Continued)

1.0 INTRODUCTION

The Nuclear Regulatory Commission, as part of its Operating Permit review, has requested additional data on ground water conditions at the Vogtle Electric Generating Plant (VEGP). This 'Ground Water Supplement' provides the information requested in the Draft Site Evaluation Report (DSER, Dec. 4, 1984) Section 2.4.12.5 and in the letters (E.G. Adensam to D.O. Foster) dated January 22 and February 19, 1985. Additional information is also provided that is thought to be of assistance. The data is grouped under three subjects: ground-water levels; permeability and porosity; and status of drill holes. The information will be reviewed and summarized for inclusion in a forthcoming amendment to the Final Safety Analysis Report.

2.0 GROUND-WATER LEVELS

The NRC has requested additional information concerned with the level of the water table in order to assess the design basis ground-water level. In response, the following are submitted:

- Tabulated water-level measurements taken at all observation wells of the VEGP site, 1971 through January 1985.

- Hydrographs of the water levels measured in observation wells.

- Summary tables of all observation wells constructed at the site that identify when the wells were constructed, what the current status is (i.e., active, inactive, grouted, etc.), and other pertinent data.

- Monthly precipitation records of the U.S. Weather Bureau stations at Augusta (Bush Field), Waynesboro, Blackville, SRP, and Hampton for the period 1952 through 1983, and the partial monthly records of precipitation taken at the VEGP site during the period 1972 through 1983.

- Two figures are provided to show 1) the locations of all observation wells constructed at the VEGP site, and 2) the wells that make up the current (1985) ground-water monitoring program.

The history of the ground-water monitoring program at the VEGP site is complex. This is due primarily to necessary interruptions caused by construction activities, as well as the fact that both water-table (unconfined) and confined aquifers are being monitored. A summary of that history is submitted to clarify the monitoring sequence, frequency, and periods of measurements.

2.1 Construction of Observation Wells; 1971 to 1985

A ground-water monitoring program was established at the VEGP site with the first exploration work in 1971. That program has included an array of observation wells open to the water-table aquifer above the Blue Bluff marl, and an array of wells open to the confined aquifer immediately below the marl (in the unnamed sands of the Lisbon Formation).

Special observation wells installed include a nest of wells (identified as 42A through D) that provided wells open to the unconfined and confined aquifer immediately above and below the marl, respectively, and wells open to the marl itself. They provided data on the distribution of hydrostatic pressure across the marl. Other special wells include a series of short-lived construction "piezometers" that were installed in the backfill as it was placed around the Power Block complex. They were utilized to assure the water table in the backfill was deep enough to achieve effective compaction. All of the construction piezometers were destroyed upon completion of backfill except two, LT-1A and LT-7.

The initial array of observation wells installed during the exploration period 1971 through 1972 included several located in areas of plant construction. These were destroyed and sealed as required by the construction schedule, and when possible, replaced after the construction was completed.

The original observation wells reported in the PSAR (Table 2.4-3) included 16 open to the water table aquifer, 10 open to the confined aquifer, and two monitoring hydrostatic pressure in the marl. This array remained until July 1974 when site grading began, and excavation for the Power Block commenced. A majority of the wells were terminated at that time to make way for construction. All activity at the site was interrupted three months later, September 1974. Water-level monitoring did not resume until March 1979.

Resumption of construction, which began in 1976, required dewatering the Power Block excavation. The dewatering continued, uninterrupted, until March 1983. As construction progressed, more wells had to be terminated. Of the original observation wells open to the water-table aquifer, only 3 remain intact currently, and of the original wells open to the confined aquifer, 2 remain currently. Other wells have been installed periodically to replace those destroyed by construction.

Currently, February 1985, there are 13 wells open to the water table aquifer, including two within the backfill material adjacent to the Power

Block, and 10 wells monitoring the confined aquifer immediately below the Blue Bluff marl. Additional wells in the water-table aquifer are planned, including two within the backfill material, adjacent to structures of the Power Block, and two to the north and west of the power block in undisturbed Barnwell deposits. Locations of these planned wells are shown on Figure 2-2.

2.2 Water-level measurements

During the period September 1971 through March 1972, water levels in observation wells at VEGP were monitored by Law Engineering Company at least bi-weekly and, commonly, more frequently.

The Design Basis water level was determined with that data. Water level measurements since that initial period have generally been less frequent, except for a period December 11, 1980 through September 15, 1982 when daily measurements were made in two wells.

No water-level measurements were made between April 1972 and April 1973 when Georgia Power Company personnel commenced monitoring on a quarterly basis. Monitoring was again stopped July 1974 when site grading and excavation for the Power Block was commenced.

Monitoring was not resumed until June 1979, at which time quarterly measurements of all existing wells was again initiated. Daily readings were made in observation wells 800 and 802 during the period December 11, 1980 through September 15, 1982 as part of the monitoring conducted for placement of the backfill around the Power Block structures. Temporary wells were installed in the backfill as it was being placed to monitor the saturated level and assure proper compaction.

Water levels in observation wells of the unconfined aquifer after June 1979 (including those in the backfill) were influenced by construction dewatering. The dewatering of the Power Block excavation was in effect from June 1976 through March 1983.

Several of the water-level measurements to be submitted are not reflections of the water table. Characteristically, this occurred where infiltration of silt and sand into the well casing had progressed until it filled the casing to above the screened interval. The water level measured in the well would then be considerably higher than the water table outside the well casing. Until the silt and sand was removed, the well cleaned, readings of water level are not a reflection of the water table. Such readings are listed in the tabulation, but are noted with an explanation of why they are not representative of the water table.

The water-level measurements taken in the temporary wells are not submitted as they are not a reflection of the water-table, but of moisture control maintained for proper backfill compaction.

2.3 Precipitation

Monthly precipitation data from 5 stations within the vicinity of the Vogtle Plant Site is summarized in Tables 2-5 through 2-9 for the 32-yr period of 1952-1983. Available data at the plant site (1972-1983) is shown in Table 2-10. Plant site and the stations are shown in Figure 2-3.

Annual precipitation totals are plotted in Figure 2-4 for the concurrent period, 1952-1983, for five stations. Plots of the cumulative annual totals appear in Figure 2-5 for each station.

Vogtle Plant site data, shown in Table 2-10 is inadequate to characterize the annual and monthly precipitation for the site: Rather, a regional average based on the stations in the vicinity would be an adequate index. As apparent in Figure 2-5, the five nearby stations exhibit similar characteristics and trends.

TABLE 2-1

OBSERVATION WELLS IN UNCONFINED AQUIFER

Well No.	HISTORY Installed (YR)	Current Status	Coordinates N	E	Ground Surface Elev.[1] (ft)	Top of PVC Elev.[2] (ft)	Depth Top of Marl[3] (ft)	Screen Depth[3] (ft)
129	1971	Active	8856	9576	215.9	215.3	77	92 - 97
142	1971	Active	8283	8262	231.2	224.5	92	85 - 95
179	1971	Active	9059	7779	274.8	275.9	130	111 - 131
800	1979	Active	8850	11011	213.7	215.3	83	69 - 89
801	1979	Active	7656	10733	212.8	215.8	82	62.5- 82.5
802	1979	Active	7201	10199	215.8	217.7	91	69 - 89
803A	1979	Active	7085	8898	218.3	220.3	82	57 - 77
804	1979	Active	6597	8227	224.1	226.1	87	60 - 80
805A	1979	Active	6672	10403	232.7	236.7	124	95 - 115
806B	1980	Active	8821	9726	214.8	215.8	77[4]	55 - 65
807A	1980	Active	9047	9835	213.6	218.0	77[4]	65 - 75
LT-1A[5]	1979	Active	8388	9300	(6)	206.9	69[7]	65.4- 75.4[8]
LT-7[5]	1979	Active	8151	9323	(6)	200.4	63[7]	58.2- 68.2[8]
124	1971	Inactive, 1979 (buried)	6896	9527	260.2	259.9	128	160 - 170
138	1971	Grouted, 1985	8000	8500	225.2	225.1	87	5 - 82
140	1971	Grouted, 1985	7846	8702	222.4	223.5	89	81 - 96
141	1971	Grouted, 1985	7860	8293	230.4	223.6	97	90 - 100
143	1971	Grouted, 1980	8283	8738	224.5	225.0	81	78.5- 88.5
145G	1971	Inactive, 1974 (buried)	7792	7063	218.7	219.7	82	72 - 82
176	1971	Inactive, 1974 (buried)	7117	11423	196.4	196.9	77	65 - 75

TABLE 2-1 (continued)

OBSERVATION WELLS IN UNCONFINED AQUIFER

Well No.	HISTORY Installed (YR)	Current Status	Coordinates N	E	Ground Surface Elev.(1) (ft)	Top of PVC Elev.(2) (ft)	Depth Top of Marl(3) (ft)	Screen Depth(3) (ft)
177	1971	Grouted, 1980	8560	10865	213.0	213.0	79	60 - 80
178	1971	Grouted, 1978	9958	8994	240.4	240.5	89	71 - 91
243	1972	Grouted, 1985	9154	8618	213.0	225.2	71	60 - 80
244	1972	Inactive, 1979 (buried)	8835	8859	212.6	213.7	72	51 - 71
245	1972	Grouted, 1978	8501	9917	207.6	209.0	71.5	52 - 92
247	1972	Inactive, 1972 (buried)	5750	5424	211.3	--	82	70 - 80
248	1972	Inactive, 1972 (buried)	7469	5111	166.8	--	70.3	60 - 70
249	1972	Inactive, 1979 (buried)	8826	10154	193.0	194.0	57.9	47 - 57

Notes

(1) Elevations shown were determined at time of drilling.

(2) Elevations shown are current or latest determination made prior to well abandonment.

(3) Unless otherwise indicated, depths shown were measured from ground surface at time of drilling.

(4) Approximate depth based on log of well 129.

(5) Observation wells located in backfill.

(6) Ground surface continually changes as backfill is placed.

(7) Additions to riser casing as backfill is placed have been added to approximate depth from ground surface at time of drilling based on top of marl contour map, FSAR Figure 2.5.1-30.

(8) Additions to riser casing as backfill is placed have been added to depths measured from ground surface at time of drilling.

TABLE 2-2

OBSERVATION WELLS IN CONFINED AQUIFER

Well No.	HISTORY Installed (YR)	Current Status	Coordinates N	E	Ground Surface Elev.(1) (ft)	Top of PVC Elev.(2) (ft)	Depth Bot. of Marl(3) (ft)	Screen Depth(3) (ft)
27	1971	Active	8622	13931	210.0	209.0	148	180 - 190
29	1971	Active	9975	12392	193.0	193.4	126	200 - 210
850A	1984	Active	11723	10494	225.9	227.8	135	169 - 179
851A	1984	Active	8868	7066	262.7	264.3	195	269 - 279
852	1984	Active	5993	13380	200.7	202.1	153.5	199 - 209
853	1984	Active	11020	9204	227.6	229.1	145	195 - 205
854	1984	Active	9899	7917	236.8	238.3	153	197 - 207
855	1984	Active	7159	13951	218.0	219.4	173	219 - 229
856	1984	Active	4927	12558	186.7	188.1	155	176 - 186
24	1971	Grouted	7850	9092	216.0	216.4	145	210 - 220
26	1971	Grouted, 1984	5963	15197	203.0	203.8	158	190 - 200
31	1971	Grouted, 1984	8764	11237	211.0	216.8	151	200 - 210
32	1971	Grouted, 1984	9784	9572	214.0	217.4	139	200 - 210
33	1971	Grouted, 1984	11834	10864	238.0	238.6	157	210 - 220
34	1971	Inactive(capped)	12180	10846	86.0	90.5	(4)	90 - 100
101A	1971	Grouted, 1974	7950	9515	210.6	211.7	138	190 - 200
121	1971	Grouted, 1985	10467	12195	88.8	--	(4)	78 - 88
135	1971	Grouted	8992	8742	200.5	201.3	124.8	160 - 170
144	1971	Grouted	10403	12124	103.2	103.2	38	38.5- 48.5
147	1971	Grouted, 1978	7975	8471	226.2	227.4	152	280 - 300

TABLE 2-2 (continued)

OBSERVATION WELLS IN CONFINED AQUIFER

Well No.	HISTORY Installed (YR)	Current Status	Coordinates N	E	Ground Surface Elev.(1) (ft)	Top of PVC Elev.(2) (ft)	Depth Bot. of Marl(3) (ft)	Screen Depth(3) (ft)
157	1971	Grouted, 1985	10605	7598	207.6	213.1	153.1	139.5- 149.5
175	1971	Grouted, 1985	8386	7363	233.1	--	164	155 - 165
181	1971	Inactive(buried)	8744	6833	258.3	--	194.5	190 - 200
246	1972	Grouted, 1984	10532	6553	210.4	213.5	179.7	220 - 230

Notes

(1) Elevations shown were determined at time of drilling.

(2) Elevations shown are current or latest determination made prior to well abandonment.

(3) Unless otherwise indicated, depths shown were measured from ground surface at time of drilling.

(4) Well located in channel of Savannah River, marl not present.

TABLE 2-3

NEST OF OBSERVATION WELLS 42A, B, C, D, AND E

Well No.	HISTORY Installed (YR)	Current Status	Coordinates N	E	Ground Surface Elev.(1) (ft)	Top of PVC Elev.(2) (ft)	Marl Interval(3) (ft)	Screen Depth(3) (ft)
42A	1971	Grouted, 1974	8380	9535	210.6	213.0	72 - 137	140 - 150
42B	1971	Grouted, 1974	8386	9544	210.4	--	72 - 137	120 - 130
42C	1971	Grouted, 1974	8398	9563	210.0	--	72 - 137	80 - 90
42D	1971	Grouted, 1974	8403	9571	209.7	212.7	72 - 137	60 - 70
42E	1971	Grouted, 1974	8408	9580	209.6	--	72 - 137	45 - 55

NOTES

(1) Unless otherwise indicated, elevations shown were determined at time of drilling.

(2) Elevations shown are current or latest determination made prior to well abandonment.

(3) Unless otherwise indicated, depths shown were measured from ground surface at time of drilling.

TABLE 2-4

WATER LEVEL MEASUREMENTS FOR OBSERVATION WELLS

Water Levels for Well 24

Date	Elevation	NOTES
06-MAY-1971	121.80	
26-MAY-1971	122.70	
15-JUN-1971	116.30	
17-JUN-1971	117.20	
16-JUN-1971	118.30	
18-JUN-1971	117.20	
22-JUN-1971	117.60	
23-JUN-1971	119.30	
01-JUL-1971	116.20	
14-JUL-1971	117.20	
21-JUL-1971	117.00	
26-JUL-1971	117.30	
04-AUG-1971	117.00	
11-AUG-1971	117.50	
18-AUG-1971	118.20	
25-AUG-1971	116.20	
01-SEP-1971	117.80	
06-SEP-1971	117.50	
15-SEP-1971	117.30	
28-SEP-1971	117.30	
06-OCT-1971	117.60	
23-OCT-1971	117.70	
02-NOV-1971	117.20	
10-NOV-1971	117.10	
17-NOV-1971	116.80	
23-NOV-1971	117.00	
01-DEC-1971	117.30	
07-DEC-1971	117.40	
14-DEC-1971	119.00	
23-DEC-1971	119.50	
29-DEC-1971	119.00	
05-JAN-1972	118.00	
12-JAN-1972	118.20	
19-JAN-1972	119.90	
26-JAN-1972	120.50	
03-FEB-1972	120.30	
09-FEB-1972	120.30	
23-FEB-1972	120.30	
02-MAR-1972	119.60	
09-MAR-1972	119.70	
16-MAR-1972	119.10	
21-MAR-1972	119.90	
18-APR-1972	119.70	
01-MAY-1973	122.70	
30-MAY-1973	119.00	
10-JUL-1973	119.90	
13-OCT-1973	117.70	
03-NOV-1973	117.30	
09-DEC-1973	118.80	
07-JAN-1974	119.30	

Water Levels for Well 24 (Continued)

Date	Elevation	NOTES
10-FEB-1974	121.00	
23-MAR-1974	122.00	
17-APR-1974	117.70	

Water Levels for Well 26

Date	Elevation	NOTES
20-APR-1971	105.90	(1)
29-APR-1971	106.50	
06-MAY-1971	106.70	
26-MAY-1971	104.80	
15-JUN-1971	102.10	
16-JUN-1971	102.20	
17-JUN-1971	101.90	
18-JUN-1971	102.60	
22-JUN-1971	102.20	
23-JUN-1971	101.90	
01-JUL-1971	102.60	
14-JUL-1971	101.90	
21-JUL-1971	102.50	
28-JUL-1971	101.60	
04-AUG-1971	101.90	
11-AUG-1971	101.10	
18-AUG-1971	103.90	
25-AUG-1971	102.70	
01-SEP-1971	102.80	
08-SEP-1971	102.10	
15-SEP-1971	102.10	
29-SEP-1971	102.20	
23-OCT-1971	103.10	
02-NOV-1971	102.60	
10-NOV-1971	102.40	
17-NOV-1971	102.50	
23-NOV-1971	102.70	
01-DEC-1971	104.10	
07-DEC-1971	104.60	
14-DEC-1971	106.40	
23-DEC-1971	106.70	
29-DEC-1971	103.90	
05-JAN-1972	103.50	
12-JAN-1972	105.30	
19-JAN-1972	107.80	
26-JAN-1972	107.60	
03-FEB-1972	107.60	
09-FEB-1972	107.80	
23-FEB-1972	107.20	
02-MAR-1972	105.40	
09-MAR-1972	105.40	
16-MAR-1972	104.20	
21-MAR-1972	103.90	
18-APR-1972	103.50	
26-APR-1973	103.20	
30-MAY-1973	103.90	
27-JUL-1973	104.90	
13-OCT-1973	104.20	
03-NOV-1973	104.00	
09-DEC-1973	103.30	

Water Levels for Well 26 (Continued)

Date	Elevation	NOTES
07-JAN-1974	107.20	
07-JAN-1974	107.20	
10-FEB-1974	100.10	
23-MAR-1974	104.90	
17-APR-1974	105.50	
02-JUN-1979	105.20	
07-JUL-1979	102.40	
26-NOV-1979	103.50	
02-JAN-1980	102.90	
28-MAR-1980	103.30	
27-JUN-1980	102.70	
27-SEP-1980	101.40	
29-DEC-1980	101.40	
26-MAR-1981	101.90	
29-JUN-1981	100.40	
23-MAR-1982	101.60	
15-JUN-1982	100.40	
15-SEP-1982	100.80	
11-DEC-1982	100.30	
03-MAR-1983	103.90	
22-JUN-1983	101.30	
21-SEP-1983	99.90	
12-DEC-1983	100.80	
12-MAR-1984	106.90	
11-JUN-1984	101.40	

NOTE:

(1) Initial measurement after construction and testing, is not considered valid. Data not plotted on hydrograph.

Water Levels for Well 27

Date	Elevation	NOTES
06-MAY-1971	92.50	
26-MAY-1971	93.80	
15-JUN-1971	81.50	
16-JUN-1971	81.40	
17-JUN-1971	81.20	
18-JUN-1971	79.50	
22-JUN-1971	81.10	
23-JUN-1971	80.80	
01-JUL-1971	82.50	
14-JUL-1971	83.50	
21-JUL-1971	79.30	
28-JUL-1971	84.00	
04-AUG-1971	82.10	
11-AUG-1971	82.90	
18-AUG-1971	83.10	
25-AUG-1971	80.60	
01-SEP-1971	80.70	
08-SEP-1971	80.70	
15-SEP-1971	80.50	
30-SEP-1971	80.70	
05-OCT-1971	80.10	
23-OCT-1971	81.50	
02-NOV-1971	80.00	
10-NOV-1971	79.90	
17-NOV-1971	80.00	
23-NOV-1971	80.70	
01-DEC-1971	84.40	
07-DEC-1971	85.00	
14-DEC-1971	88.00	
23-DEC-1971	87.50	
29-DEC-1971	81.00	
03-JAN-1972	81.10	
12-JAN-1972	87.70	
19-JAN-1972	89.80	
26-JAN-1972	88.90	
03-FEB-1972	85.80	
09-FEB-1972	86.10	
23-FEB-1972	87.00	
02-MAR-1972	82.80	
09-MAR-1972	80.70	
15-MAR-1972	84.30	
21-MAR-1972	82.40	
18-APR-1972	81.60	
26-APR-1973	85.90	
30-MAY-1973	88.70	
10-JUL-1973	83.40	
22-SEP-1973	81.50	
13-OCT-1973	82.30	
03-NOV-1973	82.20	
09-DEC-1973	82.00	

Water Levels for Well 27 (Continued)

Date	Elevation	NOTES
07-JAN-1974	84.10	
10-FEB-1974	78.90	
23-MAR-1974	80.10	
17-APR-1974	87.50	
15-AUG-1974	84.40	
11-SEP-1974	82.50	
07-JUL-1979	81.61	
26-NOV-1979	82.20	
27-JUN-1980	82.60	
27-JUN-1980	82.60	
28-JUN-1980	82.60	
30-JUN-1980	82.60	
27-SEP-1980	82.30	
27-SEP-1980	82.30	
26-NOV-1980	82.19	
29-DEC-1980	81.10	
29-DEC-1980	81.10	
28-MAR-1981	82.60	
30-JUN-1981	80.50	
23-MAR-1982	81.80	
15-JUN-1982	80.00	
15-SEP-1982	81.50	
11-DEC-1982	74.90	
08-MAR-1983	90.00	
22-JUN-1983	83.60	
21-SEP-1983	75.20	
12-DEC-1983	75.40	
13-MAR-1984	91.20	
11-JUN-1984	80.79	
11-JUN-1984	80.79	
18-SEP-1984	81.14	
18-SEP-1984	81.14	
13-DEC-1984	79.79	
13-DEC-1984	79.79	
04-FEB-1985	87.36	

Water Levels for Well 2[illegible]

Date	Elevation	NOTES
29-APR-1971	103.30	
06-MAY-1971	105.00	
26-MAY-1971	109.40	
15-JUN-1971	107.10	
16-JUN-1971	107.20	
17-JUN-1971	107.40	
18-JUN-1971	106.50	
22-JUN-1971	106.00	
23-JUN-1971	91.50	
01-JUL-1971	100.90	
14-JUL-1971	102.80	
21-JUL-1971	103.30	
28-JUL-1971	102.30	
04-AUG-1971	101.50	
11-AUG-1971	101.50	
18-AUG-1971	101.60	
25-AUG-1971	102.00	
01-SEP-1971	102.10	
08-SEP-1971	102.00	
15-SEP-1971	101.70	
28-SEP-1971	102.60	
23-OCT-1971	99.00	
02-NOV-1971	98.30	
10-NOV-1971	98.70	
17-NOV-1971	98.60	
23-NOV-1971	98.70	
01-DEC-1971	99.50	
07-DEC-1971	99.60	
14-DEC-1971	102.80	
23-DEC-1971	102.50	
29-DEC-1971	99.40	
05-JAN-1972	99.00	
12-JAN-1972	101.80	
19-JAN-1972	103.80	
26-JAN-1972	103.60	
03-FEB-1972	103.70	
09-FEB-1972	103.50	
23-FEB-1972	103.10	
02-MAR-1972	101.20	
09-MAR-1972	101.20	
16-MAR-1972	101.70	
21-MAR-1972	101.90	
18-APR-1972	101.30	
26-APR-1972	103.80	
30-MAY-1973	100.80	
27-JUL-1973	99.60	
13-OCT-1973	99.00	
03-NOV-1973	98.40	
09-DEC-1973	98.20	
07-JAN-1974	100.70	

Water Levels for Well 29 (Continued)

Date	Elevation	NOTES
10-FEB-1974	95.20	
23-MAR-1974	99.90	
17-APR-1974	99.20	
15-AUG-1974	99.00	
11-SEP-1974	97.90	
26-NOV-1979	97.30	
11-JAN-1980	96.60	
25-MAR-1980	104.00	
27-JUN-1980	96.90	
29-DEC-1980	95.40	
23-MAR-1981	95.60	
29-JUN-1981	94.00	
23-MAR-1982	94.70	
15-JUN-1982	93.50	
15-SEP-1982	94.60	
11-DEC-1982	93.50	
06-MAR-1983	92.90	
22-JUN-1983	95.80	
15-OCT-1983	94.40	
12-DEC-1983	94.70	
12-MAR-1984	92.07	
11-JUN-1984	94.90	
18-SEP-1984	94.00	
13-DEC-1984	93.50	
04-FEB-1985	96.90	

Water Levels for Well 31

Date	Elevation	NOTES
01-JUL-1971	101.40	
14-JUL-1971	105.80	
21-JUL-1971	107.10	
28-JUL-1971	107.30	
04-AUG-1971	107.10	
11-AUG-1971	107.60	
18-AUG-1971	107.90	
25-AUG-1971	105.60	
01-SEP-1971	108.40	
08-SEP-1971	107.60	
15-SEP-1971	107.60	
30-SEP-1971	107.40	
06-OCT-1971	107.10	
23-OCT-1971	106.60	
02-NOV-1971	106.30	
10-NOV-1971	105.80	
17-NOV-1971	105.90	
23-NOV-1971	105.90	
01-DEC-1971	106.30	
07-DEC-1971	106.20	
14-DEC-1971	109.50	
23-DEC-1971	109.60	
29-DEC-1971	108.30	
05-JAN-1972	106.80	
12-JAN-1972	107.30	
19-JAN-1972	110.70	
03-FEB-1972	111.70	
09-FEB-1972	111.30	
23-FEB-1972	110.50	
02-MAR-1972	108.40	
09-MAR-1972	108.30	
15-MAR-1972	108.40	
21-MAR-1972	109.10	
18-APR-1972	108.80	
26-APR-1973	112.10	
30-MAY-1973	120.70	
27-JUL-1973	108.60	
13-OCT-1973	108.10	
03-NOV-1973	107.70	
09-DEC-1973	107.80	
07-JAN-1974	110.10	
10-FEB-1974	104.50	
23-MAR-1974	108.80	
17-APR-1974	110.80	
15-AUG-1974	107.10	
11-SEP-1974	106.80	
03-JUN-1979	107.92	
07-J L-1979	106.91	
07-JUL-1979	106.97	
2 -NOV-1979	107.80	

Water Levels for Well 31 (Continued)

Date	Elevation	NOTES
11-JAN-1980	106.56	
24-JAN-1980	108.06	
25-MAR-1980	111.34	
27-JUN-1980	107.10	
27-JUN-1980	107.10	
27-JUN-1980	107.10	
28-JUN-1980	107.10	
30-JUN-1980	107.10	
27-SEP-1980	105.10	
27-SEP-1980	105.10	
26-NOV-1980	107.69	
29-DEC-1980	105.20	
29-DEC-1980	105.20	
28-MAR-1981	105.40	
29-JUN-1981	103.90	
30-JUN-1981	103.90	
23-MAR-1982	104.60	
15-JUN-1982	103.50	
15-SEP-1982	103.12	
11-DEC-1982	103.50	
16-DEC-1982	103.50	
08-MAR-1983	103.60	
22-JUN-1983	104.70	
21-SEP-1983	159.60	(1)
12-DEC-1983	159.20	(1)
12-MAR-1984	162.80	(1)

NOTE:

(1) Data not valid. Data not plotted on hydrograph.
Well damaged during construction of cooling towers.

Water Levels for Well 32

Date	Elevation	NOTES
15-JUN-1971	104.40	
17-JUN-1971	107.60	
18-JUN-1971	107.40	
22-JUN-1971	107.40	
23-JUN-1971	107.60	
01-JUL-1971	105.90	
14-JUL-1971	103.90	
21-JUL-1971	104.40	
26-JUL-1971	106.60	
04-AUG-1971	104.40	
11-AUG-1971	106.30	
16-AUG-1971	107.20	
25-AUG-1971	108.40	
01-SEP-1971	107.40	
08-SEP-1971	107.20	
15-SEP-1971	107.20	
30-SEP-1971	107.00	
06-OCT-1971	106.20	
23-OCT-1971	106.10	
02-NOV-1971	105.90	
10-NOV-1971	105.40	
17-NOV-1971	105.60	
23-NOV-1971	105.70	
01-DEC-1971	106.20	
07-DEC-1971	106.40	
14-DEC-1971	107.60	
23-DEC-1971	108.60	
29-DEC-1971	108.70	
05-JAN-1972	107.70	
12-JAN-1972	107.20	
19-JAN-1972	108.20	
26-JAN-1972	109.60	
03-FEB-1972	110.60	
09-FEB-1972	110.70	
22-FEB-1972	110.40	
02-MAR-1972	108.30	
09-MAR-1972	108.30	
16-MAR-1972	108.30	
21-MAR-1972	109.40	
16-APR-1972	108.40	
26-APR-1973	112.50	
30-MAY-1973	108.70	
27-JUL-1973	109.70	
13-OCT-1973	108.40	
03-NOV-1973	105.00	
09-DEC-1973	104.10	
07-JAN-1974	107.40	
10-FEB-1974	101.60	
23-MAR-1974	102.40	
17-APR-1974	105.00	

Water Levels for Well 32 (Continued)

Date	Elevation	NOTES
15-AUG-1974	106.90	
11-SEP-1974	106.90	
07-JUL-1979	107.00	
24-JAN-1980	106.40	
25-MAR-1980	109.70	
27-JUN-1980	107.10	
27-SEP-1980	103.80	
29-DEC-1980	104.10	
28-MAR-1981	104.40	
29-JUN-1981	103.30	
23-MAR-1982	105.00	
15-JUN-1982	102.30	
15-SEP-1982	102.10	
11-DEC-1982	102.30	
08-MAR-1983	107.00	
22-JUN-1983	103.00	
15-SEP-1983	101.70	
12-DEC-1983	102.40	
12-MAR-1984	107.50	
22-MAR-1984	107.60	

Water Levels for Well 42A

Date	Elevation	NOTES
18-AUG-1971	104.70	
25-AUG-1971	102.90	
01-SEP-1971	102.00	
08-SEP-1971	103.20	(1)
15-SEP-1971	101.80	
28-SEP-1971	102.50	
29-SEP-1971	81.50	
06-OCT-1971	93.30	
23-OCT-1971	93.30	
02-NOV-1971	97.20	
10-NOV-1971	96.20	
17-NOV-1971	98.00	
23-NOV-1971	99.70	
01-DEC-1971	100.90	
07-DEC-1971	101.00	
14-DEC-1971	101.20	
23-DEC-1971	100.70	
29-DEC-1971	102.50	
05-JAN-1972	99.50	
12-JAN-1972	98.80	
19-JAN-1972	101.10	
26-JAN-1972	99.00	
03-FEB-1972	100.40	
09-FEB-1972	99.70	
23-FEB-1972	101.70	
02-MAR-1972	100.70	
09-MAR-1972	100.70	
16-MAR-1972	100.70	
21-MAR-1972	101.50	
18-APR-1972	101.20	
25-APR-1973	105.40	
30-MAY-1973	108.50	
27-JUL-1973	110.50	
13-OCT-1973	108.10	
03-NOV-1973	107.80	
09-DEC-1973	107.30	
07-JAN-1974	108.00	
10-FEB-1974	104.60	
23-MAR-1974	105.80	
17-APR-1974	109.60	

NOTE:

(1) These data not valid. The measurements represent water in the well used in construction and development, not aquifer water levels.

Water Levels for Well [illegible]

Date	Elevation	NOTES
15-JUN-1971	167.40	(1)
16-JUN-1971	177.20	(1)
18-JUN-1971	174.50	(1)
23-JUN-1971	175.40	(1)
04-AUG-1971	123.00	
11-AUG-1971	120.70	
18-AUG-1971	120.40	
25-AUG-1971	120.80	
01-SEP-1971	120.30	
08-SEP-1971	120.40	
15-SEP-1971	120.70	
30-SEP-1971	120.10	
23-OCT-1971	120.20	
02-NOV-1971	119.40	
10-NOV-1971	119.60	
17-NOV-1971	117.80	
23-NOV-1971	118.30	
01-DEC-1971	118.40	
07-DEC-1971	118.50	
14-DEC-1971	118.30	
23-DEC-1971	118.20	
29-DEC-1971	118.90	
05-JAN-1972	118.20	
12-JAN-1972	118.40	
19-JAN-1972	119.30	
26-JAN-1972	119.10	
03-FEB-1972	120.10	
09-FEB-1972	120.80	
23-FEB-1972	121.90	
02-MAR-1972	122.60	
09-MAR-1972	122.50	
16-MAR-1972	125.90	
21-MAR-1972	124.10	
18-APR-1972	122.50	
27-JUL-1973	139.20	

NOTE:

(1) These data not valid. The measurements represent water in the well used in construction and development, not formation pressure.

Water Levels for Well 42C

Date	Elevation	NOTES
15-JUN-1971	151.70	
16-JUN-1971	151.70	
18-JUN-1971	150.90	
23-JUN-1971	152.20	
01-JUL-1971	152.30	
14-JUL-1971	150.20	
21-JUL-1971	152.00	
28-JUL-1971	151.60	
04-AUG-1971	152.00	
11-AUG-1971	152.20	
18-AUG-1971	152.00	
25-AUG-1971	152.00	
01-SEP-1971	151.50	
08-SEP-1971	151.70	
15-SEP-1971	152.00	
30-SEP-1971	152.20	
23-OCT-1971	152.40	
02-NOV-1971	151.00	
10-NOV-1971	151.20	
17-NOV-1971	151.20	
23-NOV-1971	151.20	
01-DEC-1971	151.10	
07-DEC-1971	151.00	
14-DEC-1971	152.20	
23-DEC-1971	151.30	
29-DEC-1971	151.50	
05-JAN-1972	152.00	
12-JAN-1972	151.50	
19-JAN-1972	151.90	
26-JAN-1972	152.40	
03-FEB-1972	152.60	
09-FEB-1972	153.00	
23-FEB-1972	153.40	
02-MAR-1972	153.50	
09-MAR-1972	153.40	
16-MAR-1972	155.80	
21-MAR-1972	154.20	
18-APR-1972	153.70	
27-JUL-1973	160.30	

Water Levels for Well 42D

Date	Elevation	NOTES
15-JUN-1971	157.90	
16-JUN-1971	159.40	
18-JUN-1971	159.60	
23-JUN-1971	157.40	
01-JUL-1971	157.00	
14-JUL-1971	157.70	
21-JUL-1971	157.70	
28-JUL-1971	157.40	
04-AUG-1971	157.30	
11-AUG-1971	157.00	
18-AUG-1971	156.90	
25-AUG-1971	156.80	
01-SEP-1971	156.40	
08-SEP-1971	156.80	
15-SEP-1971	157.20	
30-SEP-1971	157.40	
06-OCT-1971	157.30	
23-OCT-1971	157.60	
02-NOV-1971	156.60	
10-NOV-1971	156.70	
17-NOV-1971	156.70	
23-NOV-1971	156.70	
01-DEC-1971	155.70	
07-DEC-1971	155.70	
14-DEC-1971	156.70	
23-DEC-1971	154.20	
29-DEC-1971	155.20	
05-JAN-1972	156.50	
12-JAN-1972	156.40	
19-JAN-1972	156.70	
26-JAN-1972	156.40	
03-FEB-1972	156.80	
09-FEB-1972	155.90	
23-FEB-1972	156.90	
02-MAR-1972	157.30	
09-MAR-1972	156.90	
16-MAR-1972	156.90	
21-MAR-1972	158.70	
18-APR-1972	157.40	
26-APR-1973	160.00	
30-MAY-1973	160.70	
27-JUL-1973	161.20	
13-OCT-1973	161.10	
03-NOV-1973	160.80	
09-DEC-1973	160.30	
07-JAN-1974	158.30	
10-FEB-1974	157.30	
23-MAR-1974	157.70	
17-APR-1974	157.30	

Water Levels for Well 101A

Date	Elevation	NOTES
13-OCT-1971	117.70	
24-OCT-1971	117.20	
02-NOV-1971	116.00	
10-NOV-1971	116.80	
17-NOV-1971	116.80	
23-NOV-1971	116.70	
01-DEC-1971	116.80	
07-DEC-1971	117.00	
14-DEC-1971	118.30	
23-DEC-1971	118.50	
29-DEC-1971	118.00	
05-JAN-1972	117.50	
12-JAN-1972	117.60	
19-JAN-1972	119.00	
26-JAN-1972	119.30	
03-FEB-1972	119.50	
09-FEB-1972	119.50	
23-FEB-1972	119.20	
02-MAR-1972	118.50	
09-MAR-1972	118.50	
16-MAR-1972	116.80	
21-MAR-1972	119.60	
13-APR-1972	118.50	
26-APR-1973	120.60	
30-MAY-1973	115.20	
10-JUL-1973	119.60	
27-JUL-1973	118.40	
22-SEP-1973	116.80	
13-OCT-1973	116.90	
03-NOV-1973	116.60	
09-DEC-1973	115.80	
07-JAN-1974	115.30	
10-FEB-1974	113.00	
23-MAR-1974	113.80	
17-APR-1974	112.90	

Water Levels for Well 124

Date	Elevation	NOTES
09-SEP-1971	161.80	
01-OCT-1971	161.60	
05-OCT-1971	161.70	
07-OCT-1971	161.60	
12-OCT-1971	161.50	
24-OCT-1971	161.80	
02-NOV-1971	161.90	
10-NOV-1971	161.50	
17-NOV-1971	161.50	
23-NOV-1971	162.00	
01-DEC-1971	161.30	
07-DEC-1971	161.20	
14-DEC-1971	161.90	
23-DEC-1971	161.80	
29-DEC-1971	161.60	
05-JAN-1972	161.50	
12-JAN-1972	162.00	
19-JAN-1972	162.00	
26-JAN-1972	162.10	
03-FEB-1972	162.40	
09-FEB-1972	162.20	
23-FEB-1972	162.30	
02-MAR-1972	162.80	
09-MAR-1972	162.50	
16-MAR-1972	162.80	
21-MAR-1972	162.70	
18-APR-1972	162.70	
26-APR-1973	167.20	
30-MAY-1973	168.90	
10-JUL-1973	169.60	
27-JUL-1973	170.30	
22-SEP-1973	169.60	
13-OCT-1973	170.20	
03-NOV-1973	169.30	
09-DEC-1973	169.40	
07-JAN-1974	167.50	
10-FEB-1974	166.00	
23-MAR-1974	166.60	
17-APR-1974	165.50	
15-AUG-1974	162.60	
11-SEP-1974	169.20	

Water Levels for Well 129

Date	Elevation	NOTES
30-SEP-1971	154.30	
01-OCT-1971	154.60	
05-OCT-1971	154.40	
07-OCT-1971	154.50	
13-OCT-1971	154.30	
24-OCT-1971	154.20	
02-NOV-1971	153.60	
10-NOV-1971	153.40	
17-NOV-1971	153.50	
23-NOV-1971	153.80	
01-DEC-1971	154.00	
07-DEC-1971	154.20	
14-DEC-1971	154.10	
23-DEC-1971	154.30	
29-DEC-1971	154.30	
05-JAN-1972	154.30	
12-JAN-1972	154.40	
19-JAN-1972	154.60	
26-JAN-1972	154.90	
03-FEB-1972	155.00	
09-FEB-1972	155.20	
23-FEB-1972	155.30	
02-MAR-1972	155.60	
09-MAR-1972	154.30	
16-MAR-1972	154.60	
21-MAR-1972	154.60	
18-APR-1972	156.60	
01-MAY-1973	157.10	
30-MAY-1973	162.40	
10-JUL-1973	162.60	
27-JUL-1973	163.30	
22-SEP-1973	162.00	
13-OCT-1973	162.20	
03-NOV-1973	162.00	
09-DEC-1973	161.40	
07-JAN-1974	159.90	
10-FEB-1974	158.20	
23-MAR-1974	159.30	
17-APR-1974	159.10	
15-AUG-1974	150.00	
11-SEP-1974	144.30	
02-JUN-1979	213.00	(1)
07-JUL-1979	211.70	(1)
26-NOV-1979	169.60	(1)
02-JAN-1980	204.90	(1)
11-FEB-1980	212.40	(1)
24-FEB-1980	203.90	(1)
01-FEB-1980	199.10	(1)
15-FEB-1980	191.80	(1)
25-MAR-1980	176.40	(1)

Water Levels for Well 129 (Continued)

Date	Elevation	NOTES
27-JUN-1980	156.00	
27-SEP-1980	147.70	
29-DEC-1980	143.90	
28-MAR-1981	142.60	
29-JUN-1981	141.60	
23-MAR-1982	140.80	
15-JUN-1982	140.80	
15-SEP-1982	141.00	
11-DEC-1982	140.60	
08-MAR-1983	140.60	
22-JUN-1983	147.80	
15-SEP-1983	151.00	
12-DEC-1983	152.80	
12-MAR-1984	154.10	
12-JUN-1984	157.30	
18-SEP-1984	157.70	
13-DEC-1984	157.20	
04-FEB-1985	157.20	

NOTE:

(1) Data not valid. Data not plotted on hydrograph. Well covered by grading. Found at 1 foot below grade as reported on March 5, 1979. Well found to be plugged and was flushed, but later found that flushing did not remove plug. Well was cleaned with air on July 13, 1984.

The low water level reported in 1974, Elevation 144, is the correct water level measured on September 11, 1974. However, this water level reflects drawdown of the unconfined aquifer as a result of dewatering the Power Block excavation. Therefore, this level should not be compared with other water level data to determine undisturbed, steady-state water level fluctuations of the unconfined aquifer.

In addition, the water level data for this well presented on Table 2.4.12-7 (Sheet 2 of 3) for all of 1979 and the first two quarters of 1980 are in error and should not be considered. The well was covered up during site grading and was not found until March 5, 1979. At this time, the well was found to be plugged and was washed in an effort to remove the obstruction. It was later found that the washing did not solve the problem. On July 13, 1984, the well was cleaned with air and is now considered operational.

Water Levels for Well 135

Date	Elevation	NOTES
30-SEP-1971	118.00	
01-OCT-1971	112.50	
05-OCT-1971	105.10	
07-OCT-1971	105.40	
13-OCT-1971	105.00	
24-OCT-1971	105.20	
02-NOV-1971	104.10	
10-NOV-1971	103.50	
17-NOV-1971	104.20	
23-NOV-1971	104.90	
01-DEC-1971	105.30	
07-DEC-1971	105.50	
14-DEC-1971	107.10	
23-DEC-1971	107.70	
29-DEC-1971	106.70	
05-JAN-1972	105.70	
12-JAN-1972	105.90	
19-JAN-1972	108.00	
26-JAN-1972	109.10	
09-FEB-1972	109.00	
26-APR-1973	109.90	
20-MAY-1973	106.50	
27-JUL-1973	106.40	
13-OCT-1973	104.50	
03-NOV-1973	104.10	
09-DEC-1973	103.70	
07-JAN-1974	107.80	
10-FEB-1974	109.50	
23-MAR-1974	110.40	

Water Levels for Well 136

Date	Elevation	NOTES
07-JUL-1979	145.70	
26-NOV-1979	147.90	
24-JAN-1980	211.50	
01-FEB-1980	210.20	
15-FEB-1980	208.10	(1)
25-MAR-1980	146.00	
29-DEC-1980	155.00	
28-MAR-1981	156.20	

(1) Data not valid - Well found to have an obstruction at Elevation 157.6 that could not be removed. Well was grouted.

Water Levels for Well 140

Date	Elevation	NOTES
01-OCT-1971	160.90	
05-OCT-1971	161.30	
07-OCT-1971	161.30	
24-OCT-1971	160.70	
02-NOV-1971	159.40	
10-NOV-1971	159.40	
17-NOV-1971	159.90	
23-NOV-1971	160.00	
01-DEC-1971	160.00	
07-DEC-1971	159.90	
14-DEC-1971	160.10	
23-DEC-1971	159.90	
29-DEC-1971	160.40	
05-JAN-1972	160.10	
12-JAN-1972	160.30	
19-JAN-1972	160.40	
26-JAN-1972	160.30	
03-FEB-1972	160.10	
09-FEB-1972	159.90	
23-FEB-1972	160.40	
02-MAR-1972	160.60	
09-MAR-1972	161.10	
16-MAR-1972	161.10	
21-MAR-1972	161.40	
16-APR-1972	161.10	
06-JUL-1972	159.40	
26-APR-1973	164.60	
30-MAY-1973	165.60	
27-JUL-1973	166.90	
13-OCT-1973	166.30	
03-NOV-1973	166.00	
09-DEC-1973	167.40	
07-JAN-1974	163.70	
10-FEB-1974	164.20	
23-MAR-1974	164.80	
17-APR-1974	162.90	

Water Levels for well 141

Date	Elevation	NOTES
01-OCT-1971	154.30	
05-OCT-1971	154.70	
07-OCT-1971	154.70	
12-OCT-1971	154.80	
13-OCT-1971	154.70	
24-OCT-1971	154.70	
02-NOV-1971	154.10	
10-NOV-1971	154.00	
17-NOV-1971	154.00	
23-NOV-1971	154.20	
01-DEC-1971	154.20	
07-DEC-1971	154.40	
14-DEC-1971	154.30	
23-DEC-1971	154.30	
29-DEC-1971	154.40	
05-JAN-1972	154.30	
12-JAN-1972	154.60	
19-JAN-1972	154.80	
26-JAN-1972	154.60	
03-FEB-1972	154.40	
09-FEB-1972	154.80	
23-FEB-1972	155.10	
02-MAR-1972	155.10	
09-MAR-1972	155.20	
16-MAR-1972	155.40	
21-MAR-1972	155.50	
13-APR-1972	155.40	

Water Levels for Well 142

Date	Elevation	NOTES
01-OCT-1971	152.70	
05-OCT-1971	152.60	
07-OCT-1971	152.90	
13-OCT-1971	152.50	
24-OCT-1971	152.50	
02-NOV-1971	153.20	
10-NOV-1971	153.20	
17-NOV-1971	153.00	
23-NOV-1971	151.70	
01-DEC-1971	151.70	
07-DEC-1971	151.60	
14-DEC-1971	151.90	
23-DEC-1971	151.90	
29-DEC-1971	152.20	
05-JAN-1972	152.10	
12-JAN-1972	152.20	
19-JAN-1972	152.40	
26-JAN-1972	152.60	
03-FEB-1972	152.70	
09-FEB-1972	152.70	
29-FEB-1972	152.90	
02-MAR-1972	153.20	
09-MAR-1972	153.20	
15-MAR-1972	152.20	
21-MAR-1972	152.90	
18-APR-1972	153.10	
01-MAY-1973	155.90	(1)
30-MAY-1973	160.20	
10-JUL-1973	160.00	
27-JUL-1973	153.70	
22-SEP-1973	159.10	
18-OCT-1973	155.70	
08-NOV-1973	159.40	
09-DEC-1973	158.90	
07-JAN-1974	157.70	
10-FEB-1974	156.60	
23-MAR-1974	157.40	
17-APR-1974	158.10	
18-AUG-1974	143.20	
06-JUN-1979	214.90	(2)
07-JUL-1979	217.60	(2)
26-NOV-1979	222.00	(2)
27-JUN-1980	146.00	
27-SEP-1980	145.90	
29-DEC-1980	145.80	
23-MAR-1981	145.70	
29-JUN-1981	145.70	
23-MAR-1982	145.50	
15-JUN-1982	145.30	
15-SEP-1982	145.30	

Water Levels for Well 142 (Continued)

Date	Elevation	NOTES
11-DEC-1982	146.10	
08-MAR-1983	146.30	
22-JUN-1983	152.30	
15-SEP-1983	153.80	
12-DEC-1983	154.40	
12-MAR-1984	155.10	
12-JUN-1984	166.10	(3)
18-SEP-1984	156.50	
13-DEC-1984	155.90	
04-FEB-1985	155.70	

NOTES:

(1) Measurement considered not valid. Data not plotted on hydrograph. This level is 10 feet lower than lowest measurement recorded during dewatering.

(2) Values not valid. Data not plotted on hydrograph. Data sheets show well is stopped up.

(3) Value not valid. Data not plotted on hydrograph. Data sheets show well plugged and washed out. This measurement was made just after well flushing and is wash water.

The low water level recorded on Table 2.4.12-7 for 1973, Elevation 136, measured on May 1, 1973, is considered in error. This level is the lowest level ever recorded for this well and is far out of line with the other measurements. The level is 10 feet lower than the lowest measurement recorded for this well during dewatering of the Power Block excavation.

The water levels reported for the second and third quarter of 1979 are also not valid. These elevations are 217.6 ft measured on July 7, 1979 and 222.0 ft measured on November 26, 1979. The field data sheet for both of these dates state that the "well is full of sediment".

The well was cleaned by washing in June of 1984 and is now considered operational.

Water Levels for Well 143

Date	Elevation	NOTES
01-OCT-1971	154.00	
05-OCT-1971	154.10	
07-OCT-1971	154.90	
13-OCT-1971	154.90	
24-OCT-1971	154.20	
02-NOV-1971	153.00	
10-NOV-1971	153.20	
17-NOV-1971	153.50	
23-NOV-1971	153.60	
01-DEC-1971	153.60	
07-DEC-1971	153.60	
14-DEC-1971	153.70	
23-DEC-1971	153.50	
29-DEC-1971	153.70	
05-JAN-1972	154.00	
12-JAN-1972	154.20	
19-JAN-1972	154.30	
26-JAN-1972	154.40	
03-FEB-1972	154.60	
09-FEB-1972	154.50	
23-FEB-1972	155.20	
02-MAR-1972	155.00	
09-MAR-1972	155.00	
16-MAR-1972	153.00	
21-MAR-1972	154.70	
18-APR-1972	154.00	
26-APR-1973	161.60	
30-MAY-1973	162.00	
27-JUL-1973	162.90	
13-OCT-1973	162.30	
03-NOV-1973	162.00	
09-DEC-1973	161.30	
07-JAN-1974	159.50	
10-FEB-1974	158.60	
23-MAR-1974	160.00	
17-APR-1974	158.30	
15-AUG-1974	149.90	

The water level measurement shown on Table 2.4.12-7 for the 1972 low is in error. The elevation listed is 143 ft. This number was determined (in error) by subtracting the measured depth of well (82 ft below M.P.) on 2/9/72 instead of the depth to water, which was 70.5 ft. The correct water level elevation is 154.5 ft. The correct low water level elevation for 1972 is 153.0 ft, measured on March 16.

Water Levels for Well 144

Date	Elevation	NOTES
11-DEC-1982	104.70	
23-JUN-1983	105.60	
21-SEP-1983	105.30	

Water Levels for Well 145G

Date	Elevation	NOTES
01-OCT-1971	196.10	
05-OCT-1971	196.70	
07-OCT-1971	195.60	
12-OCT-1971	194.70	
24-OCT-1971	196.70	
02-NOV-1971	194.90	
10-NOV-1971	196.30	
17-NOV-1971	194.90	
23-NOV-1971	196.60	
01-DEC-1971	196.50	
07-DEC-1971	196.70	
14-DEC-1971	197.30	
23-DEC-1971	193.90	
29-DEC-1971	194.90	
05-JAN-1972	195.00	
12-JAN-1972	194.70	
19-JAN-1972	196.20	
24-JAN-1972	197.40	
03-FEB-1972	195.90	
09-FEB-1972	195.90	
23-FEB-1972	195.50	
02-MAR-1972	194.70	
09-MAR-1972	194.60	
16-MAR-1972	195.70	
21-MAR-1972	195.40	
18-APR-1972	194.70	
01-MAY-1973	147.20	(1)
30-MAY-1973	160.50	
27-JUL-1973	160.70	
13-OCT-1973	158.30	
03-NOV-1973	153.10	
09-DEC-1973	157.40	(2)
07-JAN-1974	151.20	
10-FEB-1974	154.90	
23-MAR-1974	155.70	
17-APR-1974	154.00	
15-AUG-1974	152.20	

NOTE:

(1) Data not valid. Data not plotted on hydrograph.

(2) Changed from monitoring by LETCO to monitoring by Georgia Power Co.

The water level elevation in this well fluctuated a maximum of 3.5 ft, between elevation 197.4 and 193.9, from the first measurements from 1/5/71 through 4/18/72. The April 18, 1972 measurement was the last measurement made by Law Engineering Co. personnel. The next measurement was made on May 1, 1973 by personnel of Georgia Power Co. and was recorded as elevation 147.20 ft. The remaining measurments through August 15, 1974, show the water level to fluctuate between 147.2 and 160.7 ft (13.5 ft).

We have no explanation for the more than 30 ft (consistent) difference in elevation between the 1971-72 and the 1973-74 data.

water Levels for well 147

Date	Elevation	NOTES
05-OCT-1971	116.50	
07-OCT-1971	118.00	
12-OCT-1971	118.20	
24-OCT-1971	116.80	
02-NOV-1971	114.90	
10-NOV-1971	114.70	
17-NOV-1971	114.60	
23-NOV-1971	114.60	
01-DEC-1971	114.90	
07-DEC-1971	115.10	
14-DEC-1971	116.70	
23-DEC-1971	116.90	
29-DEC-1971	116.40	
05-JAN-1972	115.80	
12-JAN-1972	115.90	
19-JAN-1972	117.20	
26-JAN-1972	117.70	
03-FEB-1972	117.90	
09-FEB-1972	117.70	
23-FEB-1972	117.60	
02-MAR-1972	116.80	
09-MAR-1972	116.60	
16-MAR-1972	116.80	
21-MAR-1972	117.20	
18-APR-1972	116.30	
26-APR-1973	119.90	
30-MAY-1973	117.40	
10-JUL-1973	185.40	(1)
27-JUL-1973	117.40	
22-SEP-1973	185.00	(1)
13-OCT-1973	118.20	
03-NOV-1973	117.80	
09-DEC-1973	117.30	
07-JAN-1974	117.20	
10-FEB-1974	119.00	
23-MAR-1974	119.20	
17-APR-1974	118.30	

NOTE:

(1) These data are not considered valid. Data not plotted on hydrograph. These measurements are more than 60 feet higher than the next highest measurement. There is a 'normal' (117.4') data point between the two high points.

Water Levels for Well 157

Date	Elevation	NOTES
07-JUL-1979	211.00	
26-NOV-1979	212.00	
25-MAR-1980	210.10	
27-JUN-1980	208.80	
29-DEC-1980	206.30	
28-MAR-1981	204.80	

Water Levels for Well 175

Date	Elevation	NOTES
07-JUL-1979	144.00	
26-NOV-1979	144.40	
23-MAR-1980	144.40	
27-JUN-1980	144.50	
29-DEC-1980	144.30	
28-MAR-1981	141.00	

Water Levels for Well 176

Date	Elevation	NOTES
23-OCT-1971	159.90	
24-OCT-1971	159.70	
24-OCT-1971	159.70	
02-NOV-1971	159.20	
10-NOV-1971	159.10	
17-NOV-1971	159.40	
23-NOV-1971	159.40	
01-DEC-1971	159.40	
07-DEC-1971	159.50	
14-DEC-1971	159.40	
23-DEC-1971	159.50	
29-DEC-1971	159.40	
05-JAN-1972	159.80	
12-JAN-1972	160.00	
19-JAN-1972	160.10	
26-JAN-1972	160.10	
03-FEB-1972	160.20	
09-FEB-1972	160.40	
23-FEB-1972	160.30	
02-MAR-1972	161.10	
09-MAR-1972	161.10	
16-MAR-1972	161.40	
21-MAR-1972	161.20	
13-APR-1972	161.40	
01-MAY-1973	166.50	
30-MAY-1973	166.20	
27-JUL-1973	166.40	
13-OCT-1973	166.10	
03-NOV-1973	165.70	
09-DEC-1973	165.30	
07-JAN-1974	162.10	
10-FEB-1974	163.20	
23-MAR-1974	163.70	
17-APR-1974	163.10	

Water Levels for Well 177

Date	Elevation	NOTES
23-OCT-1971	160.50	
24-OCT-1971	160.20	
02-NOV-1971	160.50	
10-NOV-1971	160.30	
17-NOV-1971	160.40	
23-NOV-1971	160.70	
01-DEC-1971	160.50	
07-DEC-1971	160.70	
14-DEC-1971	161.00	
23-DEC-1971	160.50	
29-DEC-1971	160.60	
05-JAN-1972	160.80	
12-JAN-1972	160.90	
19-JAN-1972	161.10	
26-JAN-1972	161.20	
03-FEB-1972	161.20	
09-FEB-1972	161.20	
23-FEB-1972	161.90	
02-MAR-1972	161.90	
09-MAR-1972	162.20	
16-MAR-1972	161.30	
21-MAR-1972	159.20	
18-APR-1972	161.80	
26-APR-1973	166.90	
30-MAY-1973	168.20	
10-JUL-1973	167.50	
27-JUL-1973	169.10	
22-SEP-1973	167.20	
13-OCT-1973	165.90	
03-NOV-1973	166.50	
09-DEC-1973	166.20	
07-JAN-1974	163.00	
10-FEB-1974	163.10	
23-MAR-1974	164.00	
17-APR-1974	163.30	
15-AUG-1974	162.70	
11-SEP-1974	161.60	
07-JUL-1979	165.10	
26-NOV-1979	158.50	
24-JAN-1980	158.40	
01-FEB-1980	158.30	
15-FEB-1980	158.40	
25-MAR-1980	158.20	
27-JUN-1980	159.70	

Water Levels for Well 17B

Date	Elevation	NOTES
23-OCT-1971	158.70	
24-OCT-1971	158.70	
02-NOV-1971	158.10	
10-NOV-1971	157.70	
17-NOV-1971	159.20	
23-NOV-1971	157.70	
01-DEC-1971	157.70	
07-DEC-1971	157.70	
14-DEC-1971	157.70	
23-DEC-1971	157.50	
29-DEC-1971	157.70	
05-JAN-1972	157.40	
12-JAN-1972	158.00	
19-JAN-1972	157.50	
26-JAN-1972	158.30	
03-FEB-1972	158.50	
09-FEB-1972	158.70	
23-FEB-1972	158.90	
02-MAR-1972	159.50	
09-MAR-1972	159.50	
16-MAR-1972	157.70	
21-MAR-1972	159.20	
15-APR-1972	159.70	
26-APR-1973	163.30	
30-MAY-1973	163.40	
27-JUL-1973	162.50	
13-OCT-1973	161.20	
03-NOV-1973	160.90	
09-DEC-1973	160.20	
07-JAN-1974	158.40	
10-FEB-1974	157.30	
23-MAR-1974	157.50	
17-APR-1974	157.50	
15-AUG-1974	159.00	

Water Levels for Well 179

Date	Elevation	NOTES
23-OCT-1971	154.30	
02-NOV-1971	156.80	
10-NOV-1971	160.30	
17-NOV-1971	160.80	
23-NOV-1971	161.10	
01-DEC-1971	162.10	
07-DEC-1971	162.40	
14-DEC-1971	164.30	
23-DEC-1971	164.60	
29-DEC-1971	165.80	
05-JAN-1972	166.10	
12-JAN-1972	167.30	
19-JAN-1972	168.10	
26-JAN-1972	168.50	
03-FEB-1972	168.60	
09-FEB-1972	168.90	
23-FEB-1972	169.80	
02-MAR-1972	170.10	
09-MAR-1972	170.30	
16-MAR-1972	167.90	
21-MAR-1972	170.20	
18-APR-1972	171.90	
01-MAY-1973	174.10	
30-MAY-1973	173.60	
27-JUL-1973	172.30	
13-OCT-1973	170.80	
03-NOV-1973	170.40	
09-DEC-1973	170.10	
07-JAN-1974	168.90	
10-FEB-1974	166.60	
23-MAR-1974	166.10	
17-APR-1974	167.40	
15-AUG-1974	165.30	
11-SEP-1974	165.10	
07-JUL-1979	160.20	
26-NOV-1979	161.80	
24-JAN-1980	161.00	
25-MAR-1980	157.90	
27-JUN-1980	162.00	
27-SEP-1980	161.70	
29-DEC-1980	161.10	
28-MAR-1981	159.30	
29-JUN-1981	156.00	
23-MAR-1982	158.30	
15-JUN-1982	156.80	
15-SEP-1982	159.50	
11-DEC-1982	160.10	
09-MAR-1983	159.60	
22-JUN-1983	159.70	
15-SEP-1983	159.70	

Water Levels for Well 179 (Continued)

Date	Elevation	NOTES
12-DEC-1983	160.40	
13-MAR-1984	159.90	
12-JUN-1984	155.80	
18-SEP-1984	150.90	(1)
13-DEC-1984	151.10	(1)
04-FEB-1985	148.90	(1)

(1) Data considered valid. Drop in water level coincides with excavation for borrow material in perched water zone west of this well.

water Levels for well 243

Date	Elevation	NOTES
19-JAN-1972	148.30	
26-JAN-1972	148.40	
03-FEB-1972	146.90	
09-FEB-1972	145.90	
23-FEB-1972	146.20	
02-MAR-1972	146.70	
09-MAR-1972	146.70	
16-MAR-1972	146.50	
21-MAR-1972	146.50	
18-APR-1972	150.70	
26-APR-1973	147.10	
30-MAY-1973	147.10	
27-JUL-1973	147.50	
13-OCT-1973	147.30	
03-NOV-1973	147.00	
09-DEC-1973	146.50	
07-JAN-1974	147.00	
10-FEB-1974	146.70	
23-MAR-1974	147.20	
17-APR-1974	145.70	
15-AUG-1974	146.70	
11-SEP-1974	146.60	

Water Levels for Well 244

Date	Elevation	NOTES
26-JAN-1972	161.20	
03-FEB-1972	164.60	
09-FEB-1972	165.10	
23-FEB-1972	165.10	
02-MAR-1972	161.80	
09-MAR-1972	161.30	
16-MAR-1972	162.30	
21-MAR-1972	161.30	
18-APR-1972	162.60	
30-MAY-1973	159.60	
27-JUL-1973	157.80	
13-OCT-1973	160.10	
03-NOV-1973	159.80	
09-DEC-1973	159.30	
07-JAN-1974	157.60	
10-FEB-1974	157.40	
23-MAR-1974	157.10	
17-APR-1974	156.40	
15-AUG-1974	156.10	
15-SEP-1974	156.00	

NOTE:

None of the above water level data are considered valid.
First bailing on 1/20/72 caused 19 feet of mud to enter well.
No data to indicate well was ever cleaned.

The first water level measured at this well was elevation 147.1 ft on January 20, 1972. After this measurement was made, the well was bailed and the water level recovery measured. This bailing caused sediment to enter the well filling the bottom 19 feet. After the well was measured on January 26, 1972, the well was again bailed. This bailing caused an additional 8 feet of sediment to enter the well, filling the bottom 27 feet. There is no record that the sediment was removed, therefore, all of the water level measurements made after the January 20, 1972 measurement should be considered as incorrect. These data should not be used in an analysis of the water table in the unconfined aquifer.

Water Levels for well 245

Date	Elevation	NOTES
03-FEB-1972	155.80	
09-FEB-1972	156.00	
16-MAR-1972	155.70	
21-MAR-1972	157.00	
18-APR-1972	156.00	
30-MAY-1973	162.30	
13-OCT-1973	164.00	
03-NOV-1973	164.10	
09-DEC-1973	163.20	
07-JAN-1974	161.80	
10-FEB-1974	160.10	
23-MAR-1974	160.70	
17-APR-1974	159.90	

Water Levels for Well 245

Date	Elevation	NOTES
02-MAR-1972	117.60	
09-MAR-1972	117.70	
16-MAR-1972	118.30	
21-MAR-1972	119.60	
18-APR-1972	119.50	
01-MAY-1973	117.40	
30-MAY-1973	118.10	
13-OCT-1973	117.00	
03-NOV-1973	116.50	
09-DEC-1973	115.20	
07-JAN-1974	114.90	
10-FEB-1974	113.10	
23-MAR-1974	113.90	
17-APR-1974	113.30	
11-SEP-1974	113.20	
26-NOV-1979	113.70	
25-MAR-1980	117.20	
27-JUN-1980	113.50	
27-SEP-1980	111.10	
29-DEC-1980	111.30	
26-MAR-1981	111.80	
29-JUN-1981	110.10	
23-MAR-1982	110.70	
15-JUN-1982	109.10	
15-SEP-1982	108.80	
11-DEC-1982	109.00	
09-MAR-1983	112.80	
22-JUN-1983	108.90	
13-SEP-1983	107.90	
12-DEC-1983	109.40	
13-MAR-1984	113.70	

Water Levels for Well 249

Date	Elevation	NOTES
16-MAR-1972	161.90	
21-MAR-1972	159.90	
18-APR-1972	161.00	
26-APR-1973	162.60	
10-MAY-1973	164.60	
13-OCT-1973	165.10	
03-NOV-1973	164.90	
09-DEC-1973	164.30	
07-JAN-1974	163.40	
10-FEB-1974	161.20	
23-MAR-1974	161.90	
17-APR-1974	161.90	
15-AUG-1974	158.40	
11-SEP-1974	160.70	

Water Levels for Well 600

Date	Elevation	NOTES
07-JUL-1979	158.30	
26-NOV-1979	159.10	
02-JAN-1980	159.00	
05-JAN-1980	158.30	
24-JAN-1980	158.80	
01-FEB-1980	158.70	
15-FEB-1980	159.70	
25-MAR-1980	158.70	
10-JUN-1980	156.70	
27-JUN-1980	160.00	
27-JUL-1980	158.30	
03-AUG-1980	158.00	
11-DEC-1980	158.70	
12-DEC-1980	158.70	
15-DEC-1980	158.70	
16-DEC-1980	158.70	
17-DEC-1980	158.60	
18-DEC-1980	158.60	
19-DEC-1980	158.70	
23-DEC-1980	158.60	
29-DEC-1980	158.80	
29-DEC-1980	158.80	
30-DEC-1980	158.40	
31-DEC-1980	158.60	
06-JAN-1981	158.40	
07-JAN-1981	158.40	
08-JAN-1981	158.40	
09-JAN-1981	158.40	
15-JAN-1981	158.30	
16-JAN-1981	158.30	
19-JAN-1981	158.30	
20-JAN-1981	158.30	
21-JAN-1981	158.20	
22-JAN-1981	158.30	
23-JAN-1981	158.30	
26-JAN-1981	158.20	
27-JAN-1981	158.20	
28-JAN-1981	158.20	
29-JAN-1981	158.10	
30-JAN-1981	158.20	
02-FEB-1981	158.10	
03-FEB-1981	158.10	
05-FEB-1981	158.00	
06-FEB-1981	158.10	
09-FEB-1981	158.10	
10-FEB-1981	158.00	
12-FEB-1981	158.00	
13-FEB-1981	158.00	
16-FEB-1981	158.00	
17-FEB-1981	158.00	

Water Levels for Well 800 (Continued)

Date	Elevation	NOTES
19-FEB-1981	158.00	
20-FEB-1981	158.00	
21-FEB-1981	157.90	
23-FEB-1981	157.90	
24-FEB-1981	157.80	
25-FEB-1981	157.80	
26-FEB-1981	157.80	
27-FEB-1981	157.80	
02-MAR-1981	157.80	
03-MAR-1981	157.90	
04-MAR-1981	158.00	
05-MAR-1981	157.90	
06-MAR-1981	157.90	
09-MAR-1981	157.90	
10-MAR-1981	157.90	
11-MAR-1981	157.90	
12-MAR-1981	157.80	
13-MAR-1981	157.90	
16-MAR-1981	157.90	
17-MAR-1981	157.90	
17-MAR-1981	157.90	
18-MAR-1981	157.80	
19-MAR-1981	157.70	
20-MAR-1981	157.70	
23-MAR-1981	157.70	
24-MAR-1981	157.70	
24-MAR-1981	157.70	
25-MAR-1981	157.70	
26-MAR-1981	157.70	
27-MAR-1981	157.70	
28-MAR-1981	157.60	
31-MAR-1981	157.60	
07-APR-1981	157.60	
08-APR-1981	157.60	
09-APR-1981	157.60	
09-APR-1981	157.60	
10-APR-1981	157.50	
13-APR-1981	157.50	
1[illegible]-APR-1981	157.40	
16-APR-1981	157.50	
16-APR-1981	157.50	
17-APR-1981	157.50	
20-APR-1981	157.60	
21-APR-1981	157.50	
22-APR-1981	157.50	
23-APR-1981	157.50	
24-APR-1981	157.50	
26-APR-1981	157.60	
27-APR-1981	157.50	

Water Levels for Well #0C (Continued)

Date	Elevation	NOTES
28-APR-1981	157.50	
29-APR-1981	157.50	
30-APR-1981	157.50	
01-MAY-1981	157.40	
04-MAY-1981	157.40	
05-MAY-1981	157.50	
06-MAY-1981	157.50	
06-MAY-1981	157.50	
08-MAY-1981	157.40	
11-MAY-1981	157.40	
12-MAY-1981	157.40	
13-MAY-1981	157.30	
14-MAY-1981	157.40	
15-MAY-1981	157.40	
16-MAY-1981	157.30	
19-MAY-1981	157.30	
20-MAY-1981	157.30	
21-MAY-1981	157.30	
22-MAY-1981	157.30	
26-MAY-1981	157.20	
27-MAY-1981	157.20	
28-MAY-1981	157.30	
29-MAY-1981	157.20	
01-JUN-1981	157.20	
02-JUN-1981	157.10	
03-JUN-1981	157.10	
08-JUN-1981	157.10	
09-JUN-1981	157.10	
11-JUN-1981	157.00	
12-JUN-1981	157.00	
12-JUN-1981	157.00	
15-JUN-1981	157.10	
15-JUN-1981	157.10	
17-JUN-1981	157.10	
16-JUN-1981	157.10	
18-JUN-1981	157.10	
19-JUN-1981	157.10	
22-JUN-1981	157.00	
23-JUN-1981	157.00	
23-JUN-1981	157.00	
24-JUN-1981	157.00	
25-JUN-1981	157.10	
26-JUN-1981	157.00	
29-JUN-1981	157.00	
30-JUN-1981	157.00	
01-JUL-1981	157.00	
01-JUL-1981	157.00	
06-JUL-1981	157.30	
15-JUL-1981	157.00	

Water Levels for Well 600 (Continued)

Date	Elevation	NOTES
16-JUL-1981	157.00	
17-JUL-1981	157.20	
20-JUL-1981	157.20	
21-JUL-1981	157.20	
22-JUL-1981	157.10	
23-JUL-1981	157.20	
24-JUL-1981	157.20	
27-JUL-1981	157.10	
28-JUL-1981	157.20	
29-JUL-1981	157.20	
30-JUL-1981	157.10	
31-JUL-1981	157.20	
04-AUG-1981	157.20	
07-AUG-1981	157.30	
10-AUG-1981	157.30	
11-AUG-1981	157.30	
12-AUG-1981	157.30	
13-AUG-1981	157.30	
14-AUG-1981	157.30	
20-AUG-1981	157.40	
21-AUG-1981	157.30	
24-AUG-1981	157.50	
25-AUG-1981	157.50	
26-AUG-1981	157.50	
27-AUG-1981	157.40	
28-AUG-1981	157.50	
31-AUG-1981	157.50	
01-SEP-1981	157.50	
01-SEP-1981	157.50	
02-SEP-1981	157.50	
03-SEP-1981	157.60	
04-SEP-1981	157.60	
08-SEP-1981	157.60	
09-SEP-1981	157.60	
10-SEP-1981	157.60	
11-SEP-1981	157.50	
14-SEP-1981	157.60	
15-SEP-1981	157.60	
18-SEP-1981	157.60	
21-SEP-1981	157.60	
22-SEP-1981	157.70	
23-SEP-1981	157.70	
24-SEP-1981	157.70	
25-SEP-1981	157.70	
28-SEP-1981	157.70	
29-SEP-1981	157.50	
30-SEP-1981	157.50	
01-OCT-1981	157.60	
01-OCT-1981	157.60	
15-OCT-1981	157.50	

Water Levels for Well 500 (Continued)

Date	Elevation	NOTES
16-OCT-1981	157.40	
17-OCT-1981	157.40	
18-OCT-1981	157.50	
19-OCT-1981	157.30	
20-OCT-1981	156.30	
21-OCT-1981	156.30	
22-OCT-1981	157.50	
23-OCT-1981	157.50	
24-OCT-1981	157.50	
25-OCT-1981	157.60	
26-OCT-1981	157.50	
27-OCT-1981	157.40	
28-OCT-1981	157.54	
29-OCT-1981	157.20	
30-OCT-1981	157.30	
31-OCT-1981	157.40	
01-NOV-1981	157.40	
02-NOV-1981	157.40	
03-NOV-1981	157.40	
04-NOV-1981	157.50	
04-NOV-1981	157.50	
05-NOV-1981	157.40	
09-NOV-1981	157.30	
10-NOV-1981	157.30	
11-NOV-1981	157.40	
12-NOV-1981	157.30	
12-NOV-1981	157.40	
14-NOV-1981	157.30	
15-NOV-1981	157.50	
16-NOV-1981	157.20	
17-NOV-1981	157.30	
18-NOV-1981	157.20	
19-NOV-1981	157.30	
20-NOV-1981	157.20	
21-NOV-1981	157.30	
22-NOV-1981	157.20	
24-NOV-1981	157.30	
25-NOV-1981	157.30	
27-NOV-1981	157.20	
28-NOV-1981	157.20	
29-NOV-1981	157.20	
30-NOV-1981	157.30	
30-NOV-1981	157.30	
01-DEC-1981	157.30	
02-DEC-1981	157.20	
03-DEC-1981	157.20	
04-DEC-1981	157.20	
05-DEC-1981	157.20	
06-DEC-1981	157.30	

Water Levels for Well 800 (Continued)

Date	Elevation	NOTES
07-DEC-1981	157.20	
08-DEC-1981	157.20	
09-DEC-1981	157.30	
10-DEC-1981	157.20	
11-DEC-1981	157.10	
12-DEC-1981	157.20	
13-DEC-1981	156.90	
14-DEC-1981	157.20	
16-DEC-1981	157.30	
17-DEC-1981	157.50	
26-DEC-1981	157.10	
26-DEC-1981	157.10	
28-DEC-1981	157.00	
29-DEC-1981	156.90	
11-JAN-1982	157.00	
12-JAN-1982	157.10	
14-JAN-1982	157.20	
27-JAN-1982	157.10	
28-JAN-1982	157.10	
29-JAN-1982	157.00	
30-JAN-1982	157.30	
31-JAN-1982	156.80	
31-JAN-1982	156.30	
01-FEB-1982	157.10	
04-FEB-1982	157.20	
05-FEB-1982	157.20	
06-FEB-1982	157.30	
07-FEB-1982	157.10	
09-FEB-1982	157.30	
10-FEB-1982	157.30	
11-FEB-1982	157.30	
12-FEB-1982	157.30	
26-FEB-1982	157.40	
01-MAR-1982	157.40	
01-MAR-1982	157.40	
02-MAR-1982	157.40	
04-MAR-1982	157.40	
05-MAR-1982	157.40	
06-MAR-1982	157.30	
07-MAR-1982	157.30	
09-MAR-1982	157.30	
10-MAR-1982	157.30	
12-MAR-1982	157.30	
13-MAR-1982	157.30	
14-MAR-1982	157.30	
17-MAR-1982	157.30	
18-MAR-1982	157.20	
19-MAR-1982	157.10	
20-MAR-1982	157.30	
21-MAR-1982	157.30	

Water Levels for well 600 (Continued)

Date	Elevation	NOTES
22-MAR-1982	157.30	
23-MAR-1982	157.30	
31-MAR-1982	157.40	
31-MAR-1982	157.40	
01-APR-1982	157.40	
02-APR-1982	157.10	
03-APR-1982	157.60	
04-APR-1982	157.40	
08-APR-1982	157.40	
15-APR-1982	157.10	
16-APR-1982	157.30	
16-APR-1982	157.30	
17-APR-1982	157.30	
18-APR-1982	157.50	
05-MAY-1982	157.50	
05-MAY-1982	157.50	
07-JUN-1982	157.60	
07-JUN-1982	157.60	
08-JUN-1982	157.60	
09-JUN-1982	157.70	
10-JUN-1982	157.70	
11-JUN-1982	157.60	
12-JUN-1982	157.60	
13-JUN-1982	157.60	
14-JUN-1982	157.70	
14-JUN-1982	157.70	
15-JUN-1982	157.60	
16-JUN-1982	157.60	
17-JUN-1982	157.70	
18-JUN-1982	157.60	
20-JUN-1982	157.50	
21-JUN-1982	157.60	
22-JUN-1982	157.50	
23-JUN-1982	157.50	
24-JUN-1982	157.30	
25-JUN-1982	157.60	
26-JUN-1982	157.40	
27-JUN-1982	157.70	
28-JUN-1982	157.60	
29-JUN-1982	157.60	
30-JUN-1982	157.60	
01-JUL-1982	157.60	
02-JUL-1982	157.60	
03-JUL-1982	157.70	
05-JUL-1982	157.70	
06-JUL-1982	157.60	
07-JUL-1982	157.70	
08-JUL-1982	157.70	

Water Levels for Well 800 (Continued)

Date	Elevation	NOTES
09-JUL-1982	157.80	
10-JUL-1982	157.80	
11-JUL-1982	157.80	
12-JUL-1982	157.70	
13-JUL-1982	157.70	
14-JUL-1982	157.70	
15-JUL-1982	157.70	
16-JUL-1982	157.80	
17-JUL-1982	157.80	
18-JUL-1982	157.80	
19-JUL-1982	157.70	
20-JUL-1982	157.70	
21-JUL-1982	157.70	
22-JUL-1982	157.70	
23-JUL-1982	157.70	
24-JUL-1982	157.70	
25-JUL-1982	157.80	
26-JUL-1982	157.80	
27-JUL-1982	157.80	
28-JUL-1982	157.80	
29-JUL-1982	157.70	
30-JUL-1982	158.00	
31-JUL-1982	157.90	
01-AUG-1982	158.00	
02-AUG-1982	157.90	
03-AUG-1982	157.70	
04-AUG-1982	157.70	
05-AUG-1982	158.00	
06-AUG-1982	157.90	
07-AUG-1982	157.90	
09-AUG-1982	157.90	
10-AUG-1982	157.90	
11-AUG-1982	157.90	
23-AUG-1982	157.80	
24-AUG-1982	157.80	
25-AUG-1982	157.90	
26-AUG-1982	157.80	
27-AUG-1982	157.90	
28-AUG-1982	157.90	
29-AUG-1982	158.00	
30-AUG-1982	157.90	
31-AUG-1982	157.90	
01-SEP-1982	157.80	
02-SEP-1982	158.00	
03-SEP-1982	157.90	
04-SEP-1982	157.90	
05-SEP-1982	157.90	
07-SEP-1982	157.90	
08-SEP-1982	157.90	
09-SEP-1982	158.00	

water Levels for Well 800 (Continued)

Date	Elevation	NOTES
10-SEP-1982	158.10	
11-SEP-1982	158.00	
12-SEP-1982	157.90	
13-SEP-1982	157.80	
14-SEP-1982	157.80	
15-SEP-1982	157.90	
15-SEP-1982	157.80	
16-SEP-1982	157.80	
17-SEP-1982	157.90	
18-SEP-1982	157.90	
19-SEP-1982	157.90	
20-SEP-1982	157.80	
21-SEP-1982	157.80	
11-DEC-1982	157.50	
08-MAR-1983	158.40	
22-JUN-1983	160.60	
13-SEP-1983	160.10	
12-DEC-1983	160.00	
12-MAR-1984	159.70	
11-JUN-1984	160.10	
13-SEP-1984	160.30	
13-DEC-1984	160.20	
04-FEB-1985	159.40	

Water Levels for Well 801

Date	Elevation	NOTES
07-JUL-1979	154.30	
26-NOV-1979	154.60	
11-JAN-1980	154.90	
24-JAN-1980	154.70	
01-FEB-1980	154.70	
15-FEB-1980	154.70	
25-MAR-1980	154.70	
27-JUN-1980	155.90	
27-SEP-1980	155.30	
29-DEC-1980	154.30	
26-MAR-1981	153.60	
29-JUN-1981	151.40	
23-MAR-1982	152.30	
15-JUN-1982	153.10	
15-SEP-1982	153.90	
11-DEC-1982	154.40	
09-MAR-1983	154.00	
22-JUN-1983	157.60	
15-SEP-1983	158.60	
12-DEC-1983	159.10	
13-MAR-1984	159.50	
11-JUN-1984	160.70	
18-SEP-1984	161.30	
13-DEC-1984	160.80	
04-FEB-1985	160.40	

Water Levels for Well 602

Date	Elevation	NOTES
07-JUL-1979	150.50	
26-NOV-1979	132.10	(1)
02-JAN-1980	150.80	
24-JAN-1980	150.70	
01-FEB-1980	150.70	
15-FEB-1980	150.70	
25-MAR-1980	150.70	
27-JUN-1980	146.10	
09-SEP-1980	150.00	
27-SEP-1980	151.20	
29-DEC-1980	150.60	
03-FEB-1981	150.50	
04-FEB-1981	150.50	
05-FEB-1981	150.40	
06-FEB-1981	150.40	
09-FEB-1981	150.40	
10-FEB-1981	150.40	
28-MAR-1981	150.20	
29-JUN-1981	133.70	(1)
06-JUL-1981	132.50	(1)
23-OCT-1981	149.30	
24-OCT-1981	149.80	
25-OCT-1981	149.80	
27-OCT-1981	146.10	
28-OCT-1981	149.80	
29-OCT-1981	146.40	
30-OCT-1981	146.80	
31-OCT-1981	146.50	
01-NOV-1981	146.00	
02-NOV-1981	146.40	
03-NOV-1981	146.50	
04-NOV-1981	146.40	
05-NOV-1981	150.30	
09-NOV-1981	146.40	
10-NOV-1981	146.10	
11-NOV-1981	146.40	
12-NOV-1981	146.60	
13-NOV-1981	149.50	
14-NOV-1981	150.00	
15-NOV-1981	149.90	
16-NOV-1981	146.40	
17-NOV-1981	146.20	
18-NOV-1981	146.50	
19-NOV-1981	146.40	
23-NOV-1981	146.40	
24-NOV-1981	146.40	
25-NOV-1981	146.60	
30-NOV-1981	146.40	
01-DEC-1981	146.40	
02-DEC-1981	146.40	

Water Levels for Well 802 (Continued)

Date	Elevation	NOTES
03-DEC-1981	146.50	
04-DEC-1981	149.60	
05-DEC-1981	149.60	
06-DEC-1981	149.80	
07-DEC-1981	146.50	
08-DEC-1981	146.60	
09-DEC-1981	146.40	
10-DEC-1981	146.10	
11-DEC-1981	146.30	
12-DEC-1981	146.40	
13-DEC-1981	146.20	
14-DEC-1981	146.40	
16-DEC-1981	146.50	
17-DEC-1981	146.50	
18-DEC-1981	146.50	
19-DEC-1981	146.40	
21-DEC-1981	146.20	
22-DEC-1981	146.20	
23-DEC-1981	146.30	
24-DEC-1981	146.30	
26-DEC-1981	149.70	
27-DEC-1981	149.50	
28-DEC-1981	146.30	
29-DEC-1981	146.40	
30-DEC-1981	146.40	
02-JAN-1982	149.70	
05-JAN-1982	146.50	
06-JAN-1982	146.50	
07-JAN-1982	148.50	
08-JAN-1982	148.50	
09-JAN-1982	148.60	
10-JAN-1982	148.60	
12-JAN-1982	146.60	
13-JAN-1982	149.50	
21-JAN-1982	144.90	
22-JAN-1982	144.70	
25-JAN-1982	146.50	
26-JAN-1982	146.50	
27-JAN-1982	146.40	
28-JAN-1982	146.40	
29-JAN-1982	146.10	
30-JAN-1982	146.30	
31-JAN-1982	146.00	
01-FEB-1982	146.10	
04-FEB-1982	146.10	
05-FEB-1982	146.20	
06-FEB-1982	146.00	
09-FEB-1982	146.00	
10-FEB-1982	146.10	
11-FEB-1982	146.10	

Water Levels for Well 802 (Continued)

Date	Elevation	NOTES
12-FEB-1982	146.10	
15-FEB-1982	146.10	
16-FEB-1982	146.10	
23-MAR-1982	149.30	
27-MAR-1982	146.30	
28-MAR-1982	146.30	
01-APR-1982	146.40	
02-APR-1982	149.60	
03-APR-1982	149.40	
04-APR-1982	146.20	
06-APR-1982	145.50	
07-APR-1982	145.10	
10-APR-1982	146.00	
11-APR-1982	146.10	
12-APR-1982	146.30	
13-APR-1982	146.30	
14-APR-1982	145.80	
15-APR-1982	146.00	
16-APR-1982	146.30	
10-JUN-1982	149.80	
11-JUN-1982	149.70	
12-JUN-1982	149.70	
13-JUN-1982	149.70	
14-JUN-1982	146.50	
15-JUN-1982	146.20	
16-JUN-1982	149.50	
17-JUN-1982	150.00	
18-JUN-1982	149.80	
19-JUN-1982	149.70	
20-JUN-1982	149.60	
21-JUN-1982	149.80	
22-JUN-1982	149.30	
23-JUN-1982	149.80	
24-JUN-1982	149.70	
25-JUN-1982	149.80	
27-JUN-1982	149.90	
29-JUN-1982	149.80	
30-JUN-1982	149.80	
01-JUL-1982	149.80	
02-JUL-1982	149.80	
03-JUL-1982	150.00	
05-JUL-1982	149.80	
06-JUL-1982	149.90	
07-JUL-1982	149.90	
08-JUL-1982	150.00	
09-JUL-1982	150.20	
11-JUL-1982	150.10	
12-JUL-1982	149.90	
13-JUL-1982	150.00	
14-JUL-1982	149.80	

Water Levels for Well 802 (Continued)

Date	Elevation	NOTES
15-JUL-1982	149.90	
16-JUL-1982	150.10	
17-JUL-1982	150.00	
18-JUL-1982	150.00	
19-JUL-1982	149.90	
20-JUL-1982	149.70	
21-JUL-1982	149.80	
22-JUL-1982	149.90	
23-JUL-1982	149.90	
24-JUL-1982	149.90	
25-JUL-1982	149.90	
26-JUL-1982	149.80	
27-JUL-1982	149.80	
28-JUL-1982	149.80	
29-JUL-1982	149.80	
30-JUL-1982	150.00	
31-JUL-1982	150.00	
01-AUG-1982	150.00	
02-AUG-1982	150.20	
03-AUG-1982	149.90	
04-AUG-1982	149.90	
05-AUG-1982	149.90	
06-AUG-1982	149.90	
07-AUG-1982	149.90	
08-AUG-1982	150.20	
09-AUG-1982	150.30	
10-AUG-1982	150.40	
11-AUG-1982	150.40	
12-AUG-1982	150.60	
13-AUG-1982	150.70	
14-AUG-1982	150.80	
15-AUG-1982	150.80	
16-AUG-1982	150.60	
17-AUG-1982	150.20	
18-AUG-1982	150.20	
19-AUG-1982	150.10	
20-AUG-1982	150.10	
21-AUG-1982	150.10	
23-AUG-1982	150.10	
24-AUG-1982	150.10	
25-AUG-1982	150.00	
26-AUG-1982	150.00	
27-AUG-1982	150.10	
28-AUG-1982	150.10	
29-AUG-1982	150.10	
31-AUG-1982	150.00	
01-SEP-1982	150.00	
02-SEP-1982	150.10	
03-SEP-1982	150.10	
04-SEP-1982	150.00	

Water Levels for Well 802 (Continued)

Date	Elevation	NOTES
05-SEP-1982	150.00	
07-SEP-1982	150.00	
08-SEP-1982	150.00	
10-SEP-1982	150.00	
11-SEP-1982	150.00	
12-SEP-1982	150.00	
13-SEP-1982	149.90	
14-SEP-1982	150.00	
15-SEP-1982	150.00	
16-SEP-1982	149.90	
17-SEP-1982	149.90	
18-SEP-1982	149.90	
19-SEP-1982	149.90	
20-SEP-1982	149.90	
21-SEP-1982	149.90	
26-SEP-1982	149.90	
28-SEP-1982	149.80	
11-DEC-1982	149.70	
09-MAR-1983	150.00	
22-JUN-1983	154.60	
15-SEP-1983	156.10	
12-DEC-1983	156.90	
13-MAR-1984	157.60	
11-JUN-1984	158.90	
18-SEP-1984	159.50	
04-FEB-1985	160.35	

1) Data not valid. Not plotted on Hydrograph. Water level reported but depth measured is less than 5 ft above bottom of hole (5 ft sump below screen).

Water Levels for Well 603A

Date	Elevation	NOTES
07-JUL-1979	155.50	
26-NOV-1979	155.10	
02-JAN-1980	155.10	
11-JAN-1980	155.10	
24-JAN-1980	154.90	
01-FEB-1980	154.90	
15-FEB-1980	155.00	
25-MAR-1980	154.70	
27-JUN-1980	134.90	(1)
27-SEP-1980	154.70	
29-DEC-1980	154.40	
26-MAR-1981	154.00	
29-JUN-1981	153.60	
23-MAR-1982	152.60	
15-JUN-1982	152.40	
15-SEP-1982	152.70	
11-DEC-1982	152.60	
09-MAR-1983	152.60	
22-JUN-1983	155.10	
15-SEP-1983	156.30	
12-DEC-1983	157.70	
13-MAR-1984	158.20	
11-JUN-1984	158.90	
13-SEP-1984	159.[illegible]0	
13-DEC-1984	159.90	
04-FEB-1985	159.60	

NOTE:

(1) Data not valid. Data not plotted on hydrograph. This value is below the well screen.

Water Levels for Well 804

Date	Elevation	NOTES
07-JUL-1979	161.20	
26-NOV-1979	144.30	(1)
02-JAN-1980	161.20	
24-JAN-1980	161.00	
24-JAN-1980	161.00	
25-MAR-1980	161.00	
27-JUN-1980	161.40	
27-SEP-1980	161.10	
29-DEC-1980	160.90	
23-MAR-1981	160.30	
29-JUN-1981	143.90	(1)
06-JUL-1981	144.60	(1)
23-MAR-1982	159.10	
15-JUN-1982	159.00	
15-SEP-1982	158.70	
11-DEC-1982	159.00	
03-MAR-1983	158.40	
22-JUN-1983	159.00	
21-SEP-1983	159.70	
12-DEC-1983	160.00	
13-MAR-1984	160.10	
11-JUN-1984	160.50	
16-SEP-1984	161.00	
13-DEC-1984	160.20	
04-FEB-1985	160.90	

NOTE:

(1) Data not valid. Data not plotted on hydrograph. These values are below the well screen.

Water Levels for Well 805A

Date	Elevation	NOTES
07-JUL-1979	152.40	
26-NOV-1979	153.00	
02-JAN-1980	152.90	
24-JAN-1980	138.20	
01-FEB-1980	138.50	
25-MAR-1980	121.10	(1)
27-JUN-1980	137.50	
27-SEP-1980	153.30	
29-DEC-1980	118.70	(1)
18-MAR-1981	122.00	(1)
29-JUN-1981	119.00	(1)
23-MAR-1982	150.80	
15-JUN-1982	151.00	
15-SEP-1982	151.90	
11-DEC-1982	153.70	
08-MAR-1983	153.60	
22-JUN-1983	156.10	
21-SEP-1983	156.80	
12-DEC-1983	157.90	
12-MAR-1984	158.50	
11-JUN-1984	159.90	
18-SEP-1984	160.60	
13-DEC-1984	160.10	
04-FEB-1985	159.90	

NOTE:

(1) Data not valid. Data not plotted on hydrograph. These values are below the well screen.

Water Levels for Well 306B

Date	Elevation	NOTES
24-JAN-1980	138.20	
01-FEB-1980	138.40	
15-FEB-1980	142.60	
25-MAR-1980	140.90	
27-SEP-1980	145.00	
29-DEC-1980	143.90	
28-MAR-1981	145.00	
29-JUN-1981	145.00	(1)
23-MAR-1982	146.00	
15-JUN-1982	146.10	
15-SEP-1982	146.60	
11-DEC-1982	145.00	
09-MAR-1983	146.10	
22-JUN-1983	152.70	
15-SEP-1983	154.50	
12-DEC-1983	155.40	
12-MAR-1984	156.20	
12-JUN-1984	157.10	
18-SEP-1984	157.40	
13-DEC-1984	157.10	
04-FEB-1985	157.00	

NOTE:

(1) Data not valid. Data not plotted on hydrograph. These values are below the well screen.

Water Levels for Well 607A

Date	Elevation	NOTES
24-JAN-1980	156.10	
01-FEB-1980	156.20	
15-FEB-1980	157.90	
25-MAR-1980	158.10	
27-JUN-1980	158.90	
27-SEP-1980	158.70	
29-DEC-1980	158.10	
28-MAR-1981	157.30	
29-JUN-1981	150.40	
23-MAR-1982	154.30	
15-JUN-1982	153.50	
15-SEP-1982	154.10	
11-DEC-1982	151.80	
03-MAR-1983	152.10	
22-JUN-1983	200.90	(1)
15-SEP-1983	156.70	
14-DEC-1983	157.70	
12-MAR-1984	158.40	
18-SEP-1984	159.40	
13-DEC-1984	158.90	
04-FEB-1985	158.80	

NOTE:

(1) Measurement not considered valid. Data not plotted on hydrograph. Well damaged by site grading during period of measurement.

Water Levels for Well 550A

Date	Elevation	NOTES
18-SEP-1984	101.70	
13-DEC-1984	101.30	
04-FEB-1985	102.60	

Water Levels for well 3514

Date	Elevation	NOTES
18-SEP-1984	112.30	
13-DEC-1984	112.30	
04-FEB-1985	113.20	

Water Levels for well 652

Date	Elevation	NOTES
16-SEP-1984	114.60	
13-DEC-1984	114.20	
04-FEB-1985	115.00	

Water Levels for Well 85D

Date	Elevation	NOTES
18-SEP-1984	103.40	
13-DEC-1984	103.10	
04-FEB-1985	103.90	

Water Levels for Well #54

Date	Elevation	NOTES
18-SEP-1984	103.90	
13-DEC-1984	103.50	
04-FEB-1985	104.60	

Water Levels for well 555

Date	Elevation	NOTES
18-SEP-1984	98.60	
13-DEC-1984	97.90	
04-FEB-1985	101.60	

Water Levels for Well 856

Date	Elevation	NOTES
18-SEP-1984	112.80	
13-DEC-1984	112.40	
04-FEB-1985	113.10	

Water Levels for Well LT1A

Date	Elevation	NOTES
23-DEC-1979	138.40	
31-DEC-1979	137.60	
02-JAN-1980	137.20	
06-JAN-1980	137.00	
07-JAN-1980	136.80	
09-JAN-1980	136.70	
11-JAN-1980	136.80	
14-JAN-1980	136.90	
16-JAN-1980	136.80	
18-JAN-1980	136.80	
21-JAN-1980	136.60	
22-JAN-1980	136.80	
23-JAN-1980	136.90	
24-JAN-1980	136.80	
25-JAN-1980	136.90	
26-JAN-1980	136.80	
27-JAN-1980	136.70	
28-JAN-1980	136.60	
29-JAN-1980	136.50	
30-JAN-1980	136.50	
31-JAN-1980	136.50	
01-FEB-1980	136.50	
02-FEB-1980	136.50	
03-FEB-1980	136.60	
04-FEB-1980	136.50	
05-FEB-1980	136.40	
06-FEB-1980	136.70	
07-FEB-1980	136.60	
08-FEB-1980	136.40	
09-FEB-1980	136.60	
10-FEB-1980	136.70	
11-FEB-1980	136.70	
12-FEB-1980	136.50	
13-FEB-1980	136.40	
14-FEB-1980	136.50	
15-FEB-1980	136.60	
16-FEB-1980	136.90	
17-FEB-1980	136.40	
18-FEB-1980	136.40	
19-FEB-1980	136.50	
20-FEB-1980	136.70	
22-FEB-1980	136.50	
23-FEB-1980	136.50	
24-FEB-1980	136.40	
25-FEB-1980	136.50	
26-FEB-1980	136.20	
27-FEB-1980	136.30	
28-FEB-1980	136.50	
29-FEB-1980	136.30	
01-MAR-1980	136.30	

Water Levels for Well LT1A (Continued)

Date	Elevation	NOTES
03-MAR-1980	136.30	
04-MAR-1980	136.30	
05-MAR-1980	136.40	
06-MAR-1980	136.20	
07-MAR-1980	136.30	
08-MAR-1980	136.40	
09-MAR-1980	136.40	
10-MAR-1980	136.50	
11-MAR-1980	136.30	
12-MAR-1980	136.30	
13-MAR-1980	136.40	
14-MAR-1980	136.20	
15-MAR-1980	136.[illegible]0	
16-MAR-1980	136.10	
17-MAR-1980	136.40	
18-MAR-1980	136.30	
19-MAR-1980	136.20	
20-MAR-1980	136.30	
21-MAR-1980	136.30	
22-MAR-1980	136.30	
23-MAR-1980	136.20	
24-MAR-1980	136.10	
25-MAR-1980	136.20	
26-MAR-1980	136.20	
27-MAR-1980	136.10	
28-MAR-1980	136.30	
29-MAR-1980	136.30	
30-MAR-1980	136.50	
31-MAR-1980	136.30	
01-APR-1980	136.20	
02-APR-1980	136.20	
03-APR-1980	136.20	
04-APR-1980	136.40	
05-APR-1980	136.10	
06-APR-1980	136.10	
07-APR-1980	136.20	
08-APR-1980	136.20	
09-APR-1980	136.30	
10-APR-1980	136.20	
11-APR-1980	136.10	
12-APR-1980	136.20	
13-APR-1980	136.30	
14-APR-1980	136.40	
15-APR-1980	136.20	
16-APR-1980	136.20	
17-APR-1980	136.10	
18-APR-1980	136.20	
19-APR-1980	136.30	
20-APR-1980	136.30	
21-APR-1980	136.50	

water Levels for Well LT1A (Continued)

Date	Elevation	NOTES
22-APR-1980	136.40	
23-APR-1980	136.40	
24-APR-1980	136.40	
25-APR-1980	136.40	
26-APR-1980	136.40	
27-APR-1980	136.50	
28-APR-1980	136.50	
29-APR-1980	136.50	
30-APR-1980	136.50	
01-MAY-1980	136.50	
02-MAY-1980	136.50	
03-MAY-1980	136.60	
04-MAY-1980	136.60	
05-MAY-1980	136.80	
06-MAY-1980	136.70	
07-MAY-1980	136.70	
08-MAY-1980	136.70	
09-MAY-1980	136.60	
10-MAY-1980	136.60	
11-MAY-1980	136.60	
12-MAY-1980	136.60	
13-MAY-1980	136.80	
14-MAY-1980	136.80	
15-MAY-1980	136.70	
16-MAY-1980	136.80	
17-MAY-1980	136.80	
18-MAY-1980	136.90	
19-MAY-1980	136.90	
20-MAY-1980	136.90	
21-MAY-1980	136.90	
22-MAY-1980	137.00	
23-MAY-1980	137.00	
24-MAY-1980	137.20	
25-MAY-1980	137.10	
26-MAY-1980	137.10	
27-MAY-1980	137.00	
28-MAY-1980	137.00	
29-MAY-1980	137.00	
30-MAY-1980	137.00	
31-MAY-1980	137.10	
01-JUN-1980	137.20	
02-JUN-1980	137.10	
03-JUN-1980	136.90	
04-JUN-1980	137.10	
05-JUN-1980	137.10	
06-JUN-1980	137.00	
07-JUN-1980	137.10	
08-JUN-1980	137.30	
09-JUN-1980	137.10	
10-JUN-1980	137.20	

Water Levels for well LT1A (Continued)

Date	Elevation	NOTES
11-JUN-1980	137.10	
12-JUN-1980	137.10	
13-JUN-1980	137.10	
14-JUN-1980	137.10	
15-JUN-1980	137.20	
16-JUN-1980	137.10	
17-JUN-1980	137.10	
18-JUN-1980	136.60	
19-JUN-1980	137.10	
20-JUN-1980	137.10	
21-JUN-1980	137.10	
22-JUN-1980	137.00	
23-JUN-1980	137.00	
24-JUN-1980	137.10	
25-JUN-1980	137.10	
26-JUN-1980	137.10	
27-JUN-1980	137.00	
28-JUN-1980	137.00	
29-JUN-1980	137.00	
30-JUN-1980	137.10	
01-JUL-1980	137.00	
02-JUL-1980	136.90	
03-JUL-1980	136.90	
04-JUL-1980	136.90	
06-JUL-1980	136.90	
07-JUL-1980	136.80	
08-JUL-1980	136.80	
09-JUL-1980	136.90	
10-JUL-1980	136.90	
11-JUL-1980	137.00	
12-JUL-1980	136.90	
13-JUL-1980	136.90	
14-JUL-1980	136.80	
15-JUL-1980	136.70	
16-JUL-1980	136.80	
17-JUL-1980	136.80	
18-JUL-1980	136.80	
19-JUL-1980	136.70	
20-JUL-1980	136.60	
21-JUL-1980	136.70	
22-JUL-1980	136.70	
23-JUL-1980	136.80	
24-JUL-1980	136.80	
25-JUL-1980	136.70	
26-JUL-1980	136.80	
27-JUL-1980	136.80	
28-JUL-1980	136.80	
29-JUL-1980	136.80	
30-JUL-1980	136.70	
31-JUL-1980	136.80	

Water Levels for Well LT1A (Continued)

Date	Elevation	NOTES
01-AUG-1980	136.70	
02-SEP-1980	136.40	
01-OCT-1980	136.30	
31-OCT-1980	135.80	
01-DEC-1980	135.60	
02-JAN-1981	135.80	
02-FEB-1981	135.90	
02-MAR-1981	135.80	
02-APR-1981	135.60	
01-MAY-1981	135.70	
01-JUN-1981	135.40	
02-JUL-1981	135.20	
03-AUG-1981	135.70	
03-JUN-1982	134.60	
03-JUN-1982	134.60	
04-JUN-1982	135.00	
05-JUN-1982	135.00	
06-JUN-1982	135.00	
07-JUN-1982	134.80	
08-JUN-1982	134.90	
09-JUN-1982	135.10	
10-JUN-1982	135.10	
11-JUN-1982	135.20	
12-JUN-1982	135.20	
13-JUN-1982	135.40	
14-JUN-1982	135.50	
15-JUN-1982	135.50	
16-JUN-1982	135.60	
17-JUN-1982	135.70	
18-JUN-1982	135.80	
19-JUN-1982	136.00	
20-JUN-1982	136.20	
21-JUN-1982	136.40	
22-JUN-1982	136.60	
23-JUN-1982	136.90	
24-JUN-1982	137.20	
25-JUN-1982	137.40	
26-JUN-1982	137.70	
27-JUN-1982	138.00	
28-JUN-1982	138.10	
29-JUN-1982	138.20	
30-JUN-1982	138.30	
01-JUL-1982	138.30	
02-JUL-1982	138.50	
03-JUL-1982	138.90	
05-JUL-1982	138.90	
06-JUL-1982	139.10	
07-JUL-1982	139.30	
08-JUL-1982	135.40	
09-JUL-1982	139.70	

Water Levels for Well LT1A (Continued)

Date	Elevation	NOTES
10-JUL-1982	139.90	
11-JUL-1982	140.10	
12-JUL-1982	139.90	
13-JUL-1982	139.70	
14-JUL-1982	139.90	
15-JUL-1982	139.90	
16-JUL-1982	140.10	
17-JUL-1982	140.10	
18-JUL-1982	140.10	
19-JUL-1982	139.60	
20-JUL-1982	139.50	
21-JUL-1982	139.30	
22-JUL-1982	139.30	
23-JUL-1982	139.60	
24-JUL-1982	139.30	
25-JUL-1982	139.10	
27-JUL-1982	138.80	
28-JUL-1982	138.60	
29-JUL-1982	138.80	
30-JUL-1982	139.00	
31-JUL-1982	139.20	
01-AUG-1982	139.40	
02-AUG-1982	139.60	
02-AUG-1982	139.60	
03-AUG-1982	138.90	
04-AUG-1982	138.80	
05-AUG-1982	138.90	
06-AUG-1982	140.40	
07-AUG-1982	140.70	
08-AUG-1982	140.70	
09-AUG-1982	140.90	
10-AUG-1982	141.00	
11-AUG-1982	141.40	
13-AUG-1982	141.70	
14-AUG-1982	141.90	
15-AUG-1982	141.90	
16-AUG-1982	142.20	
17-AUG-1982	142.20	
18-AUG-1982	141.70	
20-AUG-1982	140.70	
21-AUG-1982	141.00	
23-AUG-1982	140.00	
23-AUG-1982	140.00	
24-AUG-1982	139.80	
25-AUG-1982	139.40	
26-AUG-1982	139.60	
27-AUG-1982	139.30	
28-AUG-1982	139.10	
29-AUG-1982	138.90	
30-AUG-1982	138.60	

Water Levels for Well LT1A (Continued)

Date	Elevation	NOTES
31-AUG-1982	138.60	
01-SEP-1982	138.50	
02-SEP-1982	138.50	
03-SEP-1982	138.30	
04-SEP-1982	138.30	
05-SEP-1982	138.20	
07-SEP-1982	138.20	
08-SEP-1982	137.80	
09-SEP-1982	138.10	
10-SEP-1982	137.80	
11-SEP-1982	137.70	
12-SEP-1982	137.60	
13-SEP-1982	137.40	
14-SEP-1982	137.30	
15-SEP-1982	137.30	
16-SEP-1982	137.40	
17-SEP-1982	137.20	
18-SEP-1982	137.20	
19-SEP-1982	137.20	
20-SEP-1982	137.00	
21-SEP-1982	137.20	
18-DEC-1982	135.10	
15-MAR-1983	140.90	
22-JUN-1983	131.40	
13-OCT-1983	133.80	
14-DEC-1983	136.40	
22-MAR-1984	136.10	
12-JUN-1984	137.40	
18-JUN-1984	137.70	
13-DEC-1984	137.00	
04-FEB-1985	137.05	

Water Levels for Well LT7

Date	Elevation	NOTES
28-DEC-1979	141.70	
31-DEC-1979	141.90	
02-JAN-1980	141.60	
04-JAN-1980	142.00	
07-JAN-1980	141.60	
09-JAN-1980	141.50	
11-JAN-1980	141.70	
14-JAN-1980	141.50	
16-JAN-1980	141.50	
18-JAN-1980	141.60	
21-JAN-1980	141.50	
22-JAN-1980	141.70	
23-JAN-1980	141.80	
24-JAN-1980	141.60	
25-JAN-1980	141.60	
26-JAN-1980	141.40	
27-JAN-1980	141.40	
28-JAN-1980	141.30	
29-JAN-1980	141.20	
30-JAN-1980	141.10	
30-JAN-1980	141.10	
31-JAN-1980	141.40	
01-FEB-1980	141.10	
02-FEB-1980	141.00	
03-FEB-1980	141.10	
04-FEB-1980	141.20	
05-FEB-1980	141.10	
06-FEB-1980	141.40	
07-FEB-1980	141.10	
08-FEB-1980	141.00	
09-FEB-1980	141.30	
10-FEB-1980	141.40	
11-FEB-1980	141.20	
12-FEB-1980	141.10	
13-FEB-1980	141.00	
14-FEB-1980	141.00	
15-FEB-1980	141.20	
16-FEB-1980	141.60	
17-FEB-1980	141.10	
18-FEB-1980	140.90	
19-FEB-1980	141.10	
20-FEB-1980	141.30	
21-FEB-1980	141.20	
22-FEB-1980	141.20	
23-FEB-1980	141.10	
24-FEB-1980	141.10	
25-FEB-1980	141.30	
26-FEB-1980	140.80	
27-FEB-1980	141.00	
28-FEB-1980	141.30	

Water Levels for Well LT7 (Continued)

Date	Elevation	NOTES
29-FEB-1980	141.20	
01-MAR-1980	141.20	
03-MAR-1980	140.30	
04-MAR-1980	141.00	
05-MAR-1980	141.40	
06-MAR-1980	141.30	
07-MAR-1980	141.20	
08-MAR-1980	141.50	
09-MAR-1980	141.50	
10-MAR-1980	141.60	
11-MAR-1980	141.40	
12-MAR-1980	141.50	
13-MAR-1980	141.60	
14-MAR-1980	141.40	
15-MAR-1980	141.20	
16-MAR-1980	141.30	
17-MAR-1980	141.60	
18-MAR-1980	141.60	
19-MAR-1980	141.50	
20-MAR-1980	141.80	
21-MAR-1980	142.20	
22-MAR-1980	141.80	
23-MAR-1980	141.20	
24-MAR-1980	141.90	
25-MAR-1980	142.10	
26-MAR-1980	142.00	
27-MAR-1980	142.00	
28-MAR-1980	143.50	
29-MAR-1980	142.40	
30-MAR-1980	142.60	
31-MAR-1980	142.40	
01-APR-1980	142.20	
02-APR-1980	144.20	
03-APR-1980	144.00	
04-APR-1980	142.70	
05-APR-1980	142.30	
06-APR-1980	142.30	
07-APR-1980	142.40	
08-APR-1980	142.50	
09-APR-1980	142.50	
10-APR-1980	142.50	
11-APR-1980	142.30	
12-APR-1980	142.50	
13-APR-1980	142.60	
14-APR-1980	142.30	
15-APR-1980	142.40	
16-APR-1980	142.30	
17-APR-1980	142.20	
18-APR-1980	142.40	
19-APR-1980	142.40	

Water Levels for Wall LT7 (Continued)

Date	Elevation	NOTES
20-APR-1980	143.00	
21-APR-1980	142.60	
22-APR-1980	142.40	
23-APR-1980	142.50	
24-APR-1980	142.60	
25-APR-1980	142.40	
26-APR-1980	142.40	
27-APR-1980	142.50	
28-APR-1980	142.40	
29-APR-1980	142.50	
30-APR-1980	142.40	
01-MAY-1980	142.30	
02-MAY-1980	142.20	
03-MAY-1980	142.20	
04-MAY-1980	142.30	
05-MAY-1980	142.20	
10-MAY-1980	141.90	
10-MAY-1980	141.90	
11-MAY-1980	141.90	
12-MAY-1980	141.90	
13-MAY-1980	142.00	
14-MAY-1980	142.10	
15-MAY-1980	142.00	
16-MAY-1980	141.80	
17-MAY-1980	141.80	
18-MAY-1980	141.90	
19-MAY-1980	142.00	
20-MAY-1980	142.10	
21-MAY-1980	141.90	
22-MAY-1980	141.90	
23-MAY-1980	141.90	
24-MAY-1980	142.10	
25-MAY-1980	142.10	
26-MAY-1980	141.70	
27-MAY-1980	141.50	
28-MAY-1980	141.40	
29-MAY-1980	141.40	
30-MAY-1980	141.30	
31-MAY-1980	141.20	
01-JUN-1980	141.40	
02-JUN-1980	141.20	
03-JUN-1980	141.20	
04-JUN-1980	141.20	
05-JUN-1980	141.00	
06-JUN-1980	141.00	
07-JUN-1980	141.10	
08-JUN-1980	141.20	
09-JUN-1980	141.00	
10-JUN-1980	141.00	
11-JUN-1980	140.90	

Water Levels for Well LT7 (Continued)

Date	Elevation	NOTES:
12-JUN-1980	140.80	
13-JUN-1980	140.70	
14-JUN-1980	140.90	
15-JUN-1980	140.80	
16-JUN-1980	140.50	
17-JUN-1980	140.70	
18-JUN-1980	140.80	
19-JUN-1980	140.80	
20-JUN-1980	140.70	
21-JUN-1980	140.70	
22-JUN-1980	140.50	
23-JUN-1980	140.50	
24-JUN-1980	140.60	
25-JUN-1980	140.70	
26-JUN-1980	140.60	
27-JUN-1980	140.40	
28-JUN-1980	140.30	
29-JUN-1980	140.30	
30-JUN-1980	140.40	
01-JUL-1980	140.40	
02-JUL-1980	140.30	
03-JUL-1980	140.30	
04-JUL-1980	140.30	
05-JUL-1980	140.30	
07-JUL-1980	140.10	
08-JUL-1980	140.10	
09-JUL-1980	140.10	
11-JUL-1980	140.30	
11-JUL-1980	140.30	
12-JUL-1980	140.20	
13-JUL-1980	140.10	
14-JUL-1980	140.00	
15-JUL-1980	139.80	
16-JUL-1980	140.00	
17-JUL-1980	140.00	
18-JUL-1980	140.00	
19-JUL-1980	139.60	
20-JUL-1980	139.90	
21-JUL-1980	139.90	
22-JUL-1980	139.90	
23-JUL-1980	140.00	
24-JUL-1980	139.90	
25-JUL-1980	139.80	
26-JUL-1980	139.80	
27-JUL-1980	139.80	
28-JUL-1980	139.90	
29-JUL-1980	139.80	
30-JUL-1980	139.70	
31-JUL-1980	139.70	
01-AUG-1980	139.70	

Water Levels for Well LT7 (Continued)

Date	Elevation	NOTES
02-SEP-1980	139.00	
01-OCT-1980	139.40	
01-OCT-1980	139.40	
31-OCT-1980	139.70	
01-DEC-1980	140.20	
02-JAN-1981	140.00	
02-APR-1981	139.70	
02-JUL-1981	139.50	
22-DEC-1981	140.20	
24-DEC-1981	140.20	
05-FEB-1982	139.50	
07-FEB-1982	139.60	
03-JUN-1982	140.00	
03-JUN-1982	139.90	
04-JUN-1982	140.90	
05-JUN-1982	140.30	
06-JUN-1982	140.10	
07-JUN-1982	139.80	
08-JUN-1982	139.90	
09-JUN-1982	141.70	
10-JUN-1982	140.10	
11-JUN-1982	140.00	
12-JUN-1982	140.10	
13-JUN-1982	140.10	
14-JUN-1982	140.00	
15-JUN-1982	140.10	
15-JUN-1982	140.10	
16-JUN-1982	140.20	
17-JUN-1982	140.10	
18-JUN-1982	140.20	
19-JUN-1982	140.20	
20-JUN-1982	140.10	
21-JUN-1982	140.10	
22-JUN-1982	140.00	
23-JUN-1982	140.00	
24-JUN-1982	140.00	
25-JUN-1982	140.00	
26-JUN-1982	140.10	
27-JUN-1982	140.10	
28-JUN-1982	140.20	
29-JUN-1982	140.30	
30-JUN-1982	140.30	
01-JUL-1982	140.30	
02-JUL-1982	140.20	
03-JUL-1982	140.30	
05-JUL-1982	140.40	
06-JUL-1982	140.30	
07-JUL-1982	140.40	
08-JUL-1982	140.50	
09-JUL-1982	140.70	

Water Levels for Well LT7 (Continued)

Date	Elevation	NOTES
10-JUL-1982	140.80	
11-JUL-1982	140.90	
12-JUL-1982	140.70	
13-JUL-1982	140.70	
14-JUL-1982	140.90	
15-JUL-1982	140.90	
16-JUL-1982	140.90	
18-JUL-1982	141.20	
19-JUL-1982	141.20	
24-JUL-1982	141.20	
25-JUL-1982	141.30	
27-JUL-1982	140.90	
28-JUL-1982	140.70	
29-JUL-1982	141.10	
30-JUL-1982	141.50	
31-JUL-1982	141.60	
01-AUG-1982	141.70	
02-AUG-1982	141.50	
03-AUG-1982	141.50	
04-AUG-1982	141.40	
05-AUG-1982	141.40	
06-AUG-1982	141.80	
07-AUG-1982	141.80	
08-AUG-1982	141.90	
09-AUG-1982	141.90	
10-AUG-1982	141.80	
11-AUG-1982	142.00	
02-SEP-1982	142.70	
04-SEP-1982	142.60	
05-SEP-1982	142.60	
07-SEP-1982	142.60	
08-SEP-1982	142.30	
09-SEP-1982	142.50	
10-SEP-1982	142.40	
11-SEP-1982	142.30	
12-SEP-1982	142.20	
12-SEP-1982	142.70	
13-SEP-1982	142.10	
14-SEP-1982	142.10	
15-SEP-1982	142.30	
15-SEP-1982	142.30	
16-SEP-1982	142.30	
17-SEP-1982	142.30	
18-SEP-1982	142.20	
19-SEP-1982	142.20	
20-SEP-1982	142.10	
21-SEP-1982	142.10	
18-DEC-1982	140.10	
15-MAR-1983	140.60	

Water Levels for Well LT7 (Continued)

Date	Elevation	NOTES
22-JUN-1983	149.90	
03-OCT-1983	154.20	
14-DEC-1983	155.90	
22-MAR-1984	156.60	
12-JUN-1984	157.40	
18-SEP-1984	157.70	
31-DEC-1984	158.00	

TABLE 2-5

Monthly Precipitation - Augusta Weather Station

AUGUSTA WSO AP,MONTHLY PRECIPITATION

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTYR	CALYR
1	1.94	4.06	6.37	2.29	3.40	2.83	4.03	7.11	2.87	.77	1.19	3.23	40.09	1952
2	3.07	6.96	2.64	3.79	3.80	5.06	1.46	3.47	5.28	0.00	.92	7.55	44.00	1953
3	1.89	2.84	3.23	2.48	2.63	3.52	4.85	3.60	.78	1.39	2.44	1.88	31.53	1954
4	4.28	1.88	1.91	6.03	4.09	2.47	3.96	2.41	1.59	1.75	3.36	.32	34.05	1955
5	1.54	5.89	4.96	3.39	.76	2.75	2.19	2.33	4.72	1.54	.58	2.20	32.85	1956
6	2.33	1.68	3.58	1.98	5.81	.78	1.88	2.54	7.17	2.69	6.18	2.70	39.32	1957
7	3.80	3.83	3.76	5.47	1.02	2.88	8.40	2.23	1.83	.25	.36	3.01	36.84	1958
8	3.67	4.54	5.82	2.49	5.70	2.63	2.37	5.49	6.77	6.90	.71	2.39	49.48	1959
9	8.48	5.68	5.51	4.01	2.16	4.38	8.22	1.98	2.01	.95	.09	2.24	45.71	1960
10	2.70	7.67	5.04	8.43	4.10	3.32	2.50	5.44	1.26	.18	1.50	4.21	46.35	1961
11	6.50	6.04	5.31	5.11	1.97	5.17	1.77	3.43	2.99	2.58	2.45	1.96	45.28	1962
12	5.25	3.48	3.88	3.90	2.66	4.27	3.03	1.58	4.48	.01	3.63	5.39	41.56	1963
13	7.08	4.84	5.56	5.33	4.27	5.32	9.66	9.91	2.59	6.34	1.24	3.90	66.04	1964
14	1.34	5.42	7.29	2.21	1.88	5.67	5.39	2.55	1.05	2.62	1.84	1.16	38.42	1965
15	7.01	5.36	3.73	2.37	5.77	3.50	3.44	5.74	2.10	1.83	.85	3.32	45.02	1966
16	3.37	3.86	6.53	1.92	6.98	4.67	11.43	8.00	.61	.55	2.61	2.93	53.46	1967
17	3.77	.69	.88	2.44	4.05	5.06	4.44	1.31	4.85	3.13	3.07	2.89	36.60	1968
18	1.98	2.33	3.23	4.53	4.33	4.53	6.63	4.80	7.03	1.09	1.62	3.76	45.86	1969
19	2.71	2.38	6.34	.60	4.13	1.75	6.29	5.39	.79	3.92	.63	5.06	39.99	197
20	4.62	5.35	9.57	2.38	3.85	3.51	5.11	6.69	2.50	3.48	2.64	2.69	52.39	197
21	6.08	3.08	3.06	.90	4.05	6.25	3.36	2.45	2.60	.87	2.79	5.27	40.76	197
22	5.18	5.22	6.22	3.71	2.55	7.28	2.47	2.63	2.97	2.02	.57	2.81	43.63	197
23	3.99	5.76	2.32	4.02	4.15	3.63	4.05	3.86	2.83	.09	2.38	4.05	41.13	197
24	3.71	5.22	5.23	4.43	5.01	5.10	5.32	3.53	9.51	1.29	2.12	4.58	55.05	197
25	3.51	.95	4.11	2.00	6.12	4.77	2.00	1.81	6.12	5.06	3.61	5.61	45.67	197
26	3.66	1.90	8.18	1.22	2.53	1.80	3.07	7.84	3.26	3.48	3.71	3.01	43.66	197
27	7.76	1.50	3.54	3.58	2.16	1.59	1.70	4.91	1.34	1.12	2.50	1.26	32.96	197
28	3.40	7.34	2.48	5.27	9.61	1.56	6.12	3.56	4.10	1.50	1.95	1.85	48.74	197
29	4.07	3.17	11.92	1.28	1.84	4.31	2.12	.65	5.06	1.62	2.24	.96	39.24	198
30	.75	5.26	2.62	2.27	5.29	7.08	1.72	6.20	.72	2.91	.91	8.65	44.38	198
31	3.00	4.60	1.54	5.23	3.78	3.46	3.56	3.09	1.91	3.65	2.34	4.93	41.09	198
32	4.47	6.02	6.86	5.47	1.93	3.90	1.44	4.99	5.40	2.31	4.64	5.24	52.67	198
MEAN	3.97	4.21	4.79	3.45	3.82	3.90	4.19	4.11	3.41	2.12	2.11	3.47	43.56	
STD	1.91	1.89	2.39	1.76	1.87	1.59	2.54	2.21	2.25	1.73	1.35	1.85	7.30	
MAX	8.48	7.67	11.92	8.43	9.61	7.28	11.43	9.91	9.51	6.90	6.18	8.65	66.04	
MIN	.75	.69	.88	.60	.76	.78	1.44	.65	.61	0.00	.09	.32	31.53	

Source: U. S. Department of Commerce, National Oceanic and Atmospheric Administration, Climatological Data, Georgia, Annual Summary

TABLE 2-6

Monthly Precipitation - Waynesboro Weather Station

WAYNESBORO 2 NE,MONTHLY PRECIPITATION

YEAR	JAN	FEB	MAR	APR	MAY.	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTYR	CALYR
1	2.04	4.29	6.01	1.67	3.32	3.35	1.97	6.19	5.84	1.26	1.80	2.71	40.45	1952
2	2.25	5.59	2.55	1.92	6.16	6.26	3.43	1.73	7.39	.11	.86	7.52	45.77	1953
3	1.44	1.41 .	.	.	.		3.63	2.18	1.86	1.38	2.30	2.15 .		1954
4	4.60	2.22	1.97	5.90	6.02	2.55	4.42	4.47	4.66	3.72	2.57	.53	43.63	1955
5	1.44	8.15	3.56	2.62	2.16	1.88	4.33	5.24	5.28	2.12	.93	2.60	40.31	1956
6	1.29	1.33	4.69	2.49	8.31	5.28	4.51	6.62	7.47	4.73	6.28	2.58	55.58	1957
7	3.90	4.05	4.98	5.47	1.98	3.84	4.24	2.77	1.65	.49	.32	3.51	37.20	1958
8	4.57	5.95	5.93	3.50	3.35	1.39	4.86	3.47	5.60	7.77	1.55	2.64	50.58	1959
9	.	.	4.37 .	.		5.73	8.92 .	.	.	.	.	.		1960
10	3.54	5.85	2.27	9.77	4.61	1.76	.27	8.56	.37	0.00	1.46	5.63	44.09	1961
11	5.17	3.38	7.00	1.59	3.41	5.37	2.37	3.30	1.80	1.14	3.37	.72	38.62	1962
12	7.12	3.76	2.69	2.25	2.18	10.37	6.02	1.38	5.58	0.00	3.34	3.68	48.37	1963
13	4.44 .		2.49 .	.		.65	4.06	8.30 .		16.74	1.85	3.40 .		1964
14	1.10	6.22	6.41	2.40	1.25	1.45	6.00	1.15	.70	2.23	1.93	1.27	32.11	1965
15	4.59	4.21	5.16	.61	3.49	6.13	4.10	6.77	3.05	2.07	.92	4.61	45.71	1966
16	3.71	2.67	3.94	3.43	2.90	1.98	6.04	4.72	.97	.25	2.80	2.81	36.22	1967
17	3.36	1.25	2.76	2.62	2.77	4.50	3.75	3.83	1.96	2.71	3.47	2.90	35.88	1968
18	1.76	2.38	3.35	3.87	5.73	2.00	.80	10.39	7.49	1.92	1.52	3.34	44.55	1969
19	2.25	3.32	6.47	1.36	7.86	1.51	3.88	5.96	.30	4.49	1.47	5.21	44.08	197
20	5.56	4.30	5.05	3.65	4.17	4.70	4.49	6.51	4.35	6.55	2.63	3.24	55.20	197
21	6.85	4.00	2.88	.77	3.33	6.83	3.45	4.14	.30	.63	2.61	5.38	41.17	197
22	5.17	4.61	4.85	6.07	2.48	10.48	1.43	4.38	3.21	1.68	.72	2.31	47.39	197
23	4.13	6.09	3.99	2.54	3.54	4.79	3.10	4.17	3.65	.91	1.60	6.83	45.34	197
24	5.36	7.31	7.57	4.88	10.48	5.14	7.89	5.53	5.05	1.83	2.26	3.33	66.63	197
25	4.13	1.24	4.36	1.23	9.16	6.31	5.18	3.35	5.40	5.63	3.29	5.23	54.51	197
26	3.17	2.06	7.13	.95	.87	2.21	1.38	4.06	2.54	4.53	2.03	4.82	35.75	197
27	9.28	1.56	3.23	2.14	5.00	2.14	2.81	6.16	1.15	.21	2.92	1.76	38.36	197
28	4.59	8.85	2.98	3.97	5.57	4.26	5.57	6.41	6.01	.93	4.30	2.11	55.55	197
29	3.75	2.59	13.51	2.08	1.66	2.52	1.66	.77	5.18	3.34	1.09	1.29	39.44	198
30	.85	3.95	3.56	3.03	2.31	3.93	5.57	13.09	.53	2.28	.75	8.94	48.79	198
31	5.28	3.86	1.71	3.67	1.56	4.54	5.39	1.83	2.22	2.94	2.51	3.91	39.42	198
32	5.05	5.08	8.71	9.86	1.74	4.69	4.57	3.53	8.80	1.20	4.72	4.39	62.34	198
MEAN	3.93	4.05	4.71	3.32	4.05	4.15	4.07	4.87	3.68	2.77	2.26	3.59	45.28	
STD	1.93	2.05	2.43	2.31	2.48	2.41	1.92	2.74	2.50	3.26	1.30	1.94	8.30	
MAX	9.28	8.85	13.51	9.86	10.48	10.48	8.92	13.09	8.80	16.74	6.28	8.94	66.63	
MIN	.85	1.24	1.71	.61	.87	.65	.27	.77	.30	0.00	.32	.53	32.11	

Source: U. S. Department of Commerce, National Oceanic and Atmospheric Administration, Climatological Data, Georgia, Annual Summary

TABLE 2-7

Monthly Precipitation - Blackville Weather Station

BLACKVILLE 3W,MONTHLY PRECIPITATION

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTYR	CALYR
1	2.09	4.69	6.27	4.21	3.92	3.87	1.60	7.93	3.35	1.62	2.68	3.96	46.19	1952
2	3.71	5.60	4.14	2.80	4.40	5.07	3.64	2.43	7.09	.45	1.17	8.06	48.56	1953
3	1.52	1.36	2.63	3.43	3.78	4.62	1.16	2.82	1.05	1.80	1.51	2.17	27.85	1954
4	5.30	2.60	2.22	4.91	4.13	3.94	9.18	3.35	4.14	2.09	3.03	.51	45.40	1955
5	1.99	7.71	4.28	3.15	2.79	4.61	2.79	4.74	3.50	3.11	.83	2.05	41.55	1956
6	1.36	1.35	4.70	2.28	6.07	5.93	2.41	2.54	5.29	2.82	7.00	3.38	45.13	1957
7	3.38	4.56	4.85	7.40	3.56	3.08	7.74	5.48	.83	2.36	.23	3.97	47.44	1958
8	2.87	6.02	7.37	3.33	3.22	2.82	5.53	4.34	10.75	10.15	1.61	5.01	63.02	1959
9	4.13	4.79	5.34	4.41	2.29	6.24	5.58	1.98	3.61	1.52	1.12	2.37	43.38	1960
10	3.69	5.57	3.26	12.99	3.05	6.36	2.57	5.61	1.47	.15	1.30	4.40	50.42	1961
11	5.32	4.56	5.35	4.42	3.79	5.31	4.55	2.53	5.24	2.21	3.25	2.63	49.16	1962
12	6.56	3.33	1.97	2.04	3.34	6.83	5.49	.95	4.69	0.00	3.04	3.37	42.41	1963
13	8.35	7.39	8.81	4.91	4.05	4.68	9.17	9.97	4.86	6.54	1.08	5.29	75.10	1964
14	1.20	6.72	7.05	3.00	1.41	8.63	9.55	1.12	1.88	3.14	1.70	1.49	46.89	196
15	7.06	5.96	4.08	2.95	6.15	5.47	2.85	7.93	3.22	1.02	.96	3.65	51.30	196
16	3.70	3.34	3.46	2.54	5.63	1.63	7.07	7.55	2.15	.39	1.69	3.15	42.32	196
17	5.37	1.50	1.20	2.12	3.19	7.49	4.54	2.71	.89	3.51	3.31	2.72	38.55	196
18	2.86	2.89	3.61	2.98	5.12	3.30	5.35	4.60	5.46	2.13	2.16	3.31	43.77	196
19	2.99	2.89	7.62	.94	9.40	1.82	2.64	5.34	2.04	3.26	1.56	4.52	45.02	197
20	4.63	4.11	7.65	2.80	3.91	8.79	6.15	6.47	.92	4.85	2.76	2.48	55.52	197
21	5.71	3.69	2.74	.36	3.49	6.22	4.06	4.52	.39	1.38	4.14	5.71	42.41	197
22	5.12	8.33	9.50	3.49	2.74	10.60	6.04	3.80	4.74	1.53	1.00	5.45	62.34	197
23	3.17	6.35	2.83	3.27	4.38	4.03	5.90	7.08	5.58	.07	1.85	5.21	49.72	197
24	5.13	5.69	5.55	3.67	7.28	4.34	7.12	5.72	2.48	1.54	1.54	4.08	54.14	197
25	4.25	1.60	3.49	1.19	5.41	11.53	1.79	3.02	5.77	5.24	3.64	4.19	51.12	197
26	3.19	1.99	7.42	.89	5.68	4.64	1.79	5.86	3.66	4.64	1.31	5.47	46.54	197
27	7.36	1.30	2.48	4.51	4.93	3.22	7.35	3.38	1.18	.02	2.36	2.13	40.22	197
28	4.42	6.42	2.24	5.73	4.85	4.67	5.44	5.41	8.16	.65	4.99	2.05	55.03	197
29	4.57	2.84	9.74	2.61	2.53	3.88	1.40	2.57	6.44	1.80	1.40	1.72	41.50	198
30	.70	3.77	3.01	2.28	1.52	7.40	5.38	7.59	.12	2.03	.74	8.08	42.62	198
31	3.30	3.79	1.45	4.73	2.73	4.45	6.11	1.78	2.26	1.91	1.54	4.56	38.61	198
32	3.66	5.25	6.25	4.40	.69	3.96	3.55	2.73	4.89	1.65	4.18	4.31	45.52	198
MEAN	4.02	4.31	4.77	3.61	4.04	5.29	4.86	4.50	3.69	2.36	2.21	3.83	47.46	
STD	1.83	1.99	2.40	2.25	1.76	2.29	2.38	2.26	2.46	2.12	1.44	1.73	8.54	
MAX	8.35	8.33	9.74	12.99	9.40	11.53	9.55	9.97	10.75	10.15	7.00	8.08	75.10	
MIN	.70	1.30	1.20	.36	.69	1.63	1.16	.95	.12	0.00	.23	.51	27.85	

Source: U. S. Department of Commerce, National Oceanic and Atmospheric Administration, Climatological Data, South Carolina, Annual Summary

TABLE 2-8

Monthly Precipitation - Hampton Weather Station

HAMPTON,MONTHLY PRECIPITATION

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTYR	CALYR
1	1.73	6.54	3.27	2.97	5.88	3.52	3.55	5.64	1.12	.44	1.93	2.85	39.44	1952
2	2.90	4.58	6.35	1.76	2.49	5.54	3.45	4.06	6.03	.13	1.57	6.90	45.76	1953
3	1.13	1.57	1.75	2.56	8.21	1.07	2.46	5.26	3.14	1.05	1.9C	2.14	32.24	1954
4	3.47	2.26	.46	7.02	3.61	6.25	7.92	2.61	6.37	1.20	.85	1.50	43.52	1955
5	1.44	6.89	3.59	2.78	3.17	1.17	5.36	1.39	4.99	2.04	.56	1.10	34.48	1956
6	1.33	1.82	5.60	2.03	9.22	6.88	5.71	1.72	4.55	1.67	6.88	1.74	49.15	1957
7	3.35	2.48	4.67	4.72	5.39	6.96	4.74	4.34	2.55	3.83	.80	2.90	46.73	1958
8	4.57	7.12	7.44	2.50	6.76	2.97	4.77	5.45	8.50	7.59	.78	4.27	62.72	1959
9	4.83	5.64	4.08	2.53	2.41	4.82	12.57	2.55	4.37	3.10	.66	1.86	49.42	1960
10	3.22	3.99	3.92	7.39	5.77	5.99	7.09	15.03	4.00	.20	1.65	2.61	60.86	1961
11	6.25	2.16	7.52	3.10	3.38	4.26	7.86	6.04	6.59	2.90	2.48	2.05	54.59	1962
12	4.69	4.00	.70	1.75	6.44	8.82	4.58	3.18	6.78	.45	2.77	2.88	47.04	1963
13	7.50	6.75	3.45	2.62	5.27	2.2[illegible]	12.33	7.35	9.81	8.24	.67	2.92	69.11	1964
14	1.52	7.08	7.74	2.48	1.75	6.5[illegible]	9.91	4.22	1.94	2.38	1.87	1.13	48.58	1965
15	5.40	5.10	3.12	2.20	7.24	4.78	4.97	7.15	2.75	.99	.45	3.06	47.21	1966
16	6.09	3.73	1.81	3.69	5.14	7.06	5.48	6.03	3.27	.27	2.18	2.10	46.85	1967
17	2.23	1.10	1.49	5.08	2.59	6.35	4.34	2.60	2.25	3.02	2.66	3.38	37.09	1968
18	1.50	2.14	4.96	1.76	8.47	8.06	6.32	8.69	10.66	3.07	2.59	3.14	61.36	1969
19	2.77	3.80	7.81	1.37	2.38	2.94	4.73	4.67	1.43	4.02	.71	3.07	39.70	1970
20	2.81	3.55	6.66	3.48	2.63	5.76	11.58	11.10	.53	6.00	3.13	2.37	59.60	1971
21	4.51	4.70	2.59	.53	4.80	7.28	1.72	8.81	.95	1.35	3.22	5.43	45.89	1972
22	4.99	4.85	5.22	3.88	1.33	13.80	2.62	8.74	3.22	.65	2.67	4.74	56.71	1973
23	3.86	5.40	3.56	2.00	4.14	2.96	5.96	7.22	4.01	.17	2.91	3.83	46.02	1974
24	4.39	4.20	4.48	5.23	5.31	5.73	12.05	5.15	4.57	1.02	.79	3.22	56.14	1975
25	4.37	1.68	2.85	1.64	11.96	4.64	4.17	2.26	7.16	3.35	3.10	4.26	51.44	1976
26	3.37	1.25	5.96	.58	2.92	6.24	2.94	5.99	2.26	3.47	1.55	6.25	42.78	1977
27	5.40	2.02	1.87	2.36	4.70	3.29	4.82	2.01	1.15	.36	3.12	2.41	33.51	1978
28	5.11	4.92	3.53	4.65	7.02	2.64	3.53	2.78	9.98	2.54	2.43	2.85	51.98	1979
29	4.14	1.25	11.92	1.76	3.76	2.97	.85	2.79	5.47	2.21	1.00	1.87	39.99	1980
30	.70	3.65	3.88	2.30	2.17	6.69	3.51	6.09	.90	1.30	1.18	7.08	39.45	1981
31	3.62	3.89	1.90	4.78	2.34	7.17	9.52	2.32	2.57	1.95	.65	4.50	45.21	1982
32	7.74	5.26	7.78	4.04	1.36	10.09	1.71	2.30	2.91	.76	4.63	5.72	54.30	1983
MEAN	3.78	3.92	4.44	3.05	4.69	5.48	5.72	5.17	4.27	2.24	2.01	3.32	48.09	
STD	1.81	1.86	2.54	1.64	2.54	2.66	3.22	3.04	2.80	2.04	1.37	1.59	9.00	
MAX	7.74	7.12	11.92	7.39	11.96	13.80	12.57	15.03	10.66	8.24	6.88	7.08	69.11	
MIN	.70	1.10	.46	.53	1.33	1.07	.85	1.39	.53	.13	.45	1.10	32.24	

Source: U. S. Department of Commerce, National Oceanic and Atmospheric Administration, Climatological Data, South Carolina, Annual Summary

TABLE 2-9

Monthly Precipitation - Savannah River Plant

SRP,MONTHLY PRECIPITATION

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTYR	CALY
1	2.07	3.23	6.55	3.12	5.56	5.67	2.82	5.98	3.34	1.36	2.86	3.99	46.55	195
2	2.69	5.48	3.83	2.96	4.42	5.38	3.63	3.61	8.53	.11	1.04	7.51	49.19	195
3	1.26	1.64	2.95	2.50	2.89	2.91	2.03	4.10	1.43	1.29	2.94	2.88	28.82	195
4	4.75	2.62	2.21	5.57	4.53	3.31	3.94	5.07	3.42	1.32	2.93	.46	40.13	195
5	1.67	7.94	4.84	3.21	3.07	2.34	4.34	3.18	4.56	1.83	.93	2.05	39.96	195
6	2.05	1.58	4.29	2.75	8.02	4.17	3.51	2.41	5.04	6.12	6.46	2.24	48.64	195
7	4.01	4.38	4.96	5.63	2.07	2.50	5.32	2.76	1.12	.96	.21	4.42	38.34	195
8	3.54	6.06	6.44	2.03	3.81	4.06	5.80	2.93	8.71	10.86	1.97	3.54	59.75	195
9	6.91	5.81	5.76	5.07	1.96	3.66	5.27	2.81	4.84	.97	.83	2.93	46.82	196
10	3.59	5.76	7.23	8.20	3.88	3.01	3.09	7.15	1.00	.07	1.83	6.60	51.41	196
11	4.64	5.14	6.52	4.03	3.50	4.41	2.56	3.43	5.55	2.27	3.50	2.26	47.75	196
12	5.96	3.64	3.34	3.70	2.98	8.42	3.18	1.04	5.37	0.00	3.68	4.47	45.78	196
13	7.79	6.00	5.79	5.94	3.62	4.50	10.42	12.34	5.68	6.13	.88	4.38	73.47	196
14	2.00	6.39	8.67	2.43	1.33	5.04	8.04	1.94	2.83	2.59	2.17	1.41	44.84	196
15	7.18	5.96	4.43	2.53	5.51	4.66	4.11	5.23	3.64	1.25	1.05	3.40	48.95	196
16	3.66	3.80	5.68	2.82	5.01	3.74	7.52	7.32	1.70	.64	2.51	3.13	47.53	196
17	3.98	.94	1.49	2.12	3.46	6.20	3.88	4.27	2.24	3.00	3.39	2.73	37.70	196
18	2.00	2.46	3.38	4.09	3.02	3.95	2.71	5.42	4.56	1.16	.40	4.19	37.34	196
19	2.79	2.69	7.36	1.38	4.16	3.46	4.85	3.79	1.71	5.01	1.68	4.92	43.80	197
20	5.11	4.16	8.68	2.92	2.98	5.92	10.53	8.76	3.80	5.95	2.31	2.89	64.01	197
21	8.91	4.42	2.82	.57	4.72	6.57	2.64	6.05	1.47	1.20	3.56	5.23	48.16	197
22	5.36	5.26	6.38	4.58	3.50	10.89	6.04	3.81	3.71	1.22	.31	4.64	55.70	197
23	2.58	7.03	2.87	2.93	4.15	2.79	4.08	6.27	3.22	.08	2.19	3.83	42.02	197
24	4.98	6.64	5.91	4.42	5.15	3.84	8.55	3.83	5.18	1.74	3.41	2.03	55.68	197
25	4.18	1.08	3.83	2.50	10.90	4.35	1.95	1.64	5.48	4.92	4.19	5.08	50.10	197
26	3.72	1.62	6.86	1.27	1.79	2.47	3.42	7.30	5.50	4.27	1.63	3.86	43.71	197
27	10.02	1.32	3.07	3.53	3.64	3.43	4.12	5.11	4.06	.06	3.54	1.88	43.78	197
28	3.59	7.74	3.09	6.49	8.94	1.54	7.85	2.21	6.13	1.35	3.95	2.17	55.05	197
29	5.12	3.48	10.96	1.69	3.49	2.99	.90	2.03	5.86	2.14	2.50	1.91	43.07	198
30	.89	5.02	4.72	2.07	6.90	4.29	3.97	5.79	.54	2.81	1.00	9.55	47.55	198
31	3.94	4.45	2.50	5.68	2.72	4.27	11.48	5.00	4.62	3.87	2.40	4.83	55.76	198
32	3.77	7.21	6.77	5.77	1.67	6.57	4.85	6.32	3.56	1.92	5.38	4.15	57.94	198
MEAN	4.21	4.40	5.13	3.58	4.17	4.42	4.92	4.65	4.01	2.45	2.43	3.73	48.10	
STD	2.17	2.05	2.17	1.74	2.10	1.88	2.64	2.36	2.01	2.39	1.47	1.84	8.67	
MAX	10.02	7.94	10.96	8.20	10.90	10.89	11.48	12.34	8.71	10.86	6.46	9.55	73.47	
MIN	.89	.94	1.49	.57	1.33	1.54	.90	1.04	.54	0.00	.21	.46	28.82	

Source: "Technical Summary of Groundwater Quality Protection Program at Savannah River Plant, DPST-83-829, Vol. 1, Dec. 1983, E. I. duPont de Nemours & Co., Savannah River Laboratory

TABLE 2-10

Monthly Precipitation - Vogtle Electric Generating Plant

12/72 - 12/83

	1972	1973	1977	1978	1979	1980	1981	1982	1983
January	-	3.77	-	4.16	1.30	0.59	0.00	1.74	1.60
February	-	5.71	-	.32	6.77	0.59	0.00	2.19	3.94
March	-	5.18+	-	7.55	1.01	7.78	1.28	0.14	3.66
April	-	ND	.63+	1.77	ND	1.51	1.38	2.68*	3.58
May	-	1.11	.54	3.43	6.10	2.42	1.47	ND	0.33
June	-	5.58	2.40	.97+	0.00	0.00	3.68*	1.48++	3.10
July	-	.50	.77	2.86*	5.87	0.00	ND	1.71	0.35
August	-	2.82	4.10	.17+	3.95	0.00	2.28	1.91	1.96
September	-	1.37	1.90	0.00	4.31	3.30	0.00	0.31	5.04
October	-	.66	1.64	0.00	0.06	0.00	3.93	0.88	1.19
November	-	.19+	.70	1.68	6.08	.46	0.00	1.01	1.43
December	4.74	0.00	2.12	1.20+	0.00*	0.00	6.23	1.37*	2.67
Total	4.74	26.89	14.80	24.11	35.45	16.65	20.25	15.42	28.85

- = No Data Collection

+ = 5-10% Bad Data

* = 10-20% Bad Data

++ = 20-40% Bad Data

ND = <40% Bad Data

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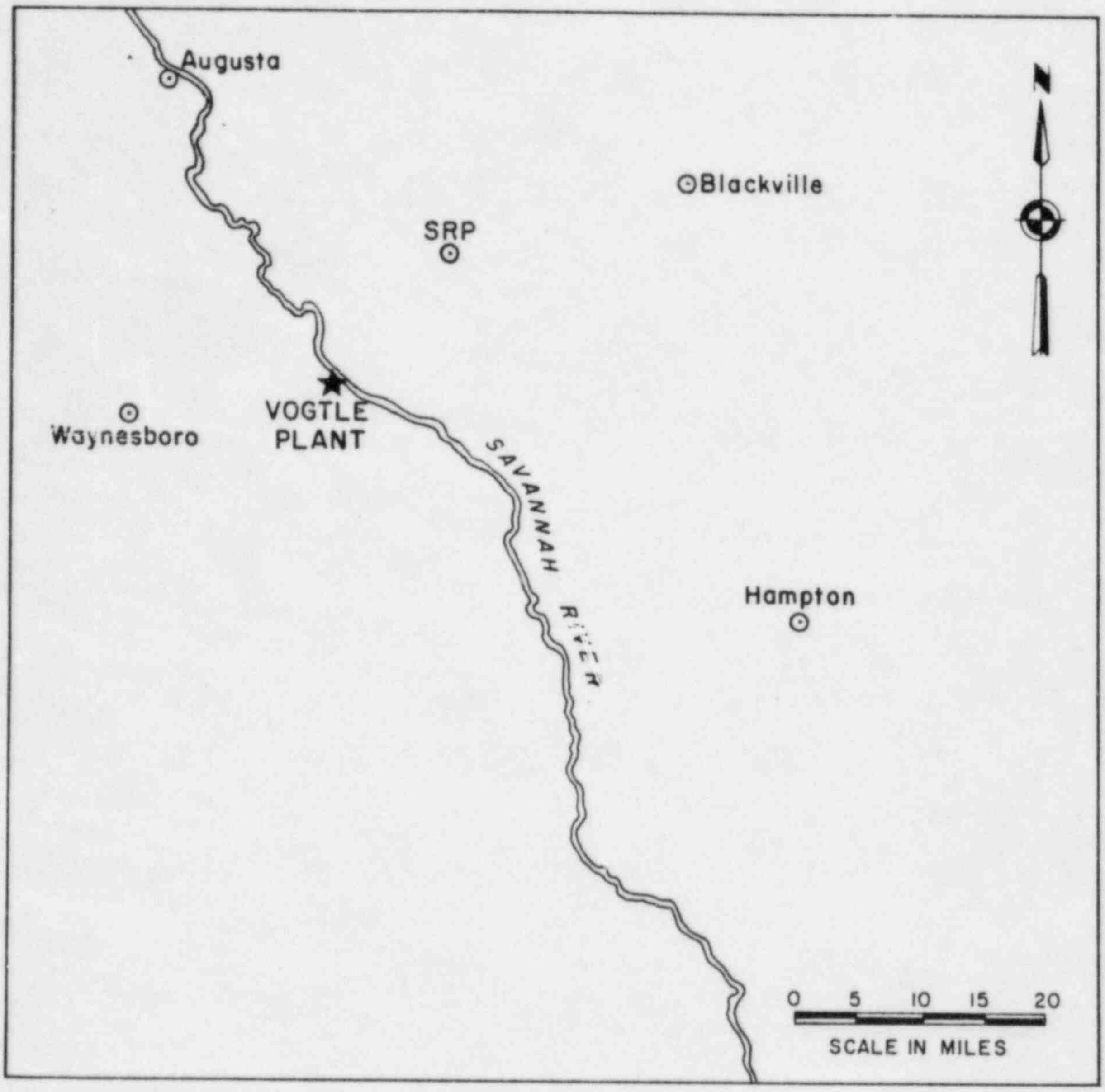
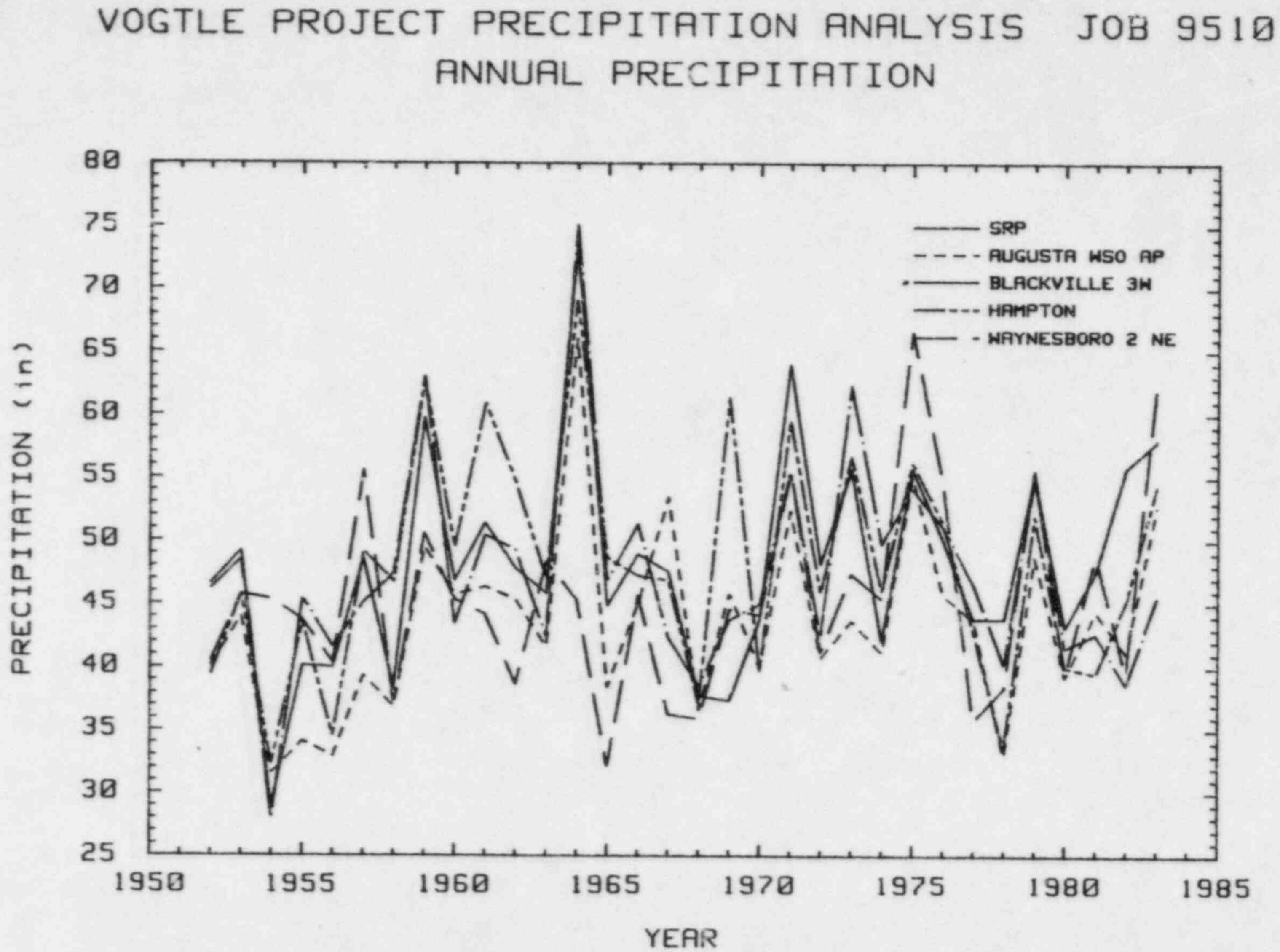


BECHTEL
SAN FRANCISCO

GEORGIA POWER COMPANY
ALVIN W. VOGTLE NUCLEAR PLANT

PRECIPITATION STATIONS

JOB No.	DRAWING No.	REV.
9510-091	FIGURE 2-3	



VOGTLE PROJECT PRECIPITATION ANALYSIS JOB 9510
ANNUAL PRECIPITATION
PRECIPITATION (in)
YEAR
SRP
AUGUSTA WSO AP
BLACKVILLE 3W
HAMPTON
WAYNESBORO 2 NE
80
75
70
65
60
55
50
45
40
35
30
25
1950
1955
1960
1965
1970
1975
1980
1985

FIGURE 2-4

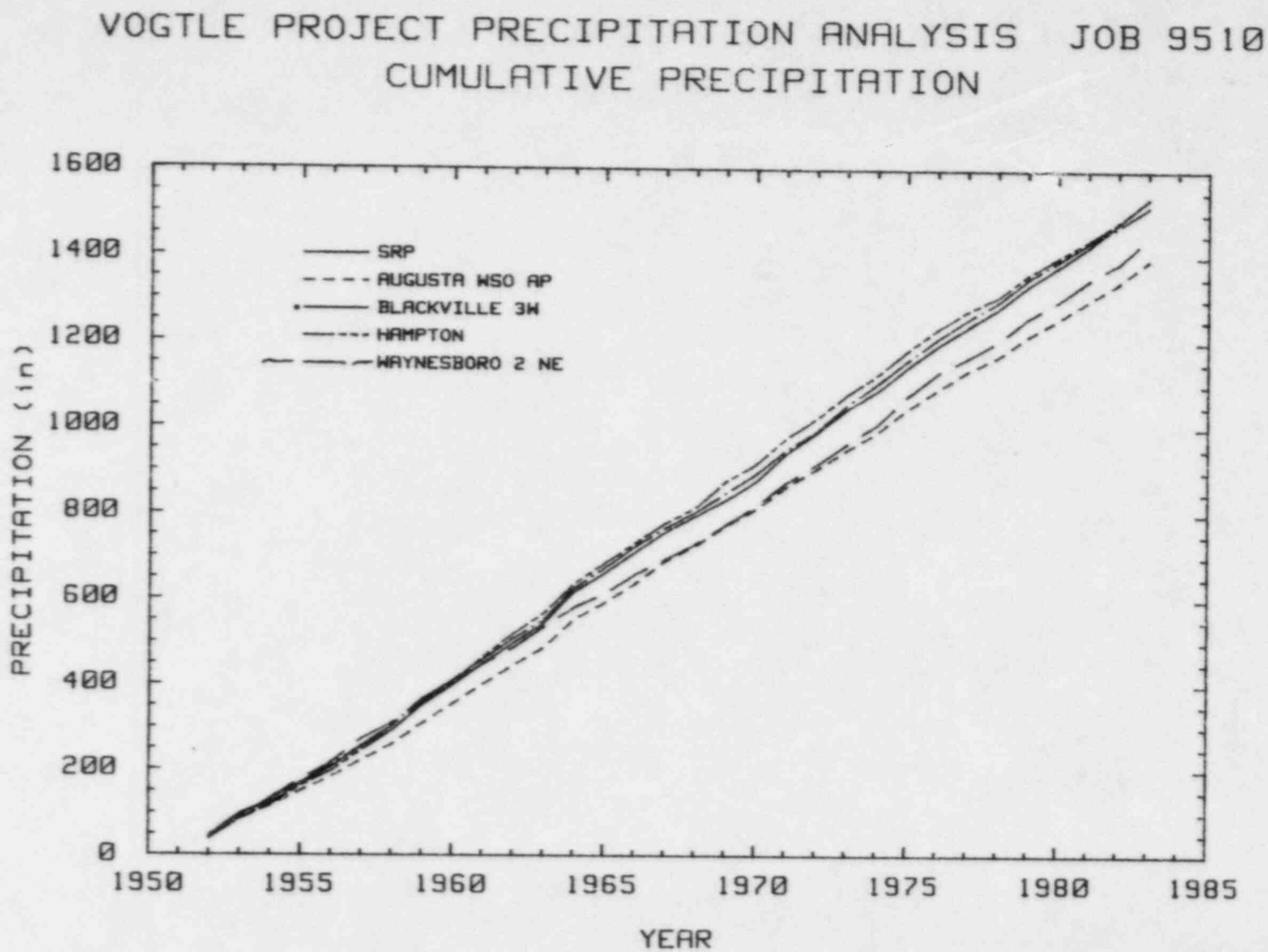
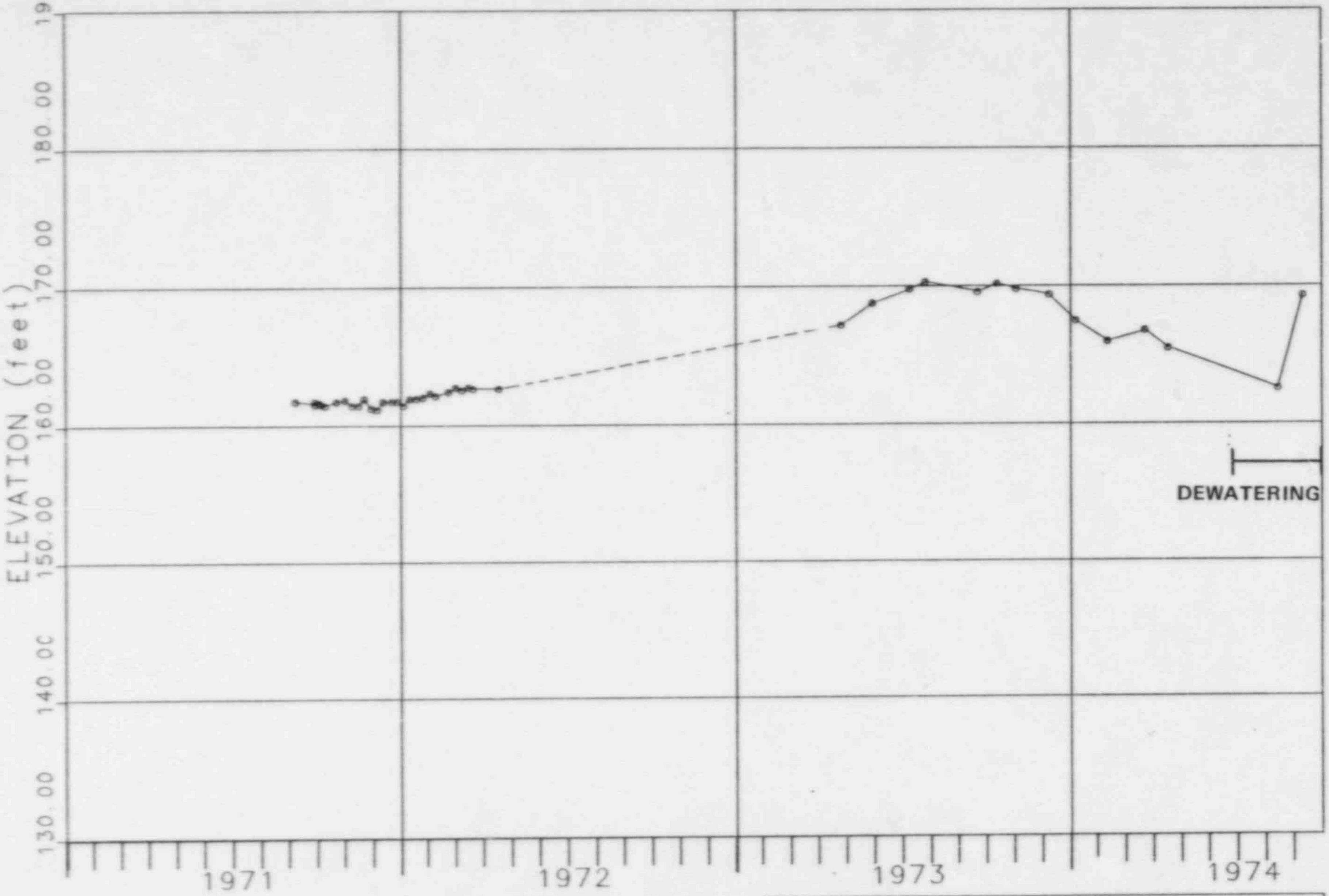

VOGTLE PROJECT PRECIPITATION ANALYSIS JOB 9510
CUMULATIVE PRECIPITATION
SRP
AUGUSTA WSO AP
BLACKVILLE 3W
HAMPTON
WAYNESBORO 2 NE
PRECIPITATION (in)
0
200
400
600
800
1000
1200
1400
1600
YEAR
1950
1955
1960
1965
1970
1975
1980
1985

FIGURE 2- 5

HYDROGRAPHS OF OBSERVATION WELLS



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VOGTLE HYDROGRAPHS

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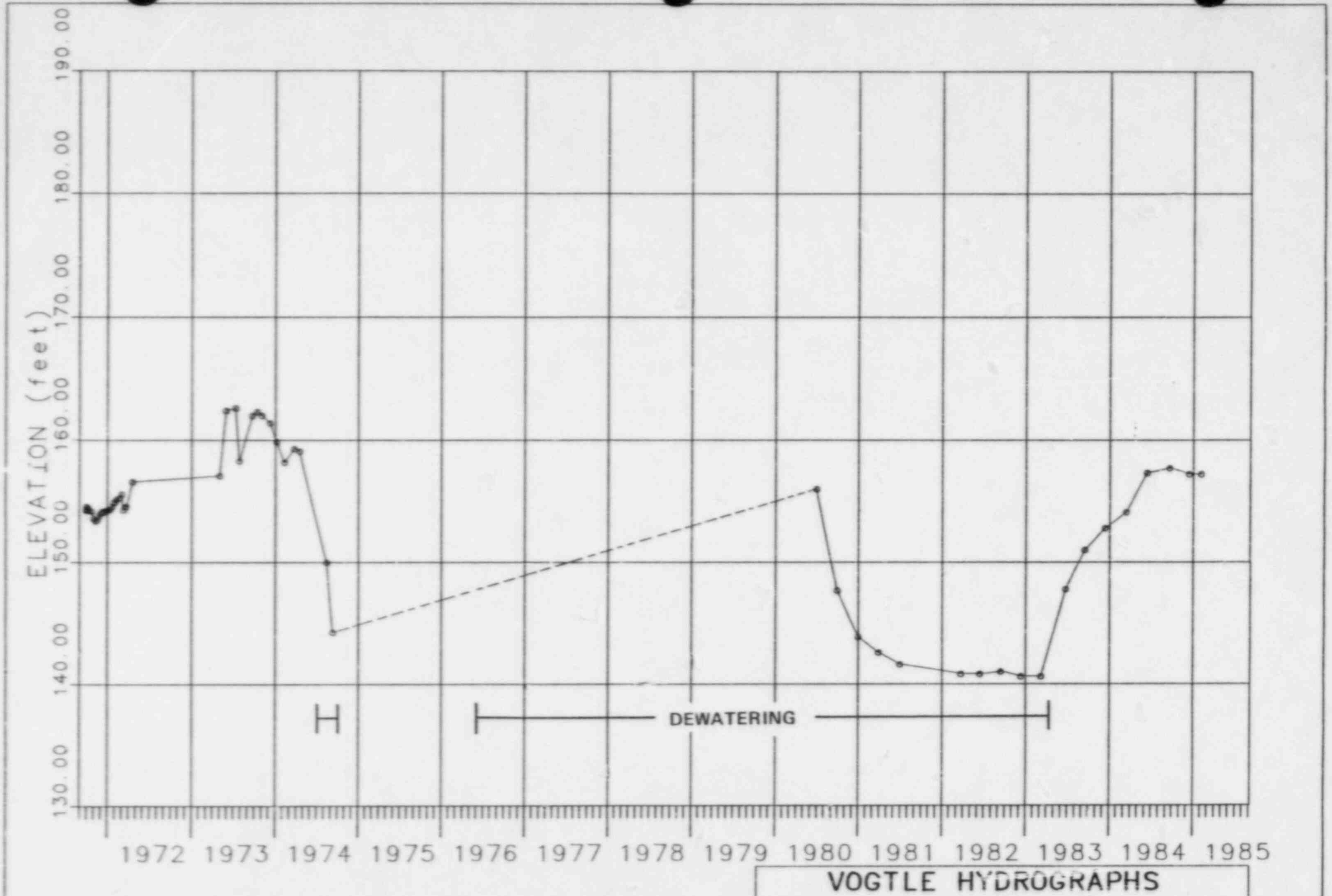

VOGTLE HYDROGRAPHS

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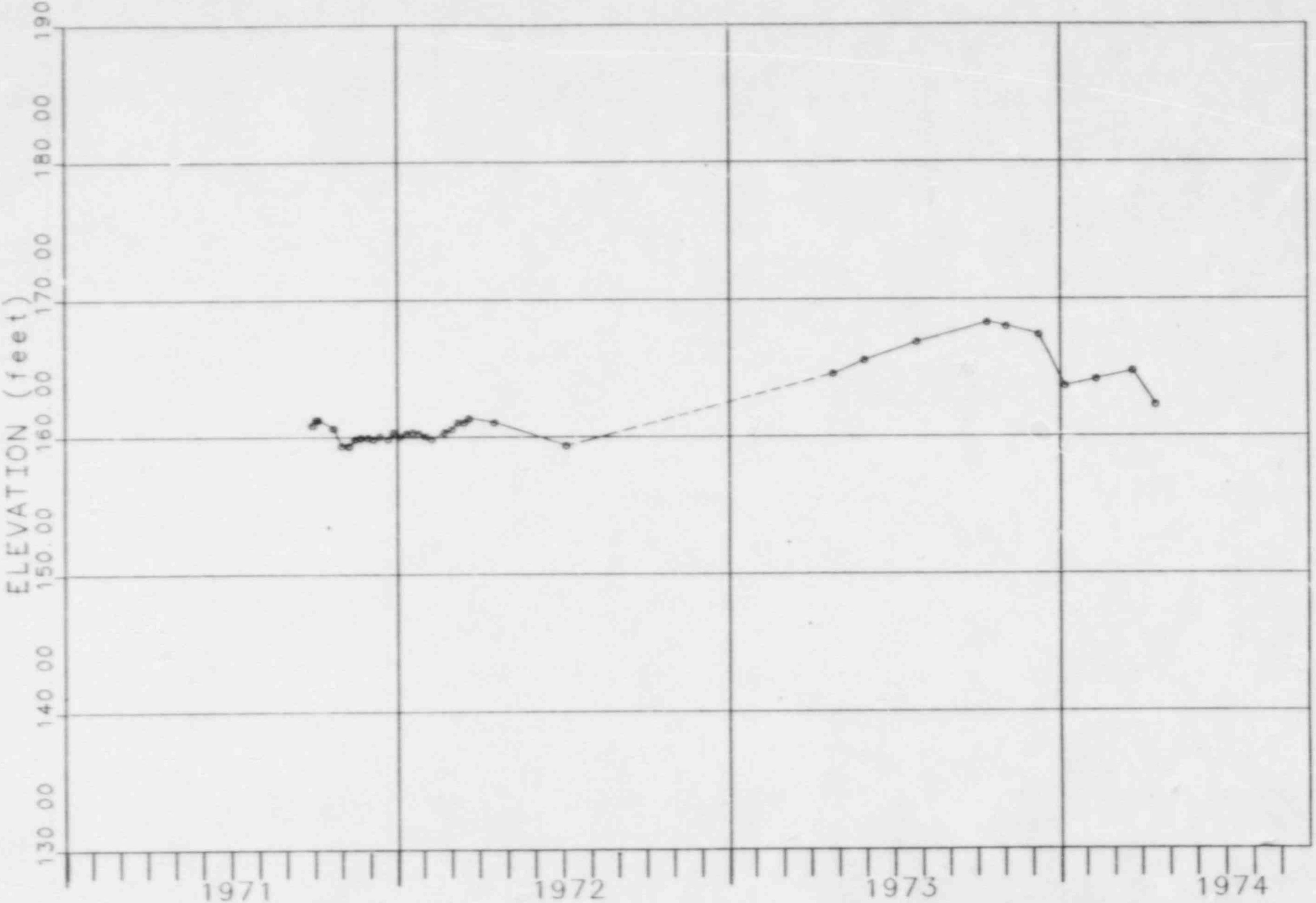

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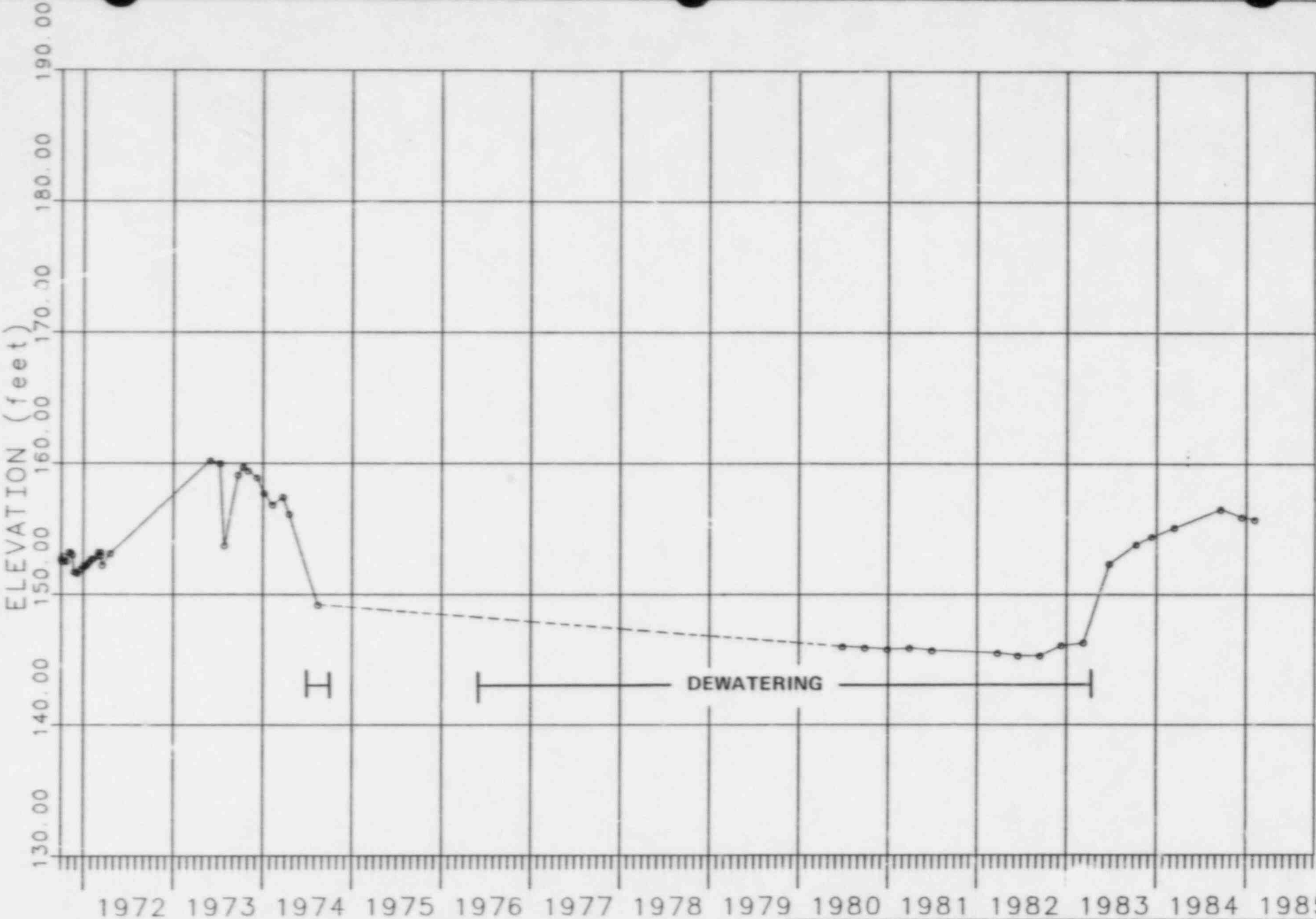

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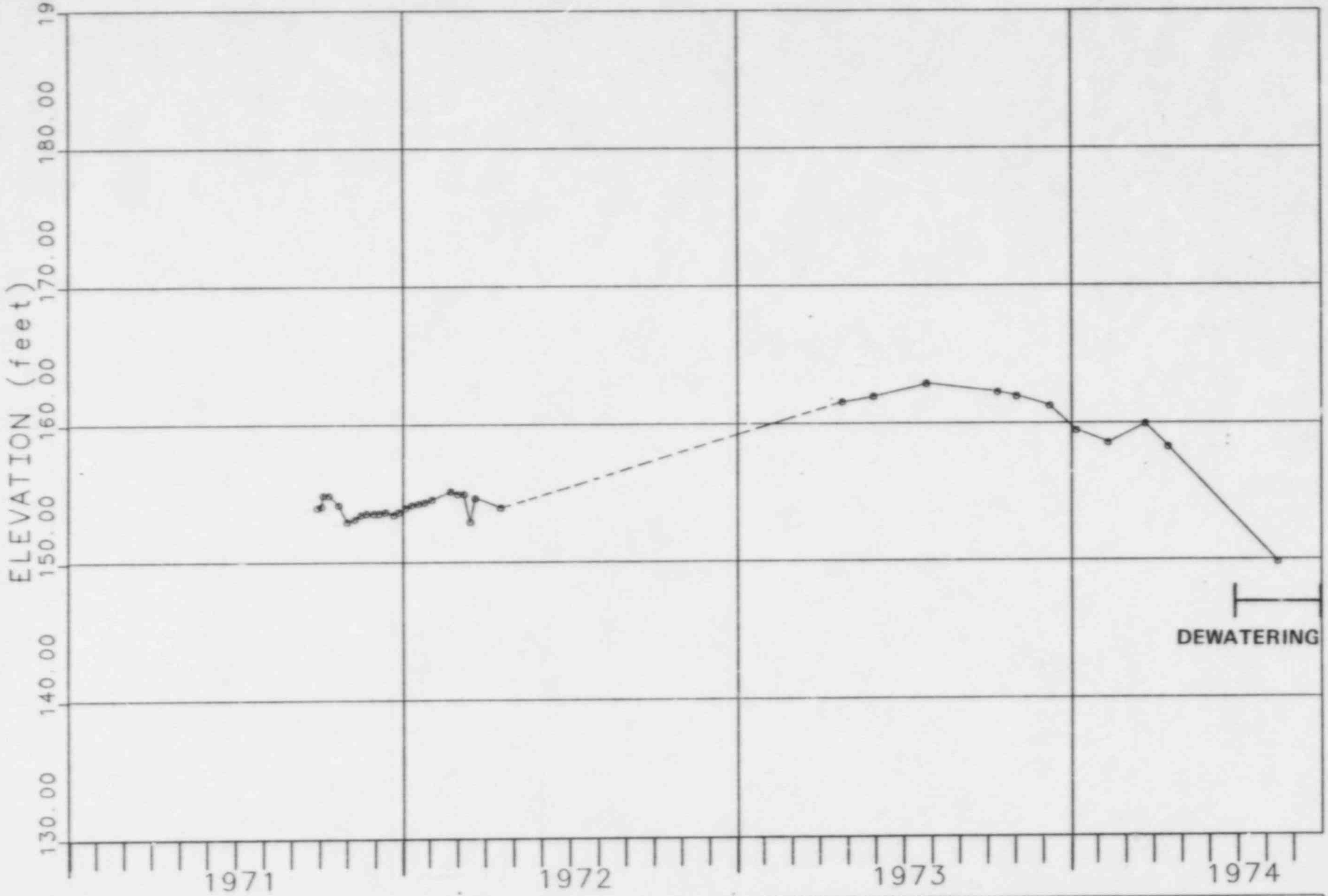

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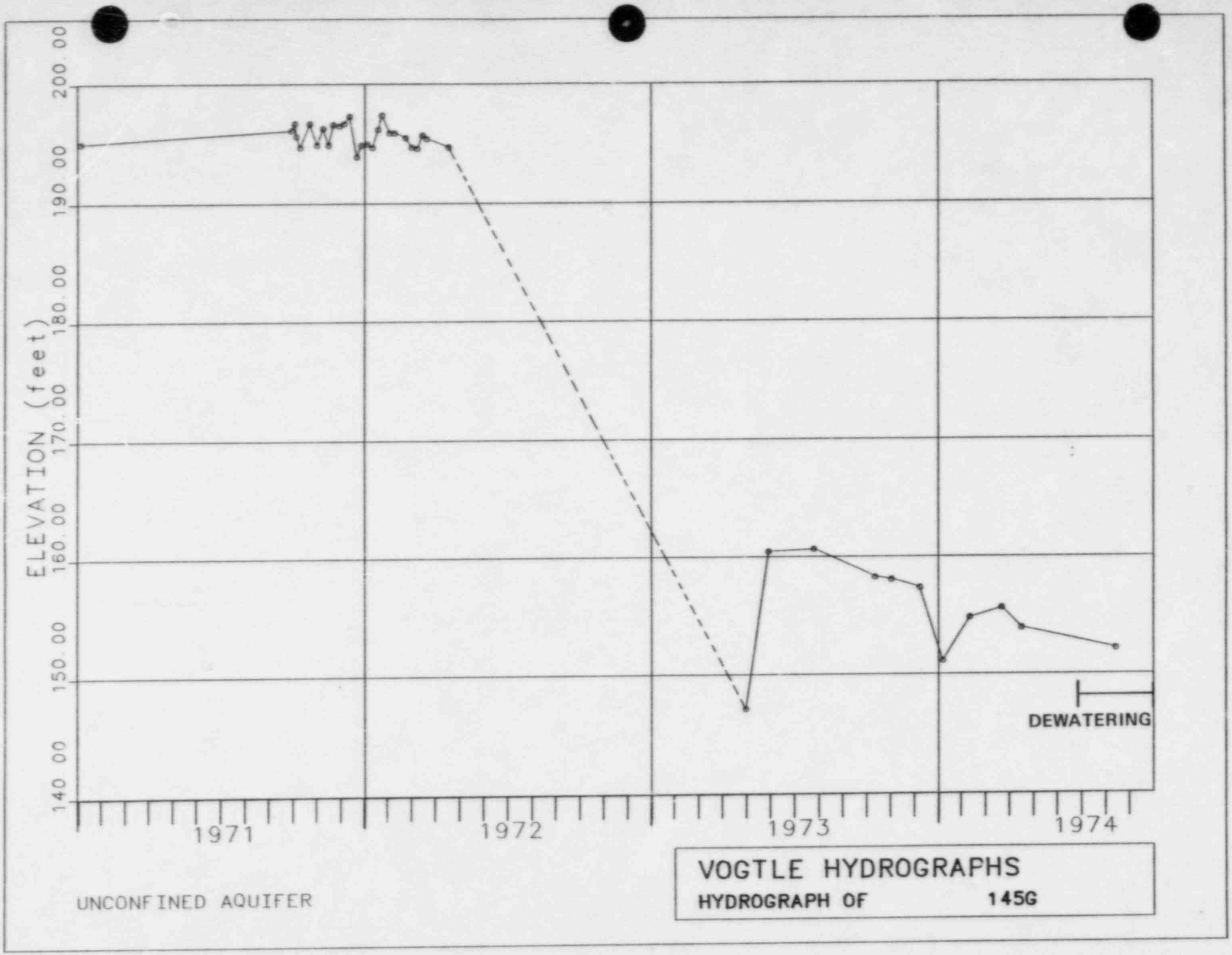
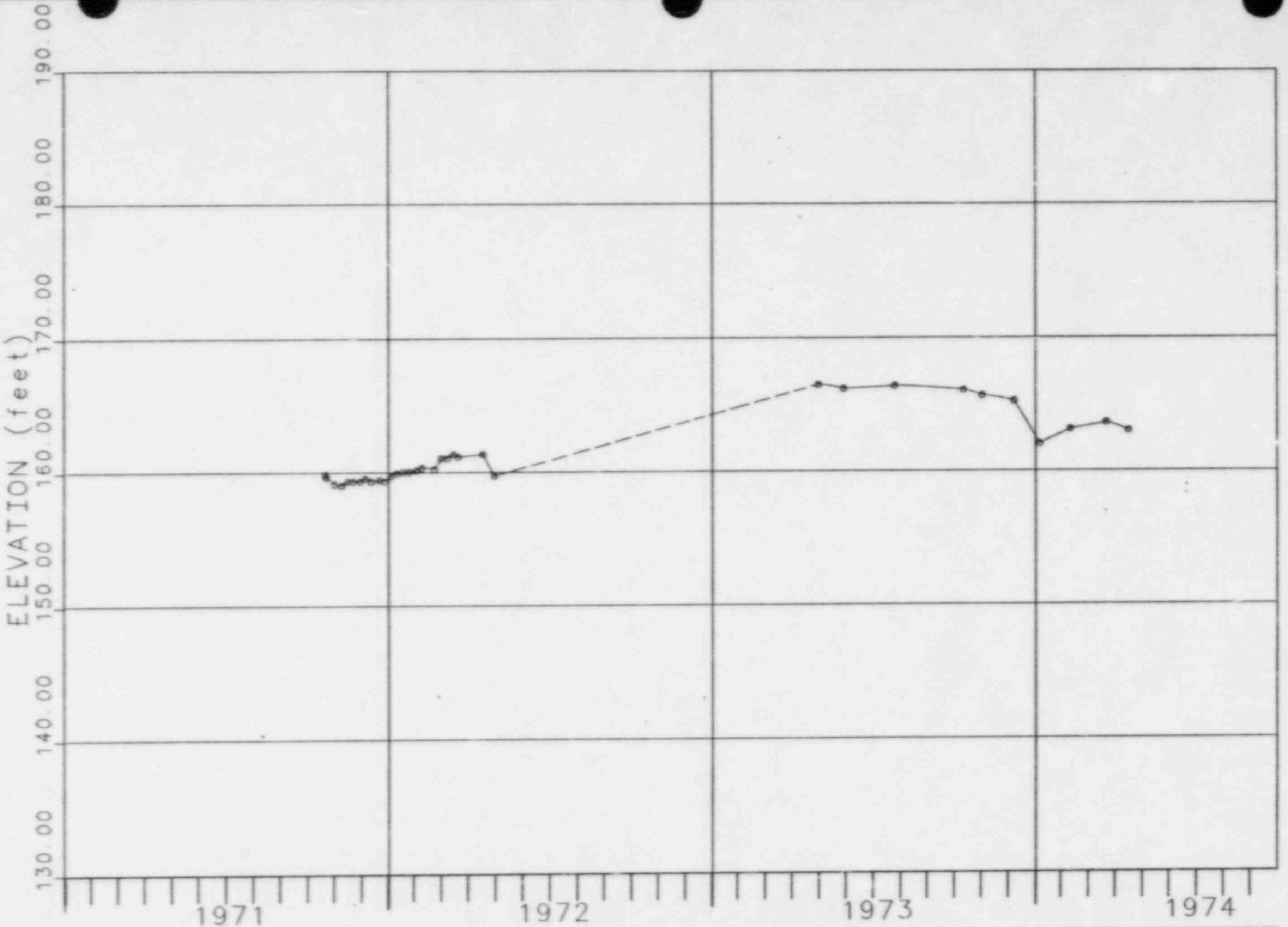


ELEVATION (feet)
200.00
190.00
180.00
170.00
160.00
150.00
140.00
1971
1972
1973
1974
DEWATERING
UNCONFINED AQUIFER
VOGTLE HYDROGRAPHS
HYDROGRAPH OF 145G



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VOGTLE HYDROGRAPHS

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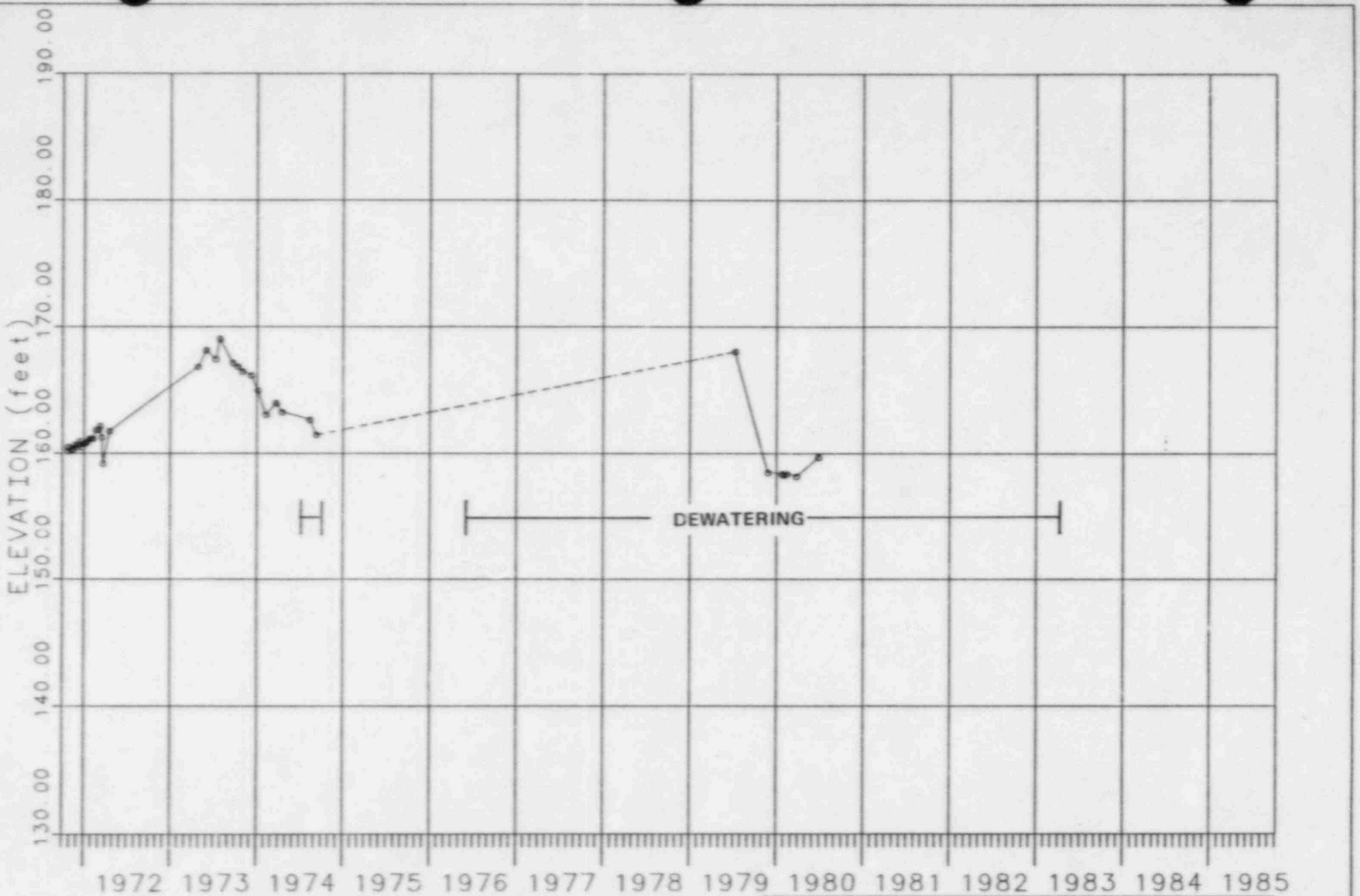

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VOGTLE HYDROGRAPHS

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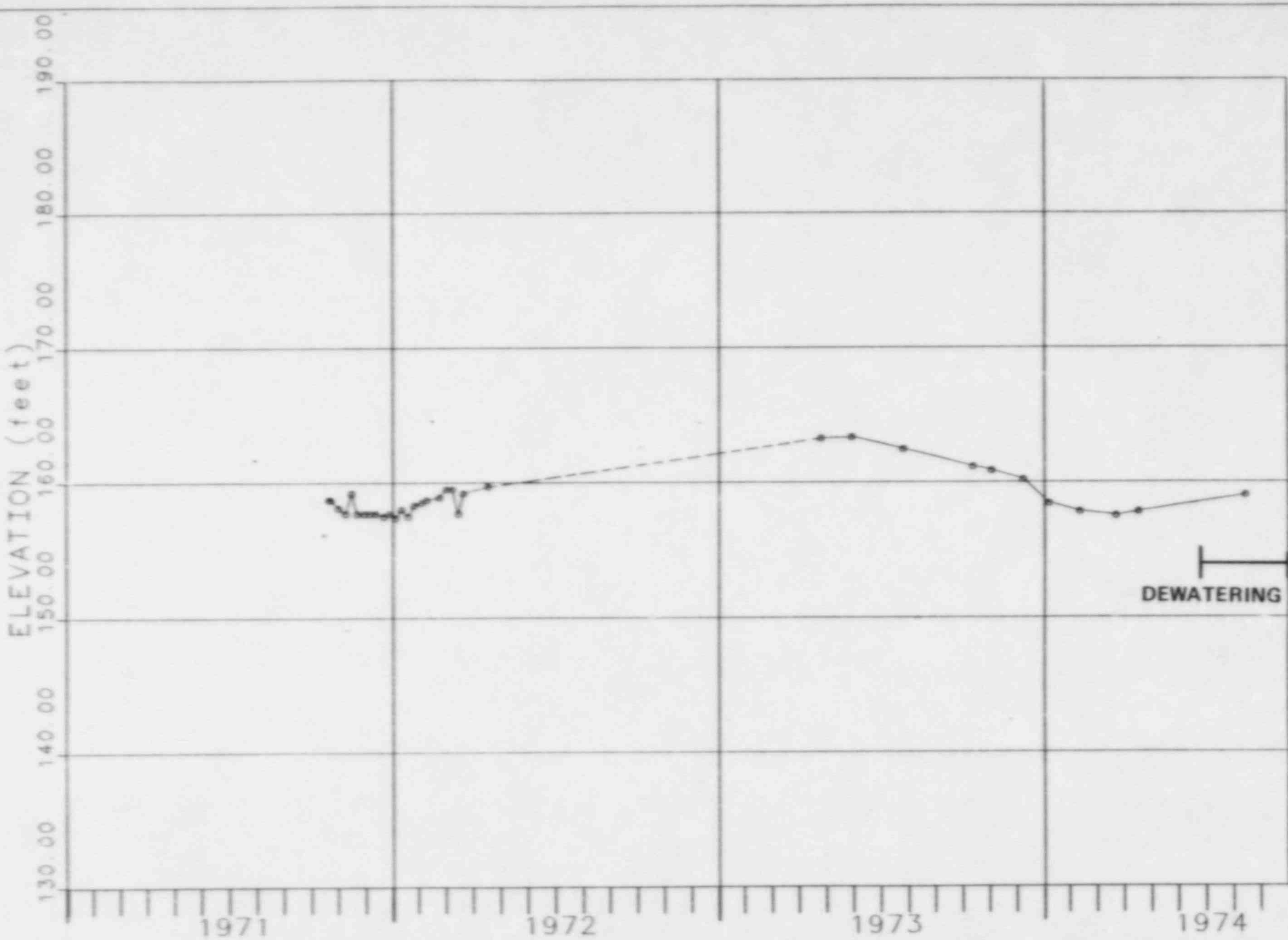

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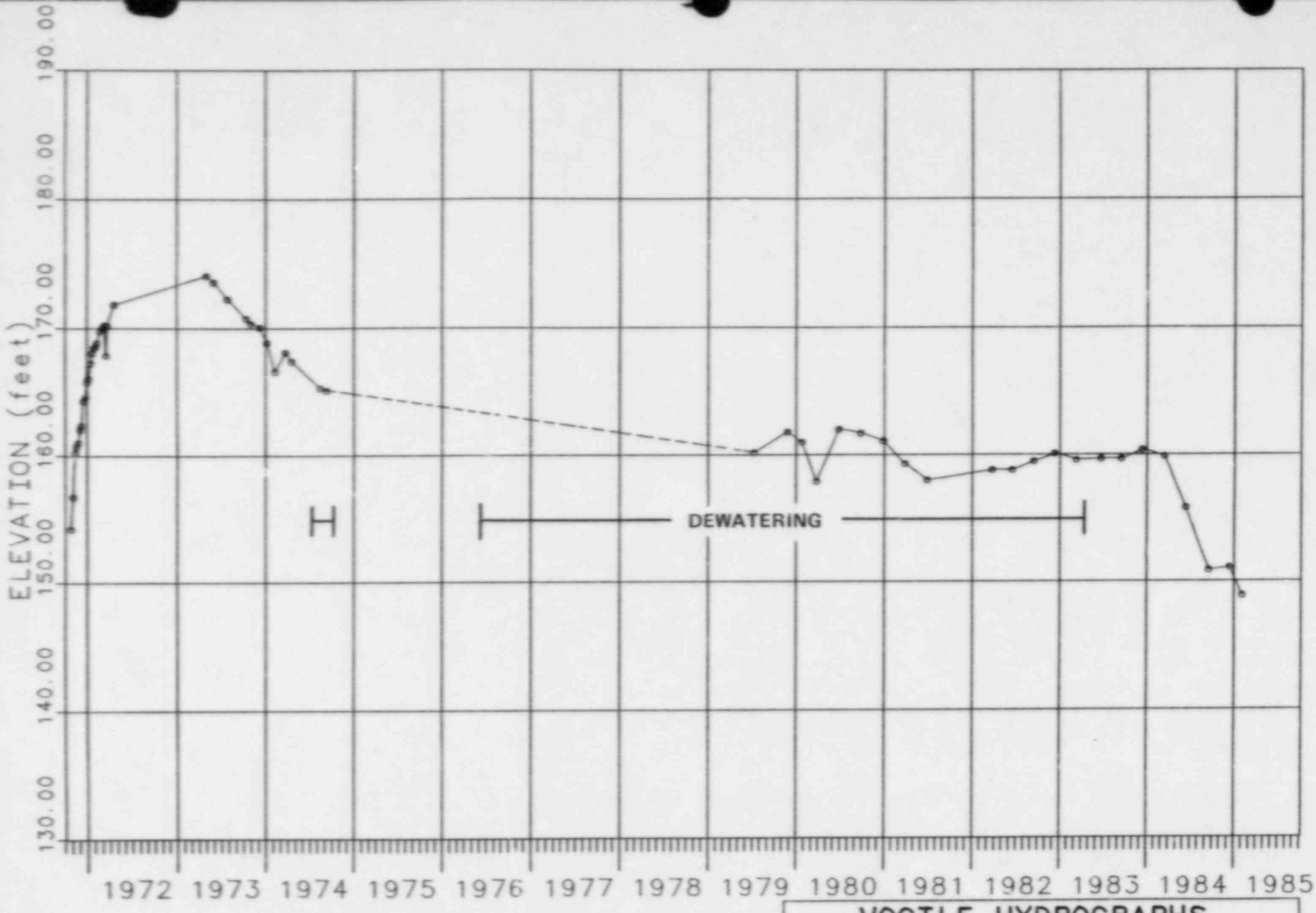

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VOGTLE HYDROGRAPHS

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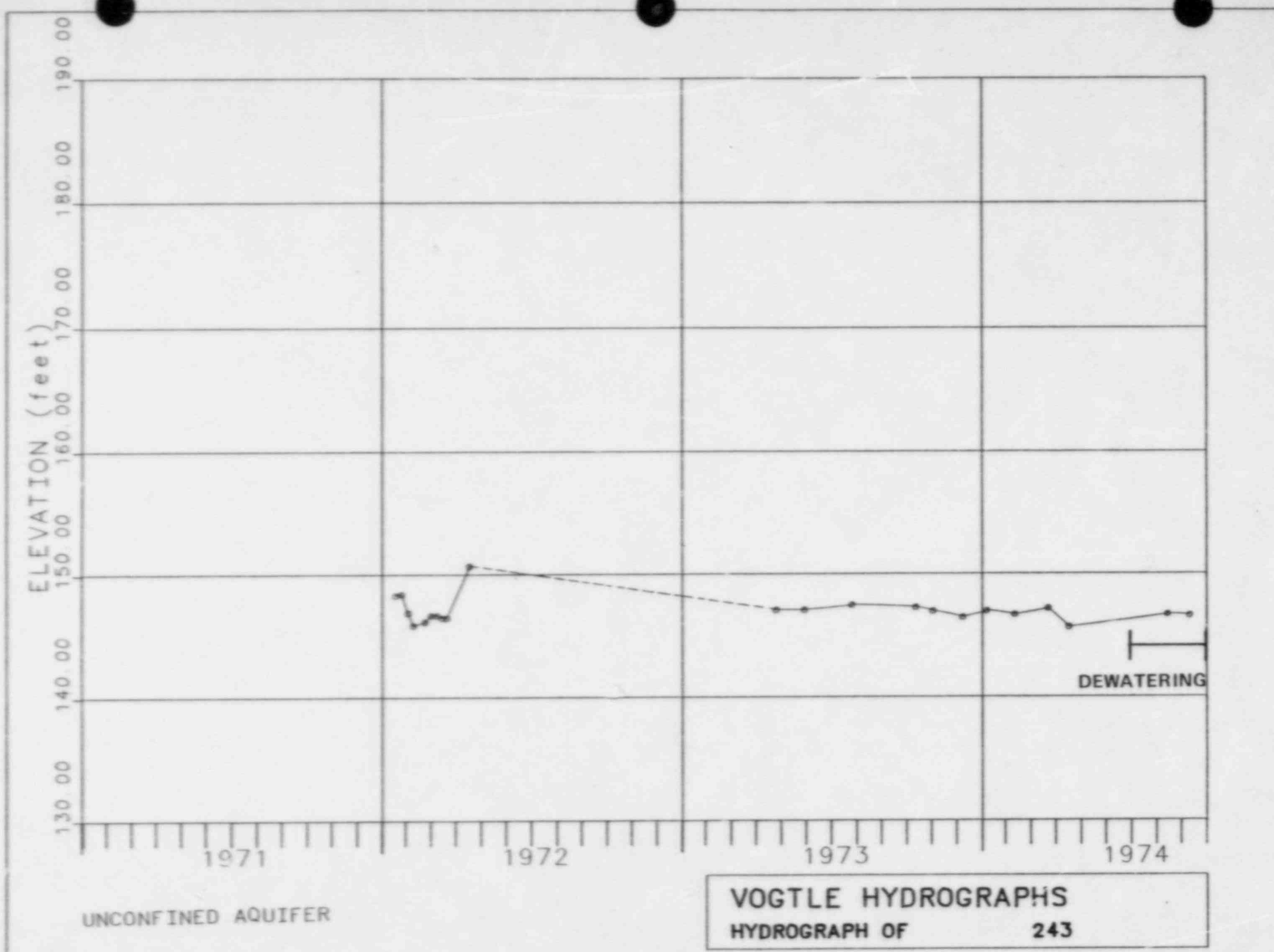
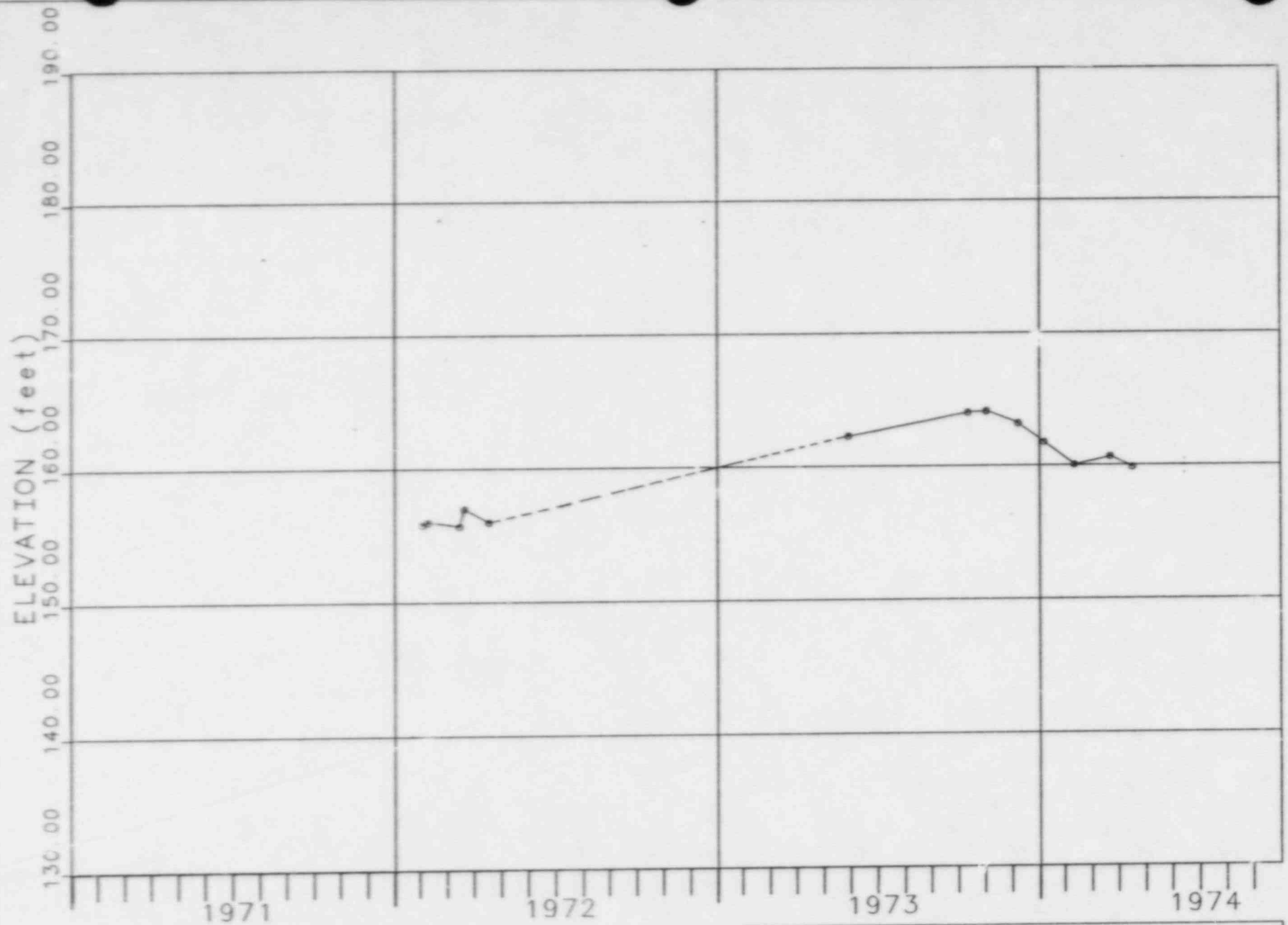


190.00
180.00
170.00
160.00
150.00
140.00
130.00
ELEVATION (feet)
1971
1972
1973
1974
DEWATERING
UNCONFINED AQUIFER
VOGTLE HYDROGRAPHS
HYDROGRAPH OF 243



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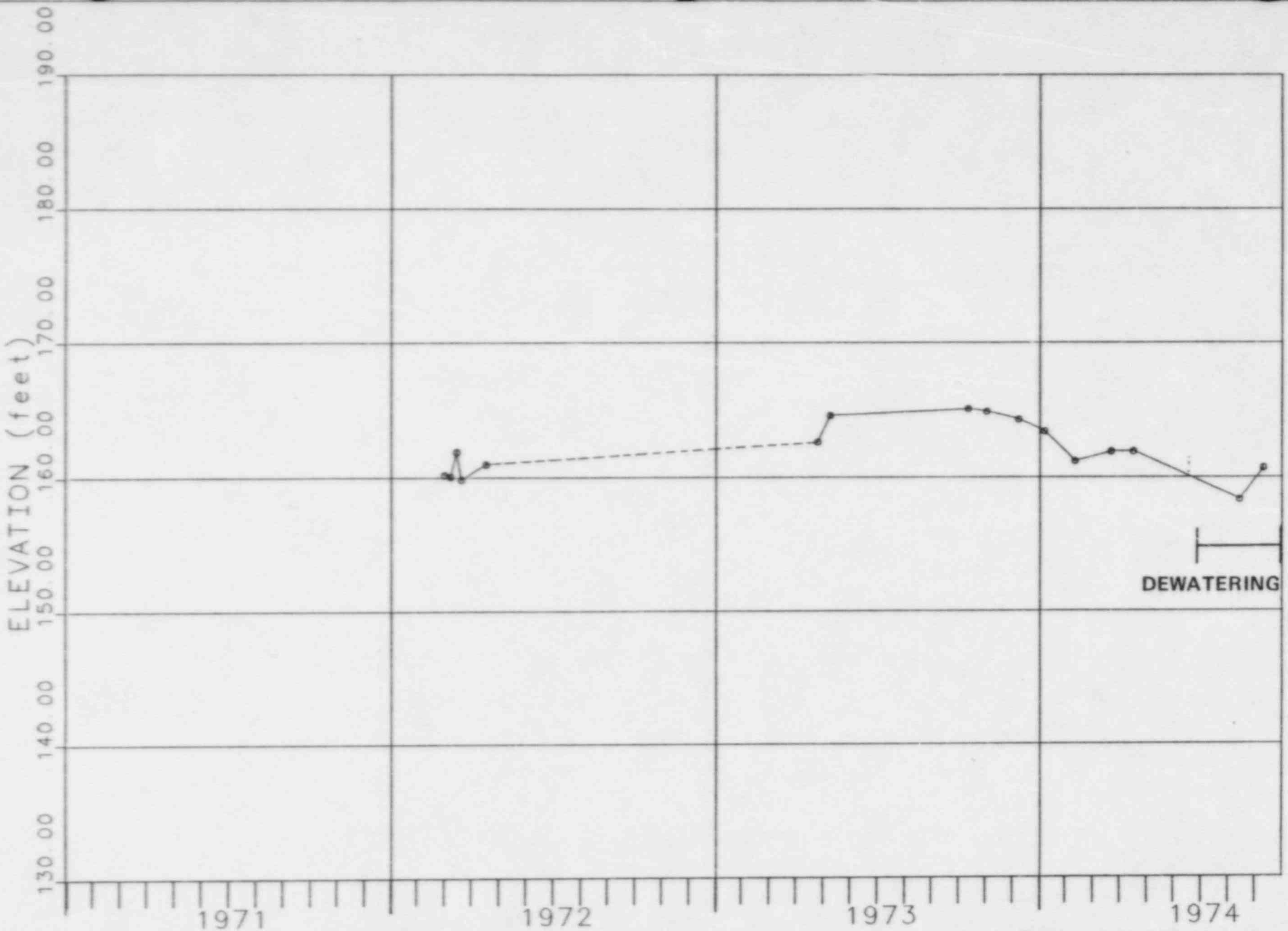
VOGTLE HYDROGRAPHS

HYDROGRAPH OF 245



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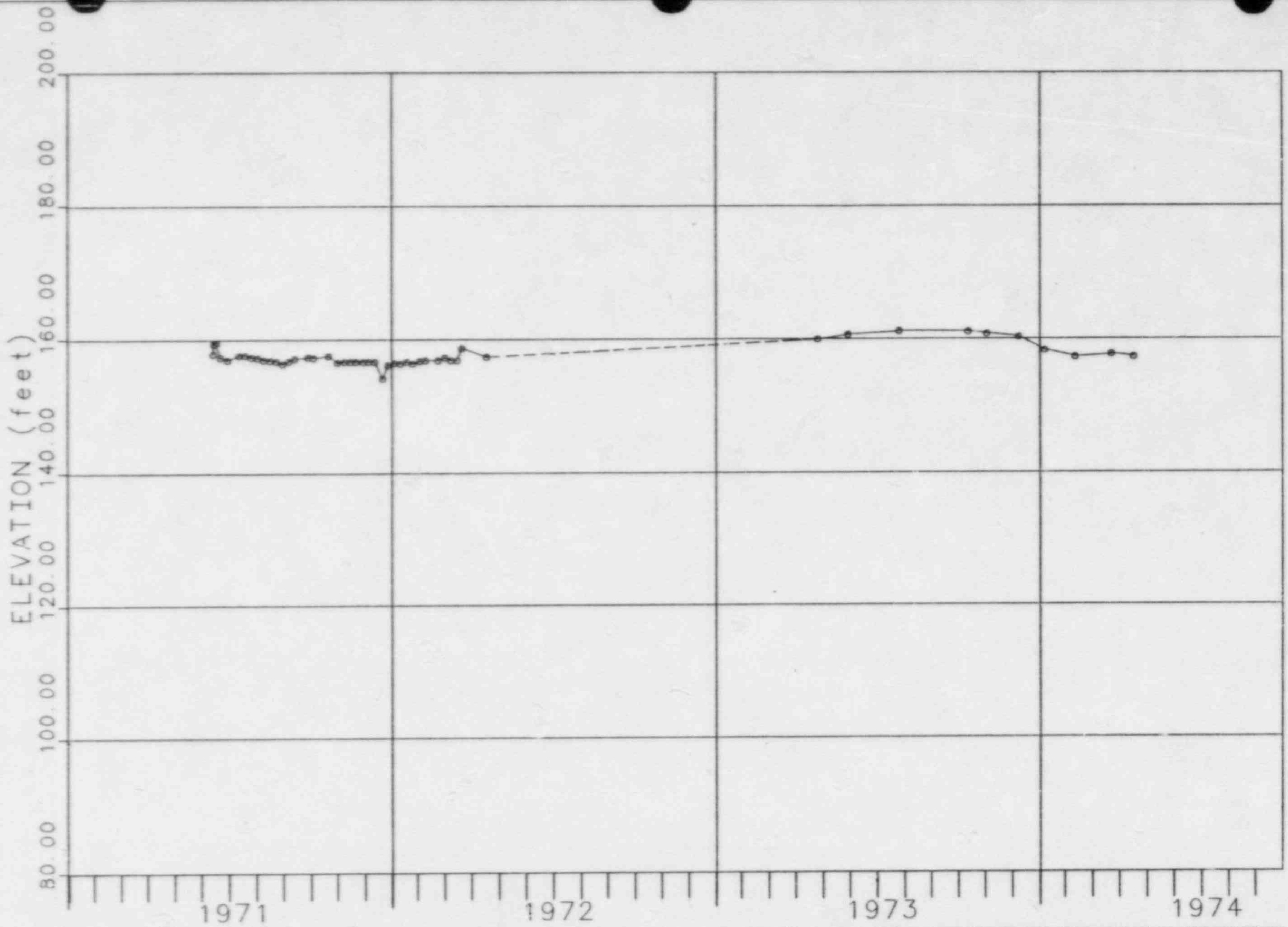
VOGTLE HYDROGRAPHS

HYDROGRAPH OF 249



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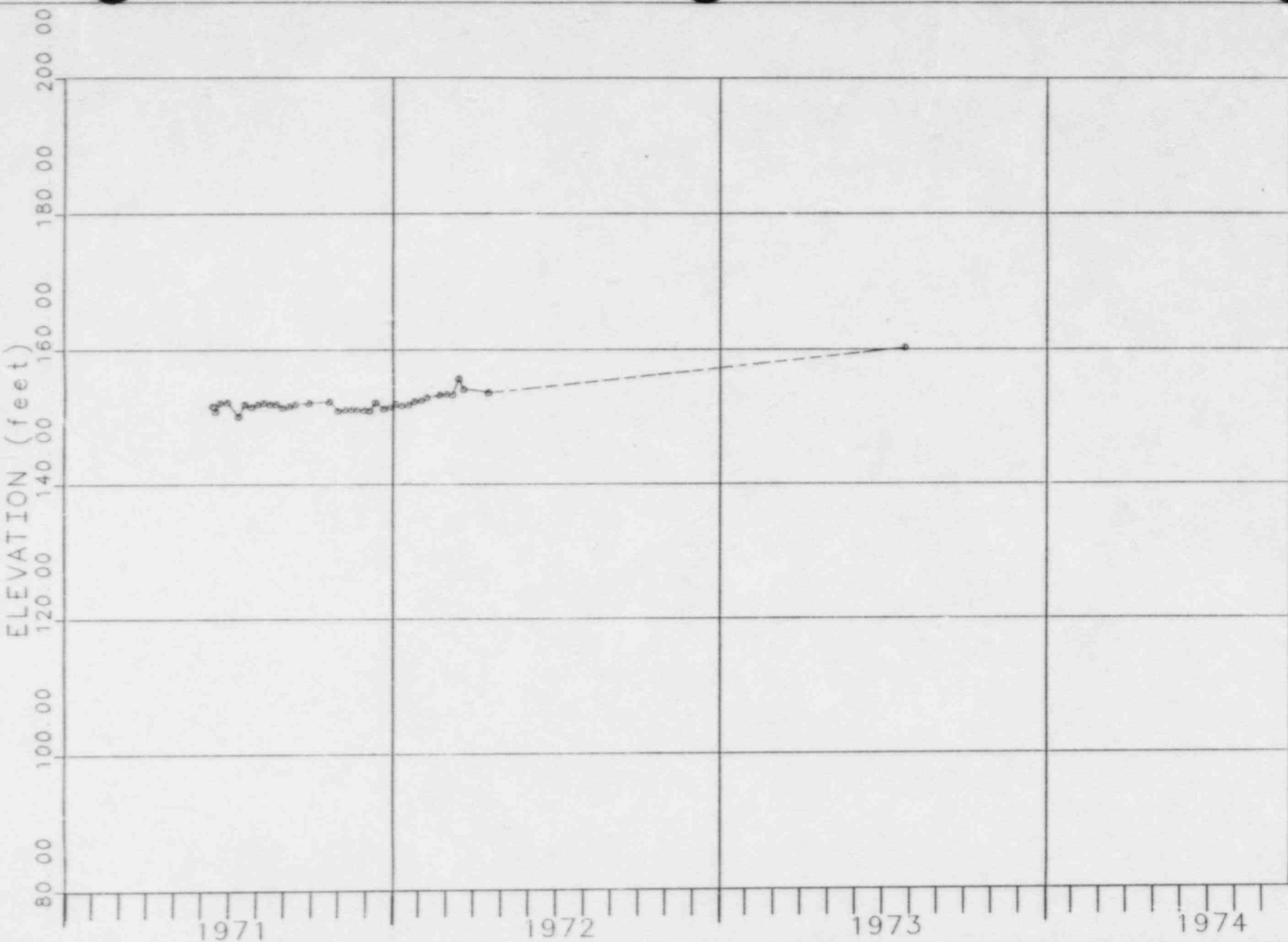
VOGTLE HYDROGRAPHS

HYDROGRAPH OF 42D



MARL AQUICLUDE

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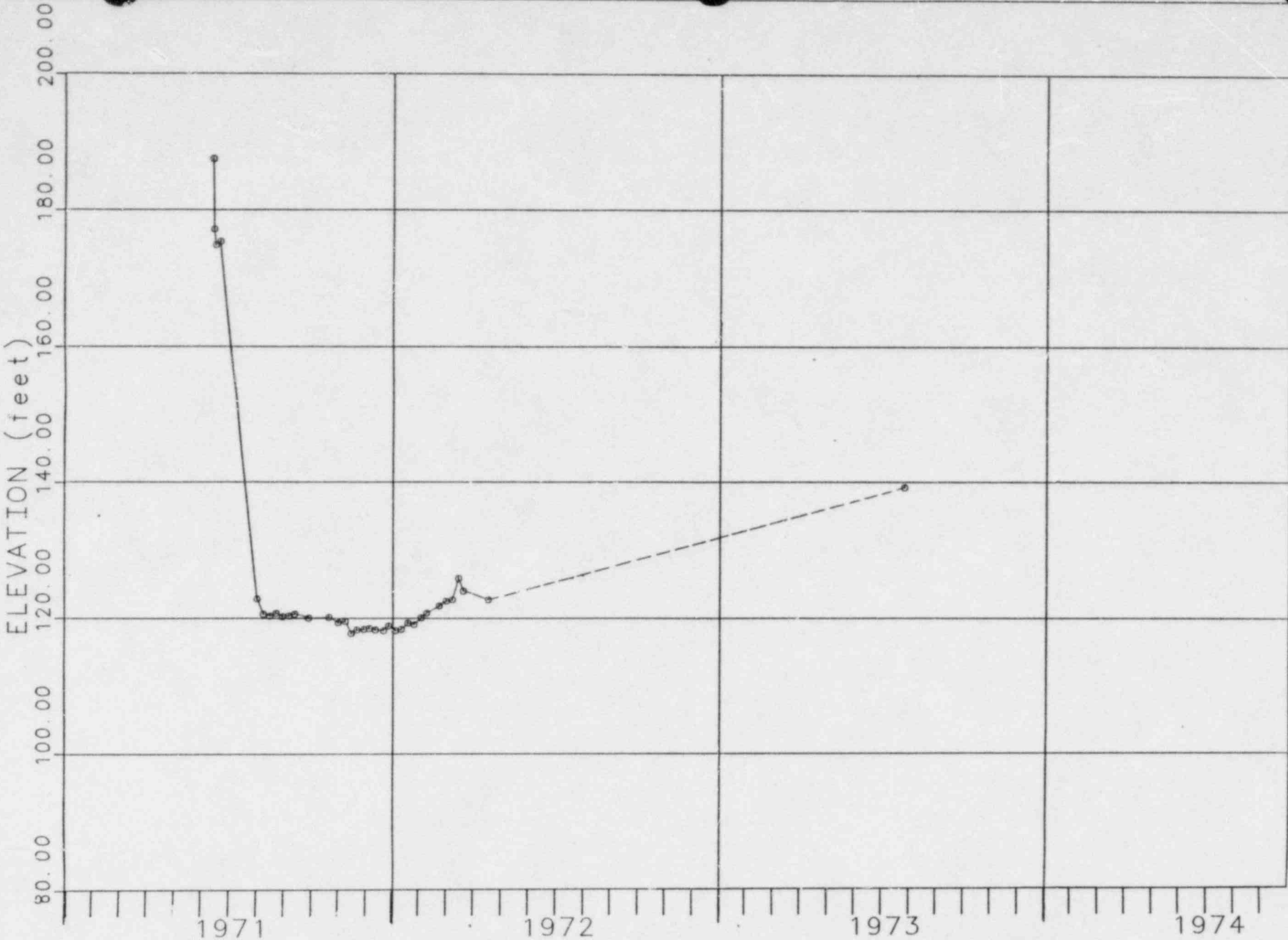

MARL AQUICLUDE

VOGTLE HYDROGRAPHS

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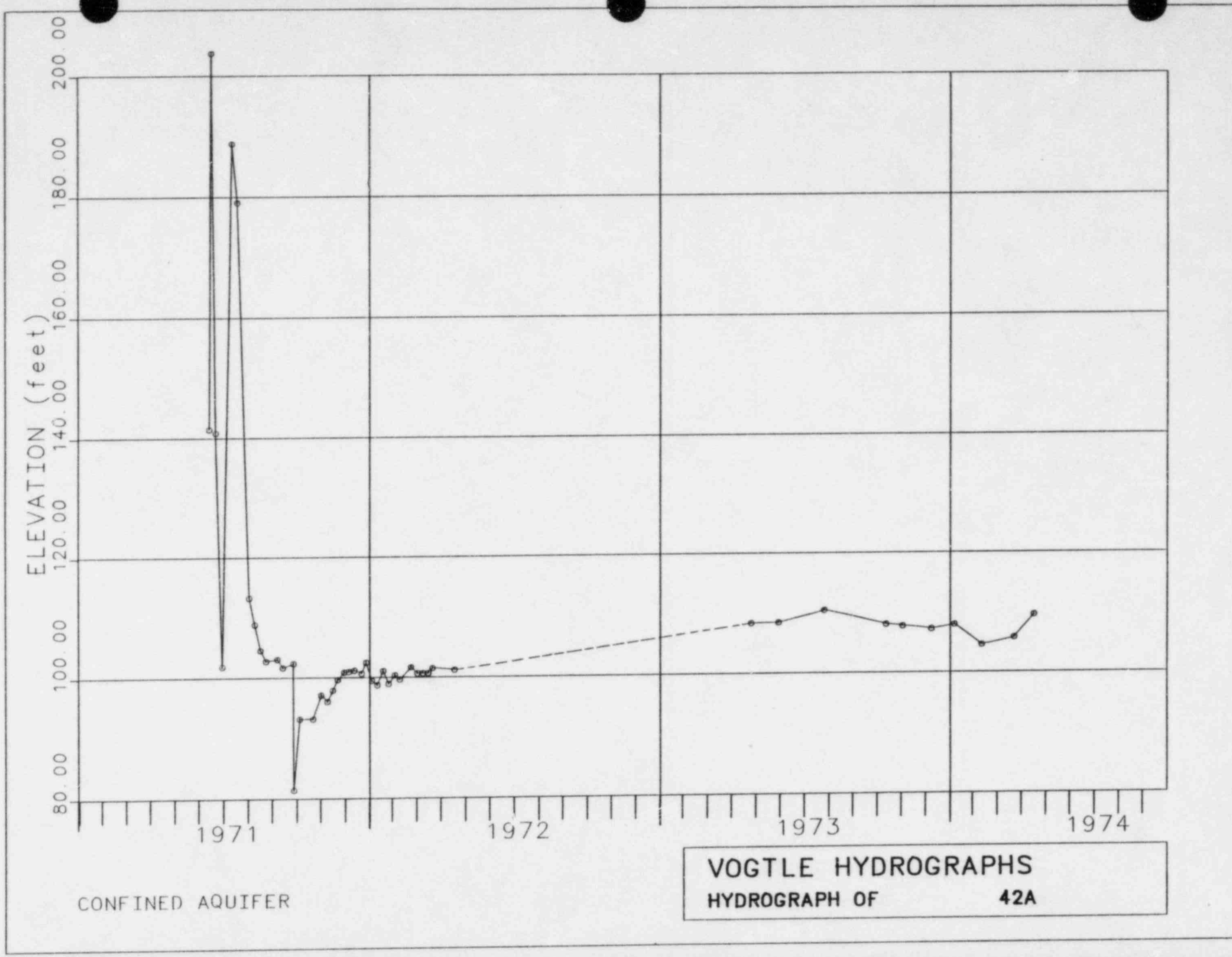
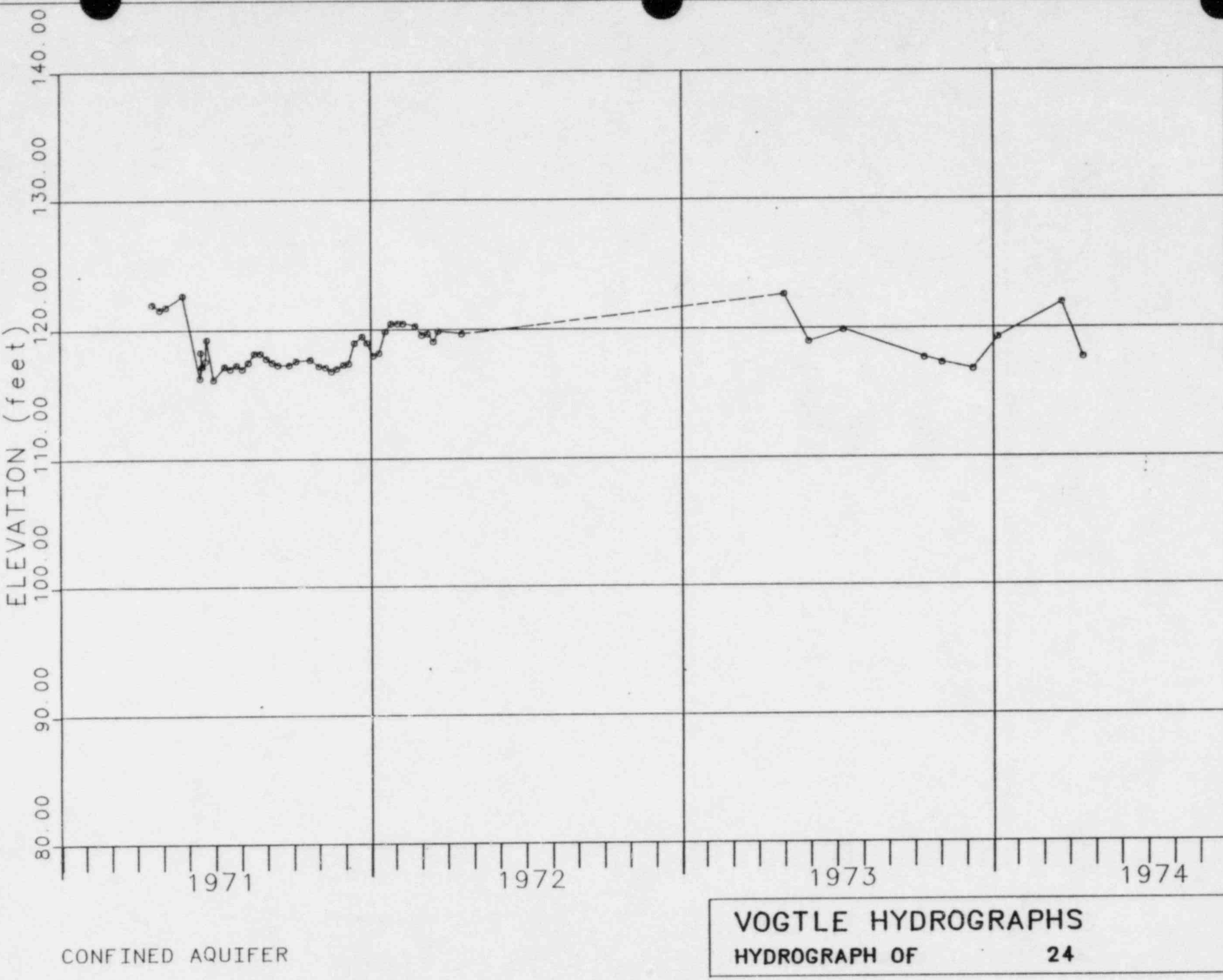
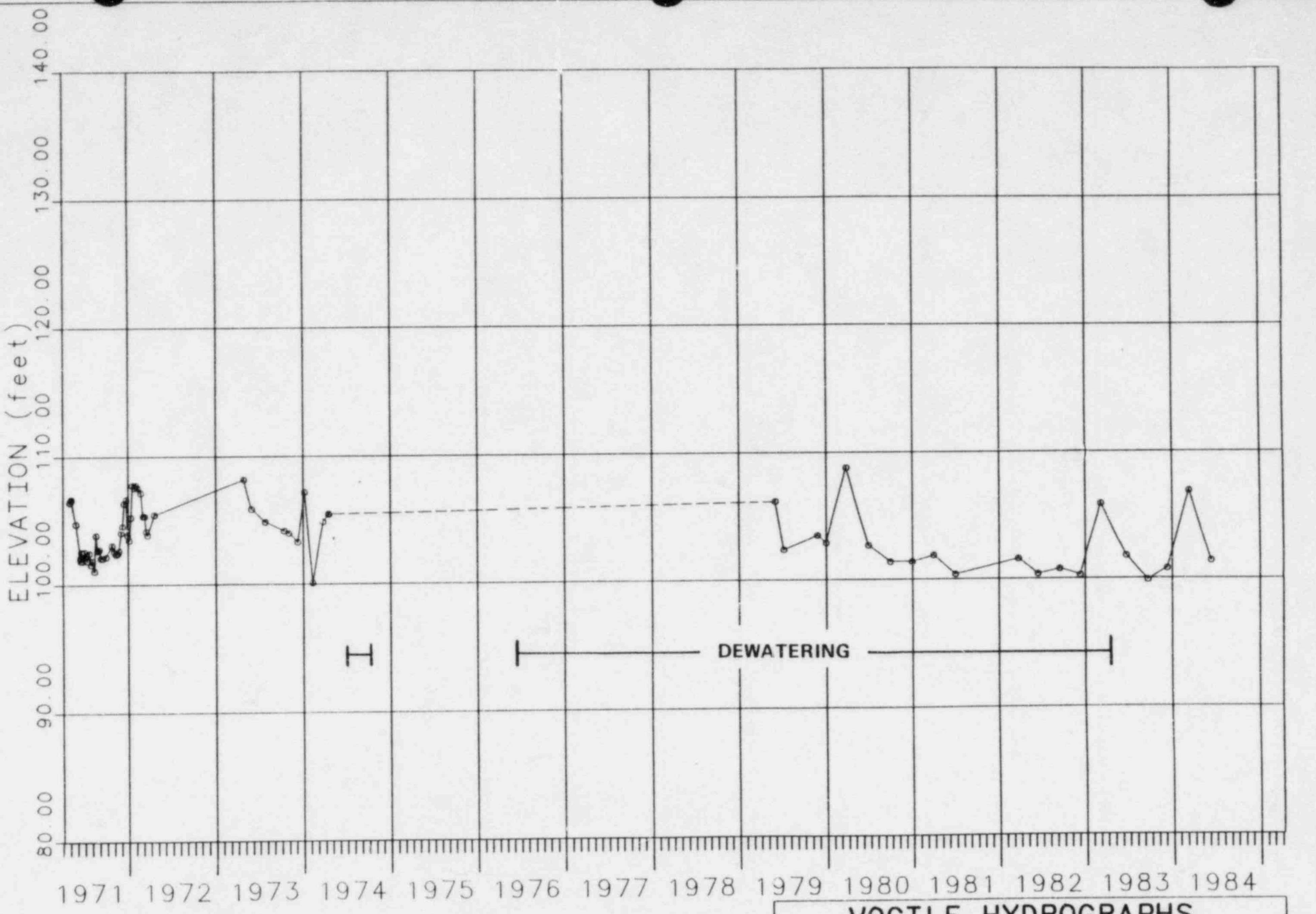

200.00
180.00
160.00
140.00
120.00
100.00
80.00
ELEVATION (feet)
1971
1972
1973
1974
CONFINED AQUIFER
VOGTLE HYDROGRAPHS
HYDROGRAPH OF 42A



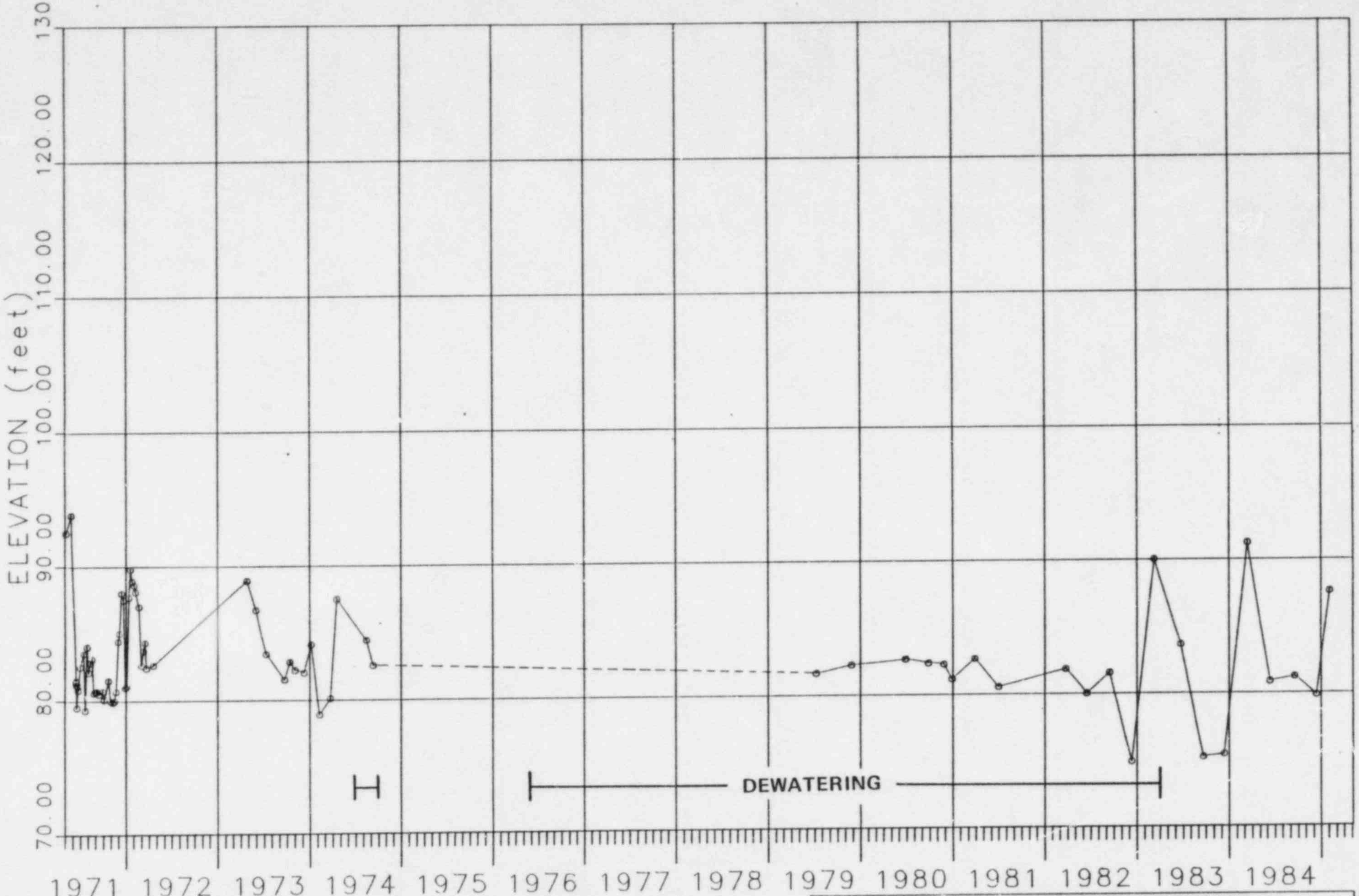
VOGTLE HYDROGRAPHS

HYDROGRAPH OF 24



VOGTLE HYDROGRAPHS

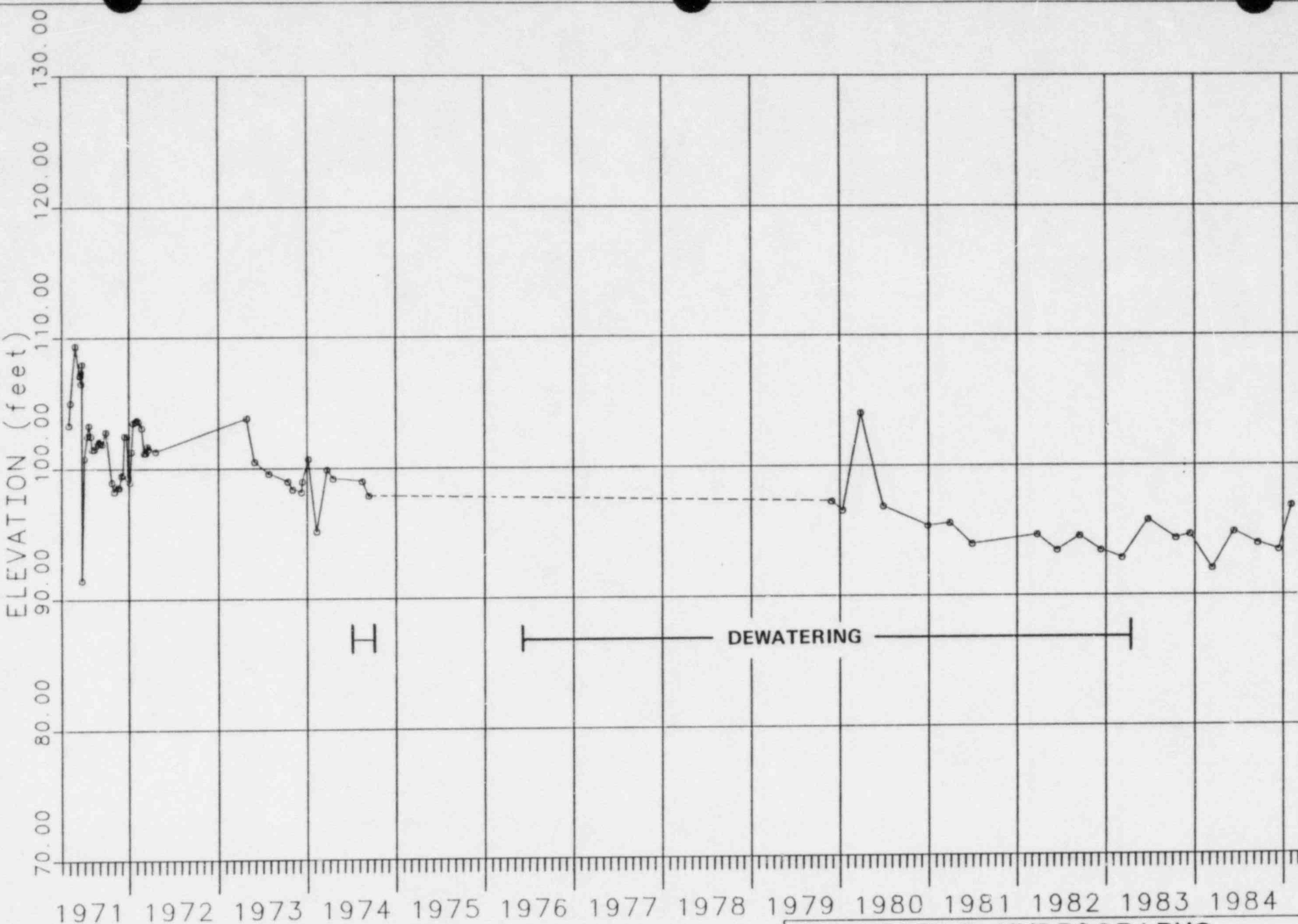
HYDROGRAPH OF WELL 26



CONFINED AQUIFER

VOGTLE HYDROGRAPHS

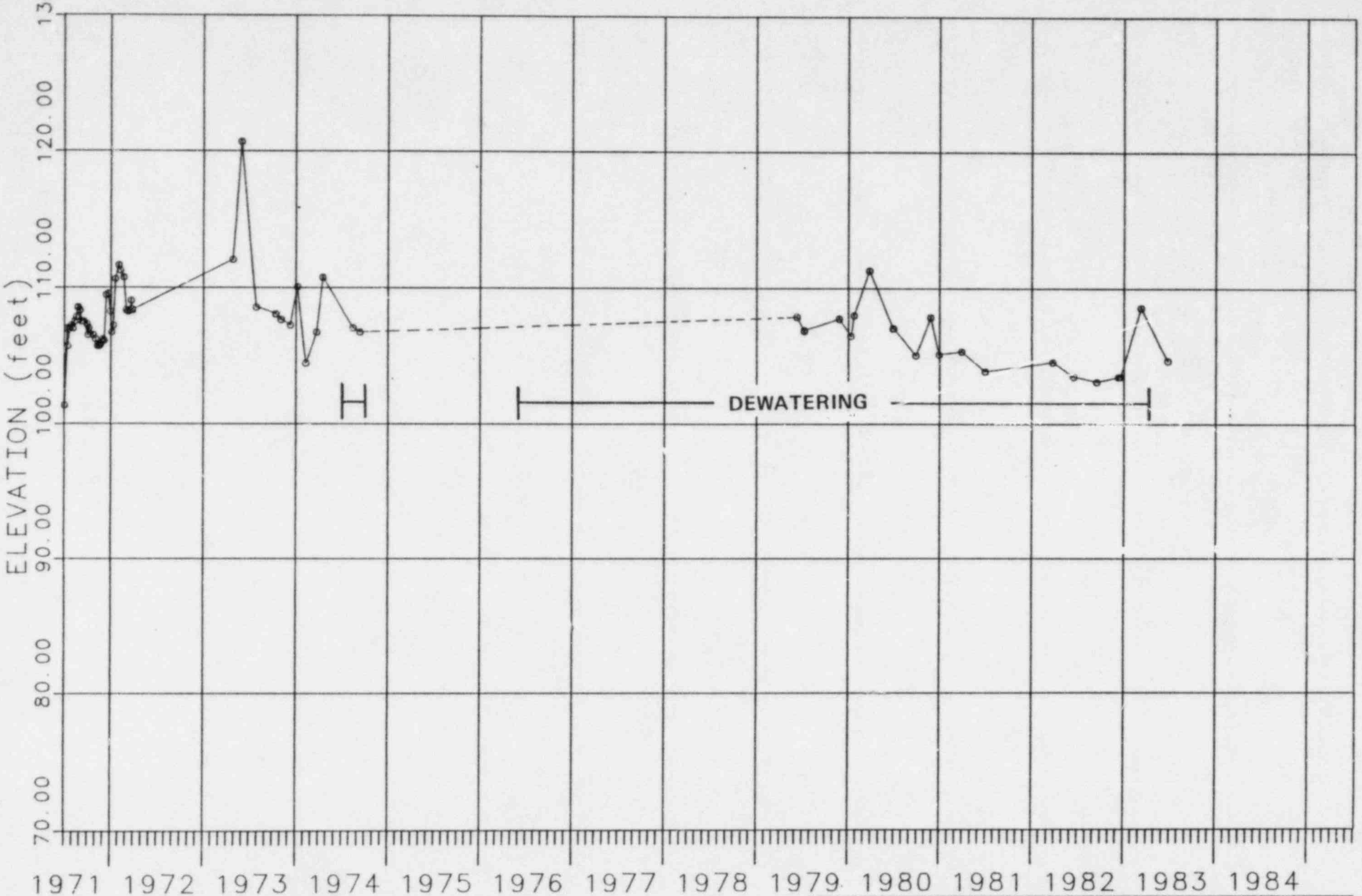
HYDROGRAPH OF WELL 27



CONFINED AQUIFER

VOGTLE HYDROGRAPHS

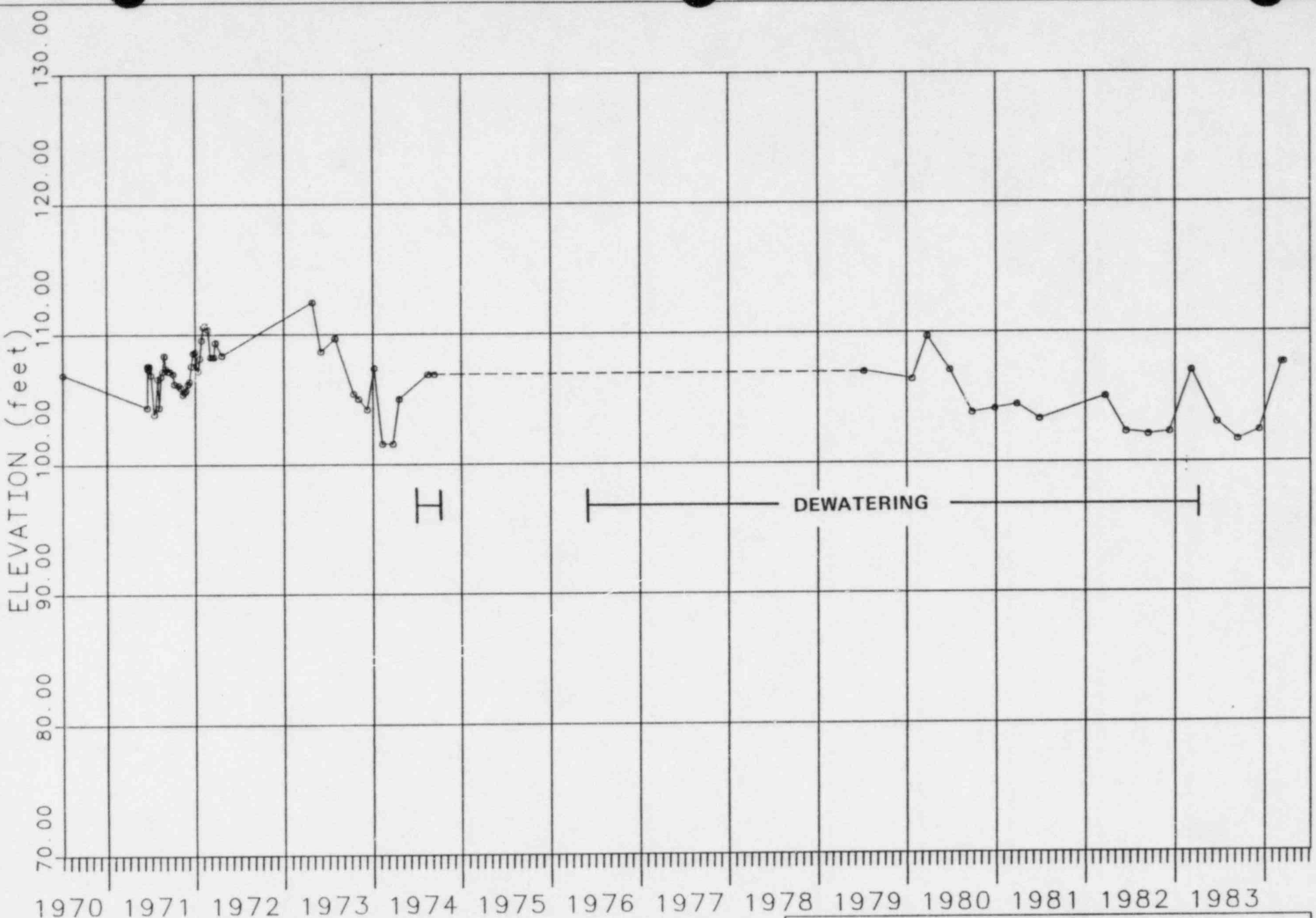
HYDROGRAPH OF WELL 29



CONFINED AQUIFER

VOGTLE HYDROGRAPHS

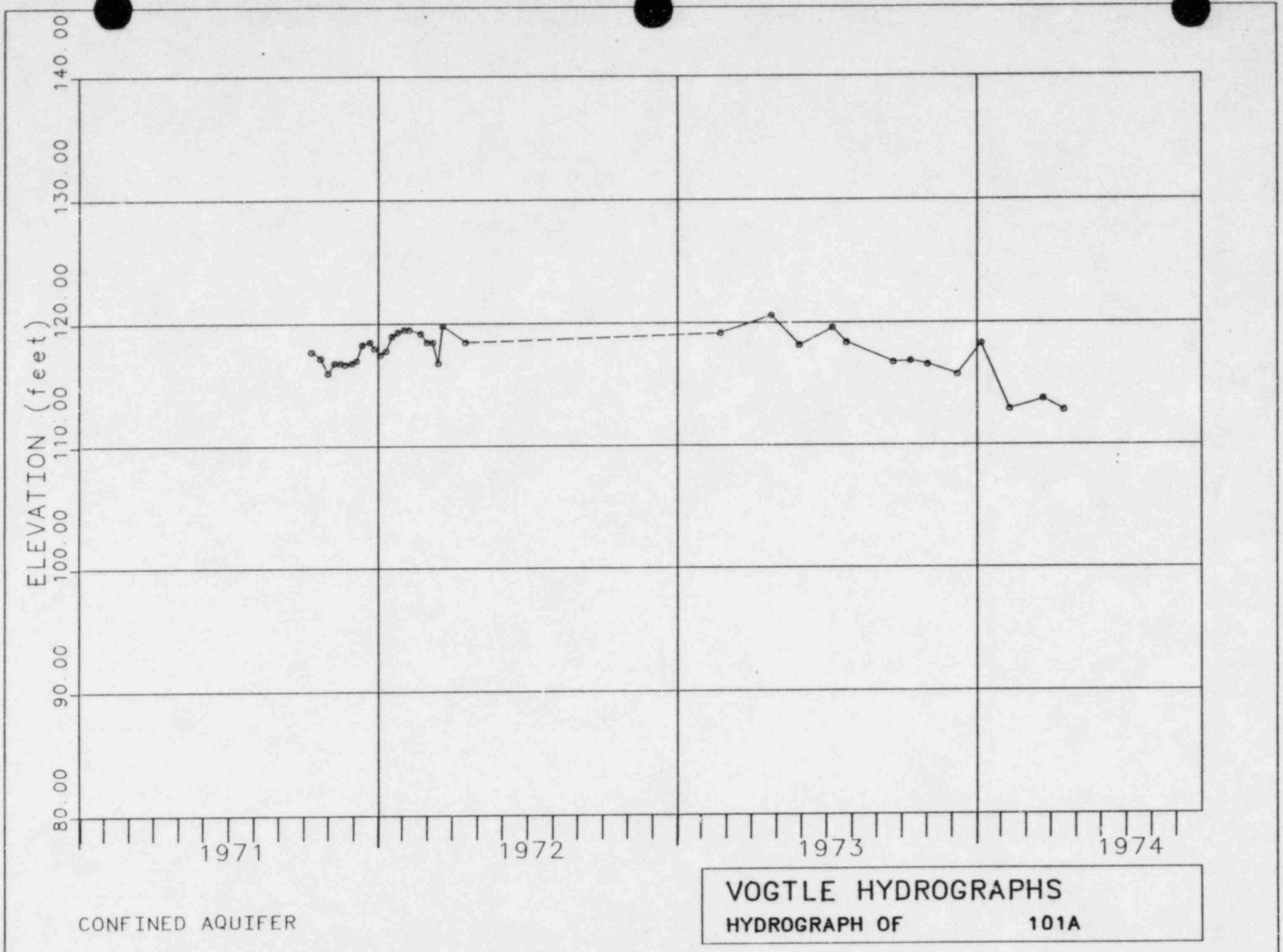
HYDROGRAPH OF WELL 31



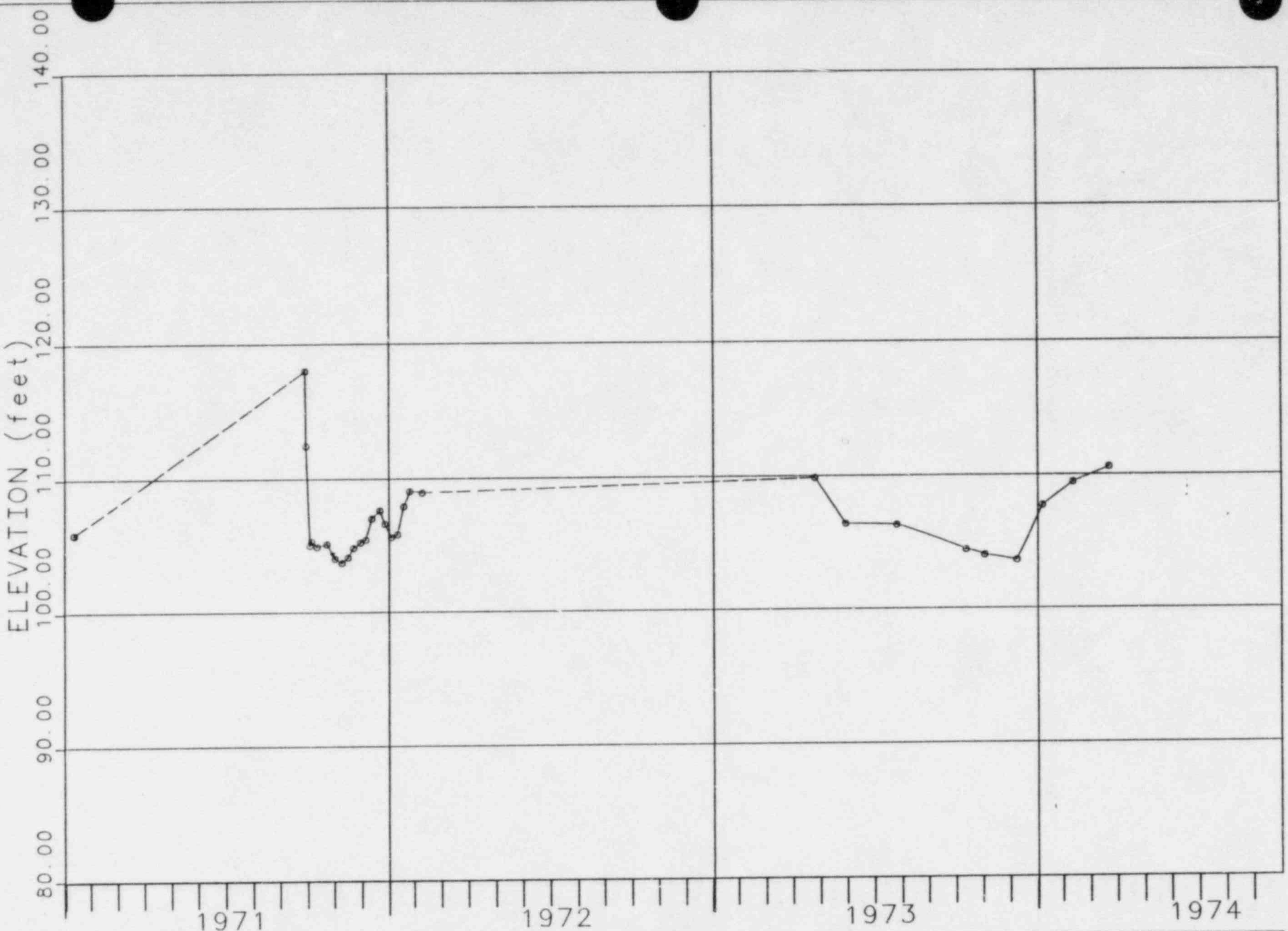
CONFINED AQUIFER

VOGTLE HYDROGRAPHS

HYDROGRAPH OF WELL 32



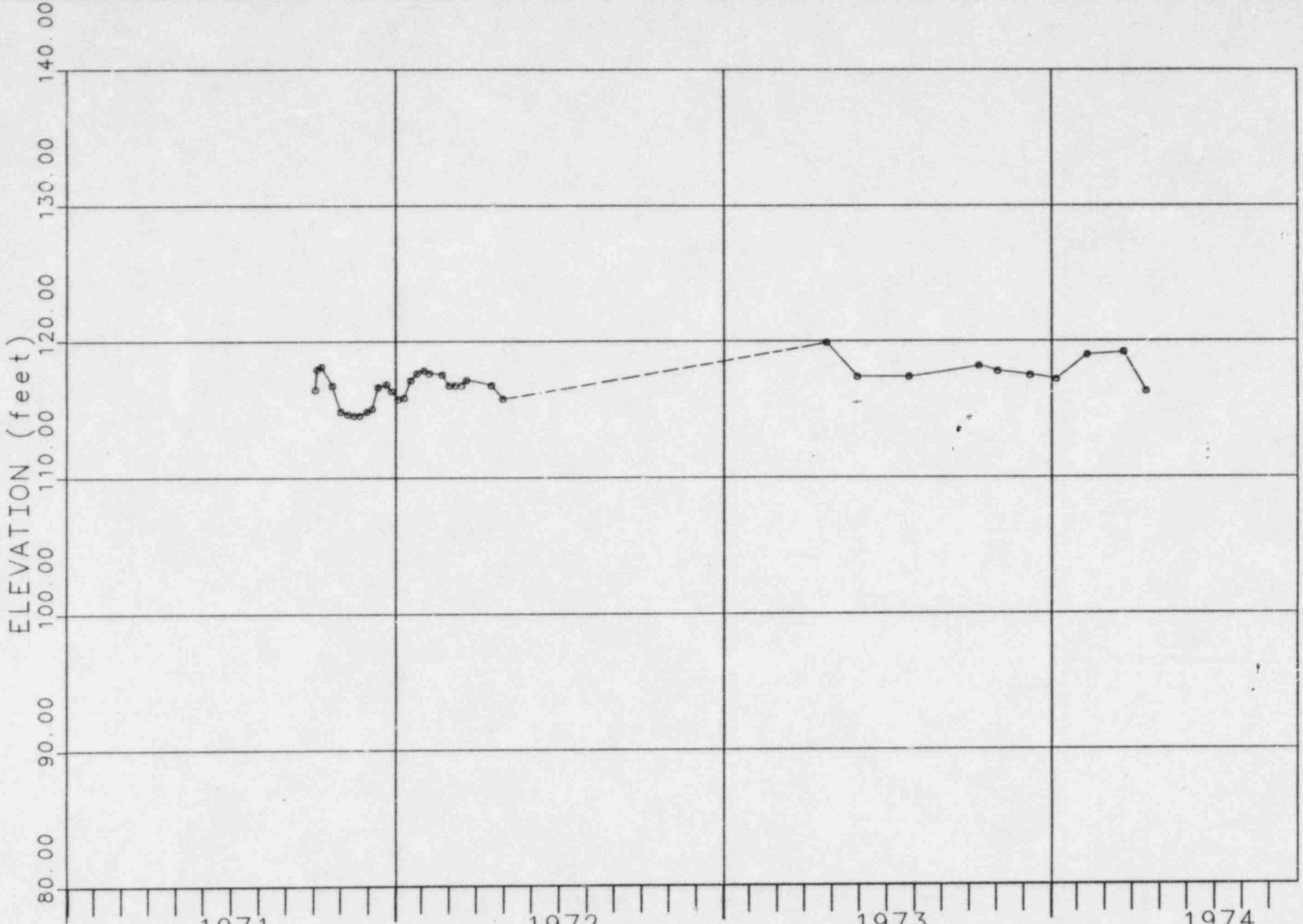
ELEVATION (feet)
140.00
130.00
120.00
110.00
100.00
90.00
80.00
1971
1972
1973
1974
CONFINED AQUIFER
VOGTLE HYDROGRAPHS
HYDROGRAPH OF 101A



CONFINED AQUIFER

VOGTLE HYDROGRAPHS

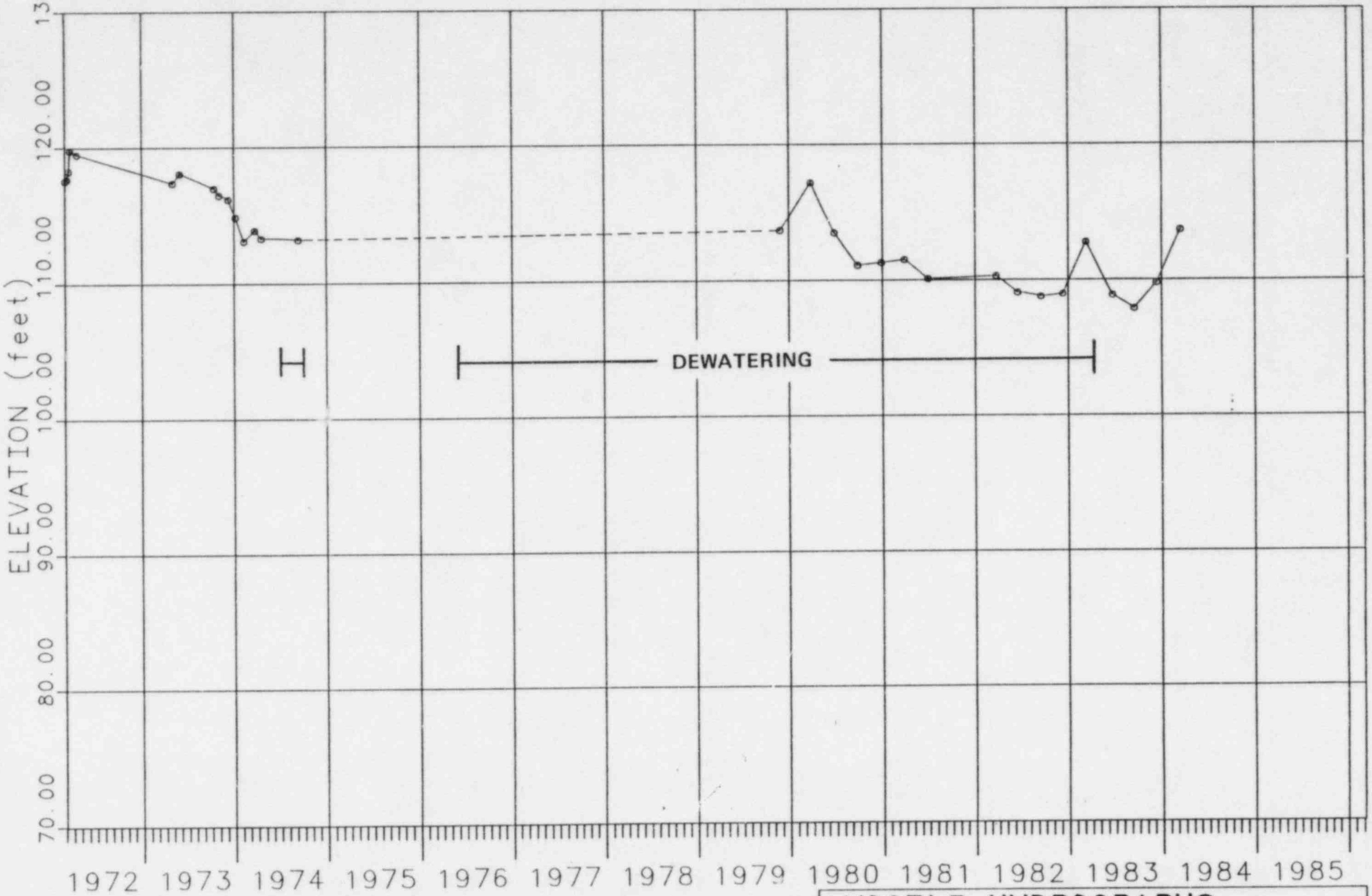
HYDROGRAPH OF 135



CONFINED AQUIFER

VOGTLE HYDROGRAPHS

HYDROGRAPH OF 147



CONFINED AQUIFER

VOGTLE HYDROGRAPHS

HYDROGRAPH OF WELL 246

3.0 PERMEABILITY AND POROSITY

In response to the request for a record of all permeability and porosity evaluations made of the unconfined aquifer and the Blue Bluff marl (letter from E. G. Adensam to D. O. Foster, dated February 19, 1985), the following discussion and accompanying tables are submitted. Logs of the holes in which permeability tests were conducted or from which samples were taken for analysis of permeability and/or porosity are included with this supplement.

3.1 Permeability

Most of the permeability (hydraulic conductivity) testing was done during the initial site exploration, and was reported in the PSAR. The field tests performed in exploratory holes at the intake structure were done after the PSAR was initially submitted and were reported in the FSAR. Two pumping tests were conducted in the unconfined aquifer at the request of the consultant designing the temporary construction dewatering system. These data had not been submitted previously in the SAR. In response to the request for all permeability data, a thorough review of the records of investigation, 1971 to the present, was made, and the data from these tests were found. They have now been analyzed to determine representative permeability values and are submitted with this response. The drilled holes or wells in which tests were conducted, or from which samples were taken for laboratory analysis are shown on the attached figure. The holes drilled for the dewatering tests were not logged by a soils engineer or geologist. However, the driller's logs are submitted with this supplement.

The hydraulic conductivity of the water-table (unconfined) aquifer was measured in the field by constant-head inflow methods (including open stand-pipe and permeameter tests), constant-discharge pumping tests, and variable-head inflow methods. In addition, laboratory permeability tests were made on samples taken from one exploratory hole (107A) and on grab samples of backfill material. Estimates of hydraulic conductivity were reported for selected soil samples based on a theoretical relationship to grain size.

Hydraulic conductivity of the marl was measured in the field in exploratory holes by constant-head inflow methods. In all but two cases, packers were used to isolate test intervals. Two permeameter tests were conducted in weathered marl. No laboratory tests of marl permeability were done.

3.1.1 Constant-discharge (pumping) tests. Two test wells, each with an array of 4 observation wells, were constructed in the vicinity of the Power Block excavation to conduct aquifer pumping tests. Locations are shown on the attached Figure 3-1. The purpose of the tests was to provide data on the permeability of the Utley limestone, which, beneath the site, is composed predominantly of shells in a matrix of silt and clay, but includes thin and discontinuous beds of limestone, sands and coquina. It was throught in the initial plans for dewatering that the formation might be very permeable and act as a drain for dewatering.

Well pumping tests are based on the Theis nonequilibrium theory of the physics of flow toward a pumping well. In each of these tests water was extracted at a relatively constant rate for a period of time and the rate of response (drawdown, or interference) was measured at each of the observation wells. The resulting data were analyzed by the Theis curve-matching method as well as the Jacob modified non-equilibrium method. These methods are described in standard texts of ground-water hydrology (ie; Walton, W.C., "Groundwater Resource Evaluation", 1970, McGraw-Hill Book Company).

The first well, W-1, was pumped at a rate of 36 gpm for a period of 97 hours, and response was sufficient in all four observation wells for analysis. The second well, W-2, was in a much less permeable zone of the formation than the first well, and response in the observation wells was negligible to small and analysis was not feasible. The average yield of W-2 was 12 gpm but it fluctuated considerably and the test was terminated after 27 hours. The two tests indicated that transmissivity of the Utley limestone is relatively low and varies considerably from place to place. It was concluded the formation would not be an effective drain for dewatering.

In addition to the two conventional pumping tests, constant-head tests were conducted in some of the observation wells. During two of these tests, the water-level rise in an adjacent observation well was measured. The response of observation well 2A to the constant inflow of

72 gpm at well 2B was adequate for analysis as an inverse of a pumping test. The other test was not sufficient for analysis. A summary of these tests and the analyses are provided in Table 3-3.

3.1.2 Constant-head tests. Most of the field tests were of the type wherein water is introduced into the aquifer through the exploratory hole or completed well by maintaining a constant hydraulic head (pressure) in the hole. The rate of inflow is monitored and permeability calculated with the data collected. Inflatable packers were used to isolate a specified test interval in the exploratory holes. In wells, the screened interval was assumed to be the test interval. The procedure followed is that provided by Designation 18 of the U.S. Bureau of Reclamation Earth Manual. The data of these tests are included on the drill logs of the tested hole, or on accompanying sheets with the drill logs.

The tests of unconfined sands conducted in holes 183 and 184 followed the test procedure described as Designation 19, Permeameter Test, of the U.S.B.R. Earth Manual. The intervals tested were determined by the screened portion of casing installed in the holes. Results of the constant-head tests are listed in Table 3-1 and 3-2.

3.1.3 Falling-head tests. In addition to the pumping tests conducted for dewatering design, falling-head tests were conducted in the temporary observation wells constructed for those pumping tests. A measured volume of water was introduced into the well, and then the rate of decay of the column of water in the well was monitored. These data were analyzed by the falling head method, as described in the U.S. Bureau of Mines Open File Report 136-77, "Field Permeability Test Methods with Application to Solution Mining", 1977. Results of these tests are listed in Table 3-3.

3.1.4 Laboratory Tests. As part of the initial investigations to determine the foundation soil properties, laboratory permeability measurements were made of Barnwell sand samples taken from borehole 107A. Three of those samples were undisturbed samples. The fourth was a disturbed sample for which permeability was measured at three densities. Similarly, laboratory tests were made at three densities of two "grab" samples of backfill material. The backfill samples were selected for different amounts of material finer than the No. 200 sieve: one sample with 5.9%, and one with 11% fines. The testing procedure followed was to saturate the samples by the back-pressure technique, confine them at the effective overburden pressure, and then maintain a constant hydraulic gradient across the sample. Results of laboratory tests are listed in Table 3-1.

3.1.5 Grain-size analyses. A common method of estimating permeability of sands is by applying the approximate relationship to grain size found by A. Hazen for filter sands (Freeze, R.A., Cherry, J.A., "Groundwater", 1979, Prentice-Hall Inc.):

$$K = Ad_{10}^{2}$$

The d_{10} value is the 10% finer grain size, and if expressed in millimeters, A is equal to 1.0, and K is expressed in cm/sec. Although the approximation was developed for uniformly graded sands, it has been commonly applied as a rough estimate of other sands. The estimates are listed in Table 3-1.

3.2 Porosity

The drill holes, or sites, from which the samples analyzed were taken are shown on Figure 3-1, the porosity calculations are listed in Table 3-4. The drill logs of the holes are also submitted. The laboratory determinations of soil properties were directed to those units on which structural units are founded. These include the Blue Bluff marl and the upper sands of the Barnwell Group. No records have been found of any tests conducted on samples of the Utley limestone unit.

Porosity of the Blue Bluff marl was calculated from laboratory soil analyses of undisturbed samples taken in exploratory holes during the initial site studies. The determined porosities range from 24% to 62%. There were 18 samples analyzed. The mean porosity value is 47.5%.

Porosity of undisturbed Barnwell sands and/or silty sands (some from the water-table aquifer) have also been determined. Fifteen samples were analyzed and porosity values range from 34% to 61% with a mean of 43.9%. In addition, porosity in relation to density of two recompacted samples of Barnwell sands used for backfill material is provided. Porosity of the Utley limestone is estimated from descriptions of the material. Descriptions of the material are available from mapping of the power-block excavation and from exploratory drill logs.

The Utley unit was exposed at the base of the cuts in the power-block excavation, and ranged from less than one-foot, to more than twelve feet thick. Unfortunately, extensive slumping and regrading obscured this portion of the slopes and detailed description was not possible. The more resistant, indurated limestone units tended to remain exposed. Jointing and/or fractures were not reported present in the indurated limestone beds. Cavities were present in the upper, thickest limestone unit on portions of the north and west slopes. It is estimated that cavities make up 5% of the unit in the excavation exposure.

More representative descriptions of the Utley unit are provided by the core recovered from the many exploratory holes drilled throughout the VEGP site. From these descriptions, the Utley limestone beneath the site is comprised predominantly of shells in a partially cemented matrix of silt, clay and sand. There are discontinuous beds of hard dense limestone, relatively clean sands, and coquina. No joints or fractures are reported in the material apart from the cavities.

Based on these descriptions, it appears that primary (intergranular) porosity remains (pores have not been filled by cementation). Joints and fractures (other than the cavities) contribute a negligible quantity of openings. The Utley unit beneath the VEGP site is classified as a partially cemented silty sand. Total porosity varies from place to place and is estimated to range from 15% to 60% (depending on sample size, porosity would be 100% where cavities are present, and less than 10% in the dense limestone beds). Effective porosity is estimated to be 30%.

TABLE 3-1

PERMEABILITY TEST DATA
BARNWELL SANDS, SILTS, AND CLAYS

HOLE NUMBER	INTERVAL TESTED (FT.)	PERMEABILITY (FT/YR)	MATERIAL TESTED AND/OR REMARKS
WELL PERMEAMETER TESTS			
183	50.0-60.0	200	Sand
184	53.0-63.0	267	Sand (SW), Clayey Sand (SC) and Clay (CL)
LABORATORY TESTS			
107A	13.8-14.4	302	Sand (SP); undisturbed sample
	34.0-36.0	9.8	Sand (SW); undisturbed sample
	49.0-51.0	19,973	Sand (SW); dry density = 83.1 pcf
		6,833	dry density = 84.0 pcf
		1,682	dry density = 91.0 pcf
	62.5-63.0	27.4	Sand (SW); undisturbed sample
S #10	Backfill (Grab sample)	6,070	% compaction = 92.9
		4,580	% compaction = 93.9
		4,400	% compaction = 95.7
		2,260	% compaction = 99.8
S #11	Backfill (Grab sample)	4,110	% compaction = 91.2
		1,820	% compaction = 94.0
		1,430	% compaction = 97.0
		430	% compaction = 98.8
GRAIN SIZE ANALYSES			
301	10.0-11.5	1.34	Silty Sand (SM)
305	70.0-72.5	16,559	Silty Sand (SM) and Sand (SP)
308	39.0-40.7	1.32	Clay (CL)
309	8.0-10.0, 18.0-20.3 and 29.0-31.0	19,663	Composite sample of Silty Sand (SM) and Sand (SP)
313	8.0-10.0 and 18.0-20.0	7,969	Composite sample of Silty Sand (SM) and Sand (SP)
314	18.0-19.5 and 28.0-30.0	7,969	Composite sample of Sand (SM) and Silty Sand (SP)
319	30.0-31.3 and 40.0-42.0	4,968	Composite sample of Sand (SP) and Silty Sand (SM)
331	38.0-40.0 and 49.0-51.5	4,968	Composite sample of Clayey Sand (SC)

TABLE 3-2

PERMEABILITY TEST DATA
BLUE BLUFF MARL

HOLE NUMBER	INTERVAL TESTED (FT.)	PERMEABILITY[1] (FT/YR)	MARL INTERVAL (FT.)	REMARKS
CONSTANT HEAD (PACKER) TESTS				
157	100.0-110.0	3.0	92.0-153.1	Tests rejected because of packer leakage. See results of tests in Hole 508.
	100.0-120.0	3.9		
	110.0-120.0	18.6-54.2		
	128.0-138.0	0		
	120.0-140.0	0		
170	104.5-124.5	0	92.0-152.0	
	110.0-130.0	0		
	120.0-140.5	0		
	130.5-150.5	0		
180	77.5-99.5	0	72.0-142.0	
	85.0-105.0	0		
	95.0-115.0	3.7		
	105.0-125.0	1.2		
245	80.0-100.0	0	71.5-135.5	
	82.0-102.0	0		
	86.0-106.0	0		
	103.0-123.0	0		
	110.0-130.0	0		
249	67.5-87.5	0	57.9-122.0	Tests questionable because of possible packer leakage.
	80.0-100.0	48.4		
	92.5-112.5	29.2		
501	76.5-96.5	0	74.0-150.0	
	88.0-113.0	0		
	114.0-139.0	0		
	135.0-150.0	0		
502	86.0-114.5	0	82.5-146.0	
	114.5-139.5	0		
	137.5-150.0	0		
503	63.5-82.0	0	58.0-121.5	
	66.0-102.0	0		
	81.0-102.0	0		
	100.0-122.0	0		

TABLE 3-2 (continued)

PERMEABILITY TEST DATA
BLUE BLUFF MARL

HOLE NUMBER	INTERVAL TESTED (FT.)	PERMEABILITY[1] (FT/YR)	MARL INTERVAL (FT.)	REMARKS
CONSTANT HEAD (PACKER) TESTS				
504	87.0-99.0	0	84.0-134.0	
	97.0-109.	0		
	107.0-119.0	0		
	118.0-130.0	0		
	122.0-135.0	0		
505	148.0-160.0	0	147.0-187.0	
	157.0-167.0	0		
	166.0-178.0	0		
	175.0-187.0	0		
506	93.0-105.0	0	92.0-162.0	
	103.0-115.0	0		
	113.0-125.0	0		
	123.0-135.0	0		
	133.0-145.0	0		
	143.0-155.0	0		
	153.0-165.0	0		
507	112.0-124.0	0	111.0-180.5	
	125.0-137.0	0		
	135.0-147.0	0		
	140.0-152.0	0		
	150.0-162.0	0		
	160.0-172.0	0		
	165.0-177.0	0		
508	97.0-109.0	0	95.0-150.8	Drilled adjacent to Hole 157 to determine validity of original tests.
	104.0-116.0	0		
	114.0-126.0	0		
	125.0-137.0	0		
	135.0-147.0	0		
	142.0-154.0	0		
510	95.0-107.0	0	93.0-154.0	
	105.0-117.0	0		
	115.0-127.0	0		
	125.0-137.0	0		
	135.0-147.0	0		
	141.0-153.0	0		

TABLE 3-2 (continued)

PERMEABILITY TEST DATA
BLUE BLUFF MARL

HOLE NUMBER	INTERVAL TESTED (FT.)	PERMEABILITY(1) (FT/YR)	MARL INTERVAL (FT.)	REMARKS
CONSTANT HEAD (PACKER) TESTS				
513	90.0-102.0	0	86.0-147.5	
	100.0-112.0	0		
	110.0-122.0	0		
	120.0-132.0	0		
	130.0-142.0	0		
518	124.0-129.0	0	77.5-139.7	
P-1	11.0-31.0	0	4.0-33.0	
P-2	5.0-30.0	40	0.5-29.5	Analysis suggests leakage around packer.
P-3	7.1-17.0	0	7.0-39.5	Weathered marl
	17.0-37.0	0		
P-5	12.0-27.0	0	11.0-25.8	
WELL PERMEAMETER TESTS				
P-1A	0.0-6.0	16	0.0-6.0	Weathered marl.
P-3A	0.0-6.5	23	0.0-6.5	Weathered marl.

Notes

(1) Zero indicates no measurable water takes.

TABLE 3-3

PERMEABILITY TESTS

UTLEY LIMESTONE

Observation Well No.	Tested Interval (ft)	transmissivity (gpd/ft)	Permeability (ft/yr)	Remarks
1. Pumping Tests				
a. Well No. 1 pumped out at an average of 30 gpm for 97 hours.				
1A	56-78	6,350	14,100	Theis curve match, max. drawdown 1.92 ft.
1B	68-78	25,700	125,400	Theis curve match, max. drawdown 1.05 ft.
1C	56-80	9,830	20,000	Theis curve match, max. drawdown 2.49 ft.
1D	56-80	21,700	44,100	Theis curve match, max. drawdown 1.31 ft.
1A,1B,1C,1D	59-70 (avg.)	8,090	19,700	Distance-Drawdown
b. Well 2B, pumped in at an average of 74 gpm for 14 minutes.				
2A	62-85	1,530	3,250	Semi-log plot of recovery, max. drawdown -6.22 ft.
2. Falling Head (Variable Head) Tests				
Well No. 1	65-80	NA	5,800	Starting head= 36.7 ft.
1A	63-78	NA	600	Starting head= 36.5 ft.
Well No. 2	69-85	NA	980	Starting head= 44.1 and 10.6 ft. (2 tests)
2A	70-85	NA	96	Starting head= 3.2 ft.
2B	69-84	NA	360	Starting head= .6 and .9 ft. (2 tests)
2C	65-85	NA	140	Starting head= 3.0 ft.
2D	70-85	NA	2,100	Starting head= 1.8 ft.
3. Constant Head Tests				
1A	56-78	NA	160	Total Head= 61 ft.
2A	56-85	NA	3,200	Total Head= 64 ft.
2B	56-84	NA	1,790	Total Head= 75 ft.
2D	56-85	NA	1,190	Total Head= 77 ft.

NA = Not Applicable

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TABLE 3-4

POROSITY

Boring No. or Sample No.	Depth Interval (ft) or Sample Site	Porosity (%)	Remarks
Barnwell Group (includes unconfined aquifer)			
102A	15.0-16.5	34	Silty Sand--undisturbed sample
	35.0-36.5	47	Sand--undisturbed sample
	58.0-60.0	61	Clay--undisturbed sample
107A	13.2-15.2	45	Sand--undisturbed sample
	34.0-36.0	47	Sand--undisturbed sample
	62.0-64.0	52	Sand--undisturbed sample
138A	9-11	39	Silty Sand--undisturbed sample
	14-16	40	Silty Sand--undisturbed sample
	29-31	43	Silty, Clayey Sand--undisturbed sample
	34-36	38	Clayey Sand--undisturbed sample
	49-51	49	Clayey Sand--undisturbed sample
	59-60.5	44	Sand--undisturbed sample
204	18-19.3	40	Silty Sand--undisturbed sample
226A	61-63	43	Sand--undisturbed sample
235	8-10	37	Sand--undisturbed sample
Sample #10	Backfill	39.4	@ 92.9% compaction
		38.8	@ 93.9% compaction
		37.6	@ 95.7% compaction
		35.0	@ 99.8% compaction
Sample #11	Backfill (Borrow Area)	36.9	@ 91.2% compaction
		34.9	@ 94% compaction
		32.9	@ 97% compaction
		31.6	@ 98.8% compaction
Blue Bluff Marl			
102	125.8	48	
	140.3	48	
111	80.8	55	
	105.3	56	
114	80.8	54	
	100.8	51	
138A	97.0	56	
	126.0	24	
	134.0	36	
	148.6	41	
202	93.8-95.8	39	
	134-136	41	
203	82-84	62	
	114	60	
204	94.5	48	
	132-134	42	
216	84.5	47	
	132	47	

Note: Data source is Law Engineering Testing Company data sheets.

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LOGS OF DRILL HOLES

WITH PERMEABILITY DATA

BECHTEL

GEOLOGIC LOG OF DRILL HOLE

SHEET 1 OF 6

HOLE NO. 107 A

PROJECT Alvin W. Vogtle Site ANGLE FROM HORIZ 90° BEARING --

LOCATION E 623,876.5 N 1,142,996.2 BEGUN 9-16-71 COMPLETED 9-22-71

OVERBURDEN ____ DEPTH DRILLED INTO ROCK ____ TOTAL DEPTH OF HOLE 200.0

ELEV. WATER TABLE ____ NO. CORE BOXES ____ NO. SAMPLES TAKEN 35

CORE RECOVERY (%) ____ FEET ____ MODEL & MAKE OF DRILL Acker

GROUND ELEV. 209.4 HOLE LOGGED BY N. M. Thiel DRILLER LETCO-Ivey

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	SAMPLE DATA: PENETRATION TOOL	TOOL SIZE	METHOD n - BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
Denison Samples						209			0-1.0': TOPSOIL-SILTY SAND; brown, loose.
Samples 1-5: No recovery; jar samples.									1.0-13.0': SILTY SAND: Reddish-brown, loose, medium to fine-grained. (SM)
	Denison	3"		24	0		5	1	4.0': Compact.
	"	"		24	0				6.0': Fine-grained.
	"	"		24	0			2	(SM)
	"	"		12	0	199	10	3	
	"	"		24	0			4	11.5': Trace of clay
								5	
	"	"		24	17		15	6	13.0-20.0': SAND: Compact, reddish-brown, medium-grained with small amount of silt. (SP)
	"	"		24	7	189	20	7	
	"	"		24	0				20.0-28.0': SAND: Compact, tan to brown, mottled, medium to fine-grained. Some silt in seams.
21.0': Jar sample	"	"		24	11			8	CLAYEY SAND: Compact, brown medium to fine-grai[ned] with small amount of silt. (SM)
							25	9	
	"	"		24	18	179	30	10	28.0-34.0': Firm, tan to brown, mottled CLAY & SILTY SAND seams, fine-grained; grading to CLAYEY SAND; medium to fine-grained, with silt. (SC)
	"	"		24	10			11	(SW)

Hole Size 7-3/4"

Hole No. B-107

Site Unit #1

SHEET 2 OF 6

PROJECT Alvin W. Vogtle Site

HOLE NO 107 A

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	SAMPLE DATA: PENETRATION TOOL	TOOL SIZE	METHOD n-BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	LOG SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
								11	34.0-43.0': SAND; Compact, tan to light brown, medium to fine-grained, with small amount of silt. 39.0': Dense (SW)
	"	"		24	0	169	40	12	
	"	"		18	9		45	13	43.0-49.0': SILTY SAND; Dense tan, mottled, medium to fine-grained. (SM)
	"	"		24	12	159	50	14	49.0-54.0': SAND; Dense, tan, mottled, medium to fine-grained, black sand streaks, no silt. (SW)
	"	"		24	5		55	15	54.0': 6" Brown clay seam. 54.5-56.5': CLAYEY SAND; Compact, tan to light brown, medium-grained, some shell fragments. (SC)
	"	"		24	14			16	
						149	60		56.5-58.5': CLAY; Stiff, whitish-tan, with 2" sand seam. (CL)
	"	"		12	5			17	58.5-62.5': SAND; Compact, tan to light brown, medium to fine-grained, with few clay lumps. (SW)
	"	"		24	18			18	
							65		62.5-70.0': SAND; Compact, tan to brown, mottled, medium to fine-grained, with trace of clay. (SW)
	"	"		18	4				
						139	70	19	70.0-75.0': LIMESTONE; With shell fragments.

Hole Size 7-3/4"

Hole No 107A

Site Unit #1

PROJECT Alvin W. Vogtle Site

SHEET 3 OF 6

HOLE NO 107 A

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	SAMPLE DATA: PENETRATION TOOL	TOOL SIZE	METHOD n-BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	LOG / SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
									75.0-137.5': SHALE CLAY; Gray, hard, with trace of fine-grained sand. (CL)
Set casing at 80.0'	"	"		24	18	129	80	20	
Below 80.0' used 4-3/4" bit.							85		
	"	"		24	24	119	90	21	88.0': SANDY CLAY: Gray, hard, fine-grained, some calcareous pieces. (CL)
							95		
						109	100		
	"	"		24	24		105	22	105.0': SILTY CLAY: Hard, gray, with some calcareou[s] fragments & trace of fine grained sand. (CL)
						99	110		

Hole Size 7-3/4" - 4-3/4"

Hole No 107A

Site Unit #1

SHEET 4 OF 6

PROJECT Alvin W. Vogtle Site

HOLE NO 107 A

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	SAMPLE DATA: PENETRATION TOOL	TOOL SIZE	METHOD n-BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	LOG / SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
									(CL)
	"	"		24	24			23	
						89	120		
							125		
	"	"		14	14			24	128.0': <u>SILTY CLAY</u>; Grades to light gray, hard, <u>SANDY</u>, <u>SILTY CLAY</u>, at bottom of sample 25.
						79	130		
	"	"		24	24			25	
							135		
	"	"		24	22	69	140	26	137.5-156.0': <u>CLAYEY SAND</u>; Compact to dense, gray, medium to fine-grained. (SC)
							145		
						59	150		149.0': Compact.
	"	"		24	18			27	(SC)

Hole Size 7-3/4" - 4-3/4"

Hole No 107A

Site Unit #1

PROJECT Alvin W. Vogtle Site

SHEET 5 OF 6

HOLE NO 107 A

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	SAMPLE DATA: PENETRATION TOOL	TOOL SIZE	METHOD n-BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
									(SC)
									156.0-175.5': SAND; Very dense, gray, medium-grained. (SP)
						49	160		
	"	"		24	11			28	161.0': Fine-grained.
	"	"		24	15			29	
							165		(SP)
	"	"		24	15	39	170		169.0': Fine-grained, trace of silt.
								30	
	"	"		24	12			31	(SP)
							175		
									175.5-186.0': SILTY SAND; Very dense, gray.
	"	"		24	18	29	180	32	(SM)
							185		
									186.0-200.0': SAND; Very dense, light gray, coarse to medium-grained. (SW)
	"	"		24	0	19	190	33	
	"	"		24	9			34	

Hole Size 7-3/4" x 4-3/4"

Hole No 107A

Site Unit #1

SHEET 6 OF 6

PROJECT Alvin W. Vogtle Site

HOLE NO 107A

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	SAMPLE DATA: PENETRATION TOOL	TOOL SIZE	METHOD n-BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	LOG	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
										(SW)
										198.0': Medium to fine-grained.
	"	"		24	17	9	200		35	
										BOH 200.0'

Hole Size 7-3/4" - 4-3/4"

Hole No 107A

Site Unit #1

BECHTEL

GEOLOGIC LOG OF DRILL HOLE

SHEET 1 OF 5
HOLE NO. 157

PROJECT Alvin W. Vogtle Site ANGLE FROM HORIZ. 90° BEARING --
LOCATION N 1,145,605.1 E 621,598.0 BEGUN 9-29-71 COMPLETED 10-4-
OVERBURDEN ______ DEPTH DRILLED INTO ROCK ______ TOTAL DEPTH OF HOLE 184.1
ELEV. WATER TABLE ______ NO. CORE BOXES ______ NO. SAMPLES TAKEN --
CORE RECOVERY (%) 58 FEET 93.6 MODEL & MAKE OF DRILL Acker
GROUND ELEV. 207.6 HOLE LOGGED BY M. Kern DRILLER LETCO-Shealy

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	% CORE RECOVERY	PRESSURE TESTS: LOSS IN G.P.M.	Pressure P.S.I.	TIME Minutes	ELEVATION	DEPTH	LOG	CLASSIFICATION AND PHYSICAL CONDITION
29 Sept. 71 Rock bitted with 4-1/2" tri-cone to 22.5', then began coring with NX when top of the shell horizon encountered.					208			
						5		
					198	10		
						15		
Lost 90% of water at 18.5'.								
					188	20		
30 Sept. 71	89					25		22.5-92.0': SHELL; White, broken and whole shells, sandy, silty, partial cementation by limestone.
50% water return at 35.0'.	66				178	30		

HOLE SIZE 4-1/2"

HOLE NO. 157

SITE General

PROJECT Alvin W. Vogtle Site

SHEET 2 OF 5

HOLE NO. 157

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.,	% CORE RECOVERY	PRESSURE TESTS: LOSS IN G.P.M.	PRESSURE P.S.I.	TIME IN MIN.	ELEVATION	DEPTH	LOG	CLASSIFICATION AND PHYSICAL CONDITION
	100				168	40		
1 Oct. 71						45		
	47				158	50		
						55		
	45				148	60		
						65		
100% water loss at 68.0'.	29				138	70		

Hole Size 4-1/2"

HOLE NO. 157

SITE General

PROJECT Alvin W. Vogtle Site

SHEET 3 **OF** 5

HOLE NO. 157

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.,	% CORE RECOVERY	PRESSURE TESTS: LOSS IN G.P.M.	PRESSURE TESTS: PRESSURE P.S.I.	PRESSURE TESTS: TIME IN MIN.	ELEVATION	DEPTH	LOG	CLASSIFICATION AND PHYSICAL CONDITION
	41				128	80		
						85		
2 Oct. 71	11				118	90		92.0-153.1': CLAY; Dark gray, silty, sandy in places, some hard, cemented zones.
Set 95' NX casing from 0' - 95'. Began coring with Revert.	73				108	95 / 100		
	100	Test 4: 0.04	Test 4: 5	Test 4: 14		105		
		Test 6: 0.09	Test 6: 5	Test 6: 11	98	110		

Hole Size 4-1/2" + NX

HOLE NO. 157

SITE General

SHEET 4 OF 5

PROJECT Alvin W. Vogtle Site

HOLE NO. 157

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.,	% CORE RECOVERY	PRESSURE TESTS: LOSS IN G.P.M.	PRESSURE TESTS: PRESSURE P.S.I.	PRESSURE TESTS: TIME IN MIN.	ELEVATION	DEPTH	LOG	CLASSIFICATION AND PHYSICAL CONDITION
	90	T.2:0.75 T.3:0.3	T.2:5 T.3:10	T.2:5 T.3:8	88	120		
3 Oct. 71						125		
	100	Test 5: 0	Test 5: 5	Test 5: 5	78	130		
		Test 1: 0	Test 1: 10	Test 1: 5		135		
	100				68	140		
Packer test attempted at interval ~~143'-133'~~, but no pressure: water leaking around packer.						145		
	100				58	150		
4 Oct. 71								153.1-184.1': SAND; Medium gray, fine to medium-grained.

Hole Size NX

HOLE NO. 157

SITE General

PROJECT Alvin W. Vogtle Site	SHEET 5 OF 5
	HOLE NO. 157

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.,	% CORE RECOVERY	PRESSURE TESTS: LOSS IN G.P.M.	PRESSURE TESTS: PRESSURE P.S.I.	PRESSURE TESTS: TIME IN MIN.	ELEVATION	DEPTH	LOG	CLASSIFICATION AND PHYSICAL CONDITION
No recovery due to uncemented nature of sand.	0				48	160		Silty, uncemented.
	0	Test 7: 0.17 Test 8: 0.0	Test 7: 5 Test 8: 10	Test 7: 15 Test 8: 5	38	165 170		
	0				28	175 180		
Placed 35.0' of gravel in bottom of hole (for Packer Test) then flushed with clean water.								BOH 184.1

Hole Size NX

HOLE NO. 157

SITE General

BECHTEL

GEOLOGIC LOG OF DRILL HOLE

SHEET 1 OF 5
HOLE NO. 170

PROJECT Alvin W. Vogtle Site ANGLE FROM HORIZ. 90° BEARING --
LOCATION N 1,142,987.6 E 622,440.3 BEGUN 10-2-71 COMPLETED 10-2-7
OVERBURDEN ____ DEPTH DRILLED INTO ROCK ____ TOTAL DEPTH OF HOLE 180.0
ELEV. WATER TABLE ____ NO. CORE BOXES ____ NO. SAMPLES TAKEN 0
CORE RECOVERY (%) ____ FEET ____ MODEL & MAKE OF DRILL Acker
GROUND ELEV. 228.3 HOLE LOGGED BY ____ DRILLER LETCO-Melvin

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	% CORE RECOVERY	PRESSURE TESTS: LOSS IN G.P.M.	PRESSURE TESTS: Pressure P.S.I.	PRESSURE TESTS: TIME Minutes	ELEVATION	DEPTH	LOG	CLASSIFICATION AND PHYSICAL CONDITION
Note: This boring was made for use as a Packer Test Hole. The geologic information was obtained from Hole No. 147, which lies 30' to the SE of Hole No. 170.					228			0'-1': TOPSOIL 1'-40': SAND
						5		
					218	10		
Depth to water from pressure gage used for test was 82.7'.						15		
					208	20		
						25		
					198	30		

HOLE SIZE 4-7/8"

HOLE NO. 170
SITE Unit #3

PROJECT Alvin W. Vogtle Site

HOLE NO. 170

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.,	% CORE RECOVERY	PRESSURE TESTS: LOSS IN G.P.M.	PRESSURE TESTS: PRESSURE P.S.I.	PRESSURE TESTS: TIME IN MIN.	ELEVATION	DEPTH	LOG	CLASSIFICATION AND PHYSICAL CONDITION
					188	40		40'-50': CLAY
						45		
					178	50		50'-84': SAND
						55		
					168	60		
						65		
					158	70		

Hole Size 4-7/8"

HOLE NO. 170

SITE Unit #3

PROJECT Alvin W. Vogtle Site

HOLE NO. 170

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.,	% CORE RECOVERY	PRESSURE TESTS: LOSS IN G.P.M.	PRESSURE P.S.I.	TIME IN MIN.	ELEVATION	DEPTH	LOG	CLASSIFICATION AND PHYSICAL CONDITION
					148	80		
100% water loos at 85.0'.						85		84'-90': SHELL
					138	90		90'-92': CLAY
								92'-152': CLAY
						95		
Set 98.0' of 4" casing.					128	100		
						105		
					118	110		
		0.0	5	10				

Hole Size 3-1/2"

HOLE NO. 170

SITE Unit #3

SHEET 4 OF 5

?JECT Alvin W. Vogtle Site

HOLE NO. 170

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.,	% CORE RECOVERY	PRESSURE TESTS: LOSS IN G.P.M.	PRESSURE TESTS: PRESSURE P.S.I.	PRESSURE TESTS: TIME IN MIN.	ELEVATION	DEPTH	LOG	CLASSIFICATION AND PHYSICAL CONDITION
		0.0	5	11				
					108	120		
						125		
		0.0	10	6				
					98	130		
		0.02	5	12				
						135		
		0.0	5	8				
					88	140		
		0.0	10	4				
						145		
					78	150		
								152'-154': SAND & GRAVEL

Hole Size 3-1/2"

HOLE NO. 170

SITE Unit #3

PROJECT Alvin W. Vogtle Site

HOLE NO. 170

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.,	% CORE RECOVERY	PRESSURE TESTS: LOSS IN G.P.M.	PRESSURE TESTS: PRESSURE P.S.I.	PRESSURE TESTS: TIME IN MIN.	ELEVATION	DEPTH	LOG	CLASSIFICATION AND PHYSICAL CONDITION
								154'-180': SAND
		0.7	5	10	68	160		
						165		
					58	170		
						175		
					48			
								BOH 180.0'

Hole Size 3-1/2"

HOLE NO. 170

SITE Unit #3

BECHTEL

GEOLOGIC LOG OF DRILL HOLE

SHEET 1 OF 5
HOLE NO. 180

PROJECT Alvin W. Vogtle Site ANGLE FROM HORIZ. 90° BEARING --
LOCATION N 142,965.2 E 623,724.4 BEGUN 10-17-71 COMPLETED 10-17-
OVERBURDEN ____ DEPTH DRILLED INTO ROCK ____ TOTAL DEPTH OF HOLE 162.
ELEV. WATER TABLE ____ NO. CORE BOXES ____ NO. SAMPLES TAKEN 0
CORE RECOVERY (%) ____ FEET ____ MODEL & MAKE OF DRILL Acker
GROUND ELEV. 210.1 HOLE LOGGED BY ____ DRILLER LETCO-Melvin

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	% CORE RECOVERY	PRESSURE TESTS: LOSS IN G.P.M.	PRESSURE TESTS: Pressure P.S.I.	PRESSURE TESTS: TIME Minutes	ELEVATION	DEPTH	LOG	CLASSIFICATION AND PHYSICAL CONDITION
Note: This boring was made for use as a Packer Test Hole. The geologic information was obtained from Hole No. 106, which lies 30' to the north of Hole No. 180, and from the drillers log.					210			0.-1': TOPSOIL
						5		1'-17': SAND
					200	10		
Depth to water from pressure gage used during tests; 62.1'.						15		
					190	20		17'-33': SAND
						25		
					180	30		
								33'-43': SAND

HOLE SIZE 3-1/2"

HOLE NO. 180
SITE Unit #2

SHEET 2 OF 5

PROJECT Alvin W. Vobtle Site

HOLE NO. 180

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.,	% CORE RECOVERY	PRESSURE TESTS: LOSS IN G.P.M.	PRESSURE P.S.I.	TIME IN MIN.	ELEVATION	DEPTH	LOG	CLASSIFICATION AND PHYSICAL CONDITION
					170	40		
						45		43'-64': SAND
					160	50		
						55		
					150	60		
100% water loss at 64.0'.						65		64'-72': SHELL
					140	70		69'-72': VOID
: 74' of NX casing.								72'-142': CLAY

Hole Size 3-1/2"

HOLE NO. 180

SITE Unit #2

PROJECT Alvin W. Vogtle Site

HOLE NO. 180

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.,	% CORE RECOVERY	PRESSURE TESTS: LOSS IN G.P.M.	PRESSURE TESTS: PRESSURE P.S.I.	PRESSURE TESTS: TIME IN MIN.	ELEVATION	DEPTH	LOG	CLASSIFICATION AND PHYSICAL CONDITION
		0.0	5	10	130	80		
						85		
		0.0	5	10	120	90		
						95		
		0.1	5	10	110	100		
						105		
		0.3	5	9	100	110		

Hole Size 2-7/8"

HOLE NO. 180

SITE Unit #2

SHEET 4 OF 5

PROJECT Alvin W. Vogtle Site

HOLE NO. 180

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.,	% CORE RECOVERY	PRESSURE TESTS: LOSS IN G.P.M.	PRESSURE TESTS: PRESSURE P.S.I.	PRESSURE TESTS: TIME IN MIN.	ELEVATION	DEPTH	LOG	CLASSIFICATION AND PHYSICAL CONDITION
					90	120		
						125		
					80	130		
						135		
					70	140		
		0.05	5	10				142'-167': SAND
						145		
					60	150		Hole caved below 155.0'.

Hole Size 2-7/8"

HOLE NO. 180

SITE Unit #2

PROJECT Alvin W. Vogtle Site

SHEET 5 OF 5

HOLE NO. 180

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.,	% CORE RECOVERY	PRESSURE TESTS: LOSS IN G.P.M.	PRESSURE TESTS: PRESSURE P.S.I.	PRESSURE TESTS: TIME IN MIN.	ELEVATION	DEPTH	LOG	CLASSIFICATION AND PHYSICAL CONDITION
					50	160		
								BOH 162.0'.

Hole Size 2-7/8"

HOLE NO. 180

SITE Unit #2

Holes 183 and 184 were drilled by Law Engineering Co. and no geologic drill logs were made from these holes. The depth and interval tested were based on geologic information correlated from nearby drill holes. The nearest hole to 183 is 139 and the nearest to 184 is 107A. The following information is provided in Section 2.4.13.2.1.3 of the Preliminary Safety Analysis Report.

G. Tests in the Shallow Sands. Pump-in tests were conducted in two borings to provide data for determining the permeability of the nonindurated, saturated sands overlying the marl. The two borings (183 and 184) are at opposite edges of the site area for Units 1 and 2, as shown on figure 2.5-1. Determining the permeability of those sands assists in designing a dewatering system and also provides data for estimating the rate of ground water movement.

1. Procedure. The test holes were drilled similarly to those for the tests conducted in the marl. After drilling to the desired intervals to be tested, 2-inch diameter PVC pipe with a 10-foot screened interval was placed in each hole, and the holes flushed with clean water. It was necessary to place a screen in the test interval; otherwise, the nonindurated sands would cave.

The tests were conducted by personnel of Law Engineering Company on November 3, 1971, in accord with the method listed under Designation E-19 of reference 4. A constant head was maintained in the well by controlling the flow of water from a calibrated tank. The discharge passed through a line extending below the water table to minimize aeration of the water.

Determination of permeability is made with the following formula (condition of water table above the bottom of the tested interval):

$$k = \frac{525{,}600 \log_e \left(\frac{h}{r}\right) \frac{Q}{2\pi}}{h^2 \left[\left(\frac{h}{S}\right)^{-1} - 1/2 \left(\frac{h}{S}\right)^{-2}\right]}$$

where:

k = coefficient of permeability, feet per year

h = height of water in the well, feet

r = radius of well, feet

Q = discharge rate of water, cubic feet per minute

S = difference in head between water in the well and the water table, feet

This formula is modified from the formula given in reference 4, in not adjusting the coefficient to conditions of water viscosity at 20 C temperature. It is assumed this adjustment is small (temperature of the water used ranged from 20 to 22 C). The borings were NX size, so that the radius was 0.15 foot, and the difference in head was maintained at a constant 2 feet in both tests. The calculated permeabilities were 200 feet per year at Hole 183, and 267 feet per year at hole 184.

2. <u>Findings</u>. Data collected during the tests are listed in table 2.4-6. In addition to the above, the following conditions held at each hole:

<u>183</u>

Depth to water table: 37.75 feet
Depth to interval tested: 50.0 - 60.0 feet

<u>184</u>

Depth to water table: 48.7 feet
Depth to interval tested: 53.0 - 63.0 feet

Table 2.4-6
WELL PERMEAMETER TESTS
(November 3, 1971)

EXPLORATION HOLE 183				EXPLORATION HOLE 184			
		Water Volume (gallons)				Water Volume (gallons)	
Time (Clock)	Accum. Minutes	Increment	Accum.	Time (Clock)	Accum. Minutes	Increment	Accum.
14:51	0	Begin Test		13:11	0	Begin Test	
:52	1	0.267	0.267	:12	1	0.731	0.731
:53	2	0.267	0.534	:13	2	0.800	1.531
:54	3	0.200	0.734	:14	3	0.133	1.664
:55	4	0.267	1.001	:15	4	0.133	1.797
:57	6	0.333	1.334	:17	6	0.533	2.330
:59	8	0.400	1.734	:19	8	0.067	2.397
15:01	10	0.400	2.134	:21	10	0.266	2.663
:03	12	0.400	2.534	:23	12	0.266	2.929
:05	14	0.400	2.934	:25	14	0.333	3.292
:07	16	0.333	3.267	:27	16	0.200	3.462
:10	19	0.600	3.867	:30	19	0.466	3.928
:13	22	0.533	4.400	:33	22	0.400	4.328
:16	25	0.466	4.866	:36	25	0.466	4.794
:19	28	0.466	5.332	:39	28	0.400	5.194
:22	31	0.400	5.732	:42	31	0.400	5.494
:25	34	0.466	6.198	:45	34	0.466	5.960
:28	37	0.400	6.598	:48	37	0.366	6.326
:31	40	0.400	6.998	:51	40	0.400	6.726
:34	43	0.400	7.398	:54	43	0.400	7.126
:37	46	0.400	7.798	:57	46	0.400	7.526
:40	49	0.400	8.198	14:00	49	0.400	7.926
:43	52	0.267	8.465	:03	52	0.400	8.326
:46	55	0.400	8.865	:06	55	0.400	8.726
:49	58	0.400	9.265	:09	58	0.400	9.126
:52	61	0.267	9.532	:12	61	0.400	9.526
:55	64	0.267	9.799	:15	64	0.400	9.926
:58	67	0.200	9.999	:18	67	0.400	10.326
16:01	70	0.200	10.199	:21	70	0.400	10.726
:04	73	0.333	10.532	:23	72	0.266	10.992
:06	75	0.266	10.798	:23	72	0.266	10.992

BECHTEL CORPORATION

SHEET 1 OF 4

GEOLOGIC LOG OF DRILL HOLE

HOLE NO. 245

PROJECT Alvin W. Vogtle Site ANGLE FROM HORIZ 90° BEARING

LOCATION N 1,143,490.9 E 623,924.5 BEGUN 1-12-72 COMPLETED 1-21-72

OVERBURDEN DEPTH DRILLED INTO ROCK TOTAL DEPTH OF HOLE 150 feet

ELEV. WATER TABLE NO. CORE BOXES 6 NO. SAMPLES TAKEN 0

CORE RECOVERY (%) 56 FEET 84.5 MODEL & MAKE OF DRILL Acker-Mark II

GROUND ELEV. 207.7 feet HOLE LOGGED BY Pete Mote DRILLER LETCO-Collins

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	% CORE RECOVERY	SAMPLE DATA: BLOW COUNT	PENETRATION TOOL	HAMMER WT/LBS	HAMMER FALL-INCHES	ELEVATION	DEPTH	LOG / SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
Rock bit to 6' to set surface casing. Drilling with mud, using NX size 10' core barrel, with diameter impregnated face discharge bit.						208			0-2.5' SOIL: Silty, clayey sand, brown organic particles.
							5		2.5'-15.0' SAND: Medium-grained, siliceous, brownish-red, uncemented.
	25					198	10		Becomes hard, possibly partially cemented between 9 and 14 feet.
							15		16.0'-49.0' CLAY: Yellow, fairly fat, slightly sandy and silty. Black organic pockets widely scattered. Some very thin sand stringers are also present.
	25					188	20		
							25		Clay grades to a sandy clay.
Lack of recovery possibly due to high percentage of uncemented sand.	10					178	30		
							35		

Hole Size 3-1/2"

Hole No. 245

Site Adjacent #16

SHEET 2 OF 4

PROJECT Alvin W. Vogtle Site

HOLE NO. 245

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	% CORE RECOVERY	SAMPLE DATA: BLOW COUNT	SAMPLE DATA: PENETRATION TOOL	SAMPLE DATA: HAMMER WT/LBS	SAMPLE DATA: HAMMER FALL-INCHES	ELEVATION	DEPTH	LOG / SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
Barrel sanded in. Sample possibly lost when jerking barrel free.	0								
Rig jumped at few times at 41'. Lost water at 41'.						168	40		Cobbles or gravel at 41'.
	0								
	10						45		Sandy clay continues mottled red-tan.
Drilling very hard tween 49' - 53.5'	17					158	50		49.0'-71.5' SHELL ZONE: Clay, tan-yellow, silty with scattered sand and shell fragments.
Water Return 0%.	50						55		Color changes to light brown and then to a very light brown to white, shell content increases. Matrix is siliceous.
	98					148	60		65.5'-70.0' Coquina with intermittant sandstone, greenish white, with small amounts of white clay (weathered coquina).
Water Return 0%.							65		65.5'-66.5' Void 68.5'-69.5' Void
Drilling very hard.	30								
	62					138	70		At 70': Material becomes a very light tan calcareous clay with thin streaks of red sand.
	99								71.5'-135.5' CLAY: Silty, gray, calcareous, thinly
							75		

Hole Size 3-1/2"

Hole No. 245

Site Adjacent #1Lc

PROJECT Alvin W. Vogtle Site

SHEET 3 OF 4

HOLE NO. 245

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	% CORE RECOVERY	SAMPLE DATA: BLOW COUNT	Pressure Test	HAMMER WT/LBS	HAMMER FALL-INCHES	ELEVATION	DEPTH	LOG / SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
Casing set to 76.5'. Water Return 100%.									bedded with signs of crossbedding, shells visib in upper 1 foot (marl).
	100		IV			128	80		Material grades to a sandy silt with randomly scatter shell fragments. At 79'; Signs of corss-bedding with thin beds of clay and silt. At 81'; Nodule becoming common by 85'. Small black streaks (possibly organic) between 81' and 86'.
Drilling extremely hard and slow.			V				85		86'-89' Clayey silt. 89' One foot limestone bed 90' Sandy silt with a few scattered shells. Nodules prominent to 94'.
	82		III			118	90		
							95		
Put on new diamond bit.	100					108	100		
Pressure Tests All intervals were tested on 2-10-72. All were tested at 10 psi and 15 psi. No water take was observed in any interval. Length of each test was 5 minutes.	100		II			98	105 110		Nodules become softer.
							115		

Hole Size 3-1/2" - NX

Hole No. 245

Site Adjacent #116

PROJECT Alvin W. Vogtle Site

HOLE NO. 245

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	% CORE RECOVERY	SAMPLE DATA: BLOW COUNT	Pressure Test	HAMMER WT/LBS	HAMMER FALL-INCHES	ELEVATION	DEPTH	LOG	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
										Nodules disappear about 116'.
	100		I			88	120			
							125			
Hole pressure tested between 70' and 130'.						78	130			
Water Return 100%.	100									At 133'; Shells become abundant.
							135			
Hole flushed with water to 140'.	0					68	140			135.5'-137.5' CLAY: Sandy, dark greenish-gray, material much softer than overlying strata, shells and nodules disappear.
Drilled with 1 ton pressure and a basket core catcher. Driller indicates sand continues.	30						145			137.5'-150.0' SAND: Fine, silty, dark gray to black. Medium dense, not reactive to hydrochloric acid.
						58	150			Bottom of Hole 150'.

Hole Size NX

Hole No. 245

Site Adjacent #116

BECHTEL CORPORATION

GEOLOGIC LOG OF DRILL HOLE

SHEET 1 OF 5
HOLE NO. 249

PROJECT Alvin W. Vogtle Site ANGLE FROM HORIZ 90° BEARING

LOCATION N 1,143,826 E 624,154 BEGUN 2-14-72 COMPLETED 2-18-72

OVERBURDEN 2 feet DEPTH DRILLED INTO ROCK 181 feet TOTAL DEPTH OF HOLE 183 feet

ELEV. WATER TABLE NO. CORE BOXES 10 NO. SAMPLES TAKEN 1

CORE RECOVERY (%) 58 FEET 102 MODEL & MAKE OF DRILL Failing 1500

GROUND ELEV. 193.0 feet HOLE LOGGED BY Pete Mote DRILLER Girdler F & E C Thigpen

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	% CORE RECOVERY	SAMPLE DATA: BLOW COUNT	SAMPLE DATA: PENETRATION TOOL	SAMPLE DATA: HAMMER WT/LBS	SAMPLE DATA: HAMMER FALL-INCHES	ELEVATION	DEPTH	LOG	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
Starting hole with 4-1/2" phosphate barrel (4" core). Also used, a 5' x 5.5" core barrel and a 10' x 3.5" NX core barrel. Drilling with mud, diamond and carbide face discharge bits. Drilled to 4.5' with tri-cone to set barrel.						193				0-2.0' SOIL: Dark brown, sandy, organic.
										2.0'-55.2' SAND: Brown, medium-grained, unconsolidated, siliceous.
	90						5			At 7.5'; Sand grades to fine and color changes to mottled gray-tan.
	100					183	10			At 11.5'; Color becomes a mottled red-gray-tan. 12.5'-15.8' Clay lense, f silt pockets, small, colo same as overlying materia
Water Return 100%.	100						15			At 14.7'; Color grades mostly brown. At 15.8'; Sand continues, color, mostly red-brown, with some clay stringers.
	81					173	20			By 18'; Stringers disappe 18.8'-19.4' Sand clay lense. Sand continues clean below lense, color becoming orangish by 22'.
	38						25			
	99									Sand continues.
	0					163	30			
Started the 5.5" core barrel.	0						35			

Hole Size 5-1/2"

Hole No. 249

Site Solution Depression

SHEET 2 OF 5

PROJECT Alvin W. Vogtle Site

HOLE NO. 249

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	% CORE RECOVERY	SAMPLE DATA: BLOW COUNT	Pressure Test	HAMMER WT/LBS	HAMMER FALL-INCHES	ELEVATION	DEPTH	LOG / SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
	16								36.9'-37.5' Sandy clay lense. At 37.5'; Medium sand continues.
						153	40		
	100								At 42'; Color grades to a light tan.
							45		At 45.5'; Material grades medium to fine and color changes back to orangeish. Streaked coloration indicate poor bedding.
	94								
						143	50		At 50'; Color changes slightly purplcish. At 52'; Sand becomes brown. 53.2'-55.2' Clay lense, sandy, chocolate brown with light streaks.
	93								
At 55.6': refusal with phosphate, switched to 5.5" core barrel.							55		55.2'-57.9' SHELL ZONE: Shell fragments in a clay sand matrix. At 56.7'; Hard limestone layer, yellow. 56.7'-57.9' Clay, sandy and silty, fairly fat.
	72								57.9'-122.0' CLAY: Gray (marl) sandy, massive, generally with some vague sign of poor bedding.
Set 61.5' of 4" casing. Began coring with NX at 60.6'. Sample between 60.6' and 61.5' disturbed.						133	60		At 62'; Interbedded clay and silts, poorly, small shell fragments become fairly wide spread.
							65		At 67.5'; Material becomes more sa'y and massive.
	100		I			123	70		68.2'-6(.' A hard limestone bed. Massive material continues below.
	100						75		

Hole Size 5-1/2" - NX

Hole No. 249

Site Solution Depression

PROJECT Alvin W. Vogtle Site

SHEET 3 OF 5

HOLE NO. 249

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	% CORE RECOVERY	SAMPLE DATA: BLOW COUNT	SAMPLE DATA: Pressure Test	SAMPLE DATA: HAMMER WT/LBS	SAMPLE DATA: HAMMER FALL-INCHES	ELEVATION	DEPTH	LOG / SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
Pressure Tests (2-18-72) Section I: 67.5'-87.5' 10 psi - 5 minutes No loss 15 psi - 5 minutes No los									Calcareous nodules appear in sample. 74.2'-75.2' Limestone bed nodules become more abundent and larger, 2". Material grades more sandy.
						113	80		
	100		I				85		Material continues a very sandy clay. Calcareous nodules become very abundant.
Section II:* 80.0'-100.0' 10 psi - 5 minutes Take 5 gallons 15 psi - 5 minutes Take 7 gallons			II			103	90		At 91'; Material grades a silty clay and nodules continue but became loss prominent. Color changes to a lighter gray.
	99						95		
Section III:* 92.5'-112.5' 10 psi - 5 minutes Take 3 gallons 15 psi - 5 minutes Take 4-1/4 gallons						93	100		At 98'; Material grades t a clayey siltstone. Nodules become almost non-existant siltstone appears, generally massiv and streaked with differe shades of gray.
			III				105		
*Take possibly because of leaky or improperly set lower pocket.	100					83	110		At 109.5'; Hard 6" zone, possible nodule.
							115		

Hole Size NX

Hole No. 249

Site Solution Depression

PROJECT Alvin W. Vogtle Site

SHEET 4 OF 5

HOLE NO. 249

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	% CORE RECOVERY	SAMPLE DATA: BLOW COUNT	PENETRATION TOOL	HAMMER WT/LBS	HAMMER FALL-INCHES	ELEVATION	DEPTH	LOG / SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
	85					73	120		
	35								122.0'-124.0' CLAY: Dark green, sandy.
							125		124.0'-183.0' SAND: Gray, clean, unconsolidated, fine to medium, quartz dominated. Siltstone continues.
	0					63	130		
							135		Material grades medium to coarse, siliceous.
	15					53	140		Fine to medium, as observed in cuttings.
							145		Material grades medium to coarse, siliceous.
	0					43	150		
							155		

Hole Size NX

Hole No. 249

Site Solution Depression

PROJECT Alvin W. Vogtle Site

SHEET 5 OF 5

HOLE NO. 249

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	% CORE RECOVERY	SAMPLE DATA: BLOW COUNT	SAMPLE DATA: PENETRATION TOOL	SAMPLE DATA: HAMMER WT/LBS	SAMPLE DATA: HAMMER FALL-INCHES	ELEVATION	DEPTH	LOG / SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
	0					33	160		
1' Split spoon sample.								1	
							165		
	5								
						23	170		Dark gray sand, silty, lo[…] half of sample. Silt is micaceous, talcose or muscovite.
							175		
									Material continues dark gray and silty.
	5					13	180		
Piezometer set in hole.									
Hole is grouted in the marl clay. 57' of 2" PVC.									Bottom of Hole 183'.

Hole Size NX

Hole No. 249

Site Solution Depression

BECHTEL

GEOLOGIC LOG OF DRILL HOLE

SHEET 1 OF 5
HOLE NO. 301

PROJECT Alvin W. Vogtle Site   ANGLE FROM HORIZ 90°   BEARING ____

LOCATION N 1,142,715 E 622,225   BEGUN 5-9-72   COMPLETED 5-13-72

OVERBURDEN 0'   DEPTH DRILLED INTO ROCK 161' 4"   TOTAL DEPTH OF HOLE 161.3'

ELEV. WATER TABLE ____   NO. CORE BOXES ____   NO. SAMPLES TAKEN 25

CORE RECOVERY (%) ____   FEET ____   MODEL & MAKE OF DRILL CME-55

GROUND ELEV. 227.3   HOLE LOGGED BY Norm Thiel   DRILLER LETCO-Stone

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	SAMPLE DATA: PENETRATION TOOL	TOOL SIZE	METHOD n-BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	LOG SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
						227			0'-9.0' SILT: Dense, red, sandy.
	Split Spoon	2"	9-14-19 / 33	18"			5	1	
	Shelby	3"		18"	16"	217	10	UD 1	9.0'-87.0' SAND: Red, silty, fine.
	Split Spoon	2"	11-15-14 / 19	18"			15	2	As above.
	Shelby	3"		18"	16"	207	20	UD 2	As above.
	Split Spoon	2"	8-10-10 / 20	18"			25	3	As above.
	Shelby	3"		18"	18"	197	30	UD 3	Becomes tan, fine, very little silt.
							35		

Hole No. 301

Hole Size 7-7/8"

Site Unit #1 - Emergency Wa

SHEET 2 OF 5

PROJECT Alvin W. Vogtle Site

HOLE NO 301

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	SAMPLE DATA: PENETRATION TOOL	TOOL SIZE	METHOD n-BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	LOG / SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
	Split Spoon	2"	9-14-19 / 33	18"				4	Dense, tan, medium, trace silt.
						187	40		
	Shelby	3"		24"	21"			UD 4	Medium to fine.
	Split Spoon	2"	4-5-8 / 13	18"			45	5	Compact, silty.
						177	50		
	Shelby	3"		30"	28"			UD 5	Tan, medium to fine, clayey.
	Split Spoon	2"	7-8-8 / 16	18"			55	6	Firm, only trace silt.
						167	60		
	Shelby	3"		30"	28"			UD 6	White to tan, clayey, medium to fine.
	Split Spoon	2"	9-18-24 / 42	18"			65	7	Dense, white, medium to fine, grading coarser.
						157	70		
	Shelby	3"		30"	0"			UD 7	Finer.
	"	3"		30"	30"		75	UD 8	

Hole Size 7-7/8"

Hole No 301

Site Unit #1, Emergency Water

PROJECT Alvin W. Vogtle Site

SHEET 3 OF 5

HOLE NO 301

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	SAMPLE DATA: PENETRATION TOOL	TOOL SIZE	METHOD N-BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION.
	Split Spoon	2"	6-5-6 / 11	18"				8	Tan, silty, clayey, fine.
						147	80		
	Shelby	3"		24"	22"			UD 9	
									White, medium to fine.
							85		
	Split Spoon	2"	6-5-6 / 11	18"				9	
Lost all water at 87'.									87.0'-91.0' SHELLS
Set 6" casing to 90'.						137	90		
									91.0'-160.0' CLAY: Hard, gray, silty, calcareous.
	Pitcher	4"		30"	30"			UD 10	
							95		
	"	"		30"	30"	127	100	UD 11	Greenish-gray.
							105		
	"	"		30"	26"	117	110	UD 12	Highly cemented, very ha trace fine sand.
							115		

Hole Size 7-7/8" - 5-7/8"

Hole No 301

Site Unit #1, Emer

Water

PROJECT Alvin W. Vogtle Site

SHEET 4 OF 5

HOLE NO 301

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	SAMPLE DATA: PENETRATION TOOL	TOOL SIZE	METHOD n-BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	LOG	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
	Pitcher	4"		24"	23"	107	120		UD 13	Same as above.
							125			
						97	130			
							135			
	"	"		30"	24"	87	140		UD 14	Very hard, not cemented.
							145			
	"	"		30"	27"	77	150		UD 15	Sandier.
							155			

Hole Size 5-7/8"

Hole No 301

Site Unit #1, Emergency Water

PROJECT Alvin W. Vogtle Site

SHEET 5 OF 5

HOLE NO 301

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	SAMPLE DATA					ELEVATION	DEPTH	LOG	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION.
	PENETRATION TOOL	TOOL SIZE	METHOD n-BLOWS	ADVANCE	RECOVERY					
	Pitcher	4"		28"	12"	67	160		UD 16	160.0'-161.3' : SAND
Grouted through top of clay.										Bottom of Hole 161.3'

Hole Size 5-7/8"

Hole No 301

Site Unit #1, Emerg

Water

BECHTEL

SHEET 1 OF 5

GEOLOGIC LOG OF DRILL HOLE

HOLE NO. 305

PROJECT Alvin W. Vogtle Site ANGLE FROM HORIZ 90° BEARING

LOCATION N 1,142,870 E 622,505 BEGUN 5-13-72 COMPLETED 5-16-72

OVERBURDEN 0' DEPTH DRILLED INTO ROCK 161' TOTAL DEPTH OF HOLE 161'

ELEV. WATER TABLE NO. CORE BOXES NO. SAMPLES TAKEN 28

CORE RECOVERY (%) FEET MODEL & MAKE OF DRILL Acker Mark II

GROUND ELEV. 227.7 HOLE LOGGED BY Norm Thiel DRILLER LETCO-Harris

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	SAMPLE DATA: PENETRATION TOOL	TOOL SIZE	METHOD n - BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	LOG / SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
						228			0'-51' SAND: Firm, reddish-brown, medium to fine, silty.
	Split Spoon	2"	4-6-7 / 13	18"	10"		5	1	
	Shelby	3"		17"	17"	218	10	UD 1	As above.
	Split Spoon	2"	8-14-18 / 32	18'	10"		15	2	Less silty.
	Shelby	3"		18'	18"	208	20	UD 2	
	Split Spoon	2"	11-17-19 / 36	18"			25	3	
	Shelby	3"		18"	18"	198	30	UD 3	Tan to brown, silty, fine to coarse, well graded.
	Split Spoon	2"	9-16-29 / 45	18"	10"		35	4	Light brown, dense, trace silt.

Hole Size 7-5/8"

Hole No. 305

Site Aux. Bldg.

PROJECT Alvin W. Vogtle Site

SHEET 2 OF 5

HOLE NO 305

NOTES: WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	SAMPLE DATA: PENETRATION TOOL	TOOL SIZE	METHOD n-BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	LOG / SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
	Shelby	3"		24"	0	188	40	UD 4	Yellowish-tan, medium to fine, very clayey.
	"	"		30"	27"			UD 5	
	Split Spoon	2"	6-7-9 / 16	18"	18"		45	5	Less clayey.
	Shelby	3"		30"	27"	178	50	UD 6	51.0'-60.0' CLAY: Tan to yellow, weathered, silty, trace sand, sand lenses.
	Split Spoon	2"	11-7-10 / 17	18"	18"		55	6	
	Shelby	3"		24"	24"	178	60	UD 7	60.0'-77.0' SAND: Very dense, white to yellow, clayey, medium.
	Split Spoon	2"	16-27-38 / 65	18"	14"		65	7	
	Shelby	3"		8"	0	168	70	UD 8	Tan, medium to fine, trace of silt.
	Pitcher	4"		30"	14"			UD 9	
	Split Spoon	2"	5-7-9 / 16	18"	18"		75	8	Yellow sand lenses.

Hole Size 7-5/8"

Hole No 305

Site Aux. Bldg.

SHEET 3 OF 5

PROJECT Alvin W. Vogtle Site

HOLE NO 305

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	SAMPLE DATA: PENETRATION TOOL	TOOL SIZE	METHOD n-BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
Set 6" casing to 77'.									77.0'-156.0' <u>CLAY</u>: Yellow, silty, some thin sand layers.
	Shelby	3"		24"	24"	158	80	UD 10	
	Split Spoon	2"	6-2-2 / 4	18"	8"		85	9	
	Shelby	3"		2"	2"			UD 11	At 89'; Lime mudstone and lime and sand matrix.
						148	90		
	Pitcher	4"		30"	30"			UD 12	Greenish-gray clay, calcareous, silty, firm.
							95		
	"	"		30"	30"	138	100	UD 13	Some small shell fragmen
							105		
	"	"		15"	15"	128	110	UD 14	Very hard, limestone, gr
							115		

Hole Size 7-5/8" - 5-5/8"

Hole No 305

Site Aux. Bldg.

PROJECT Alvin W. Vogtle Site

SHEET 4 OF 5

HOLE NO 305

NOTES WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	SAMPLE DATA PENETRATION TOOL	TOOL SIZE	METHOD n-BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	LOG	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
	Pitcher	4"		18"	13"	118	120		UD 15	Occasional thin (2"-3") clayey sand layers with shell fragments.
							125			
	"	"		30"	26"	108	130		UD 16	Hard nodules.
							135			
	"	"		30"	29"	98	140		UD 17	Slightly sandy, some nodules.
							145			
	"	"		30"	30"	88	150		UD 18	
							155			

Hole Size 5-5/8"

Hole No 305

Site Aux. Bldg.

PROJECT Alvin W. Vogtle Site

SHEET 5 OF 5

HOLE NO 305

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC	PENETRATION TOOL	TOOL SIZE	METHOD n-BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	LOG	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
	Pitcher	4"		24"	12"	78	160		UD 19	156.0'-161.0' SAND: Light gray, fine, trace of silt
Grouted up through clay.										Bottom of Hole 161'

Hole Size 5-5/8"

Hole No 305

Site Aux. Bldg.

BECHTEL

SHEET 1 OF 4

GEOLOGIC LOG OF DRILL HOLE

HOLE NO. 308

PROJECT Alvin W. Vogtle Site ANGLE FROM HORIZ 90° BEARING

LOCATION N 1,143,106 E 622,740 BEGUN 5-10-72 COMPLETED 5-12-72

OVERBURDEN 0' DEPTH DRILLED INTO ROCK 151' 4" TOTAL DEPTH OF HOLE 151.3'

ELEV. WATER TABLE NO. CORE BOXES NO. SAMPLES TAKEN 24

CORE RECOVERY (%) FEET MODEL & MAKE OF DRILL Acker Mark II

GROUND ELEV. 225.9 HOLE LOGGED BY Norm Thiel DRILLER LETCO-Harris

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	SAMPLE DATA: PENETRATION TOOL	TOOL SIZE	METHOD n - BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	LOG	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
						226				0'-76.0' SAND: Red, loose, silty, fine.
	Split Spoon	2"	2-3-4 / 7	18"			5		1	
									UD	
	Shelby	3"		24"	24"	216	10		1	Medium to fine.
	Split Spoon	2"	12-9-15 / 24	18"			15		2	As above.
									UD	
	Shelby	3"		24"	24"	206	20		2	Tan, fine, clayey, with thin black streaks.
	Split Spoon	2"	11-23-23 / 46	18"			25		3	Brown, dense, medium to fine.
									UD	
	Shelby	3"		24"	21"	196	30		3	Becomes finer.
	Split Spoon	2"	6-10-12 / 22	18"			35		4	

Hole No. 308

Hole Size 7-7/8"

Site Diesel Gen. Bldg.

SHEET 2 OF 4

PROJECT Alvin W. Vogtle Site

HOLE NO 308

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	SAMPLE DATA: PENETRATION TOOL	TOOL SIZE	METHOD n-BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
	Shelby	3"		21"	21"	186	40	UD 4	White to tan, medium, trace silt, no clay.
	Split Spoon	2"	13-19-25 / 44	18"			45	5	As above.
	Shelby	3"		18"	17"	176	50	UD 5	Finer.
	Split Spoon	2"	19-32-22 / 54	18"			55	6	White, clayey, medium to fine, large amount of shells (calcareous).
	Shelby	3"		23"	21"	166	60	UD 6	Shells, clayey, hard.
Water loss 100%.									
	Split Spoon	2"	8-8-8 / 16	18"			65	7	White, firm, clayey, medium to fine.
	Shelby	3"		24"	0"	156	70		
	"	"		24"	0"			UD 7	
							75	UD 8	

Hole Size 7-7/8"

Hole No 308

Site Diesel Gen. Bldg.

PROJECT Alvin W. Vogtle Site

HOLE NO 308

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	PENETRATION TOOL	TOOL SIZE	METHOD n-BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
	Shelby	3"		12"	4"			UD 9	76.0'-83.0' <u>SHELLS</u>
						146	80		
	Split Spoon	2"	21-41-54 / 95	18"				8	83.0'-147.0' <u>CLAY</u>: Very har gray-green, silty, calcareous.
							85		
Set 6" casing to 89'.	Pitcher	4"		28"	26"	136	90	UD 10	
							95		
	"	"		28"	24"	126	100	UD 11	Occasional shell fragmen
							105		
	"	"		28"	26"	116	110	UD 12	Trace fine sand.
							115		

Hole Size 7-7/8" - 5-7/8"

Hole No 308

Site Diesel Gen. Bl

PROJECT Alvin W. Vogtle Site

SHEET 4 OF 4

HOLE NO 308

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	SAMPLE DATA: PENETRATION TOOL	TOOL SIZE	METHOD n-BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	LOG	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
	Pitcher	4"		28"	28"	106	120		UD 13	As above.
							125			
	"	"		28"	24"	96	130		UD 14	
							135			
	"	"		28"	14"	86	140		UD 15	Very hard, cemented.
							145			147.0'-151.3' SAND: Dark gray, silty, medium to fine, calcareous.
	"	"		28"	12"	76	150		UD 16	
›uted up through clay.										Bottom of Hole 151.3'

Hole Size 5-7/8"

Hole No 308

Site Diesel Gen. Bldg.

BECHTEL

SHEET 1 OF 5

GEOLOGIC LOG OF DRILL HOLE

HOLE NO. 309

PROJECT Alvin W. Vogtle Site ANGLE FROM HORIZ 90° BEARING

LOCATION N 1,143,120 E 622,335 BEGUN 5-9-72 COMPLETED 5-13-72

OVERBURDEN 0' DEPTH DRILLED INTO ROCK 161'6" TOTAL DEPTH OF HOLE 161.5'

ELEV. WATER TABLE NO. CORE BOXES NO. SAMPLES TAKEN 27

CORE RECOVERY (%) FEET MODEL & MAKE OF DRILL CME-55

GROUND ELEV. 231.2 HOLE LOGGED BY Norm Thiel DRILLER LETCO-Ross

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	SAMPLE DATA: PENETRATION TOOL	TOOL SIZE	METHOD n - BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	LOG	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
						231				0'-35.5' SAND: Firm, red, silty, fine.
	Split Spoon	2"	2-3-7 / 10	18"			5		1	
At 10', 1st Shelby tube left in hole. Moved 3' east and began again.	Shelby	3"		24"	23"				UD 1	As above.
						221	10			
	Split Spoon	2"	8-8-11 / 19	18"			15		2	As above.
	Shelby	3"		28"	14"				UD 2	Tan.
						211	20			
	Split Spoon	2"	9-10-11 / 21	18"			25		3	Red.
	Shelby	3"		24"	14"	201	30		UD 3	Tar to red.
							35			

Hole Size 8-1/2"

Hole No. 309

Site Control Bldg., Units 3

PROJECT Alvin W. Vogtle Site

SHEET 2 OF 5

HOLE NO 209

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	SAMPLE DATA: PENETRATION TOOL	TOOL SIZE	METHOD n-BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	LOG	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
	Split Spoon	2"	8-6-6 / 12	18"					4	35.5' -47.0' CLAY: Silty, sandy, red to purple to yellow-brown, mottled.
	Shelby	3"		36"	0"	191	40		UD 4	
	Pitcher	4"		36"	0				UD 5	Yellow, sandy.
	"	"		30"	15"		45		UD 6	
										47.0'-79.0' SAND: Yellow, white, tan, firm, medium to fine.
	Split Spoon	2"	7-8-11 / 19	18"					5	
	Shelby	3"		24"	15"	181	50		UD 7	
	Split Spoon	2"	8-9-15 / 24	18"			55		6	White, clayey.
	Shelby	3"		8"	0"	171	60		UD 8	
	Pitcher	4"		28"	0"				UD 9	As above.
							65			
	"	"		36"	8"				UD 10	
	"	"		36"	36"	161	70		UD 11	As above, gray.
							75			

Hole Size 8-1/2"

Hole No 309

Site Control Bldg. Units 3 & 4

SHEET 3 OF 5

PROJECT Alvin W. Vogtle Site

HOLE NO 309

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	SAMPLE DATA: PENETRATION TOOL	TOOL SIZE	METHOD n-BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
	Split Spoon	2"	5-9-12 / 21	18"				7	
									79.0'-91.0' SAND & SHELLS: Sand, gray to white, shell fragments, possible limestone lenses.
	Pitcher	4"		24"	14"	151	80	UD 12	
Attempted split spoon at 85', 50 blows for 0 inches.							85		
Water loss 100%									
						141	90		
									91.0-158.0' CLAY: Hard, gray silty, calcareous.
	"	"		30"	28"		95	UD 13	
	"	"		28"	28"	131	100	UD 14	Very hard, cemented.
							105		
	"	"		30"	30"	121	110	UD 15	Trace medium to fine sand and shell fragments.
							115		

Hole Size 8-1/2"

Hole No 309

Site Control Bldg. Units 3 & 4

SHEET 4 OF 5

PROJECT Alvin W. Vogtle Site

HOLE NO 309

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	SAMPLE DATA: PENETRATION TOOL	TOOL SIZE	METHOD n-BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	LOG	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
	Pitcher	4"		24"	20"	111	120		UD 16	Highly cemented, limestone or siltstone.
							125			
	"	"		30"	10"	101	130		UD 17	Sandy.
							135			
	"	"		30"	29"	91	140		UD 18	No sand.
							145			
	"	"		30"	26"	81	150		UD 19	
							155			

Hole Size 8-1/2"

Hole No 309

Site Control Bldg. Units 3 & 4

PROJECT Alvin W. Vogtle Site

SHEET 5 OF 5

HOLE NO 309

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	SAMPLE DATA					ELEVATION	DEPTH	LOG	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
	PENETRATION TOOL	TOOL SIZE	METHOD n-BLOWS	ADVANCE	RECOVERY					
	Pitcher	4"		30"	21"	71	160		UD 20	158.0'-161.5' SAND: Silty, greenish-gray, coarse to fine.
Grouted up through clay.										Bottom of Hole at 161.5'

Hole Size 8-1/2"

Hole No 309

Site Control Bldg. Units 3 & 4

BECHTEL

GEOLOGIC LOG OF DRILL HOLE

SHEET 1 OF 5
HOLE NO. 313

PROJECT Alvin W. Vogtle Site ANGLE FROM HORIZ 90° BEARING
LOCATION N 1,143,274 E 622,790 BEGUN 5-12-72 COMPLETED 5-16-72
OVERBURDEN 0' DEPTH DRILLED INTO ROCK 161'6" TOTAL DEPTH OF HOLE 161.5'
ELEV. WATER TABLE NO. CORE BOXES NO. SAMPLES TAKEN 25
CORE RECOVERY (%) FEET MODEL & MAKE OF DRILL Acker Mark II
GROUND ELEV. 224.9 HOLE LOGGED BY J. Guida DRILLER LETCO-Melvin

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	SAMPLE DATA: PENETRATION TOOL	TOOL SIZE	METHOD n - BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	LOG / SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
						225	0		0'-73.0' SAND: Red-brown, loose, silty.
	Split Spoon	2"	2-2-4 / 6	18"	9"		5	1	
	Shelby	3"		24"	18"			UD 1	
						215	10		
	Split Spoon	2"	5-10-17 / 27	18"	14'		15	2	Brown, slightly clayey.
	Shelby	3"		24"	15"			UD 2	
						205	20		
	Split Spoon	2"	8-12-15 / 27	18	10"		25	3	Light brown, coarser.
	Shelby	3"		24"	20"			UD 3	Finer, mottled.
						195	30		
							35		

Hole Size 7-5/8"

Hole No. 313
Site Unit #3 - Turbine Bl

SHEET 2 OF 5

PROJECT Alvin W. Vogtle Site

HOLE NO 313

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	SAMPLE DATA: PENETRATION TOOL	TOOL SIZE	METHOD n - BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	LOG / SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
	Split Spoon	2"	6-7-9 / 16	18"	14"			4	Tan, silty, dense, medium.
	Shelby	3"		24"	18"	185	40	UD 4	Loss silty.
	Split Spoon	2"	7-17-22 / 39	18"	10"		45	5	Becomes rather clean.
Lost sample UD5. Recovered 15" on second hole.	Shelby	3"		24"	15"	175	50	UD 5	
	"	3"		24"	15"		55	UD 6	
	Pitcher	4"		12"	6"	165	60	UD 7	White, with shells and clay.
	Split Spoon	2"	18-16-24 / 40	18"			65	6	Mottled white & green with shell fragments.
	Pitcher	4"		30"	7"	155	70	UD 7	73.0'-87.0' <u>SHELLS</u>: White, calcareous, mottled with silty clay and sand.
							75		

Hole Size 7-5/8"

Hole No 313

Site Unit #3 - Turbine Bld

SHEET 3 OF 5

PROJECT Alvin W. Vogtle Site

HOLE NO 313

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	SAMPLE DATA: PENETRATION TOOL	TOOL SIZE	METHOD n-BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	LOG	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
	Split Spoon	2"	100/10"	10"	5"				8	Very hard.
	"	"	150/0"	12"	0"	145	80		9	As above.
	"	"	32-52-49/101				85		10	
At 85', hole caved. Lost 10' of rod and the tri-cone bit. Moved 3' west and drilled new hole. Set 6" casing to 87'.										87.0'-159.0' <u>CLAY</u>: Grayish-green, silty, calcareous, inorganic, hard, low plasticity.
	Pitcher	4"		30"	22"	135	90		UD 8	
							95			
	"	"		30"	27"	125	100		UD 9	As above. Very hard from 101' to 103.5'. Limestone or siltstone.
							105			
	"	"		30"	24"	115	110		UD 10	As above.
							115			

Hole Size 7-5/8" - 4"

Hole No 313

Site Unit #3 - Turbine Bl

PROJECT Alvin W. Vogtle Site

HOLE NO 313

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	SAMPLE DATA: PENETRATION TOOL	TOOL SIZE	METHOD n-BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	LOG	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
	Pitcher	4"		30"	25"	105	120		UD 11	Limestone fragments.
							125			
	"	"		30"	18"	95	130		UD 12	Some fine sand.
							135			
	"	"		30"	15"	85	140		UD 13	As above.
							145			
	"	"		30"	25"	75	150		UD 14	As above.
							155			

Hole Size 4"

Hole No 313

Site Unit #3 - Turbine Bldg

PROJECT Alvin W. Vogtle Site	SHEET 5 OF 5
	HOLE NO 313

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	SAMPLE DATA: PENETRATION TOOL	TOOL SIZE	METHOD n-BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	LOG	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
	Pitcher	4"		30"	18"	65	160		UD 15	159.0'-161.5' SAND: Dark gray-green, dense, silty.
Grouted through top of clay.										Bottom of Hole at 161.5'

Hole Size 4"

Hole No 313

Site Unit #3 - Turbine Bl

BECHTEL

SHEET 1 OF 5

GEOLOGIC LOG OF DRILL HOLE

HOLE NO. 314

PROJECT Alvin W. Vogtle Site ANGLE FROM HORIZ 90° BEARING

LOCATION N 1,143,335 E 622,494 BEGUN 5-9-72 COMPLETED 5-12-72

OVERBURDEN 0' DEPTH DRILLED INTO ROCK 163'6" TOTAL DEPTH OF HOLE 160.5'

ELEV. WATER TABLE NO. CORE BOXES NO. SAMPLES TAKEN 21

CORE RECOVERY (%) FEET MODEL & MAKE OF DRILL Acker Mark II

GROUND ELEV. 229.5' HOLE LOGGED BY J. Guida DRILLER LETCO-Alexander

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	SAMPLE DATA: PENETRATION TOOL	TOOL SIZE	METHOD n - BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	LOG / SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
						230			0'-63.0' SAND: Red-brown, medium, slightly silty, moist.
	Split Spoon	2"	3-5-5 / 10	18"	16"		5	1	
								UD	
	Shelby	3"		18"	16"			1	
						220	10		
	Split Spoon	2"	9-10-9 / 19	18'	15"		15	2	Slightly clayey, brown.
								UD	
	Shelby	3"		18'	14"			2	
						210	20		
	Split Spoon	2"	3-5-6 / 11	18"	17"		25	3	Occasional clay seams.
								UD	
At 28' dropped 4" wrench in hole. Moved 3' east and began again.	Shelby	3"		24"	19"	200	30	3	
									Light tan, clayey, dense, silty.
							35		

Hole Size 7-5/8"

Hole No. 314

Site Unit #3 - Turbine Bl

SHEET 2 OF 5

PROJECT Alvin W. Vogtle Site

HOLE NO 314

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	SAMPLE DATA: PENETRATION TOOL	TOOL SIZE	METHOD n-BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	LOG SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
	Split Spoon	2"	9-10-10 / 20	18"	14"			4	Very clayey, with very fine sand, tan, silty.
	Shelby	3"		24"	22"			UD 4	
						190	40		
	Split Spoon	2"	6-6-10 / 16	18"	18"		45	5	Less silty.
								UD 5	Clayey.
	Shelby	3"		24"	16"	180	50		
	Split Spoon	2"	17-22-23 / 45	18"	10"		55	6	Slightly silty, dense. Coarse to medium.
	Pitcher	4"		24"	15"	170	60	UD 6	Brown, fine to medium.
									63.0'-97.0' <u>SHELLS</u>: White, calcareous, very dense, clayey.
	Split Spoon	2"	20-30-21 / 51	18"	15"		65	7	
						160	70		
							75		

Hole Size 7-5/8"

Hole No 314

Site Unit #3 Turbine

PROJECT Alvin W. Vogtle Site

SHEET 3 OF 5

HOLE NO 314

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	SAMPLE DATA: PENETRATION TOOL	TOOL SIZE	METHOD n-BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
Water loss 100%						150	80		
							85		
	Split Spoon	2"	100/9"	9"	9"	140	90	8	Shells, white, calcareous, very dense, clay binder.
							95		
Set 6" casing to 97'.									97.0'-159.0' <u>CLAY</u>: Greenish gray, mottled, hard, silt[y], calcareous, inorganic, l[ow] plasticity.
	"	"	100/12"	12"	12"	130	100	9	
							105		
Sample UD7, cutting edge of tube buckled.	Pitcher	4"		30"	22"	120	110	UD 7	Limestone fragments.
							115		

Hole Size 7-5/8" - 5-5/8"

Hole No 314

Site Unit #3 Turbin[e]

SHEET 4 OF 5

PROJECT Alvin W. Vogtle Site

HOLE NO 314

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	SAMPLE DATA: PENETRATION TOOL	TOOL SIZE	METHOD N-BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	LOG	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
	Pitcher	4"		30"	21"	110	120		UD 8	Hard limestone portions up to 6" - 8" across.
							125			
	"	"		24"	6"	100	130		UD 9	As above.
							135			
	"	"		30"	30"	90	140		UD 10	Some fine sand.
							145			
	"	"		30"	30"	80	150		UD 11	As above.
							155			

Hole Size 5-5/8"

Hole No 314

Site Unit #3 - Turbine

PROJECT Alvin W. Vogtle Site	SHEET 5 OF 5 / HOLE NO 314

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	PENETRATION TOOL	TOOL SIZE	METHOD n-BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	LOG	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
	Pitcher	4"		30"	15"	70	160			159.0'-160.5' SAND: Greenish black, silty, dense.
Grouted up through top of clay.										Bottom of Hole 160.5'

Hole Size 5-5/8"

Hole No 314

Site Unit #3 - Tur

BECHTEL

SHEET 1 OF 6

GEOLOGIC LOG OF DRILL HOLE

HOLE NO. 319

PROJECT Alvin W. Vogtle Site ANGLE FROM HORIZ 90° BEARING

LOCATION N 1,141,849 E 622,225 BEGUN 5-20-72 COMPLETED 5-23-72

OVERBURDEN 0' DEPTH DRILLED INTO ROCK 203' TOTAL DEPTH OF HOLE 203'

ELEV. WATER TABLE NO. CORE BOXES NO. SAMPLES TAKEN 32

CORE RECOVERY (%) FEET MODEL & MAKE OF DRILL Failing 1500

GROUND ELEV. 255.5' HOLE LOGGED BY Norm Thiel DRILLER LETCO-Boline (Girdler)

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	SAMPLE DATA: PENETRATION TOOL	TOOL SIZE	METHOD n - BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	LOG	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
						256				0'-3.0' SAND: Red-brown, silt
										3.0'-14.0' SILT: Firm, tan to red, some clay and sand.
	Split Spoon	2"	5-8-15 / 23	18"	18"		5		1	
	Shelby	3"		14"	14"	246	10		UD 1	
										14.0'-67.0' SAND: Firm, purpl to tan, silty, fine.
	Split Spoon	2"	7-10-12 / 22	18"	18"		15		2	
	Shelby	3"		30"	25"	236	20		UD 2	As above.
	Split Spoon	2"	7-10-19 / 29	18"	18"		25		3	Firm, medium to fine, clea
	Shelby	3"		16"	15"	226	30		UD 3	Dense, trace, silt.
							35			

Hole No. 319

Hole Size 7-5/8"

Site Cooling Tower

PROJECT Alvin W. Vogtle Site

SHEET 2 OF 6

HOLE NO 319

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	PENETRATION TOOL	TOOL SIZE	METHOD n-BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	LOG SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
	Split Spoon	2"	12-18-25 / 43	18"	18"			4	
	Shelby	3"		24"	15"	216	40	UD 4	Red, medium to fine.
	Split Spoon	2"	12-19-24 / 43	18"	9"		45	5	Dense, silty.
	Shelby	3"		24"	19"	206	50	UD 5	Trace clay.
	Split Spoon	2"	13-24-30 / 54	18"	4"		55	6	Very dense, tan, medium to fine, silty.
	Shelby	3"		15"	14"	196	60	UD 6	Trace clay.
	Split Spoon	2"	27-35-17 / 52	18"	2"		65	7	Dense, light brown, clayey.
									67.0'-84.5' CLAY: Yellow to tan, silty, trace sand.
	Pitcher	4"		36"	32"	186	70	UD 7	
							75		

Hole Size 7-5/8"

Hole No 319

Site Cooling Tower

SHEET 3 OF 6

PROJECT Alvin W. Vogtle Site

HOLE NO 319

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	PENETRATION TOOL	TOOL SIZE	METHOD n - BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
	Split Spoon	2"	9-12-15 / 27	18"	2"			8	Very sandy.
	Pitcher	4"		36"	13"	176	80	UD 8	Dense, sandy.
									84.5'-99.0' SAND: Tan to yellow, silty, medium to fine.
	Split Spoon	2"	14-23-25 / 48	18"	10"		85	9	
	Pitcher	4"		36"	36"	166	90	UD 9	Clayey.
	Split Spoon	2"	35-65 / 100	12"	2"		95	10	
						156	100		99.0'-101.5' SHELL: Sandy.
	Pitcher	4"		36"	31"			UD 10	101.5'-118.0' SAND: Very dense, white, clayey, with shell fragments.
	Split Spoon	2"	22-35-40 / 75	18"	10"		105	11	
	Pitcher	4"		36"	24"	146	110	UD 11	Only trace clay, still shell fragments.
							115		

Hole Size 7-5/8"

Hole No 319

Site Cooling Tower

SHEET 4 OF 6

PROJECT Alvin W. Vogtle Site

HOLE NO 319

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	PENETRATION TOOL	TOOL SIZE	METHOD n-BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
	Split Spoon	2"	23-30-45 75	18"	10"			12	
						136	120		118.0'-125.0' SHELL: Highly cemented limestone and shell, very hard.
Water loss 100% Set 125' of 6" casing.	Pitcher	4"		12"	10"			UD 12	
							125		125.0'-131.0' SAND: Very clayey, tan, medium to fine.
						126	130		
	"	"		36"	36"			UD 13	131.0'-198.0' CLAY: Greenish-gray, hard, silty, slightly calcareous.
							135		
						116	140		
	"	"		36"	13"			UD 14	Some limestone layers.
							145		
						106	150		
	"	"		36"	36"			UD 15	As above.
							155		

Hole Size 7-5/8" - 5"

Hole No 319

Site Cooling Towers

PROJECT Alvin W. Vogtle Site

SHEET 5 OF 6

HOLE NO 319

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	SAMPLE DATA: PENETRATION TOOL	TOOL SIZE	METHOD n-BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	LOG	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
	Pitcher	4"		36"	13"	96	160		UD 16	
							165			
	"	"		24"	12"	86	170		UD 17	Some soft limestone.
							175			
	"	"		36"	36"	76	180		UD 18	Clay again, some shells.
							185			
	"	"		36"	36"	66	190		UD 19	Very hard, sandy.
							195			

Hole Size 5"

Hole No 319

Site Cooling Tower

SHEET 6 OF 6

PROJECT Alvin W. Vogtle Site

HOLE NO 319

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	SAMPLE DATA: PENETRATION TOOL	TOOL SIZE	METHOD n-BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	LOG	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
						56	200		UD 20	198.0'-203.0' SAND: Gray, medium to fine, some silt.
Grouted up through clay.										Bottom of Hole 203'

Hole Size 5"

Hole No 319

Site Cooling Tower

BECHTEL

GEOLOGIC LOG OF DRILL HOLE

SHEET 1 OF 5

HOLE NO. 331

PROJECT Alvin W. Vogtle Site ANGLE FROM HORIZ 90° BEARING

LOCATION N 1,142,873 E 621,548 BEGUN 5-18-72 COMPLETED 5-23-72

OVERBURDEN 9' DEPTH DRILLED INTO ROCK 160'3" TOTAL DEPTH OF HOLE 161.5'

ELEV. WATER TABLE NO. CORE BOXES NO. SAMPLES TAKEN 26

CORE RECOVERY (%) FEET MODEL & MAKE OF DRILL CME-55

GROUND ELEV. 220.9' HOLE LOGGED BY J. Guida DRILLER LETCO-Ross

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	SAMPLE DATA: PENETRATION TOOL	TOOL SIZE	METHOD n - BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	LOG / SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
						221			0'-.8' TOPSOIL
									.8'-17.0' SAND: Reddish-brown, silty, medium, loose.
	Split Spoon	2"	2-3-6 / 9	18"	9"		5	1	
	Shelby	3"		24"	7"	211	10	UD 1	Red and brown.
	Split Spoon	2"	6-13-21 / 34	18"	14"		15	2	Clayey.
									17.0'-24.0' CLAY: Tan, silt stiff, with fine sand.
	Shelby	3"		24"	18"	201	20	UD 2	
									24.0'-63.0' SAND: Light gra medium, silty, slightly clayey, shell fragments, firm.
	Split Spoon	2",	6-9-11 / 20	18"	15"		25	3	
	Shelby	3"		24"	22"	191	30	UD 3	
							35		

Hole Size 7-5/8"

Hole No. 331

Site Cooling Tower

PROJECT Alvin W. Vogtle Site

SHEET 2 OF 5

HOLE NO 331

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	SAMPLE DATA: PENETRATION TOOL	TOOL SIZE	METHOD n-BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
	Split Spoon	2"	6-8-9 / 17	18"	18"			4	Becomes lighter in color. Less clayey.
	Shelby	3"		24"	15"	181	40	UD 4	
	Split Spoon	2"	8-9-11 / 20	18"	15"		45	5	Grades finer.
	Pitcher	4"		30"	20"	171	50	UD 5	Coarser.
[illegible]r loss 100%									
	Split Spoon	2"	7-9-11 / 20	18"	14"		55	6	Light gray, medium, silty, slightly clayey, firm, with shell fragments.
	"	"	9-13-17 / 30	18"	10"	161	60	7	Dense.
									63.0'-72.5' SHELL: Calcareous, white with silty clay matrix, dense.
	"	"	19-21-21 / 42	18"	12"		65	8	
	"	"	10-11-15 / 26	18"	8"	151	70	9	More shells.
									72.5'-78.0' SAND: White, fine to medium, silty, loose.
							75		

Hole Size 7-5/8"

Hole No 331

Site Cooling Tower

PROJECT Alvin W. Vogtle Site

SHEET 3 OF 5

HOLE NO 331

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	SAMPLE DATA					ELEVATION	DEPTH	LOG / SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
	PENETRATION TOOL	TOOL SIZE	METHOD n-BLOWS	ADVANCE	RECOVERY				
	Split Spoon	2"	4-3-3 / 6	18"	0"			10	
	Shelby	3"		18"	10"			UD 6	78.0'-84.0' SHELLS: Tan, calcareous, in silty clay matrix, hard.
	Split Spoon	2"	100 / 8"	8"	8"	141	80	11	
Set 86' of 6" casing.	Split Spoon	2"	100 / 6"	6"	6"		85	12	84.0'-155.0' CLAY: Gray-gre calcareous, inorganic, si hard.
	Pitcher	4"		30"	24"	131	90	UD 7	
							95		
	"	"		30"	25"	121	100	UD 8	As above.
							105		
	"	"		30"	28"	111	110	UD 9	Some limestone, very hard
							115		

Hole Size 7-5/8" - 5"

Hole No 331

Site Cooling Tower

PROJECT Alvin W. Vogtle Site

SHEET 4 OF 5

HOLE NO 331

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	SAMPLE DATA: PENETRATION TOOL	TOOL SIZE	METHOD n-BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	LOG	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
	Pitcher	4"		30"	28"	101	120		UD 10	Hard, limestone layers.
							125			
	"	"		30"	26"	91	130		UD 11	Slightly sandy, very stiff.
							135			
	"	"				81	140		UD 12	As above.
							145			
	"	"				71	150		UD 13	Limestone fragments.
							155			

Hole Size 5"

Hole No 331

Site Cooling Tower

PROJECT Alvin W. Vogtle Site

SHEET 5 OF 5

HOLE NO 331

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	SAMPLE DATA					ELEVATION	DEPTH	LOG	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
	PENETRATION TOOL	TOOL SIZE	METHOD n-BLOWS	ADVANCE	RECOVERY					
										155.0'-161.5' SAND: Dark gray, silty, firm, medium to fine.
	Pitcher	4"		30"	22"	61	160		UD 14	
Grouted up through clay.										Bottom of Hole 161.5'

Hole Size 5"

Hole No 331

Site Cooling Tower

BECHTEL

GEOLOGIC LOG OF DRILL HOLE

SHEET 1 OF 6
HOLE NO. 501

PROJECT A. W. Vogtle Nuclear Site ANGLE FROM HORIZ. 90 BEARING -
LOCATION N 1143014 E623891 BEGUN 8-1-73 COMPLETED 8-15-73
OVERBURDEN 74 DEPTH DRILLED INTO ROCK 76 ft. TOTAL DEPTH OF HOLE 208.
ELEV. WATER TABLE - NO. CORE BOXES 5 NO. SAMPLES TAKEN 7
CORE RECOVERY (%) 69 % FEET 52.5ft. MODEL & MAKE OF DRILL CME 55
GROUND ELEV. 208.20 HOLE LOGGED BY P. Yen DRILLER LETCO - Riley

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	% CORE RECOVERY	PRESSURE TESTS: LOSS IN G.P.M.	Pressure P.S.I.	TIME Minutes	ELEVATION	DEPTH	LOG	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
Drilled to 76.0 ft. using 5-7/8" tri-cone bit. 5 bags bentonite. Cased with 4" casing to 75.0 ft					208				0-74.0 ft. OVERBURDEN: Sand, silt, and clay.
						5			
Cored with Longyear NX barrel beginning at 76.0 ft.					198	10			
8 bags cement used for casing.						15			
5 bags bentonite used for drilling.									
					188	20			
Grouted to 15 ft. with 5 bags of grout.									
Hole drilled to investigate marl only. No samples 0 to 74 ft.						25			
					178	30			
Solid rectangles represent spoon samples.									
						35			

13

HOLE SIZE 5 7/8"

HOLE NO. 501

SITE Unit 1 Reactor

PROJECT A. W. Vogtle Nuclear Site

HOLE NO. 501

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	% CORE RECOVERY	PRESSURE TESTS: LOSS IN G.P.M.	PRESSURE TESTS: PRESSURE P.S.I.	PRESSURE TESTS: TIME IN MIN.	ELEVATION	DEPTH	LOG (Sample)	CLASSIFICATION AND PHYSICAL CONDITION
					168	40		
						45		
					158	50		
						55		
					148	60		73.0' Cuttings and 1-1/2" piece of shale. 74.'-150.' CLAY (MARL): Greenish-gray, silty, very calcareous, very firm, weakly cemented, massive, has hard moderately cemented nodules, can be broken by hard hammer blow, has shell fragments in some areas. 74.0' Clay marl. Gray, clay, firm with slight weathering in upper 2'.
67.0' 100% water loss.						65		
Shells in return water in 68.0'					138	70		
Spoon Sample		74.0						
	SS 1.4	9-9-23 7 5	24	23				
Spoon Sample	SS	1.4	100=9					

HOLE SIZE 5 7/8"

HOLE NO. 501

SITE Unit 1 Reacto

12/10/73 Amendment

PROJECT A. W. Vogtle Nuclear Site

HOLE NO. 501

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	% CORE RECOVERY	PRESSURE TESTS: LOSS IN G.P.M.	PRESSURE P.S.I.	TIME IN MIN.	ELEVATION	DEPTH	LOG / Sample	CLASSIFICATION AND PHYSICAL CONDITION
		76-1/2	96-1/2					74.5-76.0' MARL: Gray, clayey.
76.0 14" recovery	17	0 0 * * Slight leakage out top of casing.	5 10 15	2 5 5	128	80		82.5-83.5' Hard, well cemented limestone nodule, not broken.
83.0 3'10" recovery Core loss due to soft layer at about 86-88	78	88-	113'			85		
88.0 8"	66						xxx	3" thick broken zone mechanically fractured by drill action.
89.0 4'4" out of 4'4"	100	0 0 0 0 0	5 10 15 20 25	2 2 2 10 10	118	90		4" piece of core, well cemented.
93.3 9'4" recovery	92				108	95 100		96.0-96.4' Thinly bedded moderately cemented layers Broken 1/8 to 1/4" pieces. 103.-107' (goes to about 110') Has hard moderately cemented limestone concretions from 1/4" to 1/2" size, core is crushed and broken from drill action.
103.3 4.1' recovery 107'10"	82					105		
4'3" recovery 113'4"	44				98	110	xxx	112.0' Broken zone 2" mechanically fractured by drilling action.
5' recovery			114	-139.0				

HOLE SIZE NX

HOLE NO. 501

SITE Unit 1 Reactor

SHEET 4 OF 6

PROJECT A. W. Vogtle Nuclear Site

HOLE NO. 501

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	% CORE RECOVERY	PRESSURE TESTS: LOSS IN G.P.M.	PRESSURE TESTS: PRESSURE P.S.I.	PRESSURE TESTS: TIME IN MIN.	ELEVATION	DEPTH	LOG / SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
Water test 114 - 139.0 ft.	72	0	5	2				
		0	10	5				
		0	15	5				
		0	20	5				
		0	25	10				
120'8"					38	120		
10/10 recovery	100					125		
130'8"					78	130		
5'5" recovery	55	135-	150					
		0	5	2		135		
		0	10	5				
		0	15	10				
								Marl. 139.0 ft.
140.7					68	140		
	55					145		
150'8"					58	150		SAND:150.0 ft. Soft material, sand in a clay matrix, medium grained, dark gray-black.
6'9" recovery	68							

HOLE SIZE NX

HOLE NO. 501

SITE Unit 1 Reactor

12/10/73 Amendment

SHEET 5 OF 6

PROJECT A. W. Vogtle Nuclear Site

HOLE NO. 501

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	% CORE RECOVERY	PRESSURE TESTS: LOSS IN G.P.M.	PRESSURE TESTS: PRESSURE P.S.I.	PRESSURE TESTS: TIME IN MIN.	ELEVATION	DEPTH	LOG / Sample	CLASSIFICATION AND PHYSICAL CONDITION
								150'8"-160'8" SAND: Firm gray-black sand.
160'8"					48	160		
Spoon sample		165'	8"			165		
	SS	1.4	100=8" 47-60-76					165'8"-167'2" SAND: Medium grained, brown-black, slightly silty sand.
Spoon sample		170'	3"		38	170		
	SS	1.4	100=12" 70-68					170'8"-172'2" SAND: Slightly more silty than above sample sand.
Spoon sample		175'	8"			175		
	SS	1.4	100=10"					175'8"-177'2" SAND: Medium grained, dark gray sand. Silty.
Spoon sample		181.0			28	180		181.0' SAND: Coarse sand, dark gray.
	SS	1.4	100=1"					
						185		Washed out.
					18	190		
190'8"								

HOLE SIZE NX

HOLE NO. 501

SITE Unit 1 Reactor

SHEET 6 OF 6

PROJECT A. W. Vogtle Nuclear Site

HOLE NO. 501

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	% CORE RECOVERY	PRESSURE TESTS: LOSS IN G.P.M.	PRESSURE TESTS: PRESSURE P.S.I.	PRESSURE TESTS: TIME IN MIN.	ELEVATION	DEPTH	LOG	Sample	CLASSIFICATION AND PHYSICAL CONDITION
195'8"									
18" recovery	14				8	200			Attempted coring 195'8"-206'8", recovered very little medium grained sand.
						205			
206'8"		206.6'							
Spoon sample	SS	1.4							206'8"-208'0" SAND: Medium (coarser) sand grains with medium gray clay.
TD=208.0 ft.									
						210			

HOLE SIZE NX

HOLE NO. 501

SITE Unit 1 Reacto

BECHTEL

GEOLOGIC LOG OF DRILL HOLE

SHEET 1 OF 4
HOLE NO. 502

PROJECT A. W. Vogtle Nuclear Site ANGLE FROM HORIZ. 90° BEARING –
LOCATION N1143 390, E 623 357 BEGUN 8-6-73 COMPLETED 8-15-73
OVERBURDEN 82.5 ft. DEPTH DRILLED INTO ROCK 67.5 ft. TOTAL DEPTH OF HOLE 150.0 ft.
ELEV. WATER TABLE – NO. CORE BOXES 4 NO. SAMPLES TAKEN 6
CORE RECOVERY (%) 94.5 FEET 61.9 MODEL & MAKE OF DRILL CME 55
GROUND ELEV. 216.02 ft HOLE LOGGED BY P. Yen DRILLER Bill Shealy LECCO

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	% CORE RECOVERY	PRESSURE TESTS: LOSS IN G.P.M.	PRESSURE TESTS: Pressure P.S.I.	PRESSURE TESTS: TIME Minutes	ELEVATION	DEPTH	LOG	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
Drilled to 83 ft. using 5 7/8" tri-cone bit.									0-82.5 ft. OVERBURDEN: Sand, silt, and clay.
Set 4" casing to 83 ft. depth.					211	5			
						10			
Began coring at 83.5 ft. with a Longyear NX barrel.									
Had 100% water loss at 72.5 ft.					201	15			
Used 4 bags cement for casing.						20			
Used 4 bags bentonite for drilling. Hole was back-filled to 35 ft. depth with 5 bags of cement.					191	25			
Hole drilled to investigate marl only. No samples 0 to 35 ft.						30			
					181				

HOLE SIZE 5 7/8"

HOLE NO. 502
SITE General

PROJECT A. W. Vogtle Nuclear Site

HOLE NO. 502

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	% CORE RECOVERY	PRESSURE TESTS LOSS IN G.P.M.	PRESSURE P.S.I.	TIME IN MIN.	ELEVATION	DEPTH	LOG / SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
Solid rectangles indicate spoon samples.								
						40		
					171	45		
						50		
Spoon sample	SS	52.5 1.4	44-30	25				52.5 CLAY: Yellow-green, calcareous, uniform.
					161	55		
Spoon sample	SS	57.5 1.4	17-19	25				57.5 CLAY: Green-brown, calcareous, uniform.
						60		
Spoon sample	SS	62.5 1.4	17-17	18				62.5 CLAY: Green-tan, calcareous, uniform.
					151	65		
						70		

HOLE SIZE 5 7/8"

HOLE NO. 502

SITE General

12/10/73 Amendment

SHEET 3 OF 4

PROJECT A. W. Vogtle Nuclear Site

HOLE NO. 502

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	% CORE RECOVERY	PRESSURE TESTS: LOSS IN G.P.M.	PRESSURE P.S.I.	TIME IN MIN.	ELEVATION	DEPTH	LOG / SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
		77.5						
Spoon sample	SS	1.4	100-1	1/2				77.5 No recovery.
		80-119.5				80		
		0	20	5				
		0	25	10				
Spoon sample.		82.5						
Began coring 83.5	SS	1.4	12-17-29					82.5'-146.' <u>MARL</u>: Silty clay, gray, calcareous, massive, not bedded, fossiliferous, varies from compacted to moderately well cemented. Occasionally becomes very limy, well cemented nodules, 4 to 8 inches thick. Marl can be broken by finger pressure. Nodules can be broken by hard hammer blow.
		83.5-100.5						
		0	15	5				
		0	25	10	131	85		
		86.0-114.5						
		0	10	3				
	95	0	20	5				
		0	25	10				
90.5						90		
	100				121	95		
100.5						100		
	100				111	105		
109.5						110		
		114.5-139.5						

13

HOLE SIZE 5 7/8"

HOLE NO. 502

SITE General

12/10/73 Amendment 13

SHEET 4 OF 4

PROJECT A. W. Vogtle Nuclear Site

HOLE NO. 502

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	% CORE RECOVERY	PRESSURE TESTS: LOSS IN G.P.M.	PRESSURE TESTS: PRESSURE P.S.I.	PRESSURE TESTS: TIME IN MIN.	ELEVATION	DEPTH	LOG / SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
116.0 Core broken by mechanical action of the drill.	100	0 0 0	10 15 20	2 5 10				
119.5	100					120		121-125.0 MARL: Contains occasional limy, well cemented nodules 4 to 6 inches thick which causes slight grinding at marl-nodule boundary.
124.5	100				91	125		
129.5	100					130		
134.5	100	137.5-150.0 0 0	 5 10	 2 5	81	135		
139.5	80	0 *0.5 *Slight water loss into sand.	15 20	10 10		140		
144.5 Lost major part of run due to the uncemented nature of the sand.	40	148.0 SS	 1.4	 26-74-6"	71	145		148.0 SAND: Dark gray to black, fine to medium grained, silty, clayey, non-calcareous, massive, uncemented, moderately compacted. Not reactive to HCL acid.
150.0						150		
TD=150.0 ft.								

HOLE SIZE NX

HOLE NO. 502

SITE General

12/10/73 Amendment 1

BECHTEL

SHEET 1 OF 4

GEOLOGIC LOG OF DRILL HOLE

HOLE NO. 503

PROJECT A. W. Vogtle Nuclear Site ANGLE FROM HORIZ. 90 BEARING -

LOCATION N 1143 870 E 624 130 BEGUN 8-13-73 COMPLETED 8-16-73

OVERBURDEN 63.5 ft. DEPTH DRILLED INTO ROCK 58' TOTAL DEPTH OF HOLE 130 ft.

ELEV. WATER TABLE ____ NO. CORE BOXES 3 NO. SAMPLES TAKEN 1

CORE RECOVERY (%) 60% FEET 36.2' MODEL & MAKE OF DRILL CME 55

GROUND ELEV. 194.47 ft. HOLE LOGGED BY P. Yen DRILLER Cleo Ivy LETCO

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	% CORE RECOVERY	PRESSURE TESTS: LOSS IN G.P.M.	PRESSURE TESTS: Pressure P.S.I.	PRESSURE TESTS: TIME Minutes	ELEVATION	DEPTH	LOG	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
Drilled to 60 ft. with 5-7/8" tricone bit									0-63.5 ft. OVERBURDEN: Sand, silt, and clay.
						5			
4 bags bentonite used. No cement used.									
4" casing set to 60 ft. Used Longyear NX barrel. Began coring at 62 ft.					184	10			
						15			
No water losses									
Backfilled to 34 ft with 5 bags of cement.					174	20			
						25			
Hole drilled to investigate marl only. No sample 0-62 ft.									
					164	30			
Solid rectangles indicate spoon samples.									

13

HOLE SIZE 5 7/8"

HOLE NO. 503

SITE General

SHEET 2 OF 4

PROJECT A. W. Vogtle Nuclear Site

HOLE NO. 503

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	% CORE RECOVERY	PRESSURE TESTS: LOSS IN G.P.M.	PRESSURE P.S.I.	TIME IN MIN.	ELEVATION	DEPTH	LOG / SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
					154	40		
						45		
					144	50		
						55		
		58.0						
Spoon Sample	SS	55 1.4	12-16-19		134	60		58.4-121.5' MARL: Clayey silt, gray, very calcareous, very firm, weakly cemented, massive has hard moderately cemented nodules, core can be broken by hard finger pressure. Nodules are broken by hard hammer blow, has shell fragments in some areas.
Began coring 62.0								
Core all in one piece.	100	63.5 - 82.0						
		0	5	2				
		0	10	2		65		
		0	15	5				
67.0		2	20	10				
		Slight loss out top of casing						
	100	66.0-102.0			124	70		
72.0		0	5	2				
	50	0	10	5				
		0	15	5				
		0	20	5				
		*	25	5				

* slight loss out top of casing.

HOLE SIZE 5 7/8" & NX

HOLE NO. 503

SITE General

12/10/73 Amendment 1

SHEET 3 OF 4

PROJECT A. W. Vogtle Nuclear Site

HOLE NO. 503

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	% CORE RECOVERY	PRESSURE TESTS: LOSS IN G.P.M.	PRESSURE P.S.I.	TIME IN MIN.	ELEVATION	DEPTH	LOG / SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
77.0						75		
Slightly more difficult drilling some slight blockings 82.0	30	81 -	1020		114	80		
2'7" recovery. Average core length is 3 1/2" 87.0	53	0 0 4	20 25 30	5 10 10		85		
2'3" recovery 92.0	23				104	90		88.0 stained joint at 88 ft.
1'7" recovery 97.0	31					95		
1'3" recovery 102.0	25	100-	122.0		94	100		100.0 MARL: clayey silt, limy, easily scratched with fingernail, massive, non-bedded, fine to medium grained, intermittently fossiliferous, gray.
		0 0 *	20 25 30	5 10 10				
102.0-107.0 5.0' recovery Average core length 12-14". 107.0	100	*slight leakage out top of casing				105		
107.0-112.0 5.0' recovery 112.0	100				84	110		
112.0-117.0 4' recovery	80							

HOLE SIZE NX

HOLE NO. 503

SITE General

12/10/73 Amendment 13

PROJECT A. W. Vogtle Nuclear Site

HOLE NO. 503

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	% CORE RECOVERY	PRESSURE TESTS: LOSS IN G.P.M.	PRESSURE TESTS: PRESSURE P.S.I.	PRESSURE TESTS: TIME IN MIN.	ELEVATION	DEPTH	LOG / SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
117.0								
2'1" recovery	43				74	120		
122.0								121.5 SAND: dark gray to black medium grained, some clay contact established with core barrel. Generally a sandy silt of moderate plasticity.
7" recovery	12					125		
130.0					64	130		
TD = 130.0 ft.						135		
						140		
						145		
						150		

HOLE SIZE NX

HOLE NO. 503

SITE General

BECHTEL

GEOLOGIC LOG OF DRILL HOLE

SHEET 1 OF 5

HOLE NO. 504

PROJECT A.W.VOGTLE NUCLEAR SITE ANGLE FROM HORIZ. 90 BEARING

LOCATION N1,144,139 E 622,611 BEGUN 8-17-73 COMPLETED 8-23-73

OVERBURDEN 84 ft. DEPTH DRILLED INTO ROCK 50 ft. TOTAL DEPTH OF HOLE 186.5ft

ELEV. WATER TABLE - NO. CORE BOXES 3 NO. SAMPLES TAKEN 7

CORE RECOVERY(%) 88 % FEET MODEL & MAKE OF DRILL CME 55

GROUND ELEV. 214.61 ft. HOLE LOGGED BY P. Yen DRILLER CLEO IVY & LEWIS LETCO

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	% CORE RECOVERY	PRESSURE TESTS: LOSS IN G.P.M.	Pressure P.S.I.	TIME Minutes	ELEVATION	DEPTH	LOG / SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
Drilled to 85 ft. using a 5 7/8" tricone bit.								0-84.0 ft. OVERBURDEN: Sand, silt and clay.
						5		
Cased (4") to 85 ft.								
Began NX coring at 85 ft.					205	10		
Used no cement. Used 5 bags bentonite.								
						15		
Began coring at 85 ft. with a longyear NX barrel.								
100 % Water loss @ 20 ft.					195	20		
Backfilled to 23 ft. with 5 bags of cement.						25		
Hole drilled to investigate marl only. No sample taken 0-85 ft.								
Solid rectangles indicate spoon samples.					185	30		

HOLE SIZE 5 7/8"

HOLE NO. 504

SITE General

13

12/10/73 Amendment 13

SHEET 2 OF 5

PROJECT A.W. VOGTLE NUCLEAR SITE

HOLE NO. 504

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	% CORE RECOVERY	PRESSURE TESTS LOSS IN G.P.M.	PRESSURE P.S.I.	TIME IN MIN.	ELEVATION	DEPTH	LOG / SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
					175	40		
						45		
					165	50		
						55		
					155	60		
						65		
					145	70		

HOLE SIZE 5 7/8"

HOLE NO. 504

SITE General

12/10/73 Amendment 1

SHEET 3 OF 5

PROJECT A.W. VOGTLE NUCLEAR SITE

HOLE NO. 504

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	% CORE RECOVERY	PRESSURE TESTS: LOSS IN G.P.M.	PRESSURE TESTS: PRESSURE P.S.I.	PRESSURE TESTS: TIME IN MIN.	ELEVATION	DEPTH	LOG / SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
Shaly clay material in return line.								
Yellow green clay with shells in return line at 80.0 ft.					135	80		
Began coring 85ft.			84.0					
Spoon Sample		SS1.4	50-50	5"		85		84.0-134.' MARL: Gray, very firm compacted clay. Very calcareous. Weakly cemented, silty, massive, has hard moderately cemented nodules, marl can be broken by hard finger pressure, nodules are broken by hard hammer blow. Has shell fragments in some zone.
4 ft. recovery. 90 ft.	80	87	- 99					
		0 0 0 0 *	10 15 20 25 30	2 2 2 2	125	90		
13 4 ft. recovery. 95 ft.	80							
3'6" recovery.			97-109			95		95 - 103 ft. LIMESTONE: Nodules alternating layers 2 - 3" thick cemented limestone in the marl.
some core loss due to grinding. Hard & soft layers 100 ft.	70	0 0 0 *	10 15 20 25	2 2 2	115	100		
4.0 ft. recovery. 105 ft.	100					105		
Core length: Broken 4-10"			107-	119				
5.0 recovery 110 ft.	100	0 0 *	10 15 20	3 2	105	110		
5.0 recovery 115 ft.	100							

* slight loss out top of casing

HOLE SIZE 5 7/8" & NX

HOLE NO. 504

SITE General

12/10/73 Amendment 13

PROJECT A.W.VOGTLE NUCLEAR SITE

HOLE NO. 504

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	% CORE RECOVERY	PRESSURE TESTS: LOSS IN G.P.M.	PRESSURE TESTS: PRESSURE P.S.I.	PRESSURE TESTS: TIME IN MIN.	ELEVATION	DEPTH	LOG / SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
Recovery 5.0 ft.								
	100	118	-130.0					
Average core 18"		0	10	10				
120		*	15	10	95	120		
	100	122-	135					
		0	10	5				
125		0	15	3		125		
		0	20	5				
		0	25	5				
		0	30	5				
	100	*	35	10				
130.0					85	130		
Recovery 3.5 ft. Core loss at 134ft. Sand will not stay in core barrel.	70							
135.0						135		134.0 SAND; gray medium grained dark. Non - calcarious.
No recovery in sand.	0							
140.0			140		75	140		140-141.5 SAND: dark gray, medium grained, non-calcarious
Spoon sample		ss1.4	100=2"					
			144.5					
Spoon sample		ss	1.4	100=2"		145		144.5 - 146 SAND: medium grained, medium gray, non-calcarious.
			149.5					
Spoon sample		ss	1.4	100=3"	65	150		149.5 - 151.0 SAND: medium grained sand, gray, clean, very slightly silty.

HOLE SIZE NX

* slight loss out top of casing.

HOLE NO. 504

SITE General

SHEET 5 OF 5

PROJECT A.W.VOGTLE NUCLEAR SITE

HOLE NO. 504

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	% CORE RECOVERY	PRESSURE TESTS: LOSS IN G.P.M.	PRESSURE P.S.I.	TIME IN MIN.	ELEVATION	DEPTH	LOG / SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
Spoon sample		ss	1.4	100-4"				~~155~~ CLAY: brown-gray medium grained, non-calcareous.
no recovery in sand due to uncemented nature of the sand.			160.0					
Spoon sample		ss	1.4	100-2"	55	160		160.0 SAND.
						165		
			170.0					
Spoon sample		ss1.4	100=5"		45	170		170 SAND: medium grained, dark gray, non-calcareous.
No recovery.			175.0					
Spoon sample		ss	1.4	30-70=10"		175		175.0 SAND.
No recovery in sand			180.0					
Spoon sample		ss	1.4	100=5	35	180		180.0 SAND.
			185.0					
Spoon sample		ss	1.4	75-25=7		185		185.0 SAND: medium grained, dark gray- black, slightly silty, non-calcareous.
TD = 186.5 ft.								
						190		

HOLE SIZE NX

HOLE NO. 504

SITE General

12/10/73 Amendment 13

BECHTEL

GEOLOGIC LOG OF DRILL HOLE

SHEET 1 OF 6
HOLE NO. 505

PROJECT A.W. VOGTLE NUCLEAR SITE ANGLE FROM HORIZ. 90 BEARING -
LOCATION N 1147 040 E 622 299 BEGUN 8-23-73 COMPLETED 8-31-73
OVERBURDEN 147 ft. DEPTH DRILLED INTO ROCK 40 ft. TOTAL DEPTH OF HOLE 201.5 ft
ELEV. WATER TABLE ____ NO. CORE BOXES 4 NO. SAMPLES TAKEN 4
CORE RECOVERY (%) 99% FEET 39.6' MODEL & MAKE OF DRILL CME 55
GROUND ELEV. 241.9 ft HOLE LOGGED BY P. YEN DRILLER CLEO IVY-LETCO

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	% CORE RECOVERY	PRESSURE TESTS: LOSS IN G.P.M.	Pressure P.S.I.	TIME Minutes	ELEVATION	DEPTH	LOG	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
5 7/8" tricone bit used to 147 ft Longyear NX barrel used for core recovery 4" casing to 147 ft.									0 - 147 ft. OVERBURDEN: Sand, silt, and clay.
						5			
8 bags bentonite used for drilling.									
No cement used for casing.					212	10			
Began casing 147 ft.									
						15			
Backfilled to 7?ft. with 5 bags of cement.									
Water tested with double pneumatic packers at 10 ft. intervals with packers at 12 ft. spacing.					202	20			
						25			
Hole drilled to investigate marl only. No samples taken. 0-147 ft.					192	30			
Solid rectangles indicate spoon samples.						35			

HOLE SIZE 5 7/8"

HOLE NO. 505
SITE General

12/10/73 Amendment 1

SHEET 2 OF 6

PROJECT A.W.VOGTLE NUCLEAR SITE

HOLE NO. 505

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	% CORE RECOVERY	PRESSURE TESTS			ELEVATION	DEPTH	LOG	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
		LOSS IN G.P.M.	PRESSURE P.S.I.	TIME IN MIN.					
					182	40			
						45			
					172	50			
						55			
					162	60			
						65			
					152	70			

13

HOLE SIZE 5 7/8"

HOLE NO. 505

SITE General

12/10/73 Amendment 13

PROJECT A.W.VOGTLE NUCLEAR SITE

HOLE NO. 505

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	% CORE RECOVERY	PRESSURE TESTS LOSS IN G.P.M.	PRESSURE P.S.I.	TIME IN MIN.	ELEVATION	DEPTH	LOG	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
					142	80			
						85			
					132	90			
						95			
					122	100			
						105			
					112	110			

HOLE SIZE 5 7/8"

HOLE NO. 505

SITE General

PROJECT A.W.VOGTLE NUCLEAR SITE

SHEET 4 OF 6

HOLE NO. 505

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	% CORE RECOVERY	PRESSURE TESTS: LOSS IN G.P.M.	PRESSURE P.S.I.	TIME IN MIN.	ELEVATION	DEPTH	LOG	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
Water loss 100% at 120 ft.									
					102	120			
						125			
Sampled at 130 no recovery (still in shell)					92	130			
						135			
					82	140			
4" casing - cased to 147.0 very tough marl.									147'-187' CLAY-MARL: Gray to greenish-gray, silty, very calcareous, very firm, weakly cemented, massive, has hard moderately cemented nodules, marl can be broken by hard finger pressure, nodules by hard hammer blow. Shell fragments in some zones.
146. Spoon sample no recovery		147.0				145			
147.0	ss	1.4	100	2					
		148	160						
Broken 2-16"		0	5	5					
		0	10	12					
	100	-	15	10	72	150			
		Water lost out top of casing 1/2 gpm.							
152.0									
Broken 2-8" hard and soft marl	100								154.0 MARL; 3" piece very hard marl, light gray, fine grained.

HOLE SIZE 5 7/8 & NX

HOLE NO. 505

SITE General

SHEET 5 OF 6

PROJECT A.W.VOGTLE NUCLEAR SITE

HOLE NO. 505

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	% CORE RECOVERY	PRESSURE TESTS: LOSS IN G.P.M.	PRESSURE TESTS: PRESSURE P.S.I.	PRESSURE TESTS: TIME IN MIN.	ELEVATION	DEPTH	LOG / SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
157.0		157-167						152-157.0 MARL: Medium gray to light gray, hard to very hard marl, begins to show less coquina.
Broken 2-7"	100	0 0 - Water out top of casing.	5 10 15	5 5	62	160		
162.0								
Broken, hard & soft zones.	100	166-	178			165		
167.0								
Slight core grinding 168.5 - 169.5	99	0 0 0 - Water out top of casing.	5 10 15 20	5 10 5	52	170		
172.0								172.2 MARL: 1/2" line of broken shell and carbonaceous material in the marl. Continues uniform.
Core length Broken 2-14" Aug 10"	98	175-	187			175		
177.0		0 0 0 0 -	5 10 15 20 25	5 10 10 5				
Core length Broken Aug 6-8"	100	Water out top of casing.			42	180		
182.0								
Core length 2-24" Aug 12" Broken	100					185		
187.0								187.0 SAND: medium grained, dark gray, silty, non-calcareous.
Sampled 3 ft. with no recovery in sand. 190.0 Spoon sample.	0		190.0		32	190		
No recovery in sand with core barrel	ss 0	1.4	25-75 6 195.0	16	15			190-191.5 SAND: non-calcareous, dark gray medium grained.

HOLE SIZE NX

HOLE NO. 505

SITE General

12/10/73 Amendment 1

PROJECT A.W.VOGTLE NUCLEAR SITE

SHEET 6 OF 6

HOLE NO. 505

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	% CORE RECOVERY	PRESSURE TESTS LOSS IN G.P.M.	PRESSURE P.S.I.	TIME IN MIN.	ELEVATION	DEPTH	LOG	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
Spoon sample No recovery	0	ss	1.4	68-32					195-196.5 SAND: dark gray, medium grained, noncalcareous, slightly clayey.
200.0			200.0		22	200			200 - 201.5 SAND: clean, light gray, medium grained, noncalcareous.
Spoon sample		ss	1.4	100=2"					
TD = 201.5 ft.									

HOLE SIZE NX

HOLE NO. 505

SITE General

12/10/73 Amendment 13

BECHTEL

GEOLOGIC LOG OF DRILL HOLE

SHEET 1 OF 5
HOLE NO. 506

PROJECT A. W. Vogtle Nuclear Site ANGLE FROM HORIZ. 90 BEARING -
LOCATION NI 146 698 E 621 067 BEGUN 9-14-73 COMPLETED 9-20-73
OVERBURDEN 92.0 Ft. DEPTH DRILLED INTO ROCK 69 ft. TOTAL DEPTH OF HOLE 178.0 ft.
ELEV. WATER TABLE ______ NO. CORE BOXES 4 NO. SAMPLES TAKEN 2
CORE RECOVERY (%) 83% FEET 63 ft MODEL & MAKE OF DRILL CME 55
GROUND ELEV. 172.7 ft. HOLE LOGGED BY P. Yen DRILLER Bill Shealey LETCO

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	% CORE RECOVERY	PRESSURE TESTS: LOSS IN G.P.M.	PRESSURE TESTS: Pressure P.S.I.	PRESSURE TESTS: TIME Minutes	ELEVATION	DEPTH	LOG	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
Rockbit 5 7/8" to marl at 91.5 ft.									0-92.0 ft. OVERBURDEN: sand and clay.
						5			
Set 4" casing to 91.5 ft.									
Drilled with mud in marl making 5 ft runs with 10 ft. Longyear sampling barrel, NX.					163	10			
100% water loss at 45 ft.						15			
Shell encountered at 35 ft.					153	20			
Regained 100% circulation at 93 ft.									
						25			
Same water loss in sand									
Used approximately 4 bags of bentonite					143	30			
No cement used to set casing.									
Backfilled to 6 ft. with 5 bags of cement									

HOLE SIZE 5 7/8"

HOLE NO. 506
SITE General

PROJECT A. W. Vogtle Nuclear Site

HOLE NO. 506

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	% CORE RECOVERY	PRESSURE TESTS			ELEVATION	DEPTH	LOG / SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
		LOSS IN G.P.M.	PRESSURE P.S.I.	TIME IN MIN.				
Water tested with double pneumatic packers at 10 ft. intervals.								
Packers were 12 ft. apart.					133	40		
Hole drilled to investigate marl only. No samples 0-91.5 ft.						45		
Solid rectangles indicate spoon samples.					123	50		
						55		
					113	60		
						65		
					103	70		

13

HOLE SIZE 5 7/8"

HOLE NO. 506

SITE General

PROJECT A. W. Vogtle Nuclear Site

HOLE NO. 506

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	% CORE RECOVERY	PRESSURE TESTS: LOSS IN G.P.M.	PRESSURE P.S.I.	TIME IN MIN.	ELEVATION	DEPTH	LOG / SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
					93	80		
						85		92.'-162.' CLAY-MARL: Gray to greenish-gray, silty, very calcareous, very firm, weakly cemented, massive, has hard moderately cemented nodules, marl can be broken by hard finger pressure. Nodules by hard hammer blow. Shell fragments in some areas.
Spoon Sample Began Coring 93.0			92.0		83	90		92.0 MARL: Clay, with shells, limy silty clay, massive, fine to medium grained, gray, slightly sandy.
93.0		SS 1.4	20-70=5	1/2				
		93 - 105						
3'7"/4'3" Core length broken and ground up. Barrel blocked up. Core length 1/4-5". Average 2". 97'3"	84	0 0 0 *	20 25 30 35	5 10 10 5		95		93-95.5 MARL: is silty, slightl sandy clay, gray, has a mottled granular appearance contains small broken shell fragment shows same unsorted bedding, massive.
2'10"/5'9". Core length broken and ground up. Limestone nodules present in this run. 103'0"	50	*slight leak out top of casing.			73	100		95.5 MARL: becomes uniform gray clay, slightly silty, moderately compacted, fine grained, easily broken by drilling action, brittle, begin to show limestone nodules, marl itself is moderately limy and contains occasional shells and casts.
		103 - 115						
2'8"/4'0". Core length 1/4-8" Broken and ground up. Core barrel blocked up. 107'	71	0 0 0 0 0	20 25 30 35 40	5 5 10 10 5		105		103-107 SAND: calcareous, compacted.
5'9"/6'0" Core length 1/4-8". Limestone nodules with some grinding. 113'0"	55	No loss. Discontinued test.			63	110		111.9 3/4 inches thick layer of charcoal.
		113 - 125						
Core length broken: 2-18". Average 4".	100	0 0 0 0 0	20 25 30 35 40	5 5 5 10 10				

No loss. Discontinued test.

HOLE SIZE 5 7/8" & NX

HOLE NO. 506

SITE General

SHEET 4 OF 5

PROJECT A. W. Vogtle Nuclear Site

HOLE NO. 506

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	% CORE RECOVERY	PRESSURE TESTS: LOSS IN G.P.M.	PRESSURE P.S.I.	TIME IN MIN.	ELEVATION	DEPTH	LOG / SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
No grinding of core 118.0								116.5 MARL: fossiliferous. 120.0 MARL: non bedded, silty clay uniform. LIMESTONE: nodules 2-4" thick: 96.8, 97.3, 97.8, 99.0, 107.0, 109, 110, 111.2, 111.4, 111.5, 113.5, 117.5, 118.0, 122.0, 123.0, 124.7, 126.0, 127.1 to 135, 136.0, 145.5.
Core length broken 2-14" average 5" Very little grinding or abrasion. 123.0	100	123 - 135			53	120		
Core length broken 2-13" average 6" No grinding of core 128.0	98	0 0 0 0 0	20 25 30 35 40	5 5 5 10 10		125		127.1-135.0 LIMESTONE: not nodular but appears to be hard, very limy marl, uniform light gray, massive, silty.
		No loss, Discontinued test.						
Core length broken 2-16" average 6" slight grinding at 127.0 133.0	100	133 - 145			43	130		138.0-153.0 MARL: shows a uniform appearance, silty, firm, moderate cementation, succeptible to occasional mechanical fracture as a result of drilling action. Massive non bedded, predominantly gray clay.
Core length broken 2-14" average 6" No core grinding 138.0	100	0 0 0 *	25 30 35 40	5 10 10 5		135		
		*slight loss out top of casing.						
Core length broken 2-14" average 6" No grinding 143.0	100	143 - 155			33	140		
Core length broken 3-20" average 12" No grinding 148.0	100	0 0 *0	25 30 35	5 15 10		145		
		*slight leakage past packer and out top of casing. Estimated 1/2 gpm.						
Core length broken 3-26" average 12" No grinding 153.0	100	153 - 165			23	150		154.5 MARL: shows more lime content, broken shells and black specks of carbonaceous material, as a gradational transition.
Core length broken 2-20 average 12"	100	0 0 0 *	25 30 35 40	5 10 10 5				
		*slight loss out top of casing (3/4 gpm)						

HOLE SIZE NX

HOLE NO. 506

SITE General

12/10/73 Amendment 13

SHEET 5 OF 5

PROJECT A. W. Vogtle Nuclear Site HOLE NO. 506

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	% CORE RECOVERY	PRESSURE TESTS: LOSS IN G.P.M.	PRESSURE P.S.I.	TIME IN MIN.	ELEVATION	DEPTH	LOG / SAMPLE
No grinding 158.0							
Core length broken 2-12" average 4" Bottom part of run (in sand) was not recovered. 163.0	81					160	
9" recovery in sand 168.0	15					165	
12" recovery in sand 173.0	20				3	170	
No recovery in sand.	0	178.0				175	
Spoon Sample TD = 178.0 ft.		SS 1.4	400=3"			180	
						185	
						190	

CLASSIFICATION AND PHYSICAL CONDITION

157.8, 159.0, 159.4, 159.7, 161.5 large 1/2" thick, salmon pink layers of shell. The marl itself becomes very fossiliferous, limy, firm to 161.5.

161.5-162.0 SAND: gradational contact beginning at 161.5 with very limy gray-green clay becoming green to dark green clay with sand. Becoming slightly silty sand at 162.0, slight amount of clay.

163.0 SAND: predominantly fine grained, non calcareous, silty non plastic, black, uniform. 13

168.0 SAND: as before but moderately silty and black.

173.0 SAND: fine to medium grained, slightly silty to clean sand, calcareous, chiefly quartz, vitreous, light tan color.

HOLE SIZE NX

HOLE NO. 506

SITE General

BECHTEL

GEOLOGIC LOG OF DRILL HOLE

SHEET 1 OF 5
HOLE NO. 507

PROJECT A. W. Vogtle Nuclear Site ANGLE FROM HORIZ. 90 BEARING -
LOCATION N 1, 145, 504.5 E 620,633.5 BEGUN 9-4-73 COMPLETED 9-13-73
OVERBURDEN 111 ft. DEPTH DRILLED INTO ROCK 67.5 ft. TOTAL DEPTH OF HOLE 191.0 ft
ELEV. WATER TABLE - NO. CORE BOXES 4 NO. SAMPLES TAKEN 4
CORE RECOVERY (%) 85% FEET 57.5 MODEL & MAKE OF DRILL CME 55
GROUND ELEV. 211.83 ft. HOLE LOGGED BY P. Yen DRILLER Cleo Ivy LETCO

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	% CORE RECOVERY	PRESSURE TESTS: LOSS IN G.P.M.	Pressure P.S.I.	TIME Minutes	ELEVATION	DEPTH	LOG / SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
Casing ... 112 ft. with 4" casing. Drilled to marl 112 ft. using 5 7/8" tricone bit, no samples. 100% water loss at 60 ft.								0-112.0 ft. OVERBURDEN: Sand, silt and clay.
						5		
Drilled with 8 bags of mud. No cement used to set casing. 100% water return after casing set. Slight water loss in sand, before casing set.					202	10		
						15		
Encountered shell-limestone zone with drill chatter at 60 ft.					192	20		
Began coring at 112 ft. with Longyear NX barrel.						25		
Backfilled to 39 ft with 6 bags of cement.					182	30		
Solid rectangles indicate spoon samples.								

HOLE SIZE 5 7/8"

HOLE NO. 507
S.TE General

SHEET 2 OF 5

PROJECT A. W. Vogtle Nuclear Site

HOLE NO. 507

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	% CORE RECOVERY	PRESSURE TESTS: LOSS IN G.P.M.	PRESSURE P.S.I.	TIME IN MIN.	ELEVATION	DEPTH	LOG	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
Water tested at 10 ft. intervals with pneumatic double packers 12 ft. apart.									
					172	40			
					162	50			
60 ft. 100% water loss - continuous to 111.0 ft. 100% water return when casing set at 111'.					152	60			
					142	70			

13

HOLE SIZE 5 7/8"

HOLE NO. 507

SITE General

PROJECT A. W. Vogtle Nuclear Site

HOLE NO. 507

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	% CORE RECOVERY	PRESSURE TESTS: LOSS IN G.P.M.	PRESSURE TESTS: PRESSURE P.S.I.	PRESSURE TESTS: TIME IN MIN.	ELEVATION	DEPTH	LOG / SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
					132	80		
						85		
					122	90		
						95		
					112	100		
						105		111.'-180.5' <u>CLAY-MARL</u>: Gray to greenish-gray, silty, very calcareous, very firm, weakly to moderately cemented, massiv has hard moderately cemented nodules. Can be broken by har finger pressure, nodules brok with hard hammer blow. Shell fragments in some zones.
Began coring 112.0					102	110		
		111	-112.5					
Spoon sample	SS	1.4	10-15-18	18	18			111.0' <u>MARL</u>: Clayey, plastic, gr
CORE LENGTH: Broken 2-24", average 6", washed out some soft clay.	50		112-124.0					112.0 <u>MARL</u>: 5 nodules 1/2-1" diameter in core barrel followed by non-fossiliferous marl.
		0	5	5				
		0	10	5				
		0	15	5				
		0	20	5				
		0	25	5				
		1	30 - Water out top of casing.					

HOLE SIZE 5 7/8" & NX

HOLE NO. 507

SITE General

12/10/73 Amendment

PROJECT A.W. Vogtle Nuclear Site

HOLE NO. 507

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. / % CORE RECOVERY

Notes	% Core Recovery
117.0	
CORE LENGTH: Broken 1/2-14", average 4" grinding, some limey nodules. 122.0	85
CORE LENGTH: Broken and ground up, leaving limey nodules 1/2-3", average 2". 127.0	10
CORE LENGTH: Broken and washed out 1" to 4", average 2". Soft clay layer washed out. 132.0	90
CORE LENGTH: Broken 2-12", average 6". Very slight grinding. 137.0	100
CORE LENGTH: Broken 2-24", average 7". Very slight grinding. 142.0	100
CORE LENGTH: Broken 2-14", average 5". Some grinding at limestone nodules. 147.0	95
CORE LENGTH: Broken 2-24", average 8". No visible grinding. 152.0	100
CORE LENGTH: Broken 2-14, average 6".	100

PRESSURE TESTS

Loss in G.P.M.	Pressure P.S.I.	Time in Min.
0	5	5
0	10	5
0	15	5
0	20	10
1	25	- water out top of casing.
127-139 Packer leaked, reset to 125-137.0, slight leak in top of rod accounted for.		
125	-137.0 DP	
0	10	15
0	15	15
0	20	10
0	25	10
0	30	10
0	35	5
0	40	5
0	45	10
1*	50	5
*Slight leak out top of casing due to leakage around packer.		
135.	0-147.0DP	
0	5	5
0	10	5
0	15	5
0	20	10
2*	25	10
*water leaked past packer and out top of casing		
140	-152	
0	5	2
0	10	2
0	15	5
0	20	10
0	25	10
2*	30	5
*slight leakage past packer and out top of casing.		
150	-162	
0	5	5
0	10	5
0	15	5
0	20	10
0	25	5
0	30	10
0	35	5

No leakage. Test discontinued.

Elevation	Depth
92	120
	125
82	130
	135
72	140
	145
62	150

LOG / SAMPLE

CLASSIFICATION AND PHYSICAL CONDITION

Very clayey and plastic, moderately cemented to 117.0.
117.2 LIMESTONE: Nodules to 117.4.
117.4-119.5 CLAYEY SILT: gray, slightly sandy, massive.
119.5 LIMESTONE: 2" nodule, hard.
122.0 SILT (MARL): moderately compacted silt (and limestone nodule 3" at 122.3.)

126.0 MARL: Silty, gray, carbonaceous, uncemented, easily broken.

130.0 CLAY: 10" of soft clay, plastic, gray.
132-133.0 CLAY: silty, generally massive.

133.5 LIMESTONE: nodule 3" thick.
134-135.5 Contained 1/2" limestone (limey harder zones).
135.5-142.0 MARL: massive, uniform, gray, silty clay.

142.0 LIMESTONE: 3" nodule. Marl becomes more compacted.
145-147 LIMESTONE: (marly limestone).
148.3 1/4" bed of charcoal.
148.6, 149.0, 150.2, 150.6 limestone nodules 2-3 1/2" thick.

152.0 MARL: gray, compacted, sandy silty clay, not fossiliferous, massive.
153.1 slight core grinding.

HOLE SIZE NX

HOLE NO. 507

SITE General

SHEET 5 OF 5

PROJECT A. W. Vogtle Nuclear Site

HOLE NO. 507

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	% CORE RECOVERY	PRESSURE TESTS LOSS IN G.P.M.	PRESSURE P.S.I.	TIME IN MIN.	ELEVATION	DEPTH	LOG	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
Very slight core grinding. 157.0									157.0 MARL: Moderately cemented gray, massive, clayey silt, very slightly sandy to 167.6'.
CORE LENGTH: Broken 2-8", average 5". Slight core grinding. 162.0	100	160	-172		52	160			159.1 slight core grinding. 160.0 Limestone nodule 1" thick.
		0	20	5					
		0	25	5					
		0	30	10					
CORE LENGTH: Broken 2-7", average 4", very slight grinding		No	loss.	Discontinued test.					
167.0	100	165.0	-177.0			165			167.6 slight core grinding and marl becomes silty clay, uniform, massive.
		0	20	5					
		0	25	5					
		0	30	10					
CORE LENGTH: Broken 2-34", average 4", no core grinding. 172.0	100	No	loss.	Discontinued test.	42	170			169.0 MARL: grades into a slightly silty, well compacted plastic clay, massive, uniform gray. 172.0 MARL: becomes gray clay, very slightly silty in irregular beds 1/2-1" thick.
CORE LENGTH: Broken 1/2-24", average 1", no grinding. 177.0	100					175			175.1 MARL: remains clay, gray but grading into green-black color, only slightly silty. 176.0 CLAY: green-black is variable, silty, partly sandy at end of run.
CORE LENGTH: Broken 6-30", average 6", possible core loss in uncemented sand. 182.0	70				32	180			180.5 SAND: contact, gradational transition from silty clay to silty sand.
Spoon sample No recovery in sand with core barrel.	SS	182.0 1.4	100=2"						182.0 SAND: coarse, light gray brown and not calcareous.
Spoon sample	SS	184.5 1.4	200=2"			185			184.5 SAND: fine to medium grained, brown-light gray, not calcareous.
Spoon sample	SS	189.5 1.4	300=	1 1/2	22	190			189.5 SAND: fine, light gray, not clayey, slightly silty, non-calcareous.
TD = 191.0 ft.									

HOLE SIZE NX

HOLE NO. 507

SITE General

BECHTEL
GEOLOGIC LOG OF DRILL HOLE

SHEET 1 OF 5
HOLE NO. 508

PROJECT A. W. Vogtle Nuclear Site ANGLE FROM HORIZ. 90 BEARING -
LOCATION N 1145 605 E 621 613 BEGUN 8-31-73 COMPLETED 9-4-73
OVERBURDEN 95 ft. DEPTH DRILLED INTO ROCK 56 ft. TOTAL DEPTH OF HOLE 163.0 ft.
ELEV. WATER TABLE - NO. CORE BOXES - NO. SAMPLES TAKEN 3
CORE RECOVERY (%) 100% FEET 56 ft. MODEL & MAKE OF DRILL CME 55
GROUND ELEV. 190.46 ft. HOLE LOGGED BY P. Yen DRILLER Cleo Ivy- LETCO

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	% CORE RECOVERY	PRESSURE TESTS LOSS IN G.P.M.	Pressure P.S.I.	TIME Minutes	ELEVATION	DEPTH	LOG	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
Drilled (5 7/8") to marl at 95 ft. depth. Set 4" casing to 95 ft. 5 bag drilling mud used. No cement used.									0-95.0 ft. OVERBURDEN: Silt, sand and clay.
						5			
Began coring at 96.0 ft. using Longyear NX barrel.					180	10			
						15			
20.0 ft. 100% water loss. Water tested at 10 ft. intervals with pneumatic double packers set at 12 ft. spacing.					170	20			
Backfilled to 30 ft. with 5 bags of cement.						25			
Solid rectangles indicate spoon samples.					160	30			
						35			

13

HOLE SIZE 5 7/8"

HOLE NO. 508
SITE General

12/10/73 Amendment 13

SHEET 2 OF 5

PROJECT A. W. Vogtle Nuclear Site

HOLE NO. 508

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	% CORE RECOVERY	PRESSURE TESTS			ELEVATION	DEPTH	LOG	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
		LOSS IN G.P.M.	PRESSURE P.S.I.	TIME IN MIN.					
					150	40			
					140	50			
					130	60			
					120	70			

HOLE SIZE 5 7/8"

HOLE NO. 508

SITE General

12/10/73 Amendment 1

SHEET 3 OF 5

PROJECT A. W. Vogtle Nuclear Site

HOLE NO. 503

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	% CORE RECOVERY	PRESSURE TESTS: LOSS IN G.P.M.	PRESSURE TESTS: PRESSURE P.S.I.	PRESSURE TESTS: TIME IN MIN.	ELEVATION	DEPTH	LOG / SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
					110	80		
Casing: 4" diameter to 95.0 ft. depth.						85		95.'-150.8' CLAY (MARL): Gray to greenish-gray, silty, very calcareous, very firm, massive, weakly cemented, has hard moderately cemented nodules. Marl can be broken by hard finger pressure, nodules by hard hammer blow. Has shell fragments in some zones.
					100	90		
Spoon sample			95.0			95		95.0 MARL: Medium gray, limey, hard, weathered at top, very sandy, fine-medium grained, moderately silty, bearing carbonaceous particles and small black flecks, some coquina (fossils).
96.0 Began coring.		SS	1.4	35-63				96.0 MARL: Gray varies from very sandy silt and clay to silt to fat clay. Varies from soft 1" seams to massive well compacted. Cores broken easily by the drilling action and is nearly always broken at the contact zone. Thin well cemented nodular (limestone) inclusions. Marl is well compacted to poorly cemented.
CORE LENGTH: 2-14". Generally excellent recovery.	100		97.0-109.0					
		0	5	5				
		0	10	5				
		0	15	10				
101.0		0	20	10	90	100		101.0 MARL: Friable for 8" depth, still moderately sandy, moderately silty. Medium gray with black flecks. 101-101.8 Core is soft, thumbprints easily.
CORE LENGTH: 2-7". Top of run shows core grinding and possible loss by washout.	100	-	25	Blew packer (Lost into shell zone)				
			104-116	DP				104.4 Soft seam.
106.0		0	5	5		105		105.0 Begins hard marl, flecks gone.
CORE LENGTH: 2-19". Hard and soft zones. 100 % pickup last run.	100	0	10	5				
		0	15	10				108.5 3" piece of light gray hard marl. Slight amount coquina
		0	20	10				
		-	25	Blew packer. Loss into shell zone				
111.0					80	110		
Slight grinding core at 114.8.	100		114-126.0					

HOLE SIZE 5 7/8" and NX

HOLE NO. 508

SITE General

13

PROJECT A. W. Vogtle Nuclear Site

HOLE NO. 508

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	% CORE RECOVERY	PRESSURE TESTS: LOSS IN G.P.M.	PRESSURE TESTS: PRESSURE P.S.I.	PRESSURE TESTS: TIME IN MIN.	ELEVATION	DEPTH	LOG / SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
116.0		0	5	5				116.0 MARL: Continues hard medium gray, medium-fine grained, sandy, silty, not visibly fossiliferous.
		0	10	5				
CORE LENGTH: Broken 2-15".	100	0	15	10				
		-	20	-				
		Slight leakage out top of casing.						
121.0					70	120		
CORE LENGTH: Broken 2-14".	100							
		125-137						
126.0		0	5	10		125		
		0	10	10				
CORE LENGTH: Broken 2-10".	100	-	15	-				
		Slight water loss out top of casing.						
131.0					60	130		
CORE LENGTH: Broken 2-15".	100							134.1 MARL: 2" limey material streaked with gray carbonaceous material.
		135-147						
136.0		0	5	5		135		136.0 MARL: Clayey, fine grained, medium gray, uniform sparsely fossiliferous.
		0	10	10				
		0	15	5				
CORE LENGTH: Broken 2-12".	100	-	20	-				
		Slight loss of water out top of casing.						
141.0					50	140		
		142-154						
CORE LENGTH: Broken 2-8".	100	0	5	5				
		0	10	5				
		0	15	10				
		-	20	10		145		
146.0		Slight water loss out top of casing.						
CORE LENGTH: Broken 2-26".	100							
151.0					40	150		150.8 MARL: Begins to become more sandy. Big pieces of shell at bottom of run.
CORE LENGTH: 2-6". MARL: 8 1/2" recovery.	14							

HOLE SIZE NX

HOLE NO. 508

SITE General

PROJECT A. W. Vogtle Nuclear Site

SHEET 5 OF 5

HOLE NO. 508

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	% CORE RECOVERY	PRESSURE TESTS: LOSS IN G.P.M.	PRESSURE P.S.I.	TIME IN MIN.	ELEVATION	DEPTH	LOG	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
156.0 Took sppon sample.			156						
		SS	1.4	49-51	=2"				151.7 SAND: Medium grained, medium gray, very slightly silty, non-calcareous.
156-160.0 attempted coring (no recovery)			160		30	160			
160.0 Took sppon sample. No recovery		SS	1.4	64-36	=2"				161.5 SAND: Medium grained, non-plastic, dark gray to black, not calcareous, slightly clayey and silty.
			161.5						
		SS	1.4	50-50	=1"				
161.5 Took spoon sample.						165			
TD = 163.0 ft.						170			
						180			
						190			

13

HOLE SIZE NX

HOLE NO. 508

SITE General

12/10/73 Amendment 13

BECHTEL

GEOLOGIC LOG OF DRILL HOLE

SHEET 1 OF 5
HOLE NO. 510

PROJECT A. W. Vogtle Nuclear Site ANGLE FROM HORIZ 90 BEARING -
LOCATION N 1143 047 E 622 353 BEGUN 8/29/73 COMPLETED 9/14/73
OVERBURDEN 96 ft. DEPTH DRILLED INTO ROCK 58 ft. TOTAL DEPTH OF HOLE 185.0 ft.
ELEV. WATER TABLE - NO. CORE BOXES 4 NO. SAMPLES TAKEN 23
CORE RECOVERY (%) 85% FEET 49'4" MODEL & MAKE OF DRILL CME 55
GROUND ELEV. 230.7 ft. HOLE LOGGED BY P. Yen DRILLER R. Williams, B. Shealy LETCO

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	SAMPLE DATA: PENETRATION TOOL	TOOL SIZE	METHOD n - BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	LOG / SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
4" casing to 95 ft.									0-96.0 ft. OVERBURDEN: sand and clay.
Drilled to 93 ft. with 5 7/8" tricone bit.							5		
Cored through marl with Longyear 10 ft. NX sampling barrel making 5 ft. runs.						221	10		
13 Longyear sample indicated by open box.									
Water tested with pneumatic double packers set at 12 ft. spacing, testing in 10 ft. increments.							15		
						211	20		
Used 2 bags of cement. Used 6 bags of bentonite.							25		
Backfilled to 34 ft. with 5 bags of cement.									
This hole tested with Menard pressure meter apparatus. Location of test indicated by triangle symbol opposite footage markers.						201	30		

Hole Size 5 7/8"

Hole No. 510
Site Unit 4 Reactor

PROJECT A. W. Vogtle Nuclear Site	SHEET 2 OF 5 / HOLE NO 510

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	SAMPLE DATA: PENETRATION TOOL	TOOL SIZE	METHOD & - BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	LOG / SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION.
Hole drilled to investigate marl only. No samples 0-95 ft.									
						191	40		
Numbered rectangles indicate samples taken for soils testing. Starred rectangles indicate samples taken for general field data. Solid rectangles indicate spoon samples.							45		
						181	50		
						171	60		
							65		
						161	70		

Hole Size 5 7/8"

Hole No 510
Site Unit 4 Reactor

12/10/73 Amendment 1

PROJECT A. W. Vogtle Nuclear Site

SHEET 3 OF 5

HOLE NO 510

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	PENETRATION TOOL	TOOL SIZE	METHOD #-BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	LOG	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION.
						151	80			
Cased to 95.5 ft. with 4" ID casing							85			93.'-154.' CLAY(MARL): Gray to greenish-gray, silty, very calcareous, very firm, weakly cemented, massive, has hard moderately cemented nodules. Marl can be broken by hard finger pressure. Nodules broken by hard hammer blow. Shell fragments in some zones.
Longyear split tube NX barrel began coring in 5 ft. runs.						141	90			93.0 suspected marl contact.
Spoon sample.		94.0								94.0 MARL: Silty, medium gray, fine grained, calcareous, contains some carbonaceous particles and fossiliferous.
95.5	SS	1.4 95.0-107.0	18-30-50				95			
Core length: 2-16" broken. 100.0	91	0 10 0 15 0 20 0 25 0 30	5 5 10 10 15			131	100		1 2	96.2 core grinding is quite pronounced. 99.0-100.0 limy marl with shells and casts.
		No loss. Test discontinued.								
Core length: Broken 8-30". 105.0	99	105 - 117.0					105		3 4	101.5 shells and casts become more sparse. 102.6 7" piece of harder, limy marl.
Core length: 2-10" Recovered 49/60 110.0	82	0 0 0 0 0 0	15 20 25 30 35 40	5 10 5 5 10 10		121	110		5 6	108.9-109.2 5" piece of limestone. 110.0-111.2 LIMESTONE: firm, nodular peices 3/4-1" size.
		No loss. Test discontinued								
Core length: 2-5" Recovered 53/60. Core mechanically ground. 115.0	90								7	113.7-115.0 two pieces of limestone 2" thick, grinding core on either side.

Hole Size 5 7/8" and NX

Hole No 510

Site Unit 4 Reactor

PROJECT A.W. Vogtle Nuclear Site

SHEET 4 OF 5

HOLE NO 510

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	SAMPLE DATA: PENETRATION TOOL	TOOL SIZE	METHOD N.-BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	LOG	SAMPLE
Recovery 2 ft. Core length; 1/2-2" broken and ground up in core barrel. 120 EOS	40	0 0 0 0	25 30 35 40	5 5 10 10		111	120		*
		No loss discontinued test.							
Core length; Broken 0-2" Barrel filled with fallout overnight. Core ground up. 125.0	22		125 -137						*
Core length; 2-6". Average 6". Broken. 130.0	100	0 0 0 0 *	15 20 25 30 25		5 5 10 15 5	101	130		8 9
		*Water leakage past packer and cut top of casing, about 3 GPM.							
Core length; 2-7" Average 6". Broken. 135.0 EOS	100		135-147.0						10
Core length; 2-32". Average 8". No grinding seen. 140.0	100	0 0 0 *	20 25 30 35		5 10 10 10	91	135 140		11
		*Slight leak (2-3GPM) past packer and cut top of casing.							
Core length; Broken 3-24" Average 15" No grinding seen. 145.0	100	0 0 0 *	141-153 20 25 30 35		5 10 10 5		145		12
		* Slight leak out top of casing past packer approximately 3 GPM.							
Core length; Broken or fractured 2-30". Average 9". 150.0	100					81	150		13
Core length; Broken 4-30". Average 24". No grinding.	100								14

CLASSIFICATION AND PHYSICAL CONDITION.

115.0-120 Limestone nodules grinding against softer marl. Nodules recovered with rounded ends, visible shell content and moderately hard.
119.1 grinding of core.

120-125.0 dirty, shell fragments, marl chips and debris from above falling into hole. 14" of marl core is silty, plastic and contains shells and casts.
125.0 - 130.0. LIMESTONE.
125.3 grinding of core.
126.6 limestone 2 1/2" thick.
127.0 limestone nodule 1" thick.
127.2 limestone nodule 3" thick.
128.0 limestone nodule 2" thick.
128.5 slightly more sandy marl, massive, faintly bedded in part.
130.0 limestone nodule 1" thick.
130.1 - 130.2 slight grinding of core.
(132.1 limestone nodule.)
132.7 slight grinding of core.
133.9 slight grinding of core.
133.6-134.0 hard limestone, massive.
135.0 MARL: gray, massive, uniform, silty clay, barely indents with fingernail to 144.0.
145.0 MARL: becomes harder and more resistant to fingernail pressure, slightly more limy to 150.0.
150.0 MARL: Silty clay, more small specks of black carbonaceous matter, becoming slightly more yellow-gray than previous run.

Hole Size NX

Hole No 510

Site Unit 4 Reactor

12/10/73 Amendment

PROJECT A.W. Vogtle Nuclear Site

SHEET 5 OF 5

HOLE NO. 510

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	SAMPLE DATA: PENETRATION TOOL	TOOL SIZE	METHOD n-BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH
No recovery in sand. 160.0	0	160.0				71	160
Spoon sample No recovery 165.0	SS 0	1.4 165.0	100+				165
Spoon sample no recovery 170.0	SS 0	1.4 170.0	430= 3"	3	21/2	61	170
Spoon sample Core recovery. 175.0	SS 3	1.4	100	3	2		175
Core recovery. 180.0	17					51	180
Core recovery. 185.0	18						185
TD = 185.0 ft.							190

CLASSIFICATION AND PHYSICAL CONDITION.

153.0 occasional .5-1.0mm sand grains and larger shell fragments becoming more numerous to 154.0.

154.0 SAND: contact is gradational with clay and silt grading to sand, color change from gray to green-gray.

160.0 SAND: Light gray, fine to medium grained, slightly silty, non-calcareous, non-plastic.

165.0 SAND: light gray, fine to medium grained, massive, slightly silty, non-plastic, non-calcareous.

170.0 SAND: Black, slightly silty, slightly clayey, fine to medium grained, non-calcareous, non-plastic, massive, non-bedded.

175.0 SAND: Black, fine grained, clayey, non-calcareous, plastic, not compacted, massive.

180.0 SAND: Clayey, fine grained, slightly plastic, massive, non-calcareous, black to 185.0.

Hole Size NX

Hole No 510

Site Unit 4 Reactor.

BECHTEL
GEOLOGIC LOG OF DRILL HOLE

SHEET 1 OF 5
HOLE NO. 513

PROJECT A. W. Vogtle Nuclear Site ANGLE FROM HORIZ 90 BEARING -
LOCATION N 1142 940 E 622 640 BEGUN 9-4-73 COMPLETED 9-17-73
OVERBURDEN 86 ft. DEPTH DRILLED INTO ROCK 61.5 ft. TOTAL DEPTH OF HOLE 178.0 ft.
ELEV. WATER TABLE - NO. CORE BOXES 4 NO. SAMPLES TAKEN 24
CORE RECOVERY (%) 92% FEET 56.25 ft. MODEL & MAKE OF DRILL Acker
GROUND ELEV. 220.21 ft. HOLE LOGGED BY P. Yen DRILLER Smiley - LETCO

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	SAMPLE DATA: PENETRATION TOOL	TOOL SIZE	METHOD n - BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	LOG / SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
Set 4" casing to 87'. Drilled with 5 7/8" tricone bit from surface to 87 ft.							5		0-86.0 ft. OVERBURDEN: sand and clay.
Cored 88.0-148 ft. depth in marl using Longyear NX sampler barrel.						210	10		
This hole used for Menard Pressure Meter Testing. Location of test indicated by triangle symbol opposite footage marker.							15		
Three bags of cement used to grout casing. This hole was water pressure tested with pneumatic double packers at 12 ft. spacing and at 10 ft. increments.						200	20		
							25		
Backfilled to 30 ft with 5 bags of cement.						190	30		

Hole Size 5 7/8"
Hole No. 513
Site Unit 3 Reactor

PROJECT A. W. Vogtle Nuclear Site

SHEET 2 OF 5

HOLE NO 513

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	SAMPLE DATA					ELEVATION	DEPTH	LOG	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION.
	PENETRATION TOOL	TOOL SIZE	METHOD N-BLOWS	ADVANCE	RECOVERY					
Numbered rectangles indicate samples taken for soils testing. Starred rectangles indicate samples taken for general field data. Solid rectangles indicate spoon samples.										
						180	40			
							45			
						170	50			
							55			
						160	60			
							65			
						150	70			

Hole Size 5 7/8"

Hole No 513

Site Unit 3 Reactor

PROJECT A. W. Vogtle Nuclear Site

SHEET 3 OF 5

HOLE NO 513

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	SAMPLE DATA: PENETRATION TOOL	TOOL SIZE	METHOD n-BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	LOG / SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
						140	80		86.'-147.5' CLAY (MARL): Medium gray, silty, very calcareous, very firm, weakly cemented, massive, has hard moderately cemented nodules. Marl broken by hard finger pressure, nodules broken by hard hammer blow. Shell fragments in some zones.
Began coring.		86-	87.5				85		88.0 CLAY: Slightly silty, very soft, ground up by harder stones in the barrel, massive non-bedded to 91.0.
88.0	SS	1.4	17-26-41	18	18				
CORE LENGTH: Broken 3-26", average 10". 88.2 grinding in 94.5 clay. 52/60" recovery. Loss probably due to soft clay at top of run. 93.0	87	90	-102			130	90	1	91.0 MARL: Coquina appears, some pieces 3/4" long, lying flat, in individual pieces. Marl is moderately compacted, silty clay, massive, slightly streaked, limy but not shell bearing after 92.5, very slightly sandy.
		0	15	2					
		0	20	2				2	
CORE LENGTH: Broken 2-18", average 4". 93.5, 94.5 grinding core. 62/60" 98.0	100	0	25	2					
		0	30	5					
		0	35	10			95	3	
		0	40	10					
		No loss. Test discontinued						4	98.0 62/50" recovery. 103.0 59.5/60" recovery.
CORE LENGTH: Broken 2-24", average 4". 98.2 core grinding. 59.5/60 103.0	100	100	-112			120	100	5	LIMESTONE: Nodules 2-4" thick appearing at 94.5, 95.0, 97.8 99.0, 99.5, 103-104, 105.2, 108.1, 108.5, 112.0, 113.0, 114.2-117.5, 122.5-124.8.
		0	25	2					
		0	30	2					
		0	35	10				6	100-102.0 MARL: Shows lenses of more limy clay within the usual silty clay. Lenses 1/4 to 1/2" thick.
		0	40	10					
CORE LENGTH: Broken 2-5", average 3". 103.2, 104.1 core grinding, close to limestone nodules. 43/60" 108.0	72	No loss. Test discontinued					105		102.0 MARL: Becomes silty and sandy clay.
								7	110.0 MARL: Becomes plastic, slightly silty clay.
CORE LENGTH: Broken and ground up 2-6", average 4". 108.8, 112. grinding core. 53/60" 113.0	88	110	-122			110	110		
		0	25						
		0	30						
		0	35					*	
		0	40						
CORE LENGTH: Broken 2-6", average 4".		No loss. Test discontinued							

Hole Size 5 7/8" & NX

Hole No 513

Site Unit 3 Reactor

12/10/73 Amendment

PROJECT A. W. Vogtle Nuclear Site

HOLE NO 513

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	SAMPLE DATA: PENETRATION TOOL	SAMPLE DATA: TOOL SIZE	SAMPLE DATA: METHOD N-BLOWS	SAMPLE DATA: ADVANCE	SAMPLE DATA: RECOVERY	ELEVATION	DEPTH	LOG / SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION.
Grinding of clay and limestone. 44/60 118.0	73								118.0-123.0 MARL: Becomes slightly silty clay, plastic.
CORE LENGTH: Broken 2-4", average 3", core loss in soft clay. 55/60 123.0	92	120 0 0 0 0 No loss. Test discontinued.	-132 25 30 35 40	 2 5 10 10		100	120	8	123.0 LIMESTONE: Moderately hard, calcareous, limy to 127.0. 127.0 MARL: Becomes uniform, massive, gray, compacted, mechanically fractured in part by drilling action, silty clay Continues to be generally uniform with the exception of limestone 2" thick at 135.0 and 141.8.
CORE LENGTH: Broken 2-26", average 10" no apparent grinding 58/60. 128.0	99						125	9 10	
CORE LENGTH: Broken 2-18", average 10" very slight grinding. 133.0	100	130 0 0 0 0 No loss. Test discontinued.	-142 25 30 35 40	 5 5 10 10		90	130	11	142.0-143.0 MARL: Contains sparsely scattered shell fragments, 1/8-1/4" size.
CORE LENGTH: Broken 2-24", average 10" no apparent grinding. 138.0	100						135		
CORE LENGTH: Broken 2-14", average 10" no apparent grinding. 143.0	100	140 0 0 3 Small loss into sand at bottom of test interval.	-152 15 20 25	 5 5 10		80	140	12 13	142.0-147.5 MARL: Becomes more clayey (slightly silty clay) plastic gray, easily scratched with fingernail, compacted, generally fine grained.
CORE LENGTH: Broken 2-14". Bottom part of run in sand was lost. 52/60 148.0	90						145	14	147.5 SAND: Silty non-plastic sand, layer of shell at contact 1/4" thick, sand is dark green to black, non-calcareous, uncemented to moderately compacted, fine to medium grained
Small recovery in sand. 153.0	10					70	150	*	
No recovery in sand.	0								

Hole Size NX

Hole No 513

Site Unit 3 Reactor

SHEET 5 OF 5

PROJECT A. W. Vogtle Nuclear Site

HOLE NO 513

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	SAMPLE DATA: PENETRATION TOOL	TOOL SIZE	METHOD N-BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	LOG / SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION.
No recovery in sand	0								
158.0		158.0							158.0 SAND: Light gray, fine grained, silty, non-calcareous.
No recovery in sand Spoon sample	SS 0	1.4	300	2	2	60	160	*	
163.0		163.0							163.0 SAND: Gray, silty, fine to medium grained, non-calcareous.
Small recovery in sand. Spoon sample	SS 2	1.4	200	1	3		165	*	163-168.0 SAND: Black, very silty, non-calcareous, fine grained, uncemented, uniform, non-plastic, very slight amount of clay.
168.0									
Some recovery in sand.	15					50	170	*	168-173 As above SAND: Black, very silty, etc.
173.0									173-178 SAND: As above.
Small recovery in sand.	16						175	*	
178.0									
TD = 178.0 ft.						40	180		

Hole Size NX

Hole No 513

Site Unit 3 Reactor

12/10/73 Amendment

BECHTEL

GEOLOGIC LOG OF DRILL HOLE

SHEET 1 OF 5

HOLE NO. 518

PROJECT A. W. Vogtle Nuclear Site ANGLE FROM HORIZ 90 BEARING -

LOCATION N 1,142,950 E 623,800 BEGUN 8-8-73 COMPLETED 8-20-73

OVERBURDEN 77.5 ft. DEPTH DRILLED INTO ROCK 62.5 ft. TOTAL DEPTH OF HOLE 175 ft.

ELEV. WATER TABLE - NO. CORE BOXES 3 NO. SAMPLES TAKEN 23

CORE RECOVERY (%) 95% FEET 59.7 ft. MODEL & MAKE OF DRILL Acker

GROUND ELEV. 209.88 ft. HOLE LOGGED BY P. Yen DRILLER Smiley LETCO

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	SAMPLE DATA: PENETRATION TOOL	TOOL SIZE	METHOD R - BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	LOG / SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
Drilled to 76 ft. with 5 7/8" tri-cone bit (no samples). Cased (4") to 76ft. Cored from 76.0 ft. with a Longyear sampling barrel.									0-77.5 ft. OVERBURDEN: Sand and clay.
							5		
No water loss reported.									
						200	10		
Backfilled to 5 ft. with 5 bags of cement.									
This hole tested with Menard pressure testing apparatus. Location of test indicated by triangle symbol opposite footage markers.							15		
						190	20		
							25		
Numbered rectangles indicate samples taken for soils testing. Starred rectangles indicate samples taken for general field data. Solid rectangles indicate spoon samples.						180	30		

Hole Size 5 7/8"

Hole No. 518

Site Unit 1 Reactor

13

SHEET 2 OF 5

PROJECT A. W. Vogtle Nuclear Site

HOLE NO 518

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	SAMPLE DATA: PENETRATION TOOL	TOOL SIZE	METHOD & - BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	LOG / SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION.
						170	40		
							45		
						160	50		
							55		
						150	60		
							65		73.5'-74.0' Soil red brown. 77.5'-139.7' CLAY(MARL): Greenish-gray, silty, very calcareous, very firm, weakly cemented, massive, has hard moderately cemented nodules, clay can be broken by hard finger pressure, nodules by hard hammer blow. Shell fragments in some zones.
						140	70		
Spoon sample		SS1.4	10-40	72		73.5			

Hole Size 5 7/8"

Hole No 518

Site Unit 1 Reactor

PROJECT A. W. Vogtle Nuclear Site

SHEET 3 OF 5

HOLE NO 518

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	SAMPLE DATA: PENETRATION TOOL	TOOL SIZE	METHOD B-BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	LOG / SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION.
Began 76.0 Spoon sample		76-	78						
		SS	1.4	10-12-13					
3'4" recovery 79.0	99								77.5 MARL: Very hard at contact, gray, slightly sandy silty clay. Easily broken by drilling action, varies from compacted to moderately cemented limy, fine to medium grained.
3'3" 82.0	98					130	80	2, 3	
3'1" 85.0	99								
86'10"	100						85	4	86.0 1 1/2 x 1/2 inch chip of carbonized wood.
91.0	98					120	90	5, 6	
93.9	100								
Blocked barrel and ground up core. 96.0	52						95	7	
100.5	95					110	100	8, 9	
Limestone nodules begin to appear causing difficult drilling. 105.0	100							*	
109.5	98						105	XXX, 10, XXX	105.4 MARL: Mechanically broken by drilling action 2" thick. 108.2 MARL: Mechanically broken by drilling action 3" thick.
112.5	95					100	110	XXX, XXX, 11	111.0 Broken zone with limestone. Broken by drilling action.
	98							XXX	

Hole Size 5 7/8 and NX

Hole No 518

Site Unit 1 Reactor

12/10/73 Amendment 13

PROJECT A. W. Vogtle Nuclear Site

SHEET 4 OF 5

HOLE NO 518

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	SAMPLE DATA: PENETRATION TOOL	TOOL SIZE	METHOD n-BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	LOG / SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION.
	83							12	
119.6						90	120		
	100	124-	129.0					*	
124'6"	97	0	10	10			125	*	126.5 SAND: 2-4" thick, 2" clay zones on each side.
126'6"		0	15	5					
		0	20	5					
		0	25	5					
	100	Slight leak out top of packer and out top of casing approximately 1 gpm.						13	
130.5						80	130		
	100								
135.5							135	*	
	100							14	
140.5						70	140		139.7 ft. Dark gray-black sand with clay, medium grained, non-calcareous, uniform, non-bedded.
Small recovery in sand.	10							*	145.5-146.3 SAND: Dark gray, medium grained, no reaction with HCl.
145.5 Spoon sample		145.5					145		
No recovery in sand.	0	SS1.4	76-76						
150.5		150.0				60	150		150-151.5 SAND: Dark gray, medium grained, no reaction with HCl, non-plastic.
No recovery in sand	0	SS1.4	100+						

Hole Size NX

Hole No 518

Site Unit 1 Reactor

PROJECT A. W. Vogtle Nuclear Site

SHEET 5 OF 5

HOLE NO 518

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	SAMPLE DATA: PENETRATION TOOL	TOOL SIZE	METHOD n-BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	LOG / SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION.
Small recovery in sand using core barrel. 160.0	5					50	160		155-165.0 SAND: Black to dark gray, slightly silty, non-plastic, non-calcareous, poorly cemented and difficult to recover in core barrel, fine to medium grained.
Small recovery in sand using core barrel. 165.0	2						165		165-175 SAND: Dark gray, slightly silty, medium grained, non-calcareous, generally slightly plastic to non-plastic. Chiefly quartz sand and black clayey material.
Small recovery in the sand. 170.0	15					40	170		
Small recovery in the sand. 175.0	3						175	*	
TD = 175.0 ft.									

Hole Size NX

Hole No 518

Site Unit 1 Reactor.

12/10/73 Amendment 13

TEST BORING RECORD

ELEV.	DEPTH FEET	DESCRIPTION		PENETRATION-BLOWS PER FOOT 0 5 10 15 20 30 40 60 80 100
102.2		Tan Sandy Clay (CL)		
	4.0	Gray Green Silty Clay (CL) and Clayey Silt (MH) Permeability Test 1 (E-18) from 6.0 to 11.0 feet - Packer Burst Permeability Test 2 (E-18) from 11.0 to 31.0 feet	E-18	
92.2			E-18	
82.2				
72.2				
	33.0	Cemented Sand (SP or SM)	E-18	
	36.0	Black Silty Sand (SP or SM) Permeability Test 3 (E-18) from 33.0 to 48.0 feet		
62.2				
52.2	48.0	Boring Terminated		

REMARKS: Boring P-1 was wash bored without sampling. Stratification and soil descriptions are approximate.

Coordinates: N 108 + 70
E 117 + 80

DRILLED BY Haynes, Girdler
LOGGED BY CMR
CHECKED BY WAL

BORING NUMBER P-1
DATE STARTED 5-15-79
DATE COMPLETED 5-16-79
JOB NUMBER 5-7429

TEST BORING RECORD

ELEV.	DEPTH FEET	DESCRIPTION		PENETRATION-BLOWS PER FOOT 0 5 10 15 20 30 40 60 80 100
102.6		Tan and Gray Green Sandy Clay (CL) Permeability Test (E-19) from 0 to 6.0 feet.	E-19	
	6.0			
92.6				

REMARKS: Boring P-1A was wash bored without sampling. Soil description is approximate.

Coordinates: N 108 + 67
E 118 + 10

DRILLED BY Haynes, Girdler
LOGGED BY CMR
CHECKED BY WAL

BORING NUMBER P-1A
DATE STARTED 5-17-79
DATE COMPLETED 5-17-79
JOB NUMBER MB-7429

TEST BORING RECORD

ELEV.	DEPTH FEET	DESCRIPTION		PENETRATION-BLOWS PER FOOT (0, 5, 10, 15, 20, 30, 40, 60, 80, 100)
102.2	0.5	Access Road Fill Tan and Gray Green Silty Clay (CL) and Clayey Silt (ML) Permeability Test 1 (E-18) from 5.0 30.0 feet	E-18	
92.2				
82.2				
72.2	29.5 30.5	Cemented Sand Black Silty Sand (SP or SM) Permeability Test 2 (E-18) from 30.0 to 50.0 feet.	E-18	
62.2				
52.2	50.0	Boring Terminated		

REMARKS: Boring P-2 was wash bored without sampling. Stratification and soil descriptions are approximate.

Coordinates: N - 108 + 00
E - 118 + 75

DRILLED BY Haynes, Girdler
LOGGED BY CMR
CHECKED BY WAL

BORING NUMBER P-2
DATE STARTED 5-17-79
DATE COMPLETED 5-17-79
JOB NUMBER MB-7429

TEST BORING RECORD

ELEV.	DEPTH FEET	DESCRIPTION		PENETRATION-BLOWS PER FOOT 0 5 10 15 20 30 40 60 80 100
107.8		Tan Clayey Sand (SC)		
97.8	7.0	Tan and Gray Green Clayey Silt (MH) and Silty Clay (CL) Permeability Test 1 (E-18) from 7.0 to 17.0 feet.	E-18	
87.8		Permeability test 2 (E-18) from 17.0 to 37.0 feet	E-18	
77.8				
67.8	39.5	Black Silty Sand (SP or SM) Permeability Test 3 (E-18) from 40.5 to 54.5 feet	E-18	
57.8				
47.8	54.5	Boring Terminated		

REMARKS: Boring P-3 was wash bored without sampling. Stratification and soil descriptions are approximate.

Coordinates: N 106 + 89
E 118 + 62

DRILLED BY Haynes, Girdler
LOGGED BY CMR
CHECKED BY WAL

BORING NUMBER P-3
DATE STARTED 5-14-79
DATE COMPLETED 5-14-79
JOB NUMBER MB-7429

TEST BORING RECORD

ELEV.	DEPTH FEET	DESCRIPTION		PENETRATION-BLOWS PER FOOT
107.9		Tan Clayey Sand (SC) Permeability Test (E-19) from 0.0 to 6.5 feet	E-19	
	6.5			
97.9		Boring Terminated		

REMARKS: Boring P-3A was wash bored without sampling. Stratification and soil description are approximate.

Coordinates: N 107 + 03
E 118 + 46

DRILLED BY Haynes-Girdler
LOGGED BY CMR
CHECKED BY WAL

BORING NUMBER P-3A
DATE STARTED 5-17-79
DATE COMPLETED 5-17-79
JOB NUMBER MB-7429

TEST BORING RECORD

ELEV.	DEPTH FEET	DESCRIPTION		PENETRATION-BLOWS PER FOOT 0 5 10 15 20 30 40 60 80 100
96.3	1.2	Access Road Fill		
		Tan Clayey Sand (SC) - Alluvium Permeability Test 1 (E-18) from 6.0 to 12.0 feet.	E-18	
86.3	11.0	Gray Green Clayey Silt (MH) and Silty Clay (CL) Permeability Test 2 (E-18) from 12.0 to 27.0 feet.	E-18	
76.3				
	25.8	Cemented Sand		
	26.8	Black Silty Sand (SP or SM) Permeability Test 3 (F-18) from 29.0 to 54.0 feet.	E-18	
66.3				
56.3				
46.3				
	54.0	Boring Terminated		
36.3				

REMARKS: Boring P-5 was wash bored without sampling. Stratification and soil descriptions are approximate.

Coordinates: N 109 + 10
E 118 + 45

DRILLED BY Haynes, Girdler
LOGGED BY CMR
CHECKED BY WAL

BORING NUMBER P-5
DATE STARTED 5-17-79
DATE COMPLETED 5-17-79
JOB NUMBER MB-7429

106.7
102.2

PACKER TEST IN HOLE P1

DOUBLE ☐ SINGLE ☑ INTERVAL TESTED: 6.0 - 11.0 (WEATHERED MARL)

PROJECT: VOGTLE JOB NO: 9510-001

DATE: TUE MAY 15, 1979 TESTED BY: R.C. KISER

GROUND WATER DEPTH: 7.5 (AT HOLE 621) FEET HOLE SIZE: 4 1/2"

GAGE HEIGHT (AGS): 4.5 FEET TOP OF SWIVEL AT 2.75' ABOVE G.L.

REMARKS: PACKER BURST AFTER 5 MIN. NO WATER TAKE

TIME (MINUTES)		FLOW METER READING (FT^3)	FLOW RATE (CFM)	PRESSURE (PSI)
2:25	0	52000.0		10
2:30	5	52000.0	0	–

PACKER TEST IN HOLE P-1

DOUBLE ☐ SINGLE ☑ INTERVAL TESTED: 11.0 - 31.0 MARL

PROJECT: VOGTLE JOB NO: 9510-001

DATE: MAY 16, 1979 TESTED BY: R.C. KISER

GROUND WATER DEPTH: 7.5 (AT 621) FEET HOLE SIZE: 4 1/2" BIT

GAGE HEIGHT (AGS): 4.5 FEET TOP OF SWIVEL AT 2.75' ABOVE G.L.

REMARKS: NO TAKE

TIME (MINUTES)		FLOW METER READING (C.F.)	FLOW RATE (CFM)	PRESSURE (PSI)
9:18	0	52000.0		10
9:23	5	✓	0	10
9:25	0	52000.0	–	20
9:30	5	✓	0	20

PACKER TEST IN HOLE P-1

DOUBLE ☐ SINGLE ☐ INTERVAL TESTED: 33.0 - 48.0 LOWER SAND

PROJECT: VOGTLE JOB NO: 9510-001

DATE: WED MAY 16, 1979 TESTED BY: RC KISER

GROUND WATER DEPTH: 7.5 (AT 621) FEET HOLE SIZE: 8"

GAGE HEIGHT (AGS): 4.5 FEET TOP OF SWIVEL AT 3.75' ABOVE G.L.

REMARKS: CEMENTED SAND LAYER APPROX 35-36', PLACED 4" ID STL CASING TO BOTTOM OF HOLE, WASHED, AND TREMIED GRAVEL TO 3.0' ABOVE BOTTOM OF MARL. PULLED CASING, SET PACKER 1' ABOVE TOP OF GRAVEL.

TIME	(MINUTES)	FLOW METER READING (FT³)	FLOW RATE (CFM)	PRESSURE (PSI)
1:03	0	52000.0	—	10
1:07	4	✓	0	
1:08	0	52000.0	—	20
9	1	3.1	3.1	✓
1:10	2	5.5	2.4	✓
1:11	3	7.6	2.1	✓
1:12	4	9.1	1.5	
1:13	5	10.1	1.0	
1:14	6	10.8	0.7	
1:16	8	11.8	0.5	
1:18	10	12.0	0.1	
1:20	12	12.1	0.05	
1:22	14	12.1	~~0.05~~ 0	
1:24	16	12.7	or ~~0.3~~ ~~2.6~~	
1:26	18	12.8	0.05	
1:28	20	12.8	0.0	

0810 (11-74)

BECHTEL

CALCULATION SHEET

DATE ______

DESIGN BY R.C. KISER DATE 5/17/79 CHECKED BY ______ SHEET NO. 1 OF 1

PROJECT VOGTLE JOB NO. 9510-001

SUBJECT E-19 TEST P-1A 15' E. of P1 ~~CALCULATION NO.~~ INTERVAL 0-6' UPPER MARL FILE NO. ______

(1) DEPTH FROM BASE TO GROUND SURFACE: 1.33' FEED LINE FROM BBL TO G.L.

(2) DEPTH TO BOTTOM OF HOLE: 6.0'

(3) DEPTH TO TOP OF GRAVEL PACK: G.L

(4) DEPTH OF SAND (2)-(3): 6.0

(5) DEPTH TO WATER SURFACE IN HOLE: 0

(6) DEPTH OF WATER IN WELL (2)-(5): 6.0

G.W LEVEL: 7.5' (AT HOLE 621)

(7) VOLUME OF GRAVEL PLACED IN HOLE: 3.4 5 GAL BUCKETS = 2.3 FT³

(8) AVERAGE RADIUS OF WELL:

$$r = \left(\frac{V}{\pi h}\right)^{1/2} = \left(\frac{2.3\ FT^3}{(3.14)(6.0)(FT)}\right)^{1/2} = \left(\frac{2.3\ FT^2}{18.8}\right)^{1/2} = .35\ FT = 4.2'' \text{ (DIAM = 8.4'' AVG)}$$

TIME		WATER LEVEL IN BBL (FEET)				
CLOCK	ACCUM	READ	DIFF	ACCUM	VOL (FT³)*	
7:45 A	-	2.60	-	-		18°C 5/17/79
8:45	60	2.56	.04	.04'		18°C
9:45	120	2.53	.03	.07'		19°C
10:45	180	2.50	.03	.10'		20°C
11:45	240	2.46	.04	.14'		22°C
12:45	300	2.43	.03	.17'		24°C
1:45	360	2.39	.04	.21'		25°C
2:45	420	2.36	.03	.24'		27°C
3:45	480	2.34	.02	.26'		27°C
4:45	540	2.31	.03	.29'		28°C
7:45 A	1440	1.91	.40	.69'		16°C 5/18/79
10:45	1620	1.81	.10	.79'		20°C
12:45	1740	1.77	.04	.83'	2.29	23°C

* .23 FT³/INCH OF BBL. (BARREL IS 22.5 INCHES DIAMETER)

PACKER TEST IN HOLE P-2

DOUBLE ☐ SINGLE ☐ INTERVAL TESTED: 5.0 - 30.0 MARL

PROJECT: VOGTLE JOB NO: 9510-001

DATE: TH MAY 17, 1979 TESTED BY: R.C. KISER

GROUND WATER DEPTH: 11.9 FEET HOLE SIZE: 5½

GAGE HEIGHT (AGS): 0 FEET TOP OF SWIVEL AT 3.75' ABOVE G.L.

REMARKS: AFTER 3.5 MINUTES OF TESTING AT 40 PSI, HOLE BEGAN TO TAKE WATER AT HIGH RATE (~20 CFM); BACKED PRESSURE OFF TO 20 PSI AND GOT 0 TAKE IN 5 MINUTES, HOWEVER WATER METER WAS NOT WORKING DURING 'NO TAKE' P..., ALSO DEVELOPED "SPRING" 18' BEHIND RIG.

TIME ( )		FLOW METER READING ( )	FLOW RATE (CFM)	PRESSURE (PSI)
2:25	0	520270.0		
	1	70.9	0.9	20
	2	70.9	~~0.1~~ 0.0	20
	3	71.0	0.1	
	4	71.0	~~0.1~~ 0.0	
	5	71.0	0.0	
2:31	0	71.2	—	
	1	71.3	0.1	30
	2	71.5	0.2	✓
	3	72.0	0.5	✓
	4	72.1	0.1	
	5	72.5	0.4 3gpm	
	6	72.7	0.2	
	8	73.1	0.2	
	10	73.3	0.1	
	12	73.6	0.15	
	14	73.6	0	
	16	73.6	0	Avg = .12 cfm/.91
1:47	0	74.0	? —	40
	4	295.2		

PACKER TEST IN HOLE P-2

DOUBLE ☐ SINGLE ☑ INTERVAL TESTED: 30.0 - 50.0 LOWER SAND

PROJECT: VOGTLE JOB NO: 9510-001

DATE: TH MAY 17, 1979 TESTED BY: R.C. KISER

GROUND WATER DEPTH: 11.9 FEET HOLE SIZE: 5½

GAGE HEIGHT (AGS): 0 FEET TOP OF SWIVEL AT 5.75' ABOVE G.L.

REMARKS: TESTED OPEN HOLE; SOUNDED BOTTOM OF HOLE WITH DRILL RAL AFTER TEST TO MAKE SURE HOLE STAYED OPEN.

TIME (MINUTES)		FLOW METER READING (FT³)	FLOW RATE (CFM)	PRESSURE (PSI)
3:53	0	520400.0		20
3:54	1	401.5		
	2	402.1		
	3	402.6	0.5	
	4	403.0	0.4	
	5	403.2	0.2	
3:59½	0	403.8		
	1	404.4	0.6	30
	2	405.1	0.7	
	3	405.8	0.7	
	4	406.4	0.6	
	5	407.0	0.6	
	6	407.7	0.7	
	7	408.2	0.5	
4:07	0	410.0	–	40
	1	411.2	1.2	
	2	412.2	1.0	
	3	413.3	1.1	
	4	414.5	1.2	
	5	415.8	1.3	

PACKER TEST IN HOLE P-2 PG 2 OF 2

DOUBLE ☐ SINGLE ☐ INTERVAL TESTED: ____

PROJECT: ____ JOB NO: ____

DATE: ____ TESTED BY: ____

GROUND WATER DEPTH: ____ FEET HOLE SIZE: ____

GAGE HEIGHT (AGS): ____ FEET

REMARKS: ____

TIME ( )	FLOW METER READING ( )	FLOW RATE (CFM)	PRESSURE (PSI)
6	416.9	1.1	
7	417.9	1.0	
8	419.0	1.1	
9	420.1	1.1	
10	421.2	1.1	

PACKER TEST IN HOLE P-3

DOUBLE ☐ SINGLE ☑ INTERVAL TESTED: 6.0-7.1 UPPER SAND ?

PROJECT: VOGTLE JOB NO: 9510-001

DATE: MON MAY 14, 1979 TESTED BY: R.C. KISER

< 24 HR READING

GROUND WATER DEPTH: 2.7 FEET HOLE SIZE: 5½"

GAGE HEIGHT (AGS): 0 FEET TOP OF SWIVEL AT 2.75' ABOVE G.L.

REMARKS: GROUND ELEV. ≈ 107.8 ; PACKER IS 3.1 FT LGTH ; ATTEMPTED TO SET PACKER AT TOP OF HOLE BUT GROUND BULGED OUT; TRIED TESTING LOWER 1 FT, BUT H2O TAKE VERY SMALL, WILL TRY E-19 AFTER OTHER INTERVALS COMPLETED.

TIME (MINUTES)	FLOW METER READING (FT^3)	FLOW RATE (CFM)	PRESSURE (PSI)
12:36 0	520033.3		10
12:41	33.8	0.1 CFM/MIN	10

DISREGARD

PACKER TEST IN HOLE P-3

DOUBLE ☐ SINGLE ☑ INTERVAL TESTED: 7.1 - 17.0 "WEATHERED" MARL

PROJECT: VOGTLE JOB NO: 9510-001

DATE: MON MAY 14, 1979 TESTED BY: R.C. KISER

GROUND WATER DEPTH: 2.7 FEET (< 24 HR READING) HOLE SIZE: 4 1/2" BIT

GAGE HEIGHT (AGS): 0 FEET TOP OF SWIVEL AT 1.65 ABOVE G.L.

REMARKS: NO WATER TAKE AT ALL; TERMINATED AFTER 5 MIN AT 10 PSI AND 1 MIN AT 20 PSI

TIME (MINUTES)		FLOW METER READING ( )	FLOW RATE (CFM)	PRESSURE (PSI)
12:34	0	520040.0		10
12:39	5	✓	0	10
12:39	0	✓		20
12:40	1	✓	0	20

PACKER TEST IN HOLE P3

DOUBLE ☐ SINGLE ☑ INTERVAL TESTED: 17.0 - 37.0 MARL

PROJECT: VOGTLE JOB NO: 9510-001

DATE: MON MAY 14 TESTED BY: R.C. KISER

< 24 HR READING

GROUND WATER DEPTH: 2.7 FEET HOLE SIZE: 4 ½" BIT

GAGE HEIGHT (AGS): 0 FEET TOP OF SWIVEL AT 1.75' ABOVE G.L.

REMARKS: NO TAKE - CONTINUED DRILLING TO 39.6 (BOTTOM OF MARL)

TIME (MINUTES)		FLOW METER READING (CFM)	FLOW RATE (CFM)	PRESSURE (PSI)
1:47	0	520060.7		20
1:49	2	✓	0	
1:50	0	520060.7		30
1:55	5	SAME	0	30

PACKER TEST IN HOLE P-3

DOUBLE ☐ SINGLE ☑ INTERVAL TESTED: 40.5 - 54.6 (LOWER SAND)

PROJECT: VOGTLE JOB NO: 9510-001

DATE: MON MAY 14, 1979 TESTED BY: R.C. KISER

GROUND WATER DEPTH: 2.7 FEET (< 24 HR READING) HOLE SIZE: ~~4½" BIT~~ 5½" REAMER

GAGE HEIGHT (AGS): 0 FEET (2.8 TO TOP OF SWIVEL)

REMARKS: BOTTOM OF MARL AT 39.6; SET PACKER [illegible] AT 41.0 TO GET GOOD BITE INTO WALL; ON FIRST TRY HOLE BRIDGED AT 39.0 REAMED AND WASHED WITH 5½" BIT. PACKER STILL TIGHT THRU 39-40; TEST RESULTS QUESTIONABLE

TIME (MINUTES)	FLOW METER READING (CFM)	FLOW RATE (CFM)	PRESSURE (PSI)
4:25 0	5200 61.5		30
4:26 1	63.0	1.5 *	✓
4:27 2	63.5	0.5	✓
4:28 3	64.1	0.6	✓
4:29 4	64.6	0.5	✓
4:30 5	65.1	0.5	✓
4:32 7	66.6	0.75	✓
4:34 9	68.0	0.7	✓
4:36 11	69.2	0.6	✓
4:38 13	70.9	0.85	✓
4:40 15	72.5	0.8	✓
4:45 20	76.9	0.9	✓
4:50 25	80.5	0.7	✓
4:55 30	84.5	0.8	✓
		AVG. .77 CFM	

* OMIT

CALCULATION SHEET

DATE

DESIGN BY R C KISER DATE BEGIN TU MAY 15 79 CHECKED BY SHEET NO. 1

PROJECT VOGTLE JOB NO. 9510-001

SUBJECT E-19 TEST AT P3-A (15' NW OF P3) ~~CALCULATION~~ INTERVAL UPPER MARL -- NO. 0-6.5' FILE NO.

(1) DEPTH FROM BASE TO GROUND SURFACE: 1.25' (BASE IS FEED LINE TO BOB VALVE)

(2) DEPTH TO BOTTOM OF HOLE: 6.5'

(3) DEPTH TO TOP OF GRAVEL PACK: GROUND LEVEL

(4) DEPTH OF SAND (2)-(3): 6.5' G.W. LEVEL 2.7' ? AT P3

(5) DEPTH TO WATER SURFACE IN HOLE: GROUND LEVEL

(6) DEPTH OF WATER IN WELL (2)-(5): ~~Ø~~ 6.5'

$5 \times .1337 \times 3.5 = 2.33\ ft^3$

(7) VOLUME OF GRAVEL PLACED IN HOLE: 3.5 5-GAL BUCKETS = 2.3 FT³

(8) AVERAGE RADIUS OF WELL:

$$r = \left(\frac{V}{\pi h}\right)^{1/2} = \left(\frac{2.3\ FT^3}{(3.14)(6.5\ FT)}\right)^{1/2} = \left(\frac{2.3\ FT^2}{20.41}\right)^{1/2} = .34\ FT = 4.1'' \ (\text{DIAM.} = 8.2'')$$

TIME: CLOCK	TIME: ACCUM	WATER LEVEL IN BARREL (FT): READ	DIFF	ACCUM	VOL (FT³)*	
12:10 PM	—	2.59'	—	—	—	5/15/79 TEMP = 21° C
1:10	60	2.57'	.02'	.02'		
1:55	105	2.55'	.02	.04'		
2:35	145	2.53'	.02'	.06'		
3:00	170	2.51'	.02'	.08'		
3:30	200	2.49'	.02'	.10		
* 7:30 AM		1.95	.54 ~~.44~~	.64 ~~.54~~		5/16/79 TEMP = 21° C
8:30		1.93	.02	.66 ~~.56~~		✓
9:30		1.88	.05	.71 ~~.61~~		22° C
10:30		1.85	.03	.74 ~~.64~~		23° C
11:30		1.82	.03	.77 ~~.67~~		25° C
12:30 PM	1460	1.79	.03	.80 ~~.70~~		26° C
01:30	1520	1.75	.04	.84 ~~.74~~		28° C
02:30	1580	1.71	.04	.88 ~~.78~~		29° C
03:30 pm	1640	1.67	.04	.92 ~~.82~~	~~4.11~~	30° C
07:01 AM		1.10	.57	1.49 ~~1.39~~	~~3.84~~	18° C

* .23 FT³/INCH OF BBL. (BARREL IS 22.5" DIAM)

PACKER TEST IN HOLE P-4

DOUBLE ☐ SINGLE ☑ INTERVAL TESTED: 5-15 1.0-13.0 = QAl 13.0-15.0 U/MARL

PROJECT: VOGTLE JOB NO: 9510-001

DATE: FR MAY 18, 1979 TESTED BY: R.C. KISER

GROUND WATER DEPTH: ______ FEET HOLE SIZE: 5½

GAGE HEIGHT (AGS): 0 FEET G.L.

REMARKS: UPPER 1-2 FT = BACKFILL SAND; SET PACKER AT 5' WITH THE INTENTION OF RUNNING A LOW PRESSURE PACKER TEST, HOWEVER THE QAl GAVE WAY AND THE PACKER BURST. WILL SET-UP E-19 ON FUTURE QAl TESTS

TIME (MINUTES)	FLOW METER READING (FT³)	FLOW RATE (CFM)	PRESSURE (PSI)

PACKER TEST IN HOLE P-4 PAGE 1 OF 2

DOUBLE ☐ SINGLE ☑ INTERVAL TESTED: 21.0 - 36.0° (LOWER SAND)

PROJECT: VOGTLE JOB NO: 9510-001

DATE: FR MAY 18, 1979 TESTED BY: R.C. KISER

GROUND WATER DEPTH: 6.9 FEET HOLE SIZE: 5½

GAGE HEIGHT (AGS): 0 FEET TOP OF SWIVEL AT 2.75' ABOVE G.L

REMARKS: TOP OF CEMENTED SAND = 21.6' TOP OF MARL 12.0'

TIME ( )		FLOW METER READING ( )	FLOW RATE (CFM)	PRESSURE (PSI)
11:15	0	400.0	—	20
	1	400.8	0.8	
	2	400.9	0.1	
	3	401.0	0.1	
	4	401.1	0.1	
	5	401.2	0.1	
	6	401.2	0	
	8	401.2	0	
	10	401.2	0	
11:25½	0	402.1	—	30
	1	402.2	0.1	
	2	402.7	0.2 5	
	3	402.9	0.2	
	4	402.9	0	
	5	403.1	0.2	
	6	403.2	0.1	
	8	403.5	~~0.3~~ 0.15	
	10	403.7	~~0.2~~ 0.1	

PACKER TEST IN HOLE P-4

DOUBLE ☐ SINGLE ☑ INTERVAL TESTED:

PROJECT: JOB NO:

DATE: TESTED BY:

GROUND WATER DEPTH: 6.9 FEET HOLE SIZE:

GAGE HEIGHT (AGS): FEET

REMARKS: AT 50 PSI, WATER METER "TOOK OFF" — TOO FAST FOR NORMAL TEST; ONLY SMALL AMT LEAKED AROUND PACKER, BUT TAKE WAS TOO MUCH FOR NORMAL FORMATION ∴ TEST TERMINATED.

TIME ( )		FLOW METER READING ( )	FLOW RATE (CFM)	PRESSURE (PSI)
12:36	0	404.0	—	40
	1	404.6	0.6	
	2	404.9	0.3	
	3	405.1	0.2	
	4	405.4	0.3	
	5	405.7	0.3	
	6	406.0	0.3	
	8	406.2	~~0.2~~ 0.1	
	10	406.9	~~0.7~~ 0.35	
	0	409.0	?	50
	1	424.5		

CALCULATION SHEET

BECHTEL

DATE ______

DESIGN BY R.C. KISER DATE 5/18/79 CHECKED BY ______ SHEET NO. 1

PROJECT VOGTLE INTAKE STRUCTURE PERM. TESTS JOB NO. 950-001

SUBJECT E-19, P-4A INTERVAL ~~CALCULATION NO.~~ 0-7.5' FILE NO. ______

UPPER ALLUVIUM

(1) DEPTH FROM BASE TO GROUND SURFACE: 1.25'

(2) DEPTH TO BOTTOM OF HOLE: 7.5'

(3) DEPTH TO TOP OF GRAVEL PACK: GR. LEVEL

(4) DEPTH OF SAND (2)-(3): 7.5'

(5) DEPTH TO WATER SURFACE IN HOLE: 0

(6) DEPTH OF WATER IN WELL (2)-(5): 7.5'

$\boxed{\text{G.W. DEPTH} = 6.9'}$ (AT P-4)

(7) VOLUME OF GRAVEL PLACED IN HOLE: 19 GALLON = 2.5 FT³

(8) AVERAGE RADIUS OF WELL:

$$r = \left(\frac{V}{\pi h}\right)^{1/2} \quad \left(\frac{2.5\ F^{3}}{(3.14)(6.6)}\right)^{1/2} = (.12)^{1/2} = .35\ FT = 4.2''$$

TIME CLOCK	TIME ACCUM	READ	DIFF	ACCUM	VOL (FT³)*	
1:00 PM	–	2.70	–	–		25°C START H2O FRONT
1:05	5	2.68	.02	.02		
1:10	10	2.65	.03	.05		
1:15	15	2.62	.03	.08		
1:20	20	2.59	.03	.11		
1:25	25	2.57	.02	.13		
1:30	30	2.54	.03	.16		
1:40	40	2.49	.05	.21		
1:50	50	2.44	.05	.26		
2:00	60	2.39	.05	.31		25°C
2:10	70	2.33	.06	.37		
2:20	80	2.28	.05	.42		
2:30	90	2.23	.05	.47		
2:45	105	2.15	.08	.55		
3:00	120	2.07	.08	.63		27°C
3:15	135	1.99	.08	.71		
3:30	150	1.92	.07	.78	2.15	

k = 1060.8 FT/YR

* .23 FT³/INCH OF BBL.

PACKER TEST IN HOLE P-5

DOUBLE ☐ SINGLE ☑ INTERVAL TESTED: 6.0 - 12.0 (UPPER MARL)

PROJECT: VOGTLE JOB NO: 9510-001

DATE: THU MAY 17, 1979 TESTED BY: R.C. KISER

GROUND WATER DEPTH: 11.3 FEET HOLE SIZE: 5½

GAGE HEIGHT (AGS): 0 FEET TOP OF SWIVEL 2.75' ABOVE G.L.

REMARKS: 'SPRING' DEVELOPED ~15' FROM HOLE AT 20 PSI; REDUCED PRESSURE TO 10 PSI, FLOW DECREASED BUT CONTINUED THRU 5 MINUTE TEST; CAUSE: (1) POSSIBLE THIN LAYER OF ALLUVIUM, OR (2) BACKFILL SAND DEEPER THAN ORIGINALLY THOUGHT; VERIFIED THAT CAUSE = ALLUVIUM, BY DIGGING (CONT BELOW)

TIME ( )		FLOW METER READING (FT³)	FLOW RATE (CFM)	PRESSURE (PSI)
9:20	0	520010.0	?	20
	1	38.0		
	2	69.0		
	3	95.0		
9:24	0	123.0	?	10
	1	140.0		
	2	160.0		
	3	178.0		
	4	198.0		
	5	218.0		

THRU BACKFILL SAND WITH POST HOLE DIGGER; FOUND ORIGINAL GROUND SURFACE AT 1.2' DEPTH. SINCE PACKER WAS SET AT 6.0', IT APPEARS THAT ALLUVIUM EXTENDS FROM ~1.2' TO AT LEAST 6-8' DEPTH, POSSIBLY MORE, BUT NO DEEPER THAN 12.0' (TOP OF MARL); NOTE: THIS Qal IS PROBABLY GULLY WASH RATHER THAN SAVANNAH RIVER Qal.

PACKER TEST IN HOLE PS

DOUBLE ☐ SINGLE ☑ INTERVAL TESTED: 12.0 - 27.0 MARL + CEMENTED SAND

PROJECT: VOGTLE JOB NO: 9510-001

DATE: TH MAY 17, 1979 TESTED BY: R.C. KISER

GROUND WATER DEPTH: 11.3 FEET HOLE SIZE: 5½

GAGE HEIGHT (AGS): 0 FEET TOP OF SWIVEL 1.75' ABOVE G.L.

REMARKS: ENCOUNTERED CEMENTED SAND AT 25.9'. CEMENTED SAND IS APPARENTLY IMPERMEABLE.

TIME (MINUTES)	FLOW METER READING (FT^3)	FLOW RATE (CFM)	PRESSURE (PSI)
10:11 0	520240.0		20
1	✓	0	✓
2	✓	0	✓
3	✓	0	✓
4	✓	0	✓
5	✓	0	✓
0	✓		30
2	520240.1	~~0.1~~ 0.05	✓
4	✓	0	✓
5	✓	0	✓

PACKER TEST IN HOLE P-5

DOUBLE ☐ SINGLE ☑ INTERVAL TESTED: 29.0-54.0 LOWER SAND

PROJECT: VOGTLE JOB NO: 9510-001

DATE: TH MAY 17, 1979 TESTED BY: R.C. KISER

GROUND WATER DEPTH: 11.3 FEET HOLE SIZE: 5½

GAGE HEIGHT (AGS): 0 FEET TOP OF SWIVEL AT 4.75' ABOVE G.L.

REMARKS: TESTED WITHOUT GRAVEL PACK; HOLE STAYED OPEN
(DROPPED DRILL RODS TO B.O.H — NO RESISTANCE!

TIME (MINUTES)		FLOW METER READING (FT³)	FLOW RATE (CFM)	PRESSURE (PSI)
11:24	0	520240.0	—	
	1	41.5	1.5	20
	2	42.0	0.5	
	3	42.5	0.5	
	4	43.0	0.5	
	5	43.5	0.5	
11:30	0	44.0	—	30
	1	45.0	1.0	
	2	46.0	1.0	
	3	46.9	0.9	
	4	47.5	0.6	
	5	48.3	0.8	
11:36	0	250.0	-	40
	1	52.9	2.9	
	2	55.1	2.2	
	3	57.2	2.1	
	4	59.4	2.2	
	5	63.0	3.6(?) SOME RETURN	

PACKER TEST IN HOLE P-6 E-18 OPEN END

DOUBLE ☐ SINGLE ☑ INTERVAL TESTED: 24'

PROJECT: VOGTLE JOB NO: 9510-001

DATE: MO MAY 21, 1979 TESTED BY: R.C KISER

GROUND WATER DEPTH: — FEET HOLE SIZE: 5 7/8

GAGE HEIGHT (AGS): 0 FEET

REMARKS: DRILLED TO 24' SET 4" I.D. CASING TO BOH; SET PACKER AT TOP OF CASING; TRIED "POUR-IN" (C.H) CONSTANT HEAD TEST THRU CASING BUT WATER CAME UP AROUND ANNULUS; TRIED PULLING CASING BUT BOTTOM 10' DIDN'T COME UP; NO FISHING TOOLS ON SITE ABANDONED HOLE

TIME (MINUTES)	FLOW METER READING (FT^3)	FLOW RATE (CFM)	PRESSURE (PSI)

CALCULATION SHEET

DATE

DESIGN BY ______ DATE ______ CHECKED BY ______ SHEET NO. 1 OF 2

PROJECT PGA PERM - 0.8' - 4.0' UP. QAL SILTS/CLAYS ______ JOB NO. ______

SUBJECT ______ CALCULATION NO. ______ FILE NO. ______

(1) DEPTH FROM BASE TO GROUND SURFACE: 1.4'

(2) DEPTH TO BOTTOM OF HOLE: 4.0

(3) DEPTH TO TOP OF GRAVEL PACK: GROUND LEVEL

(4) DEPTH OF SAND (2)-(3): 4.0'

(5) DEPTH TO WATER SURFACE IN HOLE: 0.

(6) DEPTH OF WATER IN WELL (2)-(5): 4.0'

GW LEVEL
APPROX: 8.1' BASED ON P6-B, C, D.

(7) VOLUME OF GRAVEL PLACED IN HOLE: 3.1 BUCKETS = 2.1 FT³

(8) AVERAGE RADIUS OF WELL:

$$r = \left(\frac{V}{\pi h}\right)^{1/2} = \left(\frac{2.1 ft^3}{(3.14)\,4.0 ft}\right)^{1/2} = (.17 ft^2)^{1/2} = .41 ft$$

TIME: CLOCK	TIME: ACCUM	READ	DIFF	ACCUM	VOL (FT³)*	
8:12	0	2.75				FILL-UP TO CUT OFF
8:17½	5½	2.32	.43			
8:20	—	2.30	—	—	—	22° C
:25	5	2.20	0.10	0.10'		
:30	10	2.14	0.06	0.16'		
:35	15	2.08	0.06	0.22'		
:40	20	2.02	0.06	0.28'		
:45	25	1.95	0.07	0.35'		
:50	30	1.90	0.05	0.40'		
:55	35	1.85	0.05	0.45'		
9:00	40	1.79	0.06	0.51'		22° C
:10	50	1.69	0.10	0.61'		
:20	60	1.59	0.10	0.71		
:30	70	1.49	0.10	0.81		
:40	80	1.40	0.09	0.90		
:50	90	1.30	0.10	1.00		
10:00	100	1.22	0.08	1.08		22° C
15	115	1.10	0.12	1.20		
30	130	0.98	0.12	1.32		
45	145	0.87	0.11	1.43		
11:00	160	0.76	0.11	1.54		22° C
		2.00 **				

** RE-FILLED BARREL TO 2.0 FT

* .23 FT³/INCH OF BBL.

BECHTEL

CALCULATION SHEET

DATE ______

DESIGN BY ______ DATE ______ CHECKED BY ______ SHEET NO. 2 oF 2

PROJECT P6-A JOB NO. ______

SUBJECT ______ CALCULATION NO. ______ FILE NO. ______

(1) DEPTH FROM BASE TO GROUND SURFACE:

(2) DEPTH TO BOTTOM OF HOLE:

(3) DEPTH TO TOP OF GRAVEL PACK:

(4) DEPTH OF SAND (2)-(3):

(5) DEPTH TO WATER SURFACE IN HOLE:

(6) DEPTH OF WATER IN WELL (2)-(5):

(7) VOLUME OF GRAVEL PLACED IN HOLE:

(8) AVERAGE RADIUS OF WELL:

$$r = \left(\frac{V}{\pi h}\right)^{1/2}$$

TIME						
CLOCK	ACCUM	READ	DIFF	ACCUM	VOL (FT^3)*	
11:15	175	1.91	.09	1.63		
11:30	190	1.81	.10	1.73		
:45	205	1.71	.10	1.83		
12:00	220	1.61	.10	1.93		22°C
12:15	235	1.52	.09	2.02		
12:30	250	1.43	.09	2.11		
12:45	265	1.34	.09	2.20		
1:00	280	1.26	.08	2.28		
$\boxed{1:20}$	300	1.20	.06	2.34	6.46	

* .23 FT^3/INCH OF BBL.

PACKER TEST IN HOLE P6-B

DOUBLE ☐ SINGLE ☑ INTERVAL TESTED: 10.0 - 20.0

PROJECT: VOGTLE JOB NO: 9510-001

DATE: W MAY 23, 1979 TESTED BY: R.C. KISER

GROUND WATER DEPTH: 9.4 FEET HOLE SIZE: 3 7/8"

GAGE HEIGHT (AGS): 0 FEET (TOP OF SWIVEL AT 1.75' ABOVE G.L.)

REMARKS: DRILLED 10', SET 10' OF THIN-WALL PVC (4" DIA.); CEMENTED IN PLACE WITH NEAT CEMENT; LET CURE OVERNIGHT; DRILLED TO 20'; FLUSHED WITH CLEAR WATER; TESTED AT 5 PSI; NOTE: HOLE SOUNDED TO 19.3' AFTER TEST → 0.7' OF SEDIMENT ON BOTTOM

TIME ( )		FLOW METER READING ( )	FLOW RATE (CFM)	PRESSURE (PSI)
		520472.0		
		~~520474.0~~	0	5
	0	520528.8		
	1	✓	0	5
	2	✓	0	
	3	✓	0	
11:00	0	500.0	—	5
	1	524.0	24.0	
	2	548.0	24.0	
	3	572.1	24.1	
	4	596.2	24.1	
	5	620.0	23.8	
	6	644.2	24.2	
	7	668.2	24.0	
	8	692.3	24.1	
	9	716.1	23.8	
	10	740.0	23.9	
	15	858.8	23.8	
	20	911.9	STOPPED FLOWING	?

PACKER TEST IN HOLE P-6C

DOUBLE ☐ SINGLE ☑ INTERVAL TESTED: 20.0 - 30.0 (lower Sand)

PROJECT: VOGTLE JOB NO: 9510-001

DATE: W MAY 23, 1979 TESTED BY: R.C. KISER

GROUND WATER DEPTH: 9.4 FEET HOLE SIZE: 3 7/8

GAGE HEIGHT (AGS): 0 FEET SWIVEL TOP AT 1.75' ABOVE G.L.

REMARKS: DRILLED 20', CEMENTED 20' OF THIN WALL PVC CASING; AFTER GROUT CURED, DRILLED ADDITIONAL 10 FT; SOUNDED HOLE AFTER TEST AND RODS DROPPED ONLY TO 20.5 FT. MAY CONSIDER THIS TEST OPEN END INSTEAD OF INTERVAL TEST.

TIME ( )		FLOW METER READING ( )	FLOW RATE (CFM)	PRESSURE (PSI)
12:38	0	925.0	-	5
	1	940.2	15.2	
	2	956.4	16.2	
	3	972.5	16.1	
	4	988.2	15.7	
	5	1003.0	14.8	
	6	1018.1	15.1	
	7	1033.0	14.9	
	8	1048.0	15.0	
	9	1062.4	14.4	
	10	1076.8	14.4	
	11	1091.0	14.2	
	12	1105.1	14.1	
	13	1119.5	14.4	
	14	1133.2	13.7	
	15	1147.0	13.8	
	17	1174.0	13.5	
	19	1200.9	13.5	
	21	1227.5	13.3	
	23	1253.1	12.8	
	25	1278.3	12.6	

PACKER TEST IN HOLE P-6D

DOUBLE ☐ SINGLE ☑ INTERVAL TESTED: 30.0 - 40.0 ALLUVIUM (Lower)

PROJECT: VOGTLE JOB NO: 9510-001

DATE: W MAY 23, 1979 TESTED BY: R.C. KISER

GROUND WATER DEPTH: 9.4 FEET HOLE SIZE: 3 7/8"

GAGE HEIGHT (AGS): 0 FEET SWIVEL HT = 1.75' ABOVE G.L.

REMARKS: DRILLED 30', SET & GROUTED 4" PVC CASING; AFTER GROUT CURED, DRILLED 10' TO 40' AND TESTED, SOUNDED HOLE AFTER TEST AND ROD DRILLED ONLY TO 30' 8" → MAY CONSIDER "OPEN END TEST"

TIME (MINUTES)		FLOW METER READING (FT³)	FLOW RATE (CFM)	PRESSURE (PSI)
2:32	0	1310.0	—	5
	1	1331.0	21.0	
	2	1352.2	21.2	
	3	1373.8	21.6	
	4	1394.9	21.1	
	5	1415.0	20.1	
	6	1433.8	18.8	
	7	1454.5	20.7	
	8	1474.1	19.6	
	9	1493.1	19.0	
	* MISSED 10 11	1530.5	18.7	
	12	1549.0	~~19.0~~ 18.5	
	14	1584.0	17.5	
	16	1616.8	16.4	
	18	1647.7	15.5	
	20	1674.0	13.2	

BECHTEL CORPORATION

DRILLERS LOG OF DRILL HOLE

SHEET 1 OF 1

HOLE NO. WELL 1

PROJECT VOGTLE N.P. DEWATER TESTS ANGLE FROM HORIZ 90° BEARING —

LOCATION ________ BEGUN 10-2-72 COMPLETED 10-3-72

OVERBURDEN ________ DEPTH DRILLED INTO ROCK ________ TOTAL DEPTH OF HOLE 94.0 Ft

ELEV. WATER TABLE ________ NO. CORE BOXES ________ NO. SAMPLES TAKEN ________

CORE RECOVERY (%) ________ FEET ________ MODEL & MAKE OF DRILL FAILING 1500

GROUND ELEV. 210 Ft (TOPO) HOLE LOGGED BY DON RIVERS DRILLER DON RIVERS

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	% CORE RECOVERY	SAMPLE DATA: BLOW COUNT	PENETRATION TOOL	HAMMER WT/LBS	HAMMER FALL-INCHES	ELEVATION	DEPTH	LOG / SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
Drilled 12¼" diam. hole. Bentonite used in drilling fluid.									0.0 – 20.0 Ft. CLAY: Brown, sandy.
							20		20.0 – 40.0 Ft CLAYEY SAND AND CLAY: Yellow
							40		
							60		56.0 – 72.0 Ft SAND: White, with yellow and black interbedded clay.
6" casing set to 80 Ft. with slotted screen, 65-80 Ft.	65'								72.0 – 80.0 Ft. SAND: White, with shells.
Clean sand-gravel pack placed in annular space.	80'						80		80.0 – 94.0 Ft MARL: Green, clayey
									Total depth 94.0 Feet
							100		

Hole Size 12 ¼"

Hole No. WELL 1

Site VOGTLE DEWATERING TESTS

BECHTEL CORPORATION

DRILLERS LOG OF DRILL HOLE

SHEET 1 OF 1

HOLE NO. WELL 2

PROJECT VOGTLE N.P. Dewater Tests ANGLE FROM HORIZ Vertical BEARING ____

LOCATION ____ BEGUN 9/12/72 COMPLETED ____

OVERBURDEN ____ DEPTH DRILLED INTO ROCK ____ TOTAL DEPTH OF HOLE ____

ELEV. WATER TABLE ____ NO. CORE BOXES — NO. SAMPLES TAKEN —

CORE RECOVERY (%) — FEET — MODEL & MAKE OF DRILL FAILING 1500

GROUND ELEV. 225 (TWD) HOLE LOGGED BY Don Rivers DRILLER Don Rivers

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	% CORE RECOVERY	SAMPLE DATA: BLOW COUNT	PENETRATION TOOL	HAMMER WT/LBS	HAMMER FALL-INCHES	ELEVATION	DEPTH	LOG / SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
Drilled 12¼" dia hole Bentonite used in drilling fluid									0-15' SANDY CLAY, brown to red
							20		15'-56' CLAYEY SAND & CLAY, brown to yellow, interbedded
							40		
									56'-61' SAND, white, with shells.
Began losing circulation @ 55' (50% loss)	69'						60		61'-85' SHELL, white, hard, limestone, some clay and sand.
	85'						80		85'-87' MARL, green, clayey, dense
6" casing set to 85' with slotted screen, 69'-85' Clean sand-gravel pack placed in annular space.							100		B.O.H. — 87'

Hole Size 12¼" Dia

Hole No. WELL 2

Site V.N.P. Dewatering Tests

SHEET 1 OF 1

BECHTEL CORPORATION

DRILLERS LOG OF DRILL HOLE

HOLE NO. O.P. 1A

PROJECT VOGTLE DEWATERING TEST ANGLE FROM HORIZ 90 BEARING —

LOCATION 60' N. of WELL #1 BEGUN 9-27-72 COMPLETED 9-27-72

OVERBURDEN 0 DEPTH DRILLED INTO ROCK 82 TOTAL DEPTH OF HOLE 82

ELEV. WATER TABLE ______ NO. CORE BOXES ______ NO. SAMPLES TAKEN ______

CORE RECOVERY (%) ______ FEET ______ MODEL & MAKE OF DRILL FAILING 1500

GROUND ELEV. 210.42 HOLE LOGGED BY DON RIVERS DRILLER DON RIVERS

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	% CORE RECOVERY	SAMPLE DATA: BLOW COUNT	PENETRATION TOOL	HAMMER WT/LBS	HAMMER FALL-INCHES	ELEVATION	DEPTH	LOG / SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
DRILLED 6 1/4" DIAM HOLE WITH BENTONITE DRILL FLUID									0-20 FT. CLAY BROWN SANDY
							20		20-56 FT. CLAY AND SAND YELLOW
							40		
							60		56-72 FT. SAND WITH WHITE CLAY
	63								
	78						80		72-78 FT. SAND LITTLE SHELL AND WHITE CLAY
									78-82 FT MARL GREEN, CLAYEY
SET PIPE, SCREEN 63-78', 2" O.D. METAL PIPE, PLACED GRAVEL AND SAND IN ANNULAR SPACE									BOTTOM OF HOLE 82 FT

Hole Size 6 1/4"

Hole No. 1A

Site VOGTLE DEWATER TESTS

BECHTEL CORPORATION

DRILLERS LOG OF DRILL HOLE

SHEET 1 OF 1

HOLE NO. 1B

PROJECT VOGTLE DEWATERING ANGLE FROM HORIZ 90 BEARING —

LOCATION 100 FT. N. of WELL #1 BEGUN ____ COMPLETED ____

OVERBURDEN ____ DEPTH DRILLED INTO ROCK 78 TOTAL DEPTH OF HOLE 78

ELEV. WATER TABLE ____ NO. CORE BOXES ____ NO. SAMPLES TAKEN ____

CORE RECOVERY (%) ____ FEET ____ MODEL & MAKE OF DRILL FAILING 1500

GROUND ELEV. 209.05 HOLE LOGGED BY DON RIVERS DRILLER DON RIVERS

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	% CORE RECOVERY	SAMPLE DATA: BLOW COUNT	PENETRATION TOOL	HAMMER WT/LBS	HAMMER FALL-INCHES	ELEVATION	DEPTH	LOG / SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
DRILLED 6¼" DIAM HOLE WITH BENTONITE MUD AS DRILL FLUID									0.0-20FT CLAY BROWN, SANDY
							20		20-56FT CLAY AND SAND YELLOW
							40		
							60		56-68 FT CLAY WHITE, LITTLE SAND
	63'								68-72 FT. SAND WHITE, CLAYEY
	78								72-78 FT. COQUINA CLAYEY, SHELLS
SET 78 FT. OF 2" CASING WITH SLOTTED SCREEN, 78'-63' PLACED CLEAN SAND-GRAVEL PACK IN ANNULAR SPACE BACK-WASHED WITH CLEAN WATER							80		BOTTOM OF HOLE 78 FT.

Hole Size 6¼"

Hole No. 1B

Site VOGTLE DEWATERING SITE

BECHTEL CORPORATION

DRILLERS LOG OF DRILL HOLE

SHEET 1 OF 1

HOLE NO. 1C

PROJECT VOGTILE DEWATERING ANGLE FROM HORIZ 90 BEARING

LOCATION 20' E. of WELL #1 BEGUN 9/28/72 COMPLETED 9/28/72

OVERBURDEN 0.0 DEPTH DRILLED INTO ROCK 82 TOTAL DEPTH OF HOLE 82

ELEV. WATER TABLE NO. CORE BOXES NO. SAMPLES TAKEN

CORE RECOVERY (%) FEET MODEL & MAKE OF DRILL FAILING 1500

GROUND ELEV. 211.34 HOLE LOGGED BY DON RIVERS DRILLER DON RIVERS

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	% CORE RECOVERY	SAMPLE DATA: BLOW COUNT	PENETRATION TOOL	HAMMER WT/LBS	HAMMER FALL-INCHES	ELEVATION	DEPTH	LOG / SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
DRILLED 6 1/4" DIAM. HOLE WITH BENTONITE DRILL MUD									0.0-20 FT. CLAY BROWN, SANDY
							20		20-56 FT. CLAY AND SAND YELLOW
							40		
							60		56-72 FT. SAND AND CLAY WHITE
	65'								72-80 FT. SAND WHITE, LITTLE SHELL AND CL
	80'						80		80-82 FT. MARL GREEN, CLAYEY
SET 80 FT OF 2" O.D. CASING, WITH SLOTTED SCREEN, 65-80' PLACED CLEAN SAND-GRAVEL IN ANNULAR SPACE									BOTTOM OF HOLE 82 FT
							100		

Hole Size 6 1/4"

Hole No. 1C

Site VOGTLE DEWATERI[NG] TESTS.

BECHTEL CORPORATION

DRILLERS LOG OF DRILL HOLE

SHEET 1 OF 1

HOLE NO. 1D

PROJECT VOGTLE DEWATERING TEST ANGLE FROM HORIZ 90 BEARING —

LOCATION 60' E. of WELL #1 BEGUN 9-29-72 COMPLETED 9-29-72

OVERBURDEN 0.0 DEPTH DRILLED INTO ROCK 82 TOTAL DEPTH OF HOLE 82

ELEV. WATER TABLE ______ NO. CORE BOXES ______ NO. SAMPLES TAKEN ______

CORE RECOVERY (%) ______ FEET ______ MODEL & MAKE OF DRILL FAILING 1500

GROUND ELEV. 210.45 HOLE LOGGED BY DON RIVERS DRILLER DON RIVERS

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	% CORE RECOVERY	SAMPLE DATA: BLOW COUNT	PENETRATION TOOL	HAMMER WT/LBS	HAMMER FALL-INCHES	ELEVATION	DEPTH	LOG / SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
DRILLED 6¼" DIAM. HOLE, WITH BENTONITE DRILL MUD									0.0-20 FT CLAY BROWN, SANDY
							20		20-56 FT. CLAY AND SAND YELLOW
							40		
							60		56-73 FT SAND AND CLAY WHITE
	65' – 80' (sample)								73-80 FT SAND, WHITE, LITTLE SHELL AND CLAY
							80		80-82 FT. MARL GREEN, CLAYEY
SET 80 FT OF 2" O.D. PIPE, WITH SLOTTED SCREEN 65'-80', BACK-FLUSHED, PLACED CLEAN GRAVEL-SAND IN ANNULAR SPACE									BOTTOM OF HOLE 82.0 FT.
							100		

Hole Size 6 ¼"

Hole No. 1D

Site VOGTLE DEWATER[ING] TESTS

BECHTEL CORPORATION

DRILLERS LOG OF DRILL HOLE

SHEET 1 OF 1

HOLE NO. O.P. 2A

PROJECT VOGTLE DEWATERING TESTS ANGLE FROM HORIZ 90 BEARING —

LOCATION 60 FT. E. OF WELL #2 BEGUN 9-21-72 COMPLETED 9-21-72

OVERBURDEN 0.0 DEPTH DRILLED INTO ROCK 87. TOTAL DEPTH OF HOLE 87.

ELEV. WATER TABLE ______ NO. CORE BOXES ______ NO. SAMPLES TAKEN —

CORE RECOVERY (%) ______ FEET ______ MODEL & MAKE OF DRILL FAILING 1500

GROUND ELEV. 219.2 HOLE LOGGED BY DON RIVERS DRILLER DON RIVERS

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	% CORE RECOVERY	SAMPLE DATA: BLOW COUNT	SAMPLE DATA: PENETRATION TOOL	SAMPLE DATA: HAMMER WT/LBS	SAMPLE DATA: HAMMER FALL-INCHES	ELEVATION	DEPTH	LOG / SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
DRILLED 6 1/4" DIAM. HOLE. DRILLING FLUID BENTONITE MUD									0-15 FT. CLAY BROWN, SANDY
							20		15-56 FT. CLAY AND SAND YELLOW
							40		
LOST CIRC.							60		56-61 FT. SAND, SHELL, WHITE
	70'								61.-85 FT COQUINA WHITE, SHELLS
	85'						80		85-87 FT. MARL, GREEN, CLAYEY
SET 85 FT. METAL PIPE, SCREEN 70-85', FILLED ANNULAR SPACE WITH CLEAN SAND AND GRAVEL							100		BOTTOM OF HOLE 87 FT.

Hole Size 6 1/4"

Hole No. 2A

Site VOGTLE DEWATER TEST

BECHTEL CORPORATION

SHEET 1 OF 1

DRILLERS LOG OF DRILL HOLE

HOLE NO. O.P. 2B

PROJECT VOGTLE DEWATERING TEST. ANGLE FROM HORIZ 90 BEARING —

LOCATION 100' E. of WELL # 2 BEGUN 9-25-72 COMPLETED 9-25-72

OVERBURDEN 0.0 DEPTH DRILLED INTO ROCK 87.0 TOTAL DEPTH OF HOLE 87.0FT

ELEV. WATER TABLE ______ NO. CORE BOXES — NO. SAMPLES TAKEN —

CORE RECOVERY (%) ______ FEET ______ MODEL & MAKE OF DRILL FAILING 1500

GROUND ELEV. 217.75 HOLE LOGGED BY DON RIVERS DRILLER DON RIVERS

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	% CORE RECOVERY	SAMPLE DATA				ELEVATION	DEPTH	LOG / SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
		BLOW COUNT	PENETRATION TOOL	HAMMER WT/LBS	HAMMER FALL-INCHES				
DRILLED 6¼" DIAM. HOLE DRILLING FLUID: BENTONITE MUD									0.0 TO 15.FT. CLAY BROWN, SANDY
							20		15-56 FT. SAND AND CLAY YELLOW
							40		
							60		56.0 TO 60.0FT SAND, SHELLS
	69'								60.0 TO 84.0 FT. COQUINA WHITE, SHELLS
	84'						80		84-87 FT MARL, GREEN CLAYEY
SET 85 FEET 2" I.D. PIPE, 15 FEET OF SCREEN 69'-84', FILLED ANNULAR SPACE WITH CLEAN GRAVEL AND SAND									BOTTOM OF HOLE 87 FEET

Hole Size 6 in.

Hole No. 2E

Site VOGTLE DEWATERING TEST.

BECHTEL CORPORATION

DRILLERS LOG OF DRILL HOLE

SHEET ____ OF ____

HOLE NO. OBS PT 2C

PROJECT: Vogtle N.P. Dewater Tests — ANGLE FROM HORIZ: Vertical — BEARING: ____

LOCATION: 20' N of Well 2 — BEGUN: 9/18/72 — COMPLETED: 9/18/72

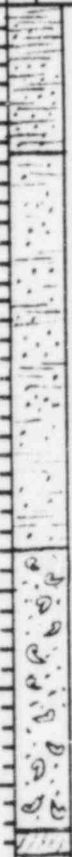
OVERBURDEN ____ DEPTH DRILLED INTO ROCK ____ TOTAL DEPTH OF HOLE ____

ELEV. WATER TABLE ____ NO. CORE BOXES ____ NO. SAMPLES TAKEN ____

CORE RECOVERY (%) ____ FEET ____ MODEL & MAKE OF DRILL ____

GROUND ELEV. ____ HOLE LOGGED BY ____ DRILLER ____

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	% CORE RECOVERY	SAMPLE DATA: BLOW COUNT	SAMPLE DATA: PENETRATION TOOL	SAMPLE DATA: HAMMER WT/LBS	SAMPLE DATA: HAMMER FALL-INCHES	ELEVATION	DEPTH	LOG / SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
Drilled 6¼" dia. hole with Bentonite									0-15' SANDY CLAY, brown
									15'-56' CLAY & SAND, yellow, interbedded
							20		
							40		
100% loss of circulation after penetrating the shell zone.									56'-85' SAND, white, contains much shell material, hard
							60		
							80		
Set 85' of 2" dia. casing with slotted screen from 65'-85'									85'-87' MARL, green, clayey, dense
							100		
Placed clean sand-gravel pack in annular space.									
Back-washed with clean water									



Hole Size ____

Hole No. OBS PT. 2C

Site V. N. P. Dewatering Te[sts]

BECHTEL CORPORATION

SHEET 1 OF 1

DRILLERS LOG OF DRILL HOLE

HOLE NO. O.P. 20

PROJECT VOGTILE DEWATER TESTS ANGLE FROM HORIZ 90° BEARING —

LOCATION 60' N. of WELL # 2 BEGUN 9-19-72 COMPLETED 9-20-72

OVERBURDEN 0.0 DEPTH DRILLED INTO ROCK 82.0 FT. TOTAL DEPTH OF HOLE 89.0

ELEV. WATER TABLE ______ NO. CORE BOXES ______ NO. SAMPLES TAKEN ______

CORE RECOVERY (%) ______ FEET ______ MODEL & MAKE OF DRILL FAILING 1500

GROUND ELEV. 219.5 HOLE LOGGED BY DON RIVERS DRILLER DON RIVERS

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	% CORE RECOVERY	SAMPLE DATA: BLOW COUNT	PENETRATION TOOL	HAMMER WT/LBS	HAMMER FALL-INCHES	ELEVATION	DEPTH	LOG / SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
DRILLED 6¼" DIAM. HOLE. BENTONITE USED AS DRILLING FLUID									0.0 - 15.0 FT. CLAY: BROWN, SANDY
							20		15.0 - 56.0 Ft CLAY AND SAND: YELLOW
							40		
LOST CIRCULATION 60 FT.							60		56.0 - 85.0 FT. SAND: WHITE,
							80		
									85.0 - 89.0 FT. MARL: GREEN, CLAYEY
SET 85' 2" PIPE, 70-85' SCREEN, GRAVEL PACK IN ANNULAR SPACE									BOTTOM OF HOLE 89.0 FT

Hole Size 6¼

Hole No. 2D

Site VOGTILE DEWATERING TESTS

LOGS OF DRILL HOLES

WITH POROSITY DATA

BECHTEL

GEOLOGIC LOG OF DRILL HOLE

SHEET 1 OF 6

HOLE NO. 102

PROJECT Alvin W. Vogtle Site ANGLE FROM HORIZ 90° BEARING

LOCATION E 623,726.6 N 1,142,796.1 BEGUN 8-17-71 COMPLETED 8-19-71

OVERBURDEN DEPTH DRILLED INTO ROCK TOTAL DEPTH OF HOLE 200'

ELEV. WATER TABLE NO. CORE BOXES NO. SAMPLES TAKEN 39

CORE RECOVERY (%) FEET MODEL & MAKE OF DRILL CME 55

GROUND ELEV. 211.53 HOLE LOGGED BY S. Chaudhary DRILLER LETCO-Shealy

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	SAMPLE DATA: PENETRATION TOOL	TOOL SIZE	METHOD n - BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	LOG	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
(Note: sample locations are approx.)						212				0-30.0'(approx.): SILTY SAND; Firm, red-brown, medium to fine-grained, trace of clay.
	Split Spoon		2-3-3 / 6		10		5		1	
	"		2-3-3 / 6		10	202	10		2	
	"		7-10-10 / 20		10		15		3	(SM/SC)
	"		8-11-16 / 27		9	192	20		4	
	"		5-18-25 / 43		13		25		5	25.0': Dense, brown.
	"		8-9-11 / 20		15	182	30		6	30.0-40.0' (Approx.): SAND Firm, brown, medium to fine-grained, some clay.
	"		5-7-12 / 19		15				7	(SC)

Hole Size 4"

Hole No. 102

Site Unit #1

SHEET 2 OF 6

PROJECT Alvin W. Vogtle Site

HOLE NO 102

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	SAMPLE DATA: PENETRATION TOOL	TOOL SIZE	METHOD n-BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	LOG	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
										35.0': Soft, sticky when wet. (SC)
	"		12-14-17 / 31		12	172	40		8	40.0-50.0'(Approx.): SILTY SAND; Dense, brown, medium to fine-grained, trace of clay.
	"		7-11-12 / 23		10		45		9	45.0': Red spots inside sample. (SM/SC)
	"		15-24-31 / 55		10	162	50		10	
	"		19-37-38 / 75		8		55		11	55.0': Very dense silty, medium to fine SAND.
	"		5,5,8 / 13		9	152	60		12	57.0-68.5': SILTY CLAY: Tan, fine sand.
* (Sample 15): In penetrating the third 6" segment, 2' penetration for 1 blow & then 10 blows for further 6".	"		3-8-12 / 20		10		65		13	63.5'-68.5'(Approx.): Firm, light gray & tan, very silty, plastic, with sand seams. (CL/ML)
	"		5-8-14 / 22			142	70		14	68.5-77.0':(Approx.): SILTY SAND; Firm, light gray & tan, medium to fine-grained, with some clay.
72.0': 100% water loss	"		3-4-*		6				15	(SM/SC)

Hole Size 4"

Hole No 102

Site Unit #1

PROJECT Alvin W. Vogtle Site

HOLE NO 102

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC	SAMPLE DATA: PENETRATION TOOL	TOOL SIZE	METHOD n - BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	LOG / SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
Set casing 0'-72'									77.0-142.5': SILTY CLAY: Very stiff to hard, brow & gray (calcareous) occasional shells.
	"		100 / 2"		8	132	80	16	(CL-cal)
	"		13-20-59		20		85	17	83.5-88.5' (Approx.): Calcareous, plasti very stiff to hard, gray.
	"		20-38-49 / 87		20	122	90	18	88.5-103.5' (Approx.): Very stiff to hard gray, plastic, calcareou with shell inclusions.
	"		100 / 5"		20		95	19	
	"		+100		20	112	100	20	
	"		+100		20		105	21	103.5'-142.5': Hard, gray, plastic, calcareous.
	"		22-30-63 / 93		20	102	110	22	
	"		+100					22A	115.0': Very hard.

Hole Size 4" & 3"

Hole No 102

Site Unit #1

PROJECT Alvin W. Vogtle

SHEET 4 OF 6

HOLE NO 102

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	SAMPLE DATA: PENETRATION TOOL	TOOL SIZE	METHOD n-BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	LOG	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
	"		12-29-47 / 76			92	120		23	
	"		+100				125		24	
	"		12-19-45		20	82	130		25	
	"		7-8-7 / 15				135		26	135.0': Stiff
						72	140		27	
	"		65 / 5		12		145		28	142.5-172.5' (Approx.): SILTY SAND; Gray, dense, medium to fine-grained, trace of clay. (SM/SC)
	"		29-36-42 / 78			62	150		29	150.0': Very dense, dark gray, slightly calcareous.
	"		85 / 6						30	

Hole Size 3"

Hole No 102

Site Unit #1

SHEET 5 OF 6

PROJECT Alvin W. Vogtle Site

HOLE NO 102

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	SAMPLE DATA: PENETRATION TOOL	TOOL SIZE	METHOD n-BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	LOG	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
	"		100/2'		2	52	160		31	
										(SM-SC)
	"		100/2'		2		165		32	
	"		69/6"			42	170		33	
										172.5-200.0': SILTY SAND; Very dense, dark gray, slightly calcareous, with trace of clay.
	"		45/2"				175		34	
										(SM)
	"		73/5"			32	180		35	
	"		100/5"				185		36	
	"		50/4"			22	190		37	
	"		50/4"						38	

Hole Size 3"

Hole No 102

Site Unit #1

SHEET 6 OF 6

PROJECT Alvin W. Vogtle Site

HOLE NO. 102

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	SAMPLE DATA					ELEVATION	DEPTH	LOG	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
	PENETRATION TOOL	TOOL SIZE	METHOD n - BLOWS	ADVANCE	RECOVERY					
							195			
	"		18 / 172			12	200		39	
										BOH 200.0'

Hole Size 3"

Hole No 102

Site Unit #1

BECHTEL

GEOLOGIC LOG OF DRILL HOLE

SHEET 1 OF 5
HOLE NO. 102A

PROJECT Alvin W. Vogtle Site ANGLE FROM HORIZ 90° BEARING --
LOCATION Adjacent to 102 BEGUN 8-31-71 COMPLETED 9-2-71
OVERBURDEN ______ DEPTH DRILLED INTO ROCK ______ TOTAL DEPTH OF HOLE 177.0
ELEV. WATER TABLE ______ NO. CORE BOXES ______ NO. SAMPLES TAKEN 14
CORE RECOVERY (%) ______ FEET ______ MODEL & MAKE OF DRILL Acker
GROUND ELEV. 211.5 HOLE LOGGED BY ______ DRILLER LETCO-Ivey

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	PENETRATION TOOL	TOOL SIZE	METHOD n - BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
5" Casing to 80'.						212			0.-1.0': TOPSOIL
									1.0-28.0': SAND; Red-brown, fine-grained, silt firm.
	Denison	4"		24	15		5	1	
	"	"		24	16	202	10	2	(SM)
	"	"		18	16		15	3	15.0': Sand becomes firmer.
						192	20		
							25		
									28.0-58.0': SAND; Clayey, tan to brown to light-gray, slightly silty, wit some sandy clay.
	"	"		18	15	182	30	4	(SC)

Hole Size 7-3/4"

Hole No. 102A
Site Units 1 & 2

SHEET 2 OF 5

PROJECT Alvin W. Vogtle Site

HOLE NO 102A

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	SAMPLE DATA: PENETRATION TOOL	TOOL SIZE	METHOD n-BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	LOG / SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
	"	4"		16	16			5	
						172	40		
							45		
									(SC)
						162	50		
							55		
									58.0-71.7': CLAY; Tan to light gray, firm, slightly silty.
	"	"		24	24	152	60	6	
	"	"		24	24			7	
							65		
									(CL)
						142	70		
	"	"		24	19			8	
									71.7-78.0': SAND; Tan to gray, silty, firm, shell, fragments.

Hole Size 7-3/4"

Hole No 102A

Site Units 1 & 2

PROJECT Alvin W. Vogtle Site

SHEET 3 OF 5

HOLE NO 102A

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	SAMPLE DATA: PENETRATION TOOL	TOOL SIZE	METHOD n-BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	LOG SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
	"	4"		24	0				(SM)
Lost all drill mud at 77'									77-78' 1' void
	"	"		16	16			9	78.0-145.0': CLAY; Greenish gray, very hard, slightly silty.
At 80' switch to 4-1/2". Set 50' of 5" casing.						132	80		
	"	"		12	12		85	10	85.0': Slightly sandy.
						122	90		
									(CL)
							95		
						112	100		100.0': Slightly silty.
	"	"		24	9			11	
							105		
						102	110		
									(CL)

Hole Size 7-3/4" - 4-1/2"

Hole No 102A

Site Units 1 & 2

SHEET 4 OF 5

PROJECT Alvin W. Vogtle Site

HOLE NO 102A

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	SAMPLE DATA: PENETRATION TOOL	SAMPLE DATA: TOOL SIZE	SAMPLE DATA: METHOD n-BLOWS	SAMPLE DATA: ADVANCE	SAMPLE DATA: RECOVERY	ELEVATION	DEPTH	LOG	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
										(CL)
						92	120			
							125			
	"	4"		24	24				12	
						82	130			
							135			
										(CL)
						72	140			140.0': Some shell fragments.
	"	"		24	24				13	
							145			145.0-177.0': <u>SAND</u>; Very dense, gray, silty.
						62	150			(SM)

Hole Size 4-1/2"

Hole No 102A

Site Units 1 & 2

PROJECT Alvin W. Vogtle Site

SHEET 5 OF 5

HOLE NO 102A

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	SAMPLE DATA: PENETRATION TOOL	TOOL SIZE	METHOD n-BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	LOG	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION.
						52	160			
							165			(SM)
						42	170			
						37	175			
	"	4"		24	18				14	
										BOH 177.0'

Hole Size 4-1/2"

Hole No 102A

Site Units 1 & 2

BECHTEL

SHEET 1 OF 6

GEOLOGIC LOG OF DRILL HOLE

HOLE NO. 111

PROJECT Alvin W. Vogtle Site ANGLE FROM HORIZ 90° BEARING --
LOCATION E 623,726.39 N 1,143,256.11 BEGUN 8-15-71 COMPLETED 8-18-71
OVERBURDEN ____ DEPTH DRILLED INTO ROCK ____ TOTAL DEPTH OF HOLE 200.0
ELEV. WATER TABLE ____ NO. CORE BOXES ____ NO. SAMPLES TAKEN 39
CORE RECOVERY (%) ____ FEET ____ MODEL & MAKE OF DRILL CME
GROUND ELEV. 207.18 HOLE LOGGED BY G. T. LeFevre DRILLER LETCO-Ross

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	SAMPLE DATA: PENETRATION TOOL	TOOL SIZE	METHOD n - BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
						207			0.17.5': SILTY SAND; Red-brown, fine-grained, subangular loose. (SM)
	Split Spoon		2-2-2 / 4				5	1	
	"		5-7-4 / 11			197	10	2	8.5': Medium-dense.
	"		5-8-11 / 19				15	3	
	"		6-6-7 / 13			187	20	4	17.5-21.0': CLAYEY SAND; Red to orange-brown, fine to medium-grained, subangular, loose. (SC)
	"		7-8-9 / 17				25	5	21.0-55.0': CLAYEY SAND; Tan to light brown, fine to medium-grained, subangular, loose with silt clay lenses. (SC)
	"		3-4-5 / 9			177	30	6	28.5': Alternate layers of CLAYEY SAND, brown, fine grained, & SILTY, SANDY CLAY, tan, fine-grained (SC)
32.0': 100% water loss. Set NX casing to 37.0'.	"		6-5-6 / 11					7	

Hole Size 4"

Hole No. 111

Site Units 1 & 2

PROJECT Alvin W. Vogtle Site

SHEET 2 OF 6

HOLE NO 111

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	SAMPLE DATA: PENETRATION TOOL	TOOL SIZE	METHOD n-BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	LOG	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
	"		3-5-7 / 12			167	40		8	37.0': Tan to light brown, fine-grained. (SC)
	"		5-10-11 / 21				45		9	42.0': Less clayey. (SM/SC)
	"		9-12-13 / 25			137	50		10	48.5': Red-brown, slightly clayey, fine to medium-grained.
	"		3-4-5 / 9				55		11	55.0-63.0': SANDY CLAY; Light greenish-yellow, very fine-grained, soft.
	"		2-2-3 / 5			147	60		12	
63.0': 100% water loss.	"		2-2-3 / 5				65		13	63.5-65.0': SILTY CLAY; Light brown, soft, with very fine-grained sand.
Set NX casing to 67.0'.										65.0-70.0': SILTY SAND; Tan, fine-grained, subangular, with shell fragments.
	"		100 / 1			137	70		14	70.0-138.5': SILTY CLAY; Greenish-gray, stiff, calcareous, with shells & trace of sand.
	"		9-11-15 / 26						15	

Hole Size 4" - 2-15/16"

Hole No 111

Site Units 1 & 2

SHEET 3 OF 6

PROJECT Alvin W. Vogtle Site

HOLE NO 111

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	SAMPLE DATA: PENETRATION TOOL	TOOL SIZE	METHOD n - BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	LOG	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
Set NX casing to 77.0'										
	"		15-24-31 / 55			127	80		16	
	"		12-18-22 / 40				85		17	
	"		100 / 1"			117	90		18	88.5': With greenish-gray limestone.
	"		100 / 4"				95		19	
	"		15-31-64 / 95			107	100		20	
	"		9-22-19 / 41				105		21	
	"		20-75-30 / 105			97	110		22	
	"		100 / 6"						23	

Hole Size 2-15/16"

Hole No 111

Site Units 1 & 2

SHEET 4 OF 6

PROJECT Alvin W. Vogtle Site

HOLE NO 111

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	PENETRATION TOOL	TOOL SIZE	METHOD n-BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	LOG	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
	"		14-31-41 / 72			87	120		24	
	"		19-24-85 / 109				125		25	
	"		41-27-48 / 52			77	130		26	
	"		28-54-65 / 119				135		27	133.5': Sandy, stiff.
	"		14-27-25 / 52			67	140		28	138.5-200.0': <u>SILTY, CLAYEY SAND</u>; Black to dark gray, angular, medium-grained, reacts to HCL.
	"		100 / 5"				145		29	143.5': Slightly silty, subangular to angular, dense.
	"		100 / 3"			57	150		30	
	"		100 / 3"						31	

Hole Size 2-15/16"

Hole No 111

Site Units 1 & 2

PROJECT Alvin W. Vogtle Site

HOLE NO 111

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	SAMPLE DATA: PENETRATION TOOL	TOOL SIZE	METHOD n-BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	LOG SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
	"		100 / 3"			47	160	32	
	"		100 / 3"				165	33	
*Bumping spoon caused low recov.	"		30-27-28 / 55			37	170	34	168.5': Fine-grained.
	"		25-32-42 / 74				175	35	
	"		100 / 4"			27	180	36	178.5': Possibly more silt.
**Lost sample bumping spoon out of hole.	"		100 / 4"				185	37	
	"		100 / 3"			17	190	38	188.5': Light gray, very slightly silty, sub-angular to sub-round, calcareous.
	"		100 / 3"					39	

Hole Size 2-15/16"

Hole No 111

Site Units 1 & 2

SHEET 6 OF 6

PROJECT Alvin W. Vogtle Site

HOLE NO 111

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	SAMPLE DATA					ELEVATION	DEPTH	LOG	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
	PENETRATION TOOL	TOOL SIZE	METHOD n-BLOWS	ADVANCE	RECOVERY					
	"		100/3"		0	7	200			
										BOH 200.0'

Hole Size 2-15/16"

Hole No 111

Site Units 1 & 2

BECHTEL

GEOLOGIC LOG OF DRILL HOLE

SHEET 1 OF 6

HOLE NO. 114

PROJECT Alvin W. Vogtle Site ANGLE FROM HORIZ 90° BEARING --

LOCATION E 623,526.3 N 1,143,503.7 BEGUN 8-17-71 COMPLETED 8-19-71

OVERBURDEN ______ DEPTH DRILLED INTO ROCK ______ TOTAL DEPTH OF HOLE 199.0

ELEV. WATER TABLE ______ NO. CORE BOXES ______ NO. SAMPLES TAKEN 40

CORE RECOVERY (%) ______ FEET ______ MODEL & MAKE OF DRILL Acker

GROUND ELEV. 212.0 HOLE LOGGED BY P. Divjak DRILLER LETCO-Ivey

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	SAMPLE DATA: PENETRATION TOOL	TOOL SIZE	METHOD n - BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	LOG / SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
Set 80' of 3" casing									0-2.0': TOPSOIL - SILTY SAN[D] Dark tan, fine-grained.
	Split Spoon		2-3-4 / 7				5	1	2.0-13.0': SAND; Red-brown, fine-grained, with some silt, loose. (SM)
	"		6-6-10 / 16			202	10	2	
	"		10-12-22 / 34				15	3	13.0-18.0': SAND; Brown, fine to medium-grained, with some silt, medium-dense to dense. (SM)
	"		11-16-17 / 33			192	20	4	18.0-29.0': SAND; Light brown, fine-grained, medium-dense to dense. (SP)
	"		10-17-17 / 34				25	5	
	"		7-2-10 / 12			182	30	6	29.0-32.5': SILTY CLAY; Ta[n] with some fine-grained sand, medium-stiff, plas[tic] (CL)
	"		6-9-10 / 19					7	32.5'-36.5': SILTY SAND; Brown, fine to medium-grained with little clay

Hole Size 3-7/8"

Hole No. 114

Site Unit #2

SHEET 2 OF 6

PROJECT Alvin W. Vogtle Site HOLE NO 114

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	SAMPLE DATA: PENETRATION TOOL	TOOL SIZE	METHOD n-BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	LOG	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
										(SM/SC)
	"		6-8-11 / 19			172	40		8	36.5-42.5': SILTY SAND; Brown, fine-grained, medium dense. (SM)
	"		14-21-32 / 53				45		9	42.5-52.5': SAND; Brown & tan, fine-grained, with little silt, dense.
	"		13-16-17 / 33			162	50		10	(SP/SM)
	"		12-10-8 / 18				55		11	52.5-59.0': SILTY SAND; Black & brown, fine to medium-grained with shells loose to medium dense, non-calcareous, (looks organic) (SM/SP)
	"		6-6-8 / 14			152	60		12	59.0-63.0': SILTY SAND; Brown, tan & black, mottled fine to medium-grained, loose. (SM/SP)
	"		9-8-10 / 18				65		13	63.0-69.0': SAND; Tan, medium-grained, not calcareous, medium-dense. (SP)
69.0': 100% water loss.	"		3-3-9 / 12			142	70		14	69.0-75.0': SANDY SILT & SAND; Brown (silt), tan (sand), fine-grained, with shells, layered, loose. (Brown, non-calcareous, tan is calcareous). (ML/SM)
	"		100 / 2"						15	

Hole Size 3-7/8"

Hole No 114

Site Unit #2

SHEET 3 OF 6

PROJECT Alvin W. Vogtle Site — HOLE NO 114

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	PENETRATION TOOL	TOOL SIZE	METHOD n-BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
									75.0-77.5': SILTY SAND; Brown, fine-grained, medium-dense. (SM)
80.0'changed to 2-7/8", set 80' NX casing	Split Spoon		100/10"			132	80	16	77.5-113.0': SILTY CLAY; Gray-green, with some shells & little fine-grained sand, calcareous, stiff to very stiff. (CL)
	"		19-21-25 / 46				85	17	
Drills hard 87.5-88.9, possibly limestone layers.	"		83/3"			122	90	18	88.5': Very stiff, shell or limestone fragments in bit.
	"		11-43-54 / 97				95	19	
	"		100/1/2"			112	100	20	
	"		110/3"				105	21	
Out of hard drill at 113.0'	"		100/2"			102	110	22	107.5': Large calcareous fragments.
	"		13-11-21 / 32					23	113.0-119.0': CLAYEY SILT (ML)

Hole Size 2-7/8"

Hole No 114

Site Unit #2

PROJECT Alvin W. Vogtle Site

HOLE NO 114

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	SAMPLE DATA: PENETRATION TOOL	TOOL SIZE	METHOD n-BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	LOG / SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
									113.0-119.0': (con't) CLAYEY SILT; Tan & gray, with some fine-grained sand & trace of shells, medium stiff, slightly plastic, calcareous. (ML)
119.0': Hard drilling	Split Spoon		100 / 10"			92	120	24	119.0-140.0': CLAYEY SILT; Gray-green, with little fine-grained sand, trace to no shells, very stiff, calcareous. (ML/CL)
	"		100 / 8"				125	25	
	"		49-33-34 / 67			82	130	26	
	"		19-21-38 / 59				135	27	
Sample 28: HCl Soluble Test. (2.5%)			+100			72	140	28	114.0-143.5': SILTY, CLAYEY, SAND; Dark gray-green, fine-grained, some clay, calcareous, dense. (SC)
Sample 29: HCl Soluble Test (0.6%	"		31-36-50 / 86				145	29	143.5-155.0': SILTY SAND; Dark gray-green, fine-grained with some clay, calcareous dense.
Sample 30: HCl Soluble Test (1.5%)	"		100 / 2"			62	150	30	(SM/SC)

Hole Size 2-7/8"

Hole No 114

Site Unit #2

SHEET 5 OF 6

PROJECT Alvin W. Vogtle Site HOLE NO 114

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC	SAMPLE DATA: PENETRATION TOOL	TOOL SIZE	METHOD n-BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	LOG	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
Sample 31: HCl Soluble Test (2.3%)	"		100 / 3"						31	115.0-162.0': SAND; Gray, fine-grained, with some t little silt, calcareous, very dense. (SM/SP)
Sample 32: HCl Soluble Test (1.9%)	"		100 / 1"			52	160		32	(SM/SP)
Sample 33: HCl Soluble Test (2.3%)	"		100 / 2"				165		33	162.0-169.0': SAND; Gray, fine-grained, with a little silt, calcareous, dense. (SP)
169.0': Drills easier.	"		26-24-52 / 76			42	170		34	169.0-174.5': SILTY SAND; Dark gray-green, fine-grained, with trace of c & what appears to be specks of decayed wood. Calcareous dense. (SM)
	"		35-45-55 / 100				175		35	169.0-199.0': SAND; Dark gray, fine-grained, with some silt, calcareous, dense.
	"		110			32	180		36	178.5': Sub-angular to sub round. (SM/SP)
	"		100				185		37	183.5': With fine-grained clay.
									38	
	"		100 / 7"			22	190			(SM/SP)
	"		100 / 2"						39	

Hole Size 2-7/8"

Hole No 114

Site Unit #2

SHEET 6 OF 6

PROJECT Alvin W. Vogtle Site

HOLE NO 114

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	SAMPLE DATA					ELEVATION	DEPTH	LOG	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
	PENETRATION TOOL	TOOL SIZE	METHOD n - BLOWS	ADVANCE	RECOVERY					
	"		100/1"						40	(SM/SP)
						12	200			BOH 199.0'

Hole Size 2-7/8"

Hole No 114

Site Unit #2

BECHTEL

GEOLOGIC LOG OF DRILL HOLE

SHEET 1 OF 6

HOLE NO. 138A

PROJECT Alvin W. Vogtle Site ANGLE FROM HORIZ 90° BEARING --

LOCATION N 1,142,966.0 E 622,509.4 BEGUN 9-17-71 COMPLETED 10-5-71

OVERBURDEN ____ DEPTH DRILLED INTO ROCK ____ TOTAL DEPTH OF HOLE 203.0

ELEV. WATER TABLE ____ NO. CORE BOXES ____ NO. SAMPLES TAKEN 32

CORE RECOVERY (%) ____ FEET ____ MODEL & MAKE OF DRILL Mahew

GROUND ELEV. 224.9 HOLE LOGGED BY N. Campagna DRILLER LETCO-Strohecker

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	PENETRATION TOOL	TOOL SIZE	METHOD n - BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
Shelby Tube sample to 96.0'.						225			
	Shelby	3"		24	20		5	UD 1	4.0': SILTY SAND; Red-brown medium to fine-grained.
	"	"		24	19	215	10	UD 2	9.0': Siltier
	"	"		24	22		15	UD 3	
	"	"		24	24	205	20	UD 4	19.0': SAND; Yellow-brown, coarse to medium-grained, some silt.
	"	"		24	22		25	UD 5	24.0': SILTY CLAY; Yellow-brown.
	"	"		23	23	195	30	UD 6	29.0': SILTY SAND; Yellow-brown, medium to fine-grained, with trace of c
	"	"		24	20		35	UD 7	34.0': SILTY CLAY; Yellow-brown, some fine-grained sand, top. Bottom; coar ~~to fine-grained SAND.~~

Hole Size 6"

Hole No. 138

Site Units 3 & 4

SHEET 2 OF 6

PROJECT Alvin W. Vogtle Site

HOLE NO 138A

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	SAMPLE DATA: PENETRATION TOOL	TOOL SIZE	METHOD n-BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
	Shelby	3"						7	
	"	"		24	24	185	40	UD 8	39.0': SANDY, SILT CLAY; Yellow-brown, fine-grained.
46.0': Lost sample.	"	"		24	21		45	UD 9	44.0': SILTY SAND; Tan & yellow-brown, fine-grained, with some clay.
	"	"		24	24	175	50	UD 10	49.0': SILTY CLAY; Tan & yellow-brown, with some medium-grained sand.
55.0': Lost bottom 3".	"	"		14	10		55	UD 11	54.0': SAND; White, medium-grained, trace of silt.
60.0': Lost bottom 2-1/2".	"	"		18	13	165	60	UD 12	
	"	"		24	24		65	UD 13	64.0': SANDY, SILTY CLAY; White with shells.
	"	"		24	24	155	70	UD 14	69.0': Same, intermixed with shell fragments.
	"	"		22	19		75	UD 15	74.0': SAND; White, coarse to medium-grained, some silt.

Hole Size 6"

Hole No 138A

Site Units 3 & 4

PROJECT Alvin W. Vogtle Site

HOLE NO 138A

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	SAMPLE DATA: PENETRATION TOOL	TOOL SIZE	METHOD n-BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	LOG	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
						145	80			
							85			
						135	90			
							95			94.5-154.0': CLAY; Greenis gray, silty, hard nodules calcareous.
Samples 1-17 made with 4" Denison	Denison	4"		24	13				*1	
				24	24	125	100		*2	96.5': Silty, shell fragme 98.5': Same.
	"	"		24	24		105		*3	102.5': Clayey-silt, gray, with shell fragments.
						115	110			

Hole Size 6"

Hole No 138A

Site Units 3 & 4

PROJECT Alvin W. Vobtle Site

HOLE NO 138A

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	SAMPLE DATA: PENETRATION TOOL	TOOL SIZE	METHOD n-BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
	"	4"		24	18			* 4	117.0': Same.
						105	120		
							125		
	"	"		24	24			* 5	125.0': Some fine sand.
						95	130		
	"	"		24	14		135	* 6	133.0': Clayey-silt, gray, hard.
	"	"		24	3			* 7	138.0': Same.
	"	"		24	24	85	140	* 8	139.0-146.5': Silty-clay, gray, cemented nodules.
	"	"		24	24			* 9	144.0': Shell fragments.
	"	"		24	15		145	* 10	
									146.5': Clayey-silt, gray, with shell fragments.
	"	"		24	24	75	150	* 11	149.5-154.0': Silty-clay, gray.

Hole Size 6"

Hole No 138A

Site Units 3 & 4

SHEET 5 OF 6

PROJECT Alvin W. Vogtle Site

HOLE NO 138A

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	SAMPLE DATA: PENETRATION TOOL	TOOL SIZE	METHOD n-BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	LOG / SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
									154.0-187.0': SAND; Gray, fine-grained, very dense.
	"	"		24	19	65	160	* 12	
							165		
	"	"		24	24	55	170	* 13	170.0': SAND; Gray, fine to medium-grained, dense, trace of silt.
							175		
	"	"		24	23	45	180	* 14	
							185		
	"	"		24	22	35	190	* 15	187.0-203.0': Sand, very silty.

Hole Size 6"

Hole No 138A

Site Units 3 & 4

SHEET 6 OF 6

PROJECT Alvin W. Vogtle Site

HOLE NO 138A

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	SAMPLE DATA					ELEVATION	DEPTH	LOG	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION.
	PENETRATION TOOL	TOOL SIZE	METHOD n - BLOWS	ADVANCE	RECOVERY					
*16: No recovery (199.0-201.0')	"	"		24	0	25	200		*16	
	"	"		24	18				*17	
Grouted hole up through clay.										BOH 203.0'

Hole Size 6"

Hole No 138A

Site Units 3 & 4

BECHTEL

GEOLOGIC LOG OF DRILL HOLE

SHEET 1 OF 4
HOLE NO. 202

PROJECT: Alvin W. Vogtle Site — ANGLE FROM HORIZ: 90° — BEARING:
LOCATION: N 1,142,710 E 623,380 — BEGUN: 1-4-72 — COMPLETED: 1-10-72
OVERBURDEN: — DEPTH DRILLED INTO ROCK: — TOTAL DEPTH OF HOLE: 155.7 ft.
ELEV. WATER TABLE: — NO. CORE BOXES: — NO. SAMPLES TAKEN: 24
CORE RECOVERY (%): — FEET: — MODEL & MAKE OF DRILL: Acker Mark II
GROUND ELEV.: 215.5 ft — HOLE LOGGED BY: N. Campagna — DRILLER: Alexander

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	SAMPLE DATA: PENETRATION TOOL	TOOL SIZE	METHOD n - BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	LOG / SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
Augered dry hole to 50'. 4" Flight Auger.						216			
	Split Spoon	2"	1-1-2 / 3	18"			5	1	SAND: Red-brown, fine, very loose.
	Shelby	3"	push	24"	24"			2	
	Split Spoon	2"	3-4-5 / 9	18"		206	10		Loose.
	"	"	8-10-10 / 20	18"				3	
							15		Becomes firm with some silt.
Driven with 140 lb. hammer.	Shelby	3"		24"	24"	196	20	4	Changes to medium fine.
									SAND: Mottled red-brown and tan, medium fine, trace clay, firm.
	Split Spoon	2"	8-11-17 / 28	18"			25	5	
	Shelby	3"	push	20"	20"	186	30	6	SAND: Tan, silty, firm, fine, with clay seams with black and white inclusions.
	Split Spoon	2"	7-10-12 / 22	24"	24"			7	

Hole Size: 4"

Hole No. 2

Site: Em. Cooling Tower

PROJECT Alvin W. Vogtle Site

HOLE NO 202

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	PENETRATION TOOL	TOOL SIZE	METHOD n-BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
	Shelby	3"	push	24"	24"	176	40	8, 8A	
No recovery. Augered to 50' but could only get sampler to 44' in dry hole. Switched to mud.	Split Spoon	2"	5-8-11 / 19	18"	0		45	9	
	Shelby	3"	push	24"	0	166	50	10	
No recovery.	"	3"	push	13"	0				
Reamed with 7-7/8" Ø tri-cone roller bit. Hard drilling 57' to 58'.	Split Spoon	2"	5-9-12 / 21	18"			55		
	"	2"	16-37-40 / 77	18"	4"	156	60	11	SAND: Yellow, fine to medium, very dense.
	"	"	5-11-13 / 24	18"	0				SAND: Silty, medium to fine, firm, mottled red and tan; some clay in red zone.
							65	12	
Stopped hole at 68' on 1-5-72. Tried sawtooth cutter at 69', too hard to cut. Used carbide cutter at 69.5'. Hit shells about 68.8'.	Shelby	2"	push	9"	0				SHELLS: Light yellow, sandy clay matrix.
	Dennison	4"	cored	24"	24"	146	70	13	

Hole Size 4"

Hole No 202

Site Fm. Cooling Tower

PROJECT Alvin W. Vogtle Site

SHEET 3 OF 4

HOLE NO 202

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC	SAMPLE DATA: PENETRATION TOOL	TOOL SIZE	METHOD n-BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	LOG	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
50% water loss at 77'. 100% water loss at 80'. 1-6-72 stopped at 80'.	Split Spoon	2"	100/8"						14	SHELLS: Cemented with silty calcareous sand.
Out of shells at 83'.	"	"	100/5"	5"		136	80		15	
Set 6 inch casing.							85		16	CLAY: Very hard, gr green cemented silty.
						126	90			
Grouted hole to 94'.	Dennison	4"	cored	18"	16"					
Stopped at 103.5' on 1-7-72.							95		17	
						116	100			
	"	"	cored	24"	24"		105		18	
						106	110			
6" sample in shoe.	"	"	cored	24"	24"					CLAY: Hard gray-green silt cemented.

Hole Size 4"

Hole No 202

Site Em. Cooling T

SHEET 4 OF 4

PROJECT Alvin W. Vogtle Site

HOLE NO 202

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	SAMPLE DATA: PENETRATION TOOL	TOOL SIZE	METHOD n-BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	LOG	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
	Dennison	4"	cored	24"	24"					Not cemented below.
									19	
						96	120			
Top 9" slipped out of liner but was replaced and sealed.	"	4"	cored	24"	24"		125		20	
						86	130			
	"	"	cored	24"	24"		135		21	
						76	140			
Drilling easier at 143'.										
	"	"	cored	24"	20"		145		22	Numerous shells at bottom, dark green clayey sand in shoe from 146.5'.
Drilling much easier at 148'.										
Stopped at 150' on 1-9-72.	Split Spoon	2"	100/ 7"	13"		66	150		23	SAND: Gray to black, silty, fine.
	"	"	100/ 8"	14"					24	Bottom of Hole at 155.7'

Hole Size 4"

Hole No 202

Site Em. Cooling Tower

BECHTEL

GEOLOGIC LOG OF DRILL HOLE

SHEET 1 OF 4
HOLE NO. 203

PROJECT Alvin W. Vogtle Site ANGLE FROM HORIZ 90° BEARING
LOCATION N 1,142,730 E 623,650 BEGUN 1-5-72 COMPLETED 1-8-72
OVERBURDEN DEPTH DRILLED INTO ROCK TOTAL DEPTH OF HOLE 155 ft.
ELEV. WATER TABLE NO. CORE BOXES NO. SAMPLES TAKEN 26
CORE RECOVERY (%) FEET MODEL & MAKE OF DRILL Acker Mark II
GROUND ELEV. 210.9 ft HOLE LOGGED BY V. Campagna DRILLER Cleo Ivey

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	SAMPLE DATA: PENETRATION TOOL	TOOL SIZE	METHOD n - BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	LOG	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
Drilled with 7-7/8" tri-cone to 81.5'.						211				TOPSOIL
	Split Spoon	2"	3-3-5 / 8	18"			5		1	SAND: Red-brown, fine.
	Shelby	3"	push	24"	19"				UD 1	
						201	10			Silty.
	Split Spoon	2"	8-12-14 / 26	18"			15		2	
	Shelby	3"	push	12"	15"				UD 2	SAND: Red-brown, silty fin and silty clay.
						191	20			
	Split Spoon	2"	10-17-19 / 36	18"			25		3	SAND: Mottled red and tan medium.
	Shelby	3"	push	14"	17"				UD 3	
	"		push	18"	18"	181	30		UD 4	
	Split Spoon	2"	6-8-13 / 21	18"						

Hole Size 8"

Hole No. 203

Site Railroad Entrance

SHEET 2 OF 4

PROJECT Alvin W. Vogtle Site

HOLE NO 203

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	SAMPLE DATA: PENETRATION TOOL	TOOL SIZE	METHOD n-BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
	Split Spoon	2"	6-8-13 21	18"				4	CLAY: Tan, sandy.
	Shelby	3"	push	24"	20"	171	40	UD 5	SAND: Mottled, red and tan, medium-fine, trace of clay.
									SAND: Mottled tan and red medium fine; bottom 2" black and 2" white sand.
	Split Spoon	2"	34	18"			45	5	
	Shelby	3"	push	20"	10"			UD 6	
No recovery 49.7 - 50.7'.	"	"	push	12"	0	161	50		
									SAND: Tan, medium, with black streaks.
Stopped at 55' on 1-5-72.	Split Spoon	2"	11-16-35 51	18"			55	6	
	Shelby	3"	push	24"	24"			UD 7	CLAY: Mottled tan and gray, sandy.
						151	60		
									SAND: Mottled tan and gray silty fine.
	Split Spoon	2"	8-14-21 35	18"			65	7	
	Shelby	3"	push	24"	24"			UD 8	Same as above.
						141	70		
Shells at 73.0' to 73.5'.									CLAY: Yellow-green silty with brown stains.

Hole Size 8"

Hole No 203

Site Railroad Entrance

PROJECT	Alvin W. Vogtle Site								SHEET 3 OF 4	HOLE NO 203

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	PENETRATION TOOL	TOOL SIZE	METHOD n-BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	LOG	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
Set 6" I.D. casing to 81'.	Split Spoon	2"	8-12-15 27		18"				8	CLAY: Hard, gray-green, sil
Drilled with 5-7/8" tri-cone from 81.5'-155.0'.						131	80			
	Dennison	4"	cored	24"	24"				D 1	
							85			
						121	90			
	"	"	cored	24"	24"		95		D 2	With shells.
						111	100			
	"	"	cored	24"	24"		105		D 3	Very hard, with cemented nodules.
	"	"	cored	24"	18"				D 4	
						101	110			
	"	"	cored	24"	21"				D 5	

Hole Size 8" - 6"

Hole No 203

Site Railroad Entr

PROJECT Alvin W. Vogtle Site

HOLE NO 203

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	SAMPLE DATA: PENETRATION TOOL	TOOL SIZE	METHOD n-BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	LOG SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
						91	120		
									CLAY: Hard, gray, green, silty with cemented nodules
Dennison liner stuck. Beat on bottom. Stopped at 126' on 1-7-72.	Dennison	4"		24"	24"		125	D 6	
						81	130		
D-7 slid out of liner into another liner because liner stuck, somewhat disturbed by pounding.	"	"	cored	24"	24"		135	D 7	CLAY: Hard, gray-green, silty.
	"	"	cored	24"	24"			D 8	
Bottom of clay at 143'.						71	140		
	Split Spoon	2"	46/4"	10"	4"		145	9	SAND: Gray to black, fine.
						61	150		
									SAND: Gray to black, medium fine.
Grouted hole to 32' depth.	"	"	100/6"	3"				10	Bottom of Hole 155'.

Hole Size 6"

Hole No 203

Site Railroad Entrance

BECHTEL

SHEET 1 OF 5

HOLE NO. 204

GEOLOGIC LOG OF DRILL HOLE

PROJECT Alvin W. Vogtle Site ANGLE FROM HORIZ 90° BEARING
LOCATION N 1,142,710 E 623,910 BEGUN 1-9-72 COMPLETED 1-17-72
OVERBURDEN DEPTH DRILLED INTO ROCK TOTAL DEPTH OF HOLE 155 ft.
ELEV. WATER TABLE NO. CORE BOXES NO. SAMPLES TAKEN 24
CORE RECOVERY (%) FEET MODEL & MAKE OF DRILL Acker Mark II
GROUND ELEV. 212.8 ft. HOLE LOGGED BY N. Campagna DRILLER Cleo Ivey

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	SAMPLE DATA: PENETRATION TOOL	TOOL SIZE	METHOD n - BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	LOG / SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
						213			
	Split Spoon	2"	3-4-4 / 8	18"			5	1	SAND: Red-brown, loose.
									Silty, fine.
	Shelby	3"	push	24"	18"	203	10	UD 1	
	Split Spoon	2"	9-11-14 / 25	18"			15	2	Medium fine, firm.
	Shelby	3"	push	16"	16"			UD 2	Silty, fine.
									Silty, medium fine.
	"	"	push	12"	12"	193	20	UD 3	
	Split Spoon	2"	19-22-22 / 44	18"			25	3	Red-brown, changing to tan, medium fine, dense.
	Shelby	3"	push	18"	17"			UD 4	Silty, with some clay.
						183	30		

Hole Size 6"

Hole No. 204

Site Em. Cooling Tower

SHEET 2 OF 5

PROJECT Alvin W. Vogtle Site

HOLE NO 204

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	SAMPLE DATA: PENETRATION TOOL	TOOL SIZE	METHOD n-BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	LOG	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
	Split Spoon	2"	8-11-17 / 28	18"					4	CLAY: Tan, very sandy, very stiff. SAND: Tan, medium fine with trace clay.
	Shelby	3"	push	18"					UD 5	
						173	40			
Stopped at 48' on 1-9-72.	Split Spoon	2"	8-11-17 / 28	18"			45		5	With black and white streaks.
Sample in shoe only. Too much resistance with sawtooth 1" behind shoe; cored 30" w/ carbide bit. No recovery. Tried sawtooth, but no good.	Shelby	3"	push	6"	0					
	Dennison	4"	cored	8"	4"					
	"	"	cored	30"	0	163	50			
	"	"	cored	4"	0					CLAY: Tan and gray, very sandy, hard.
	Split Spoon	2"	25-40-50 / 90	18"			55			
	Shelby	3"	push	24"	13"				UD 6	
Note: S.S. sample went to 3' below bottom i.e., 70' to 73'; water loss at that depth.						153	60			
	Split Spoon	2"	7-8-13 / 21	18"			65		6	SILT: Gray, clayey with tan fine sand, laminations and one piece of shell, very stiff.
UD-7 tube out of round after pushing. Lost water at 70'. Hole caving 50' - 60'.	Shelby	3"	push	24"	24"				UD 7	
	Split Spoon	2"	5-3-2 / 5	18"		143	70			
									7	CLAY: Light green plastic, silty with 1" of shell, firm.

Hole Size 6"

Hole No 204

Site Em. Cooling Tower

SHEET 3 OF 5

PROJECT Alvin W. Vogtle Site

HOLE NO 204

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC	SAMPLE DATA: PENETRATION TOOL	TOOL SIZE	METHOD n - BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	LOG / SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
Stopped at 80' on 1-10-72. Set 6" I.D. casing to 80', 1-11-72.									
						133	80		
Used worn carbide bit.	Dennison	4"	cored	24"	15"			D1	CLAY: Very hard, gray-green silty.
							85		
						123	90		
Bottom 6" left in hole. Top 14" slipped out of liner.	"	"	cored	24"				D 2	Hard, silty with shells. (Disturbed removing from barrel).
	"	"	cored	24"	21"		95	D 3	
						113	100		
	"	"	cored	24"	24"			D 4	Very hard, with shells.
							105		
						103	110		
Stopped at 114' on 1-12-72.	"	"	cored	24"	18"			D5	CLAY: Very hard, light gr green, silty with cemen nodules.

Hole Size 8" - 6"

Hole No 204

Site Em. Cooling T

PROJECT Alvin W. Vogtle Site

SHEET 4 OF 5

HOLE NO 204

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	PENETRATION TOOL	TOOL SIZE	METHOD n-BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
						93	120		
	Dennison	4"	cored	24"	24"			D-6	
							125		
						83	130		
	"	"	cored	24"	23"			D 7	
							135		
						73	140		
Stopped at 142' on 1-13-72.	"	"	cored	24"	14"			D 8	
	Split Spoon	2"	16-18-25 / 43		18"		145	8	CLAY: Dark green, sandy and SAND, clayey, medium fine.
						63	150		

Hole Size 6"

Hole No 204

Site Em. Cooling Tower

PROJECT Alvin W. Vogtle Site

SHEET 5 OF 5

HOLE NO 204

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	SAMPLE DATA: PENETRATION TOOL	TOOL SIZE	METHOD n - BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	LOG	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
	Split Spoon	2"	10-30-45 75	18"					9	SAND: Dark gray, silty, fine
										Bottom of Hole 155'.
						53	160			Hole grouted to 80', casing pulled.
							165			
							170			

Hole Size 6"

Hole No 204

Site Em. Cooling T

BECHTEL

SHEET 1 OF 4

GEOLOGIC LOG OF DRILL HOLE

HOLE NO. 216

PROJECT Alvin W. Vogtle Site ANGLE FROM HORIZ 90° BEARING

LOCATION N 1,142,930 E 623,650 BEGUN 1-18-72 COMPLETED 1-20-72

OVERBURDEN DEPTH DRILLED INTO ROCK TOTAL DEPTH OF HOLE 142.5 ft

ELEV. WATER TABLE NO. CORE BOXES NO. SAMPLES TAKEN 24

CORE RECOVERY (%) FEET MODEL & MAKE OF DRILL Acker Mark II

GROUND ELEV. 210.6 ft. HOLE LOGGED BY M. Campagna DRILLER LETCO-Ivey

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	SAMPLE DATA: PENETRATION TOOL	TOOL SIZE	METHOD n - BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	LOG	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
						211				
	Split Spoon	2"	2-3-3 / 6	18"			5		1	SAND: Red-brown, medium to fine, loose.
	Shelby	3"	push	24"	24"	201	10		UD 1	Silty.
	Split Spoon	2"	6-7-9 / 16	18"			15		2	No silt, firm.
	Shelby	3"	push	14"	16"				UD 2	
						191	20			
	Split Spoon	2"	7-7-8 / 15	18"			25		3	Mottled tan and gray, medium to fine, with 1" tan clay layers.
	Shelby	3"	push	16"	14"				UD 3	Mottled tan and gray, fi
	"	"	push	23"	14"	181	30		UD 4	

Hole Size 8"

Hole No. 216

Site Auxillary Bldg.

SHEET 2 OF 4

PROJECT Alvin W. Vogtle Site

HOLE NO 216

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	SAMPLE DATA: PENETRATION TOOL	TOOL SIZE	METHOD n-BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	LOG SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
	Split Spoon	2"	6-5-5	18"				4	CLAY: Mottled tan and gray, sandy, with black and white streaks, stiff.
	Shelby	3"	push	16"	15"			UD 5	Mottled tan and red-brown, medium to fine.
	"	"	push	21"	21"	171	40	UD 6	
									Some silt and black streaks.
	Split Spoon	2"	24-24-35 / 59	18"			45	5	Mottled tan and gray, medium with black streaks, very dense.
No recovery.	Shelby	3"	push	4"	0				
No recovery.	Dennison	4"	cored	24"	0	161	50		Tan with black streaks, medium to fine.
Sample washed around perimeter, badly disturbed.	"	"	cored	24"	18"			UD 7	
									Some silt.
	"	"	cored	24"	4"		55	UD 8	
	Split Spoon	2"	5-7-9 / 16	18"		151	60	6	SAND: Tan, clayey, to sandy clay, firm.
Stopped at 62' on 1-18-72.	Shelby	3"	push	22"	22"			UD 9	
							65		
	Split Spoon	2"	100	1/2"		141	70	7	SHELLS: In silty sand matrix.

Hole Size 8"

Hole No 216

Site Auxilliary Bldg.

PROJECT Alvin W. Vogtle Site

SHEET 3 OF 4

HOLE NO 216

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	SAMPLE DATA: PENETRATION TOOL	TOOL SIZE	METHOD n-BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	LOG	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
Set 6" casing to 80'.						131	80			
									D1	
	Dennison	4"	cored	24"	2"					
	"	"	cored	24"	2"		85		D2	CLAY: Very hard, gray-green, silty, with shells.
						121	90			
	"	"	cored	24"	24"				D3	Hard.
							95			
						111	100			
	"	"	cored	24"	22"				D4	Very hard, light gray-gre
							105			
						101	110			
	"	"	cored	24"	24"				D5	No shells.

Hole Size 8" - 6"

Hole No 216

Site Auxilliary Bl

SHEET 4 OF 4

PROJECT Alvin W. Vogtle Site

HOLE NO 216

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	SAMPLE DATA: PENETRATION TOOL	TOOL SIZE	METHOD n-BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	LOG	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
						91	120			
Top 15" slid out of liner when removing from barrel.	Dennison	4"	cored	24"	19"				D6	Hard, light gray-green, silty.
							125			
						81	130			
	"	"	cored	24"	20"				D7	
							135			
						71	140			
	Split Spoon	2"	31-40-60 100	18"					8	SAND: Black and gray, silty, fine, less silt in gray.
							145			Bottom of Hole 142.5'.

Hole Size 6"

Hole No 216

Site Auxilliary Bldg.

BECHTEL

GEOLOGIC LOG OF DRILL HOLE

SHEET 1 OF 5
HOLE NO. 226

PROJECT Alvin W. Vogtle Site ANGLE FROM HORIZ 90° BEARING
LOCATION N 1,142,940 E 625,070 BEGUN 2-5-72 COMPLETED 2-18-72
OVERBURDEN DEPTH DRILLED INTO ROCK TOTAL DEPTH OF HOLE 162
ELEV. WATER TABLE NO. CORE BOXES NO. SAMPLES TAKEN 26
CORE RECOVERY (%) FEET MODEL & MAKE OF DRILL S & H
GROUND ELEV. 218.6 feet HOLE LOGGED BY W. Kubba DRILLER S & H
Mason Sexton

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	SAMPLE DATA: PENETRATION TOOL	TOOL SIZE	METHOD n - BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	LOG SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
						219			
Operation down most of day, pump problems and adjusting mast.	Split Spoon	2"	0-0-3 / 3	18"			5	1*	SAND: Red-brown, fine
								UD*	
	Shelby	3"		24"	23"			1	Fine to medium
						209	10		
	Split Spoon	2"	7-12-14 / 26	18"			15	2*	
								UD* 2	
Lost sample U.D. 2*	Shelby	3"	250	24"	0			UD	SAND: Red-brown, silty, little clay, medium to c
	Shelby	3"		18"	12"	199	20	1	
	Split Spoon	2"	6-12-14 / 28	18"			25	1	
Dropped iron bar in hole, moved 3 feet away and started new hole. Asterisks indicate samples from initial hole (aborted). Bottom of initial hole 20'.	Shelby	3"	400	12"	12"			UD	
								2	TOP: Red-brown. BOTTOM: Tan, clayey.
						189	30		
	Split Spoon	2"	8-13-17 / 30	18"				2	Light brown, clayey, fi with silt.

Hole Size 6-7/8"

Site Unit #1 Cooling Tower

SHEET 2 OF 5

PROJECT Alvin W. Vogtle Site

HOLE NO 226

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	SAMPLE DATA: PENETRATION TOOL	TOOL SIZE	METHOD n-BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	LOG SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
	Shelby	3"	100	24"	19"	179	40	UD 3	CLAY: Tan to red-brown sand clay at top, tan, clayey sand with silt, medium at bottom.
									SAND: Red mottled, white sand, little silt, medium.
	Split Spoon	2"	7-11-10 / 21	18"			45	3	
								UD 4	Coarse, little silt from 48' - 48' 3".
Recovery in the 6" head only.	Shelby	3"	no sample	3"	3"			UD 5	
Stopped at 2-8-72 at 50'.	Denison	3"	no sample	24"	0	169	50		
	"	"		18"	10"			UD 6	SAND: Light tan, mottled with brown silty sand, medium to coarse, some clay, dense.
							55		
								UD 7	White to tan, silty, coarse.
Stopped on 2-9-72 at 60'.	"	"	no sample	24"	3"	159	60		
	"	4"		24"	21"			UD 8	
Sample UD-8 was "soopy".									
	Split Spoon	2"	14-27-44 / 71	18"			65	4	Same as above.
									CLAY: Light tan, sandy, stiff.
	Denison	4"		24"	16"			UD 9	
Stopped on 2-10-72 at 70'.						149	70		
	Split Spoon	2"	5-10-14 / 24	18"				5	SAND: Light tan, coarse to medium, little silt.

Hole Size 6-7/8"

Hole No 226

Site Unit #1 Cooling Tower

PROJECT Alvin W. Vogtle Site

SHEET 3 OF 5

HOLE NC 226

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	SAMPLE DATA: PENETRATION TOOL	TOOL SIZE	METHOD n-BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	LOG / SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
	Denison	4"		24"	14"	139	80	UD 10	Tan, light green to white, some silt, medium to coarse.
	Split Spoon	2"	100 / 5"	5"	5"			6	SHELL: White, mottled brown very dense.
							85		
	"	"	8-9-20 / 29	18"				7	CLAY: Grayish-green to greer clay (weathered); very stiff, with shells.
Stopped 2-11-72 at 90'. Started 2-14-72 by casing to 91' casing seated adequately. Stopped 2-14-72 at 93-1/2'.						129	90		
	Denison	4"		24"	18"		95	UD 11	Calcareous, cemented nodu shells, 1/4" cemented san layer.
						119	100		
	"	"		24"	19"		105	UD 12	Same as above but more sh noted.
						109	110		
	"	"		24"	24"			UD 13	Same as above.

Hole Size 6-7/8" - 5-7/8"

Hole No 226

Site Unit #1 Cooling T

SHEET 4 OF 5

PROJECT Alvin W. Vogtle Site

HOLE NO 226

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC	PENETRATION TOOL	TOOL SIZE	METHOD n-BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	LOG	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
						99	120			
Stopped 2-15-72 at 123-1/2'. Started 2-16-72 taking sample at 123-1/2'.	Denison	4"		24"	19"		125		UD 14	Cemented nodules, calcareous, some shells.
						89	130			
Actually full recovery was obtained but an 8" piece fell out and was not included in liner. Stopped 2-16-72 at 135-1/2'.	"	"		24"	16"		135		UD 15	Very hard.
						79	140			
	"	"		24"	16"		145		UD 16	
Poor sample.	"	"		24"	19"				8	Same as above.
						69	150			

Hole Size 5-7/8"

Hole No 226

Site Unit #1 Cooling Tower

SHEET 5 OF 5

PROJECT Alvin W. Vogtle Site

HOLE NO 226

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	SAMPLE DATA: PENETRATION TOOL	TOOL SIZE	METHOD n-BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	LOG	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
Stopped 2-17-72 at 158'.	Denison	4"		24"	21"				UD 17	
	Split Spoon	2"	34-60-62 / 122	18"		59	160		9	SAND: Grayish-black sand, light silt, coarse, ve[ry] dense.
										Bottom of Hole 162'.
							165			
						49	170			

Hole Size 5-7/8"

Hole No 226

Site Unit #1 Cooling To[wer]

BECHTEL

SHEET 1 OF 4

GEOLOGIC LOG OF DRILL HOLE

HOLE NO. 235

PROJECT Alvin W. Vogtle Site ANGLE FROM HORIZ 90° BEARING

LOCATION N 1,143,650 E 624,450 BEGUN 2-8-72 COMPLETED 2-14-72

OVERBURDEN DEPTH DRILLED INTO ROCK TOTAL DEPTH OF HOLE 135.5'

ELEV. WATER TABLE NO. CORE BOXES NO. SAMPLES TAKEN 24

CORE RECOVERY (%) FEET MODEL & MAKE OF DRILL Acker Mark II

GROUND ELEV. 206.2 feet HOLE LOGGED BY R. Mittelberger DRILLER LETCO-Alexander

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	SAMPLE DATA: PENETRATION TOOL	TOOL SIZE	METHOD n - BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	LOG	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
	Split Spoon	2"	2-3-4 / 7	18"			5		1	SAND: Red-brown, medium to fine.
	Shelby	3"	push	24"	19"		10		UD 1	With silt.
	Split Spoon	2"	9-15-17 / 32	18"			15		2	Layers of tan, brown and red, fine, with clay.
	Shelby	3"	push	24"	18"		20		UD 2	As above.
	Split Spoon	2"	5-11-17 / 28	18"			25		3	Medium to fine.
	Shelby	3"	push	24"	15"		30		UD 3	Tan, brown, medium to fine, with silt.
	Split Spoon	2"	11-14-13 / 27	18"					4	Tan, medium.

Hole Size 7-7/8"

Hole No. 235

Site Shops & Warehouses

SHEET 2 OF 4

PROJECT Alvin W. Vogtle Site

HOLE NO 235

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	SAMPLE DATA: PENETRATION TOOL	TOOL SIZE	METHOD n-BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
	Shelby	3"	push	24"	13"		40	UD 4	Medium to coarse.
	Split Spoon	2"	12-19-20 / 39	18"			45	5	As above
	Shelby	3"	push	24"	0			UD 5	No recovery.
Keep sample.	Denison	4"	core	24"	10"		50	UD 6	Loss of water at 51', tan, fine, silty.
	Split Spoon	2"	5-6-9 / 15	18"			55	6	Mottled, tan-brown, fine and layers of clay.
	Shelby	3"	push	24"	24"		60	UD 7	Tan, fine, silty.
	Split Spoon	2"	100+ / 2"	2"			65	7	SHELL: Silty, brown to tan, shell fragments.
Casing to 68-1/2' concrete grout to clay layer.	"	"	84	18"			70	8	CLAY: Dark gray-green, calcareous, very hard, with nodules and fine silt layers.
	Pitcher	3"	core	30"	25"			UD 8	Calcareous, cemented.

Hole Size 7-7/8" - 5-7/8"

Hole No 235

Site Shops & Warehouses

PROJECT Alvin W. Vogtle Site

SHEET 3 OF 4

HOLE NO 235

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	PENETRATION TOOL	TOOL SIZE	METHOD n-BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	LOG	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
							80			
Do not keep.	Pitcher	3"	core	30"	10"		85		UD 9	Same as above.
	"	"	core	30"	21"				UD 10	
							90			
	"	"	core	30"	18"		95		UD 11	
							100			
	"	"	core	30"	23"		105		UD 12	Same as above.
							110			
	"	"	core	30"	13"				UD 13	Same as above.

Hole Size 5-7/8"

Hole No 235

Site Shop & Wareho

SHEET 4 OF 4

PROJECT Alvin W. Vogtle Site

HOLE NO 235

NOTES ON WATER TABLE LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	SAMPLE DATA: PENETRATION TOOL	TOOL SIZE	METHOD n-BLOWS	ADVANCE	RECOVERY	ELEVATION	DEPTH	LOG	SAMPLE	CLASSIFICATION AND PHYSICAL CONDITION
	Pitcher	3"	core	30"	24"				UD 14	Same as above.
							120			
	"	"	core	30"	24"		125		UD 15	Soft.
							130			SAND: Green, medium to fine, silty.
	"	"	core	30"	21"		135		UD 16	
										Bottom of Hole 135.5'

Hole Size 5-7/8"

Hole No 235

Site Shop & Warehouses

4.0 STATUS OF DRILL HOLES

In response to the request for a discussion of the status of the 474 holes referenced in FSAR Section 2.5.4.3.1 and any holes in addition to these (letter from E.G. Adensam to D.O. Foster, dated February 19, `5), the following discussion and accompanying tables are submitted.

4.1 Holes Penetrating the Blue Bluff Marl

All of the holes that were drilled through the water-table aquifer, the Blue Bluff marl, and into the underlying confined aquifer are listed on Table 4-1. The status of each hole is also shown. It is normal practice of the engineering firms conducting the drilling of exploratory holes to fill them with grout following their completion, unless they are utilized as an observation or production well. Nine of the wells are active ground water observation wells open to the confined aquifer. There are four production wells open to the unnamed Lisbon sands (Tertiary), three of which supply construction water and one supplies water for the Simulator Building. In addition, four wells are completed as production wells open to the deeper Tuscaloosa Formation (Cretaceous); two are plant operation make-up wells, and two are wells originally planned as make-up wells, but are presently not planned to be utilized.

All of the remaining holes on this table were for exploratory purposes only. There is documentation that all of the holes were grouted except four; 236, 237, 239, and 334. There are no data to indicate the exact disposition of these holes. However, it is believed these were also grouted because it is the practice to do so.

The grouting method used for sealing all holes, exploratory, seismic, and observation wells in the same. The method employed is commonly known as the "tremie method", which is performed by insertion of a small diameter pipe (drill rods, 1/2 to 1-inch steel or PVC, etc.) to near the bottom of the hole and pumping cement slurry through the pipe, filling the hole from the bottom up. Grouting continues until grout appears at the top of the hole. This method is employed to assure that the hole is completely grouted and no voids are present.

4.2 Other Holes in the Confined Aquifer

Several exploratory holes were drilled through alluvium of the Savannah River flood plain into the confined aquifer, but did not penetrate the marl. As discussed in the FSAR, the Blue Bluff marl is not present beneath the flood plain of the river. All of the holes on Table 4-2 were drilled in the flood plain into the confined aquifer. The area is stratigraphically below the bottom of the marl.

Of these holes, two were completed as observation wells, one of which was grouted in 1985 because its location interferred with construction of the river facilities. The other is a flowing well that has been capped and equipped with a pressure gage for monitoring.

There is documentation that hole 123 was grouted to elevation 29 feet but there is no documentation as to the final completion or abandonment of the remaining holes. The grouting method for sealing observation well 121 and hole 123 was the tremie method as discussed in Section 4.1.

4.3 Holes Drilled only into the Unconfined Aquifer or River Alluvium

Holes penetrating only the unconfined aquifer or the river alluvium are shown on Table 4-3. Thirty of these holes were completed as observation wells to monitor the unconfined aquifer, thirteen of which are still in use. Of the remaining seventeen, 10 have been grouted, leaving seven that are inactive but with no documentation concerning the method of abandonment.

One of the wells, PW-1, is the water supply well for Plant Wilson.

The remaining wells were constructed as temporary observation wells in the backfill at the Power Block excavation. These wells were installed to monitor the water level in the backfill as backfilling operations were conducted to assure that the ground water would not rise high enough to interfere with proper backfilling and compaction. As backfilling progressed, and the usefulness of these wells diminished, they were destroyed by filling with grout. All grouting operations were performed using the tremie method as discussed in Section 4.1.

TABLE 4-1

HOLES THAT PENETRATE BLUE BLUFF MARL AQUICLUDE

(Drilled into confined aquifer)

Hole Number	Status	Hole Number	Status
1	Grouted	107A	Grouted
2	Grouted	109	Grouted
3	Grouted	111	Grouted
5	Grouted	111A	Grouted
6	Grouted	113	Grouted
7	Grouted	114	Grouted
8	Grouted	114A	Grouted
9	Grouted	116	Grouted
10	Grouted	119	Grouted
11	Grouted	122	Grouted
12	Grouted	132	Grouted
13	Grouted	133	Grouted
14	Grouted	134	Grouted
15	Grouted	135	Obs. well, grouted
16	Grouted	136	Grouted
17	Grouted	137	Grouted
18	Grouted	138A	Grouted in marl**
19	Grouted	139	Grouted
20	Grouted	144	Obs. well, grouted
21	Grouted	144A	Grouted
22	Grouted	145	Grouted
23	Grouted	147	Obs. well, grouted
24	Obs. well, grouted*	152	Grouted
25	Grouted	156	Grouted
26	Obs. well, grouted	157	Obs. well, grouted
27	Obs. well, active	170	Grouted
29	Obs. well, active	175	Obs. well, grouted
31	Obs. well, grouted	180	Grouted
32	Obs. well, grouted	181	Obs. well, inactive
33	Obs. well, grouted	182	Grouted
37	Grouted	202	Grouted
38	Grouted	203	Grouted in marl
39	Grouted	204	Grouted in marl
40	Grouted	216	Grouted
42	Grouted	217	Grouted
42A	Obs. well, grouted	218	Grouted
42B	Obs. well, grouted(1)	219	Grouted
42C	Obs. well, grouted(1)	220	Grouted in marl
45	Grouted	221	Grouted
101A	Obs. well, grouted	222	Grouted
102	Grouted	223	Grouted
102A	Grouted	224	Grouted
104A	Grouted	225	Grouted
105	Grouted	226	Grouted
106	Grouted	227	Grouted
107	Grouted	228	Grouted

(1) Not drilled into confined aquifer, screened in marl aquiclude.

(0632g)

TABLE 4-1 (continued)

HOLES THAT PENETRATE BLUE BLUFF MARL AQUICLUDE

(Drilled into confined aquifer)

Hole Number	Status	Hole Number	Status
229	Grouted	502	Grouted
230	Grouted	503	Grouted
235	Grouted	503A	Grouted
236	No closure record	504	Grouted
237	No closure record	505	Grouted
238	Grouted in marl	506	Grouted
239	No closure record	507	Grouted
243	Obs. well, grouted	508	Grouted
244	Obs. well, grouted in marl***	509	Grouted
245	Obs. well, grouted	510	Grouted
246	Obs. well, grouted	511	Grouted
247	Obs. well, grouted in marl	512	Grouted
248	Obs. well, grouted in marl	513	Grouted
249	Obs. well, grouted in marl	514	Grouted
301	Grouted	515	Grouted
302	Grouted	516	Grouted
303	Grouted	517	Grouted
304	Grouted	518	Grouted
305	Grouted	519	Grouted
306	Grouted	520	Grouted
307	Grouted	521	Grouted
308	Grouted	522	Grouted
309	Grouted	523	Grouted
310	Grouted	524	Grouted
311	Grouted	601	Grouted
312	Grouted	603	Grouted
313	Grouted	605	Grouted
314	Grouted	607	Grouted
316	Grouted	609	Grouted
319	Grouted	609A	Grouted
322	Grouted	610	Grouted
324	Grouted	611	Grouted
326	Grouted	613	Grouted
329	Grouted	615	Grouted
331	Grouted	617	Grouted
333	Grouted	619	Grouted
334	No closure record	621	Grouted
335	Grouted	623	Grouted
336	Grouted	624	Grouted
337	Grouted	625	Grouted
338	Grouted	627	Grouted
339	Grouted	629	Grouted
408	Grouted	631	Grouted
409	Grouted	633	Grouted
501	Grouted	702	Grouted
501A	Grouted	704	Grouted

TABLE 4-1 (continued)

HOLES THAT PENETRATE BLUE BLUFF MARL AQUICLUDE

(Drilled into confined aquifer)

Hole Number	Status	Hole Number	Status
705	Grouted	P-5	Grouted
705A	Grouted	RF-1	Grouted
706A	Grouted	RF-1	Grouted
707	Grouted	RF-2	Grouted
709	Grouted	RF-3	Grouted
711	Grouted	RF-4	Grouted
712A	Grouted	RF-5	Grouted
713	Grouted	RF-6	Grouted
850	Grouted	RF-7	Grouted
850A	Obs. well, active	RF-8	Grouted
851	Grouted	RF-9	Grouted
851A	Obs. well, active	CW-1	Construction well, active
852	Obs. well, active	CW-2	Construction well, active
853	Obs. well, active	CW-3	Construction well, active
854	Obs. well, active	MU-1	Make-up well, active
855	Obs. well, active	MU-2	Make-up well, active
856	Obs. well, active	MU-2A	Make-up well, active
P-1	Grouted	SB-1	Simulator bldg. well, active
P-2	Grouted	TW-1	Test well, active
P-3	Grouted		
P-4	Grouted		

* Obs. well, grouted - hole was completed as observation well. Observation well was grouted at later date.

** Grouted in marl - hole was drilled through marl. Marl was grouted before hole abandoned.

*** Obs. well, grouted in marl - hole was drilled through marl. Marl was grouted and hole completed as observation well open to unconfined aquifer.

TABLE 4-2

HOLES DRILLED INTO CONFINED AQUIFER
WHERE BLUE BLUFF MARL IS NOT PRESENT*

Hole Number	Status
28	No closure record
30	No closure record
34	Obs. well, inactive
35A	No closure record
36A	No closure record
36B	No closure record
120	No closure record
121	Obs. well, grouted
123	Grouted to El. 29
401	No closure record
402	No closure record
403	No closure record
404	No closure record
405	No closure record
406	No closure record
407	No closure record
OD-1	No closure record
RH-1	No closure record

* Holes located in Savannah River channel where Blue Bluff Marl is not present.

TABLE 4-3

HOLES DRILLED INTO THE UNCONFINED AQUIFER
OR RIVER ALLUVIUM

Hole Number	Status	Hole Number	Status
42D	Obs. well, grouted	ST-6	Grouted
42E	Obs. well, grouted	ST-7	Grouted
124	Obs. well, inactive	ST-8	Grouted
129	Obs. well, active	ST-8A	Grouted
138	Obs. well, grouted	ST-9	Grouted
140	Obs. well, grouted	ST-10	Grouted
141	Obs. well, grouted	ST-11	Grouted
142	Obs. well, active	ST-11A	Grouted
143	Obs. well, grouted	ST-12	Grouted
145G	Obs. well, inactive	ST-13	Grouted
176	Obs. well, inactive	ST-14	Grouted
177	Obs. well, grouted	ST-14A	Grouted
178	Obs. well, grouted	ST-15	Grouted
179	Obs. well, active	ST-A	Grouted
243	Obs. well, grouted	ST-B	Grouted
244	Obs. well, inactive	WWP-37	Grouted
245	Obs. well, grouted	PW-1	Plant Wilson well, active
247	Obs. well, inactive	RF 601	Grouted
248	Obs. well, inactive	RF 602	Grouted
249	Obs. well, inactive	RF 603	Grouted
800	Obs. well, active	RF 604	Grouted
801	Obs. well, active	RF 605	Grouted
802	Obs. well, active	RF 606	Grouted
803A	Obs. well, active	RF 607	Backfilled w/ sand*
804	Obs. well, active	RF 608	Grouted
805A	Obs. well, active	RF 609	Grouted
806B	Obs. well, active	RF 610	Grouted
807A	Obs. well, active	RF 611	Grouted
LT-1	Grouted	RF 612	Backfilled w/ sand*
LT-1A	Obs. well, active	RF 613	Backfilled w/ sand*
LT-2	Grouted	RF 614	Grouted
LT-3	Grouted	RF 615	Grouted
LT-4	Grouted	RF 616	Grouted
LT-5	Grouted	RF 617	Grouted
LT-6	Grouted	RF 618	Grouted
LT-7	Obs. well, active	RF 621	Grouted
LT-8	Grouted	RF 623	Grouted
LT-9	Grouted	RF 626	Grouted
LT-10	Grouted	RF 628	Grouted
LT-11	Grouted	RF 631	Grouted
ST-1	Grouted	RF 634	Grouted
ST-2	Grouted	RF 636	Grouted
ST-3	Grouted	RF 637	Grouted
ST-4	Grouted	RF 638	Grouted
ST-5	Grouted	RF 639	Grouted

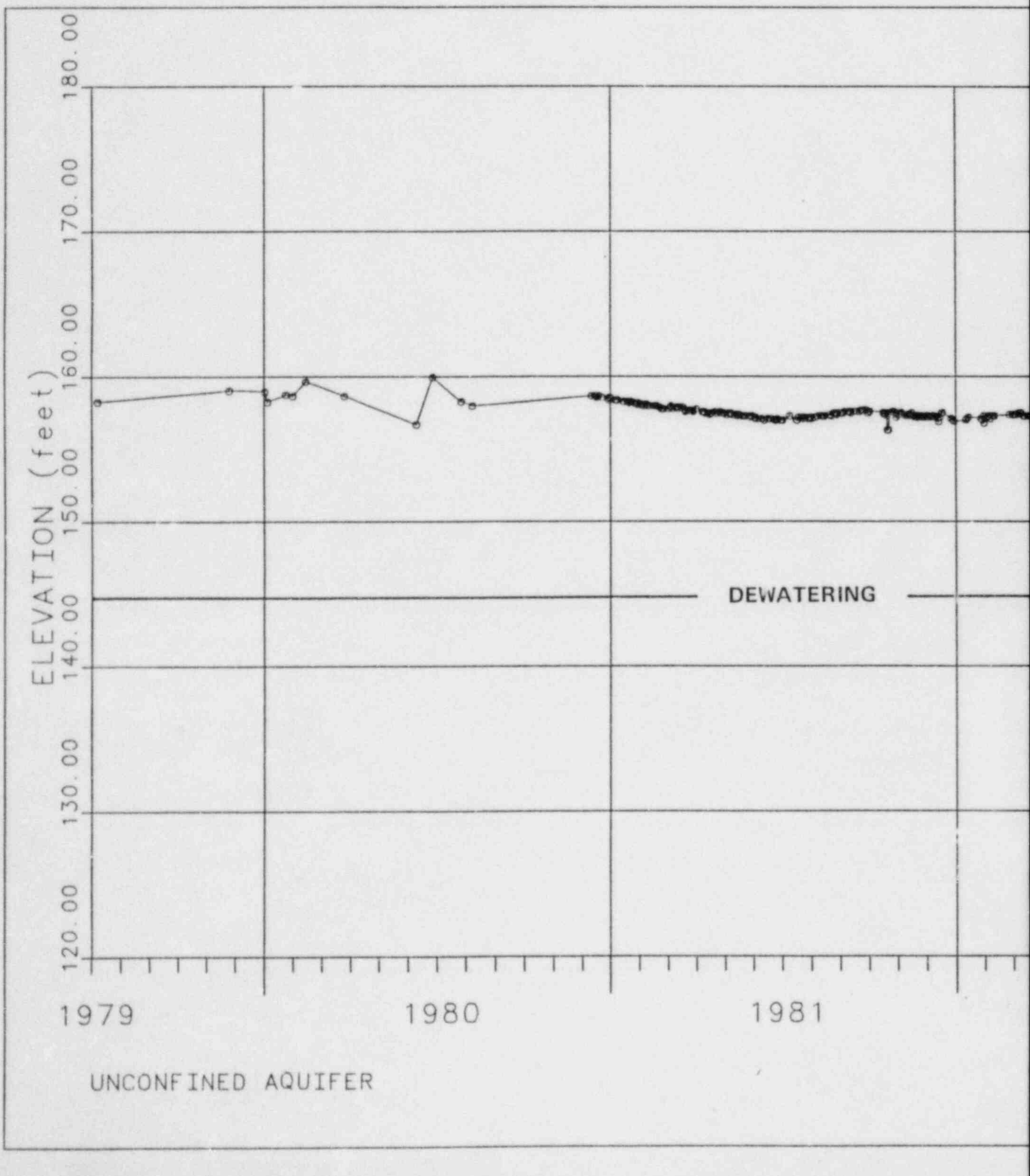
* Hole located in Savannah River

(0664g)

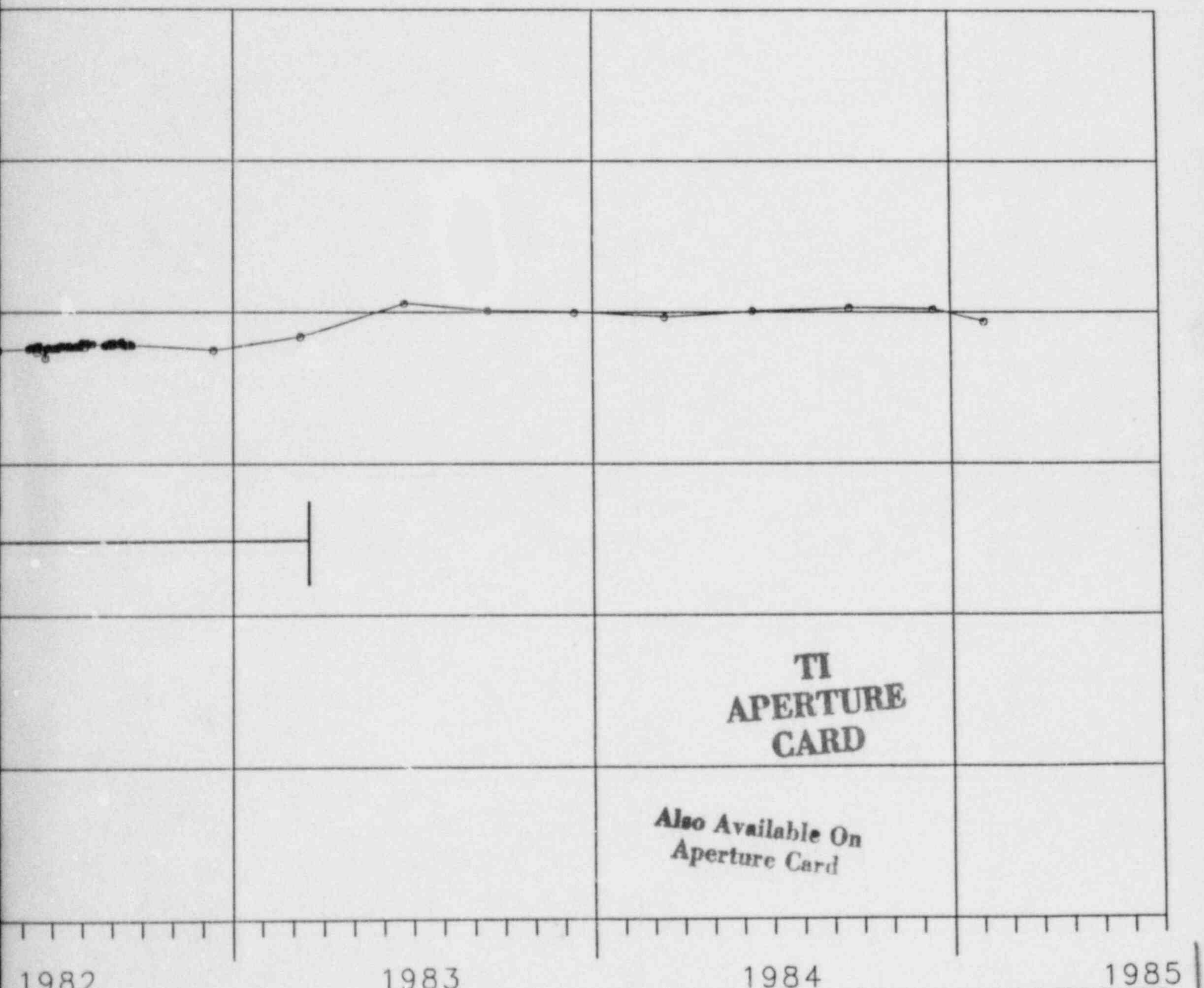
TABLE 4-3 (continued)

HOLES DRILLED INTO THE UNCONFINED AQUIFER OR RIVER ALLUVIUM

Hole Number	Status
RF 640	Grouted
P-1	Grouted
P-1A	Grouted
P-2	Grouted
P-3	Grouted
P-3A	Grouted
P-4	Grouted
P-4A	Grouted
P-5	Grouted
P-6	Grouted
P-6A	Grouted
P-6B	Grouted
P-6C	Grouted
P-6D	Grouted



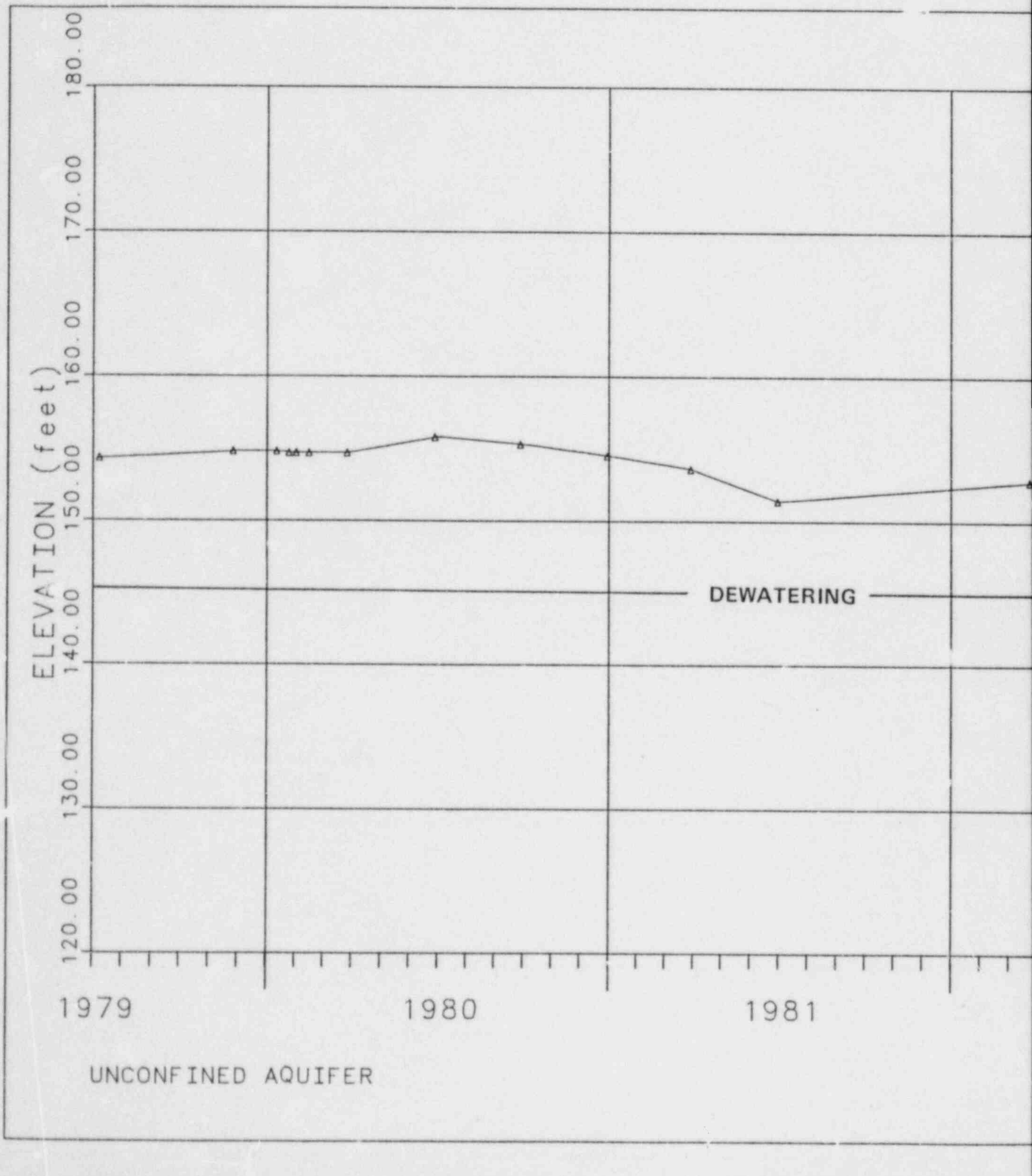
ELEVATION (feet)
180.00
170.00
160.00
150.00
140.00
130.00
120.00
DEWATERING
1979
1980
1981
UNCONFINED AQUIFER



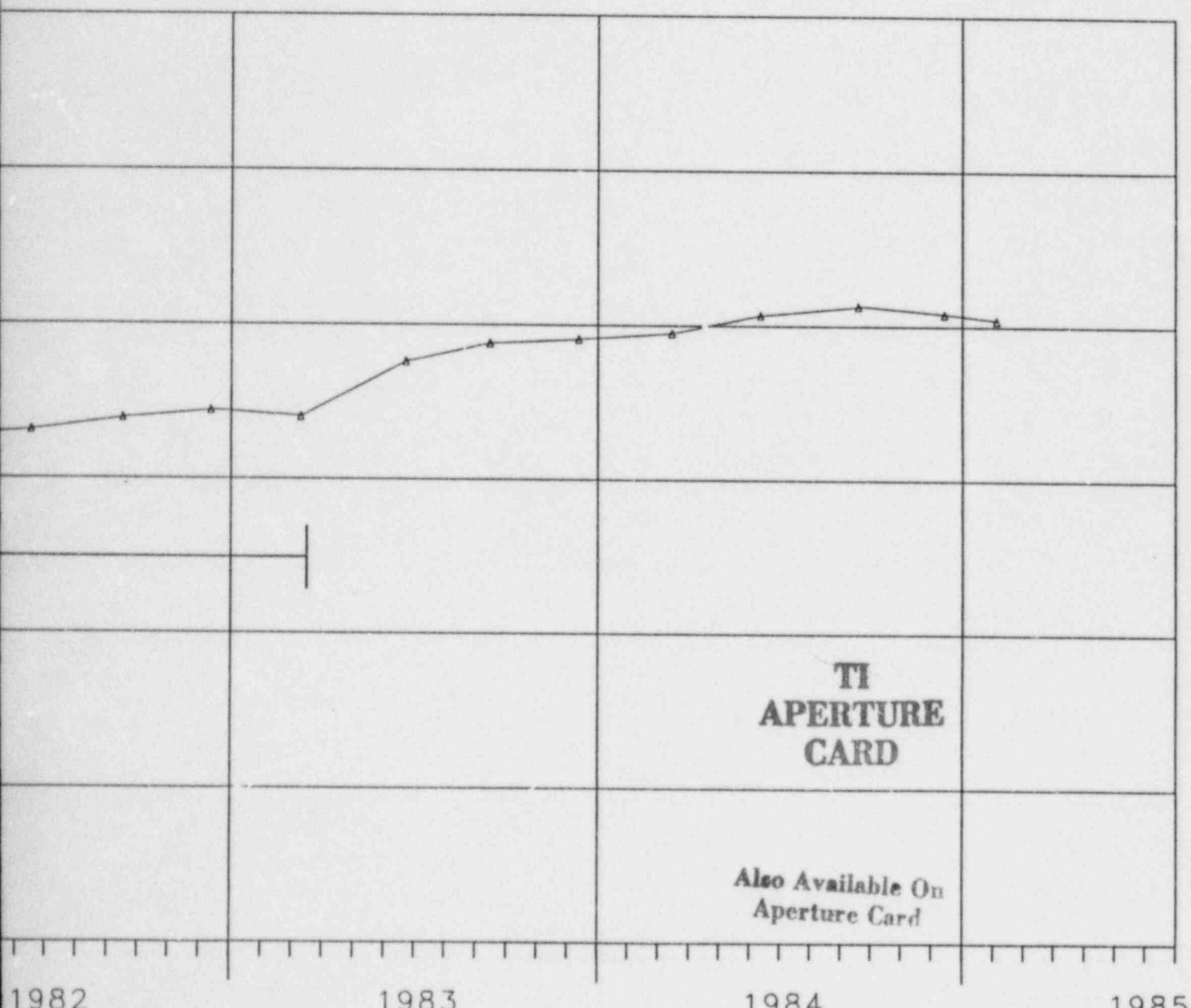
VOGTLE HYDROGRAPHS

HYDROGRAPH OF WELL 800

8503200454-03



ELEVATION (feet)
180.00
170.00
160.00
150.00
140.00
130.00
120.00
DEWATERING
1979
1980
1981
UNCONFINED AQUIFER



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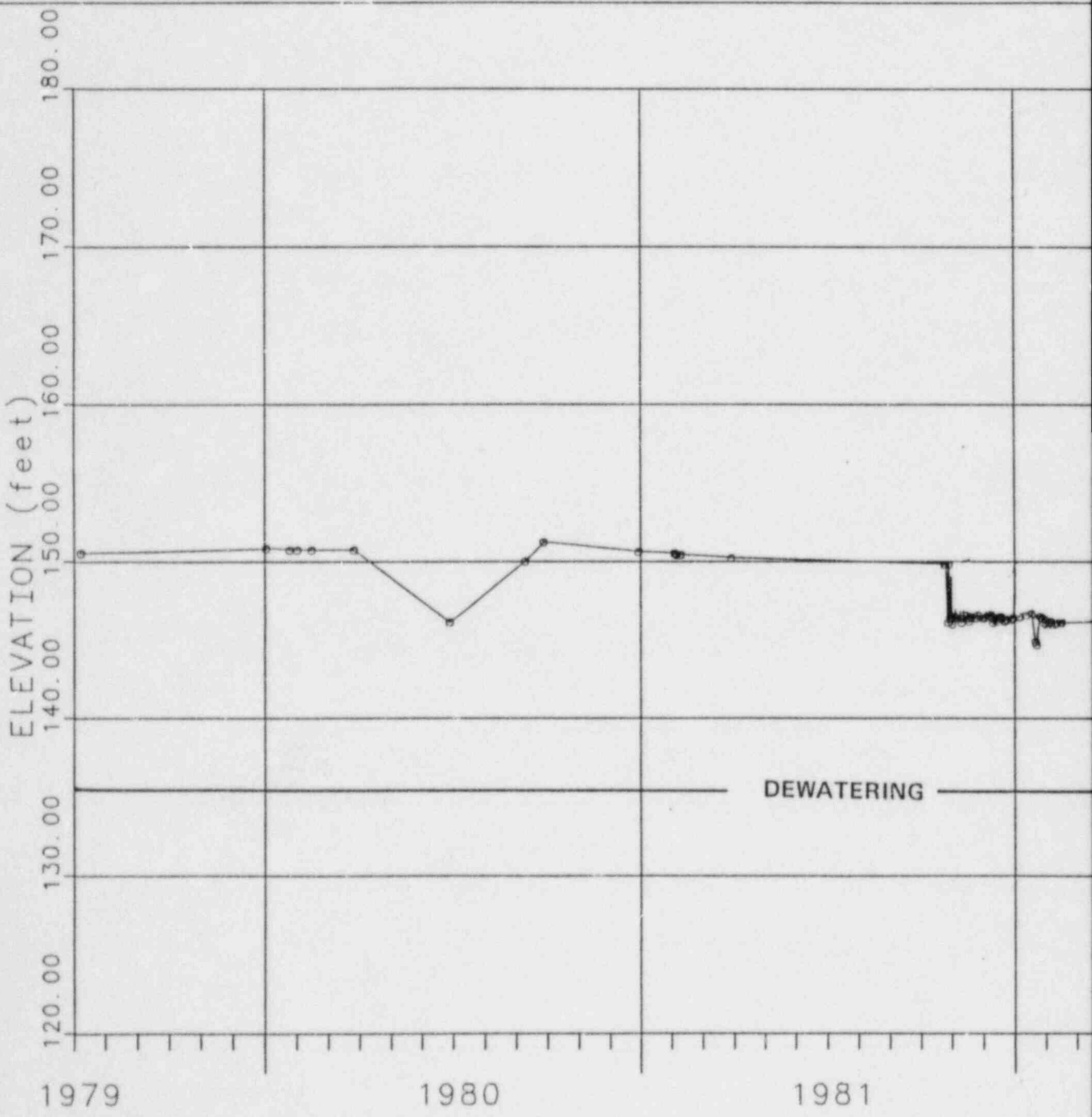
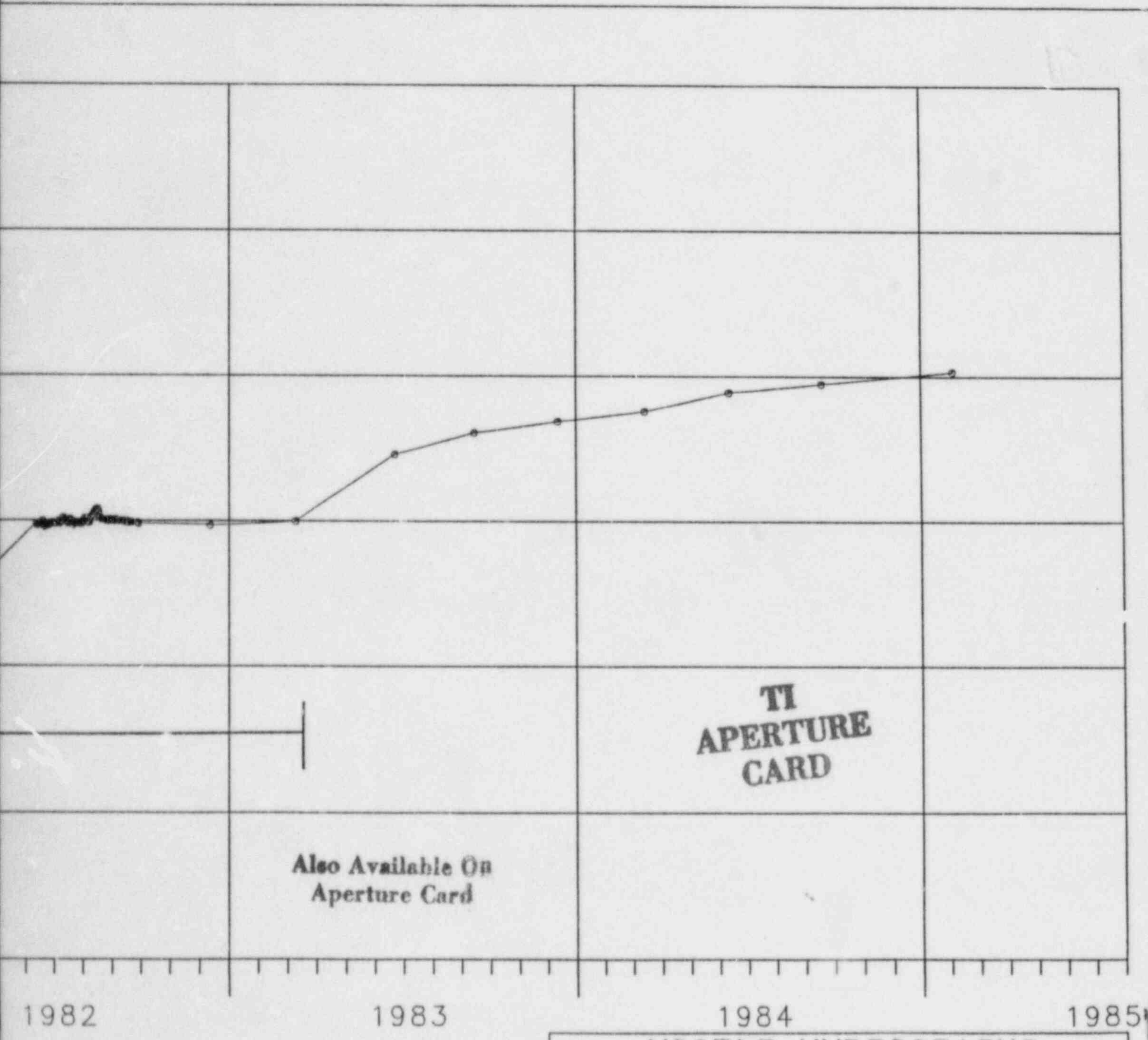
VOGTLE HYDROGRAPHS
HYDROGRAPH OF WELL 801

8503200454-04



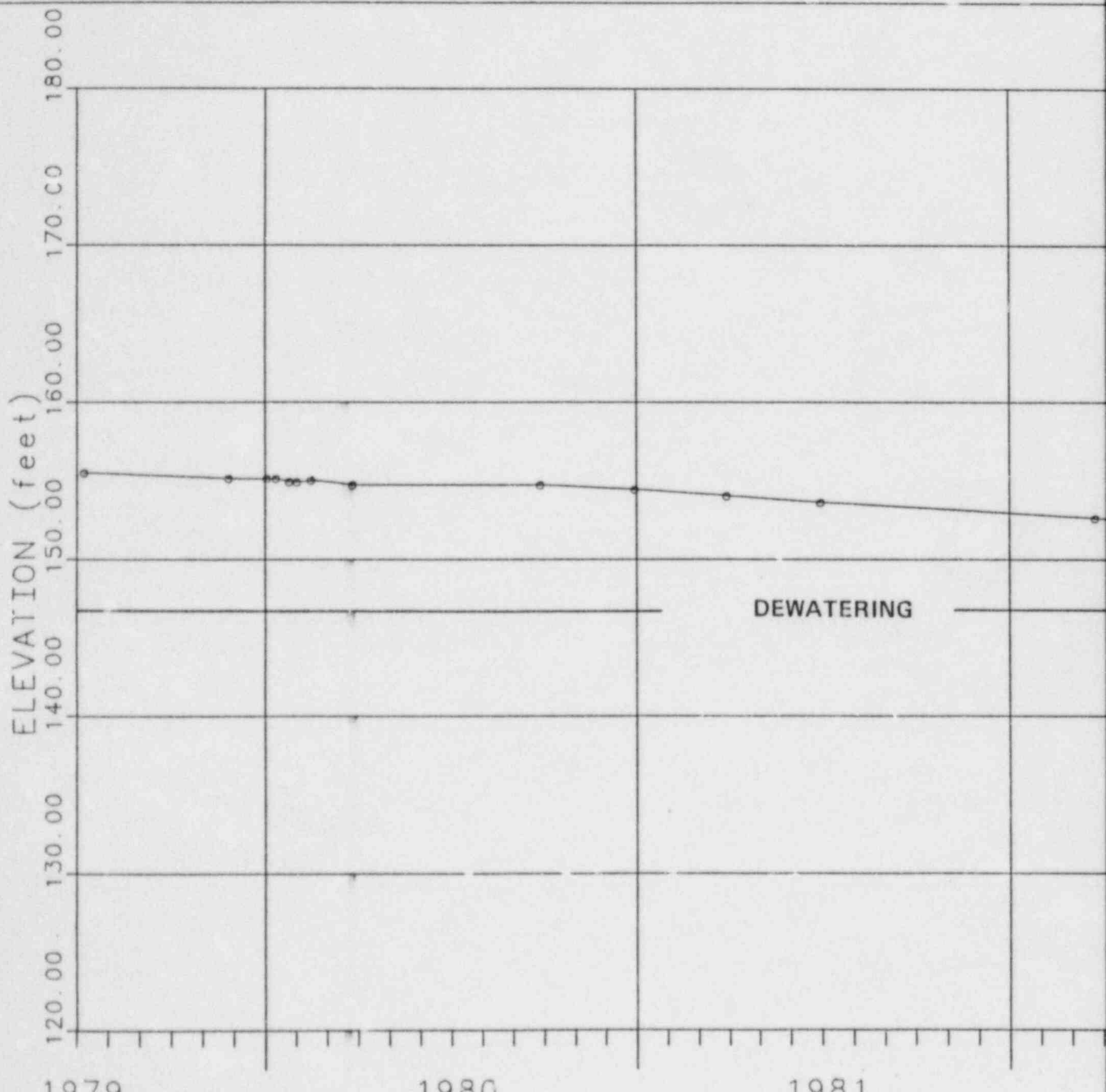
UNCONFINED AQUIFER



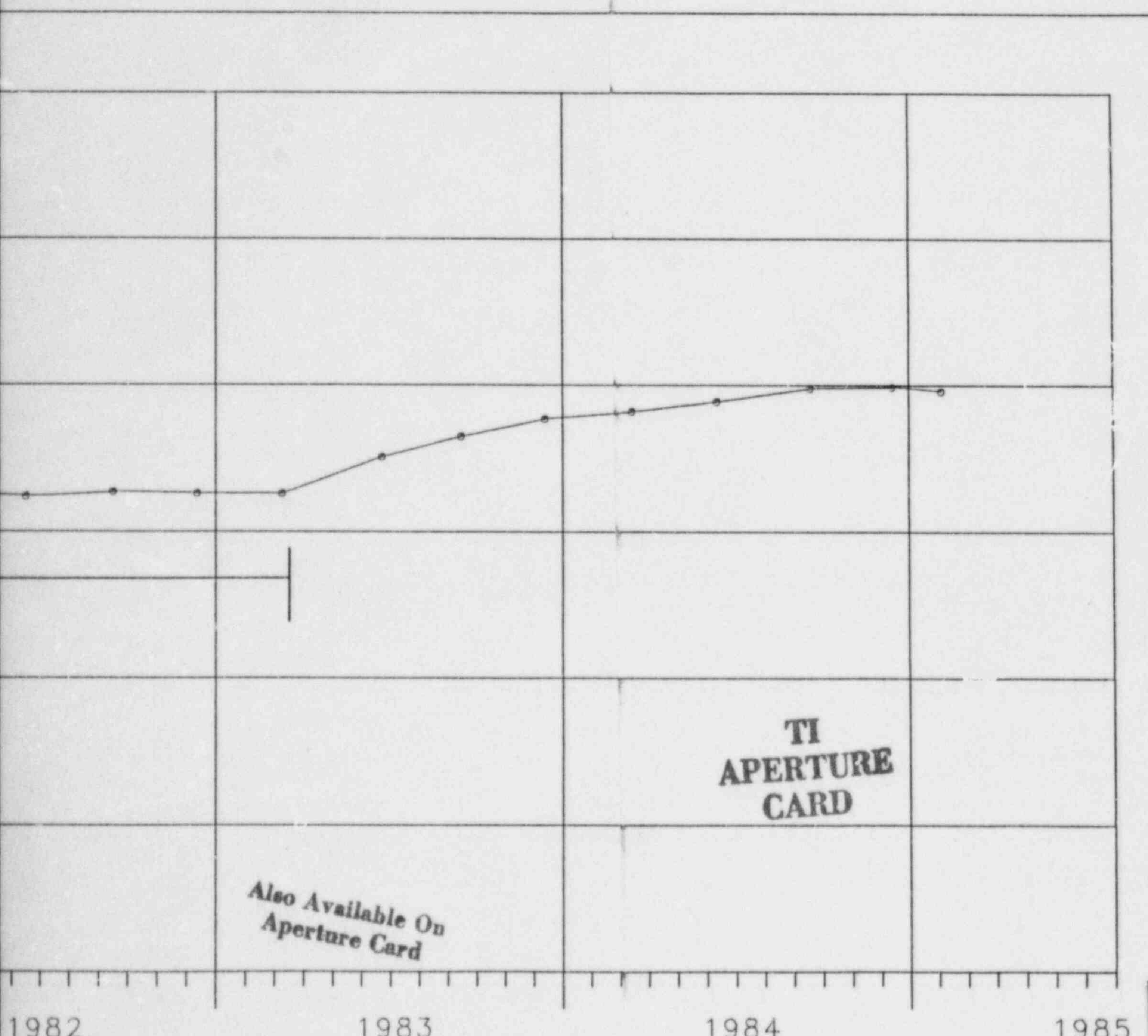
VOGTLE HYDROGRAPHS

HYDROGRAPH OF WELL 802

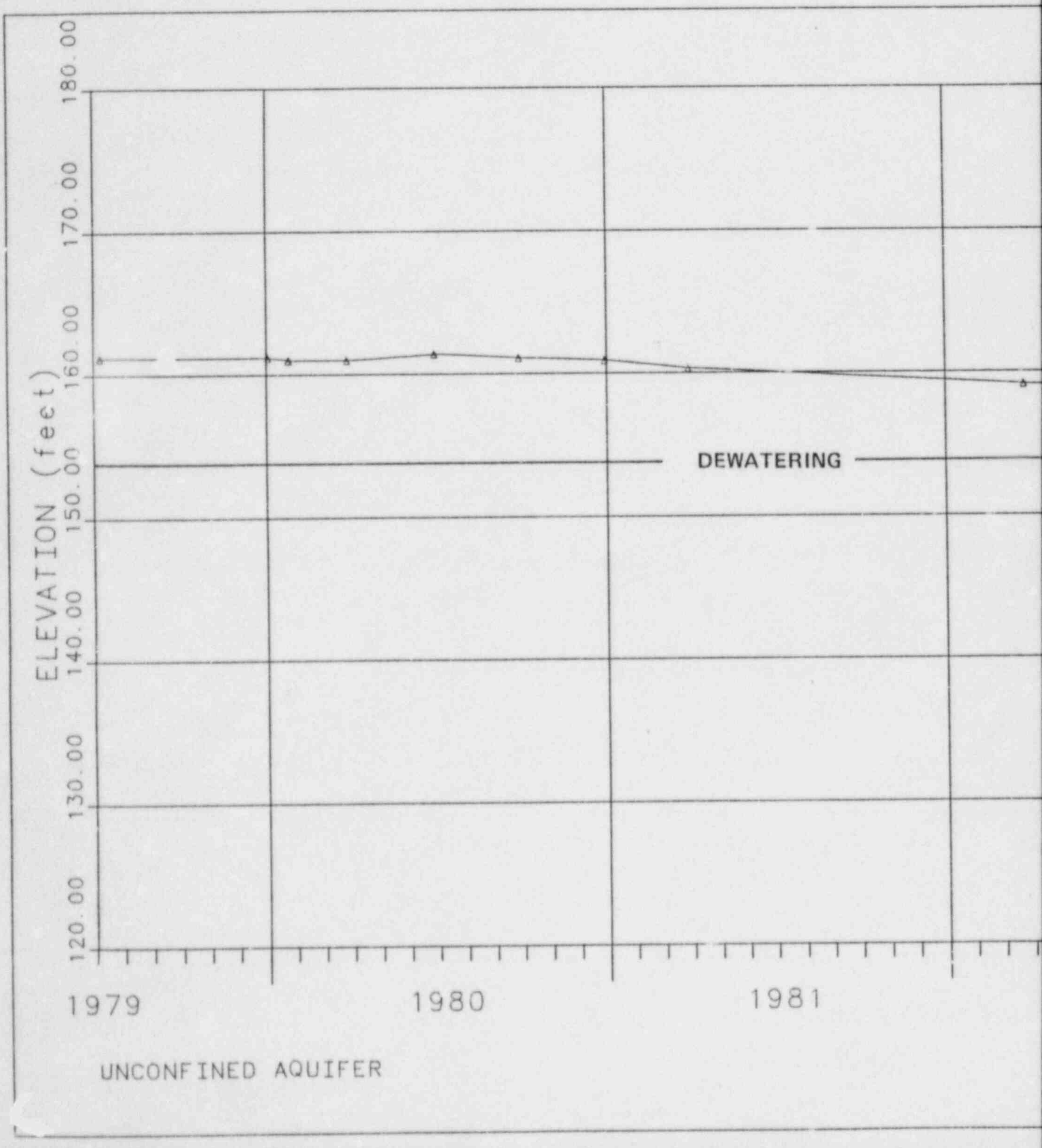
8503200454 -05

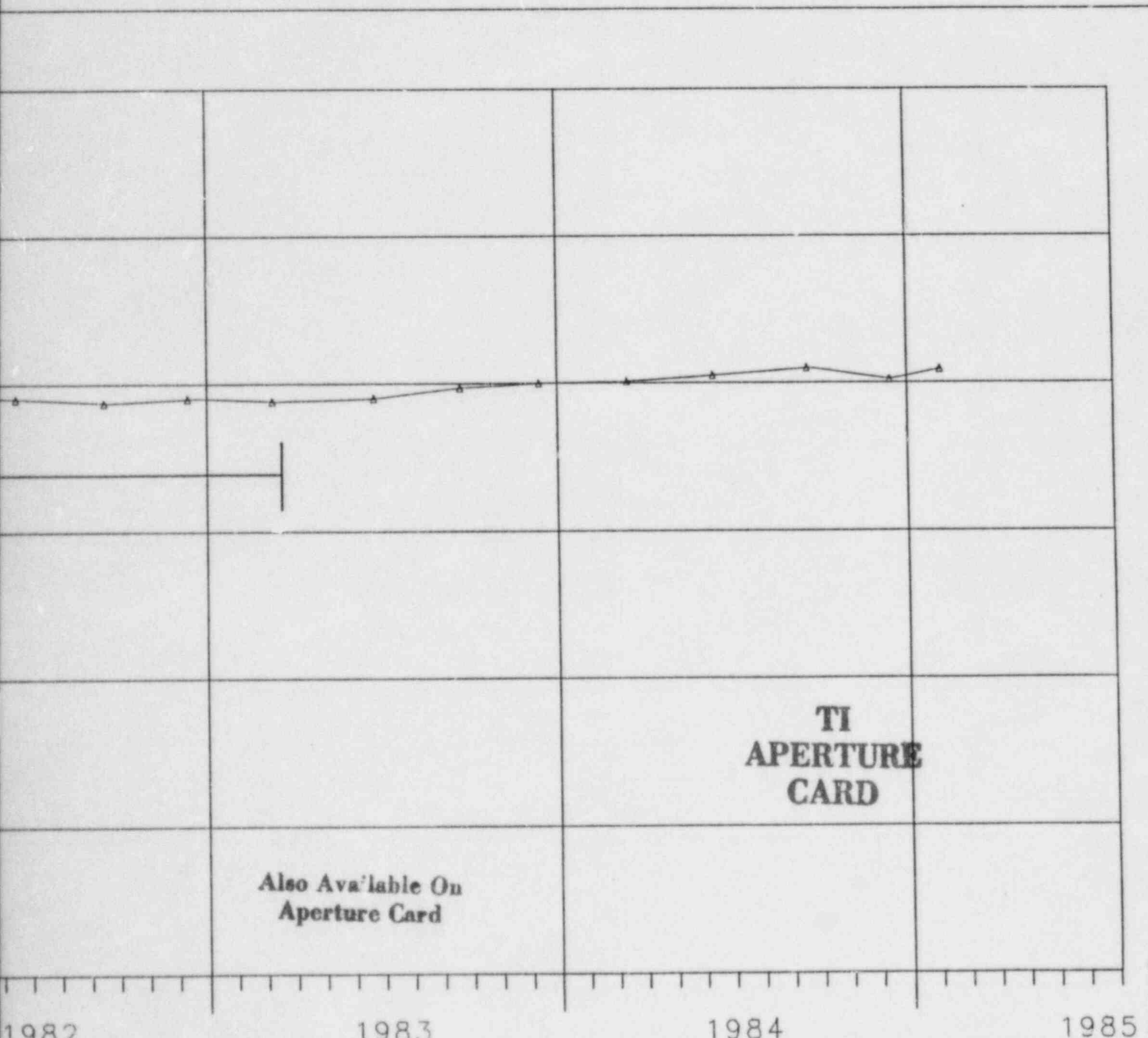


UNCONFINED AQUIFER



VOGTLE HYDROGRAPHS
HYDROGRAPH OF WELL 803A


ELEVATION (feet)
180.00
170.00
160.00
150.00
140.00
130.00
120.00
DEWATERING
1979
1980
1981
UNCONFINED AQUIFER



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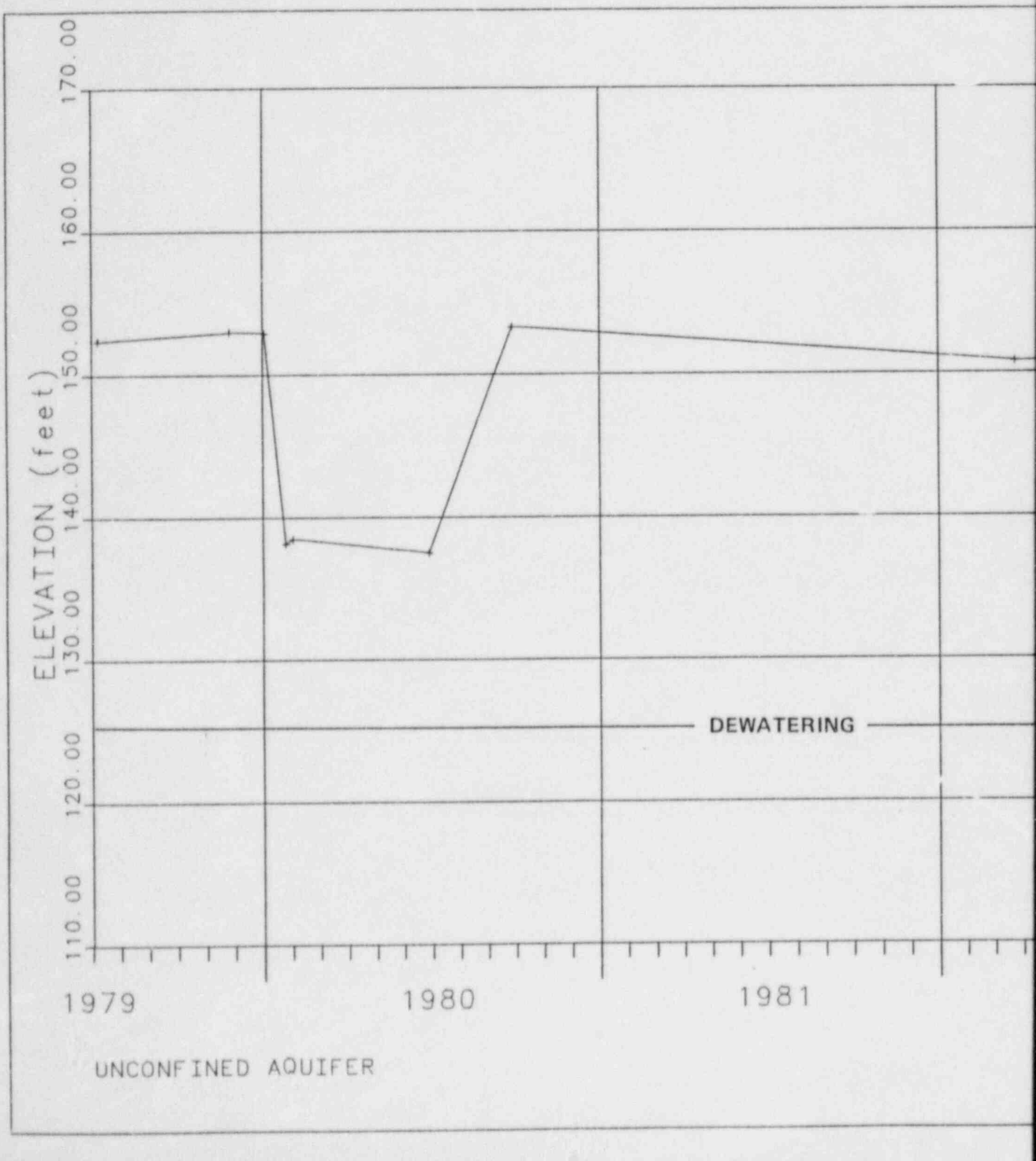
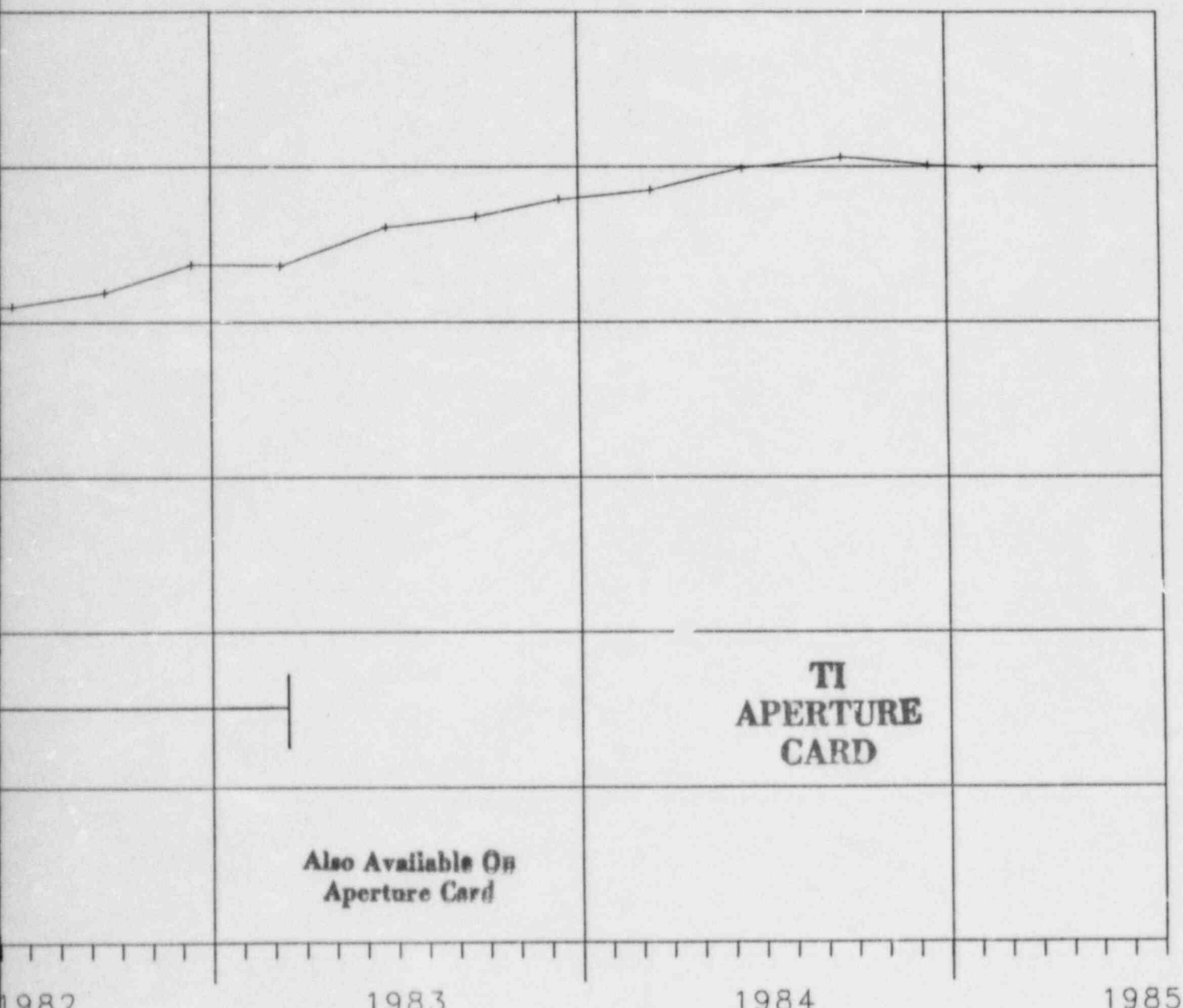
VOGTLE HYDROGRAPHS

HYDROGRAPH OF WELL 804

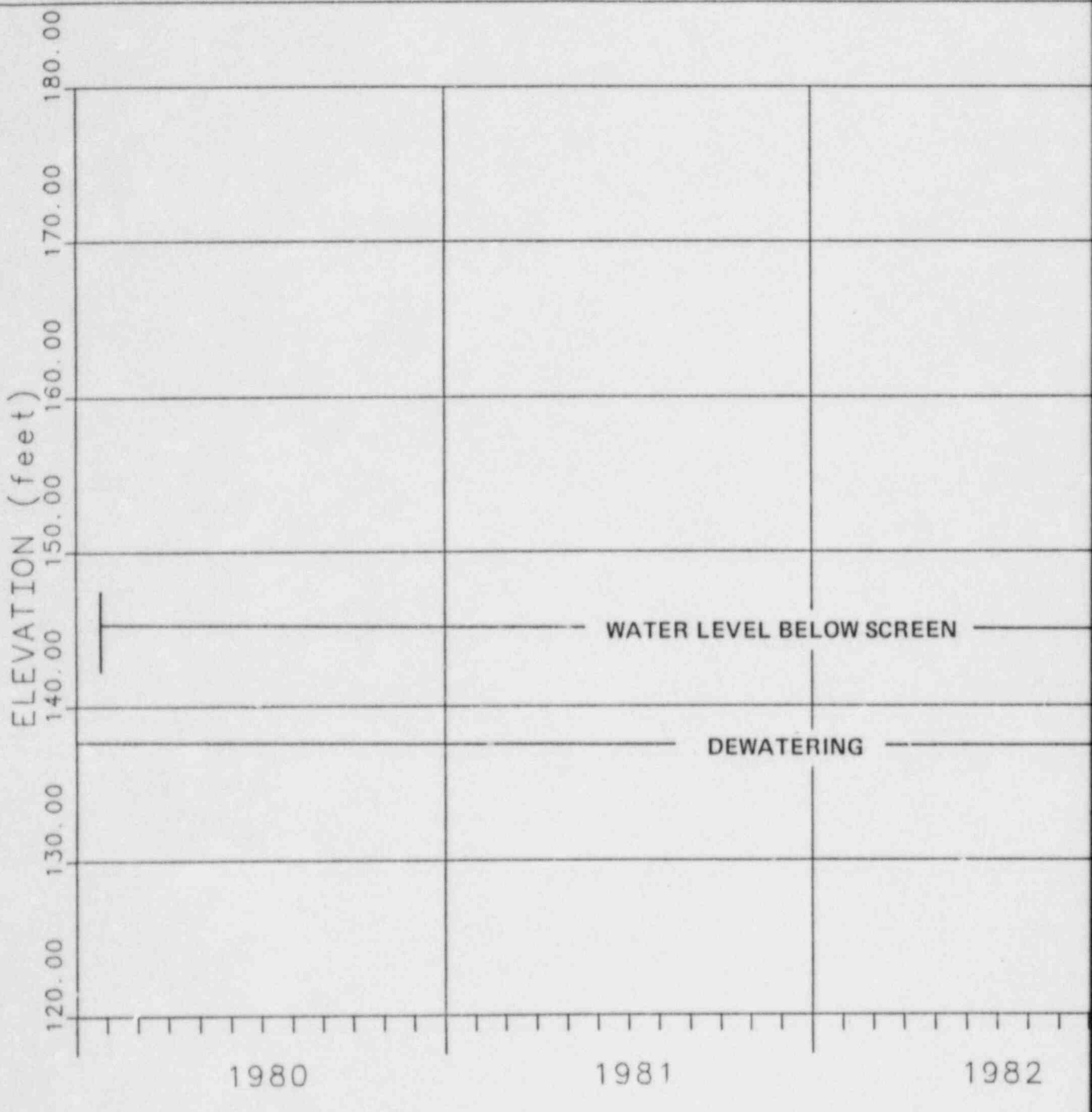

170.00
160.00
150.00
140.00
130.00
120.00
110.00
ELEVATION (feet)
DEWATERING
1979
1980
1981
UNCONFINED AQUIFER



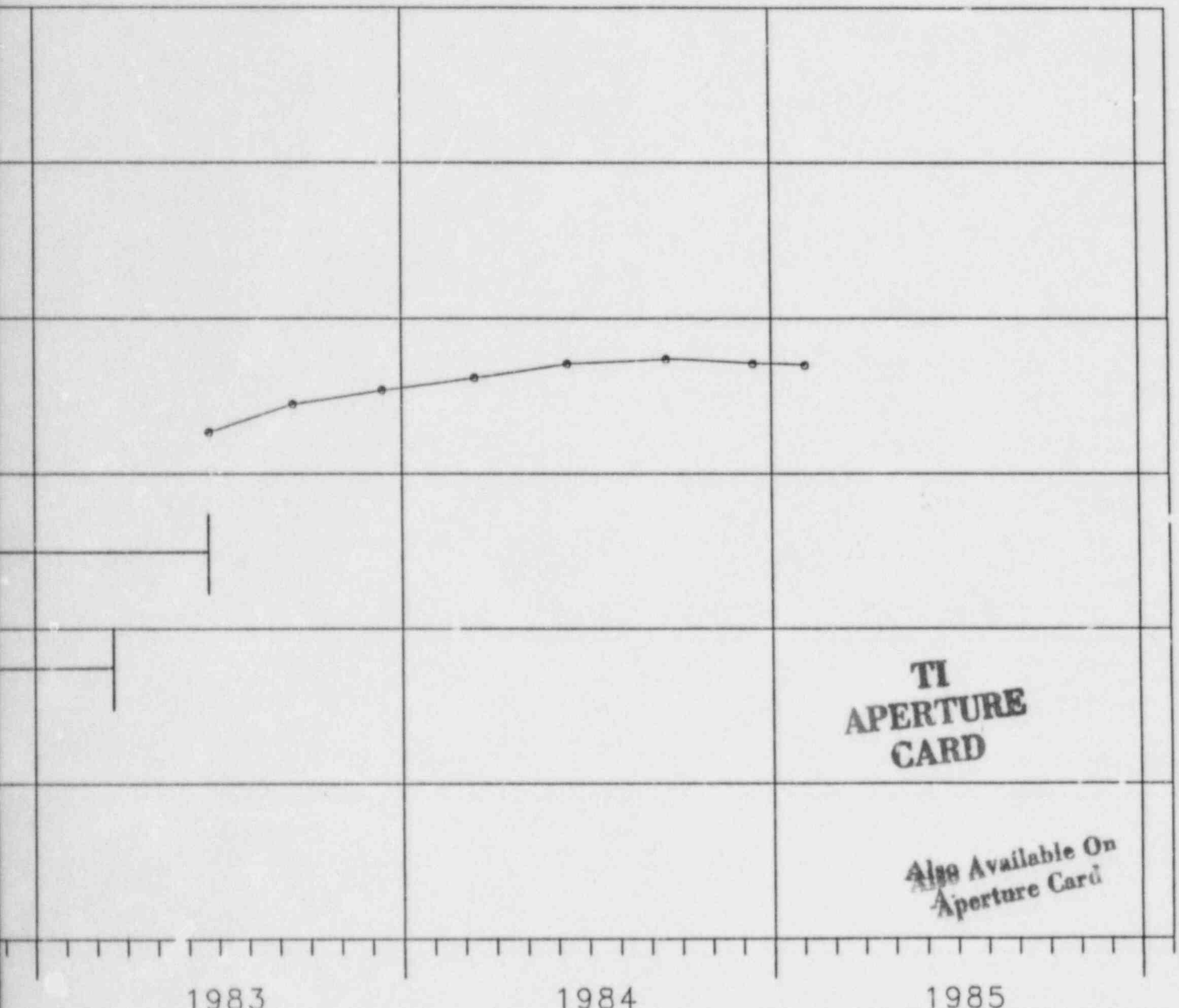
VOGTLE HYDROGRAPHS

HYDROGRAPH OF WELL 805A

8503200454-08



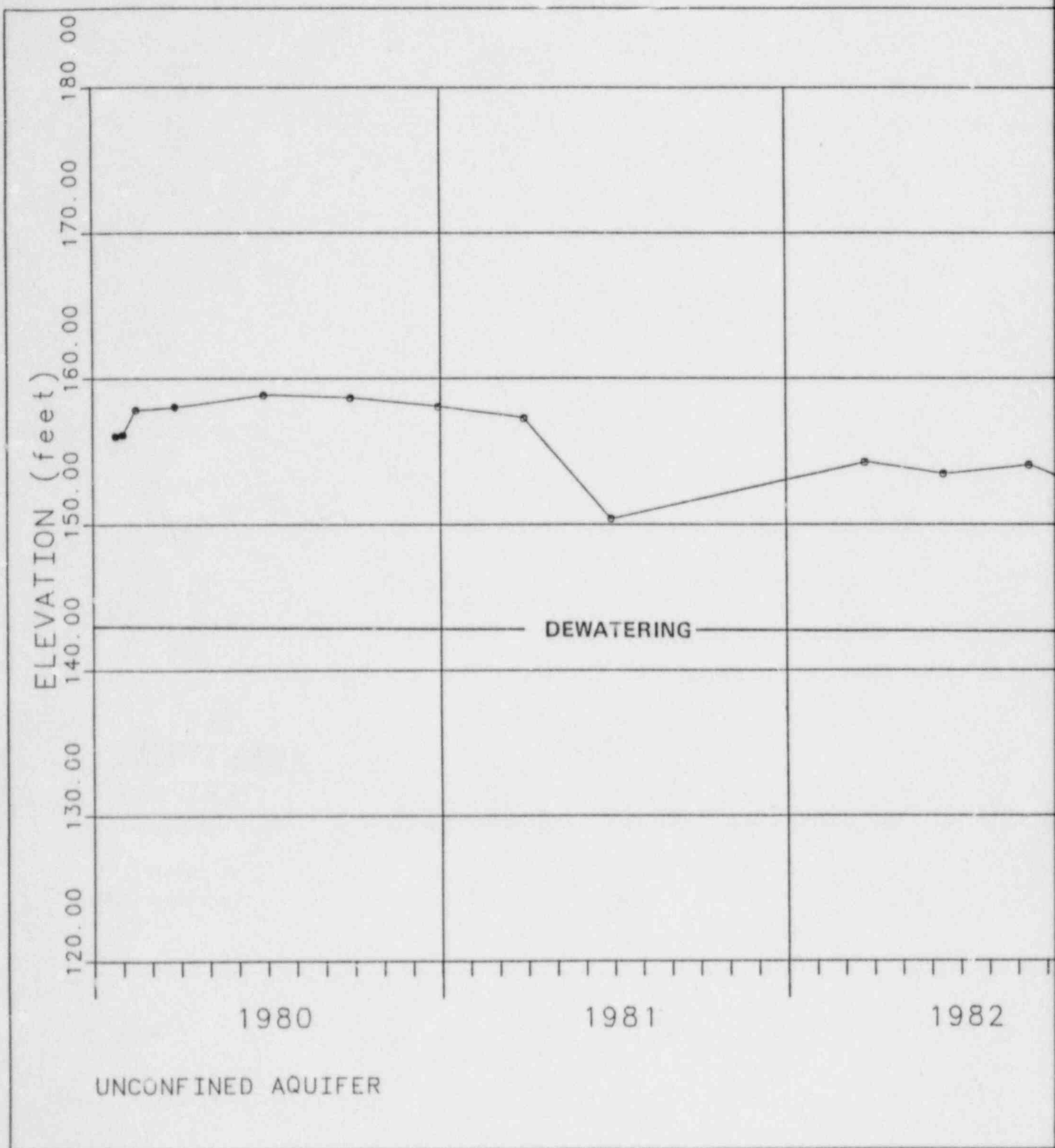
UNCONFINED AQUIFER

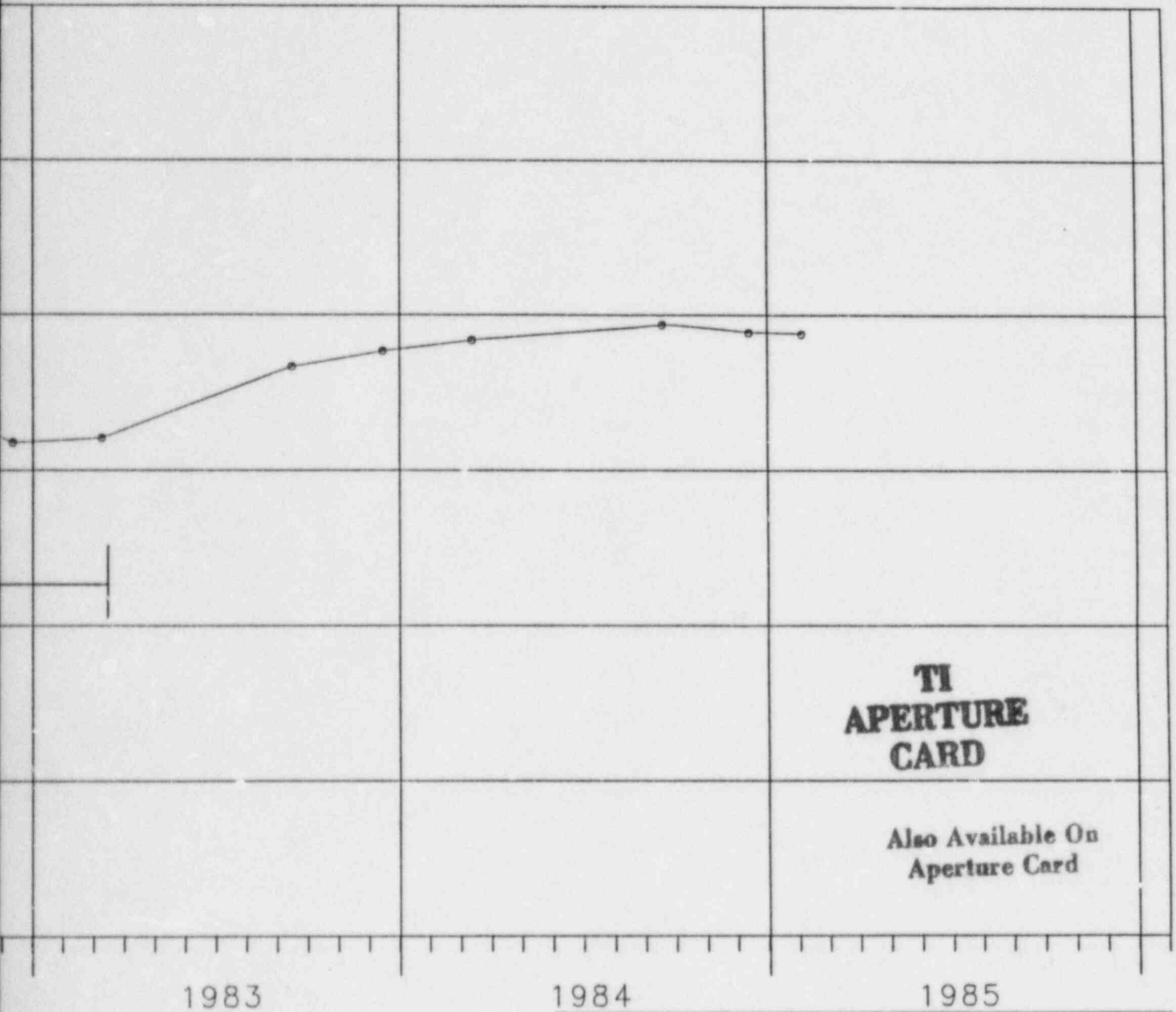


VOGTLE HYDROGRAPHS

HYDROGRAPH OF WELL 806B

8503200454-09


ELEVATION (feet)
180.00
170.00
160.00
150.00
140.00
130.00
120.00
DEWATERING
1980
1981
1982
UNCONFINED AQUIFER



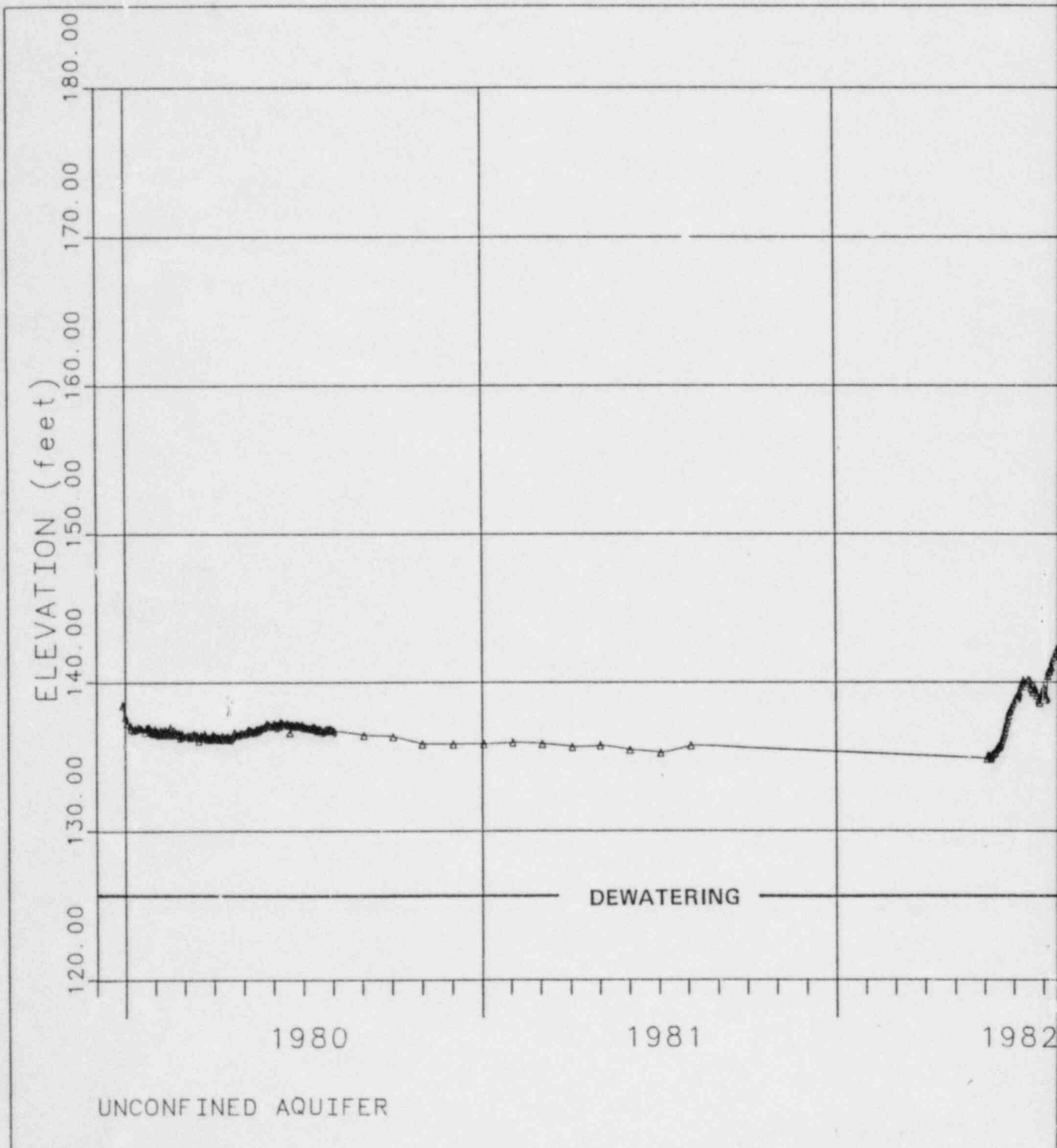
VOGTLE HYDROGRAPHS

HYDROGRAPH OF WELL 807A

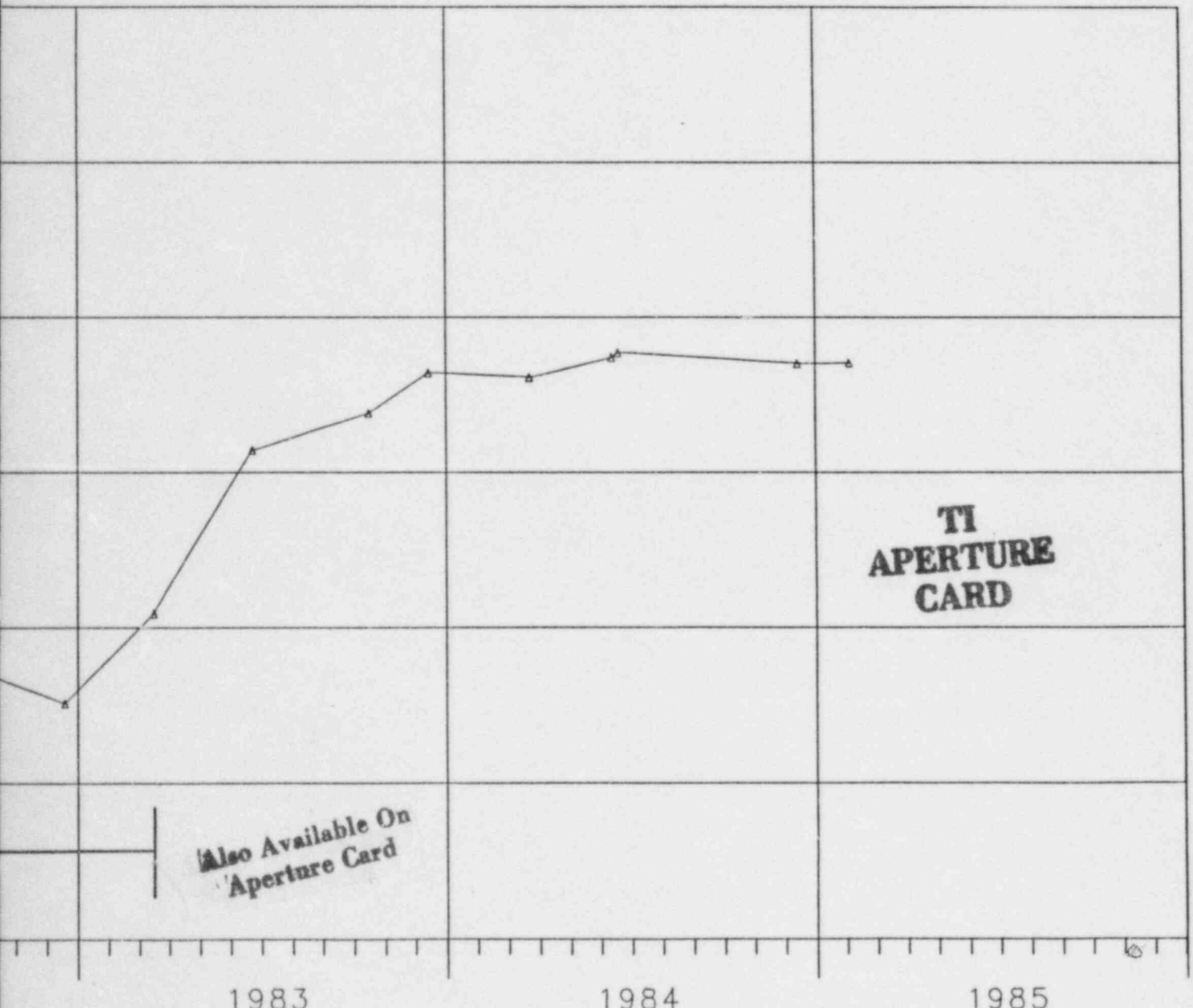
TI APERTURE CARD

Also Available On Aperture Card

8503200454 -10

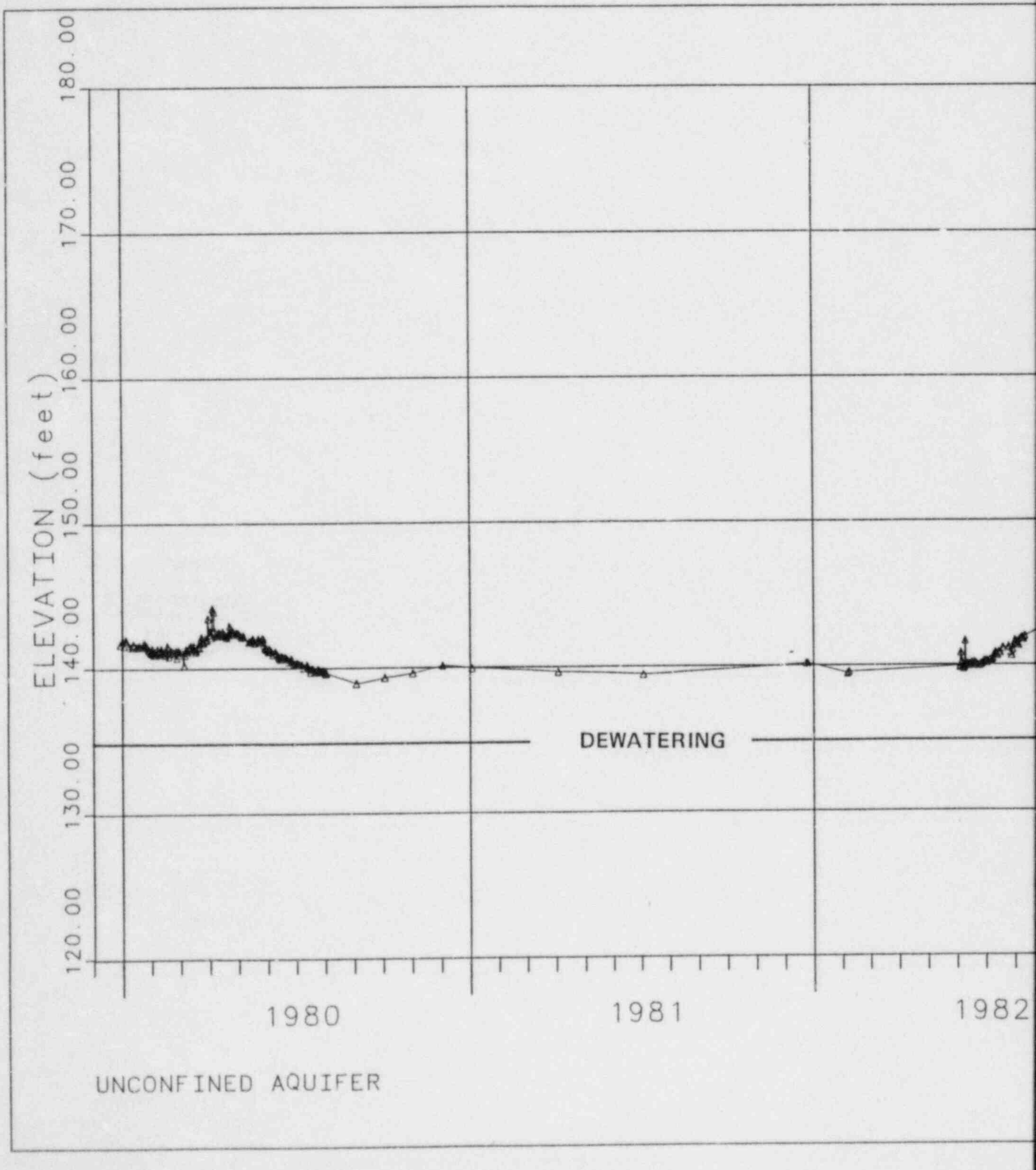


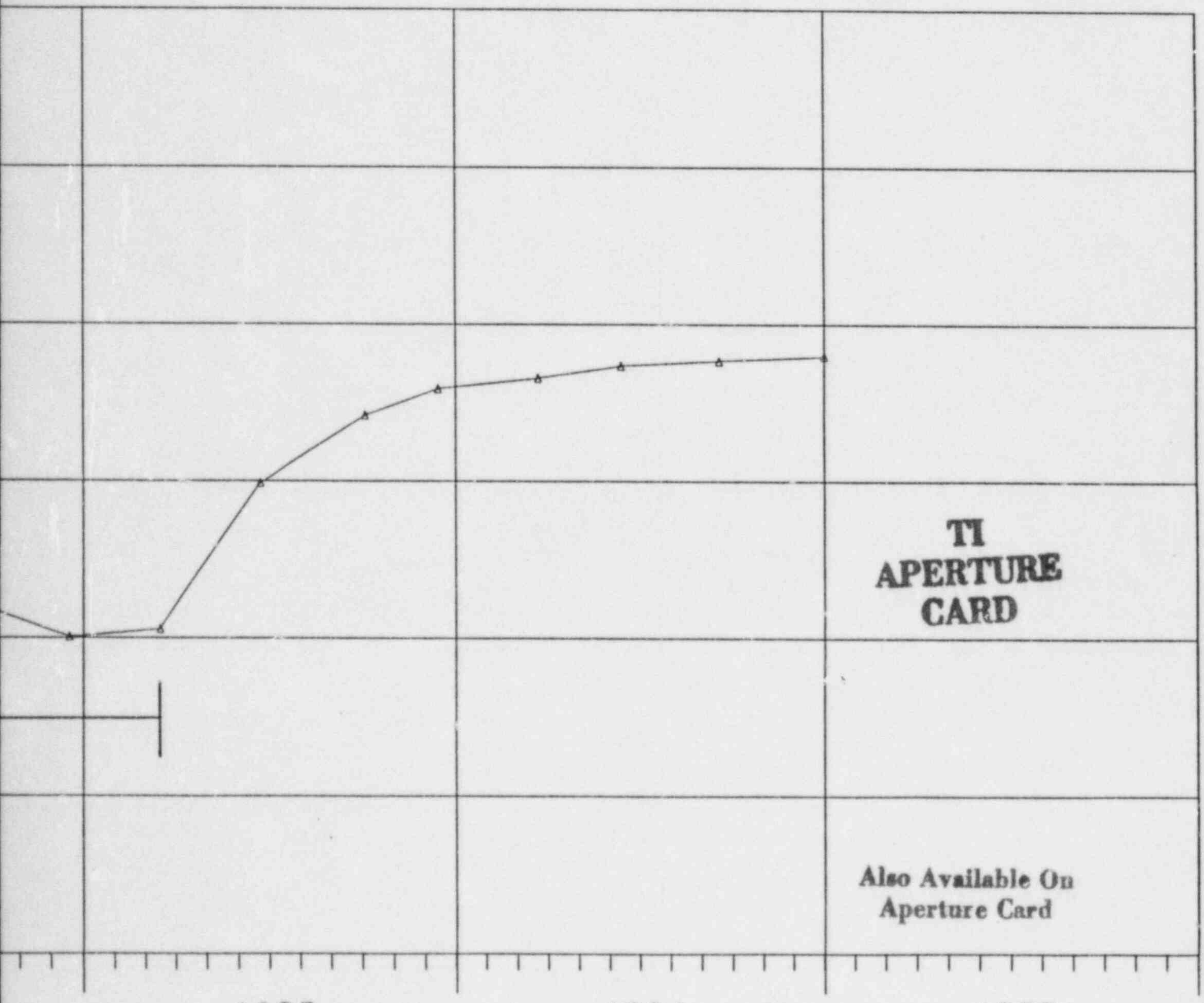
ELEVATION (feet)
180.00
170.00
160.00
150.00
140.00
130.00
120.00
DEWATERING
1980
1981
1982
UNCONFINED AQUIFER



VOGTLE HYDROGRAPHS
HYDROGRAPH OF WELL LT1A

8503200454-11


ELEVATION (feet)
180.00
170.00
160.00
150.00
140.00
130.00
120.00
DEWATERING
1980
1981
1982
UNCONFINED AQUIFER



TI
APERTURE
CARD

Also Available On
Aperture Card

VOGTLE HYDROGRAPHS
HYDROGRAPH OF WELL LT7

8503200454 -12