April 11, 1985 Update of

INTERIM DROUGHT MANAGEMENT REPORT

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South Florida Water Management District

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I. SUMMARY

This report updates the hydrologic information presented in the March 14, 1985 Interim Drought Management Report. Since mid-March there has been some significant rainfall over the District area and this has resulted in some improvement in ground and surface water conditions in most areas of the District. In addition, the mandatory restrictions imposed in Lee and Collier Counties and the voluntary cutbacks requested in nine other counties have contributed to an overall decline in water use. A comparison between total pumpage for 49 utilities showed an 8.3% reduction in total pumpage over the period March 15 to April 3, 1985 compared to the March 1-14, 1985 period. On average, utilities reduced pumpage by 10%, although the five largest utilities reduced pumpage by only 8.6%. Only 8.2% of the utilities surveyed increased pumpage over the same period.

In spite of these improvements, the District remains in a rainfall deficient situation, with an overall dry season rainfall of 40 to 70 percent of normal in most areas. Groundwater levels have risen in 18 of the 36 key indicator monitoring wells compared to February levels, remained stable in 11 wells, but have fallen in seven wells, six of which are located in the Phase I water shortage areas (Lee and Collier Counties). Although there has been no indication of significant salt water intrusion, low groundwater levels in coastal wellfields continue to cause concern. Intensive monitoring programs are continuing at Tequesta, Hallandale, Highland Beach, Marco Island, Naples, and Cape Coral to give early warning of any developing problems.

District staff have worked closely with local government officials, law enforcement agencies, interest groups, and the public in encouraging, and where necessary, enforcing water use reductions. Twenty-five requests for variances from the water shortage restrictions have been received and are being processed.

II. INTRODUCTION

On March 15, 1985 the Governing Board of the South Florida Water Management District issued an order imposing mandatory water use restrictions in Lee and Collier Counties and placed eight other counties under a water shortage warning. This report provides data and a technical analysis of the hydrologic conditions throughout these areas, as well as other parts of the District. Included also is information on the administration of the water shortage and the District's efforts to coordinate with government agencies and water users in implementing the water shortage plan.

III. WEATHER/RAINFALL SUMMARY

In the past few weeks, the atmospheric patterns affecting the South Florida Water Management District's area of responsibility have shown a fairly significant change. Blocking high pressure in the middle and upper atmospere, which had dominated through most of the winter, finally broke down toward the end of March allowing moisture-bearing weather systems to penetrate the length of the state. This resulted in two significant rain events in March for the District. Total March rainfall, which was comprised mostly of rain from these two events, is presented in Figure 1. Percent of normal rainfall is presented in Figure 2, which shows a significant portion of the District was in the dry category, including Collier County, the urban coastal area from West Palm Beach to Miami, and the Everglades Agricultural Area.

The future of our rainfall situation is dependent upon whether the afore-mentioned shift is going to persist long enough and with enough magnitude to produce frequent heavy rains to compensate for the long dry spell which lasted most of the fall and winter. At this time there is no reason to believe that this shift will signal the beginning of an exceptionally wet period - it has simply brought us back to more realistic conditions for this time of year. That is, we get alternating periods of wet and dry weather, rather than one or the other for long periods.

The result of this is that while this pattern is more favorable for periodic rains for the District, it is not an extremely wet pattern and therefore should not be counted upon to instantly reverse the situation caused by several months of very dry weather. It will, of course, certainly help things from getting rapidly worse and if it does persist long enough, it will eventually get us back to where we want to be.

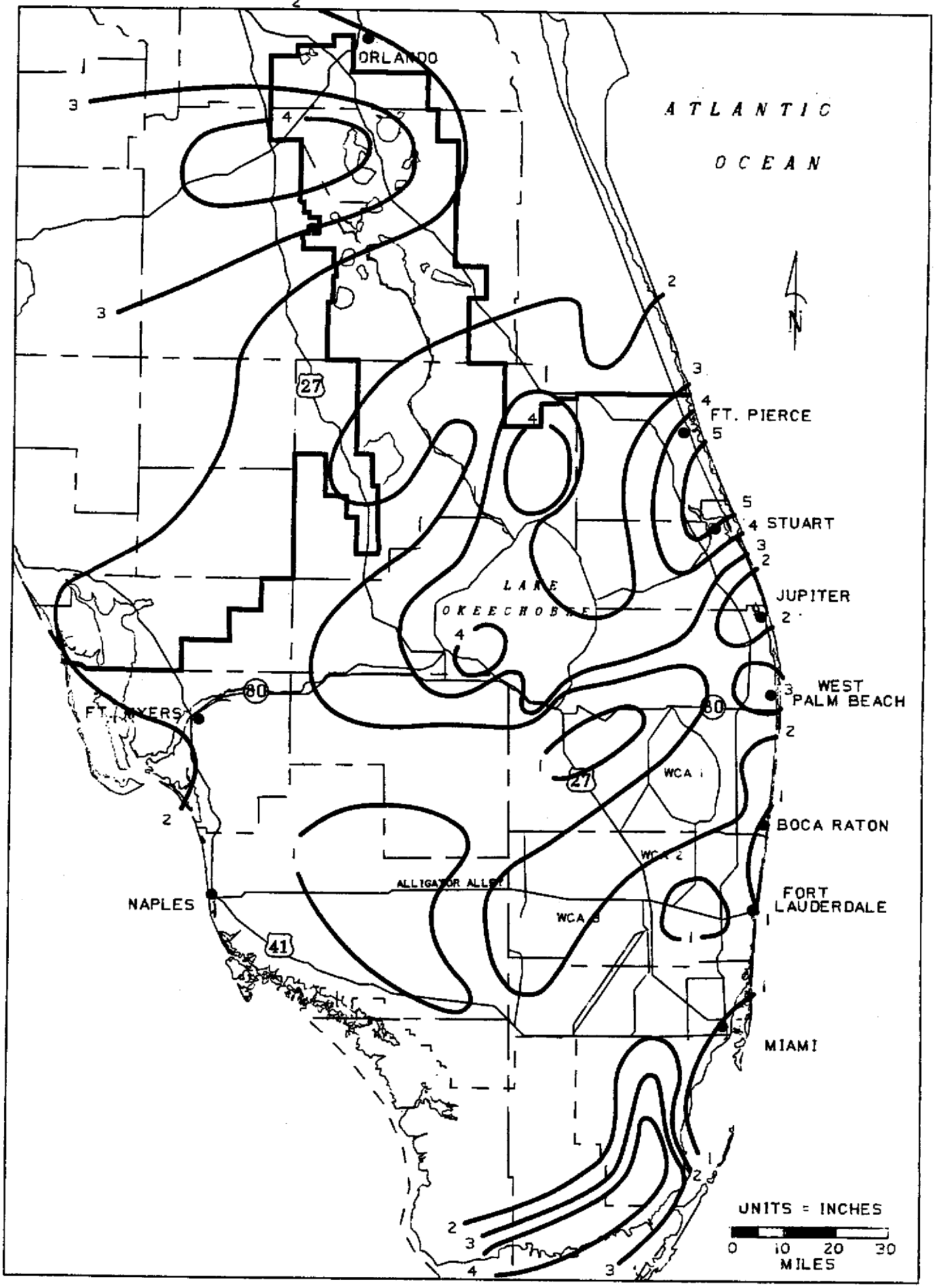


Figure 1. RAINFALL - MARCH, 1985

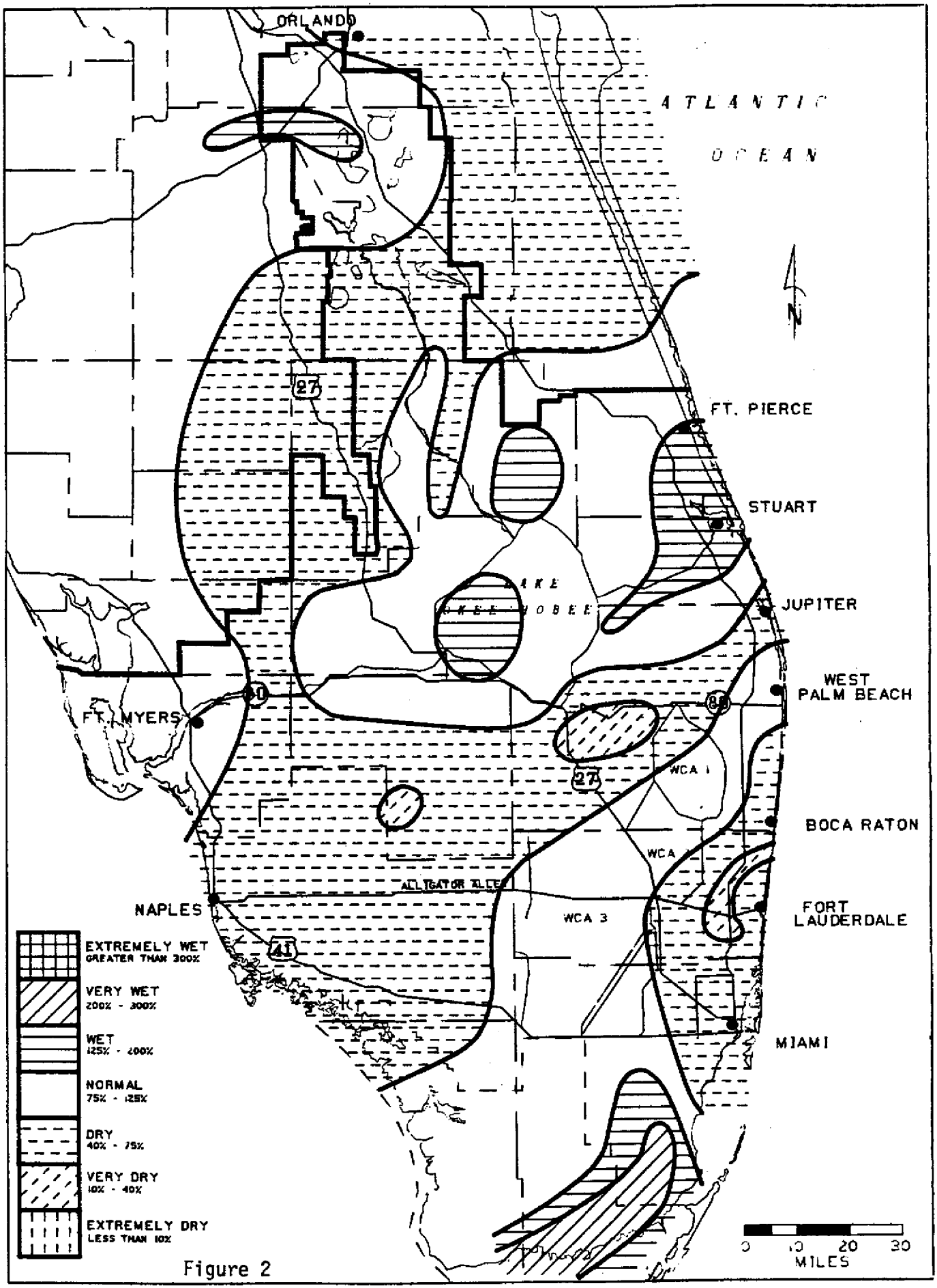


Figure 2

RAINFALL - PERCENT OF NORMAL - MARCH 1985

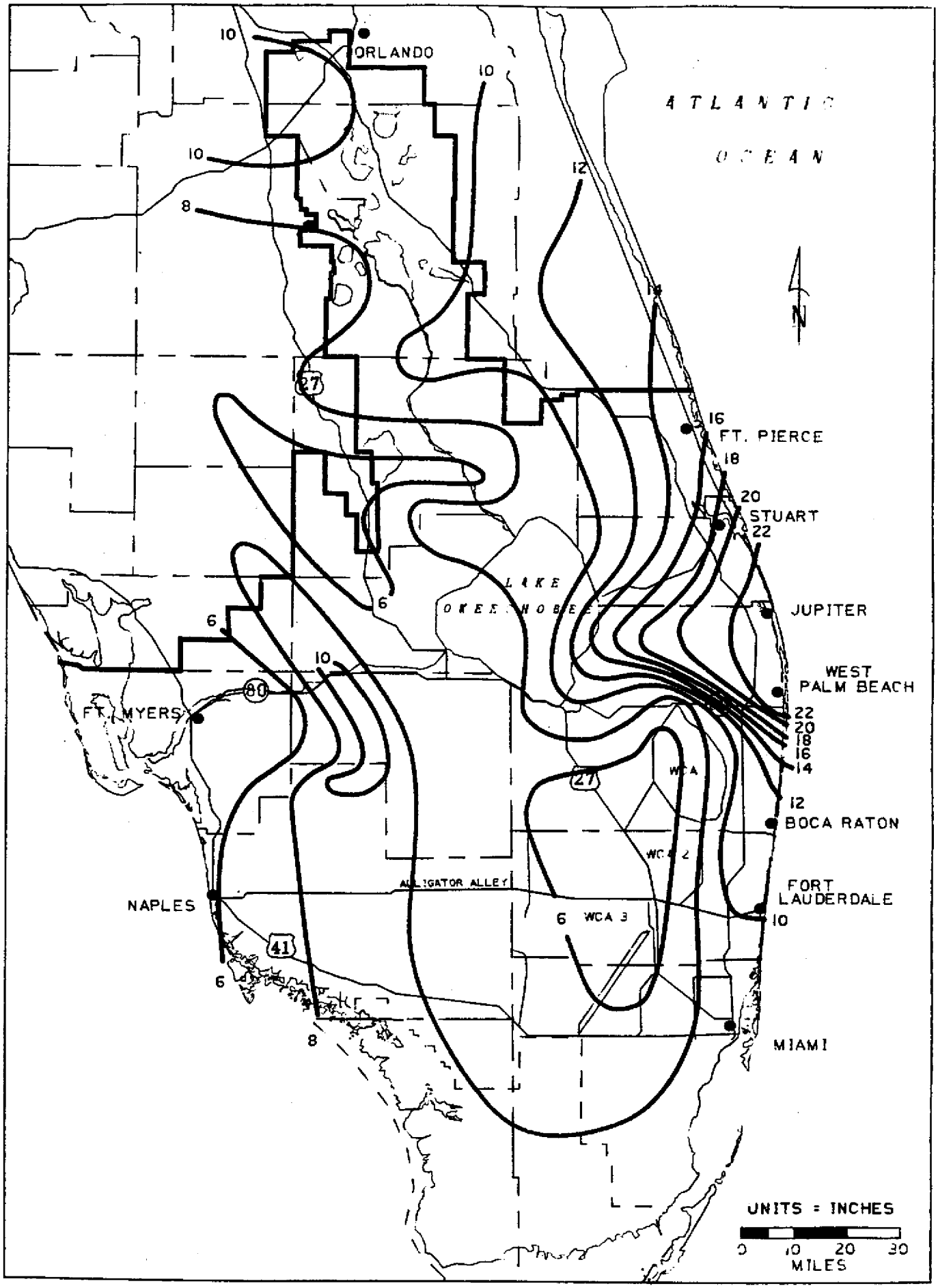


Figure 3. RAINFALL - OCT.1984-MAR.1985

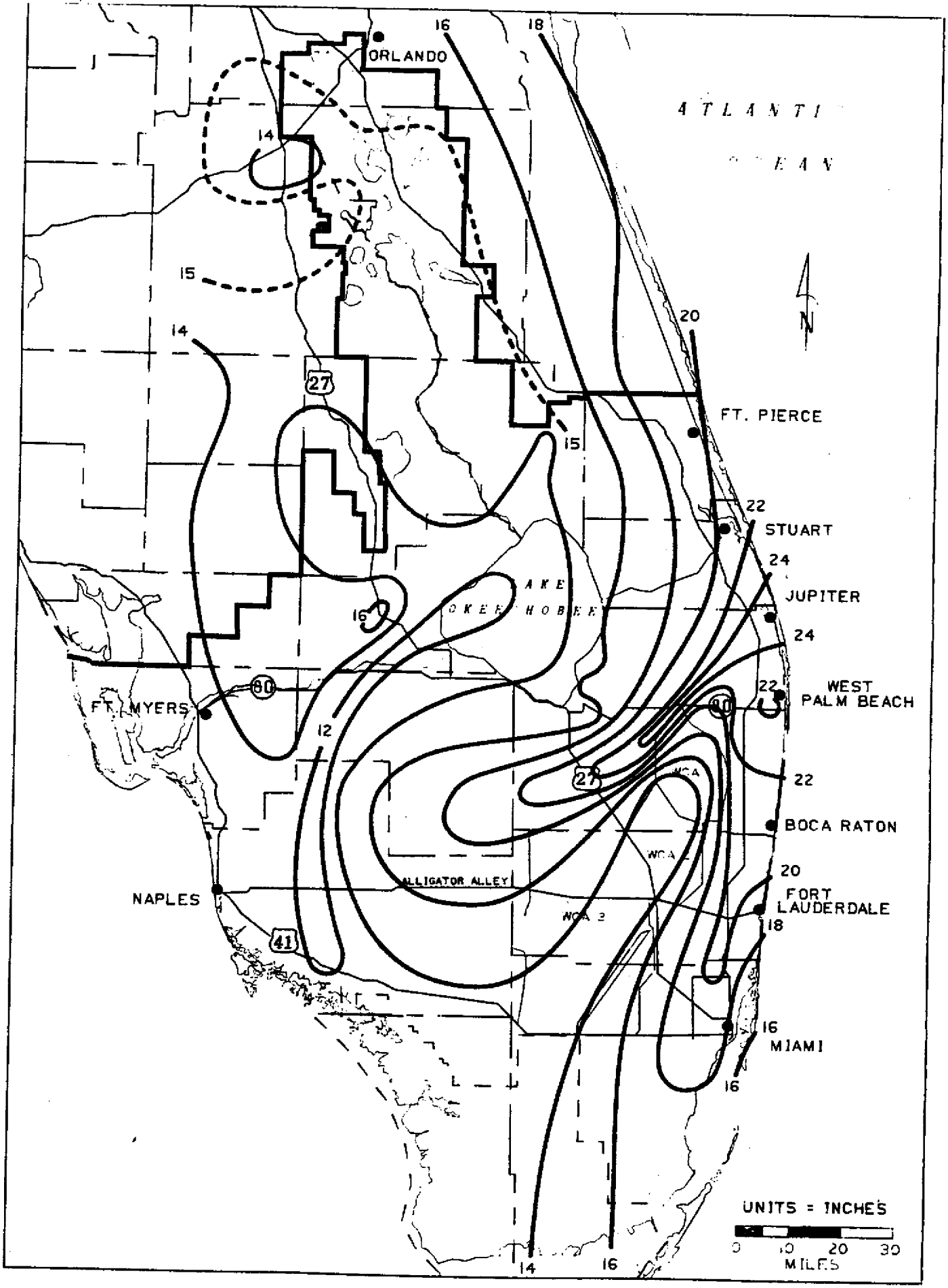


Figure 4. RAINFALL - NORMAL - OCT.-MAR.

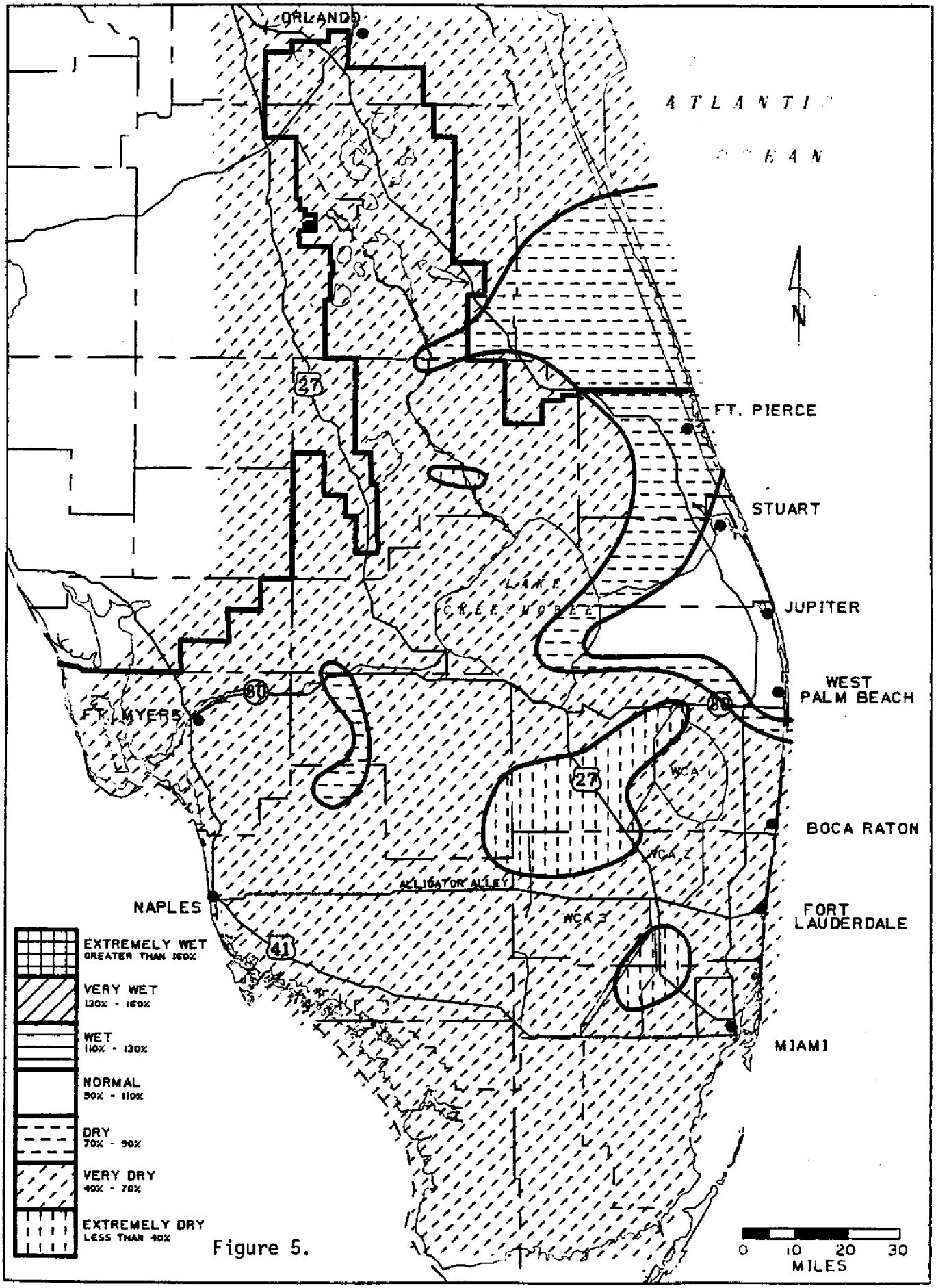


Figure 5.

RAINFALL - PERCENT OF NORMAL - OCT.84-MAR.85

IV. SURFACE WATER CONDITIONS

A. Upper Kissimmee Basin:

The flood regulation schedules of all lakes in the Upper Kissimmee Basin rise sharply early in the dry season, remain at their annual maximum stage during the winter, and drop to their annual minimums over June lst, the beginning of the hurricane season. In contrast, the actual lake stages of all lakes in that area began the dry season on the regulation schedule, dropped very slowly through the season, and this spring, are all slightly below their declining schedules. Some lakes will probably meet the schedule before June 1, and regulatory releases will begin - even with a continuation of the drought. These releases may or may not be passed through Lake Kissimmee, the lowest and largest of the lakes in the upper basin.

B. Lake Istokpoga

The Lake Istokpoga flood regulation schedule is very similar to those of the upper basin lakes, but the actual lake stage fell below the schedule in late August 1984. Since that time this lake has declined steadily and more steeply than the upper basin lakes. Consequently, the April 1 lake stage is close to the annual (June 1) minimum regulation stage (see Figure 6). In all likelihood, this lake will fall considerably lower, even with normal rainfall during the remainder of the dry season.

C. St. Lucie County

Water levels in St. Lucie County continued their decline in the first half of April, but remained well above the established permissible minimums. The abundant rainfall in the area in the last half of the month brought canal levels to a level where some regulatory releases had to be made to tidewater. The canal levels remained in the optimum range for the rest of the month and well into April.

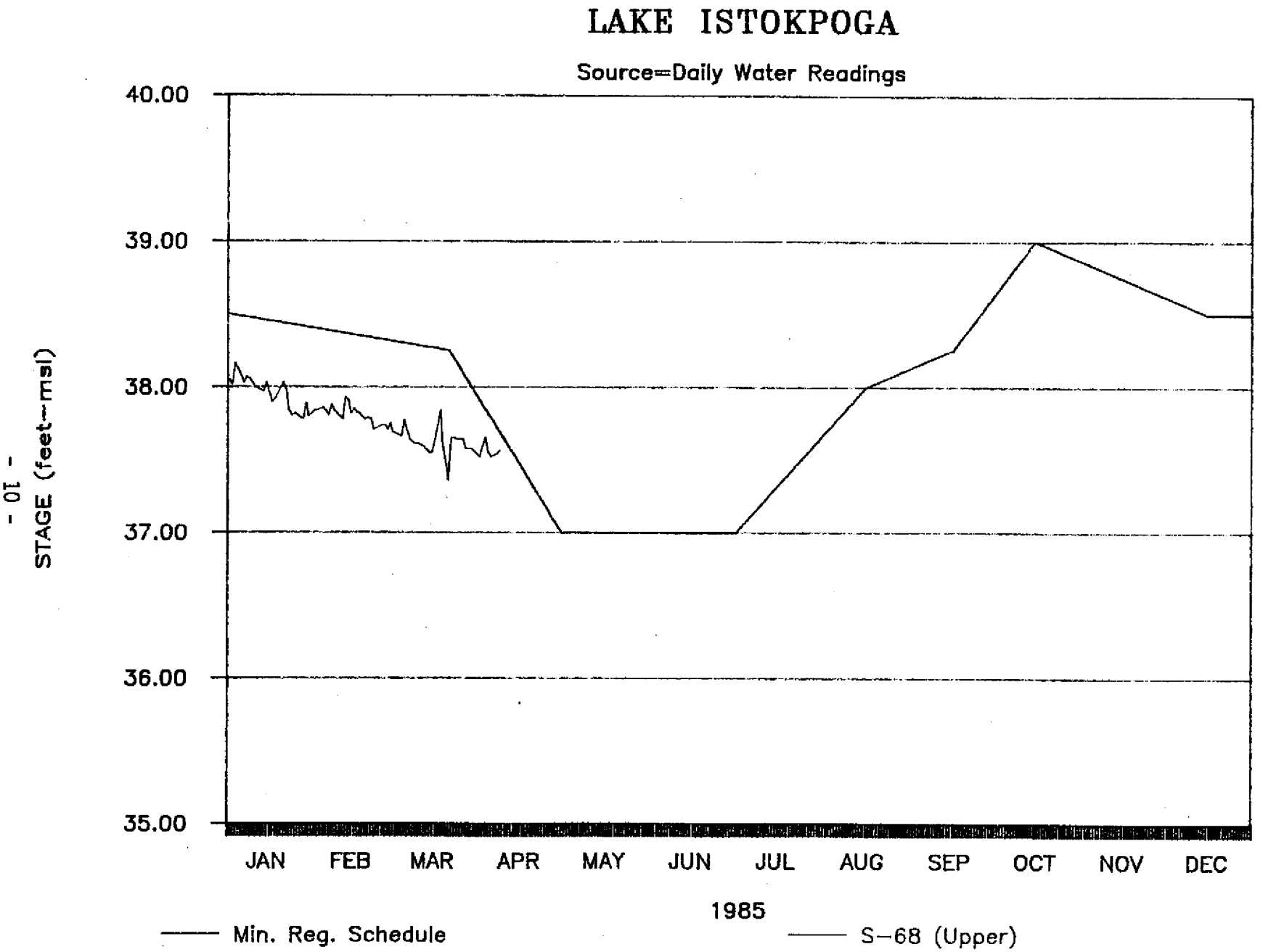

LAKE ISTOKPOGA
Source=Daily Water Readings
STAGE (feet-msl)
40.00
39.00
38.00
37.00
36.00
35.00
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
OCT
NOV
DEC
1985
Min. Reg. Schedule
S-68 (Upper)

Figure 6.

D. Lake Okeechobee and the Water Conservation Areas

The principal water storage components of the Central and Southern Florida Flood Control Project (CSFFCD) are Lake Okeechobee and the three Water Conservation Areas.

Since the beginning of the dry season Lake Okeechobee has dropped from a level of 16.29 Ft. NGVD on October 1, 1984 to a level of 13.38 Ft. NGVD on April 1, 1985 for a total decline of 2.91 feet in six months. However, from Figure 7 it can be seen that the two rainfall events in March increased the lake stage slightly and altered the steep stage decline pattern. This is clearly reflected in Figures 8 and 9 which show Monthly Total System Storage Changes and Total System Storage as of April 1, 1985. The storage loss for March was approximately 275,000 acre-feet, which was substantially less than the losses for January and February.

Releases have been made almost continuously since the first of the year from Lake Okeechobee to meet water supply requirements along the southeast coast, in the St. Lucie Canal basin, the Everglades Agricultural Area (EAA), and in the Caloosahatchee River basin. The lake has been the sole source of exportable water because any water in the Water Conservation Areas has been trapped in the marsh since early in the year. The only time these releases were suspended was during the brief rainy periods. During March net deliveries were as follows:

Total from Lake Okeechobee	185,900 AF
To:	
Caloosahatchee/S-4 Basin	21,000
Everglades Agricultural Area	49,500
Southeast Coast	83,000
Water Conservation Areas	32,400
St. Lucie Basin	unknown

Of the deliveries to the southeast coast, 40,900 acre-feet were to south Dade County.

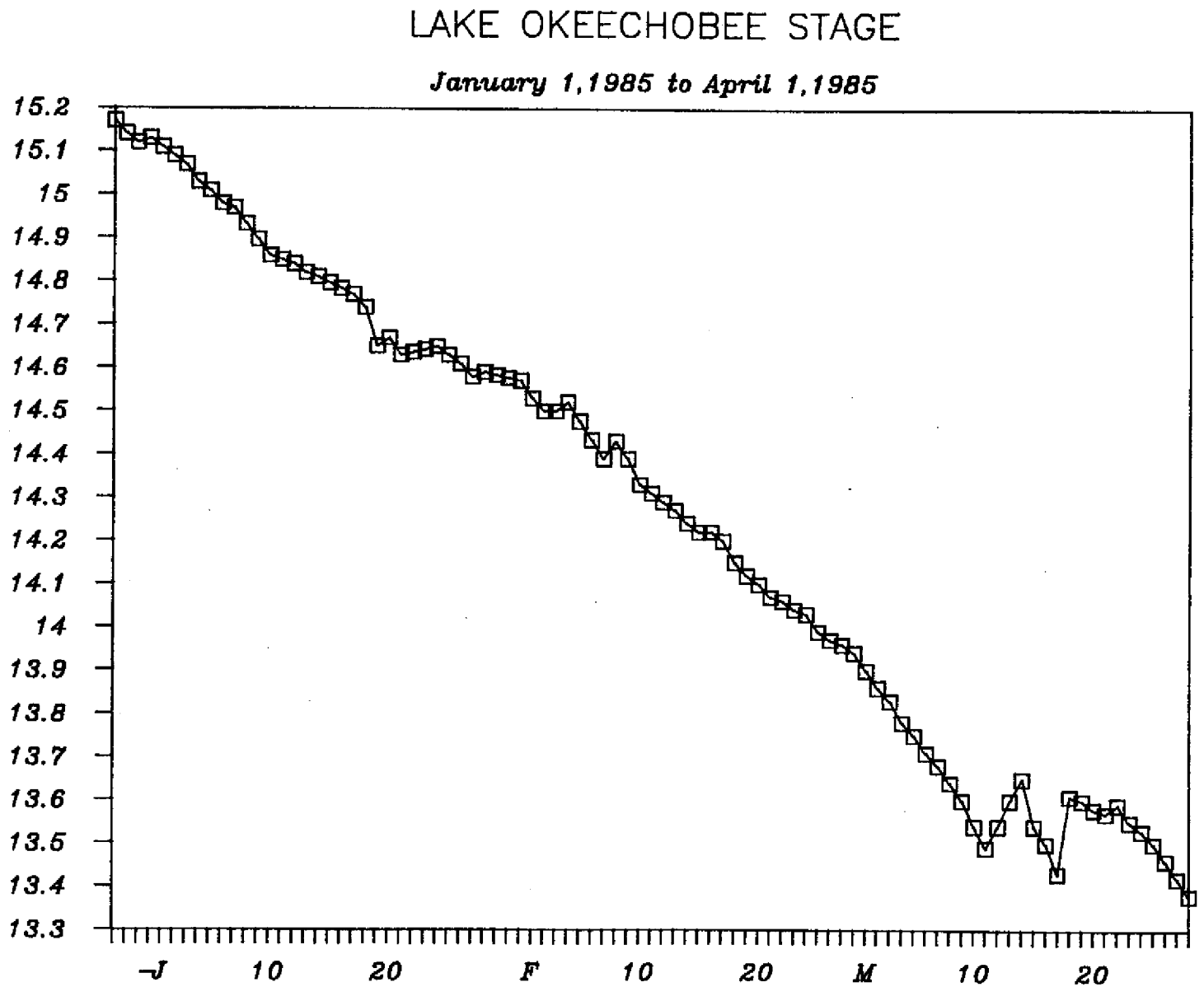

LAKE OKEECHOBEE STAGE
January 1,1985 to April 1,1985
STAGE (FT.-NGVD)
15.2
15.1
15
14.9
14.8
14.7
14.6
14.5
14.4
14.3
14.2
14.1
14
13.9
13.8
13.7
13.6
13.5
13.4
13.3
J
10
20
F
10
20
M
10
20

Figure 7.

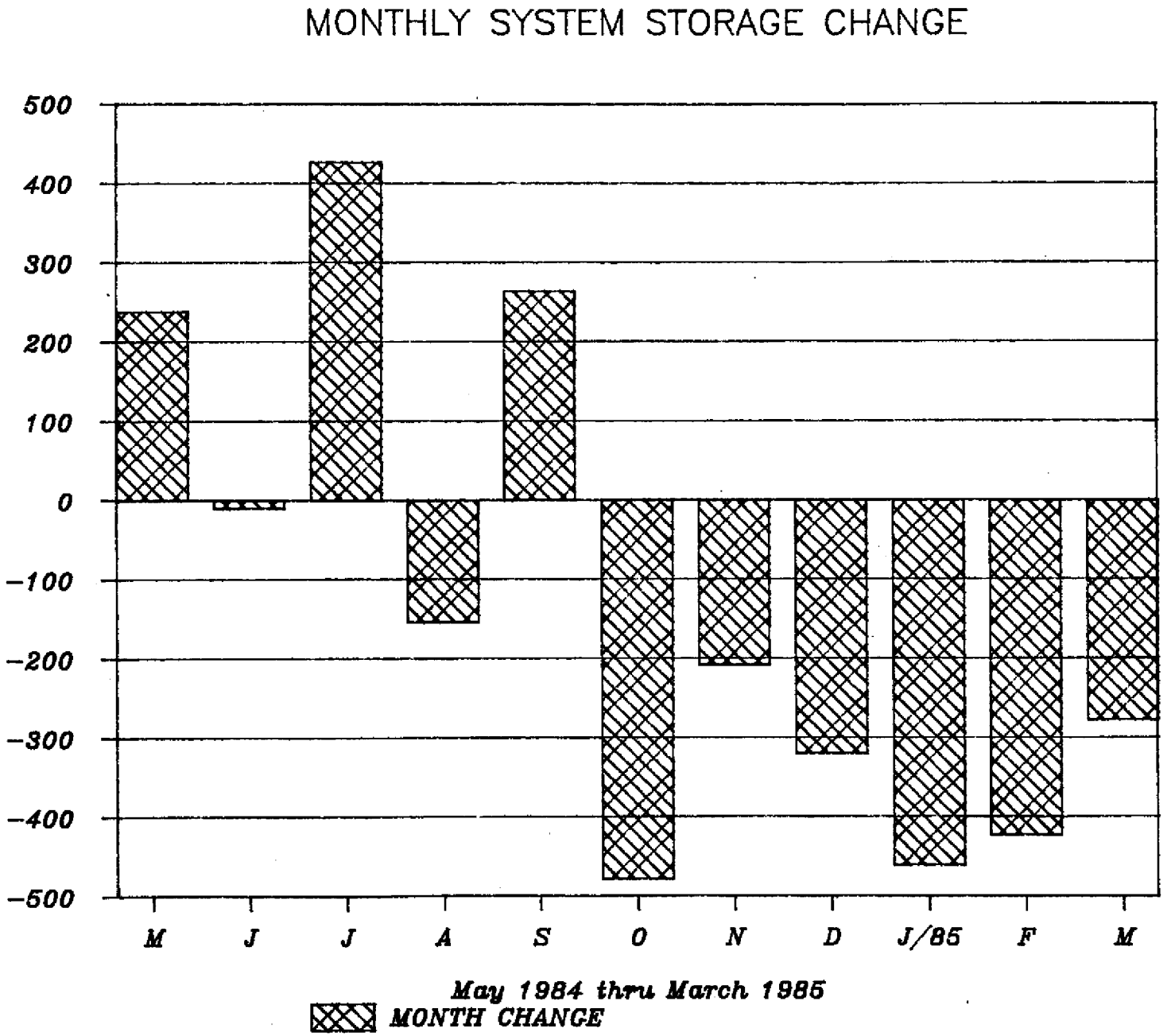

MONTHLY SYSTEM STORAGE CHANGE
ACRE-FEET
(Thousands)
500
400
300
200
100
0
-100
-200
-300
-400
-500
M
J
J
A
S
O
N
D
J/85
F
M
May 1984 thru March 1985
MONTH CHANGE

Figure 8.

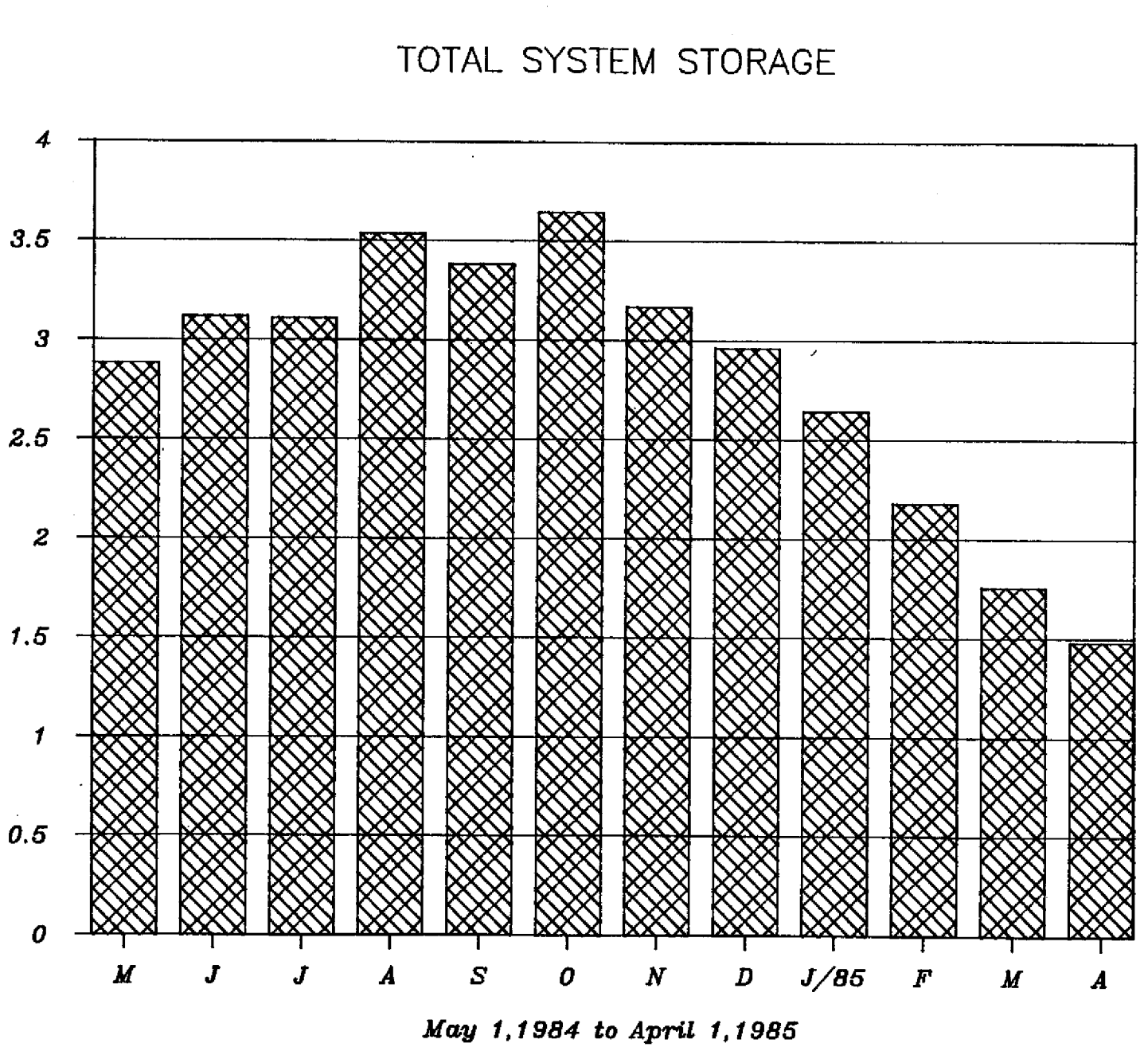

TOTAL SYSTEM STORAGE
ACRE-FEET
(Millions)
4
3.5
3
2.5
2
1.5
1
0.5
0
M
J
J
A
S
O
N
D
J/85
F
M
A
May 1,1984 to April 1,1985

Figure 9.

E. Caloosahatchee River

In January 1985 the salinity level in the Caloosahatchee River at the intake to the Lee County municipal water plant was approaching the maximum permissible level for potable water. Consequently, a large amount of water was releaseed from Lake Okeechobee to flush the salt from the lower portion of the river. About 14,600 acre-feet were required for this purpose. At the same time a salt mitigation device was installed at the Franklin Lock (S-79). This device consisted of a perforated pipe across the bottom of the channel. Air was released through the pipe, creating a bubble curtain through which boats passed when they used the lock at that structure. In the 74 days since the flushing action, the salinity level has risen gradually from 72 mg/l to 99 mg/l (on April 8, 1985). This performance compares very favorably with a similar action in 1982-83 before the bubble curtain was installed. In the earlier case, the salinity level rose from 72 to 177 in a period of 27 days. The 177 level was reached at a time when Lake Okeechobee reached regulation level and large regulatory releases removed all trapped salt from the river.

V. REGIONAL GROUNDWATER LEVELS

A review of the water levels in the 36-well Key Indicator Groundwater Monitoring Network from the end of February 1985 through the end of March 1985 reveals the following:

1. Eighteen of the 36 wells showed a higher water level at the end of March than at the end of February. This is significant since the "normal" trend would be the opposite. This is a good indicator that the combination of rainfall and reduced withdrawals in the last half of the month had beneficial impacts on the regional groundwater conditions.

2. 11 of the 36 wells showed essentially the same water level at the end of March as at the end of February. Hence a stabilization, or at least no further deterioration, of the resource during the month of March.

3. Seven of the 36 wells had a lower water level at the end of March than at the end of February. Six of these seven were in Collier and Lee Counties which are in Phase I Water Shortage status. This indicates that the rain and reduced pumpages in the last half of the month were not sufficient to stabilize the regional groundwater levels.

The graphs in Appendix II show the lowest water levels experienced during the month for each of the 36 wells in the network. The data used included end of month readings for March 1985. It is important to note that the low value shown for March 1985 in most of the wells occurred around March 14, 1985 and that the end of month conditions improved significantly as described above.

Table 1.

LIST OF MONITORING WELLS

St. Lucie County
STL42
STL125
STL41

Martin County
M147
M140

Palm Beach County
PB565
PB109
PB88

Broward County
G1213
G853
S329
G561
G617
G1222
F291

Dade County
G852
G1183
F179
F319
G596
G613
G1251

Collier County
C495
C54
C391
C392
C489
C503
C131
C492

Lee County
L1997
L730
L1418
L246
L742
L581

VI. DEMAND MANAGEMENT

A. Public Water Supply Utility Monitoring Programs

1. Pumpage Comparison. A comparison between total pumpage for 49 utilities during the period of March 15-April 3, 1985 with total pumpage for the utilities during the period of March 1-14, 1985 showed an 8.3% reduction in withdrawal. A comparison between pumpage for the period of March 15-April 3, 1985 with March 1-14, 1985 showed a 10.0% average decrease in pumpage during the March 15-April 3, 1985 period for 49 selected utilities when all individual percentage reductions were averaged. Pumpage for these same utilities, however, was 9.3% higher for March 15-28, 1985 when compared with the same period during 1984 and 20.9% higher than the same period in 1981.

Pumpage for the five largest utilities in the survey (Miami-Dade Water and Sewer Authority, Fort Lauderdale, Boca Raton, West Palm Beach, and North Miami Beach) showed an average decrease of 8.6% in pumpage for the period March 15-April 3, 1985 when compared with the pumpage for the period March 1-14, 1985. These same utilities however, pumped 6.7% more during March 15-28, 1985 than during the same two week period last year and 24.9% more than during the same two week period in 1981. The five largest utilities pump approximately 60% of the water pumped by the 49 utilities surveyed.

Only 8.2% of the utilities surveyed increased their pumpage during March 15-April 3, 1985 when compared with the period March 1-14, 1985. However 71.4% of the utilities showed higher pumpages during March 15-28, 1985 when compared with the same two week period during the previous year. 58.7% of the utilities surveyed showed higher pumpages for March 15-28, 1985 when compared with the same time interval in 1981 (Tables 2 and 3).

Table 2

SUMMARY OF UTILITY MONITORING PROGRAMS
ENDING APRIL 4, 1985

UTILITY	WATER QUALITY			WATER LEVELS			PUMPAGE		
	Stable	Improved	Worse	Stable	Incr.	Decr.	Stable	Incr.	Decr.
BROWARD COUNTY	Potential problem exists-Hallandale								
Ft. Lauderdale	S							I	
Hallandale	S							I	
Deerfield Beach								I	
Broward Co. 2A	S					D		I	
Pompano Beach	S			S				I	
Hollywood	S							I	
Dania	S			S				I	
COLLIER COUNTY	Potential problem exists-Naples Coastal Ridge and Marco Island								
Naples Ridge	S				I				D
Naples		I							D
Marco Island	S				I				D
DADE COUNTY	No apparent problems								
MDWASA (NW)								I	
MDWASA (ORR)							S		
LEE COUNTY	Potential problem exists-Cape Coral mid-Hawthorn								
Cape Coral MH raw	S			S					D
RO treated								I	
Lee County Util.						D		I	
Ft. Myers	S								D
Greater Pine Is.	S							I	
Fl Cities (N)	S			S					D
Fl Cities (S)	S					D		I	
MARTIN COUNTY	No apparent problems								
Stuart	S					D		I	
PALM BEACH COUNTY	Potential problem exists-Highland Beach, Tequesta								
Jupiter	S				I			I	
West Palm Beach								I	
Delray Beach	S			S					D
Boca Raton								I	
Highland Beach	S							I	
Tequesta			W			D		I	

NOTE: All comparisons are to previous week.

Table 3.

SUMMARY OF WATER USE

UTILITY	MGD MARCH 15-28 1985	MGD MARCH 1-14 1985	PER CENT [1] INCREASE OR DECREASE	MGD MARCH 15-28 1984	PER CENT [2] INCREASE OR DECREASE	MGD MARCH 15-28 1981	PER CENT [3] INCREASE OR DECREASE	MGD MARCH 15-APRIL 3 1985	PER CENT [4] INCREASE OR DECREASE
BROWARD COUNTY									
06-00038 City of Hollywood (R)	20.027	21.885	-8.49	20.903	-4.19	24.486	-18.21	20.094	-8.18
06-00070 Pompano Beach (R)	19.329	21.711	-11.0	19.141	+1.00	22.95	-15.8	20.068	-7.6
06-00071 Tamarac (R)	5.733	6.134	-6.53	5.397	+6.23	5.132	+11.7	5.901	-3.8
06-00082 Deerfield Beach (East and West) (R)	8.496	9.565	-11.18	8.616	-1.40	10.036	-15.34	8.828	-7.71
06-00101 Hillsboro Beach (R)	.995	1.090	-8.72	1.041	-4.42	1.028	-3.21	1.016	-6.79
06-00120 City of Sunrise:									
Plant 1 (R)	8.199	7.828	+4.74	6.956	+17.87	5.927	+38.33	7.835	+.128
Plant 2 (R)	2.749	2.336	+17.68	2.638	+4.21	2.192	+25.41	2.771	+18.63
06-00123 Fort Lauderdale (R)	47.332	53.507	-11.54	46.674	-1.53	51.000	-7.29	49.121	-8.2
06-00134 City of Davie (R)	2.251	2.476	-9.09	2.005	+12.27	1.436	+57.76	2.294	-7.35
06-00135 Pembroke Pines (R)	3.880	4.407	-11.96	4.906	-20.91	4.498	-13.74	3.966	-10.00
06-00138 Hallandale (R)	5.999	6.468	-7.25	6.155	-2.53	6.373	-5.87	5.972	-7.67

Table 3 Continued

SUMMARY OF WATER USE

UTILITY	MGD MARCH 15-28 1985	MGD MARCH 1-14 1985	PER CENT [1] INCREASE OR DECREASE	MGD MARCH 15-28 1984	PER CENT [2] INCREASE OR DECREASE	MGD MARCH 15-28 1981	PER CENT [3] INCREASE OR DECREASE	MGD MARCH 15-APRIL 3 1985	PER CENT [4] INCREASE OR DECREASE
BROWARD COUNTY CONTINUED									
Broward County System: 06-00145 06-00147 (3A,3B,3C) (R)	6.777	7.355	-7.86	6.794	-.250	6.742	+.50	7.056	-4.07
06-00142 (2A) (R)	12.599	14.064	-10.42	11.518	+9.40	12.443	+1.30	12.866	-8.52
06-00170 Ferncrest (R)	.593	.723	-17.98	.642	-7.63	.504	+17.70	.605	-16.32
06-00187 Dania (R)	1.945	2.242	-13.25	1.873	+3.80	2.005	-3.00	1.99	-11.24
COLLIER COUNTY									
11-00015 The Glades (T)	.306	.369	-17.07	.322	-4.97	.296	-3.38	.301	-18.43
Naples: 11-00017 11-00018 Coastal Ridge Golden Gate (R)	16.386	19.527	-16.09	16.278	+0.66	10.591	+54.72	16.137	-17.36
11-00080 Marco Island (R)	4.979	5.839	-14.73	4.178	+19.17	4.137	+20.53	4.952	-15.19
DADE COUNTY									
13-00005 FKAA (T)	11.385	11.769	-3.26	10.131	+12.38	6.003	+89.66	11.315	-3.86

Table 3 Continued

SUMMARY OF WATER USE

UTILITY	MGD MARCH 15-28 1985	MGD MARCH 1-14 1985	PER CENT [1] INCREASE OR DECREASE	MGD MARCH 15-28 1984	PER CENT [2] INCREASE OR DECREASE	MGD MARCH 15-28 1981	PER CENT [3] INCREASE OR DECREASE	MGD MARCH 15-APRIL 3 1985	PER CENT [4] INCREASE OR DECREASE
DADE COUNTY CONTINUED									
M.D.W.A.S.A.: 13-00017 (Alexander Orr) (T)	129.714	135.500	-4.27	119.571	+8.50	122.500	+5.90	129.200	-4.65
13-00018 (Hialeah/Miami Springs) (Preston/Northwest) (T)	138.443	152.486	-9.21	131.036	+5.70	120.886	+14.50	138.265	-9.33
13-00059 North Miami (Winson) (R)	7.632	7.943	-3.92	6.398	+19.30	5.949	+28.30	7.648	-3.71
13-00060 North Miami Beach (Sunny Isles) (Oeffler (Norwood)) (R) (Myrtle Grove)	22.091	23.743	-6.96	24.716	-10.62	24.441	-9.61	22.048	-7.14
13-00068 Homestead AFB (R)	2.624	3.256	-19.4	2.861	-8.30	3.031	-13.4	2.582	-20.7
GLADES COUNTY									
22-00045 Moorehaven (T)	.234	.271	-13.65	.231	+1.30	.222	+5.41	.234	-13.65
HENDRY COUNTY									
26-00105 Labelle (R)	.371	.376	-1.33	.365	+1.60	N/A	N/A	.380	+1.10

Table 3 Continued

SUMMARY OF WATER USE

UTILITY	MGD MARCH 15-28 1985	MGD MARCH 1-14 1985	PER CENT [1] INCREASE OR DECREASE	MGD MARCH 15-28 1984	PER CENT [2] INCREASE OR DECREASE	MGD MARCH 15-28 1981	PER CENT [3] INCREASE OR DECREASE	MGD MARCH 15-APRIL 3 1985	PER CENT [4] INCREASE OR DECREASE
LEE COUNTY									
36-00003 Lee County (R)	6.584	6.413	+2.67	8.638	-23.78	5.937	+10.90	6.516	+1.6
36-00035 Ft. Myers (R)	5.924	6.506	-8.95	5.705	+3.89	6.685	-11.38	5.880	-9.62
36-00045 Greater Pine Island (R)	.966	1.203	-19.70	.706	+36.83	.970	-0.41	.918	-23.69
36-00046 Cape Coral (T)	6.548	7.466	-12.3	5.241	+24.9	4.355	+50.4	6.333	-15.2
Florida Cities:									
36-00150 Green Meadows (R)	4.353	4.703	-7.44	4.550	-4.33	3.070	+41.79	4.407	-6.3
36-00150 Cypress Lakes (R)	.704	.681	+3.38	.742	-5.12	2.021	-65.17	.747	+9.66
36-00152 N. Cape Coral (R)	.433	.429	+0.93	.398	+8.79	.524	-17.37	.474	+10.49
36-00152 Waterway Estates (R)	.608	.709	-14.25	.624	-2.56	.488	+24.59	.582	-17.9
MARTIN COUNTY									
43-00053 City of Stuart (R)	3.24	3.621	-10.52	3.079	+5.23	3.872	-16.32	3.30	-8.86
43-00066 Hydratech (T)	.603	.681	-11.45	.416	+44.95	.313	+92.65	.618	-9.25
43-00086 Miles Grant (R)	.180	.186	-3.23	.164	+9.76	.176	+2.27	.179	-3.77

Table 3 Continued

SUMMARY OF WATER USE

UTILITY	MGD MARCH 15-28 1985	MGD MARCH 1-14 1985	PER CENT [1] INCREASE OR DECREASE	MGD MARCH 15-28 1984	PER CENT [2] INCREASE OR DECREASE	MGD MARCH 15-28 1981	PER CENT [3] INCREASE OR DECREASE	MGD MARCH 15-APRIL 3 1985	PER CENT [4] INCREASE OR DECREASE
MARTIN COUNTY CONTINUED									
43-00089 Intracoastal (T)	.834	.981	-14.98	.601	+38.77	.504	+65.48	.880	-10.30
43-00102 Martin County (R)	1.401	1.662	-15.70	1.217	+15.12	N/A	N/A	1.402	-15.64
43-00169 Martin Downs (R)	.244	.234	+4.27	.161	+51.55	N/A	N/A	.240	+2.56
OKEECHOBEE COUNTY									
47-00004 Okeechobee (R)	2.044	2.396	-14.7	1.836	+11.3	1.644	+24.3	2.064	-13.8
PALM BEACH COUNTY									
50-00010 Jupiter (R)	5.570	6.762	-17.5	4.948	+12.6	3.769	+47.8	5.733	-15.2
50-00046 Tequesta (R)	2.464	3.009	-18.1	1.988	+23.9	1.646	+49.7	2.453	-18.5
Palm Beach County: 50-00135 50-00584 System 1,2,8 (R)	9.449	10.533	-10.30	7.116	+32.80	4.118	+129.50	9.339	-11.34
50-00511 System 3 (R)	2.387	2.446	-2.41	2.124	+12.40	2.464	+3.12	2.416	-1.23
50-00401 System 9 (R)	6.789	7.700	-11.83	5.606	+21.10	3.761	+80.50	7.026	-8.75

Table 3 Continued

SUMMARY OF WATER USE

UTILITY	MGD MARCH 15-28 1985	MGD MARCH 1-14 1985	PER CENT [1] INCREASE OR DECREASE	MGD MARCH 15-28 1984	PER CENT [2] INCREASE OR DECREASE	MGD MARCH 15-28 1981	PER CENT [3] INCREASE OR DECREASE	MGD MARCH 15-APRIL 3 1985	PER CENT [4] INCREASE OR DECREASE
PALM BEACH COUNTY CONTINUED									
50-00177 Delray Beach (R)	9.774	12.872	-24.07	11.298	-13.49	13.301	-26.52	11.393	-11.50
50-00234 Lake Worth Utilities (R)	6.473	7.823	-17.26	6.295	+2.83	6.683	-3.14	6.497	-16.95
50-00346 Highland Beach (R)	1.382	1.479	-6.56	1.203	+14.88	1.089	+26.91	1.392	-5.88
50-00365 Seacoast (R)	11.438	12.819	-10.8	9.719	+17.7	10.908	+4.80	11.354	-11.4
50-00367 Boca Raton (R)	33.021	36.791	-10.2	27.414	+20.5	14.514	+128	32.908	-10.6
50-00460 Riviera Beach (R)	6.889	7.245	-4.910	6.752	+2.00	6.110	+12.70	6.938	-4.24
50-00449 Boynton Beach (R)	9.181	10.488	-12.5	7.959	+15.0	8.371	+9.70	9.181	-10.2
50-00506 Manalapan (T)	.797	.936	-14.85	.796	+0.13	.574	+38.85	.858	-8.33
50-00615 West Palm Beach (R)	23.255	26.166	-11.13	21.577	+7.80	22.414	+3.80	23.478	-10.27

Table 3 Continued

SUMMARY OF WATER USE

UTILITY	MGD MARCH 15-28 1985	MGD MARCH 1-14 1985	PER CENT INCREASE OR DECREASE [1]	MGD MARCH 15-28 1984	PER CENT INCREASE OR DECREASE [2]	MGD MARCH 15-28 1981	PER CENT INCREASE OR DECREASE [3]	MGD MARCH 15-APRIL 3 1985	PER CENT INCREASE OR DECREASE [4]
ST. LUCIE COUNTY									
56-00085 Fort Pierce (R)	.767	.972	-21.09	.808	-5.07	.755	+1.59	.776	-20.16
56-00142 Port St. Lucie (R)	2.213	2.656	-16.68	2.048	+8.06	2.490	-11.12	2.219	-16.43
TOTAL OF ALL THE UTILITIES AVERAGE DAY SURVEYED (MGD)	647.583	711.439		613.075		588.361		651.946	

1 MARCH 15-28, 1985 AVERAGE DAY DIVIDED BY MARCH 1-14, 1985 AVERAGE DAY, QUOTIENT SUBTRACTED FROM 100% TO GET PERCENT INCREASED OR DECREASED.

2 MARCH 15-28, 1985 AVERAGE DAY DIVIDED BY MARCH 15-28, 1984 AVERAGE DAY, QUOTIENT SUBTRACTED FROM 100% TO GET PERCENT INCREASED OR DECREASED.

3 MARCH 15-28, 1985 AVERAGE DAY DIVIDED BY MARCH 15-28, 1981 AVERAGE DAY, QUOTIENT SUBTRACTED FROM 100% TO GET PERCENT INCREASED OR DECREASED.

4 MARCH 15-APRIL 3, 1985 AVERAGE DAY DIVIDED BY MARCH 1-14, 1985 AVERAGE DAY, QUOTIENT SUBTRACTED FROM 100% TO GET PERCENT INCREASED OR DECREASED.

(R) = RAW (T) = TREATED

2. Cape Coral. Pumpage from the mid-Hawthorn aquifer decreased at Cape Coral. Cape Coral has indicated that they will be reducing production from the Lime Plant which obtains its water from the problem-riddled mid-Hawthorn aquifer to eight/ten hours a day. Then once the new R.O. Plant is placed into service, the Lime Plant wells will be placed on an emergency standby status. The new R.O. Plant is presently expected to go on-line before the end of the month if DER approves use of the old existing brine disposal line for the new plant.

Water levels in monitoring well L581 show that the mid-Hawthorn aquifer is recovering; water levels have risen to -30 Ft below ground from a previous low of approximately -40 Ft. Chloride concentrations in mid-Hawthorn production wells are stable.

A comparison of pumpage since the water shortage declaration with pumpage during the two weeks prior to the water shortage declaration indicates that Cape Coral has reduced pumpage by 15%.

3. City of Naples. Water levels have increased at monitoring wells 524, 527, and 528 and decreased at monitoring wells 525, 526, and 424 since 3/28. Water levels remain well above 0.0 Ft. at all monitoring wells except 424. Well 424 is influenced by several agricultural irrigation wells and it fluctates up to 1.5 Ft. daily as a result. Chloride levels have decreased at monitoring wells 525, 526, and 424 since 3/28. Chloride levels have increased at monitoring wells 524, 526, and 424 since 3/28. However, the water level and chloride data from these wells has shown daily fluctuations and the increases noted in comparing 3/28 and 4/7 data reflect these fluctuations rather than a trend of increasing chloride concentrations. Chlorides have remained basically stable within the range of fluctuations observed. Chloride concentrations have decreased in production wells 14 and 21 since last week.

Conditions have improved in parts of the Coastal Ridge Aquifer and appear to be holding steady in the rest of it.

Chloride concentrations are stable in production wells at the East Golden Gate wellfield.

A comparison of pumpage which has occurred since the declaration of a water shortage with pumpage during the two weeks prior to the shortage declaration indicates that Naples has reduced total pumpage by 17%.

4. Marco Island. Marco Island lake levels continue to be below sea level (-1.55 Ft.). This could be a potential problem, but chloride concentrations are stable and in fact have decreased since April 2. The lake is at its lowest level since 1982, when, at the beginning of April 1982 the lake was at about -2.0 Ft. The lowest level previously reached was -3.38 Ft. in late April 1982.

A comparison of pumpage which has occurred since the declaration of a water shortage with pumpage during the two weeks prior to the shortage declaration indicates that Marco Island Utilities has reduced its pumpage by 15%.

5. Tequesta. Tequesta pumpage is historically high for this time of year. Currently all of the pumpage is from one well, number 5, and one additional well, 7R. Because of this increased pumpage, the water levels in this area are continuing to decline. Chlorides have remained stable in most of the monitoring wells; however, wells PB 892, T-2, and RD-1 have shown significant increases. Well 7R has just gone on-line and well 23 may go on-line in about 2 weeks. The effect of well 7R was to give Tequesta additional capacity in order to enable them to pump up to their maximum day allocation. The effect of adding well 23 will be to spread out their pumpage and move pumpage farther from the salt water interface. If water levels continue to decline, however, there could potentially be salt water intrusion problems.

A comparison of pumpage which has occurred since the initiation of the water shortage warning with pumpage during the two weeks prior to the water shortage warning indicates that Tequesta has reduced its total water use by 18.5%.

6. Hallandale. Chloride concentrations in well 1435 at the Hallandale wellfield have remained stable indicating that inland movement of the salt water front has temporarily abated.

A comparison of pumpage which has occurred since the initiation of the water shortage warning with pumpage during the two weeks prior to the water shortage warning indicates that Hallandale has reduced its water use by 7.7%.

7. Highland Beach. Chloride concentrations at well 948 remain high but are showing stability on what has been a slowly increasing trend.

A comparison of pumpage which has occurred since the initiation of the water shortage warning with pumpage during the two weeks prior to the water shortage warning indicates that Highland Beach has reduced its water use by 5.9%.

B. Golf Course Irrigation Monitoring Program

The effort in Collier and Lee Counties has focused on golf courses and certain other landscape users. This group was selected because they use large amounts of water and because they are targeted in the water shortage plan to achieve significant water use reductions during Phase I. In Collier County there are about 4,700 acres permitted in golf course and related urban landscape categories. In Lee County the total is about 6,000 acres.

Monitoring has included weekly telephone reports by golf course superintendents. At present approximately 18 are reporting. Tabulations of these

data are being made, and where feasible, comparisons with a March 1 to March 14 base period use are made.

A special effort at monitoring and enforcement is being made for users of the Coastal Ridge Aquifer. A total of nine golf course users of this source in the vicinity of the Naples wellfield monitoring wells have been identified. A visit was made to four of the nine on March 28 and 29 during which data were collected, flows measured, and operation plans reviewed and observed. A second trip will be considered for the week of April 16-20 if it appears warranted.

We have also obtained a commitment of assistance from Bruce Augustine (Assoc. Professor and Turf/Water Specialist) with the concurrence from IFAS Administration at the University of Florida. Dr. Augustine has been of great assistance in developing appropriate technical criteria for the issuance of variances involving turf irrigation.

A special effort is also being made to identify certain agricultural users who may be affecting levels in the Coastal Ridge Aquifer. While Phase I restrictions call for only voluntary cutbacks in agricultural water use it is important to understand the demands that these users are and will be placing on this source.

C. Water Shortage Enforcement

Lee and Collier Counties: The District's model water shortage ordinance has now been adopted by both Lee and Collier Counties and the cities of Naples, Fort Myers, and Cape Coral. The Collier County Sheriff's Office has been utilizing the District's water shortage warning tickets and forwarding copies to the legal office. Lee County is issuing verbal warnings which are telephoned to the Office of Counsel and logged in. Second violations are issued citations. As of April 9, 1985 approximately 70 warnings had been issued in

Lee County, and in Collier County the approximate number of warnings and citations issued was 90 and 50, respectively.

Warning Counties: A broad effort has been initiated to obtain passage of the District's model water shortage ordinance in the nine counties subject to the water shortage warning, and Highlands County. Broward County adopted the ordinance on April 2, 1985. Dade County had its first reading on April 2, 1985. Palm Beach County will have its first reading on April 16, 1985. Martin County presently has an adequate ordinance on the books. Contact has been made with the other counties in the warning area requesting formal action. Overall, staff is receiving excellent cooperation from the various county attorneys.

A letter has been sent to the county attorneys and city managers of approximately 80 municipalities in the warning area requesting adoption of the model ordinance. Replies are being received from various municipalities at this time. Some have provided copies of existing ordinances which are under review. Overall, indications as to cooperation are generally good.

D. Variance Requests

To date, 25 formal requests for variance have been received. They range from golf courses requesting a variation to the front nine/back nine irrigation regime, to requests for approval of daylight hours due to noisy pumps.

As a rule, the golf courses whose irrigation regime satisfied the intent of the rule and were readily observable by enforcement officials were approved for a temporary variance and recommended for Governing Board approval.

Clay tennis courts require wetting down during daylight hours for safety and to alleviate damage to the courts. Two were approved for a temporary variance and recommended for approval. Standards to be applied to "clay" tennis courts evolved from these reviews (See Appendix IV). Basically, two

"windows" were established: noon to 3 PM and 9 PM to midnight during which wetting could be accomplished, not to exceed 5 minutes per court.

Larger projects with inadequate irrigation systems have trouble covering the entire area within the hours provided; one, Lakewood Country Club Community, was approved for temporary variance and recommended for approval with the understanding that within six months the system would be upgraded to provide for future compliance.

As a general rule, variances have only been considered for favorable recommendation when they are readily enforceable and are consistent with the overall rule provisions. A major consideration has been maintaining the support of local enforcement agencies by keeping the variances issued to a minimum, and those issued consistent with the major provisions of the rule.

Petitioner	Recommendation	Petitioner	Recommendation
Parkmeadow Tennis Club	Approval	El Rio Golf Club	Approval
Ft. Myers Memorial Gardens	Denial	Shanandoah Estates, Inc.	Approval
Collier County Public Schools	Approval	Royal Poinciana Golf Club	Approval
Wilderness County Club	Approval	Fred W. Clark	Denial
Lakewood Country Club	Approval	The Forest Country Club	Approval
James P. Lennane	Denial	Rocco Fusco	Denial
Sanibel Moorings Condominium Ass'n.	Denial	Bonita Springs Country Club	Denial
Edison Mall	Approval	Hideaway Beach Country Club	Approval
Fred Keller,Jr.	Denial	William Harney	Pending
Hallmark Bldrs.	Approval	J.L.S. Lawn	Approval

		Service	
Pinebrook Woods	Pending	The Country Club of Naples	Approval
Edward Fraser	Denial	Edwin Bolier	Denial
Golfwood Condo	Pending		

E. EXTERNAL COORDINATION

Public, Media, and Other Interest Group Communication

During the water shortage the public has been provided with frequent updates on drought conditions. This has been accomplished through facilitating contacts with the media, scheduling interviews of key personnel, providing timely press releases, and assistance with feature articles.

In addition, the staff has updated and reprinted existing publications on the water shortage and is creating public information leaflets regarding water conservation measures. The staff has also developed a Water Shortage Strategy Plan to be implemented in the event that drought conditions become critical. This Plan will enable the District to quickly print and distribute large quantities of brochures and leaflets to consumers.

The staff has also developed an in-house summary of water shortage meetings conducted by the District staff. This summary is distributed the same day to the Executive Office, all division and department directors, and field stations. This summary provides the staff with the latest information, and therefore, standardizes the available data to reduce discrepancies.

Local Government/Utility Customers Coordination

The staff has facilitated the objectives of interagency coordination with public and private utilities, local water resources committees, city councils, county commissions, and special interest organizations. It has also established "water shortage teams" that are specifically organized to meet the critical issues faced by local governments by making presentations.

Numerous explanatory meetings have been held with various groups to solidify adherence and compliance with the District Water Shortage Plan.

This effort has resulted in significant support for adopting the "model" ordinance as drafted and proposed by the District staff.

In addition, letters have been sent to utility directors throughout the District to assess their needs and the District's ability to meet those needs should additional water shortage phases be declared.

APPENDIX I

MEMORANDUM

April 2,1985

TO: Department and Division Directors

FROM: Tilford C. Creel, Deputy Executive Director

SUBJECT: Revised Water Shortage Team Contact List

Attached for your use is a revised contact list which refines the Public Relations/External Coordination responsibilities of the local contacts and Resource Coordination Department staff. The local contacts (Vidzes, Mosher, and the field station superintendents) are still the primary focal points for calls from the general public and small water users in their areas since these categories represent the majority of the calls.

Further refinements to this list may be needed as experience is gained during this water shortage period. Please discard the previous list as revisions are published.

Tilford C. Creel
Deputy Executive Director

cc Water Shortage Team Members

WATER SHORTAGE TEAM RESPONSIBILITIES
Public Relations, External Coordination
Revised April 2, 1985

Activity or Area	Primary Contact	Telephone #	Alternate Contact(s)	Telephone #
General Public	Local Contact	See Local Contact List		
Small Water User	Local Contact	See Local Contact List		
Major Water Users	See W.P.B. Office list			
Public Water Supply Utilities customers and local governments - water conservation measures				
Dade, Martin, St. Lucie, and Glades Counties	Fred Schiller	X-431	John Clark	X-239
Lee, Monroe, Charlotte, Orange, Osceola, Highlands, Polk, and Okeechobee Counties	John Clark	X-239	Enid Butler	X-236
Palm Beach, Broward, Collier, and Hendry Counties	Enid Butler	X-236	Fred Schiller	X-431
Media	Nicole Duplaix, Acting Dir., Information Services	X-228	Lisa Smith	X-229
State and Federal Agencies	Fred Schiller	X-431	Jan Horvath	X-209

Local Contacts
Revised April 2, 1985

Activity or Area	Primary Contact	Telephone #	Alternate Contact(s)	Telephone #
Collier County	Fred Vidzes, Admin. Big Cypress Basin	(813) 775-3241	W.P.B. Office	1-800-432-2045
Lee County	Ed Mosher, Supv. Ft. Myers Office Groundwater Div.	(813) 332-0399	W.P.B. Office	1-800-432-2045
Monroe County; Dade County - south of Eureka Drive (SW 184 St.), and the East Everglades	John Adams, Supt. Homestead Field Station	(305) 248-1422	(1) Scott Thorpe (2) W.P.B. Office	(305) 248-1422 1-800-432-2045
Dade County - north of Eureka Drive (SW 184 St.)	Herb Cummings, Supt., Miami Field Sta.	(305) 592-5680	W.P.B. Office	1-800-432-2045
Broward County	Rusty Huckabee Supt. Ft. Lauderdale Fld. Station	(305) 434-1100	W.P.B. Office	1-800-432-2045
Hendry County; Glades County (west of US 27 and south of Fisheating Creek)	Ben Cribbs, Supt. Clewiston Field Station	(813) 983-9175	W.P.B. Office	1-800-432-2045
Palm Beach County	Paul Thomas, Supt. West Palm Beach Fld. Sta.	(305) 686-8800	W.P.B. Office	1-800-432-2045
Martin, St. Lucie, Okeechobee, Highlands Counties; Glades Co. (east of US 27 and north of Fisheating Creek)	Martin Brown Supt. Okeechobee Field Station	(813) 763-2198	W.P.B. Office	1-800-432-2045
Polk, Osceola, and Orange Counties	Tom Brooks, Supt. Kissimmee Field Sta.	(305) 847-8672	W.P.B. Office	1-800-432-2045

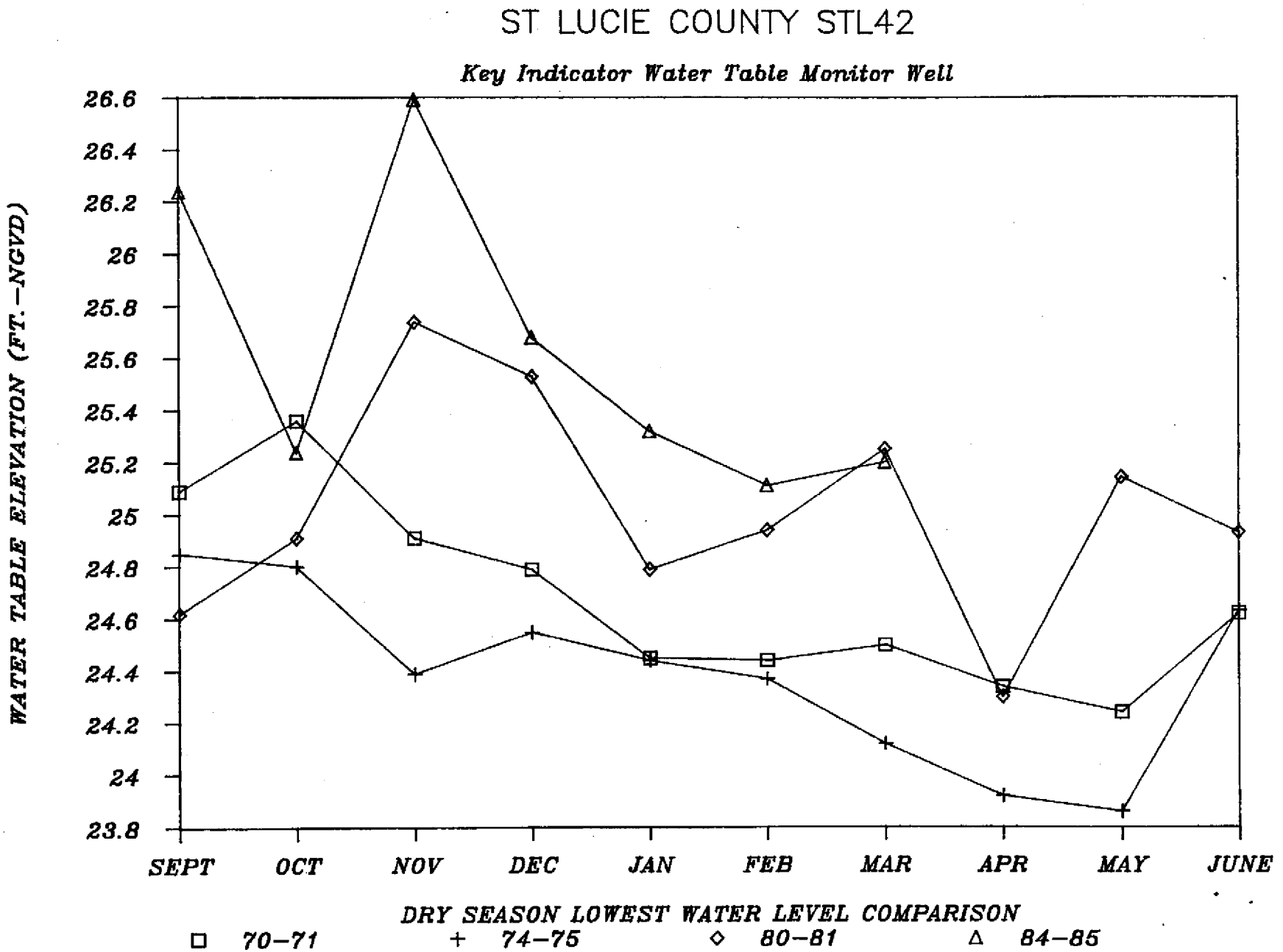
West Palm Beach Office Contacts
Revised April 2, 1985

Activity or Area	Primary Contact	Telephone #	Alternate Contact(s)	Telephone #
Project Manager	Til Creel, Deputy Executive Director	X-201	John Wodraska	X-200
Water Conditions Committee				
Technical Coordinator; develop technical recommendations for water shortage action	Leslie Wedderburn Deputy Director, Res. Control Dept.	X-561	Alan Hall	X-403
Administrative Coordinator; brief local contacts (Vidzes, Mosher, field station superintendents)	Steve Reel, Resource Planning Staff	X-402	Ron Metzger	X-562
Rainfall; Surface and Groundwater Conditions:	Alan Hall, Deputy Dir., Res. Planning Department	X-403		
Surface Water			Jorge Marban	X-319
Rainfall			Steve Letro	X-534
Groundwater			Nagendra Khanal	X-364
Water Supply Management (CSF Project Operations)	Joe Schweigart, Dir., Res. Operations Dept.	X-220	Dick Slyfield	X-240
External Coordination/ Public Relations	Jan Horvath, Dir., Res. Coord. Dept.	X-209	Dick Feeney	X-228
Legal Matters - Contact with City and County Attorneys, local law enforcement officials; model water shortage ordinance; enforcement	Tom Schwartz, District Counsel	X-245	Stan Niego Mike Tammaro	X-247 X-246
Major Water Users				
Public Water Supply Utilities - pumpages, demands, problems, technical questions, permit requirements	Pat Gleason, Dir., Water Use Division Res. Control Dept.	X-334	Gail Milleson	X-328

West Palm Beach Office Contacts (Continued)
Revised April 2, 1985

Activity or Area	Primary Contact	Telephone #	Alternate Contact(s)	Telephone #
Golf Courses	Bruce Adams, Water Use Planning Div.	X-405	Carl Woehlcke	X-411
Agriculture	Carl Woehlcke, Dir. Water Use Planning	X-411	Ray Burgess	X-546
Other	Carl Woehlcke, Dir. Water Use Planning	X-411	Bruce Adams	X-405
Explanation of water shortage plan - technical basis for restrictions, etc.	Carl Woehlcke, Dir., Water Use Planning	X-411	Bruce Adams	X-405
Requests for rule variances and interpretations	Ron Metzger, Dir. Permit License Data Administration	X-562	Vern Kaiser	X-393
Financial/Budget Support,Temp. Personnel, Telephone & Mail Services	Ed Hill, Director Dept. of Admin.	X-678	Joe Moore	X-254
Technical Services Support - Data Processing, ComputerVision Graphics/Printing	John Lynch, Dir. Dept. of Technical Services	X-278	Bob Ulevich	X-464

APPENDIX II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Key Indicator Water Table Monitor Well
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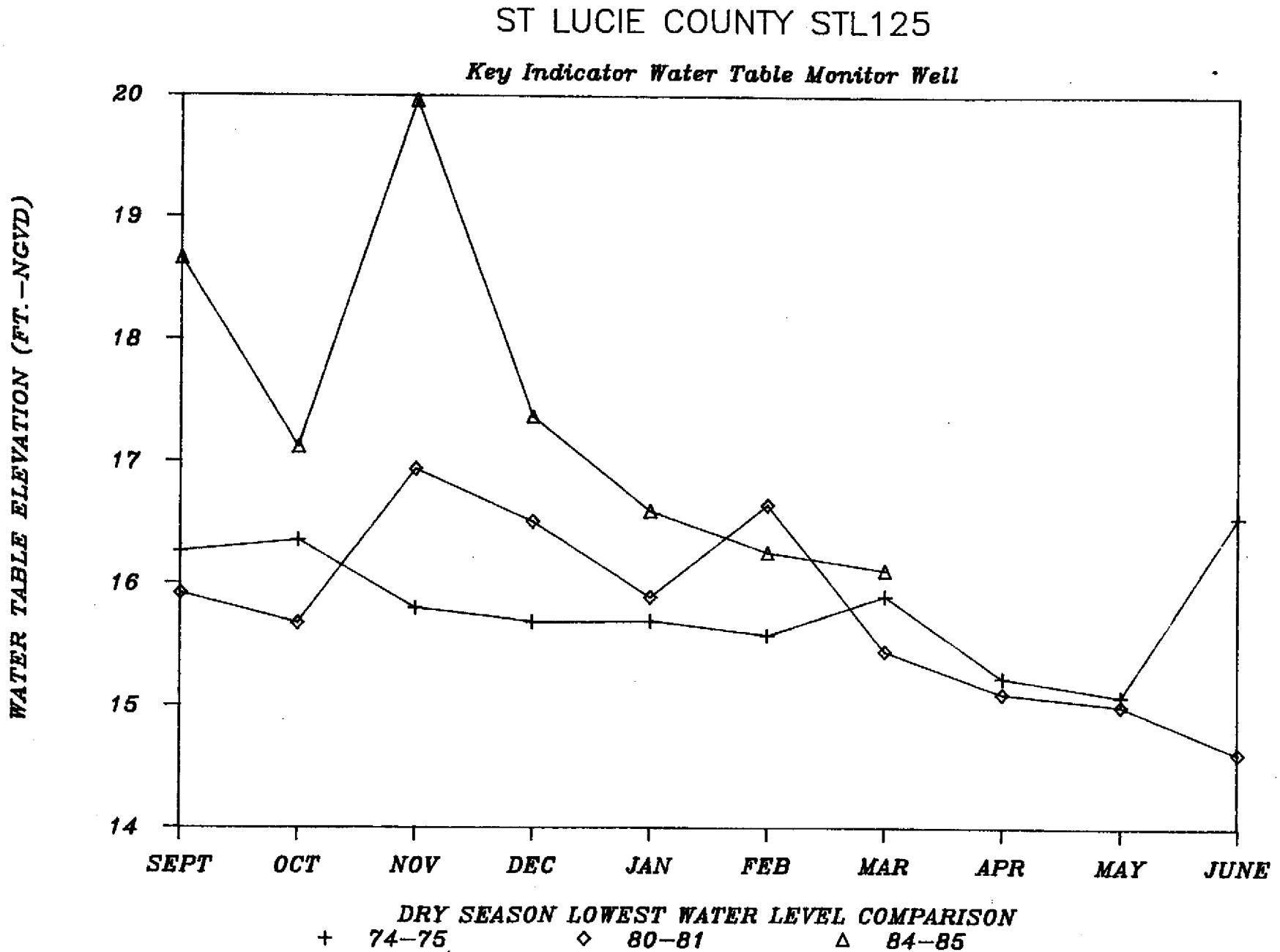
26.6
26.4
26.2
26
25.8
25.6
25.4
25.2
25
24.8
24.6
24.4
24.2
24
23.8
SEPT
OCT
NOV
DEC
JAN
FEB
MAR
APR
MAY
JUNE
DRY SEASON LOWEST WATER LEVEL COMPARISON
70-71
74-75
80-81
84-85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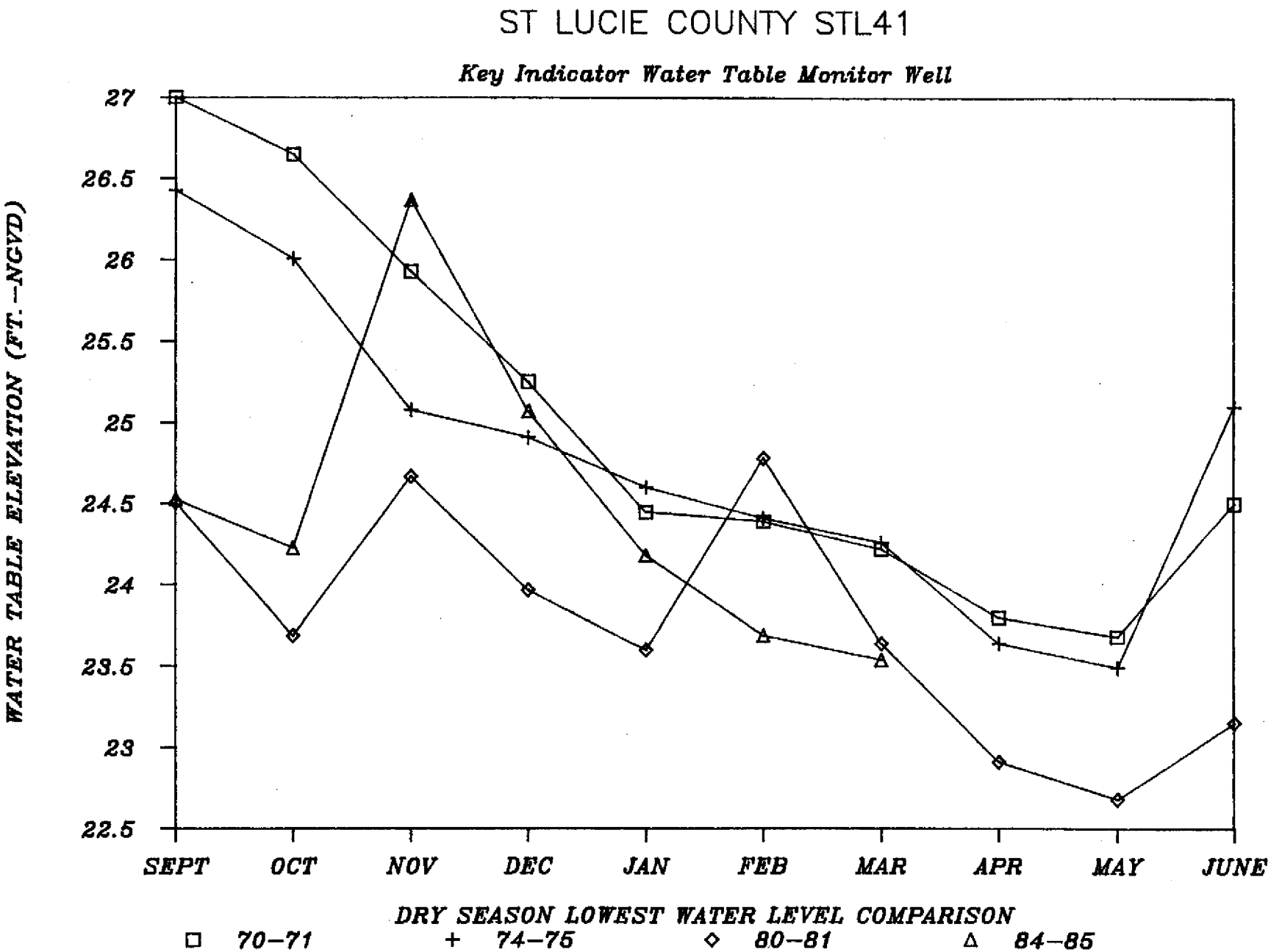
Key Indicator Water Table Monitor Well
WATER TABLE ELEVATION (FT.-NGVD)
20
19
18
17
16
15
14
SEPT
OCT
NOV
DEC
JAN
FEB
MAR
APR
MAY
JUNE
DRY SEASON LOWEST WATER LEVEL COMPARISON
+ 74-75
◇ 80-81
△ 84-85


ST LUCIE COUNTY STL41
Key Indicator Water Table Monitor Well
WATER TABLE ELEVATION (FT.-NGVD)
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26.5
26
25.5
25
24.5
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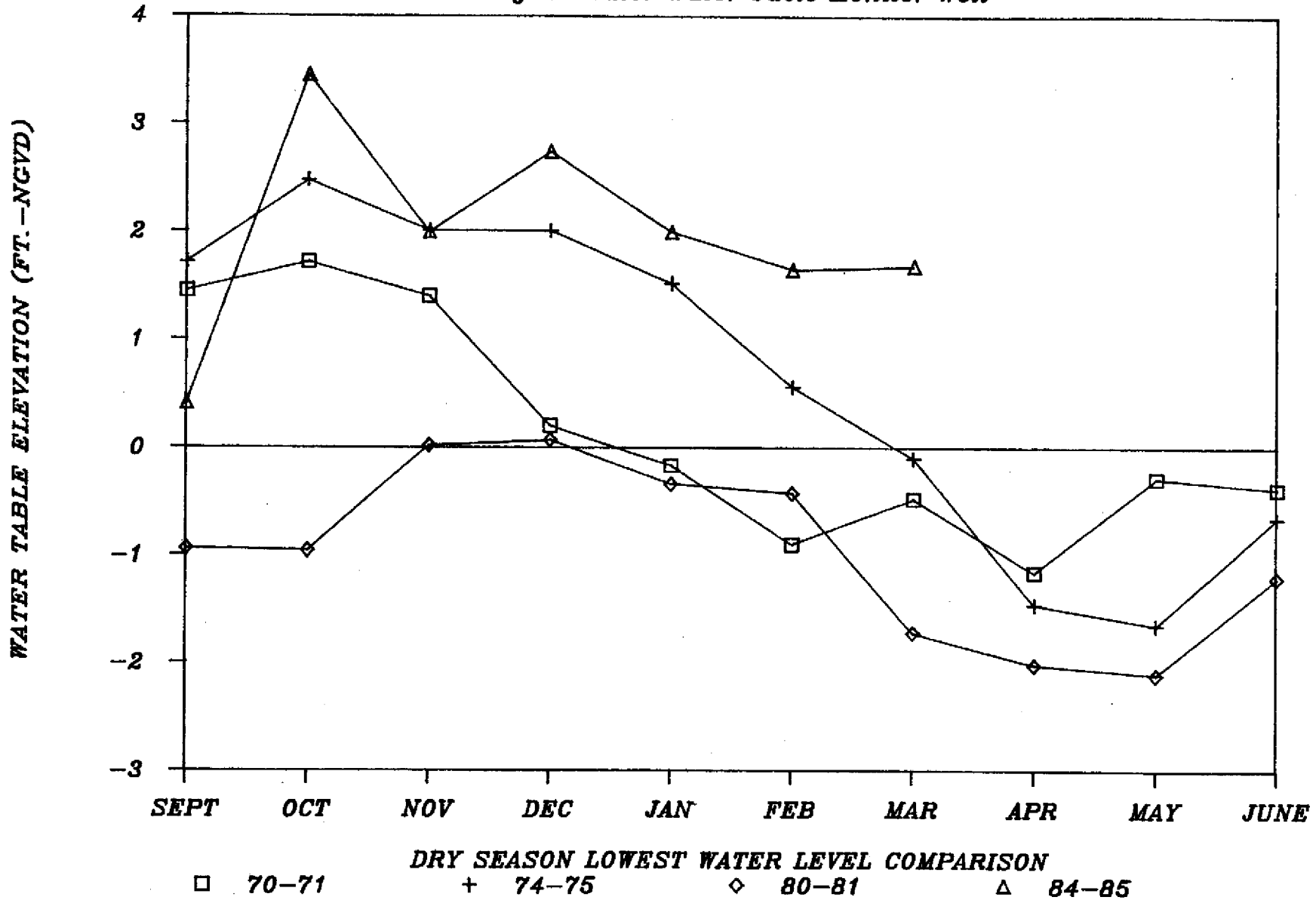
23.5
23
22.5
SEPT
OCT
NOV
DEC
JAN
FEB
MAR
APR
MAY
JUNE
DRY SEASON LOWEST WATER LEVEL COMPARISON
70-71
74-75
80-81
84-85

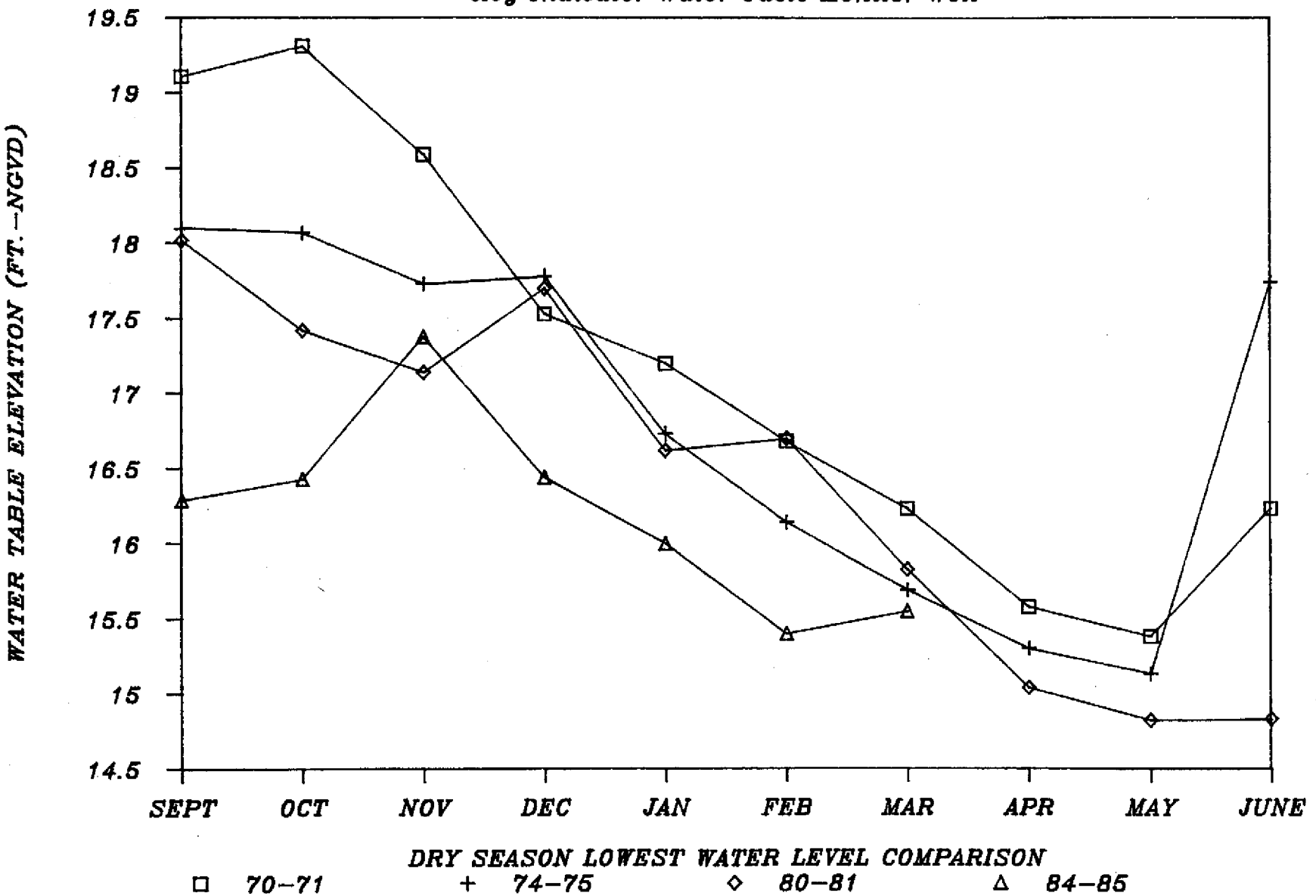
MARTIN COUNTY M147

Key Indicator Water Table Monitor Well



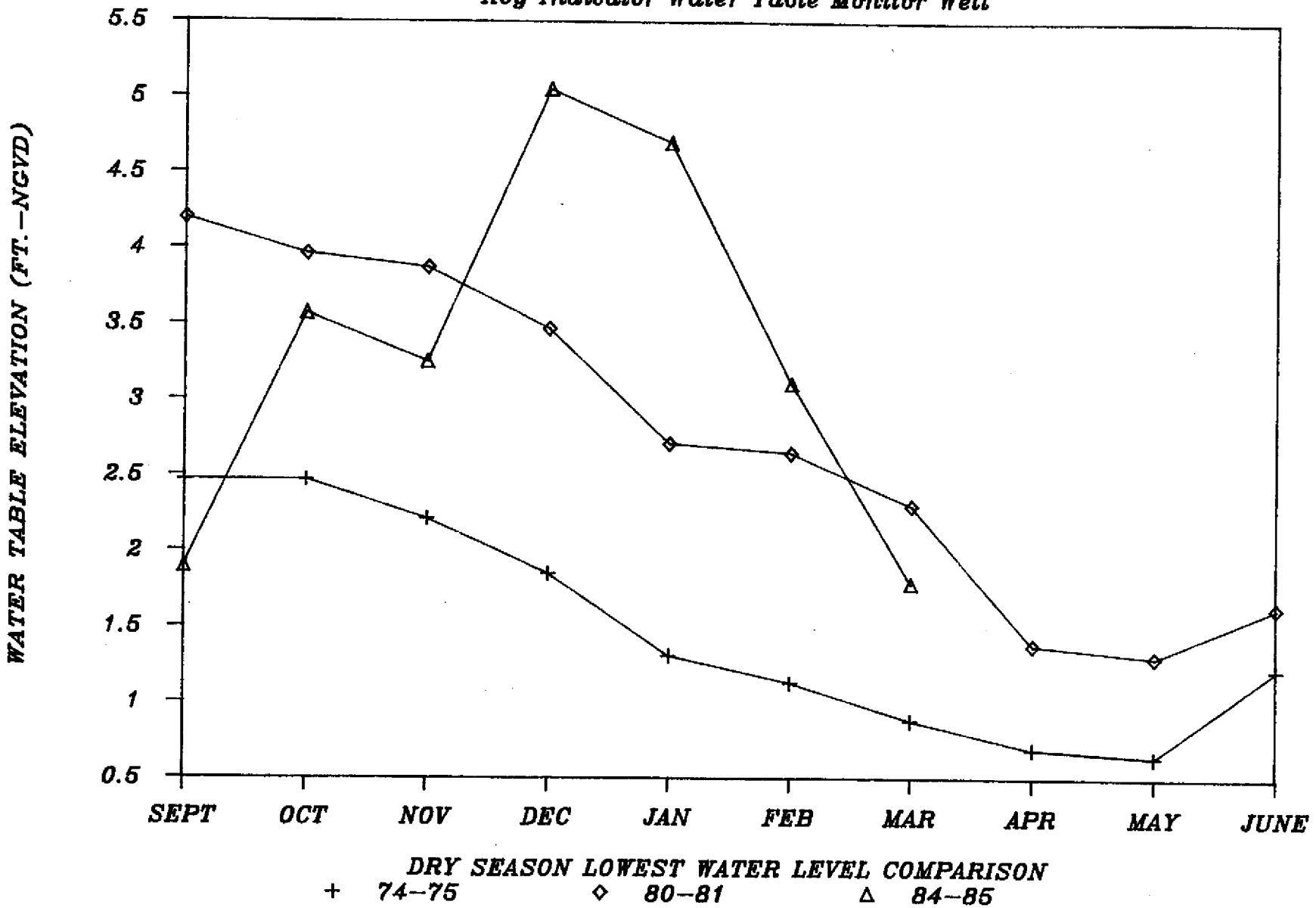
MARTIN COUNTY M140

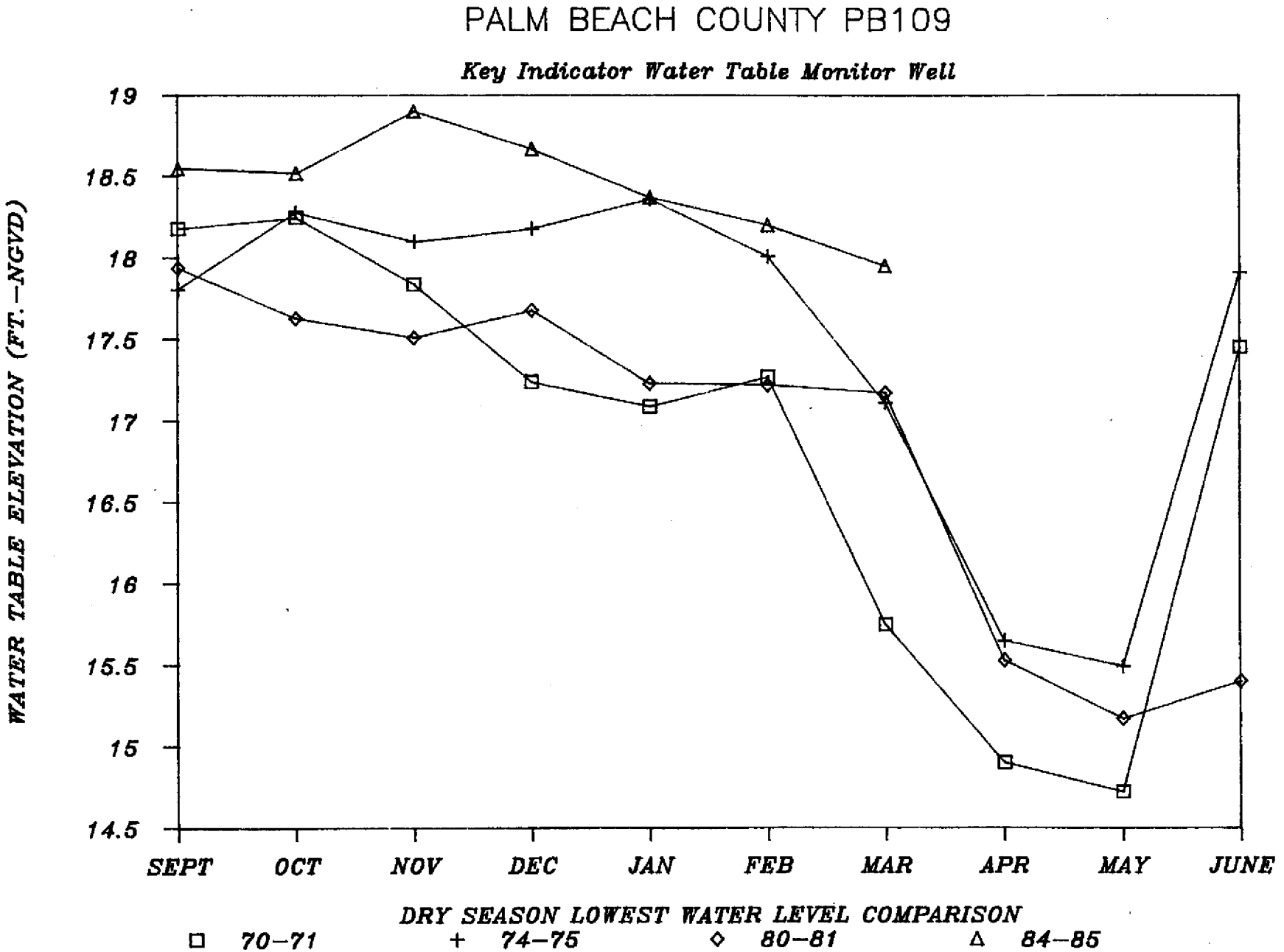
Key Indicator Water Table Monitor Well



PALM BEACH COUNTY PB565

Key Indicator Water Table Monitor Well




PALM BEACH COUNTY PB109
Key Indicator Water Table Monitor Well
WATER TABLE ELEVATION (FT.-NGVD)
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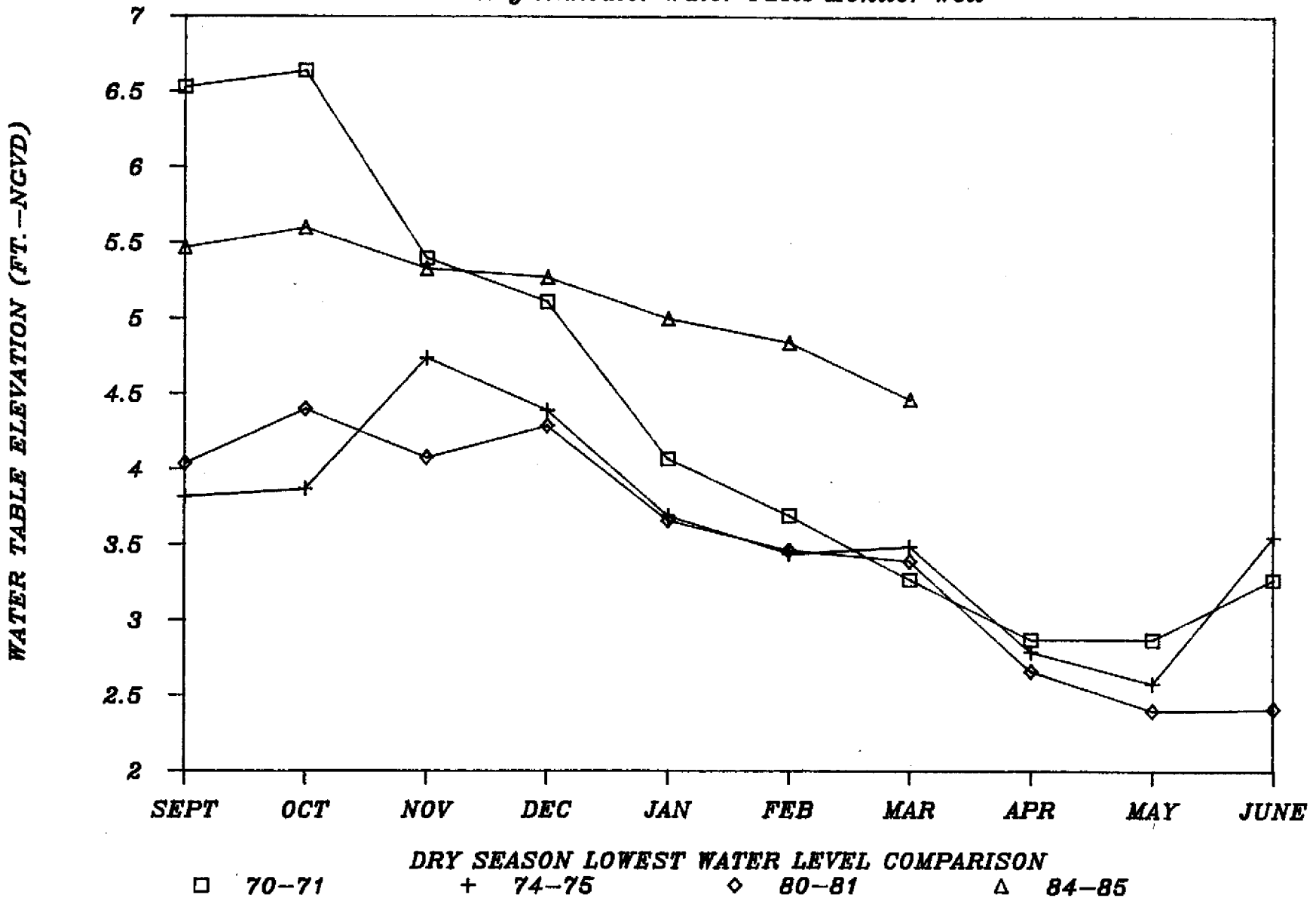
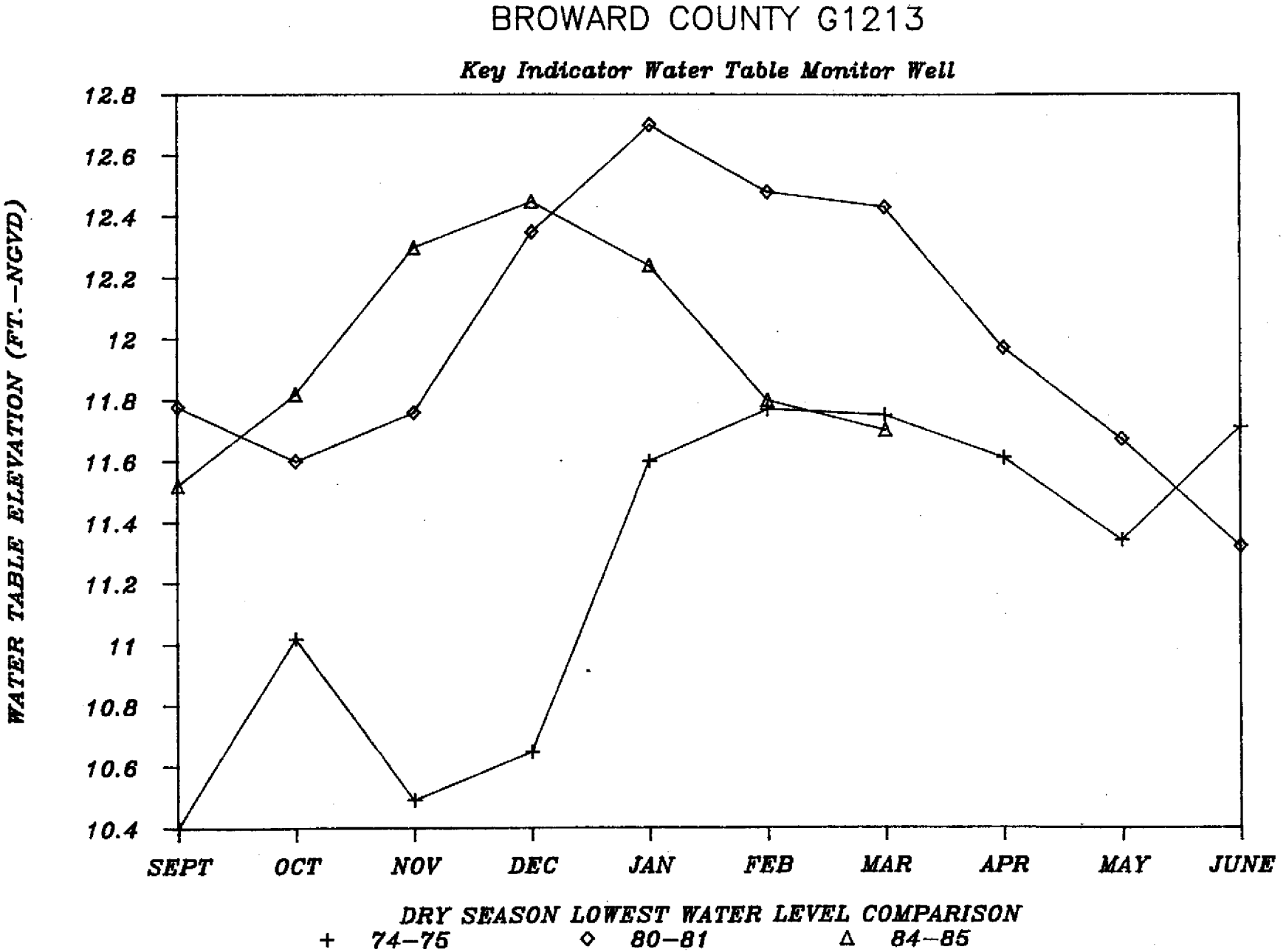
18.5
18
17.5
17
16.5
16
15.5
15
14.5
SEPT
OCT
NOV
DEC
JAN
FEB
MAR
APR
MAY
JUNE
DRY SEASON LOWEST WATER LEVEL COMPARISON
70-71
74-75
80-81
84-85

PALM BEACH COUNTY PB88

Key Indicator Water Table Monitor Well




BROWARD COUNTY G1213
Key Indicator Water Table Monitor Well
WATER TABLE ELEVATION (FT.–NGVD)
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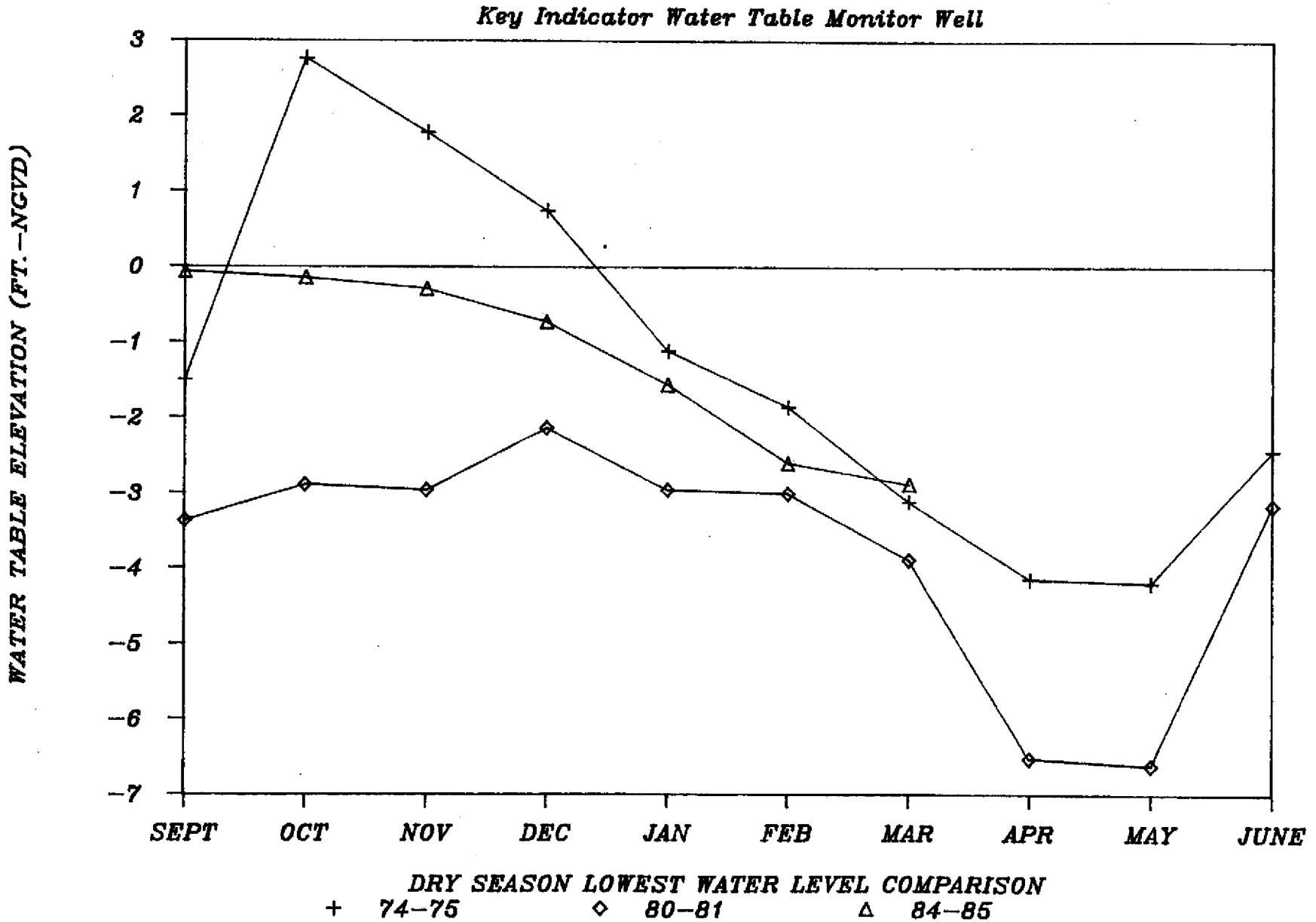
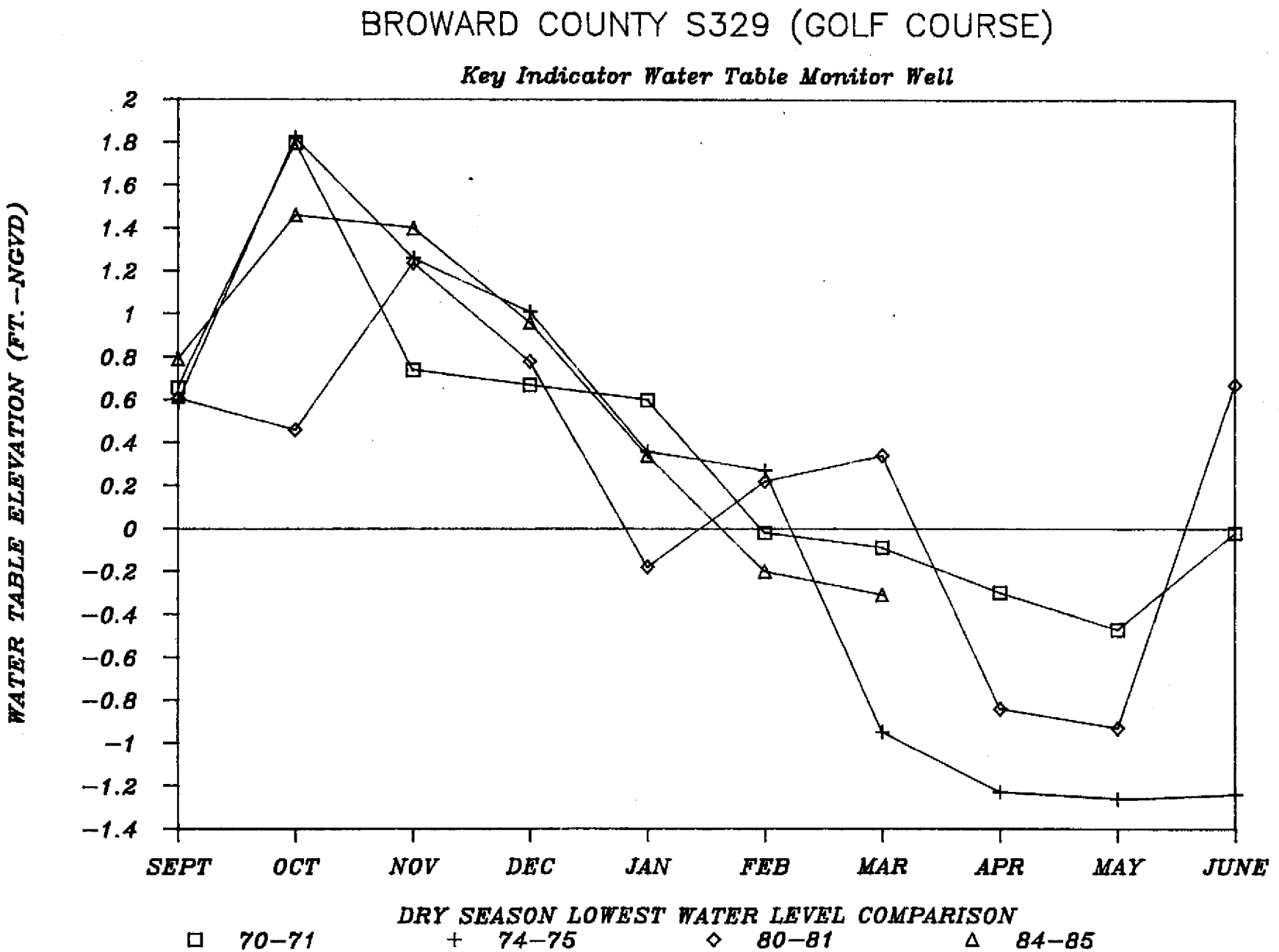
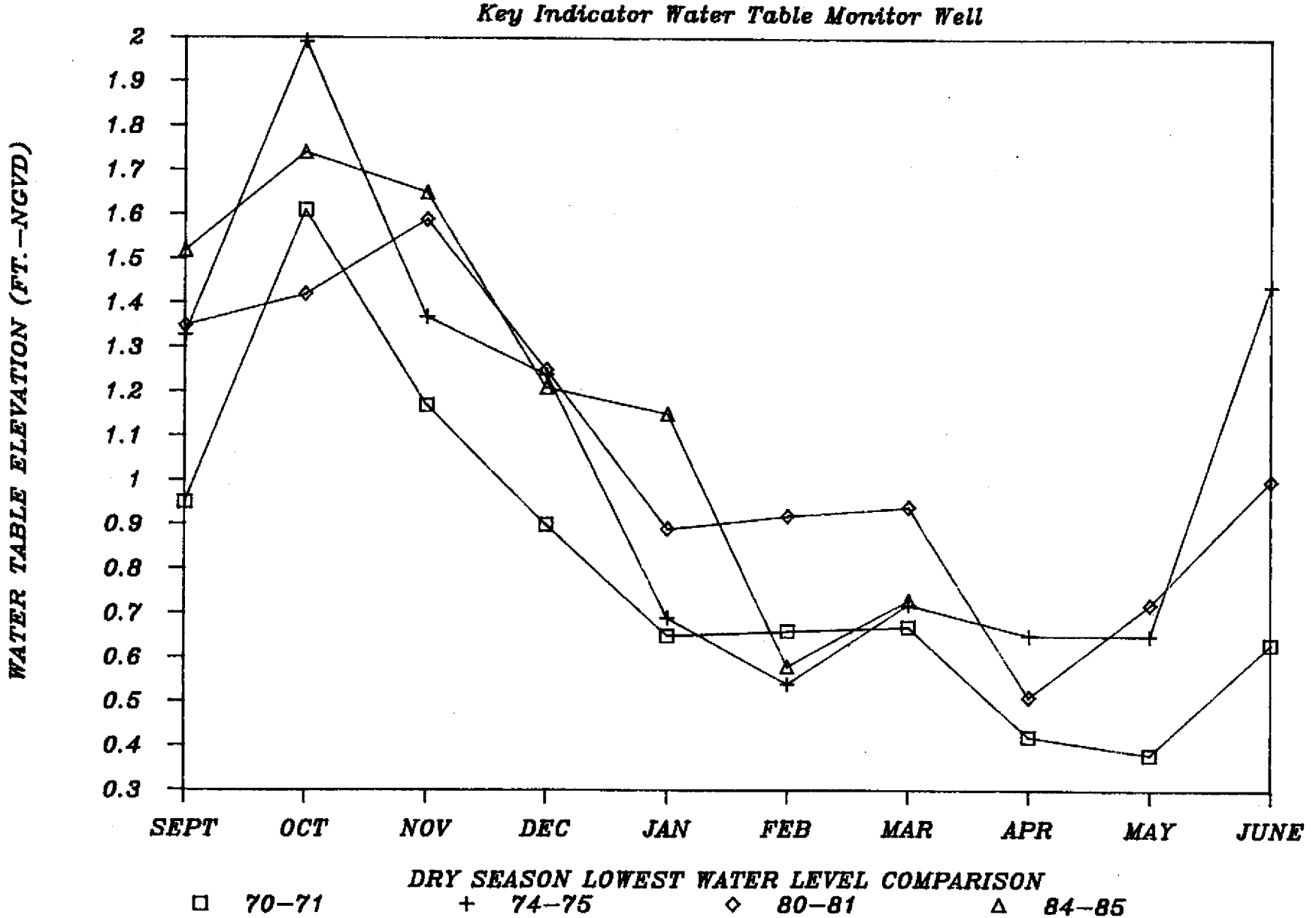
12.6
12.4
12.2
12
11.8
11.6
11.4
11.2
11
10.8
10.6
10.4
SEPT
OCT
NOV
DEC
JAN
FEB
MAR
APR
MAY
JUNE
DRY SEASON LOWEST WATER LEVEL COMPARISON
+ 74–75
◇ 80–81
△ 84–85

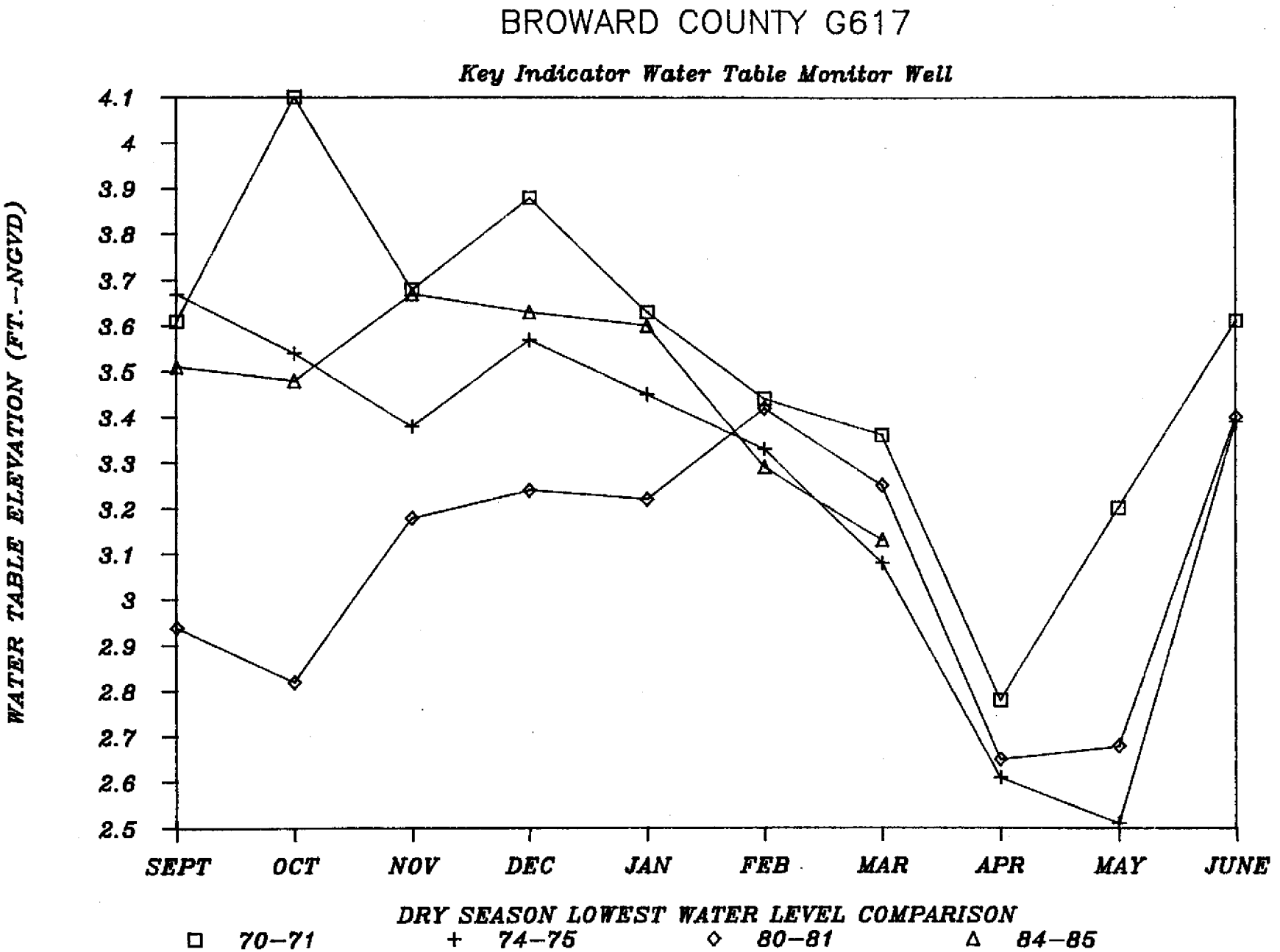
BROWARD COUNTY G853

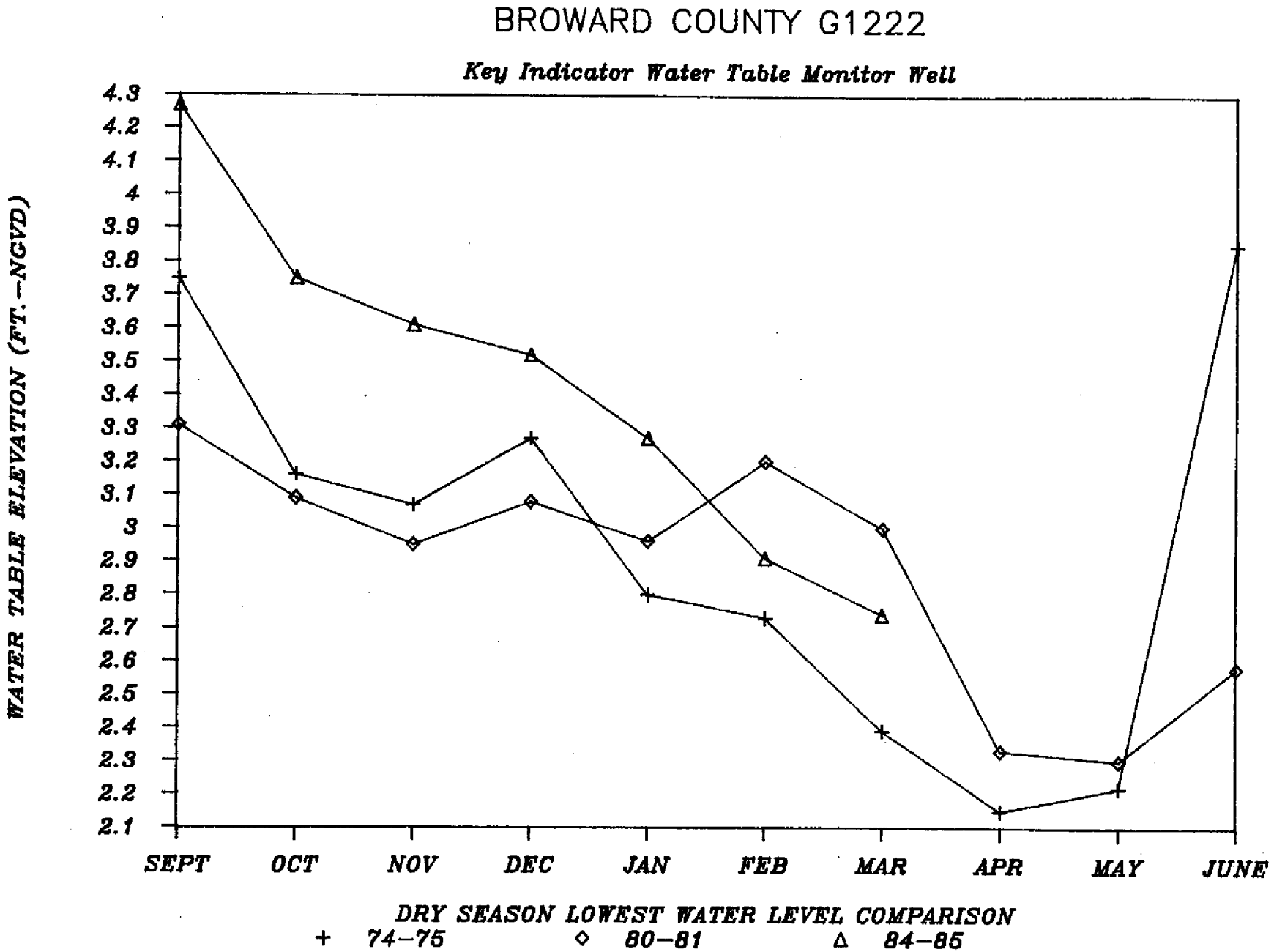


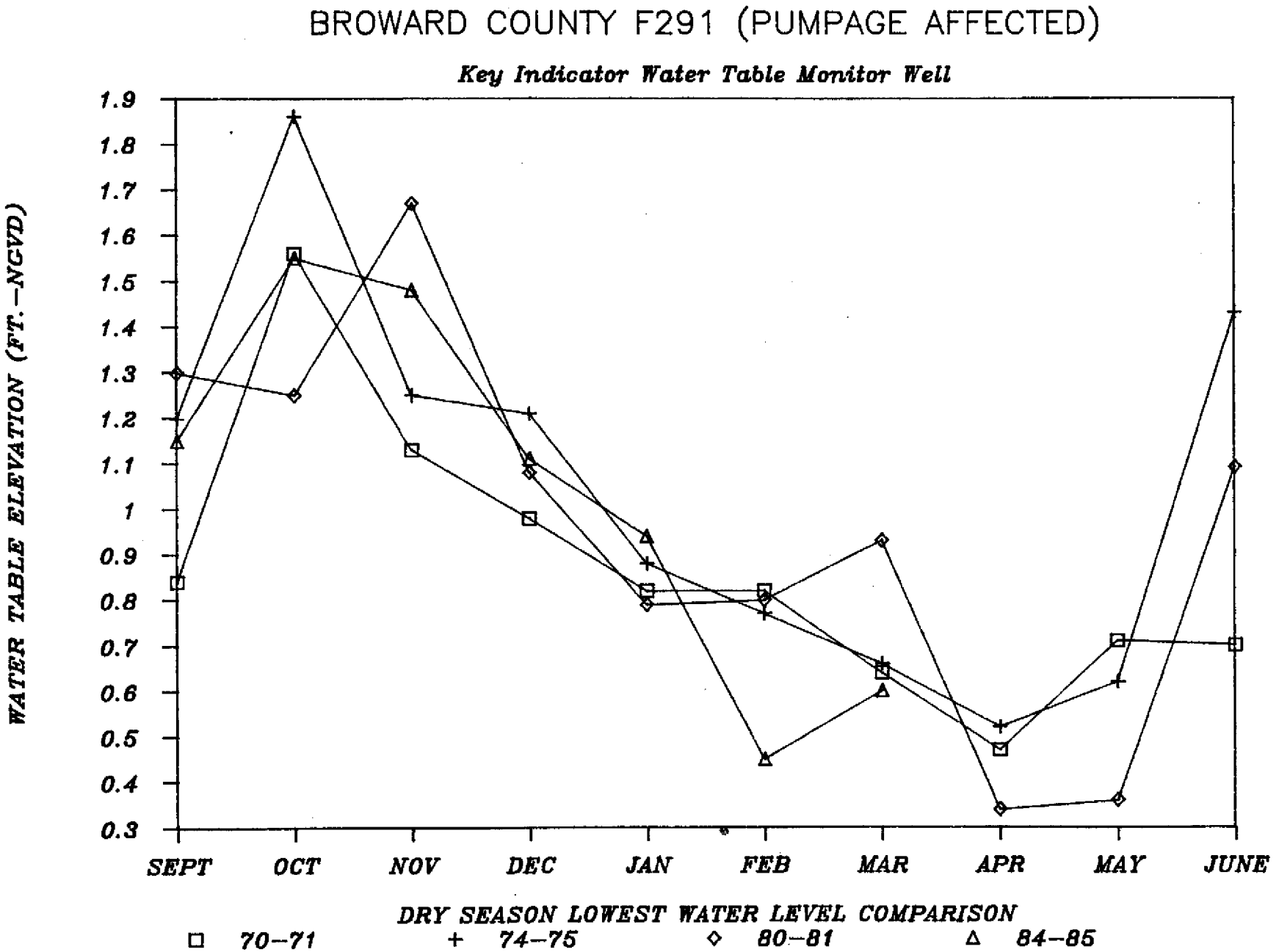

BROWARD COUNTY S329 (GOLF COURSE)
Key Indicator Water Table Monitor Well
WATER TABLE ELEVATION (FT.-NGVD)
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
-1
-1.2
-1.4
SEPT
OCT
NOV
DEC
JAN
FEB
MAR
APR
MAY
JUNE
DRY SEASON LOWEST WATER LEVEL COMPARISON
70-71
74-75
80-81
84-85

BROWARD COUNTY G561



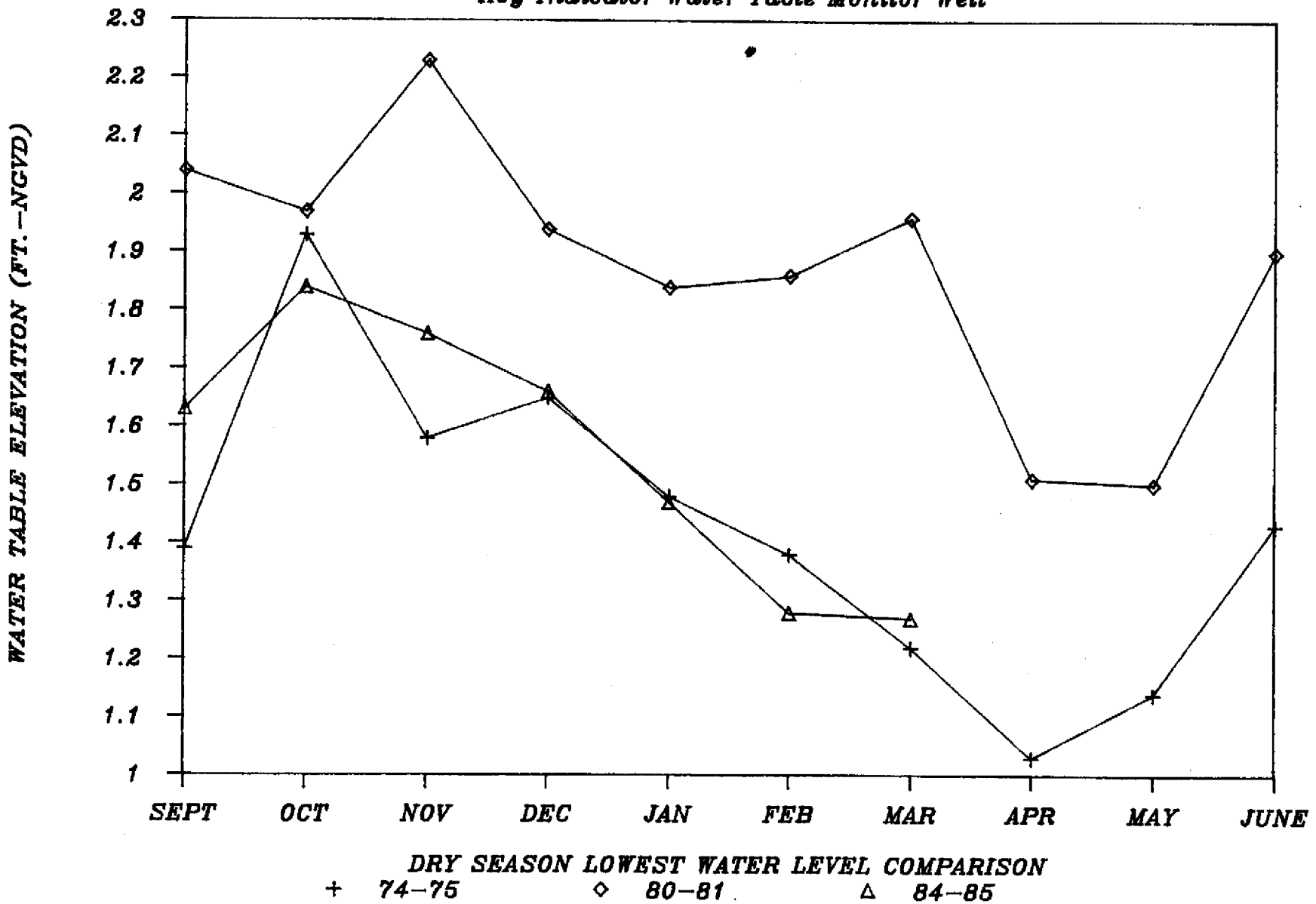

BROWARD COUNTY G617
Key Indicator Water Table Monitor Well
WATER TABLE ELEVATION (FT.-NGVD)
4.1
4
3.9
3.8
3.7
3.6
3.5
3.4
3.3
3.2
3.1
3
2.9
2.8
2.7
2.6
2.5
SEPT
OCT
NOV
DEC
JAN
FEB
MAR
APR
MAY
JUNE
DRY SEASON LOWEST WATER LEVEL COMPARISON
70-71
74-75
80-81
84-85

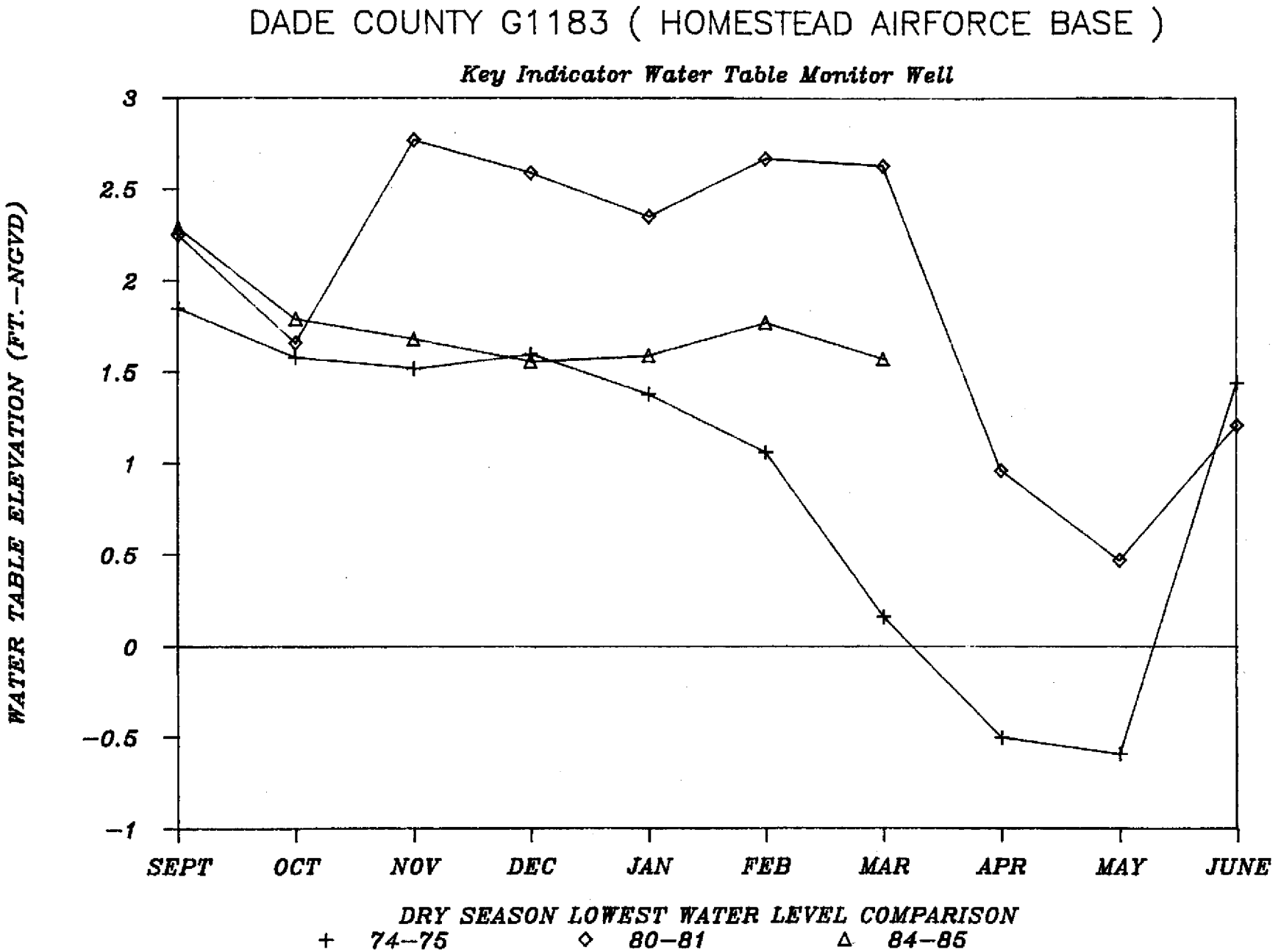

BROWARD COUNTY G1222
Key Indicator Water Table Monitor Well
WATER TABLE ELEVATION (FT.-NGVD)
4.3
4.2
4.1
4
3.9
3.8
3.7
3.6
3.5
3.4
3.3
3.2
3.1
3
2.9
2.8
2.7
2.6
2.5
2.4
2.3
2.2
2.1
SEPT
OCT
NOV
DEC
JAN
FEB
MAR
APR
MAY
JUNE
DRY SEASON LOWEST WATER LEVEL COMPARISON
+ 74-75
◇ 80-81
△ 84-85


BROWARD COUNTY F291 (PUMPAGE AFFECTED)
Key Indicator Water Table Monitor Well
WATER TABLE ELEVATION (FT.–NGVD)
1.9
1.8
1.7
1.6
1.5
1.4
1.3
1.2
1.1
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
SEPT
OCT
NOV
DEC
JAN
FEB
MAR
APR
MAY
JUNE
DRY SEASON LOWEST WATER LEVEL COMPARISON
70–71
74–75
80–81
84–85

DADE COUNTY G852

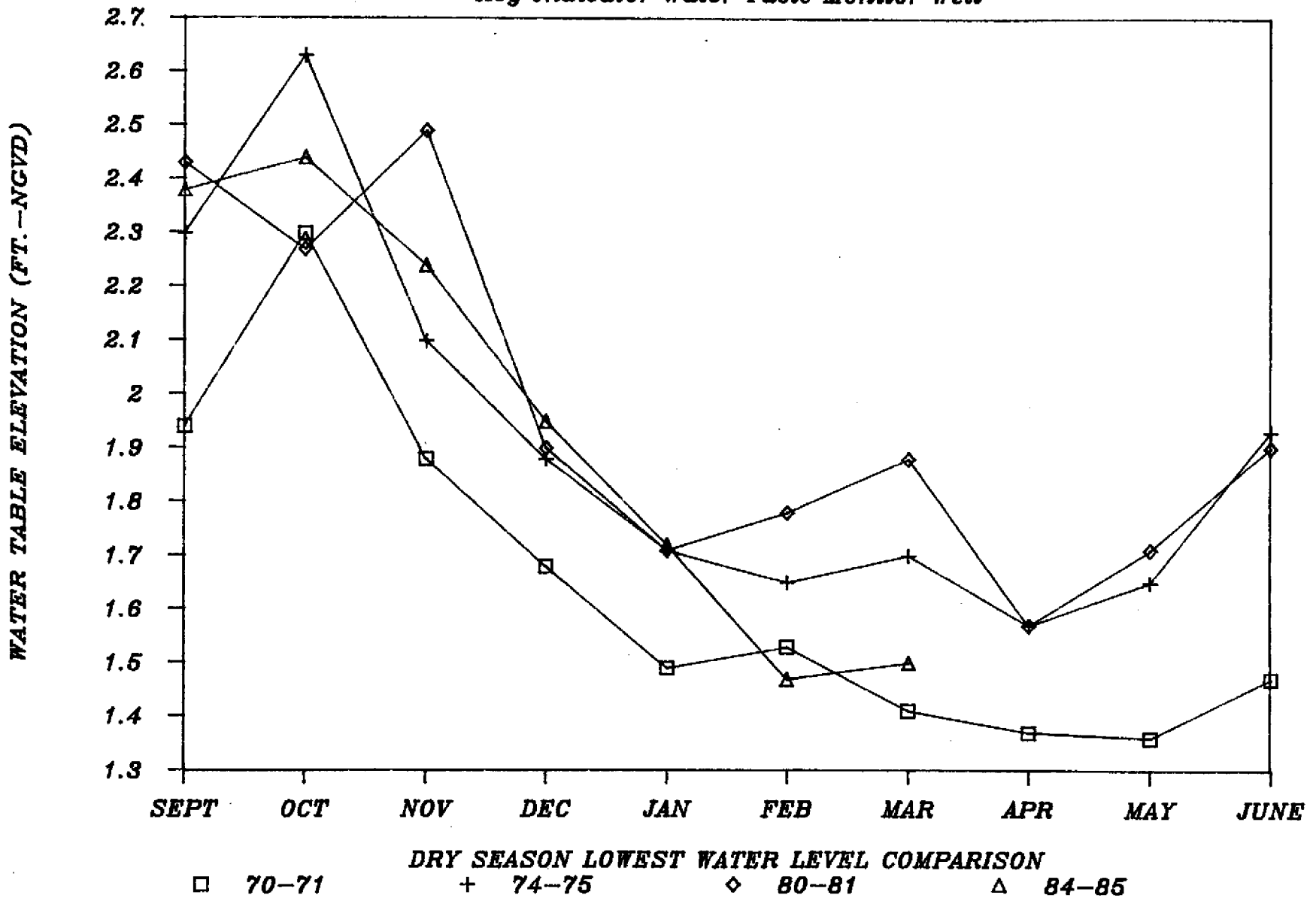
Key Indicator Water Table Monitor Well




DADE COUNTY G1183 (HOMESTEAD AIRFORCE BASE)
Key Indicator Water Table Monitor Well
WATER TABLE ELEVATION (FT.-NGVD)
3
2.5
2
1.5
1
0.5
0
-0.5
-1
SEPT
OCT
NOV
DEC
JAN
FEB
MAR
APR
MAY
JUNE
DRY SEASON LOWEST WATER LEVEL COMPARISON
+ 74-75
◇ 80-81
△ 84-85

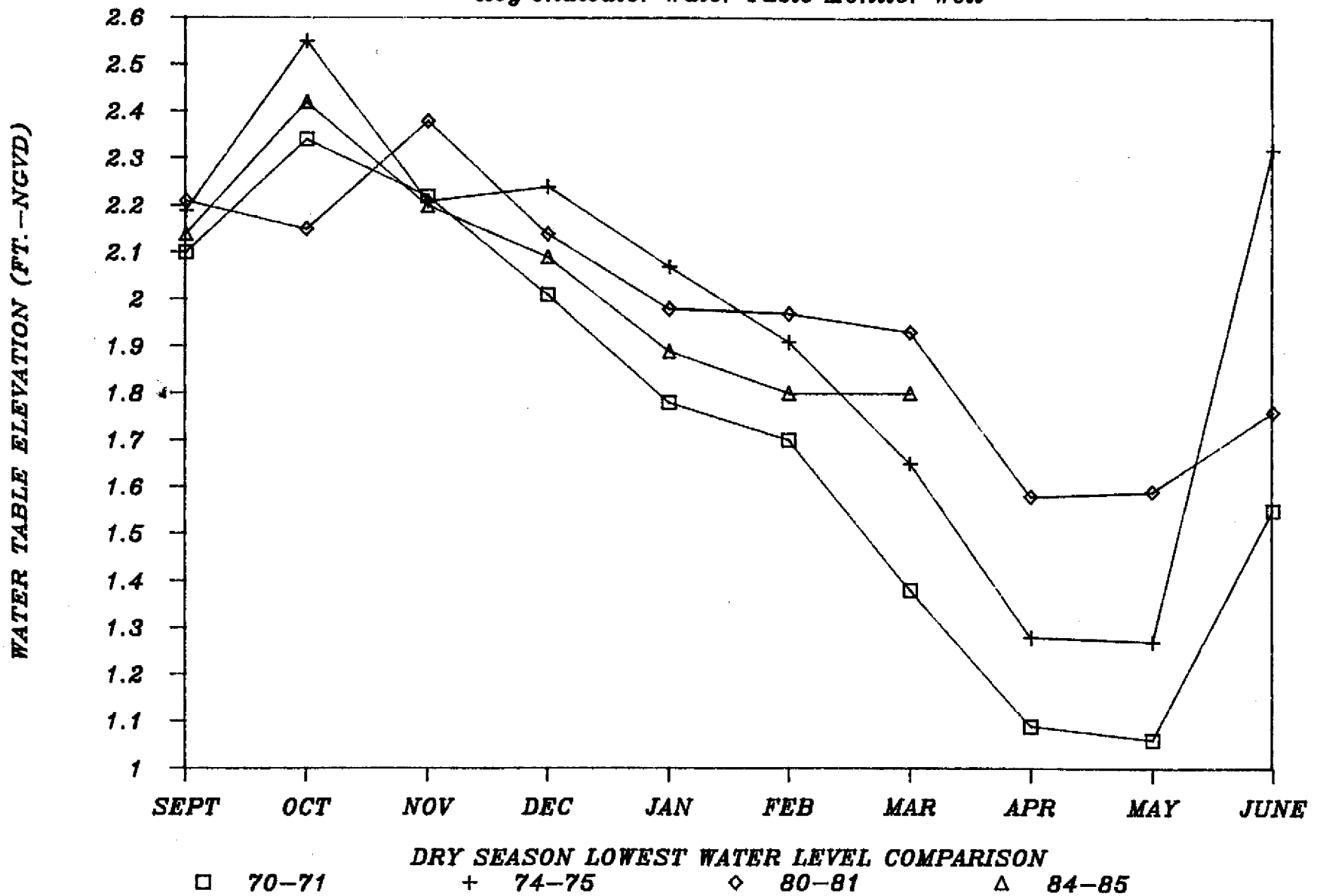
DADE COUNTY F179

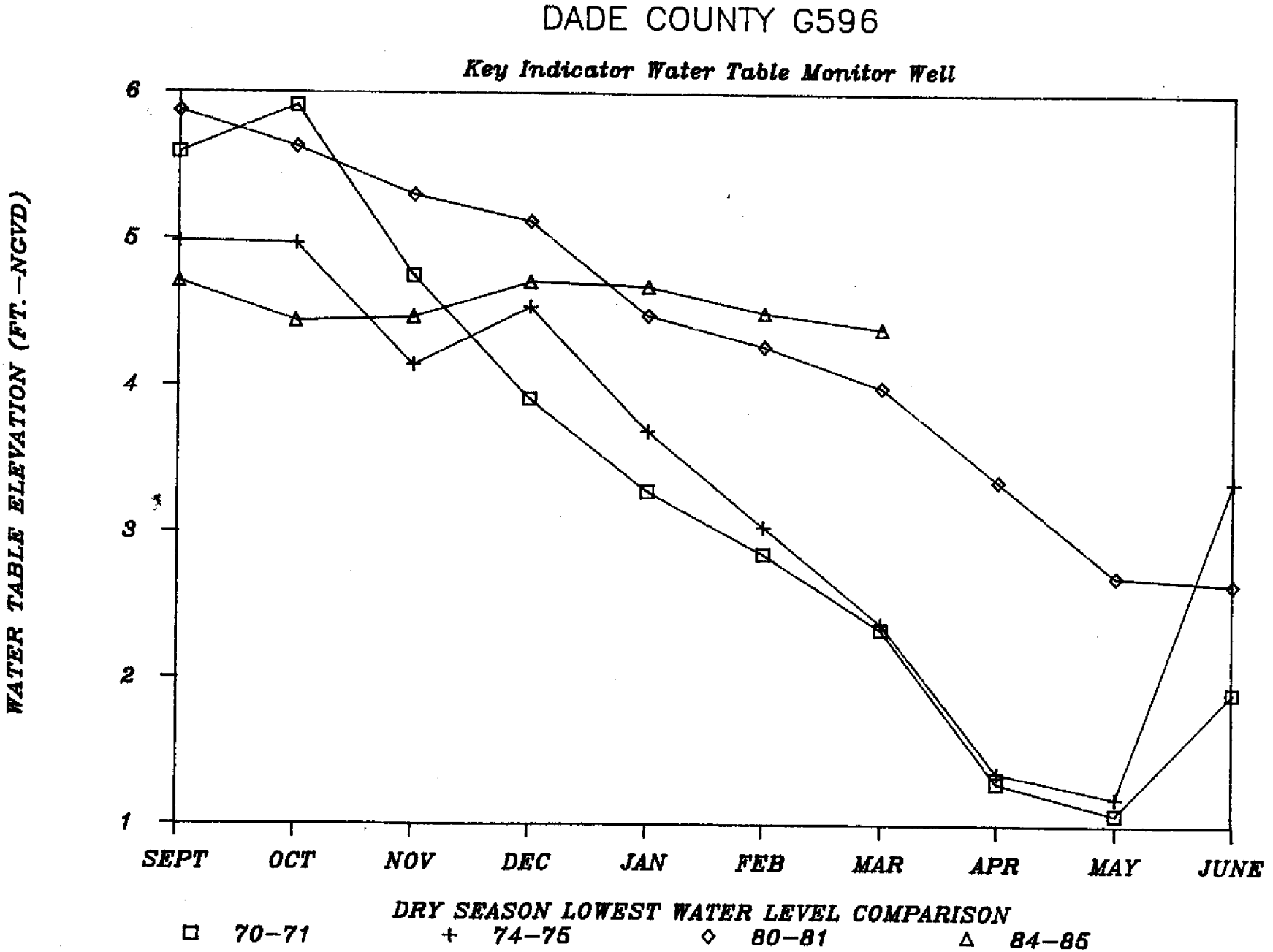
Key Indicator Water Table Monitor Well



DADE COUNTY F319

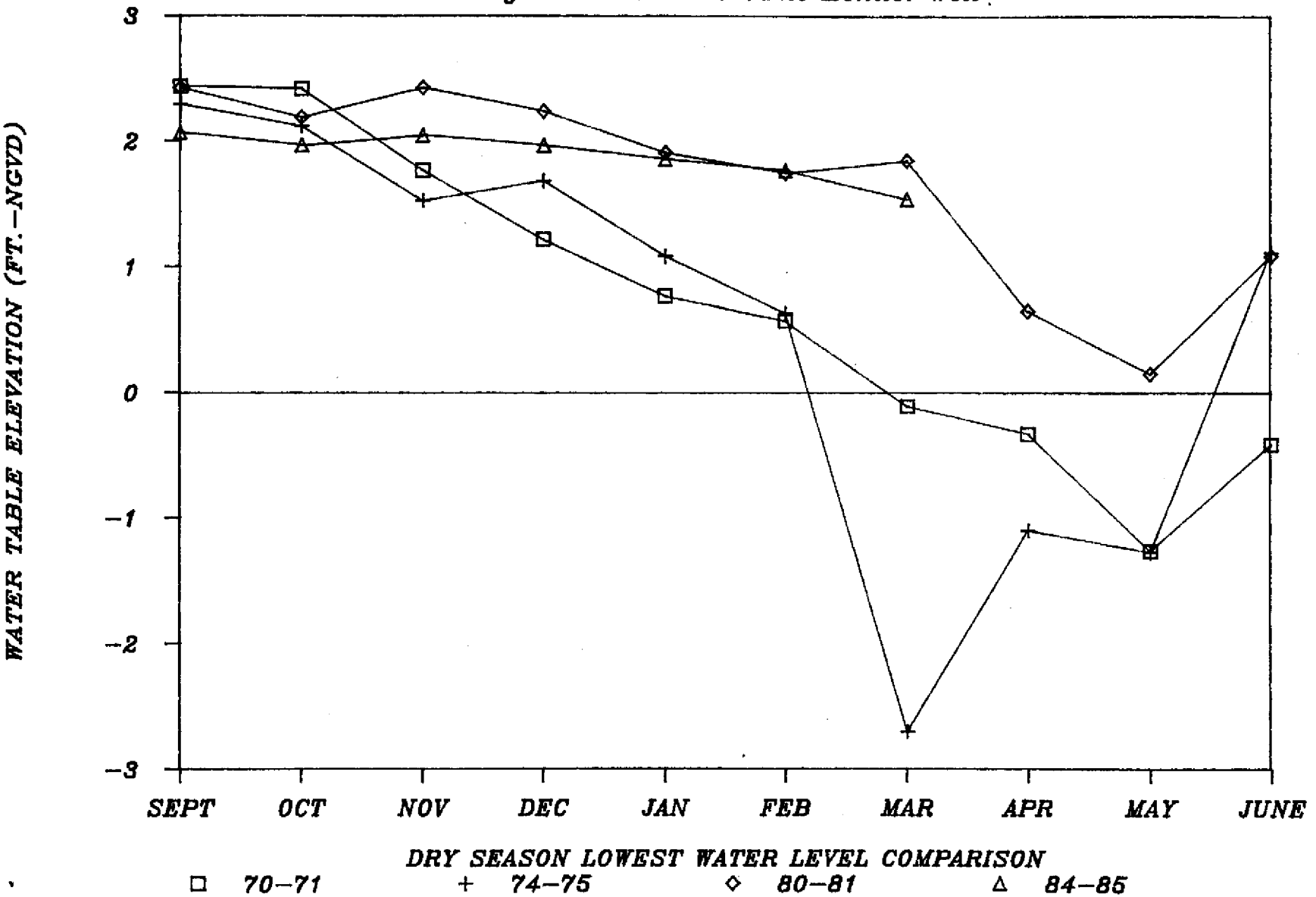
Key Indicator Water Table Monitor Well




DADE COUNTY G596
Key Indicator Water Table Monitor Well
WATER TABLE ELEVATION (FT.-NGVD)
6
5
4
3
2
1
SEPT
OCT
NOV
DEC
JAN
FEB
MAR
APR
MAY
JUNE
DRY SEASON LOWEST WATER LEVEL COMPARISON
70-71
74-75
80-81
84-85

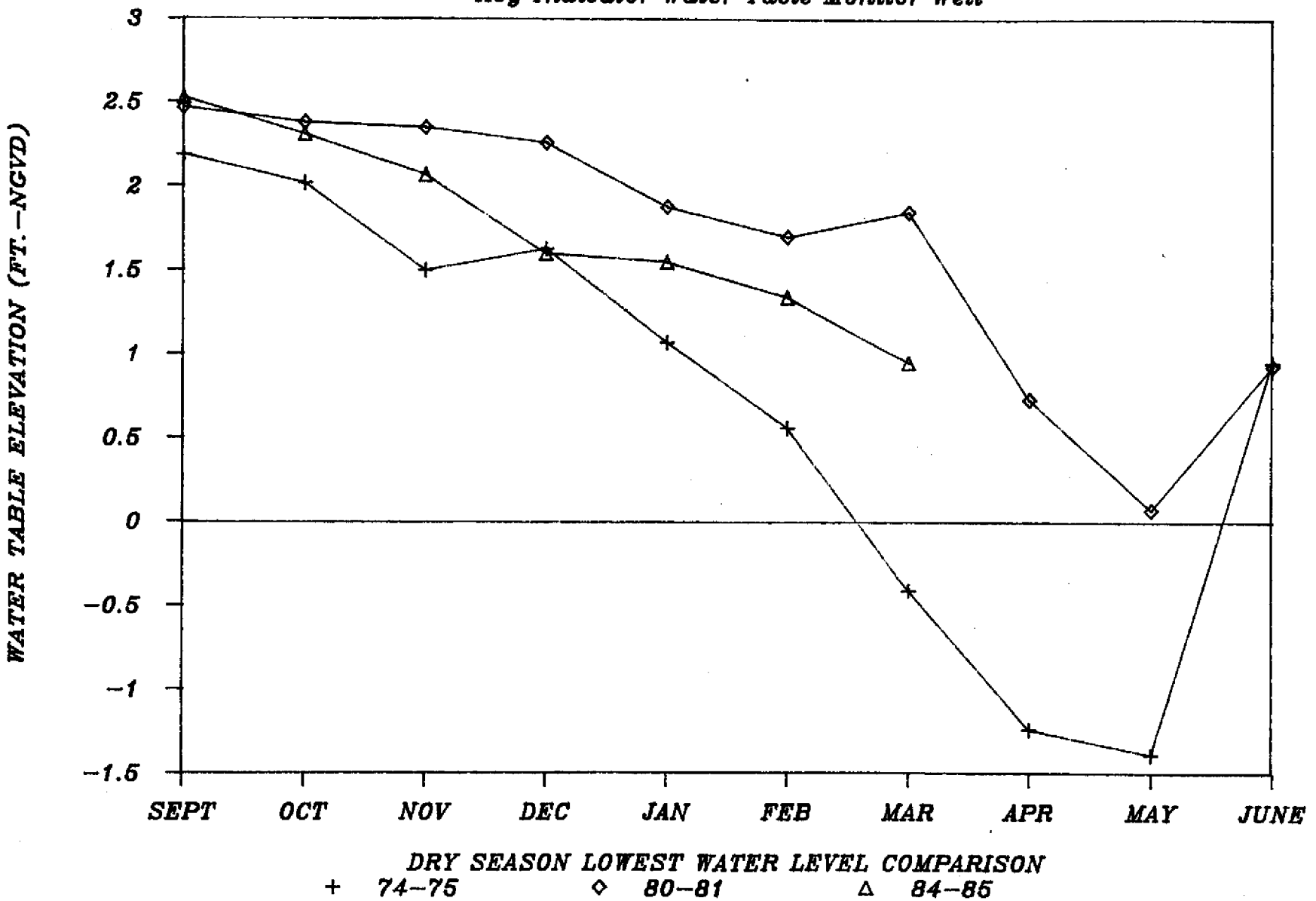
DADE COUNTY G613

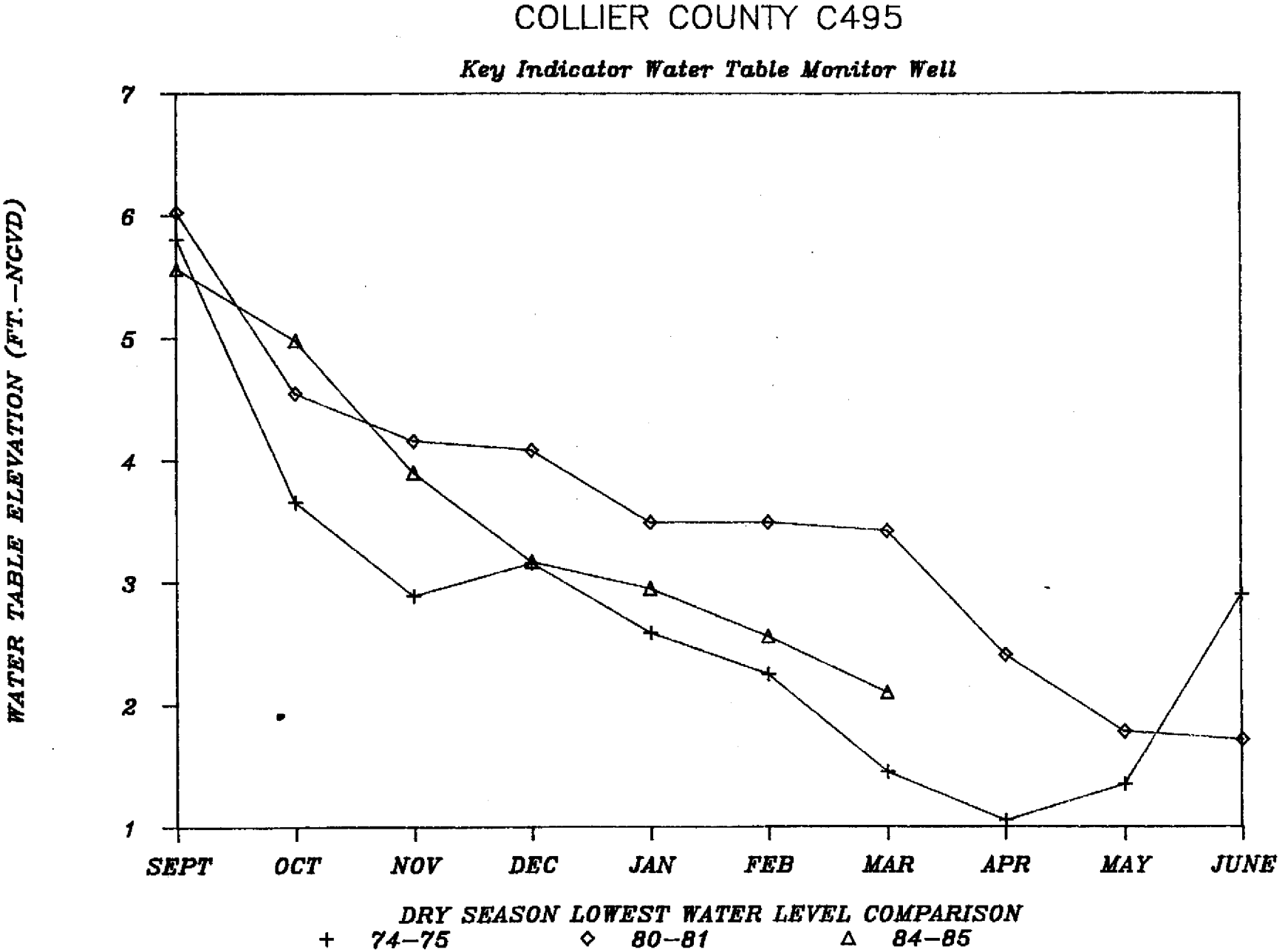
Key Indicator Water Table Monitor Well



DADE COUNTY G1251 (SOUTHWEST WELLFIELD)

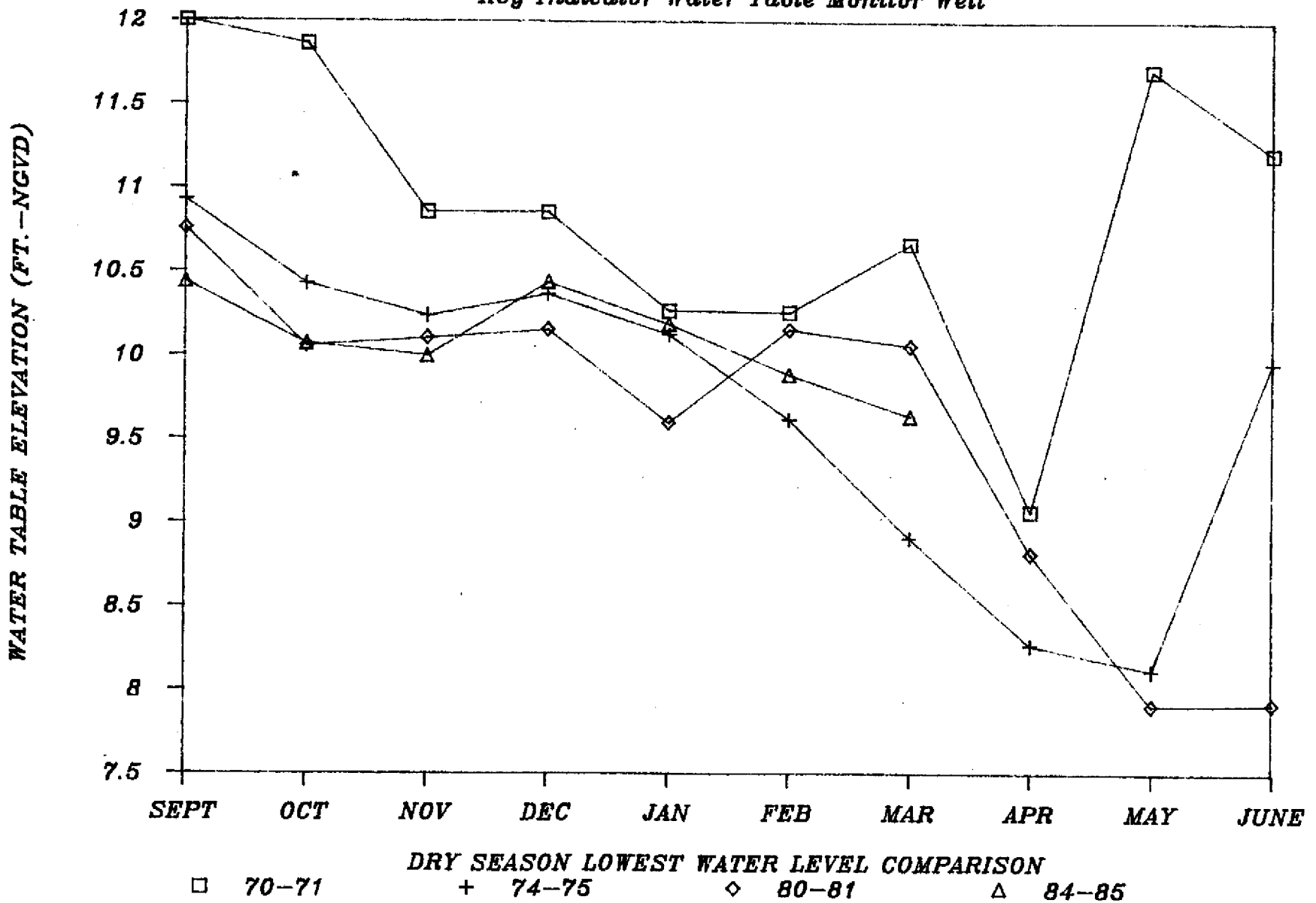
Key Indicator Water Table Monitor Well

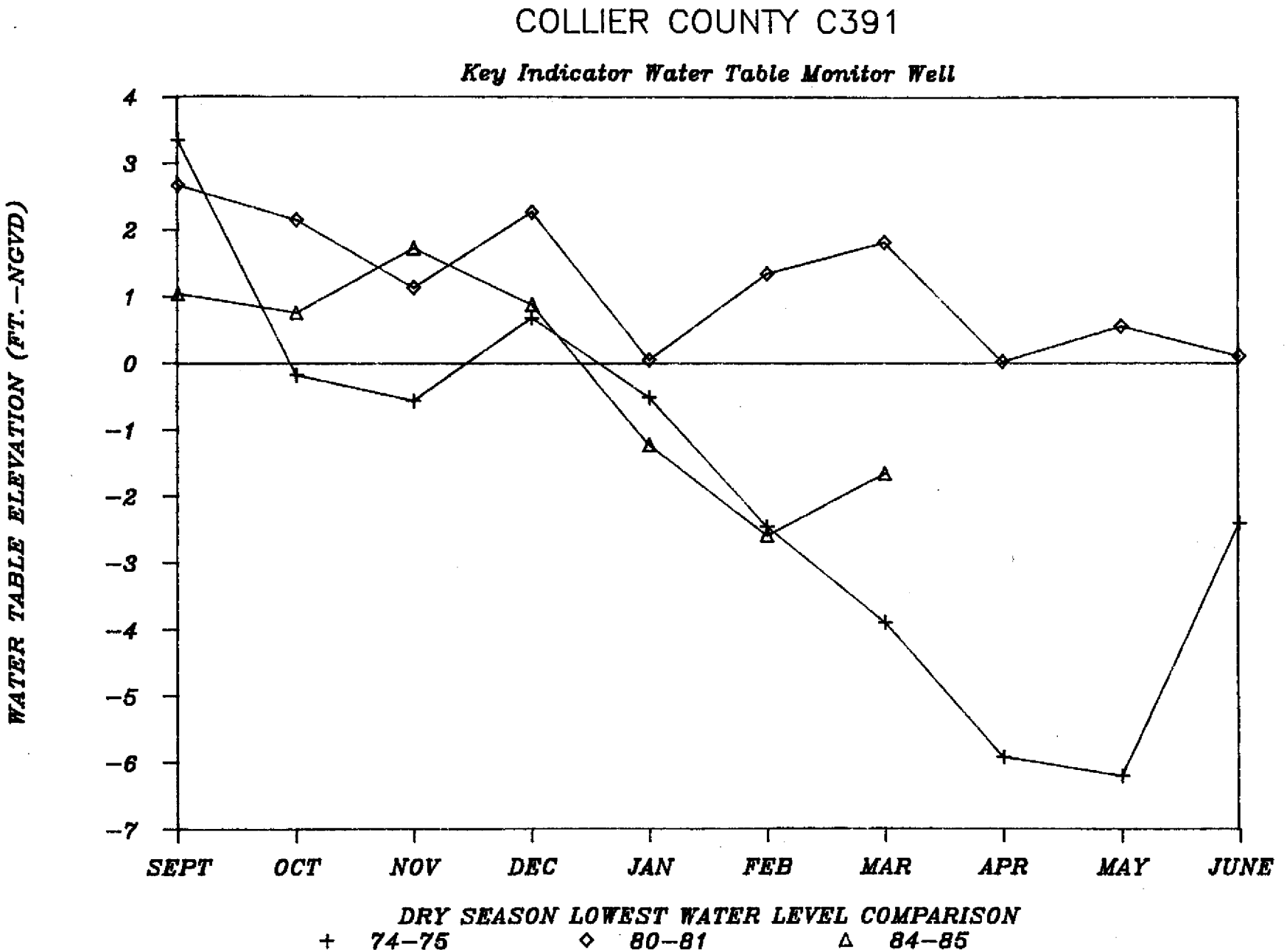


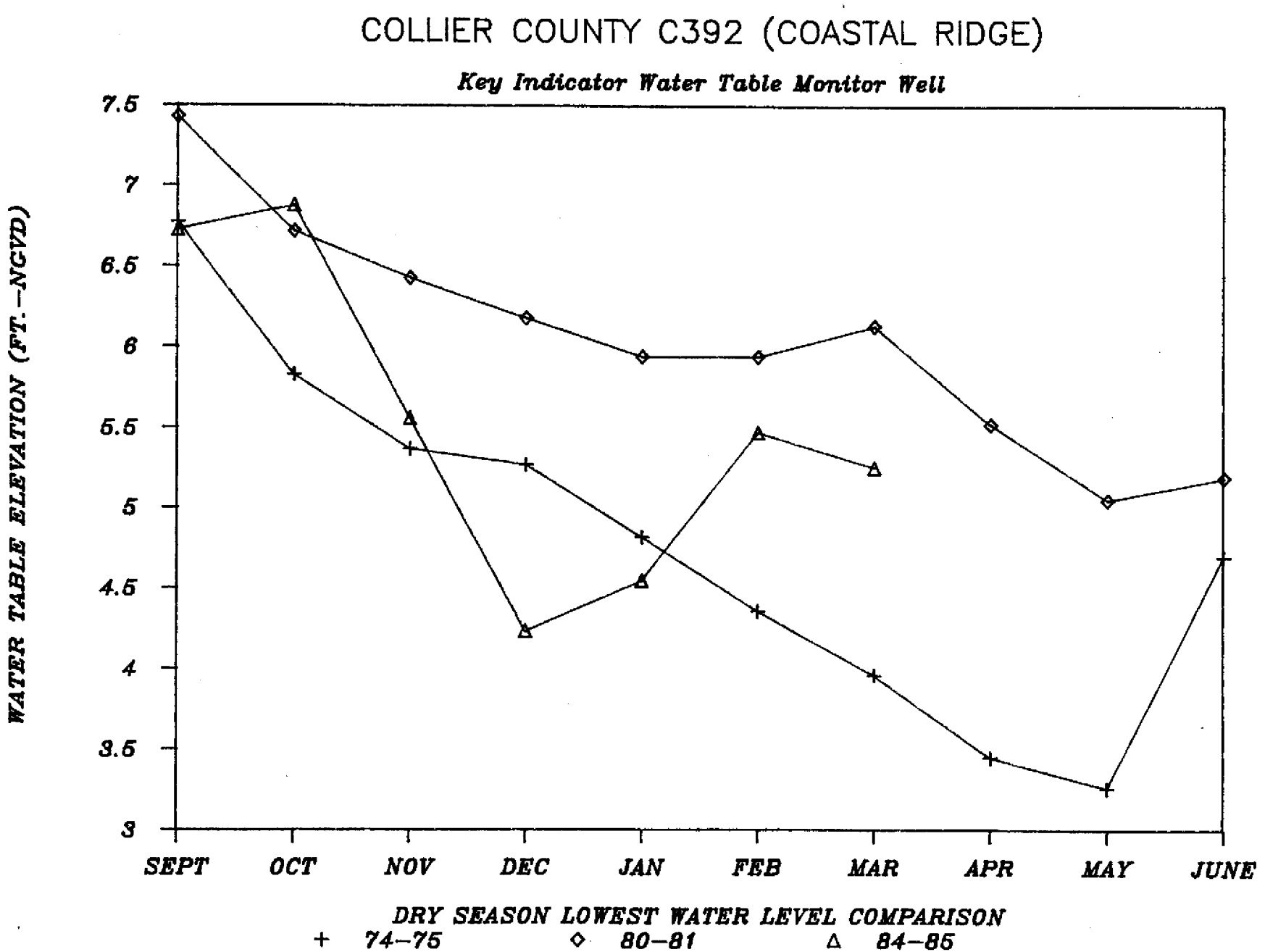

COLLIER COUNTY C495
Key Indicator Water Table Monitor Well
WATER TABLE ELEVATION (FT.-NGVD)
7
6
5
4
3
2
1
SEPT
OCT
NOV
DEC
JAN
FEB
MAR
APR
MAY
JUNE
DRY SEASON LOWEST WATER LEVEL COMPARISON
+ 74-75
◇ 80-81
△ 84-85

COLLIER COUNTY C54

Key Indicator Water Table Monitor Well

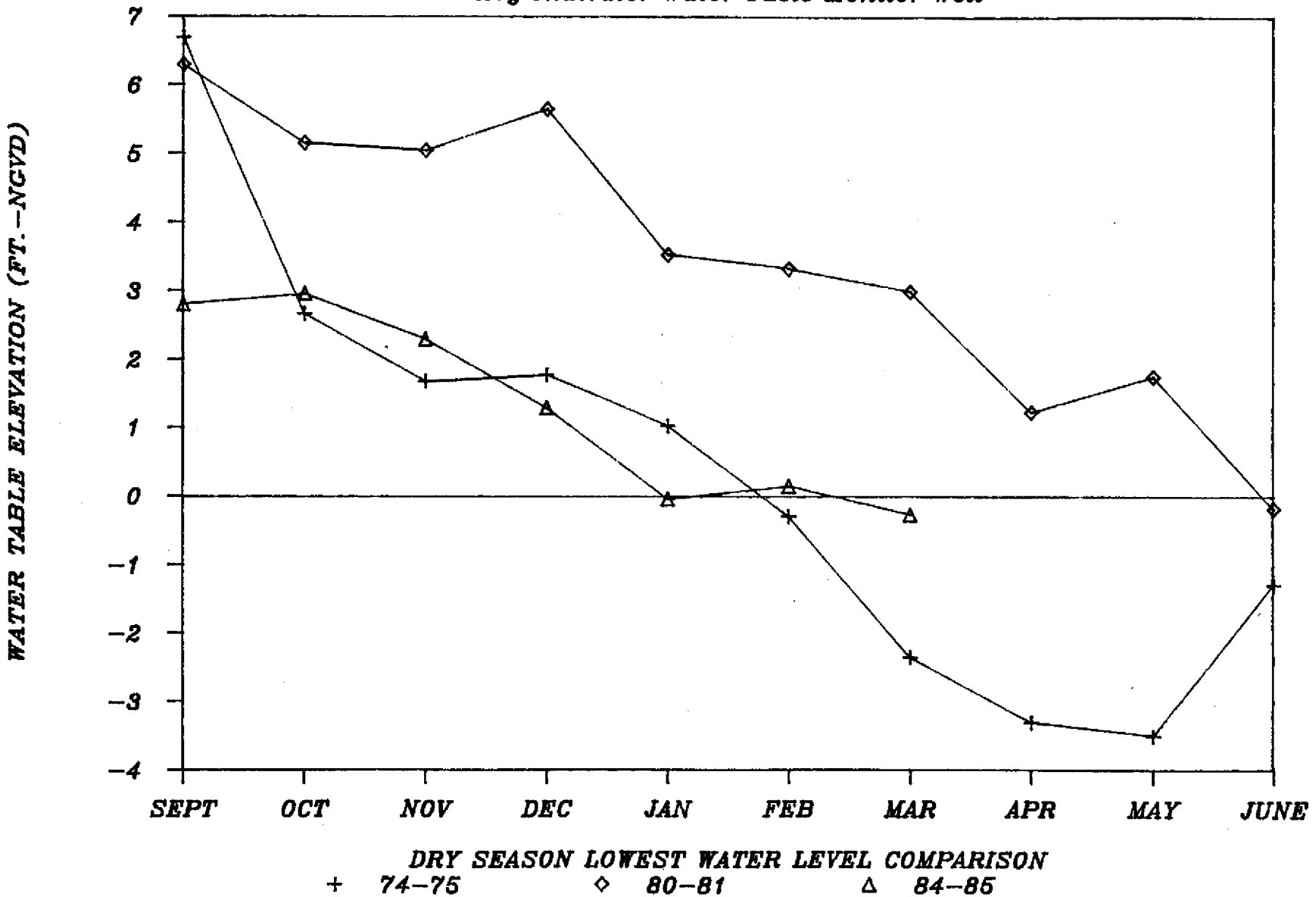



COLLIER COUNTY C391
Key Indicator Water Table Monitor Well
WATER TABLE ELEVATION (FT.-NGVD)
4
3
2
1
0
-1
-2
-3
-4
-5
-6
-7
SEPT
OCT
NOV
DEC
JAN
FEB
MAR
APR
MAY
JUNE
DRY SEASON LOWEST WATER LEVEL COMPARISON
+ 74-75
◇ 80-81
△ 84-85

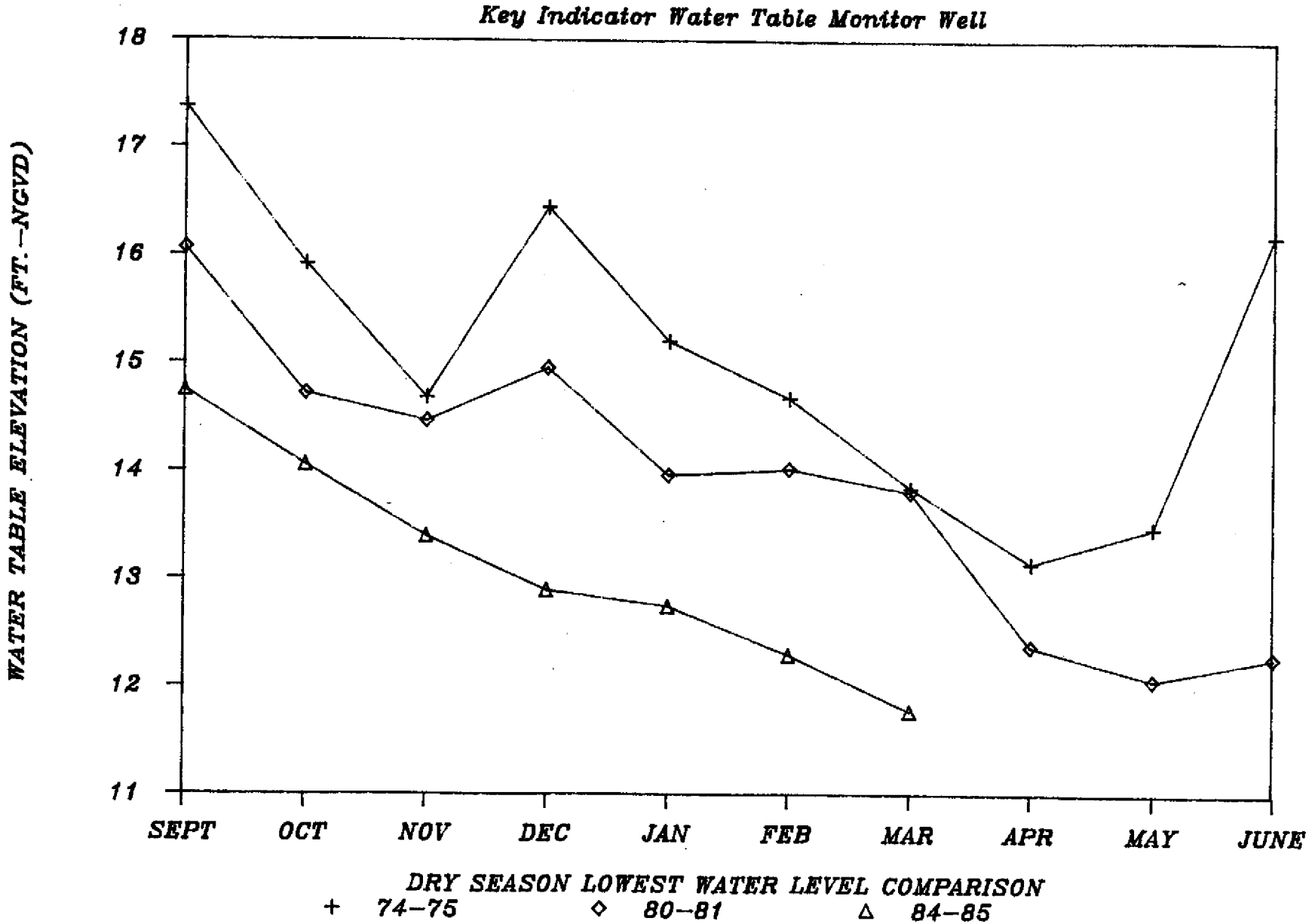

COLLIER COUNTY C392 (COASTAL RIDGE)
Key Indicator Water Table Monitor Well
WATER TABLE ELEVATION (FT.-NGVD)
7.5
7
6.5
6
5.5
5
4.5
4
3.5
3
SEPT
OCT
NOV
DEC
JAN
FEB
MAR
APR
MAY
JUNE
DRY SEASON LOWEST WATER LEVEL COMPARISON
+ 74-75
◇ 80-81
△ 84-85

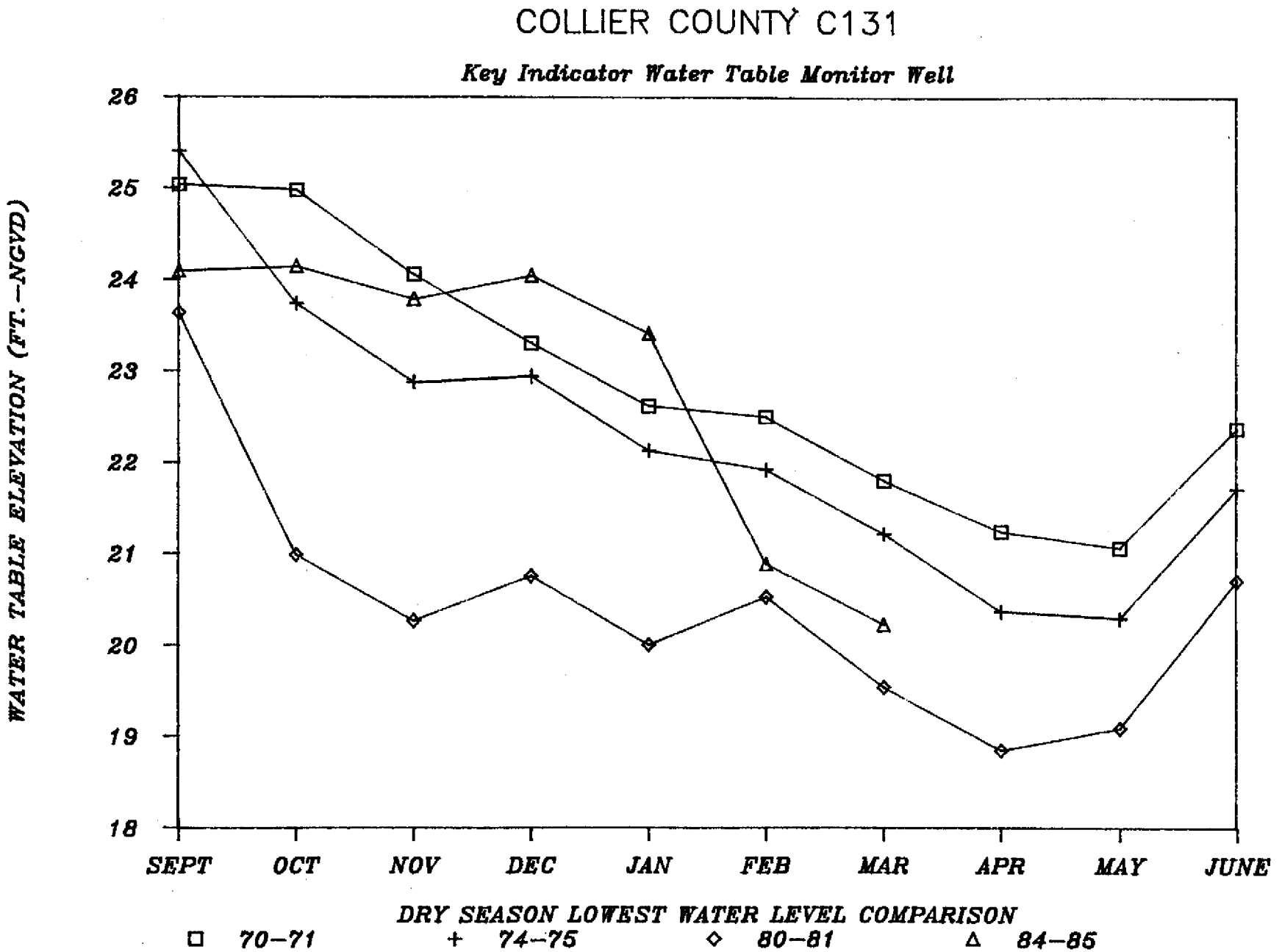
COLLIER COUNTY C489

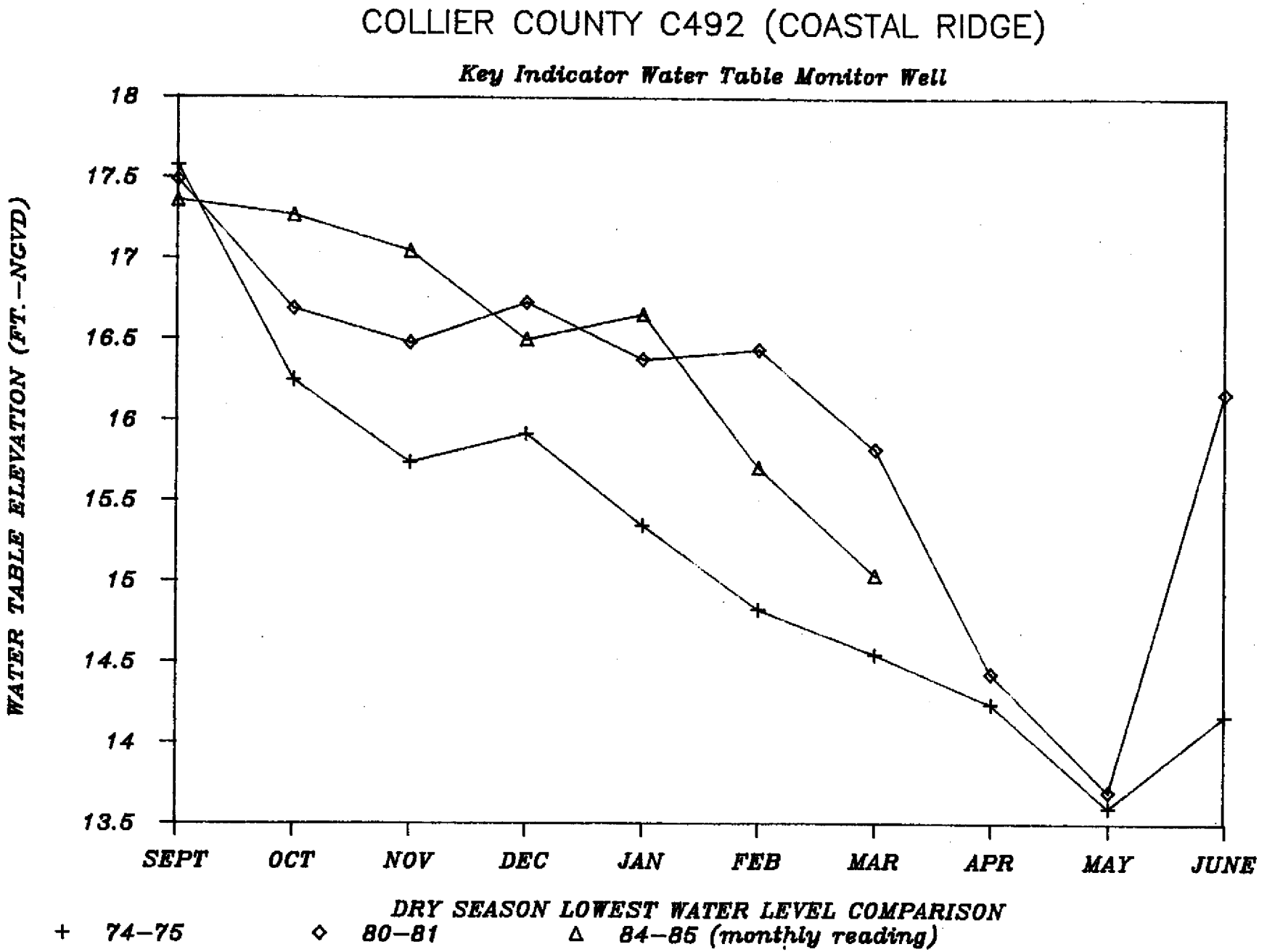
Key Indicator Water Table Monitor Well

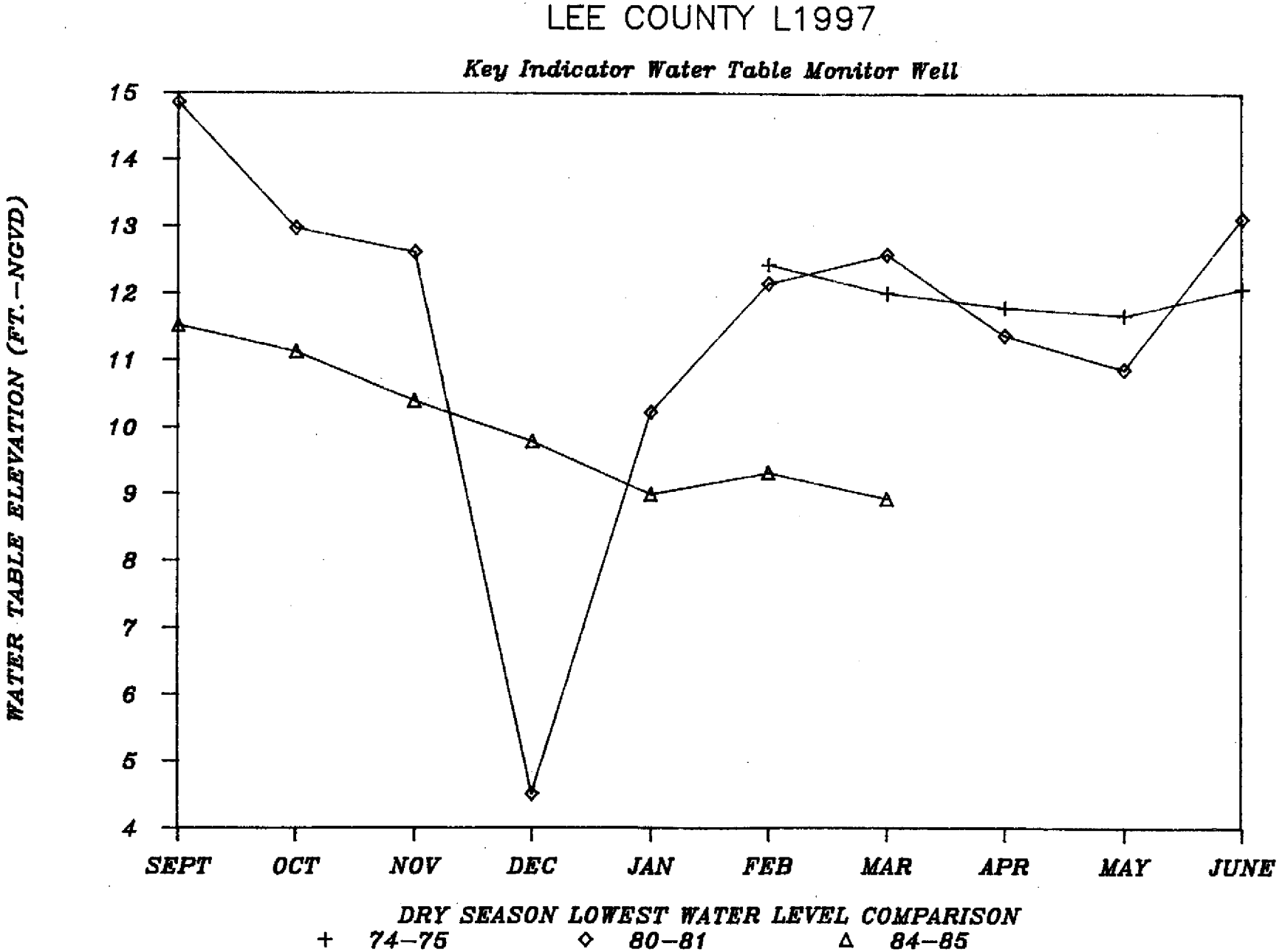


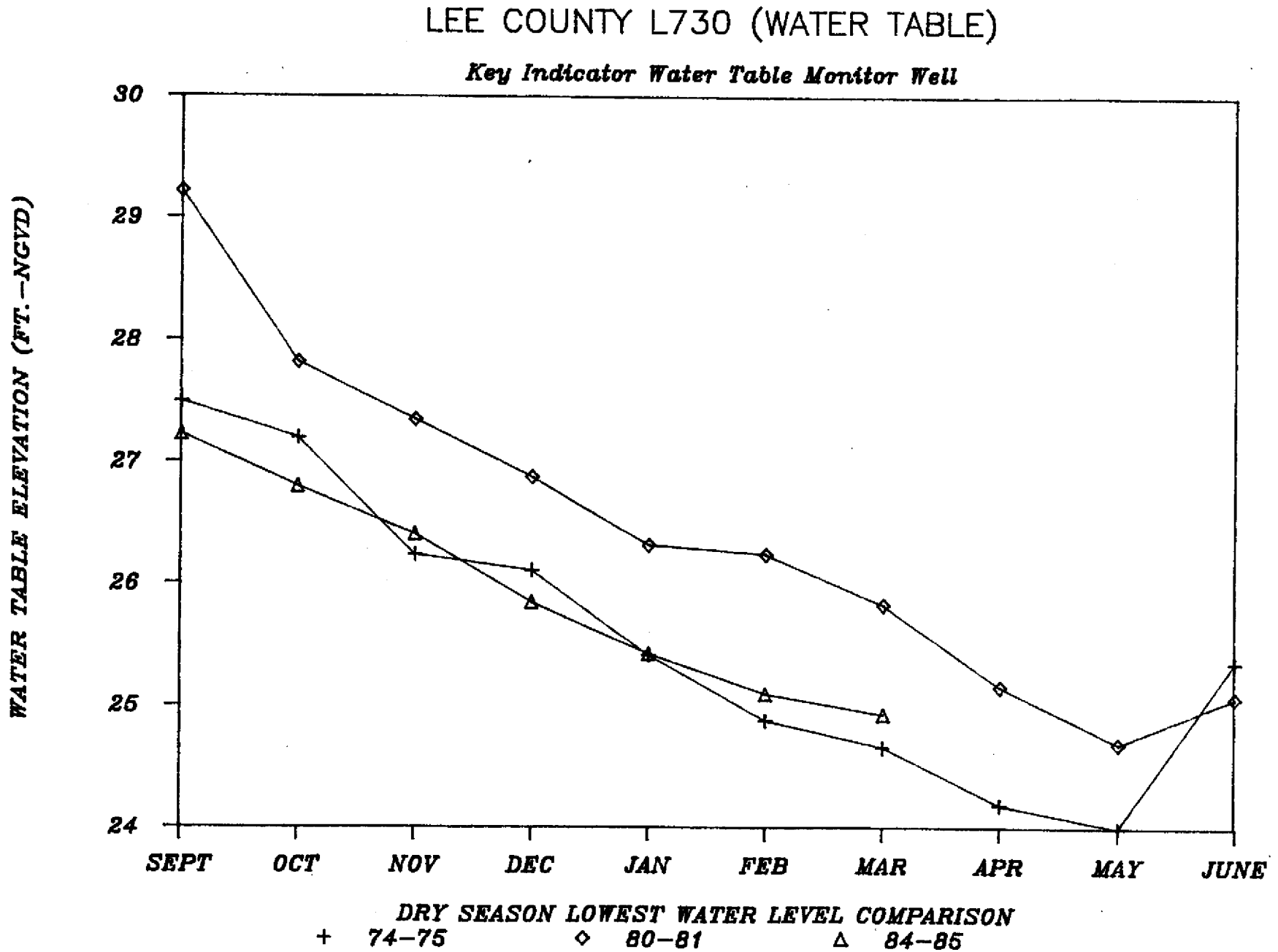
COLLIER COUNTY C503

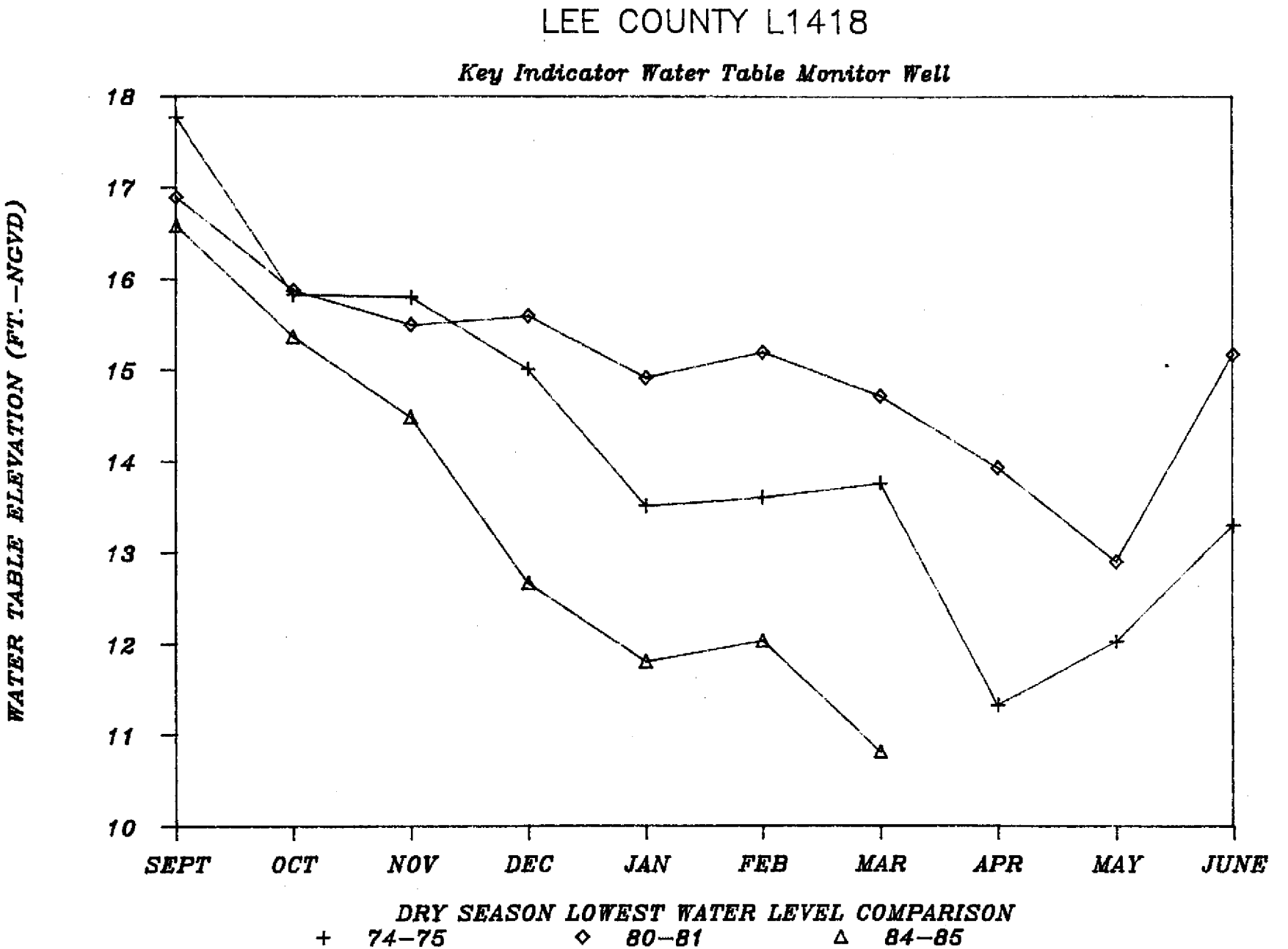


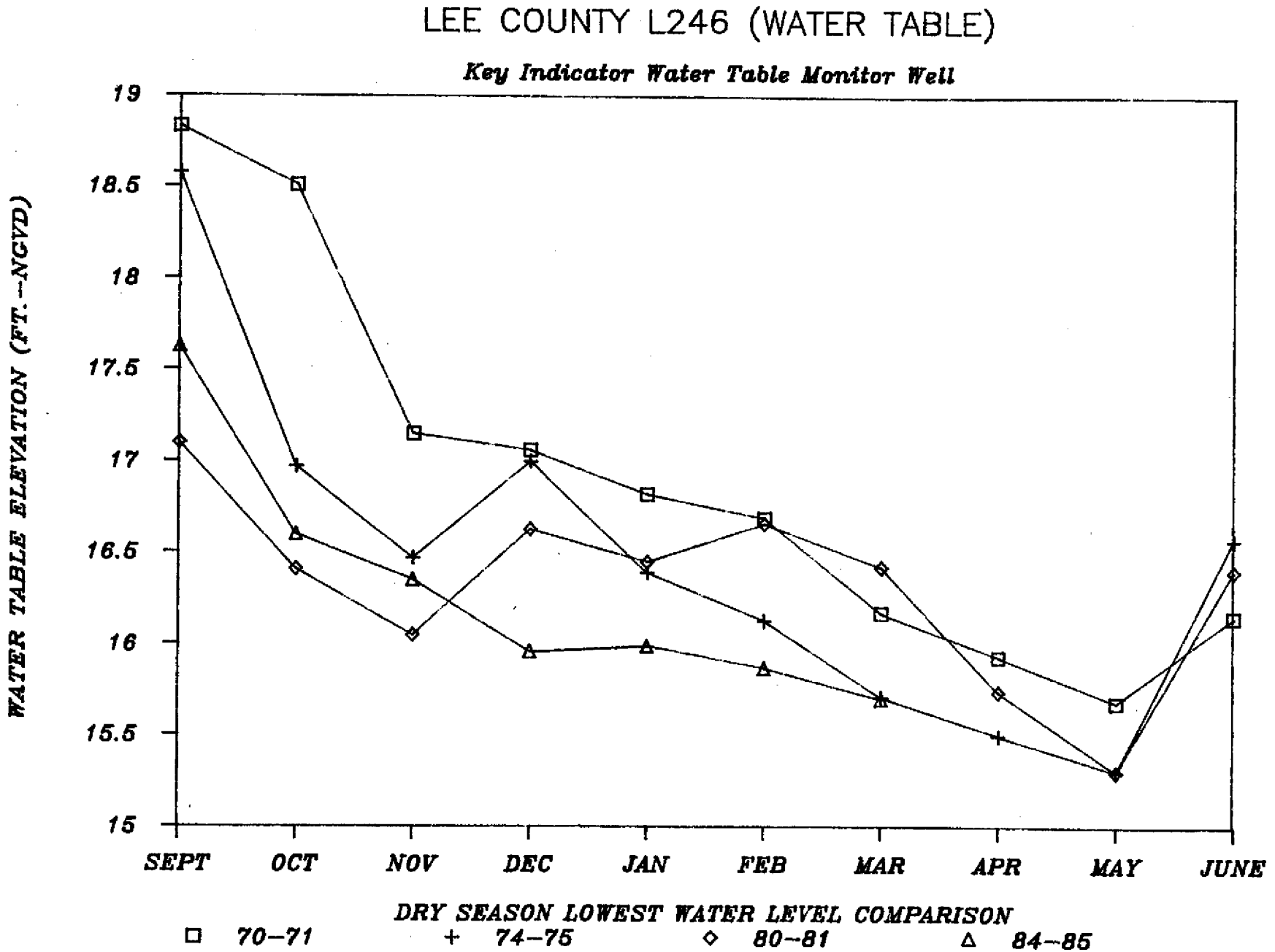

COLLIER COUNTY C131
Key Indicator Water Table Monitor Well
WATER TABLE ELEVATION (FT.-NGVD)
26
25
24
23
22
21
20
19
18
SEPT
OCT
NOV
DEC
JAN
FEB
MAR
APR
MAY
JUNE
DRY SEASON LOWEST WATER LEVEL COMPARISON
70-71
74-75
80-81
84-85

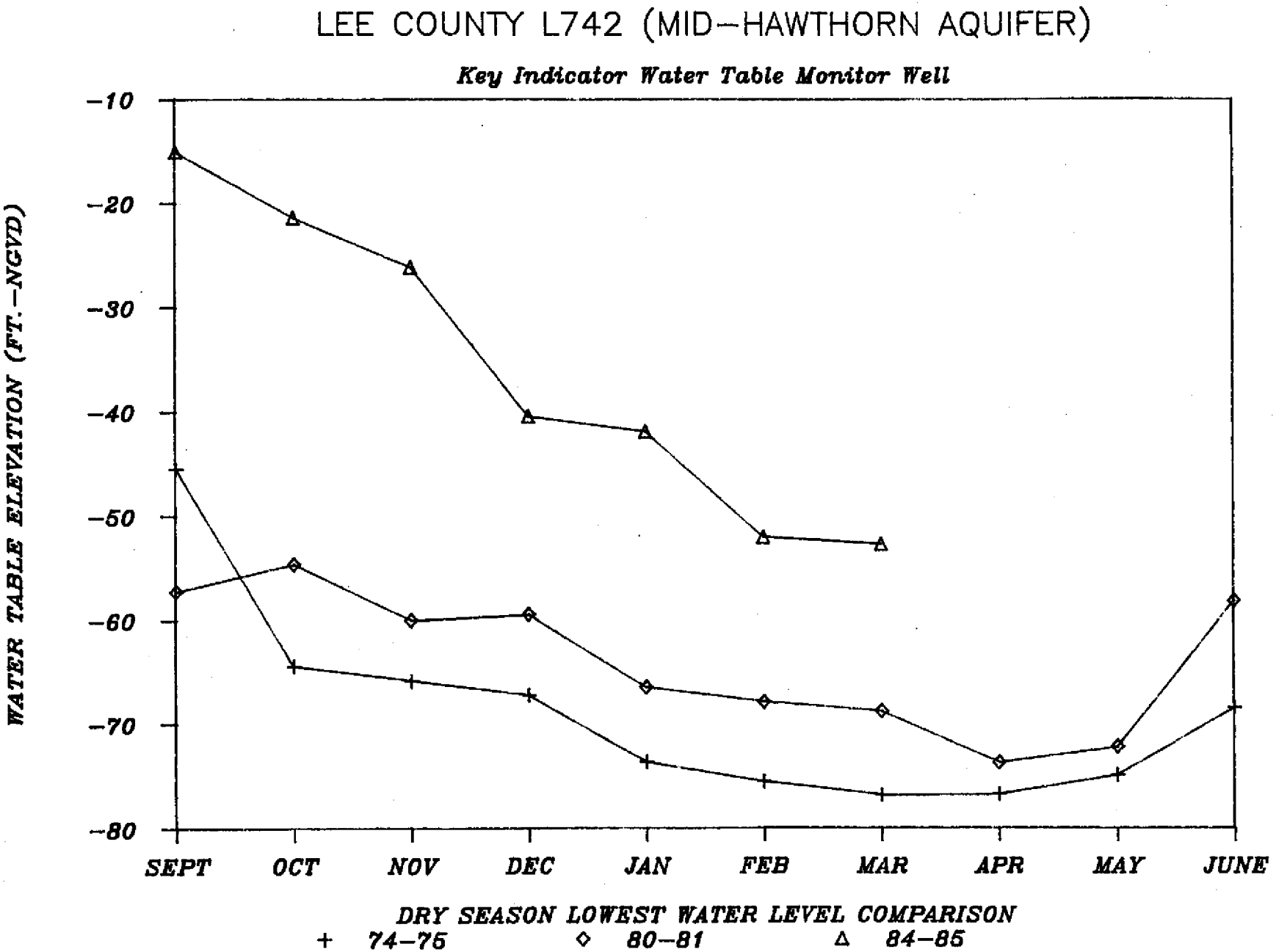

COLLIER COUNTY C492 (COASTAL RIDGE)
Key Indicator Water Table Monitor Well
WATER TABLE ELEVATION (FT.–NGVD)
18
17.5
17
16.5
16
15.5
15
14.5
14
13.5
SEPT
OCT
NOV
DEC
JAN
FEB
MAR
APR
MAY
JUNE
DRY SEASON LOWEST WATER LEVEL COMPARISON
+ 74–75
◇ 80–81
△ 84–85 (monthly reading)

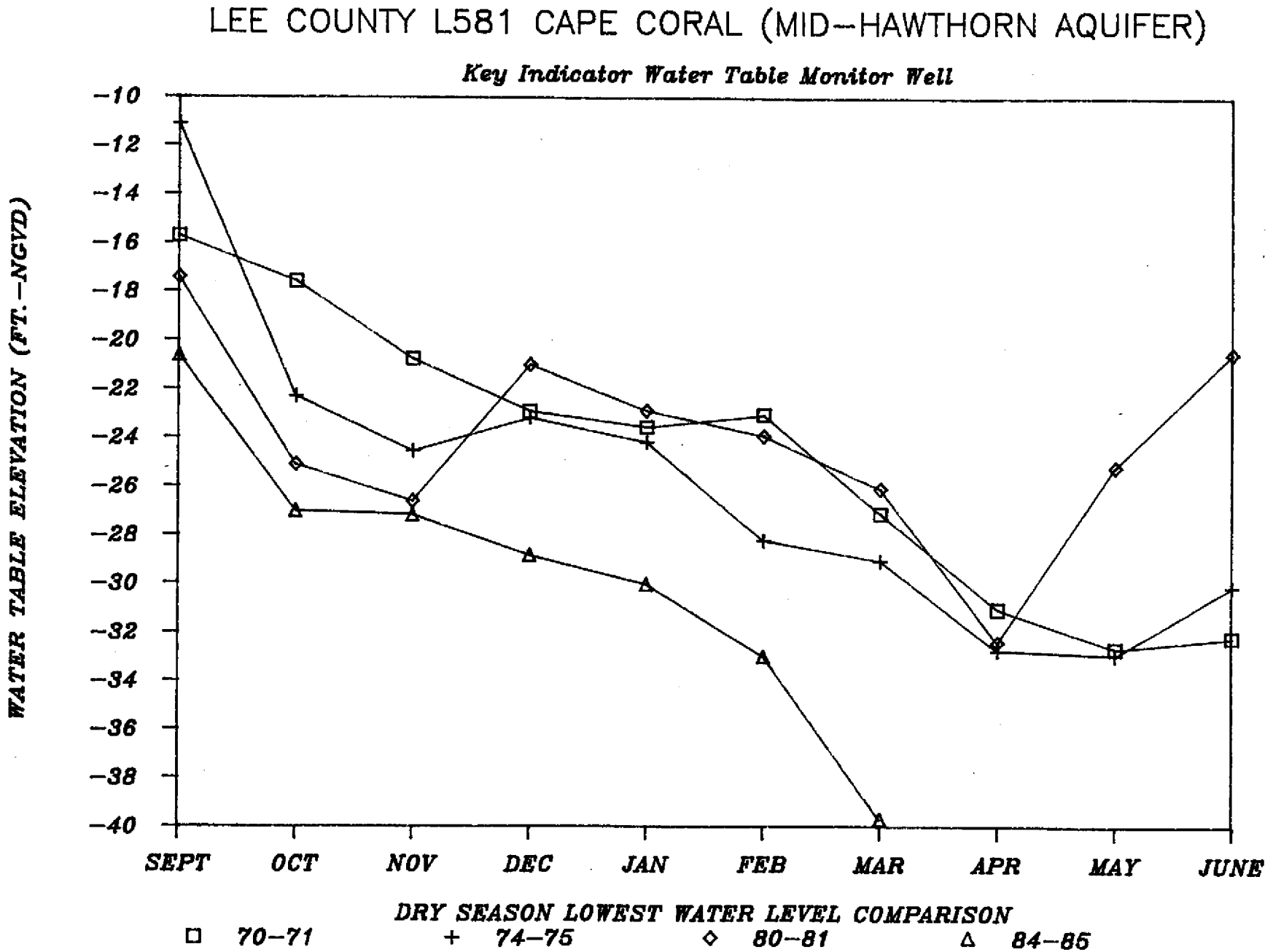

LEE COUNTY L1997
Key Indicator Water Table Monitor Well
WATER TABLE ELEVATION (FT.-NGVD)
15
14
13
12
11
10
9
8
7
6
5
4
SEPT
OCT
NOV
DEC
JAN
FEB
MAR
APR
MAY
JUNE
DRY SEASON LOWEST WATER LEVEL COMPARISON
+ 74-75
◇ 80-81
△ 84-85


LEE COUNTY L730 (WATER TABLE)
Key Indicator Water Table Monitor Well
WATER TABLE ELEVATION (FT.-NGVD)
30
29
28
27
26
25
24
SEPT
OCT
NOV
DEC
JAN
FEB
MAR
APR
MAY
JUNE
DRY SEASON LOWEST WATER LEVEL COMPARISON
+ 74-75
◇ 80-81
△ 84-85


LEE COUNTY L1418
Key Indicator Water Table Monitor Well
WATER TABLE ELEVATION (FT.-NGVD)
18
17
16
15
14
13
12
11
10
SEPT
OCT
NOV
DEC
JAN
FEB
MAR
APR
MAY
JUNE
DRY SEASON LOWEST WATER LEVEL COMPARISON
+ 74-75
◇ 80-81
△ 84-85


LEE COUNTY L246 (WATER TABLE)
Key Indicator Water Table Monitor Well
WATER TABLE ELEVATION (FT.-NGVD)
19
18.5
18
17.5
17
16.5
16
15.5
15
SEPT
OCT
NOV
DEC
JAN
FEB
MAR
APR
MAY
JUNE
DRY SEASON LOWEST WATER LEVEL COMPARISON
70-71
74-75
80-81
84-85

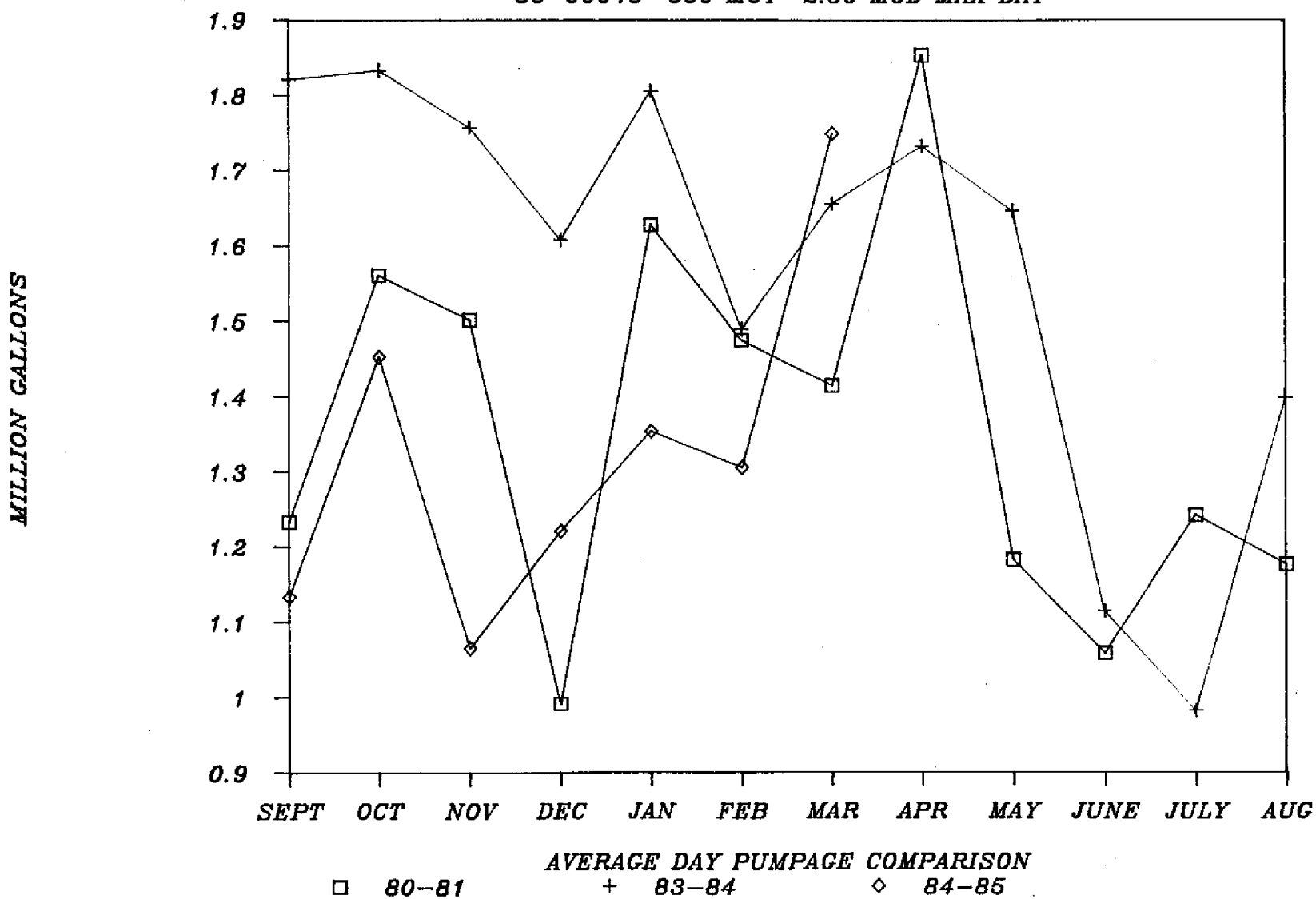

LEE COUNTY L742 (MID-HAWTHORN AQUIFER)
Key Indicator Water Table Monitor Well
WATER TABLE ELEVATION (FT.-NGVD)
-10
-20
-30
-40
-50
-60
-70
-80
SEPT
OCT
NOV
DEC
JAN
FEB
MAR
APR
MAY
JUNE
DRY SEASON LOWEST WATER LEVEL COMPARISON
+ 74-75
◇ 80-81
△ 84-85


LEE COUNTY L581 CAPE CORAL (MID--HAWTHORN AQUIFER)
Key Indicator Water Table Monitor Well
WATER TABLE ELEVATION (FT.-NGVD)
-10
-12
-14
-16
-18
-20
-22
-24
-26
-28
-30
-32
-34
-36
-38
-40
SEPT
OCT
NOV
DEC
JAN
FEB
MAR
APR
MAY
JUNE
DRY SEASON LOWEST WATER LEVEL COMPARISON
70-71
74-75
80-81
84-85

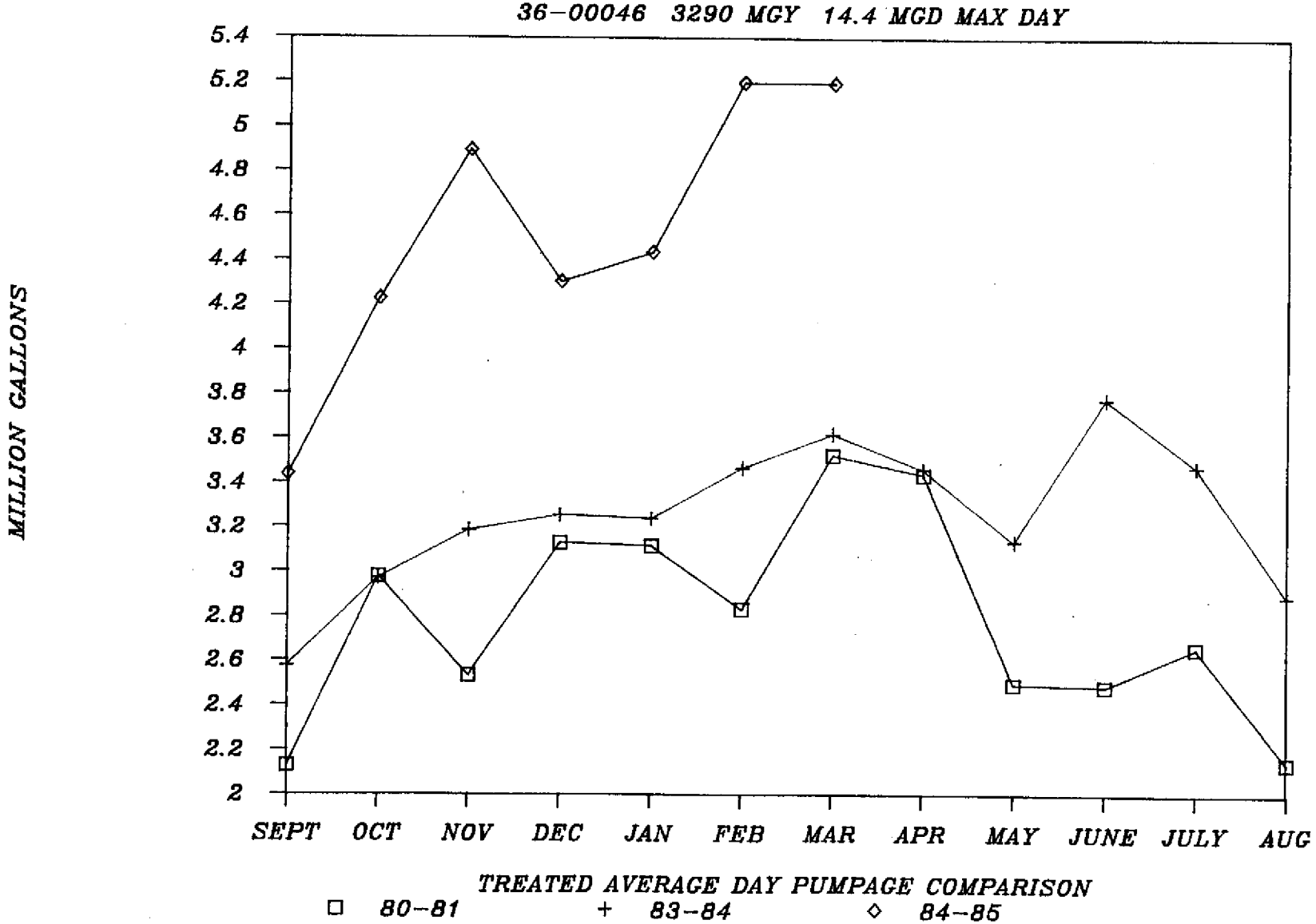
APPENDIX III

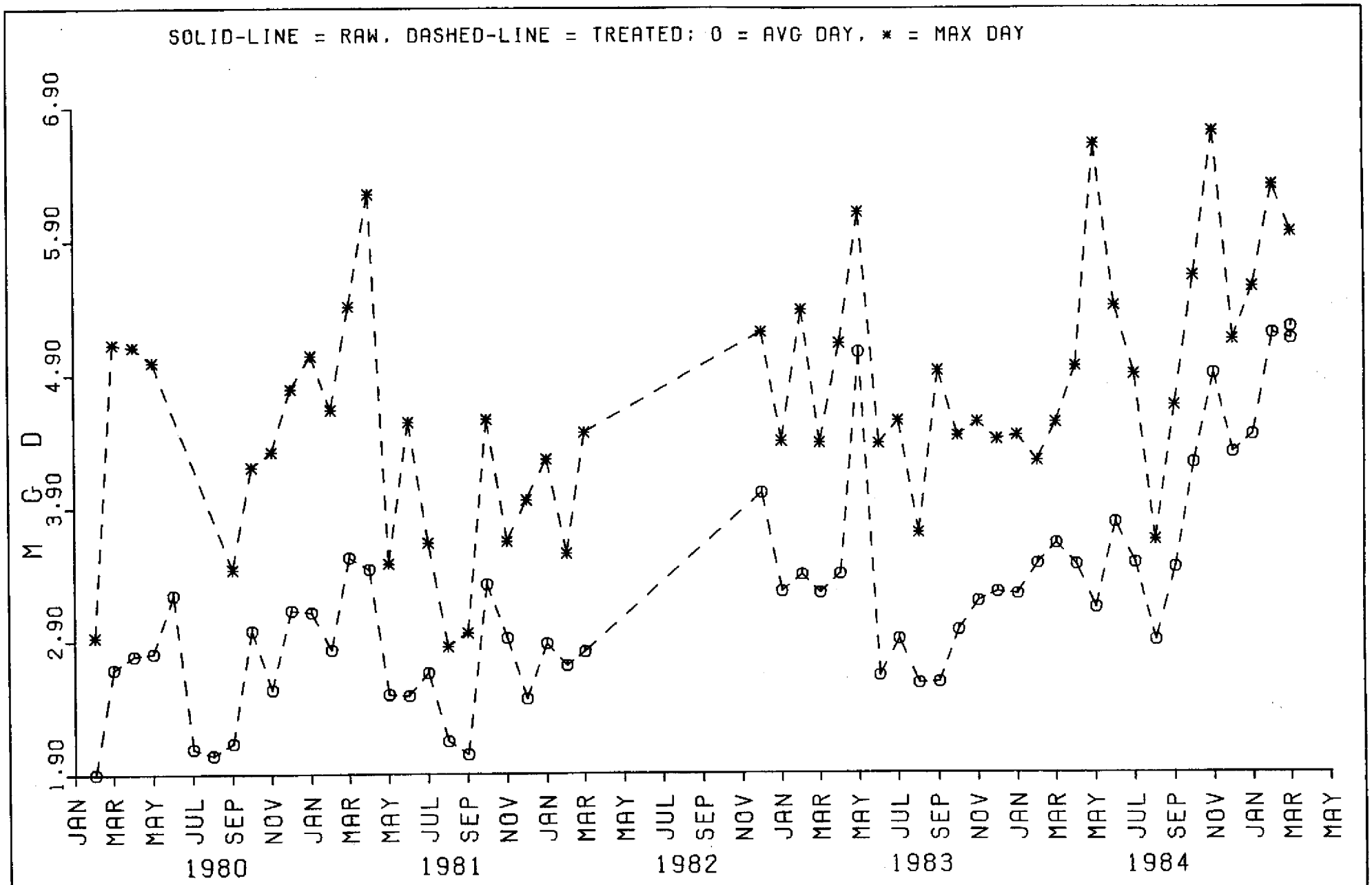
CAPE CORAL MID HAWTHORN

36-00046 660 MGY 2.50 MGD MAX DAY



CAPE CORAL LOWER HAWTHORN TREATED

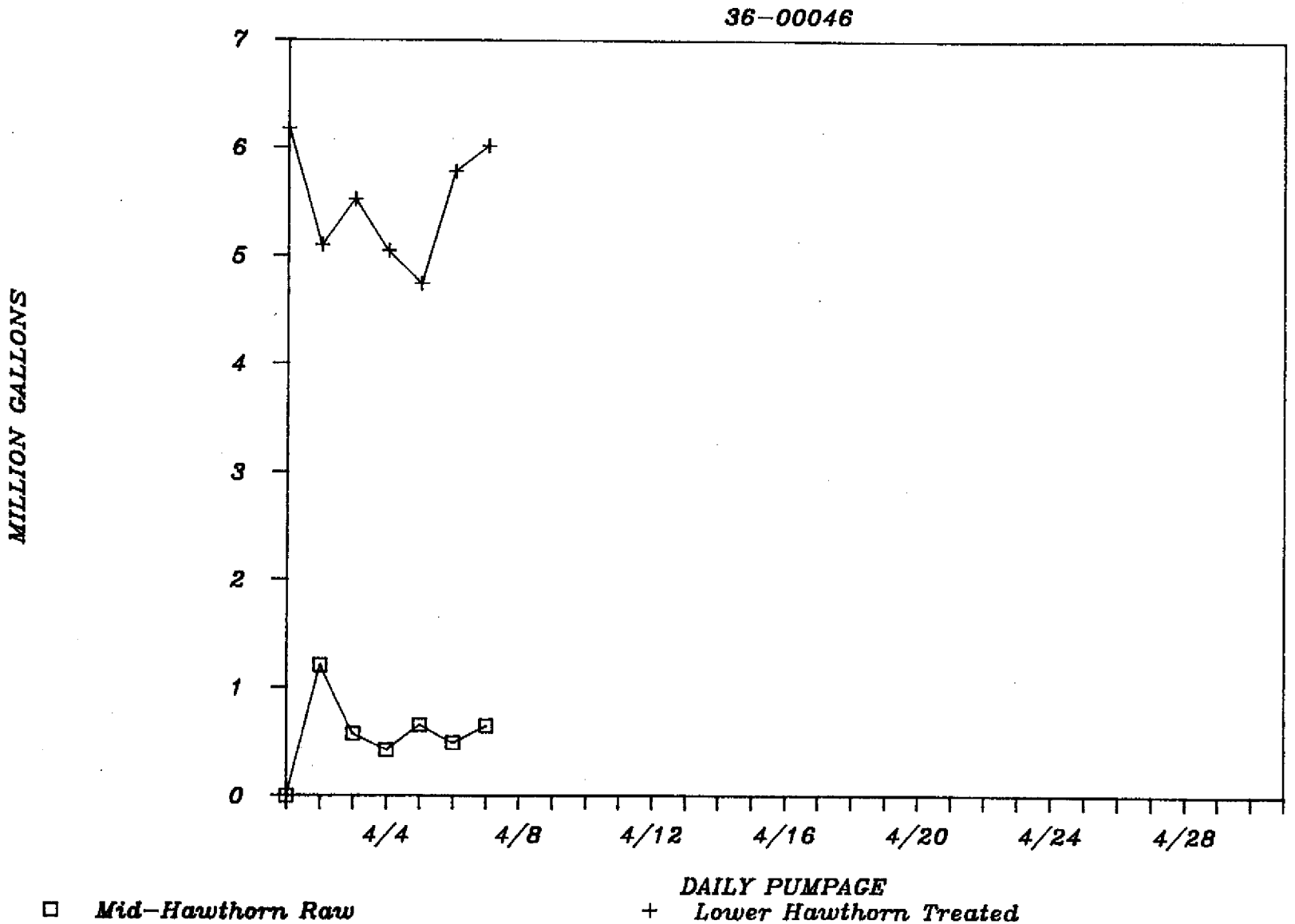




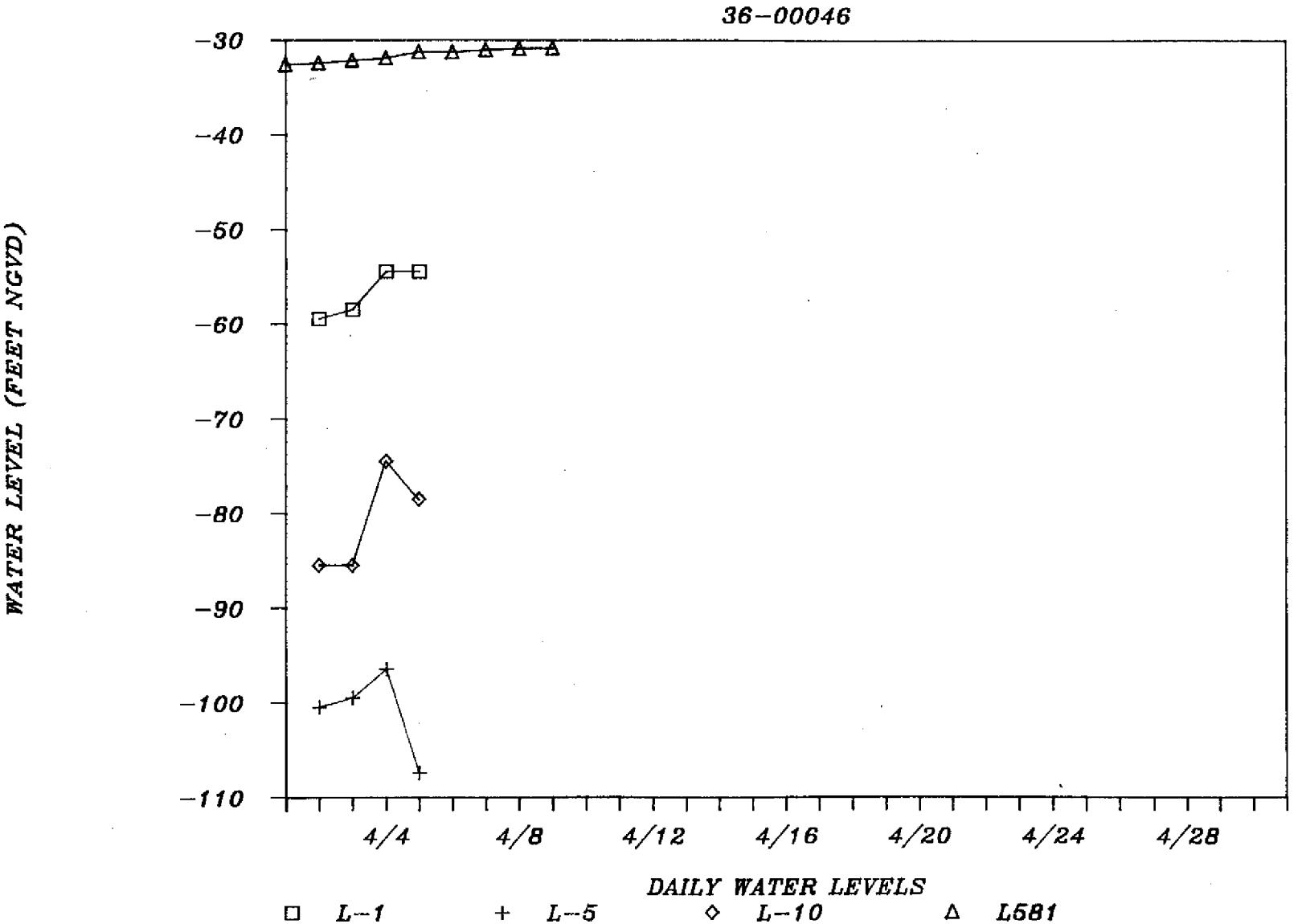
CITY OF CAPE CORAL

PERMIT NO. 36-00046-W, CITY OF CAPE CORAL
R.O. PLANT WELLFIELD

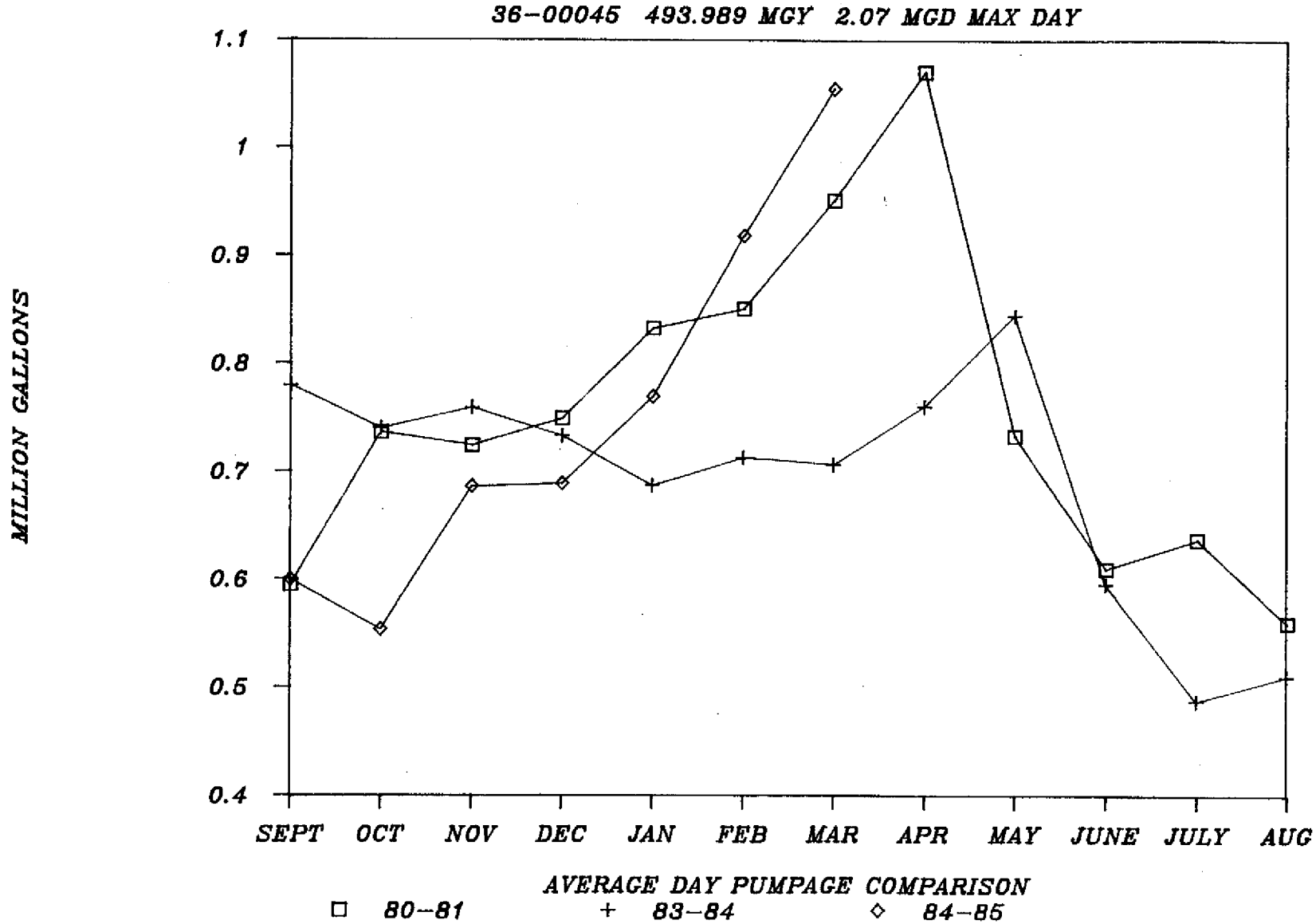
City of Cape Coral



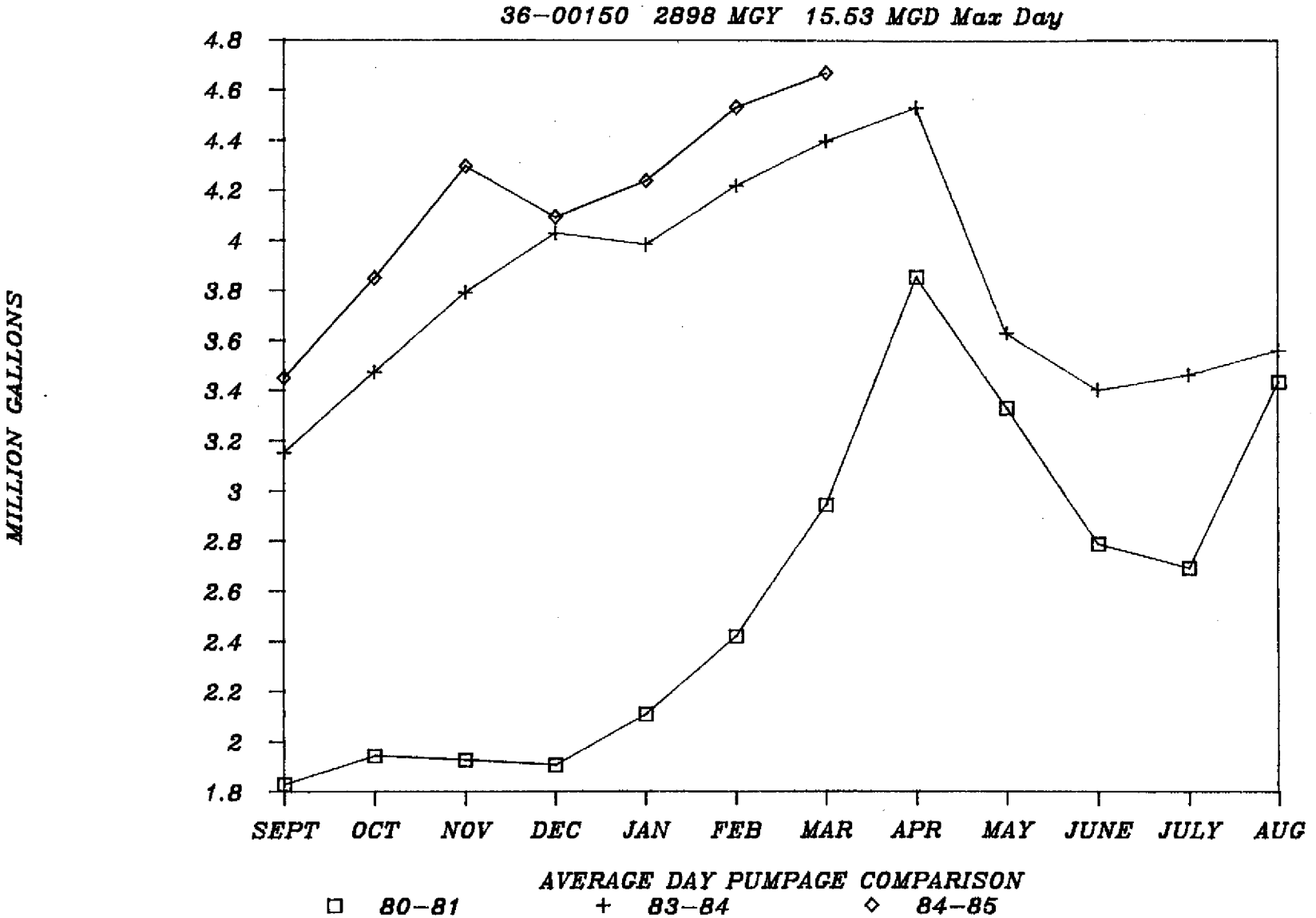
Cape Coral Mid-Hawthorn Raw Water



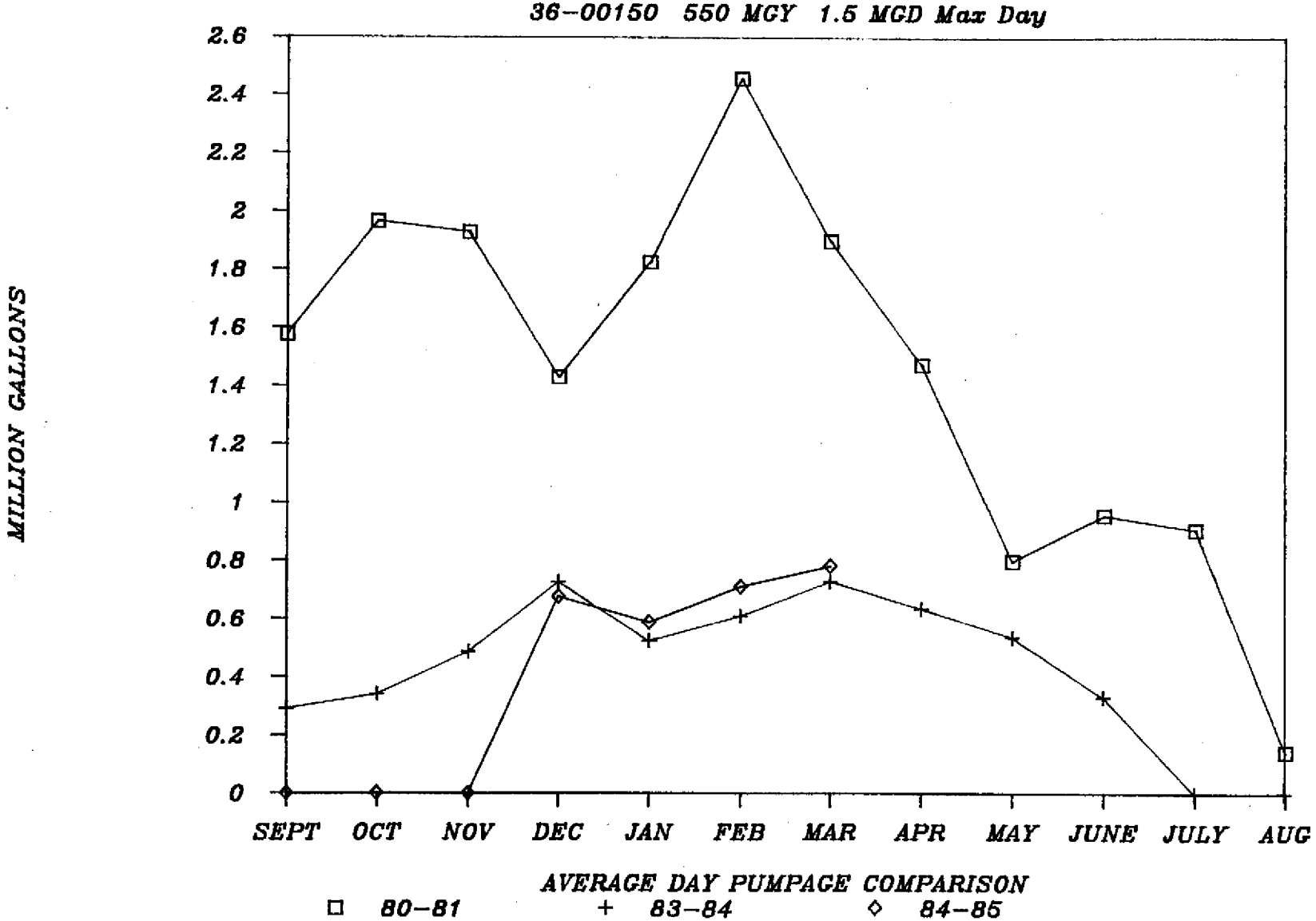
GREATER PINE ISLAND



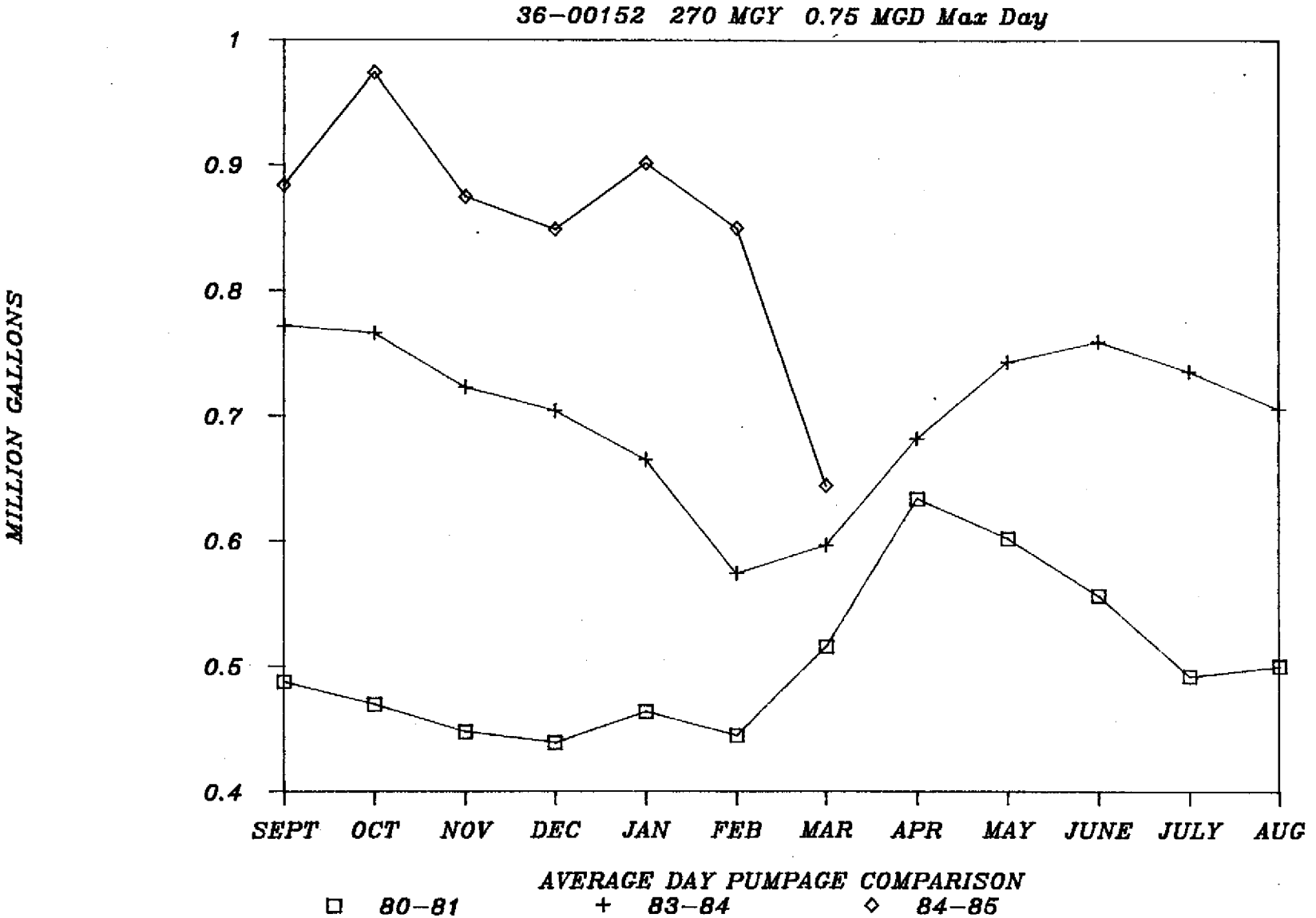
FL Cities Water Co - Green Meadows



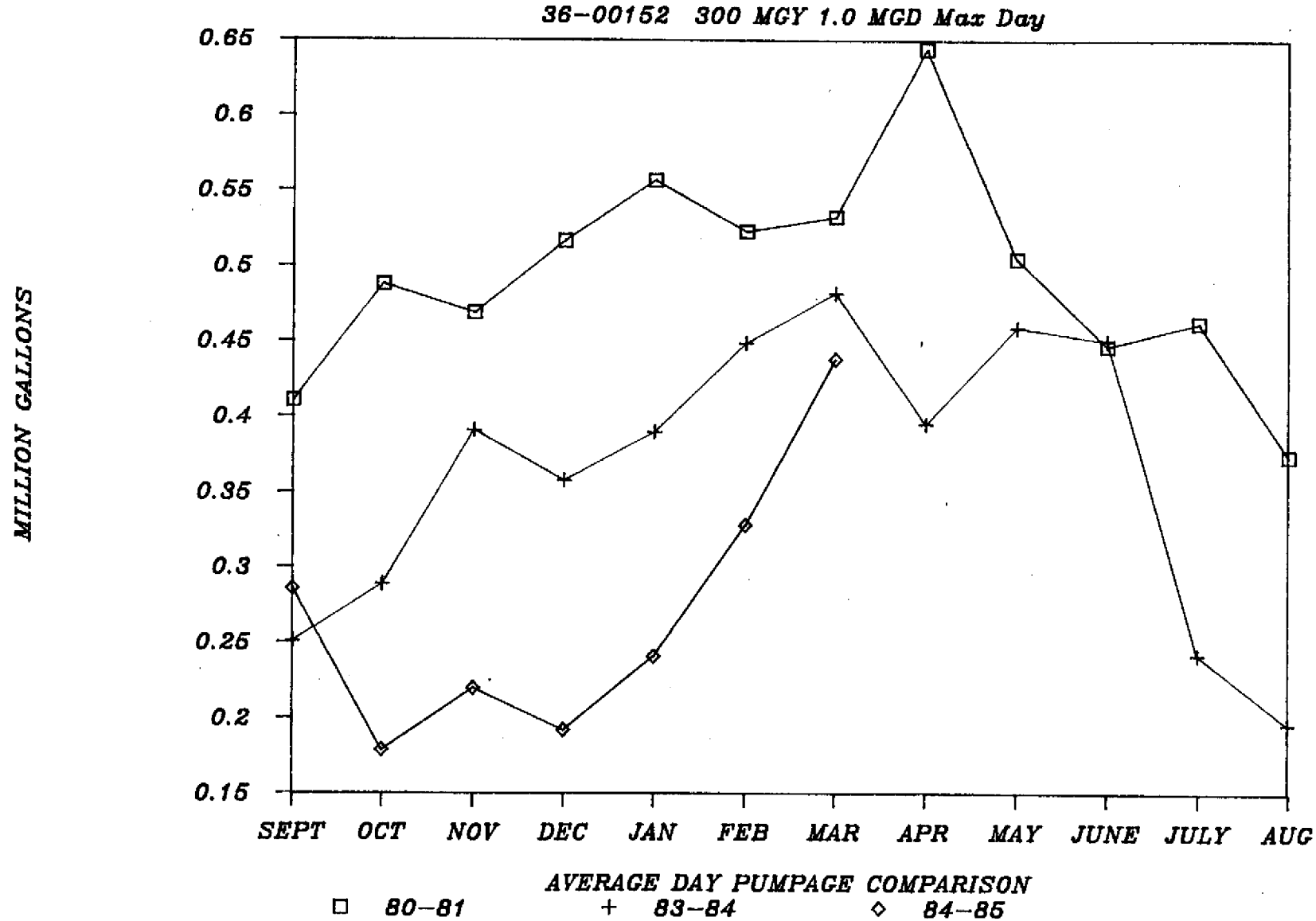
FL Cities Water Co. - Cypress Lakes



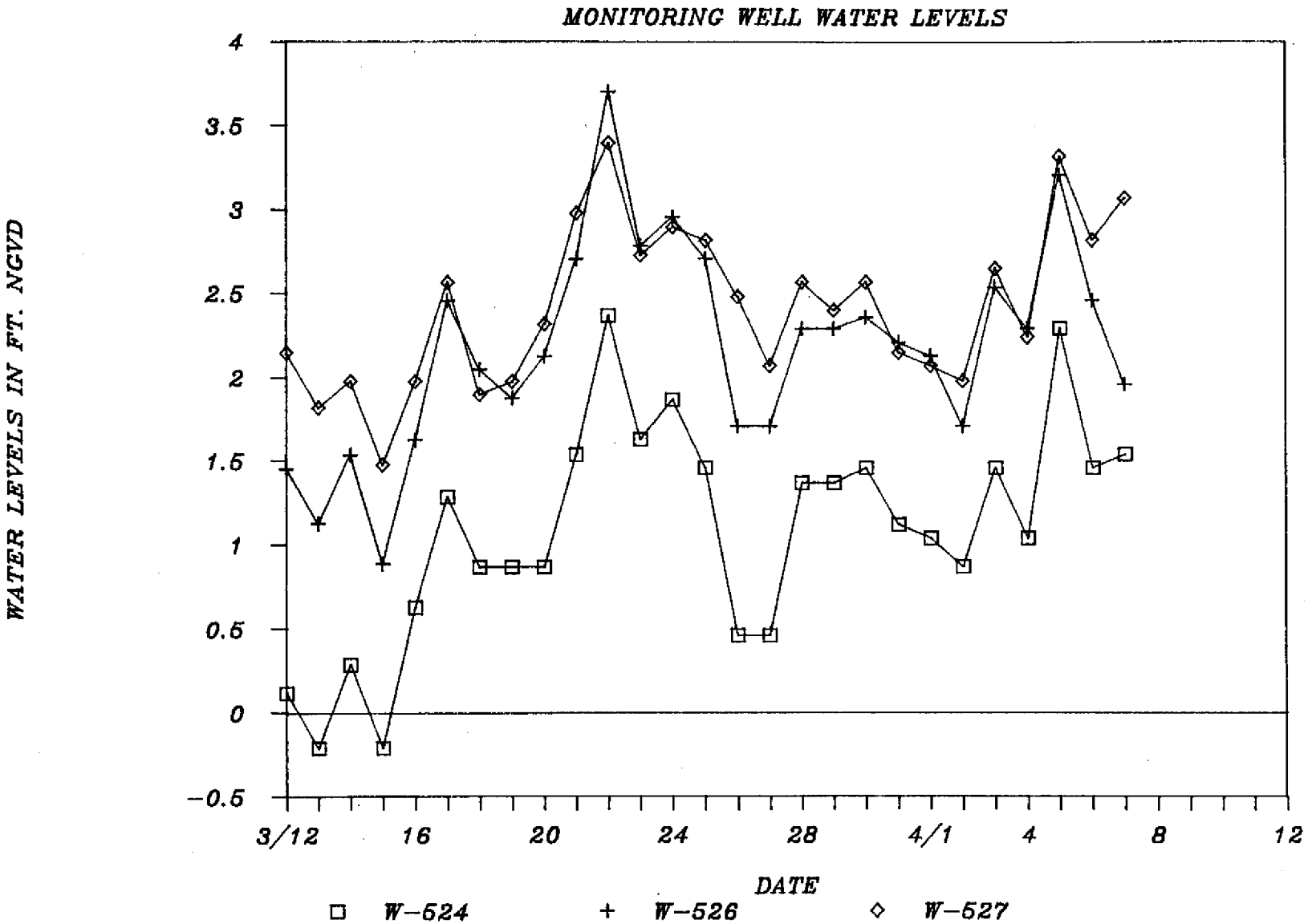
FL. Cities Water Co. - Waterway Est



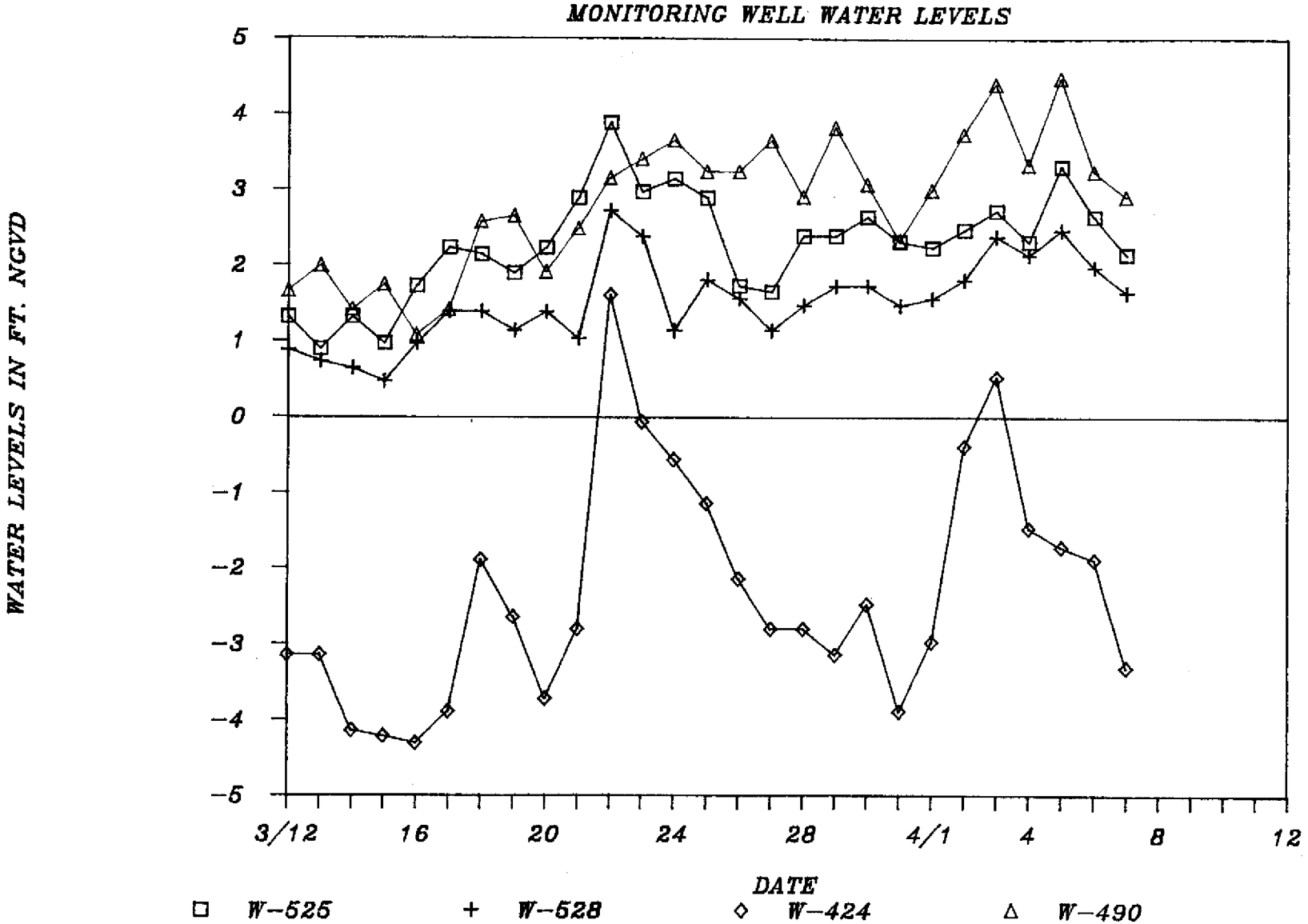
FL. Cities Water Co. - N. Cape Coral



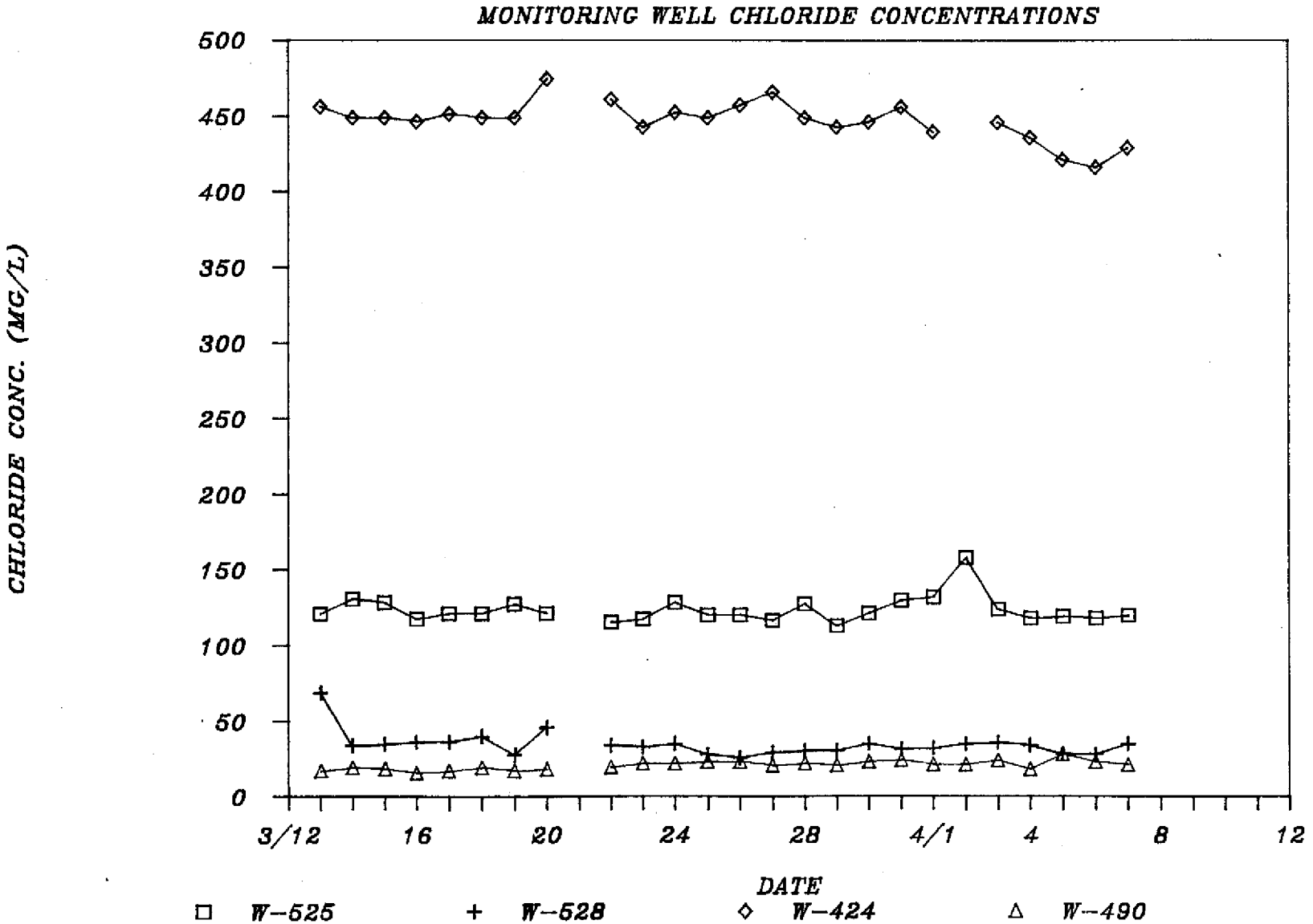
CITY OF NAPLES WELL DATA



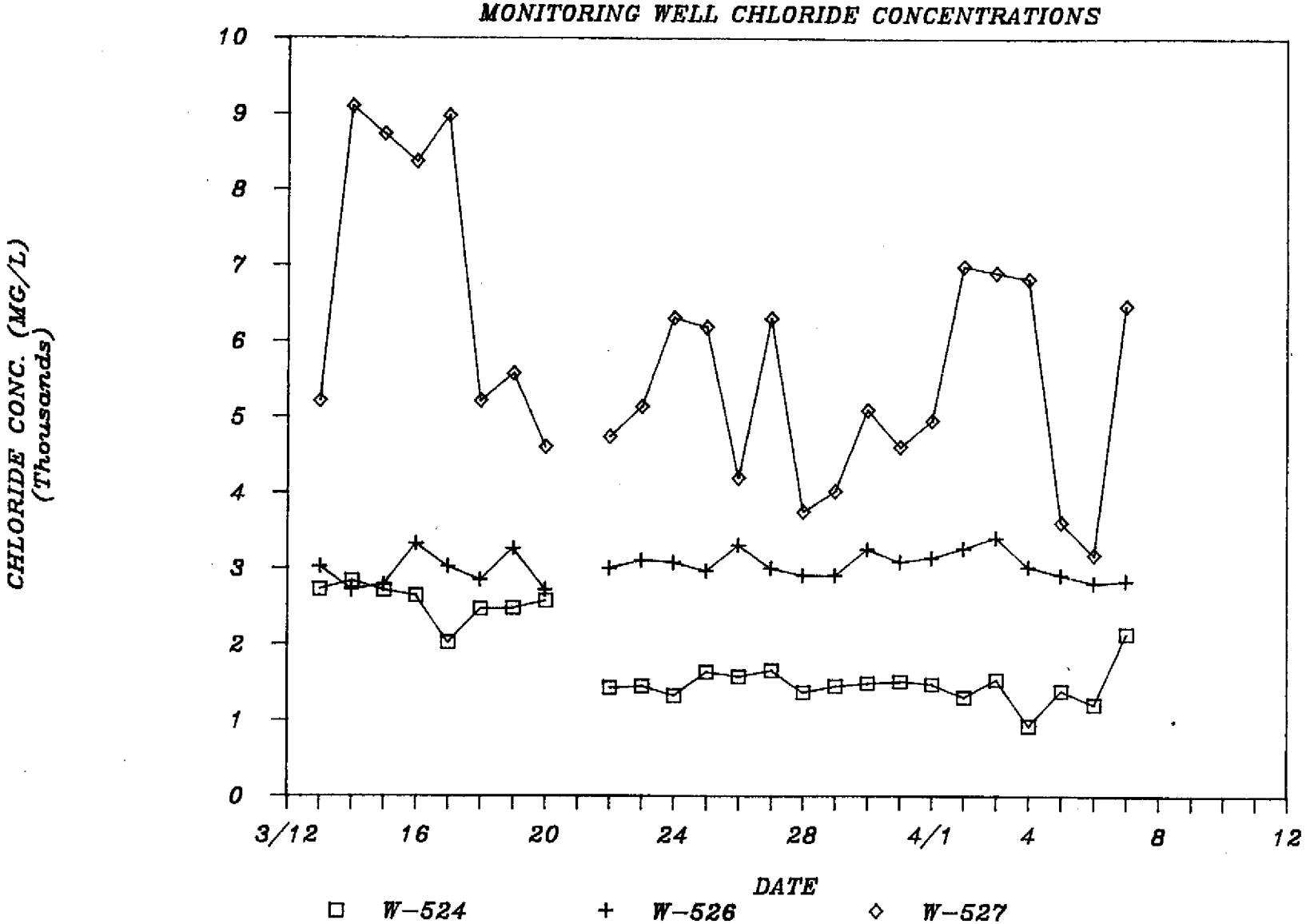
CITY OF NAPLES WELL DATA



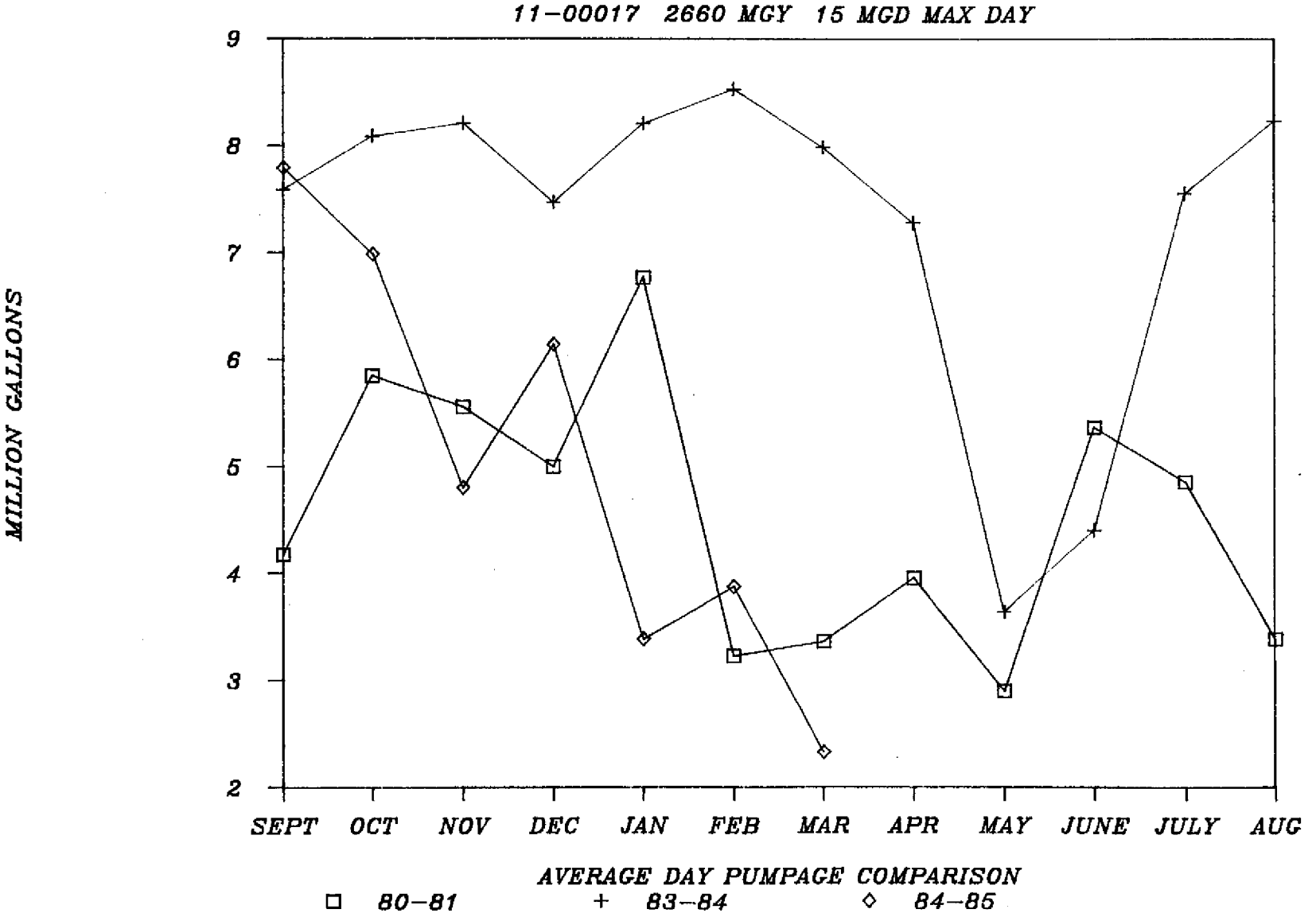
CITY OF NAPLES WELL DATA

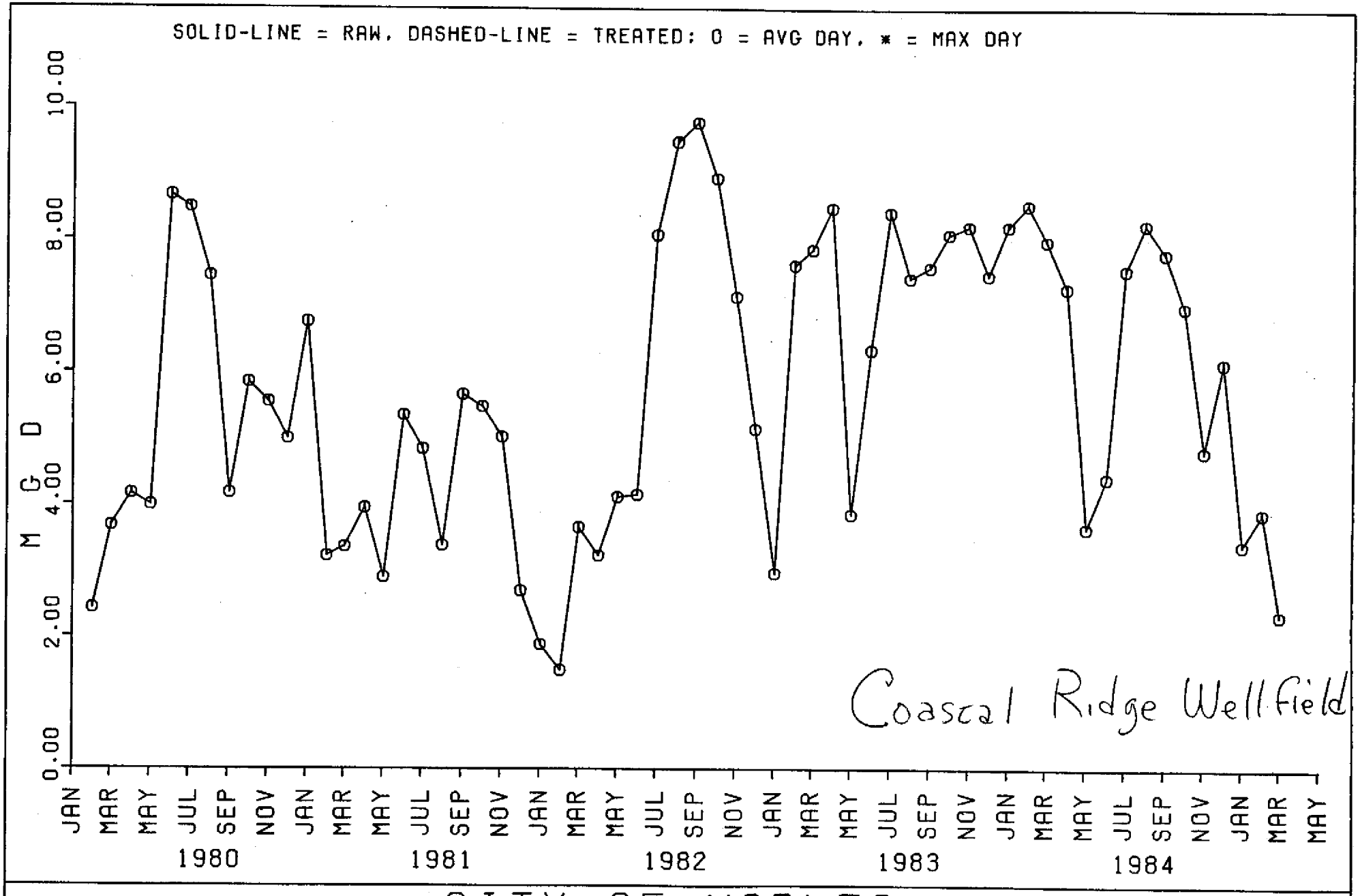


CITY OF NAPLES WELL DATA



NAPLES COASTAL RIDGE WELLFIELD



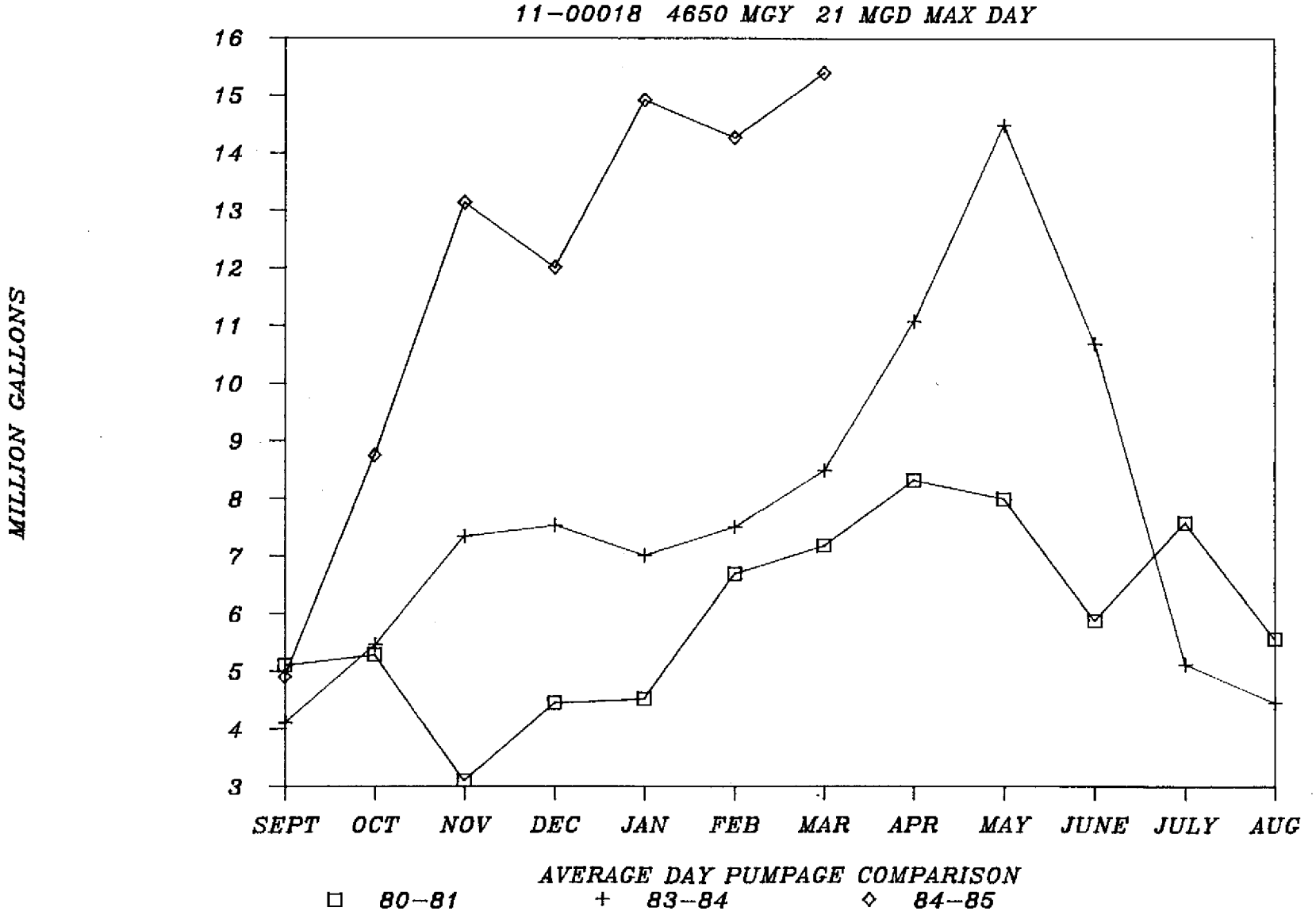


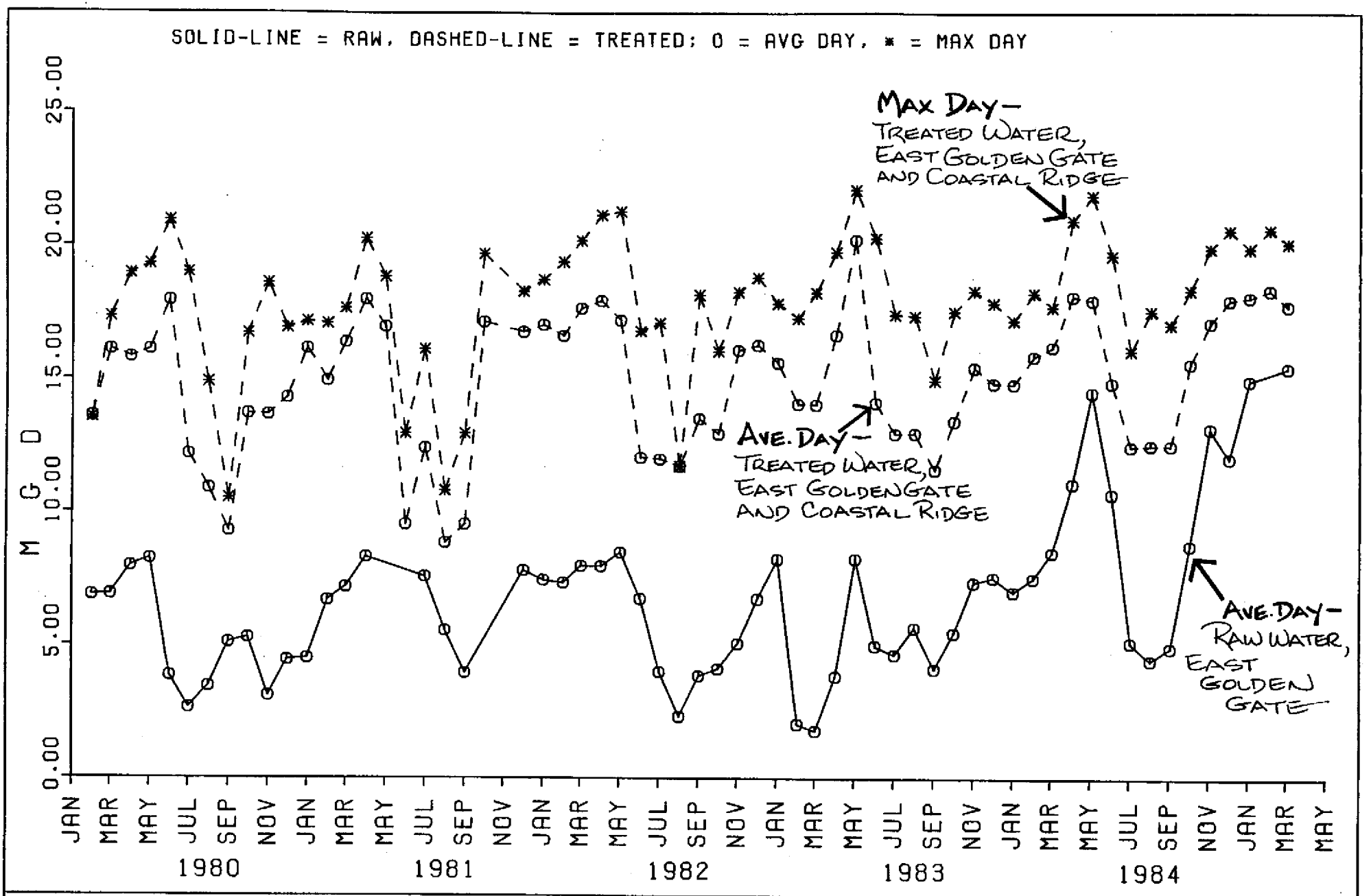
CITY OF NAPLES

PERMIT NO. 11-00017-W, CITY OF NAPLES

SUMMARY - ALL WELL FIELDS UNDER ABOVE PERMIT

NAPLES GOLDEN GATE WELLFIELD



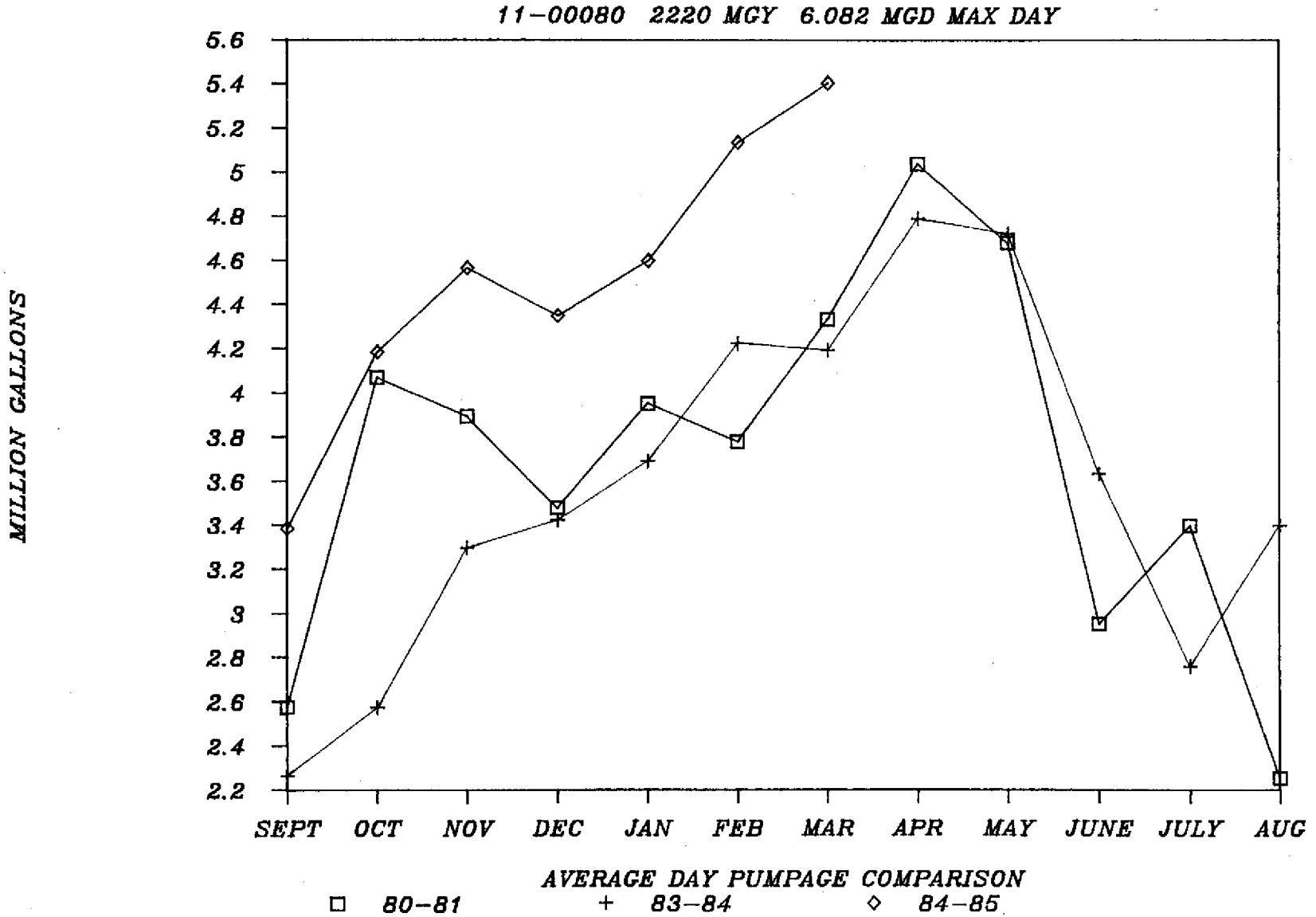


CITY OF NAPLES

PERMIT NO. 11-00018-W, CITY OF NAPLES

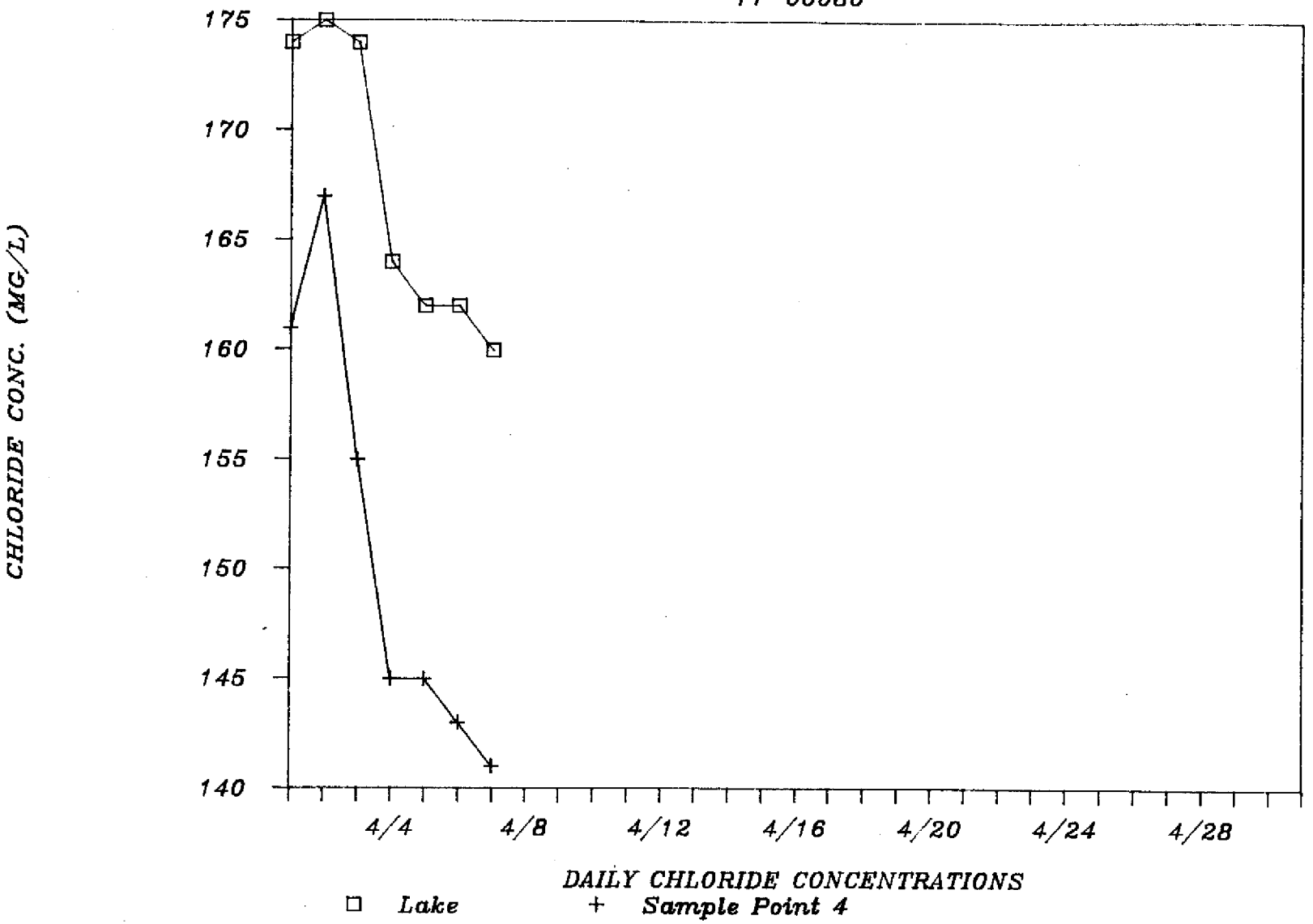
SUMMARY - ALL WELL FIELDS UNDER ABOVE PERMIT

MARCO ISLAND UTITIES



Marco Island

11--00080



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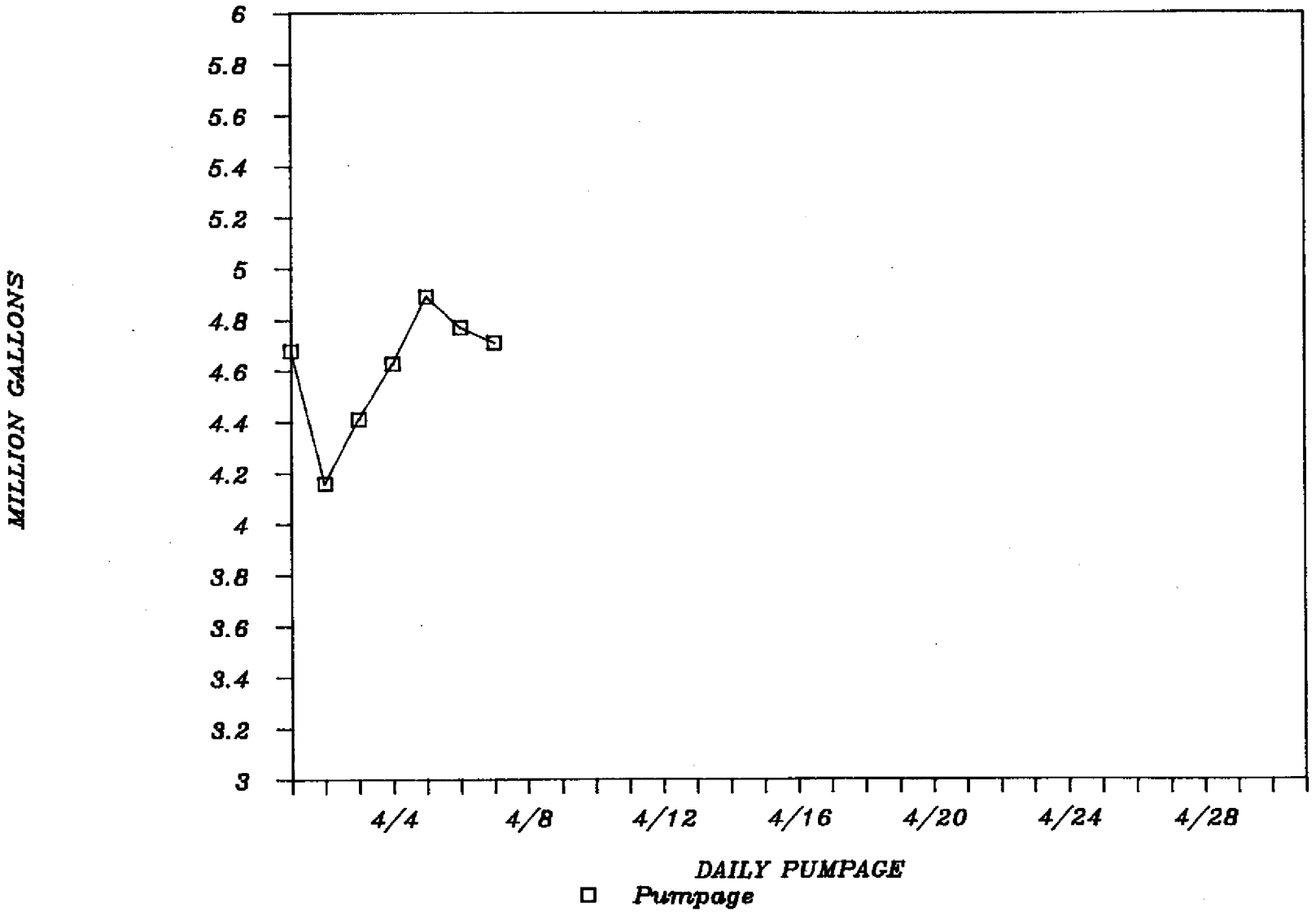
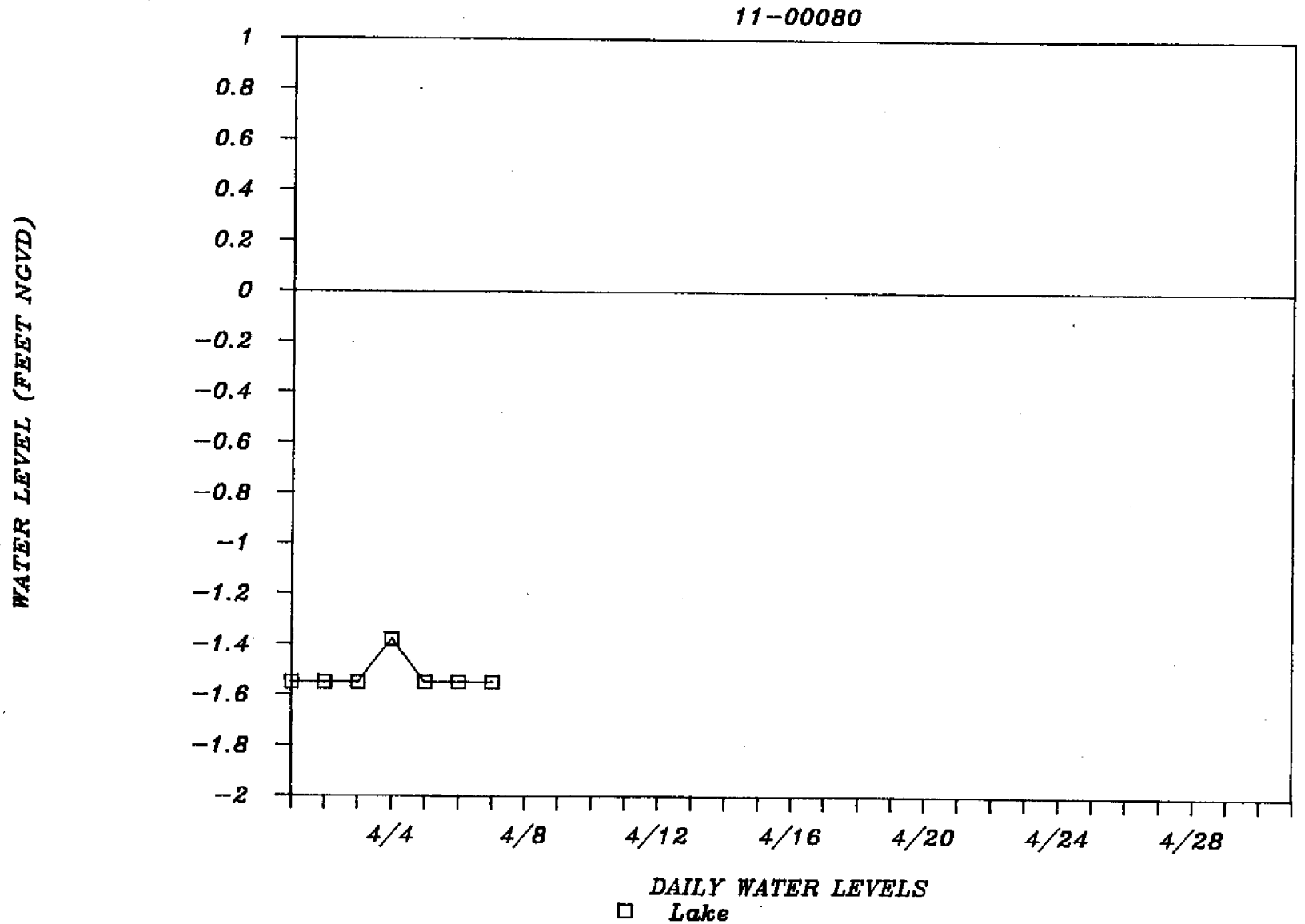
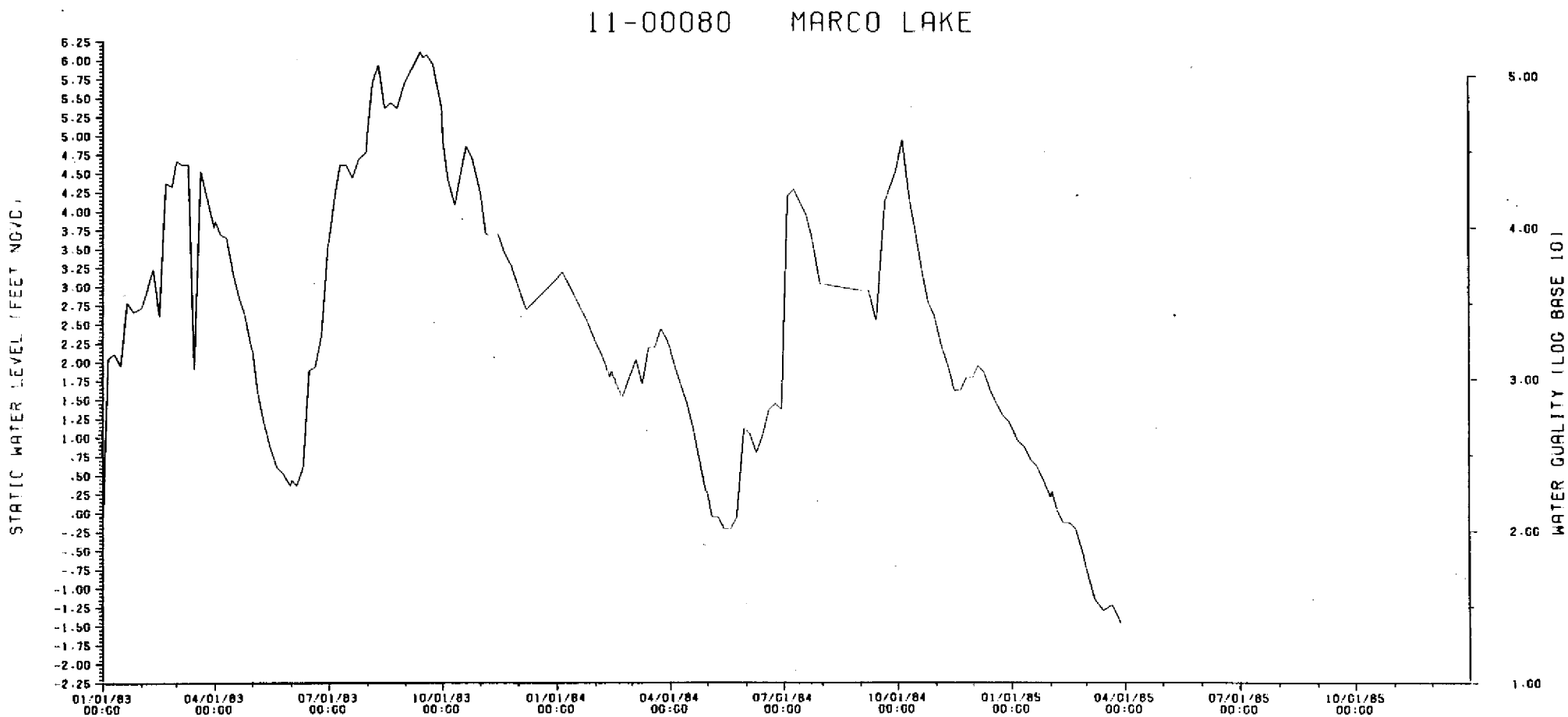


Marco Island




11-00080 MARCO LAKE
STATIC WATER LEVEL (FEET NGVD)
WATER QUALITY (LOG BASE 10)
6.25
6.00
5.75
5.50
5.25
5.00
4.75
4.50
4.25
4.00
3.75
3.50
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3.00
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01/01/83 00:00
04/01/83 00:00
07/01/83 00:00
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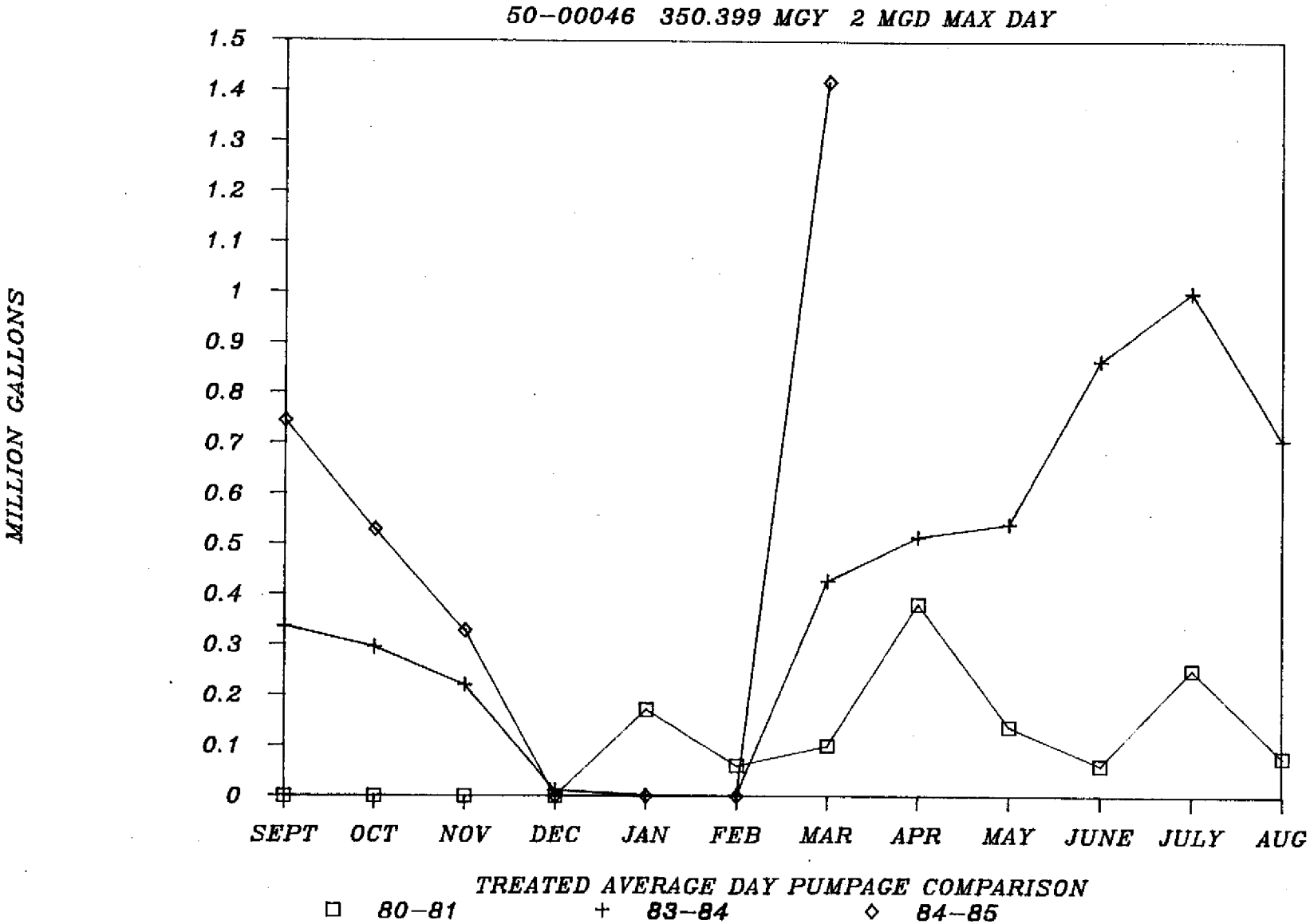
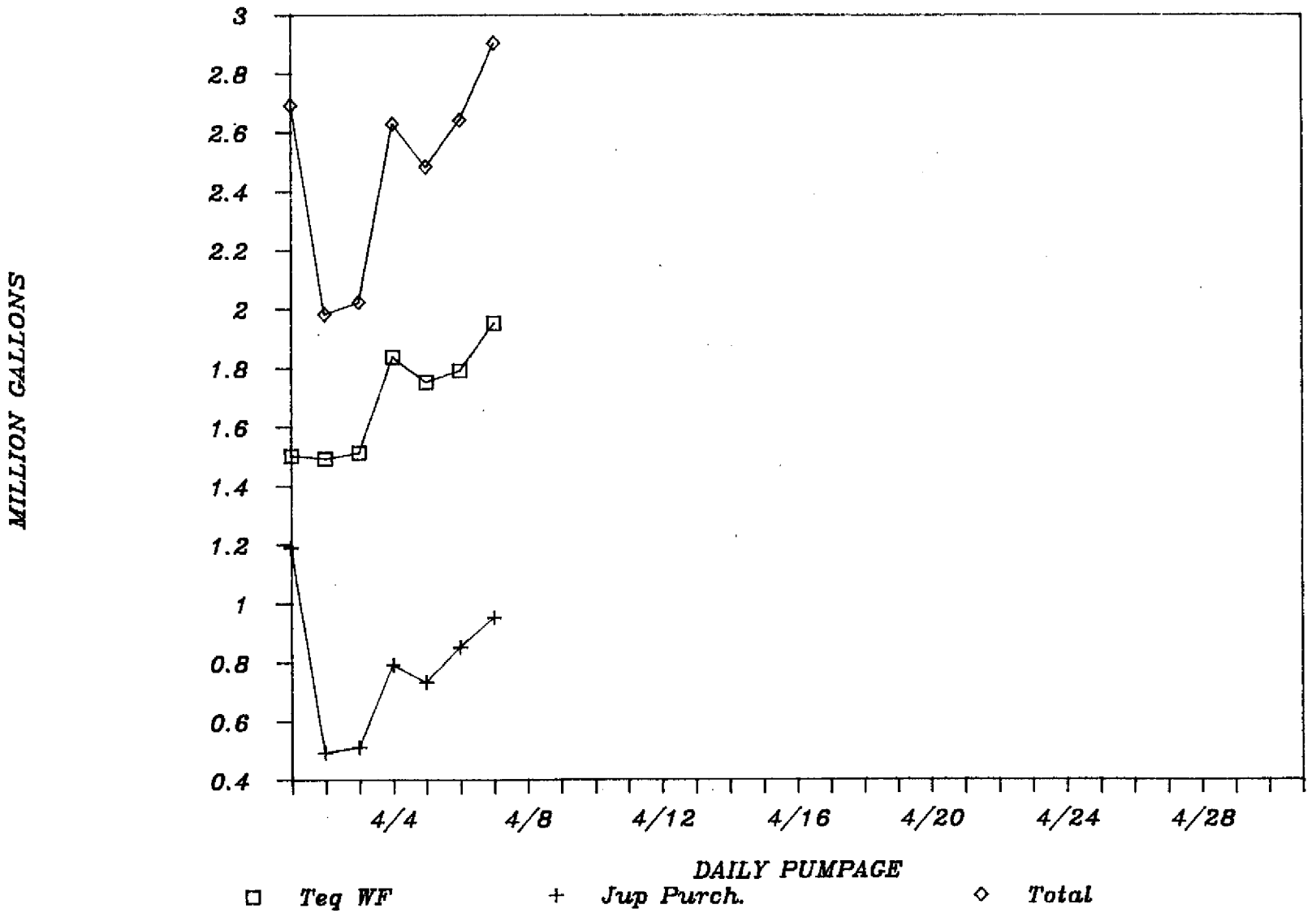
TEQUESTA WELLFIELD

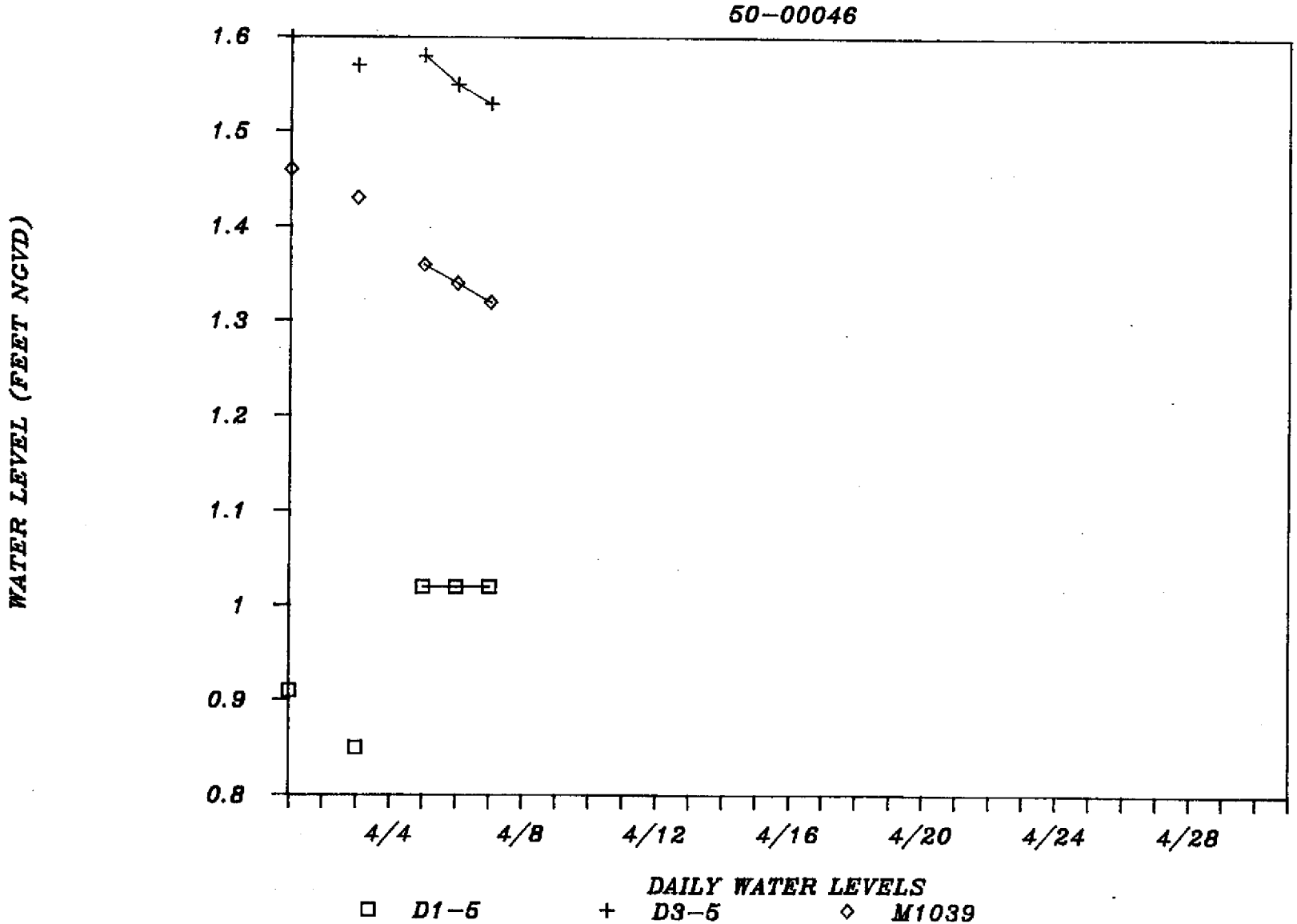


Village of Tequesta

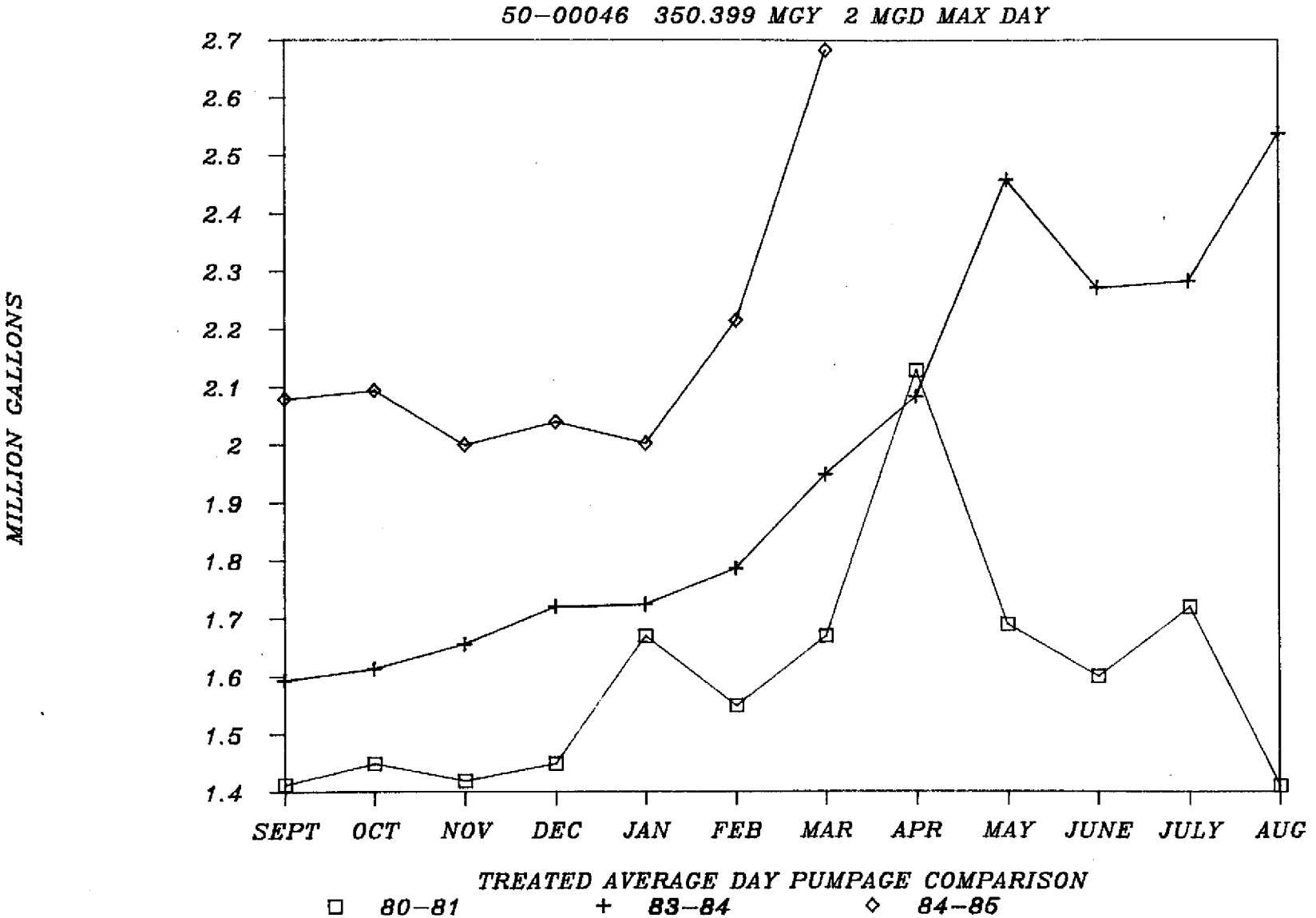
50-00046



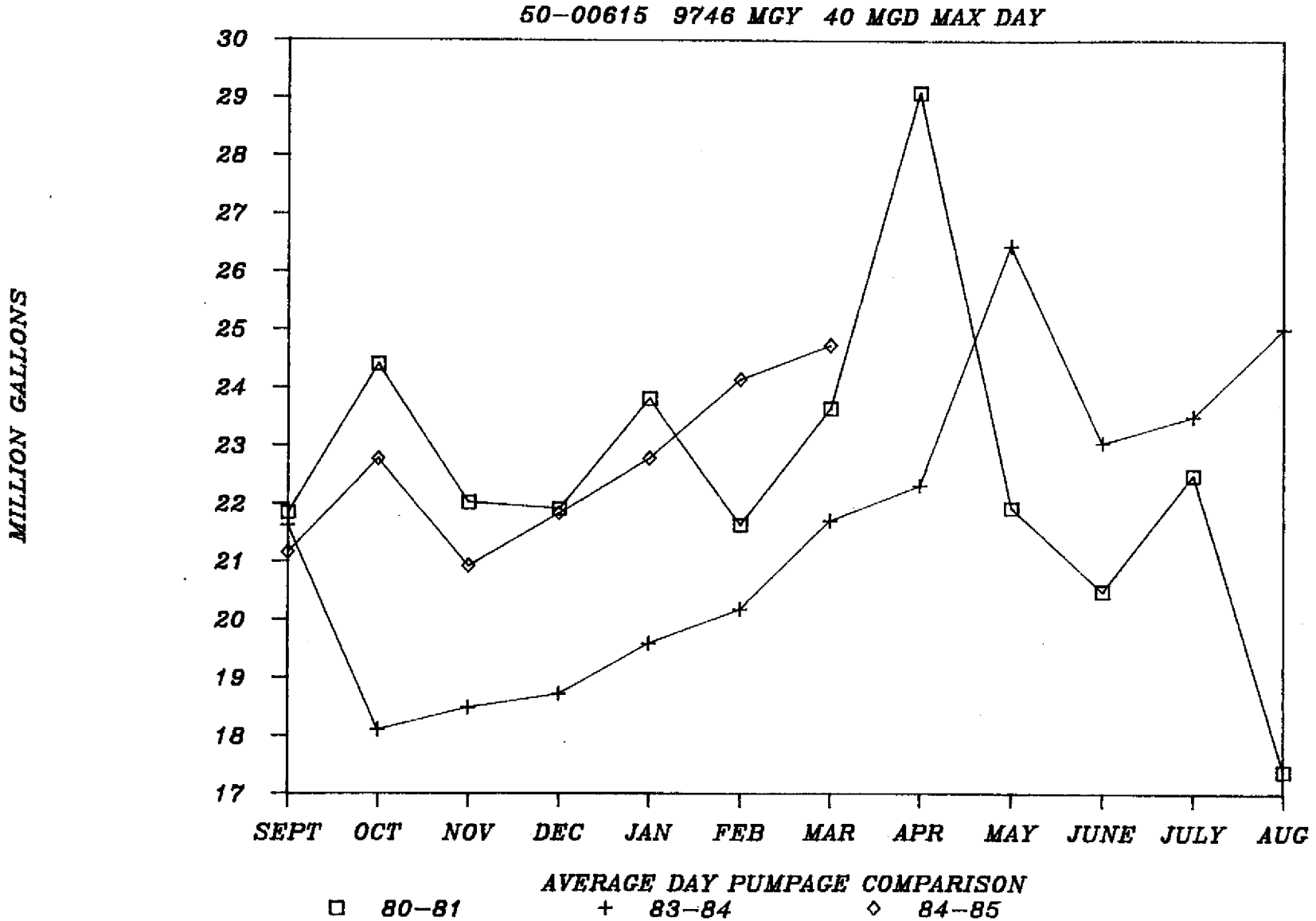
Village of Tequesta



TEQUESTA (TOTAL TREATED)

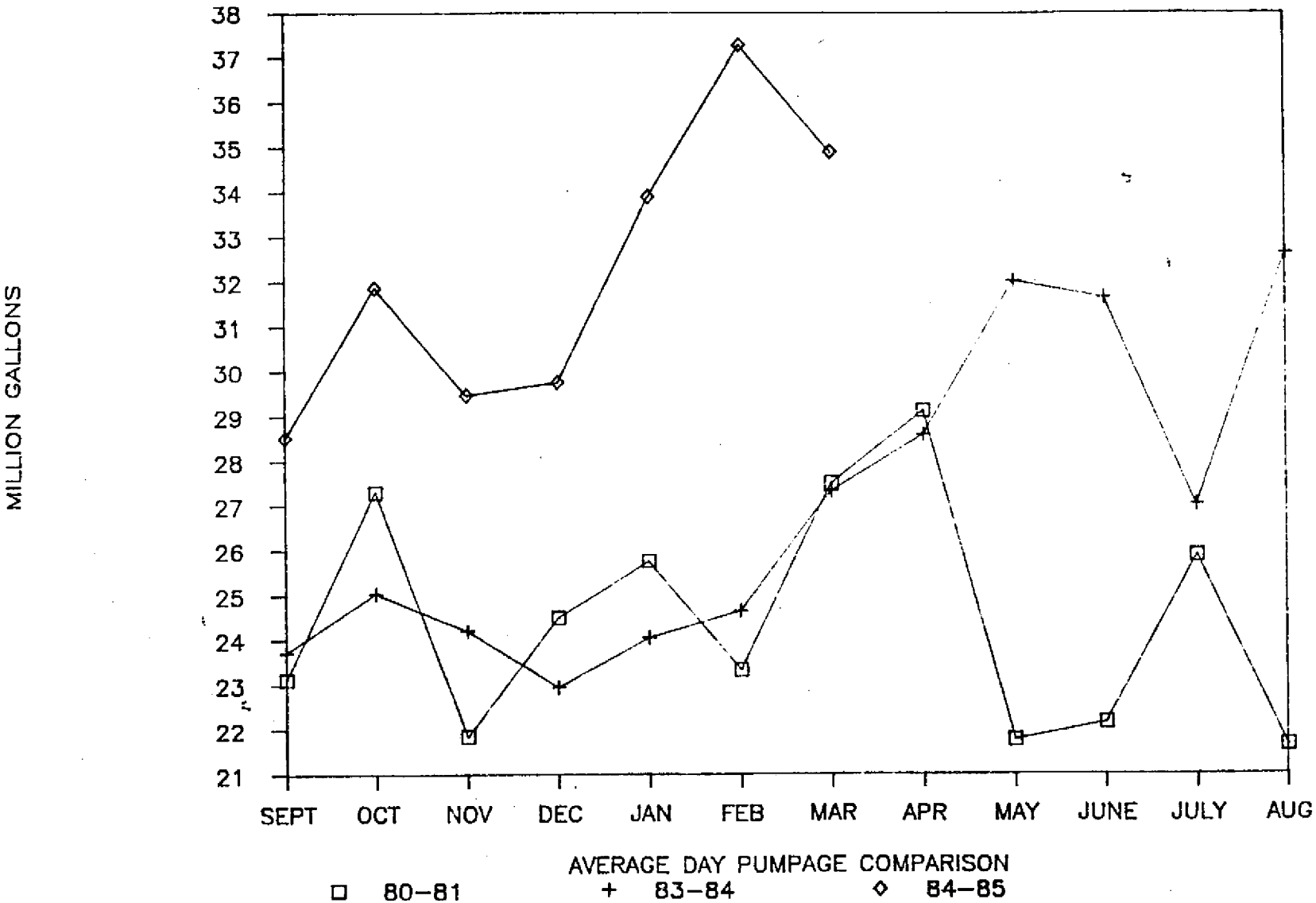


CITY OF WEST PALM BCH

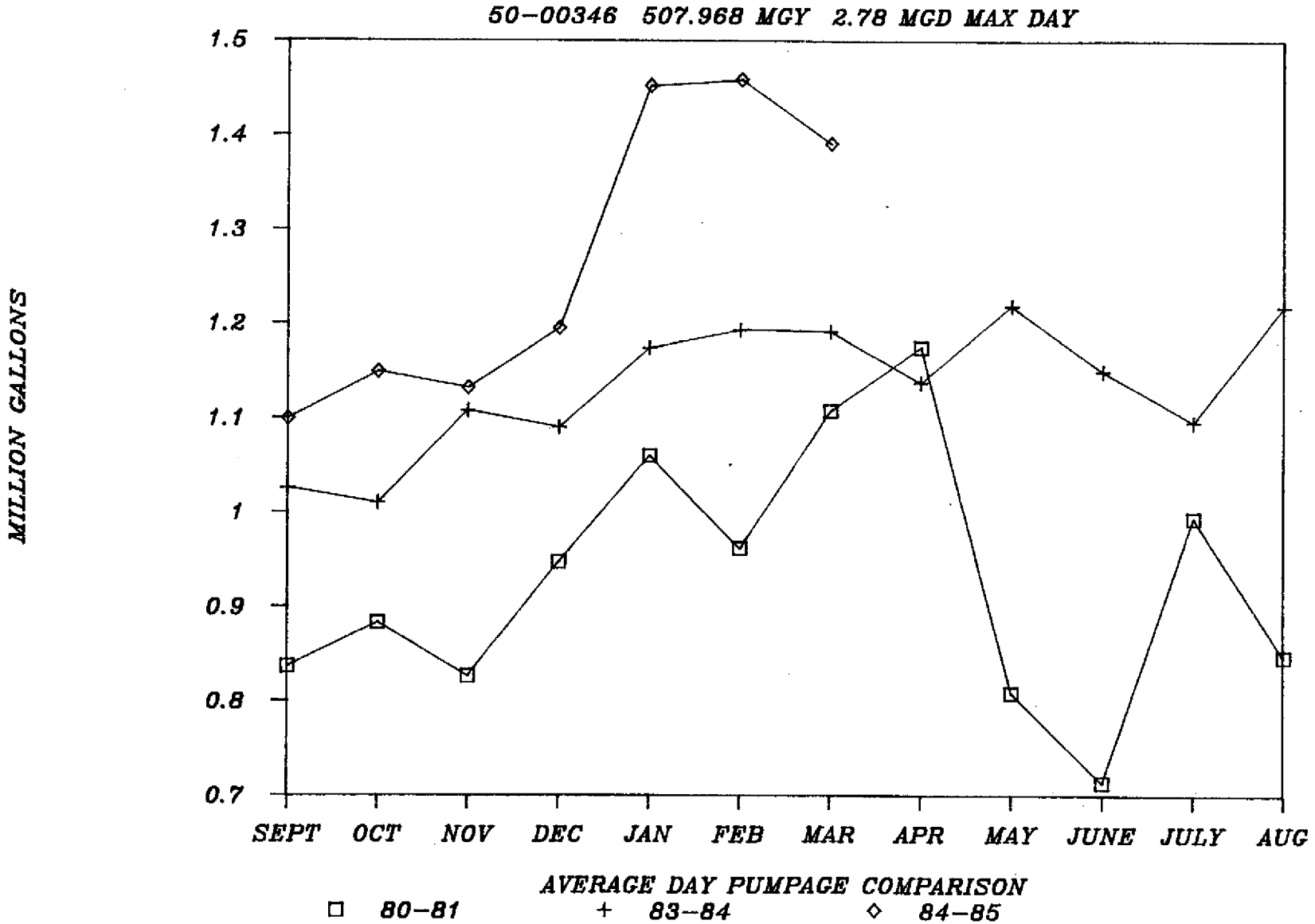


CITY OF BOCA RATON

50-00367 14200 MGY 62 MGD MAX DAY

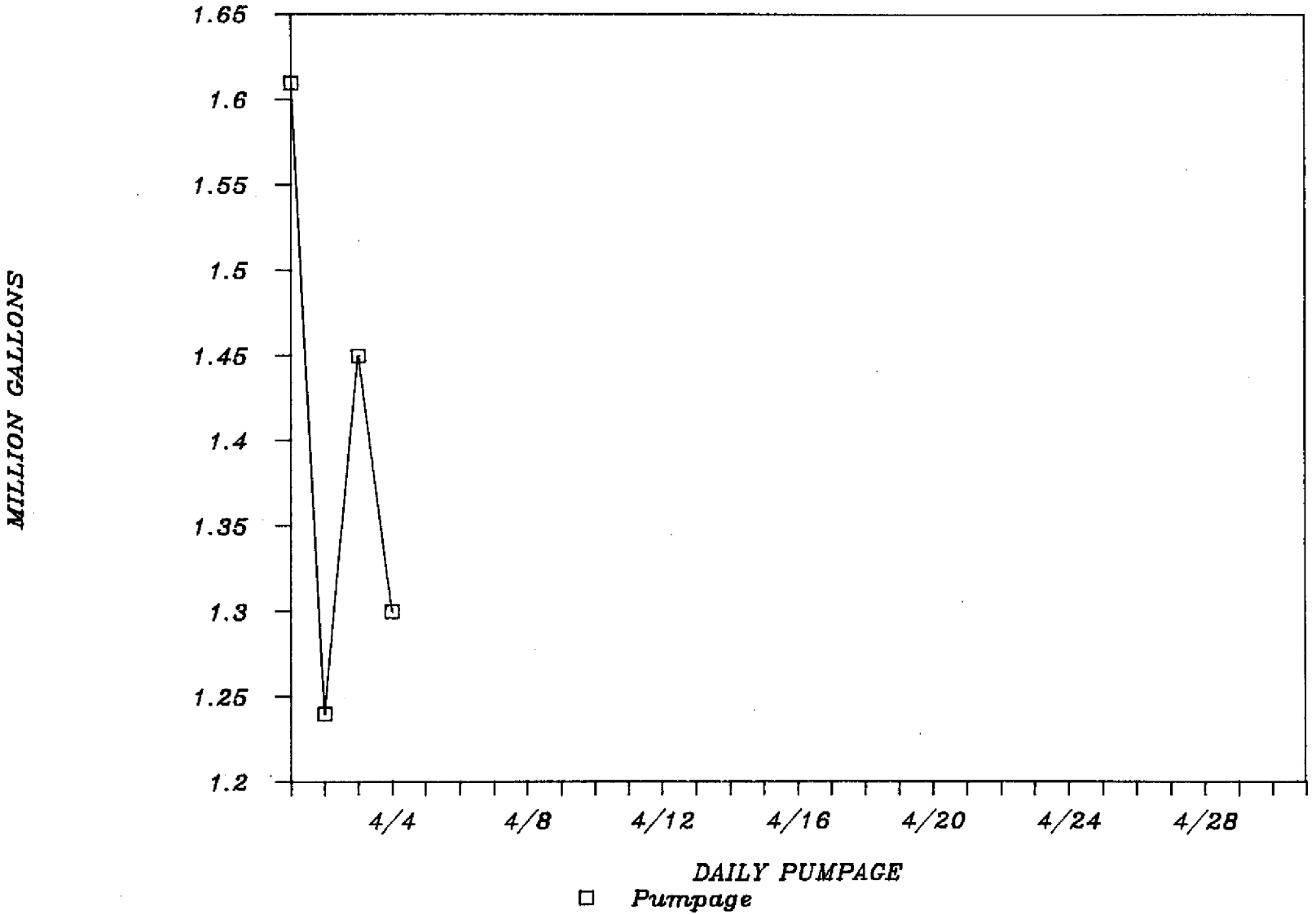


TOWN OF HIGHLAND BCH

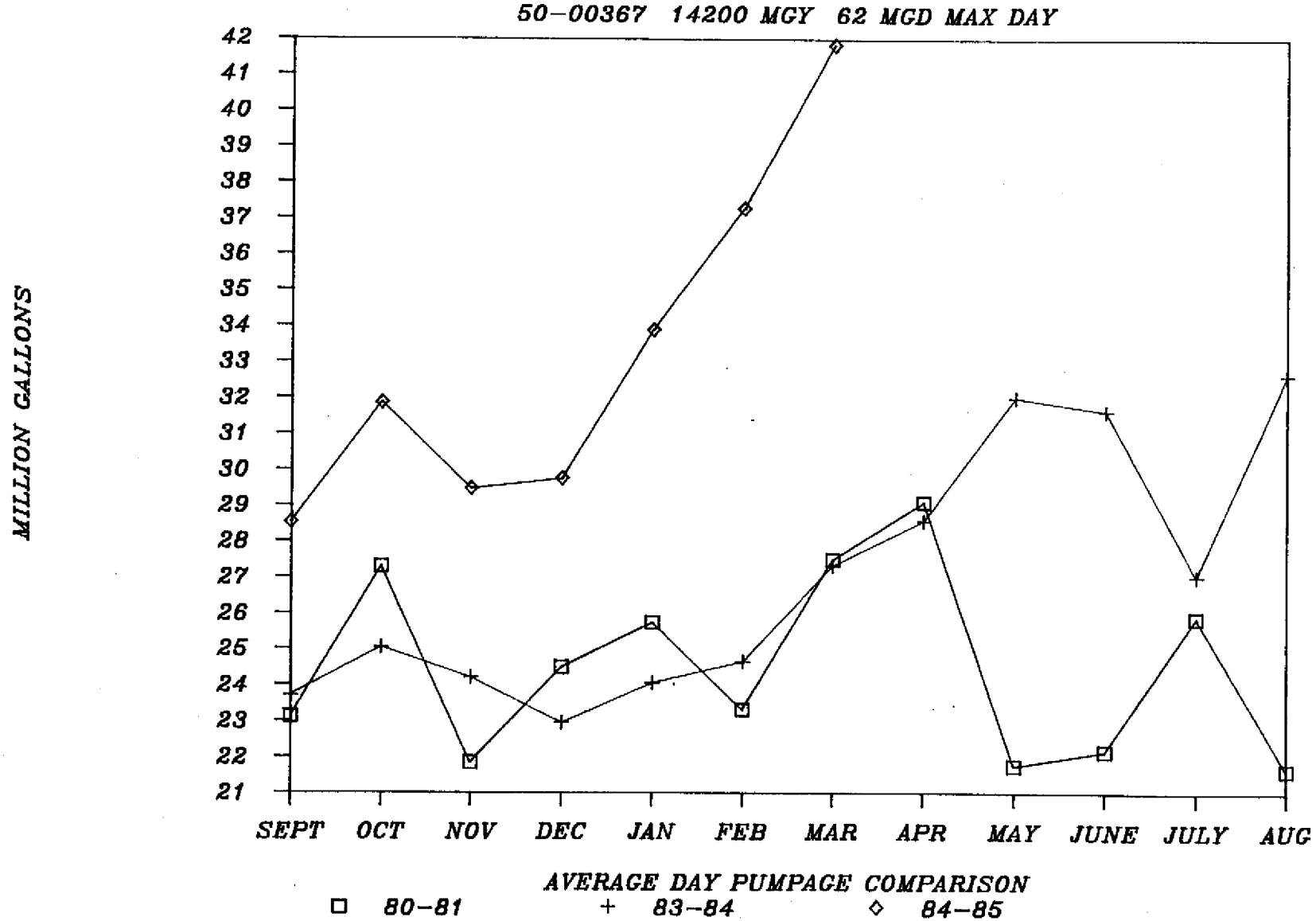


Highland Beach

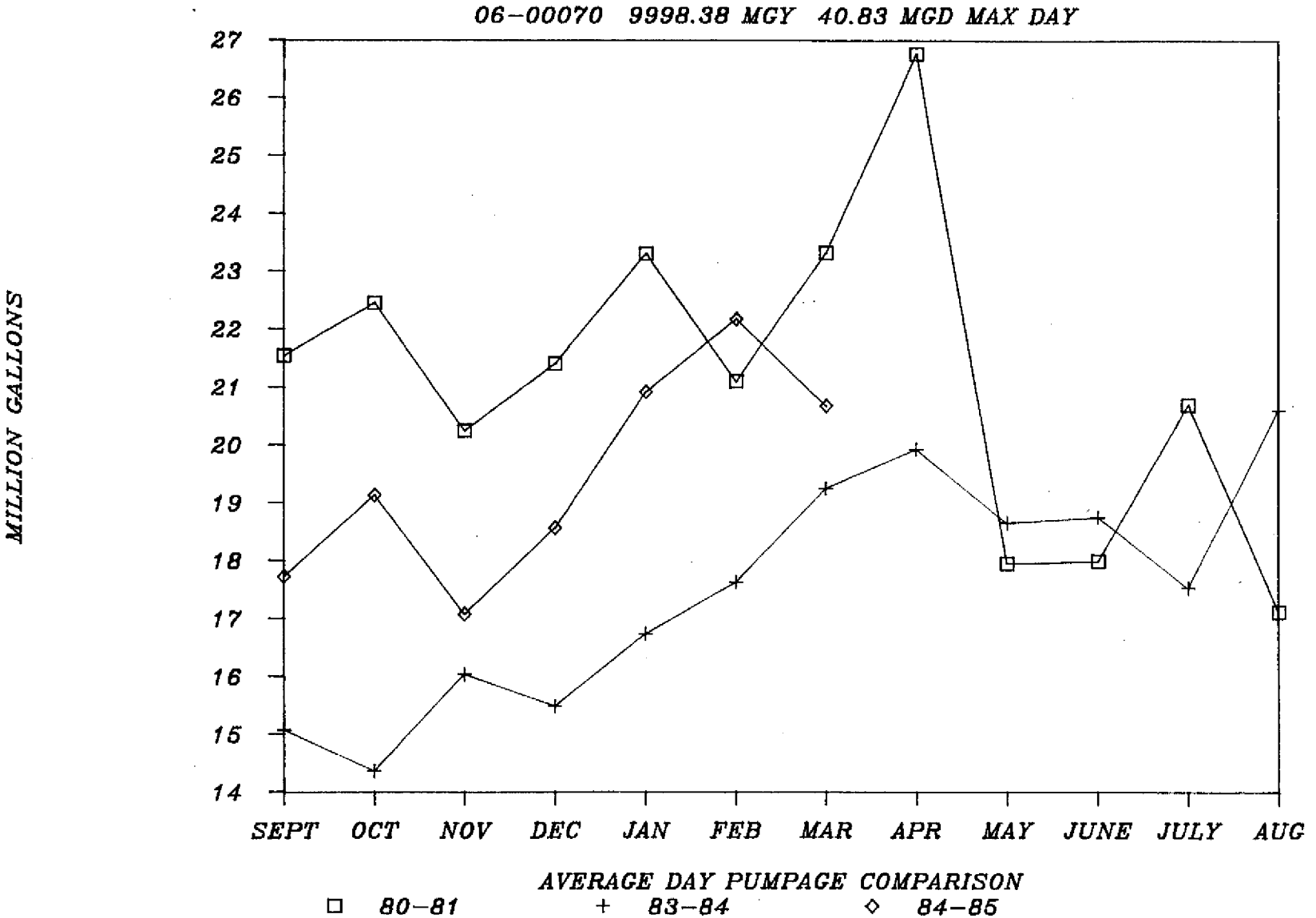
50-00346



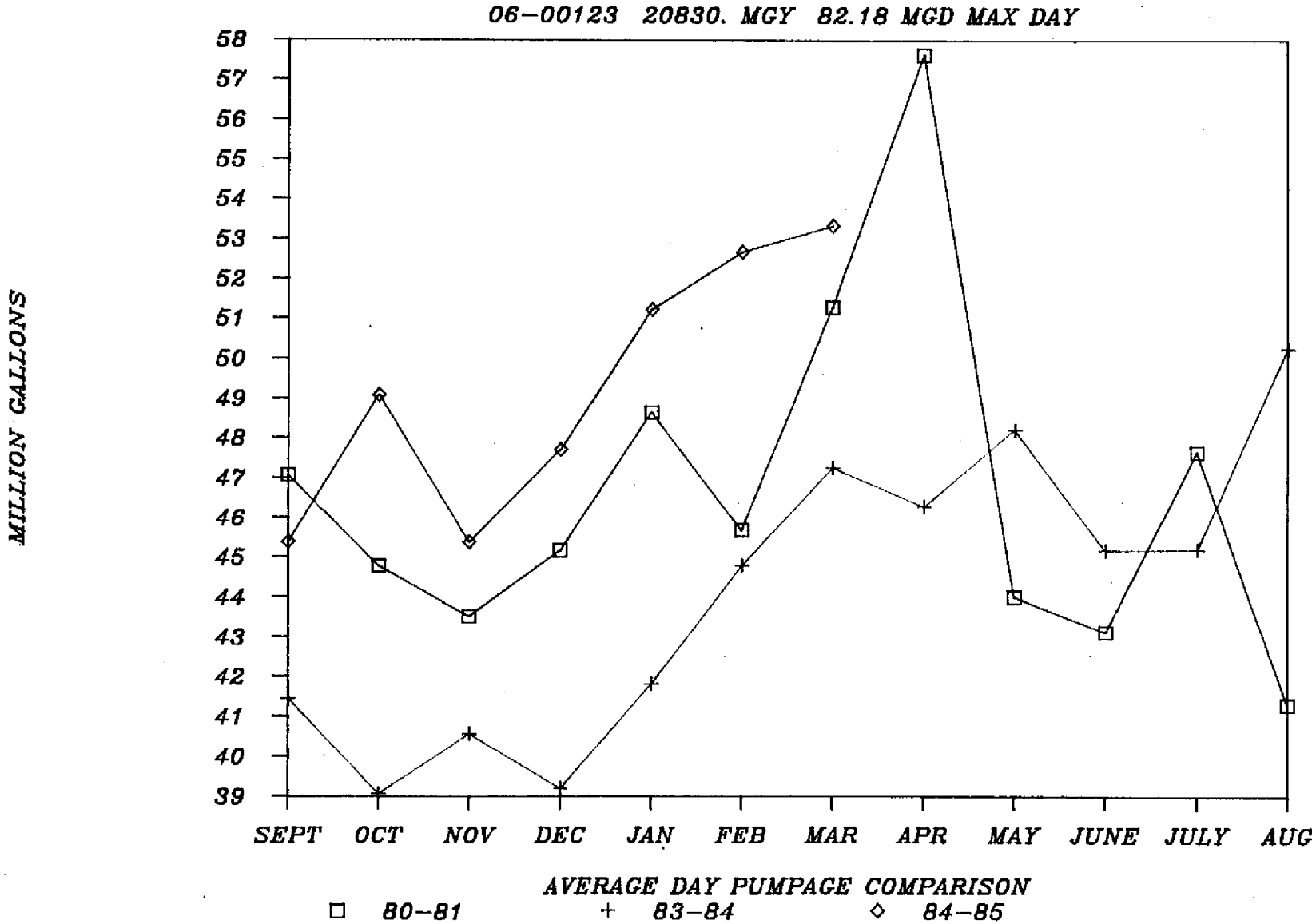
CITY OF BOCA RATON



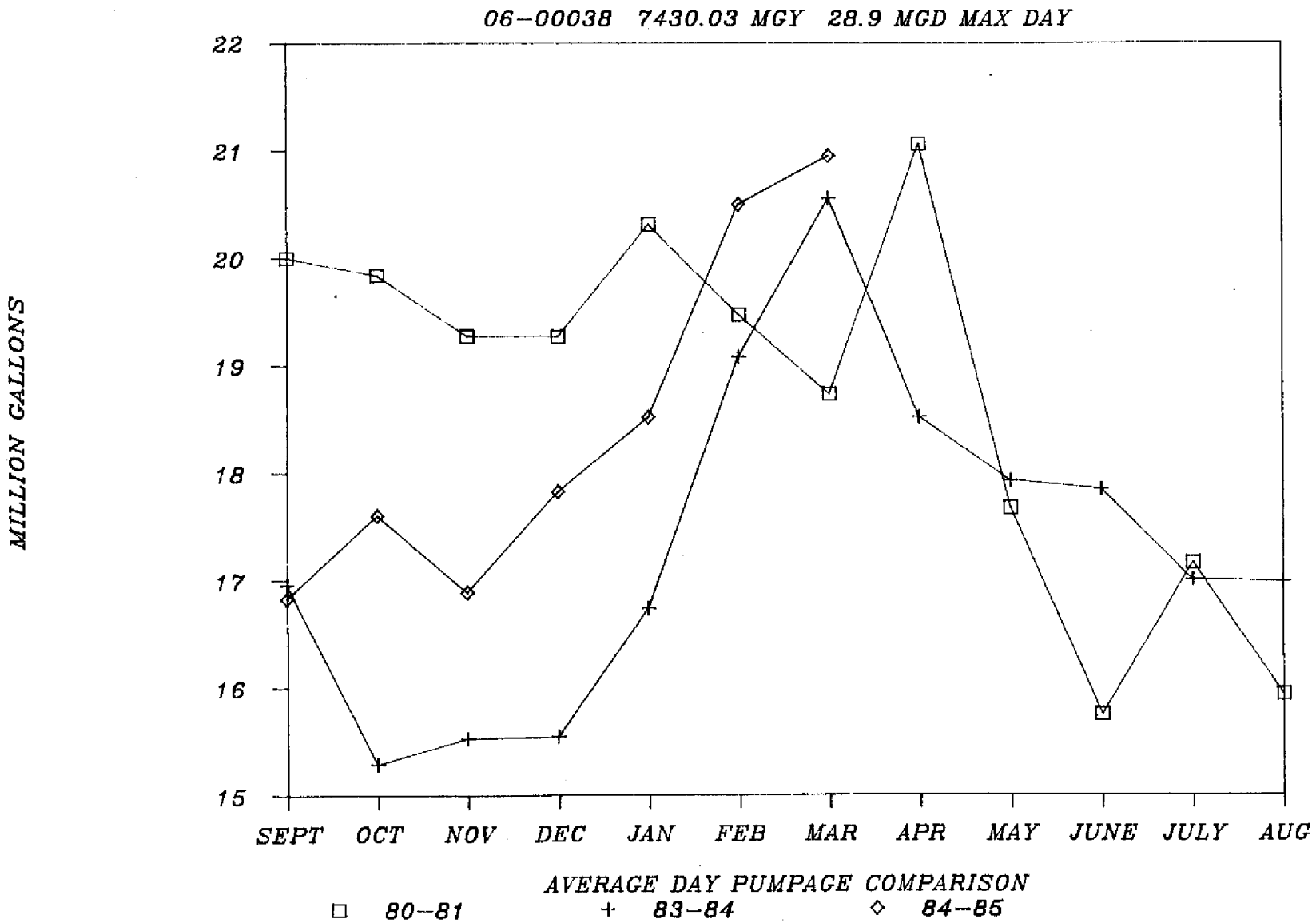
CITY OF POMPANO BCH



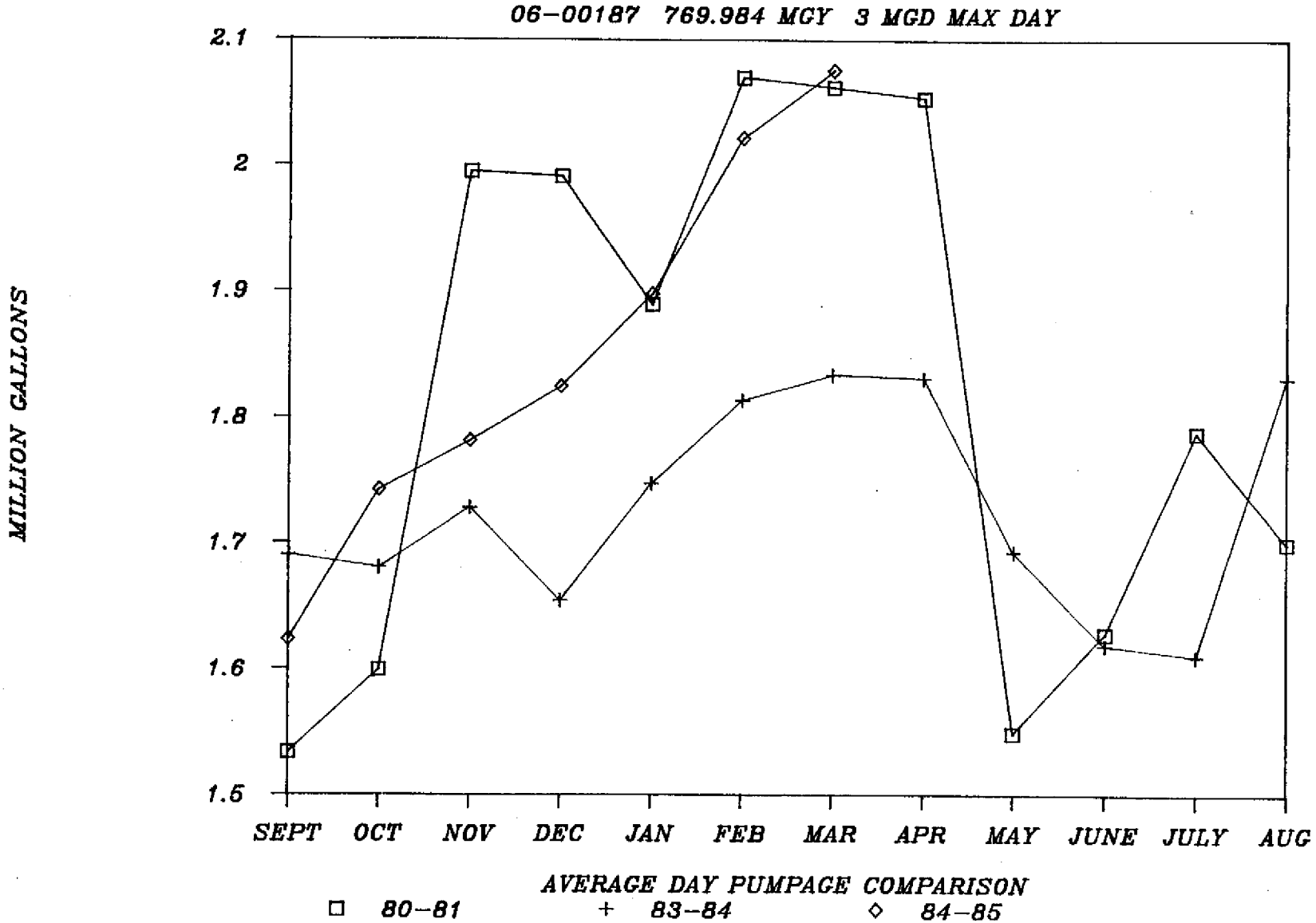
CITY OF FT LAUDERDALE



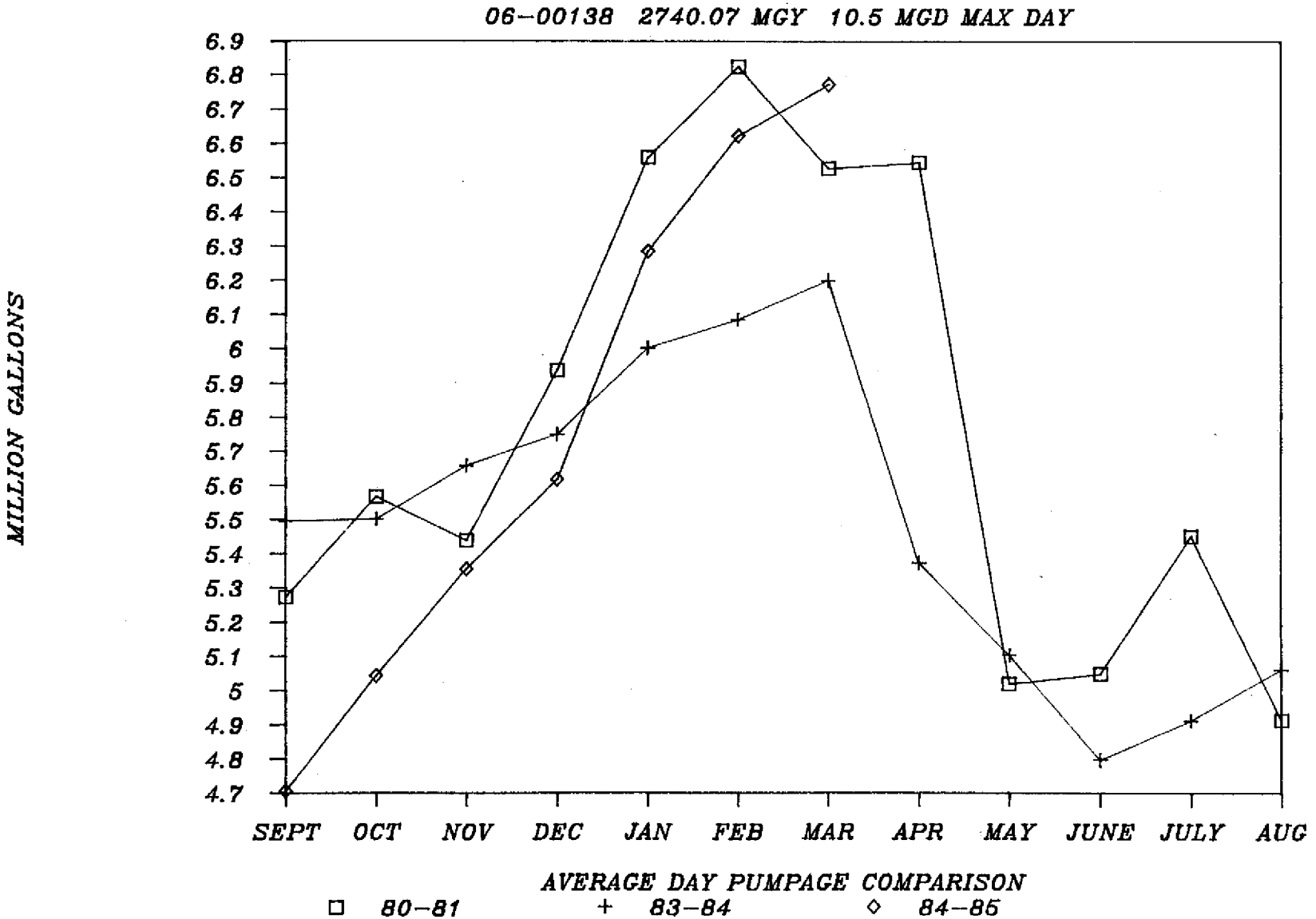
CITY OF HOLLYWOOD



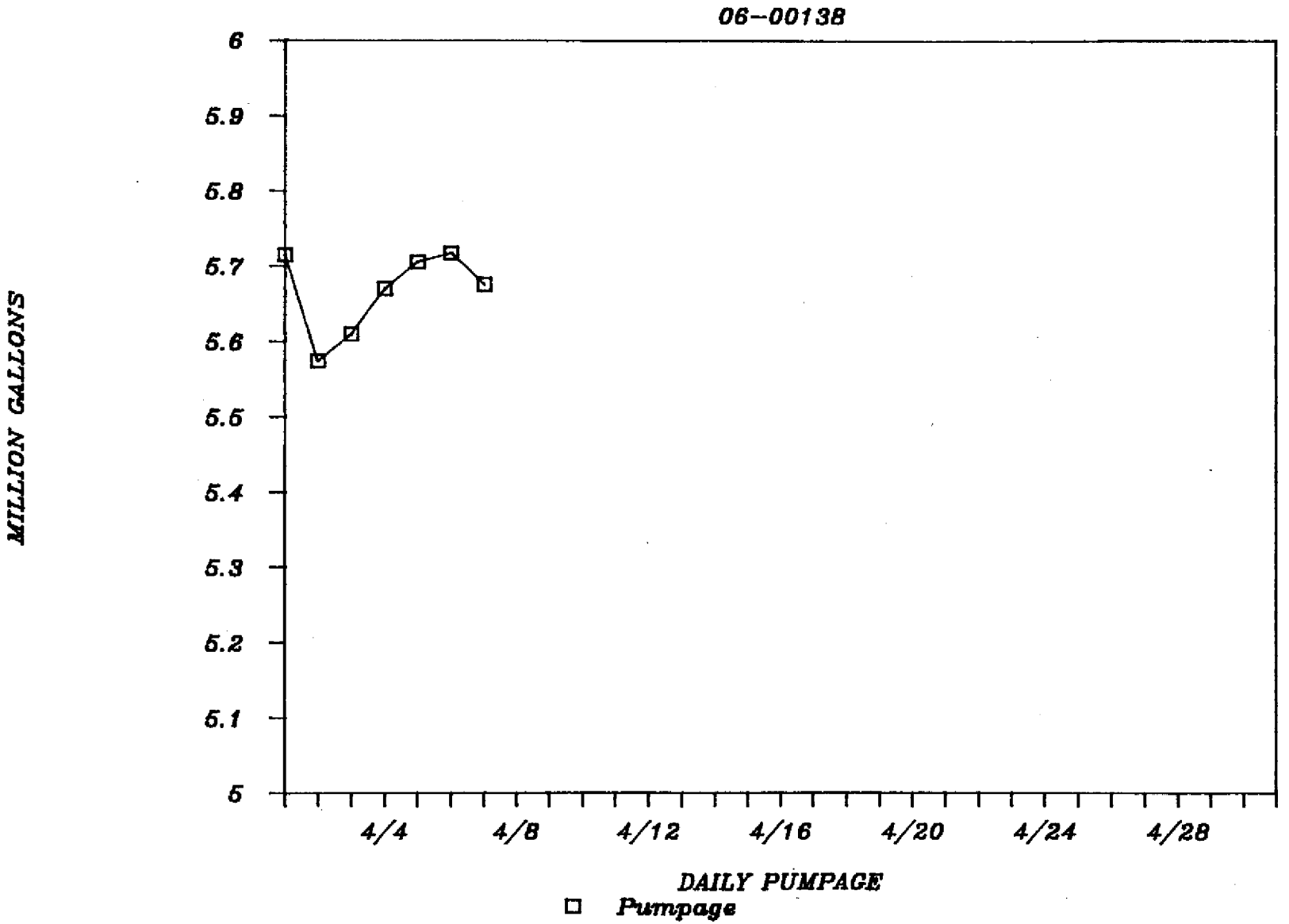
CITY OF DANIA



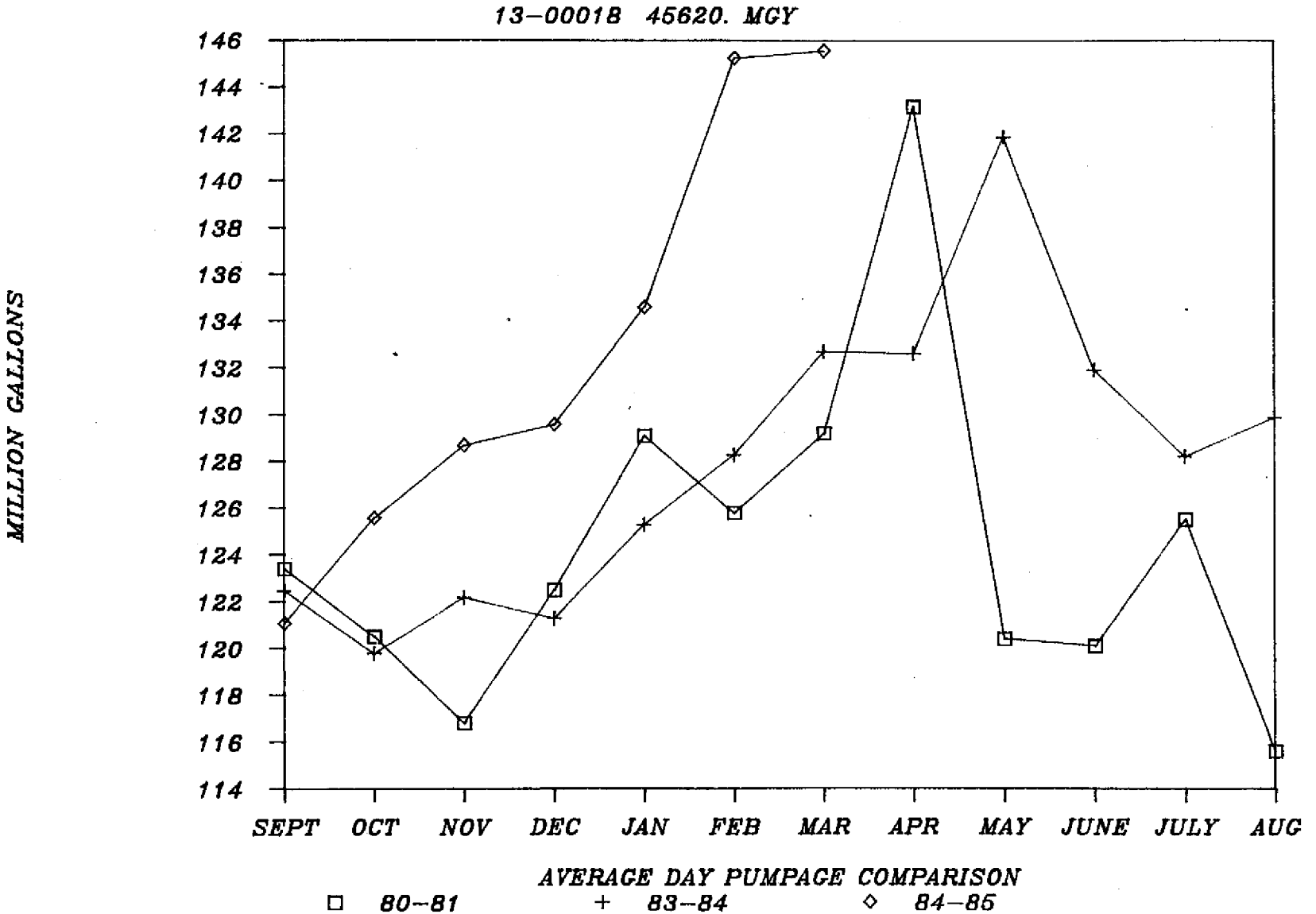
CITY OF HALLANDALE



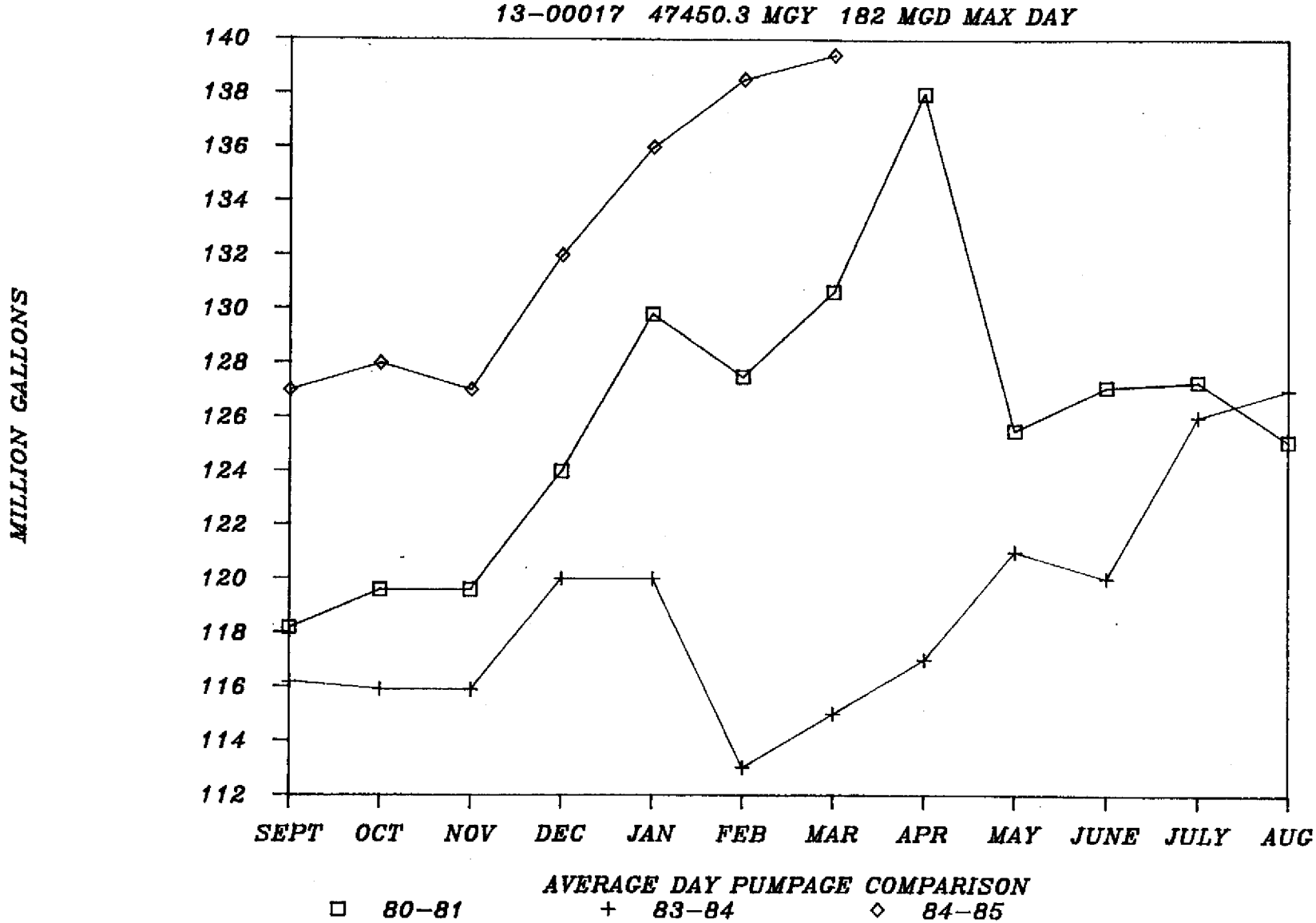
Hallandale

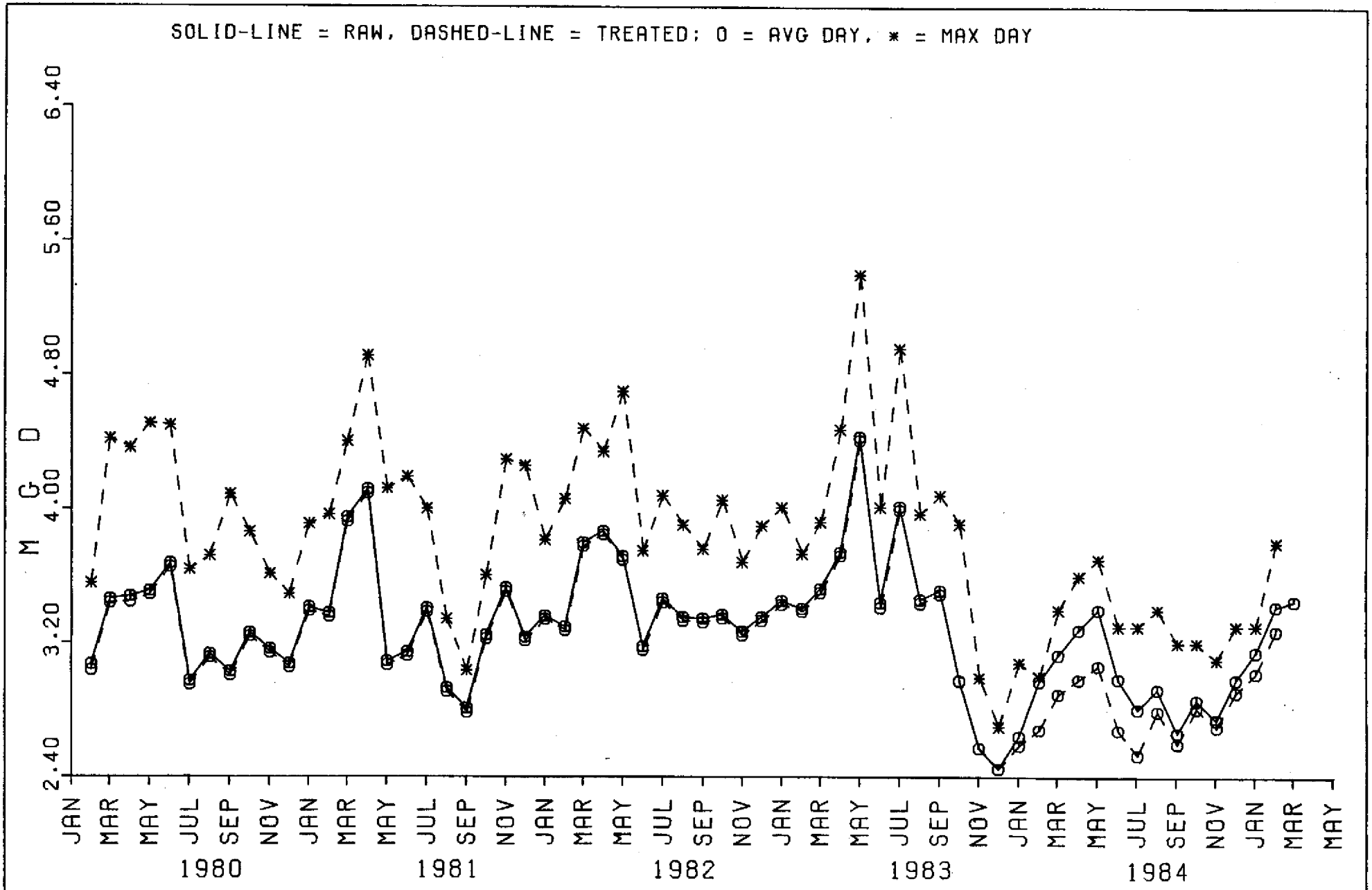

06--00138
6
5.9
5.8
5.7
5.6
5.5
5.4
5.3
5.2
5.1
5
MILLION GALLONS
4/4
4/8
4/12
4/16
4/20
4/24
4/28
DAILY PUMPAGE
Pumpage

MIAMI-DADE W+S AUTHORITY (NW)



MIAMI-DADE W+S AUTHORITY (ORR)

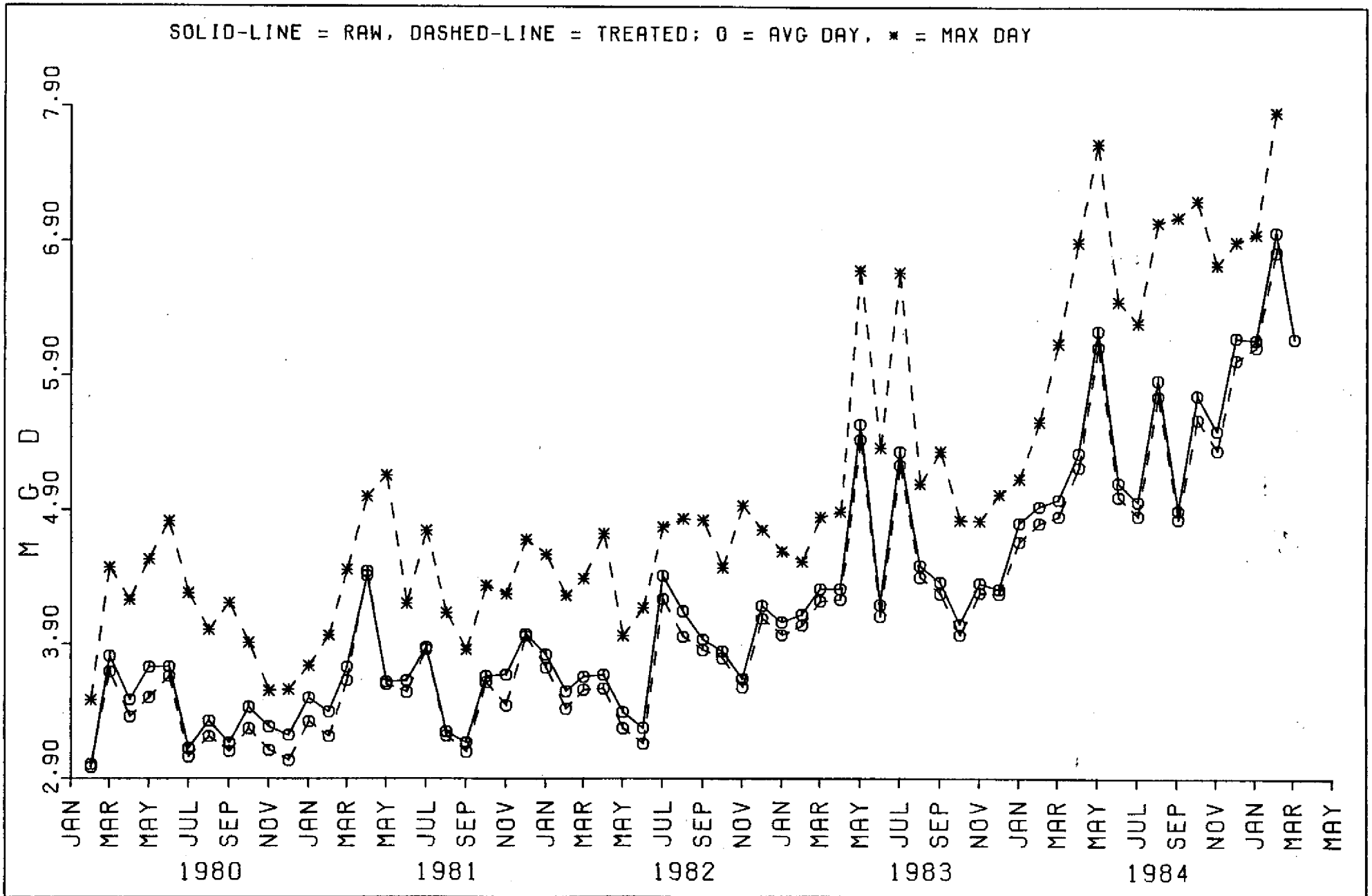




CITY OF STUART

SUMMARY - ALL PERMITS ISSUED TO THIS UTILITY

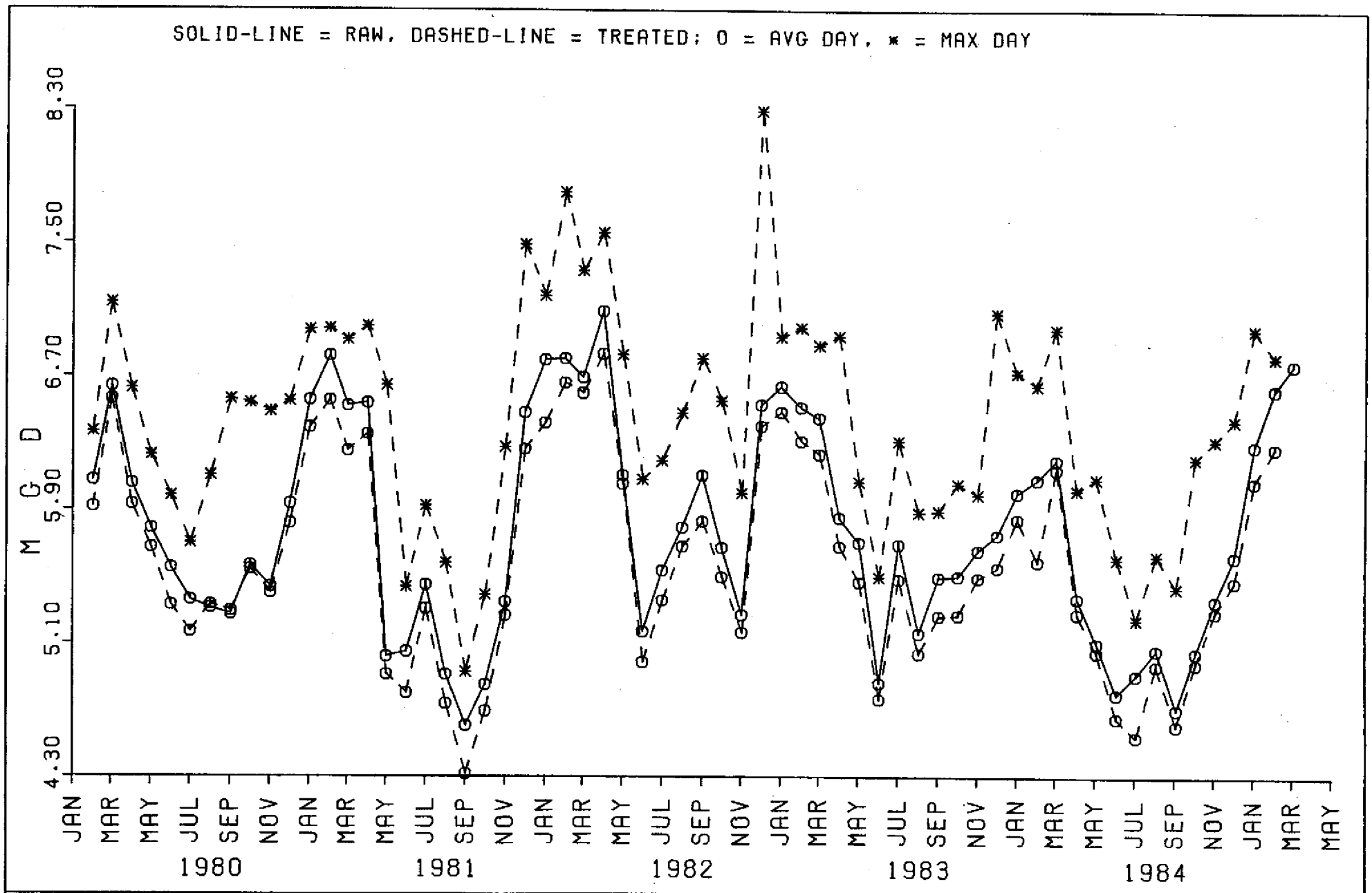
SUMMARY - ALL WELL FIELDS UNDER ABOVE PERMIT



TOWN OF JUPITER

SUMMARY - ALL PERMITS ISSUED TO THIS UTILITY

SUMMARY - ALL WELL FIELDS UNDER ABOVE PERMIT



CITY OF HALLANDALE

SUMMARY - ALL PERMITS ISSUED TO THIS UTILITY

SUMMARY - ALL WELL FIELDS UNDER ABOVE PERMIT

APPENDIX IV

M E M O R A N D U M

April 1, 1985

TO: Ron Metzger, Director, Permit Administration Division

FROM: Bruce Adams, Coordinator, Water Use Planning Division

RE: "Clay" Tennis Court Irrigation During Water Shortages

As requested during our conversation this morning, this memo should serve as an explanation of a reasonable set of irrigation standards for "clay" type tennis courts during a water shortage.

During the user negotiations in the preparation of the Water Shortage Rule, I conducted a survey of major tennis centers, met with maintenance supervisors, reviewed manufacturing literature and talked with resort owners.

The industry appears to be consistently informed as to standards for construction and maintenance.

The following practices are uniform in the South Florida area:

Irrigation - 40-60 gpm/court
Twice daily - 10 min @ noon
20-30 min @ 6-11 p.m.

Calcium chloride application - 80-150 lbs/court/mo during dry season

The courts need to be irrigated at night immediately after play ceases. The courts need to be irrigated at mid day to reduce wind erosion and to reverse the effect of the morning's play. Calcium chloride will increase the retention of the applied irrigation.

Our suggestion would be as follows:

Limit day time irrigation to 5 min. per court - Hours - 12 noon-3 p.m.

Irrigation capacity - 1 hour irrigation for each ten courts, maximum 3 hours.
Limit night time irrigation to 5 min. per court - Hours - 9 p.m.-12 midnight.

Irrigation capacity - 1 hour irrigation for each ten courts, maximum - 3 hours.

This restriction should apply from Phase I through Phase IV.
The calculated cutback using the above restrictions will result in approximately 60% reduction from normal water use.

Bruce Adams, Coordinator
Water Use Planning Division

BA:kh

APPENDIX V

DETAILS OF LOCAL GOVERNMENT/UTILITY CUSTOMERS COORDINATION

The following summary reflects the action items of the shortage team efforts and other significant meetings:

March 8	Joint Interagency Meeting on water conditions. WMD Auditorium. Update on water shortage conditions by WMD. Participants: Dalton Yancy (Florida Sugar League); Jack Moorhead (ENP); Garrett Sloan (MDWSA); John Wehle (DER); Louis Horning (Corps); Brad Hartman (Fla. Game & Fresh Water Fish), Bud Calhoun (Broward County Water Advisory Board).	Wodraska, Hall, Wedderburn
March 11	Broward County Water Resource Advisory Committee - Water Shortage Overview	Butler
March 13	Collier County Water Resource Board	Creel, Butler, Gleason, Tammaro, Vidzes
March 13	Collier County Commission (Emergency Meeting)	Creel, Butler, Gleason, Vidzes Tammaro
March 13	Collier County Attorney's Office Water Shortage Ordinance & Enforcement	Niego, Tammaro
March 13	Naples City Manager, Attorney & Utility Director. Water Shortage Plan & restrictions. Coordination and local impact and enforcement.	Vidzes, Butler Gleason, Tammaro
March 13	Major Permitted Users meeting. Collier County	Gleason, Woelke, Butler
March 13	Lee County Commission Meeting. Water shortage conditions, plan, ordinance and coordination.	Creel, Adams, Tammaro, Clark, Milleson
March 14	SFWMD Governing Board Workshop - Governing Board	
March 15	SFWMD Declaration of a Water Shortage in Collier and Lee Counties. Water shortage warning declared throughout St.Lucie, Okeechobee, Martin, Palm Beach, Broward, Dade, Monroe, Hendry and Glades Counties	

March 18	SFWMD Superintendents' Meeting. Water shortage plan and local coordination through field stations. Establish roles and procedures for cooperative efforts into communities and counties.	
March 19	Utility Directors & SFWMD Meeting - (National Guard Armory). Review of hydrologic conditions, wellfield conditions & pumpage, information exchange and future actions. Identify water shortage coordinators and utility contacts.	Wodraska, Hall, Adams, Slyfield, Horvath, Woehlcke, Gleason
March 19	Collier County Commission. Adopt the WMD Model Water Shortage Ordinance.	Vidzes
March 20	Naples City Commission. Adopt the District Model Water Shortage Ordinance.	Vidzes
March 21	Broward County Water Supply Board. Overview of Governing Board declaration, water conditions, hydrologic conditions, problem areas and pumpage reports in Broward municipalities Outline the voluntary restrictions and the shortage ordinance. BCWSB moved to support the technical information to comply with the voluntary measures and to direct the attorneys office to draft an ordinance through the County Commission. Nancy Roen, Governing Board member, was present and represents the District on this Board.	Butler, Gleason, Tammaro, Burdick
March 21	Broward County Attorney's meeting on Model Ordinance and review of their existing ordinance.	Tammaro, Butler, Burdick
March 22	City of West Palm Beach Utility meeting. Cooperative efforts and water conservation restrictions.	Butler
March 25	City of Tequesta - Water shortage and problem issues with restrictions.	Creel, Schiller, Schwartz
March 26	Broward County Commission. Official support of the District, voluntary water conservation, technical information and water shortage ordinance.	Butler, Burdick
March 26	Broward County formally adopts the District's Water Shortage Ordinance. This is a charter gove[illegible]ent county, and municipalities come under this rule.	Tammaro

March 28	City of Tequesta	Creel, Schiller, Schwartz
March 29	Big Cypress Basin Board Meeting. Collier County issues, wellfield and pumpage update Special users and permits were discussed and and the Phase I restrictions. Local government coordination with the county and cities. Water Shortage Ordinance.	Wedderburn Butler, Tammaro
April 1	Letter to city officials, managers and councils Urge leadership role by the municipalities and adoption of the Water Shortage Ordinance as a local ordinance and voluntary water conservation measures or mandatory participation in Collier and Lee counties.	Wodraska, Horvath
April 3	Letter to Utility Directors requesting assessment of water conservation programs, encourage participation and participation in questionnaire on water conservation	Wodraska, Butler
April 3	Briefing with Karen Marcus, Vice Chairman of Palm Beach County Commission. Intergovernmental coordination, water resource issues and water shortage plan and ordinance.	Butler
April 8	Briefing with Ken Adams, Chairman of the Palm Beach County Commission on water shortage ordinance, PB County's existing ordinance and the support of new water shortage ordinance. Ken Adams directed County Legal Office to agenda this item for the commission on April 16. Charles Schoech and Tom McEaddy.	Butler Schwartz Burdick
April 8	City of Palm Beach Shores (Palm Beach County Water Shortage Ordinance and city ordinance. City Commission meeting.	Burdick
April 8	Palm Beach County Planning Congress water conditions, drought management, weather patterns and C-51.	Rhoads Lietro