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FACIL:50-250 Turkey Point Plant, Unit 3, Florida Power and Light C 05000250
50-251 Turkey Point Plant, Unit 4, Florida Power and Light C 05000251
AUTH.NAME AUTHOR AFFILIATION
WILLIAMS,J.W. Florida Power & Light Co.
RECIP.NAME RECIPIENT AFFILIATION
DENTON,H.R. Office of Nuclear Reactor Regulation, Director

SUBJECT: Forwards info re change to State of FL Dept of Environ Regulation Operating Permit IO 13-57079,designating groundwater underlying site as Class G-III,Section of environ monitoring rept for 1981 encl.

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	NRR/DE/SAB	07	1	1	NRR/DSI/METB		1	1
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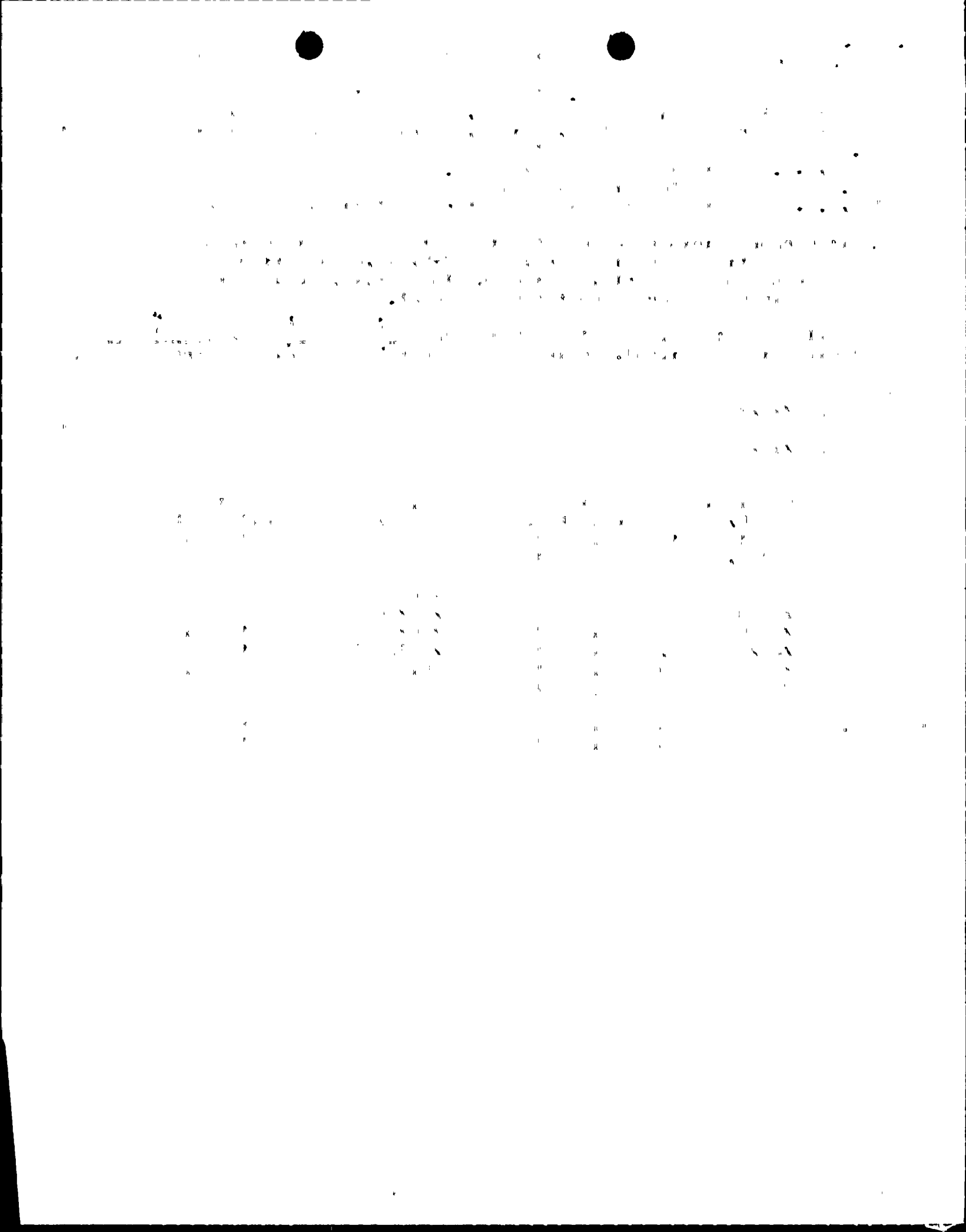


P. O. BOX 14000, JUNO BEACH, FL 33408

FLORIDA POWER & LIGHT COMPANY

December 28, 1984
L-84-387

Office of Nuclear Reactor Regulation
Mr. Harold R. Denton, Director
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Mr. Denton:

Re: Turkey Point Units 3 & 4
Docket Nos. 50-250 & 50-251
Florida Department of Environmental Regulation
Industrial Wastewater Treatment System Permit Modification

On November 2, 1982 Florida Power & Light submitted a request to the Florida Department of Environmental Regulation (DER) to modify Turkey Point Plant Operating Permit, IO 13-57079 to change the designation of the groundwater underlying the Turkey Point site from Class G-II to Class G-III. That request was approved by the DER on September 6, 1983.

Section 5.5.2 of the Turkey Point Plant Environmental Technical Specifications requires that all documentation concerning changes (deletions, revisions, or additions) to permits and certificates required by Federal, State, local and regional authorities for the protection of the environment shall be submitted to the Director of Nuclear Reactor Regulation for information. It further states that such submittals shall include an evaluation of the environmental impact of such changes. Through an oversight, timely submittal of the required information was not made. That oversight was identified during an FPL audit of the environmental program.

Attachments 1 through 5 include the documentation concerning the change. Attachment 6 provides an evaluation of the environmental impact.

Very truly yours,

J. W. Williams, Jr.
Group Vice President
Nuclear Energy

JWW/TCG/cab

Attachments

Cool
1/1

P. O. BOX 14000, JUNO BEACH, FL 33408

ATTACHMENT 1

FLORIDA POWER & LIGHT COMPANY

November 2, 1982

Mr. James C. Williams
Permitting Section Head
Department of Environmental Regulation
South Florida Subdistrict
3301 Gun Club Road
West Palm Beach, Florida 33402

RE: Turkey Point Power Plant
Industrial Wastewater Treatment System
Permit No. IO-13-57079

Dear Mr. Williams:

The following comments are respectfully submitted for the subject permit:

Page 1 of 4, second paragraph of the subject permit references the discharge of cooling canal waters to Class I-B groundwaters. Discharges to groundwater from the Turkey Point cooling canal system go only to Class III groundwaters pursuant to the newly adopted revisions to Chapter 17-3 F.A.C. effective January 1, 1983.

Several years of monitoring data indicate that receiving groundwater underneath and adjacent to the canal system has T.D.S. concentrations placing it in the newly adopted Class III category.

Florida Power and Light Company thus requests that the second paragraph on Page 1 of 4 be revised to read as follows:

> (starting at Line 8) ..... an area of 6700 acres to Class III groundwaters having a zone .....

If there are any questions concerning these requested changes, please contact Frank Gavila at 305/863-3629 or Alan Benedict at 305/863-3625.

Sincerely,

W. J. Barrow, Jr.
Manager
Environmental Permitting and Programs

WJBjr:ADB:ko

ATTACHMENT 2

P. O. BOX 14000, JUNO BEACH, FL 33408

FPL
FLORIDA POWER & LIGHT COMPANY

November 29, 1982

Mr. Bill Keats
Florida Department of Environmental Regulation
Southeast Florida District
P. O. Box 3858
West Palm Beach, Florida 33402

Re: Turkey Point Plant
Industrial Wastewater Treatment System
Permit No. IO-13-57079

Dear Mr. Keats:

Enclosed you will find Turkey Point Plant Cooling Canal System water data for salinity for 1981 as well as September, October and November of 1982. These data indicate that cooling canal water salinities are consistently above 10,000 mg/L.

In a letter to James Williams from FPL on November 2, 1982 it was suggested that discharges from the Turkey Point Cooling Canal System go only to Class III groundwaters pursuant to the newly adopted revisions to Chapter 17-3 F.A.C. Because these regulations are not yet final FPL withdraws this classification request and in its place suggests substituting Class VB pursuant to current rules.

FPL thus requests that the second paragraph Page 1 of 4 be revised to read as follows:

> (starting at line 8) .....an area of 6700 acres to Class VB groundwaters having a Zone....

Sincerely,

W. J. Barrow, Jr.
Manager
Environmental Permitting and Programs

WJBjr:ADB:ku

Attachments

FLORIDA POWER & LIGHT COMPANY

TURKEY POINT PLANT

ANNUAL NON-RADIOLOGICAL ENVIRONMENTAL MONITORING REPORT

1988

Table 1. Values of selected chemical parameters monitored at the outlet of Lake Warren, Turkey Point Power Plant, 1981.

MONTHLY				WEEKLY			
DATE	C.O.D. (mg/l)	Cu (mg/l)	Zn (mg/l)	DATE	pH (std. units)	D.O. (mg/l)	Salinity (o/oo)
Jan.	219	<0.02	<0.02	01/08	8.2	4.8	40.0
				01/15	8.0	5.4	40.0
				01/22	7.9	4.6	40.0
				01/29	7.9	4.7	40.0
Feb.	261	<0.02	<0.02	02/05	8.0	5.8	41.0
				02/12	8.0	4.4	42.0
				02/19	7.9	4.8	41.0
				02/26	8.0	5.0	42.0
Mar.	197	<0.02	<0.02	03/05	8.1	4.2	42.0
				03/12	8.1	4.1	42.0
				03/19	8.1	4.2	42.0
				03/26	8.1	4.9	44.0
Apr.	236	<0.02	<0.01	04/02	8.0	5.0	44.0
				04/09	8.2	5.8	44.0
				04/16	8.0	4.6	44.0
				04/23	8.0	5.0	44.0
				04/30	8.0	4.1	44.0
May	222	<0.02	<0.01	05/07	8.1	4.0	44.0
				05/14	8.1	4.0	44.0
				05/21	8.0	4.0	45.0
				05/28	8.0	3.7	41.0
Jun.	276	<0.02	<0.01	06/04	8.2	3.8	42.0
				06/11	8.1	2.0	42.0
				06/18	8.1	4.2	44.0
				06/25	8.0	4.7	43.0
Jul.	202	<0.02	<0.01	07/02	8.0	4.8	43.0
				07/09	8.1	5.0	44.0
				07/15	8.1	5.0	45.0
				07/23	8.0	4.3	46.0
				07/30	8.0	4.7	46.0
Aug.	266	<0.02	<0.01	08/06	8.0	4.1	45.0
				08/13	8.1	3.7	46.0
				08/20	8.1	4.1	33.0
				08/27	8.1	3.1	35.0
Sep.	302	<0.02	<0.005	09/03	8.1	3.6	36.0
				09/10	8.0	4.0	36.0
				09/17	8.1	3.8	37.0
				09/24	8.2	3.9	35.0

Table 1. (Cont'd) Values of selected chemical parameters monitored at the outlet of Lake Warren, Turkey Point Power Plant, 1981.

MONTHLY				WEEKLY			
DATE	C.O.D. (mg/l)	Cu (mg/l)	Zn (mg/l)	DATE	pH (std. units)	D.O. (mg/l)	Salinity (o/oo)
Oct	234	<0.02	<0.005	10/01	7.9	4.7	27.0
				10/08	8.1	4.0	29.0
				10/15	8.1	4.9	28.0
				10/22	8.2	4.6	30.0
				10/29	8.2	4.2	30.0
Nov.	254	<0.02	<0.005	11/05	8.2	4.8	29.0
				11/12	8.1	4.8	29.0
				11/19	8.1	5.3	30.0
				11/25	8.0	6.0	30.0
Dec.	413	<0.02	<0.005	12/03	8.1	4.8	30.0
				12/10	8.1	6.0	31.0
				12/17	8.1	4.8	31.0
				12/24	8.1	5.6	32.0
				12/31	8.0	4.0	33.0

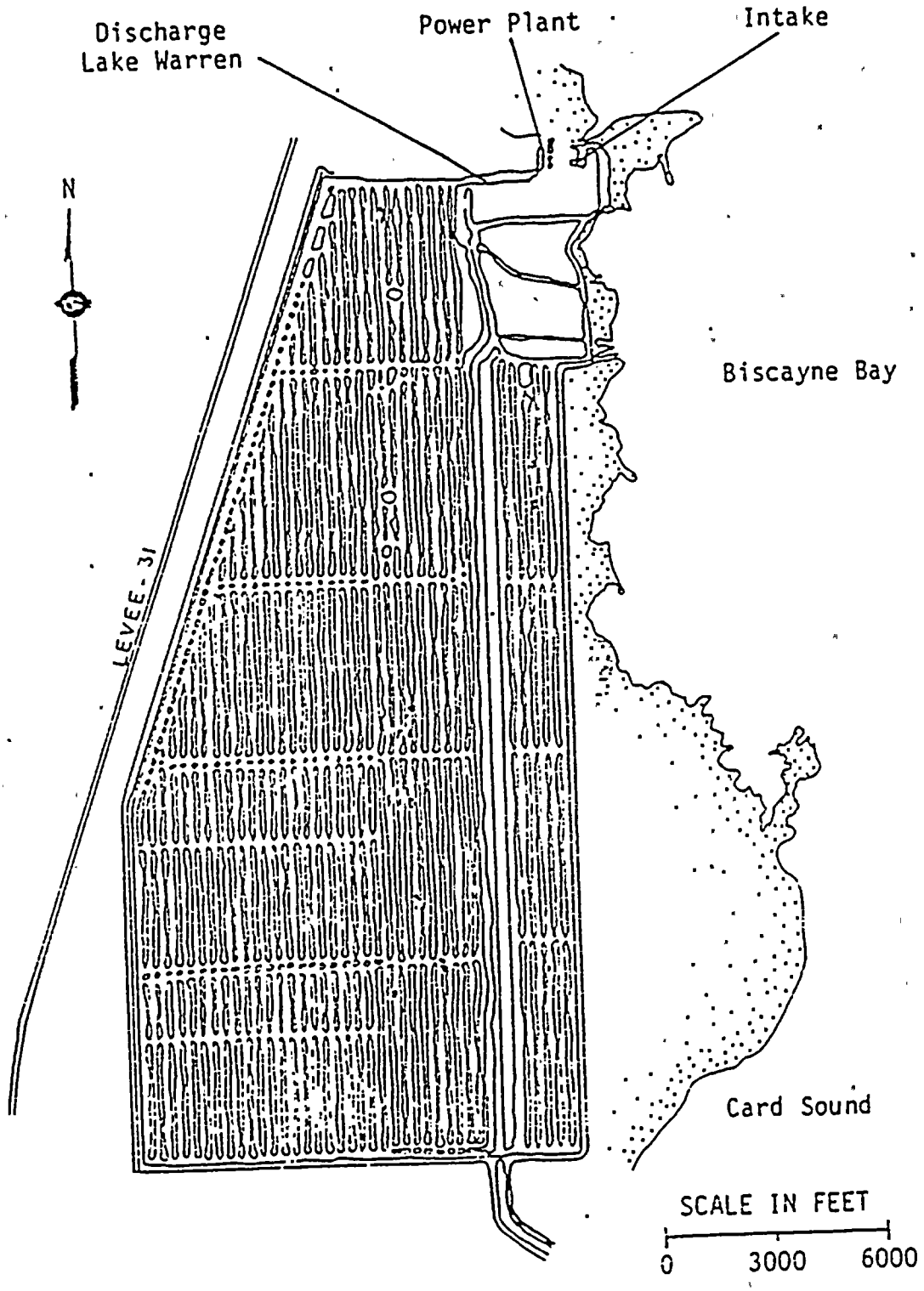


Figure 1. The location of the discharge chemical samoling point at Turkey Point Power Plant, 1981.

TURKEY POINT PLANT

COOLING CANAL WATER SALINITY VALUES

	Salinity (parts per thousand 0/00)
9/03/82	40.5
9/09/82	41.0
9/16/82	42.0
9/23/82	42.0
9/30/82	39.5
10/07/82	36.5
10/14/82	38.0
10/21/82	38.5
10/28/82	38.5
11/04/82	40.0
11/11/82	35.0
11/18/82	34.0
11/24/82	35.5

ATTACHMENT 3

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

SOUTHEAST FLORIDA
DISTRICT
P.O. BOX 3858
3301 GUN CLUB ROAD
WEST PALM BEACH, FLORIDA 33402-3858

January 6, 1983

IW - Dade County
Florida Power & Light Co.
Turkey Point Power Plant

Mr. W.J. Barrow, Jr., Manager
Environmental Permitting and Programs
Florida Power & Light Company
Post Office Box 14000
Juno Beach, Florida 33408

Dear Mr. Barrow:

Re: Turkey Point Power Plant, Industrial Wastewater Treatment System Permit, IO 13-57079

The Department cannot comply with your request to revise the Industrial Wastewater Treatment System Permit. The new rules of the Department of Environmental Regulation Chapter 17-3, F.A.C. in Section 17-3.403 define Class G-III Groundwaters as:

> CLASS G-III — Non-potable water use, groundwater in unconfined aquifers which has a total dissolved solids content of 10,000 mg/l or greater, or which has total dissolved solids of 3,000-10,000 mg/l and either has been reclassified by the Commission as having no reasonable potential as a future source of drinking water, or has been disignated by the Department as an exempted aquifer pursuant to Section 17-28.13 (3), F.A.C.

At present the groundwaters in the area of the facility have not been reclassified by the Commission nor have they been designated by the Department as an exempted aquifer. The data we have does not indicate that the groundwater exceeds the 10,000 mg/l TDS level. Therefore, until a reclassification by the Commission or an exemption is granted by the Department we must refuse your request for a revision of the permit.

Should any question arise please contact W.A. Keats of this office, telephone 305/689-5800.

Sincerely,

Roy M. Duke

Roy M. Duke
District Manager

RMD:wakbj

cc: Metropolitan Dade County
Environmental Resources
Management

ATTACHMENT 4

O. BOX 14000, JUNO BEACH FL 33408

FLORIDA POWER & LIGHT COMPANY

RECEIVED
MAY 26 1983
Env. Permitting

May 26, 1983

Mr. Roy M. Duke
District Manager
Florida Department of Environmental Regulation
Southeast Florida District
P.O. Box 3858
3301 Gun Club Road
West Palm Beach, Florida 33402

Re: Turkey Point Plant - Industrial
Wastewater Treatment System Permit
No: IO 13-57079

Dear Mr. Duke:

Florida Power and Light Company was issued the subject permit effective October 15, 1982. Subsequent correspondence from FPL to DER requested that the receiving groundwaters for discharges from the facility be changed from I-B (Class G-II as of January 1, 1983) to Class G-III. Even though the permit was not contested, the unacceptable I-B (G-II as of January 1, 1983) was retained in the permit pending the submittal of additional data by FPL supporting the contention that the Turkey Point Plant facility receiving groundwaters could legitimately be classified G-III.

Attached you will find documentation justifying the G-III reclassification request. If there are any questions please call Alan Benedict at 863-3625 or Douglas Pasley at 863-3624.

Sincerely,

W. J. Barrow, Jr.
Manager
Environmental Permitting and Programs

WJBjr:ADB:ku

Attachment

ASSESSMENT OF TOTAL DISSOLVED SOLIDS IN GROUND-WATER UNDER THE TURKEY POINT COOLING CANAL SYSTEM

INTRODUCTION

The extreme southeastern portion of Dade County, inclusive of the Florida Power and Light (FPL) Turkey Point Cooling Canal system, overlies the leading edge of the coastal portion of the Biscayne Aquifer and the landward intruding salt-water front. The relationship between two water masses here (and as in any marine coastal area) is known to be dynamic. As such, it is affected by short-term variations such as lunar-induced tidal effects. Longer period fluctuations relative to this relationship are exemplified by changes in the hydraulic gradient of the aquifer (water table) brought about by excessive rainfall or by significant deficiencies in precipitation during episodic droughts.

Since the early 1970's FPL has conducted a ground-water monitoring program relative to the cooling canal system. This work, accomplished in compliance with an agreement between FPL, the South Florida Water Management District (SFWMD) and the U.S. Nuclear Regulatory Commission, is documented in a series of published reports prepared by FPL's consultant Dames and Moore.

The following discussion presents a summary of historically-compiled ground-water quality data substantiating that the Total Dissolved Solids (TDS) levels beneath the Turkey Point cooling canal system are > 10,000 ppm. The principal source of the data is contained in the Summary Report (July 1982) published by Dames and Moore on behalf of FPL.

Figure 1 shows the location of 24 ground-water monitoring wells which have been systematically sampled at regular intervals over a long period of time. Figure 2 is a small-scale plot plan showing details of the cooling canal system. Particular attention is directed toward the ID-series wells located immediately west of the cooling canal system.

While water quality parameters in the upper water column of these wells are influenced by a pumping regime in the interceptor ditch (that insures continuity in maintaining a seaward-directed freshwater gradient in the Biscayne Aquifer), these wells represent the best available indicator of the saline water regime underlying the canal system. At the same time it should be recognized that the SFWMD approved operational framework of the canal system may not have reached a point of equilibrium at the present time as suggested in salinity evaluation study conducted by Dames and Moore for FPL in 1978[1].

DATA

Figures 3 through 7 are time-history plots of chlorinity (TDS)[2] trends through time in the ID-well series (A through E) since the inception of the monitoring program at these sites. Table 1 summarizes the continuity of historical data shown in Figures 3 through 7.

---

1 Dames and Moore, 1978, Salinity evaluation Turkey Point cooling pond system: for Florida Power & Light Co., 124p.

---

2 (a) Salinity (S) = Total Dissolved Solids (TDS)
(b) 0.03 + 1.805 Chlorinity ($^0/_{00}$) = S($^0/_{00}$)
(c) S (0/00) X 1000 = S(ppm)
(d) By inspection of empirical data tables a chlorinity value of 5.56 ppt = 10,000 ppm TDS

TABLE 1
DEPTH-TDS EQUIVALENT DATA THROUGH

TIME FOR ID-SERIES WELLS

(EXPRESSED AS PERCENTAGE OF TIME WHEN TDS IS >10,000 ppm)

Well[a]	At-15 ft msl[b]	At-30 ft msl[c]
ID-A	47 %	100 %
ID-B	73 %	100 %
ID-C	83 %	100 %
ID-D	94 %	100 %
ID-E	100 %	100 %

[a] Aligned North to South

[b] 68 month interval (Nov.'76 - June '82)

[c] 68 month interval (minimum)

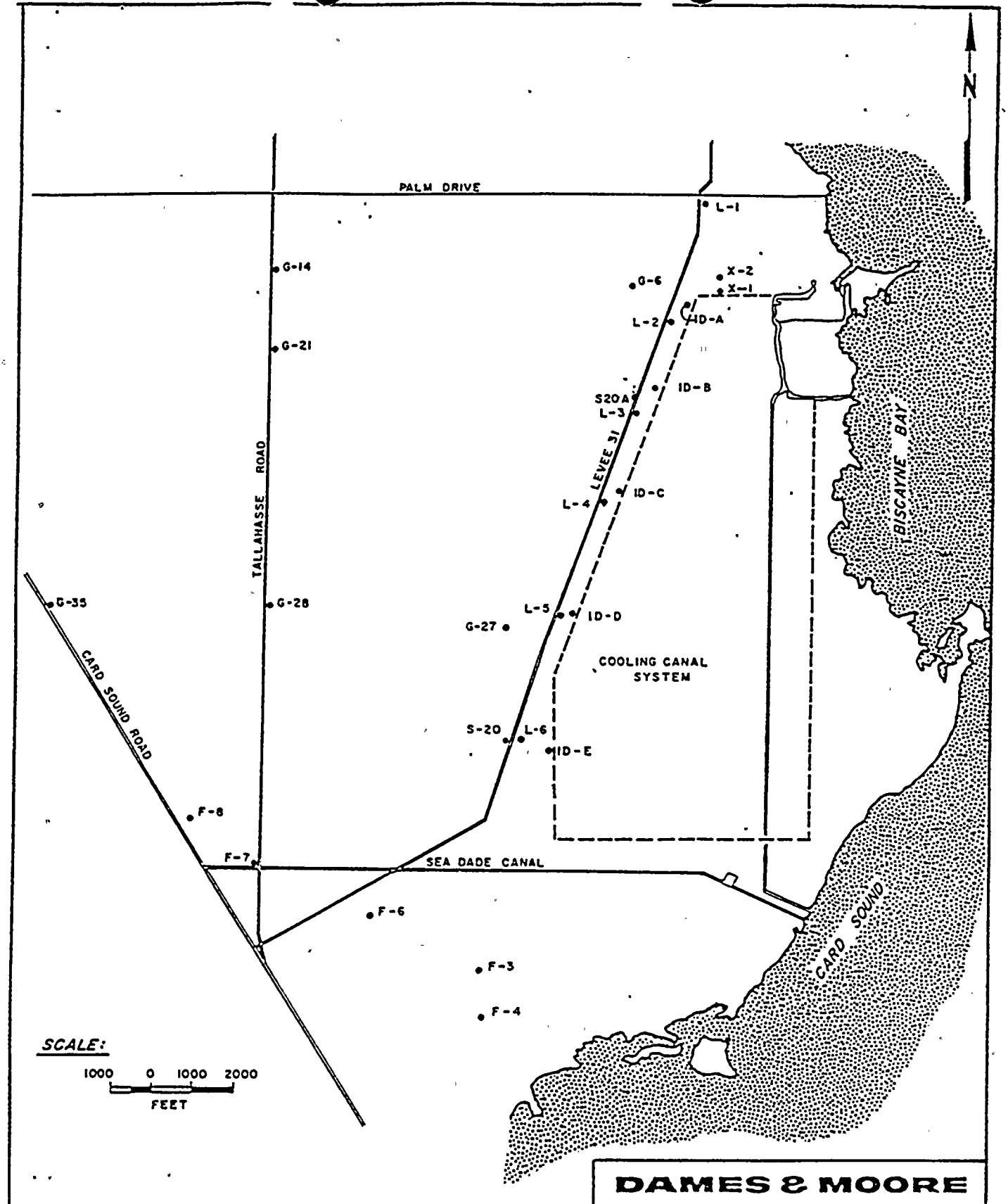
DISCUSSION

It is apparent in Table 1 that a TDS level >10,000 ppm is present 100% of the time in all the ID wells at -30 ft msl. At -15 ft msl the data from well (ID-E) indicate that the threshold TDS value of 10,000 ppm is present 100% of the time. Proceeding from ID-D north to well ID-A (see Fig. 2) the percentage of time that 10,000 ppm TDS levels occur decreases in a graduated manner. At ID-A the TDS threshold value of 10,000 ppm is exceeded 47% of the time. Close examination of the ID-A data (see Fig. 7) indicates that the majority of time-intervals in which the TDS levels are less than 10,000 ppm are incorporated in the "wet season" when significant precipitation in the South Florida region occurs. However, even beyond this level of analysis is the fact that detailed studies accomplished by Dames and Moore indicate that under projected ground-water conditions (equilibrium) the salt water front will eventually underlie the entire canal system. (Figure 8).[2]

CONCLUSIONS

Viewing the data in perspective, it is apparent that the ID-wells confirm the permanent nature of the salt-water wedge beneath the Turkey Point cooling canal system with respect to -30 ft msl. At the depth of -15 ft msl the occurrence of TDS levels <10,000 ppm in some wells can be attributed to several factors that are dependent upon each other. Of prime importance is precipitation. In considering this factor it is critical to understand that the rainfall during the "wet season" need not necessarily be of a local nature but may represent effects of regional precipitation events. Conversely, the periods of higher TDS levels tend to occur in the "dry season" when rainfall amounts are less. In both the wet and dry seasons it should be recognized that the pumping regime performed in the interceptor ditch also influences the dynamics of fresh-salt water relationships in the system.

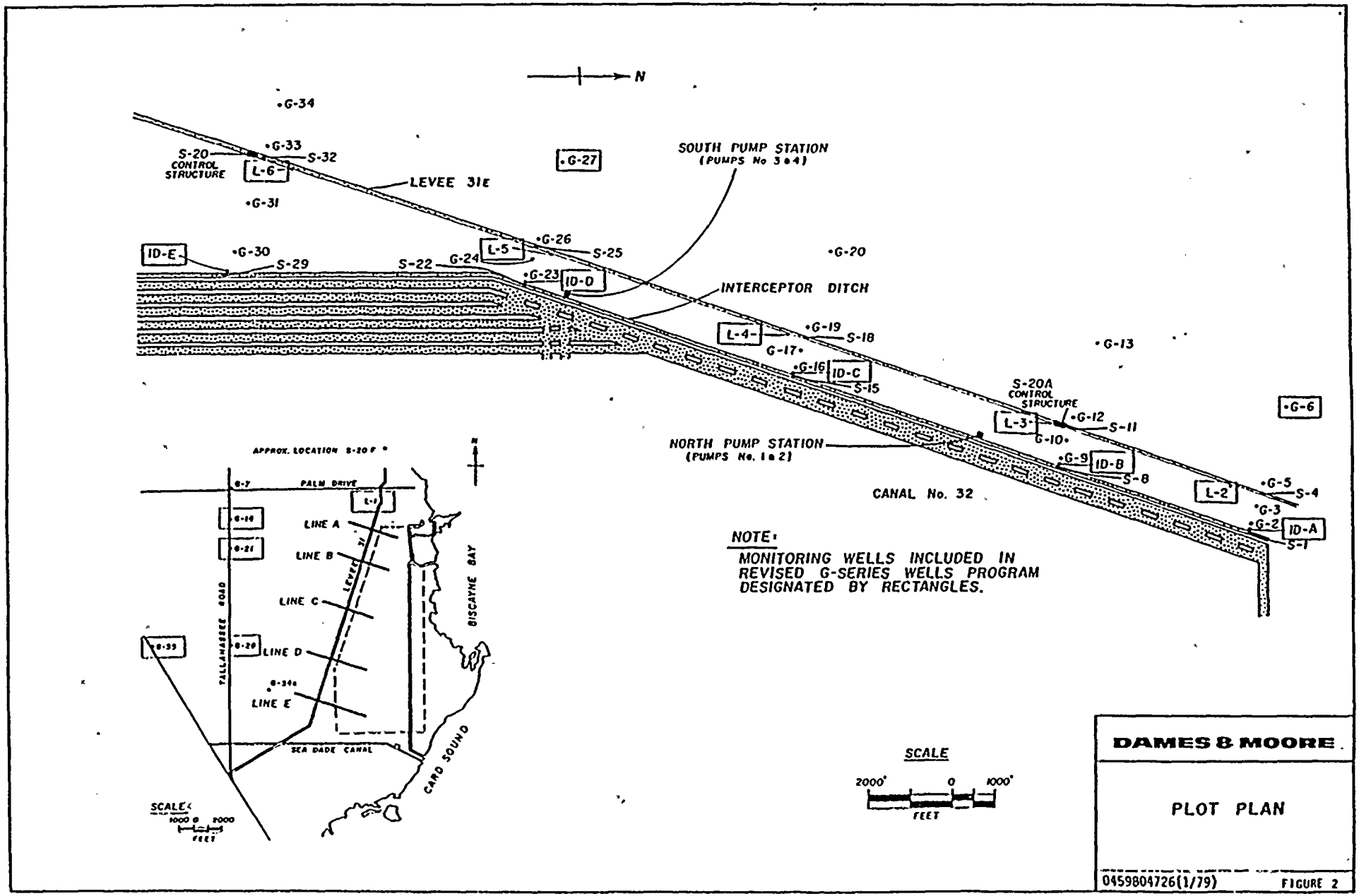
In addition to the interrelationship of precipitation and the interceptor ditch operation, it is important to remember the prevailing regional ground-water flow in this coastal area is northwest to southeast. With respect to those wells where TDS levels at -15 ft msl are not>10,000 ppm 100% of the time, the ground-water regime is such that any "cooling canal" discharges to ground-water will not affect the quality of freshwater north and west of the system. It is also projected that when the canal system reaches equilibrium the entire canal complex will be underlain by saline water (>10,000 ppm TDS) in accord with the Dames and Moore findings discussed in the salinity evaluation report of 1978.



DAMES & MOORE

WELL LOCATIONS
CURRENT MONITORING PROGRAM

0459804726(7/80) FIGURE 1

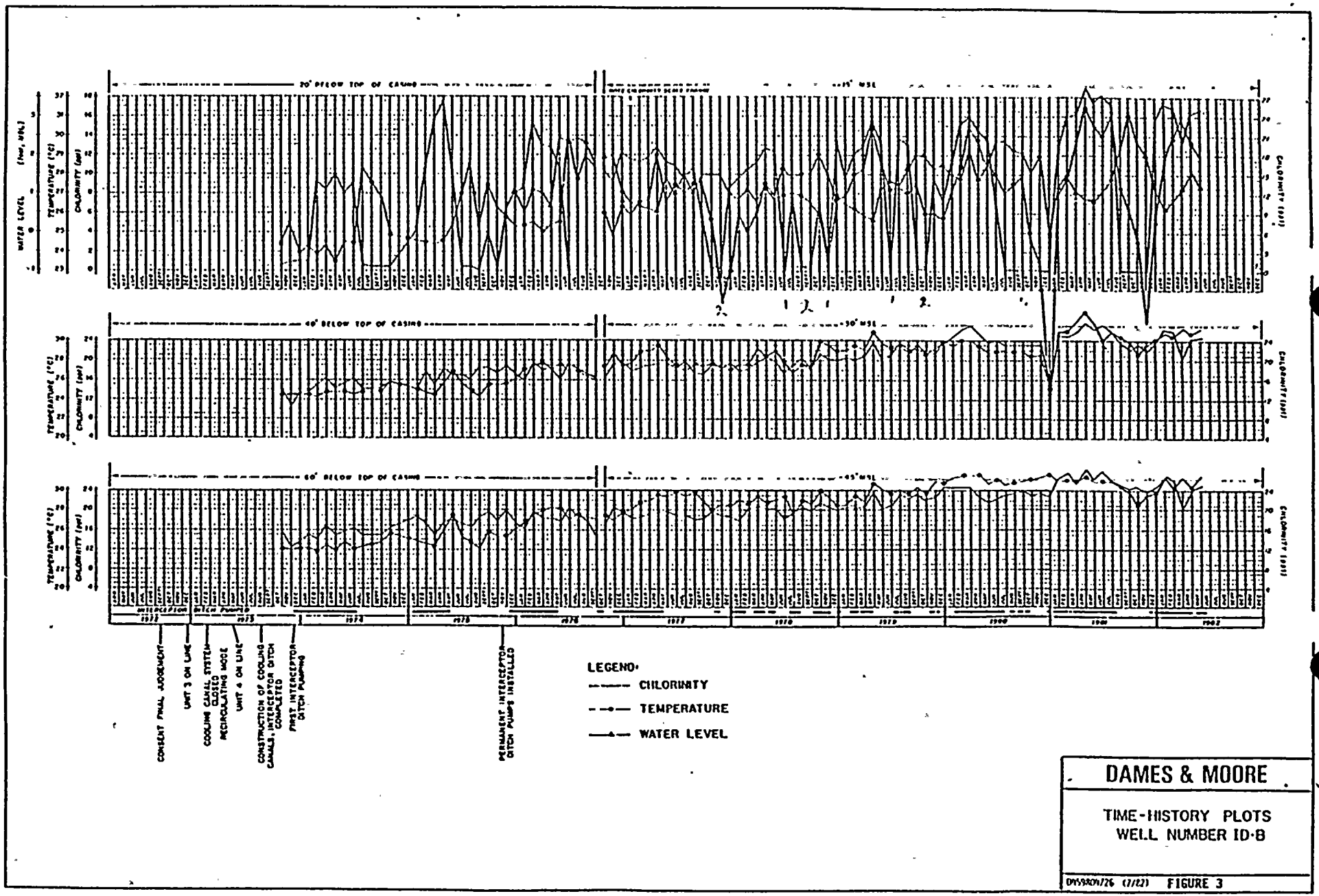


NOTE:
MONITORING WELLS INCLUDED IN REVISED G-SERIES WELLS PROGRAM DESIGNATED BY RECTANGLES.

DAMES & MOORE

PLOT PLAN

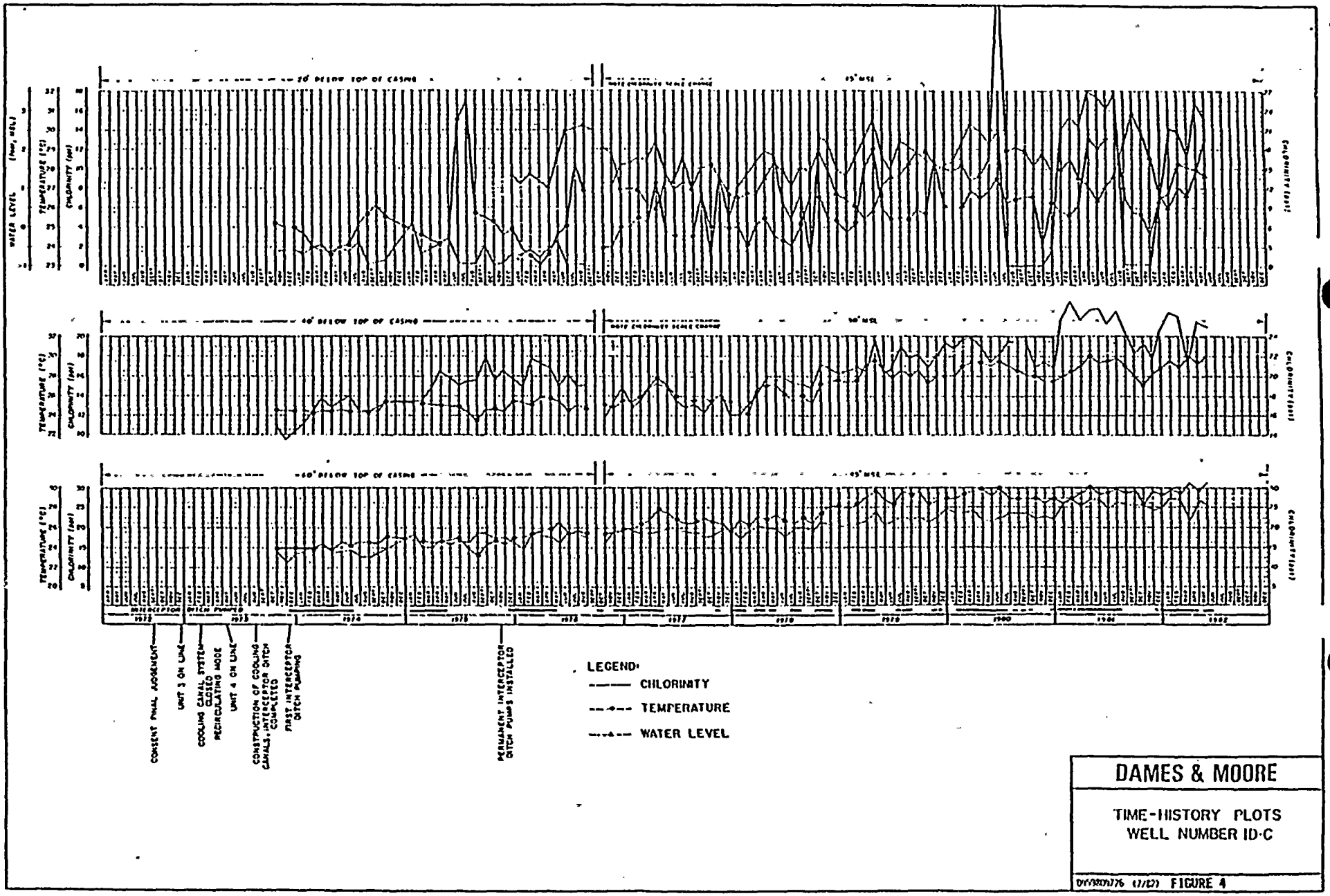
0459804726(1/79) FIGURE 2



DAMES & MOORE

TIME-HISTORY PLOTS
WELL NUMBER ID-B

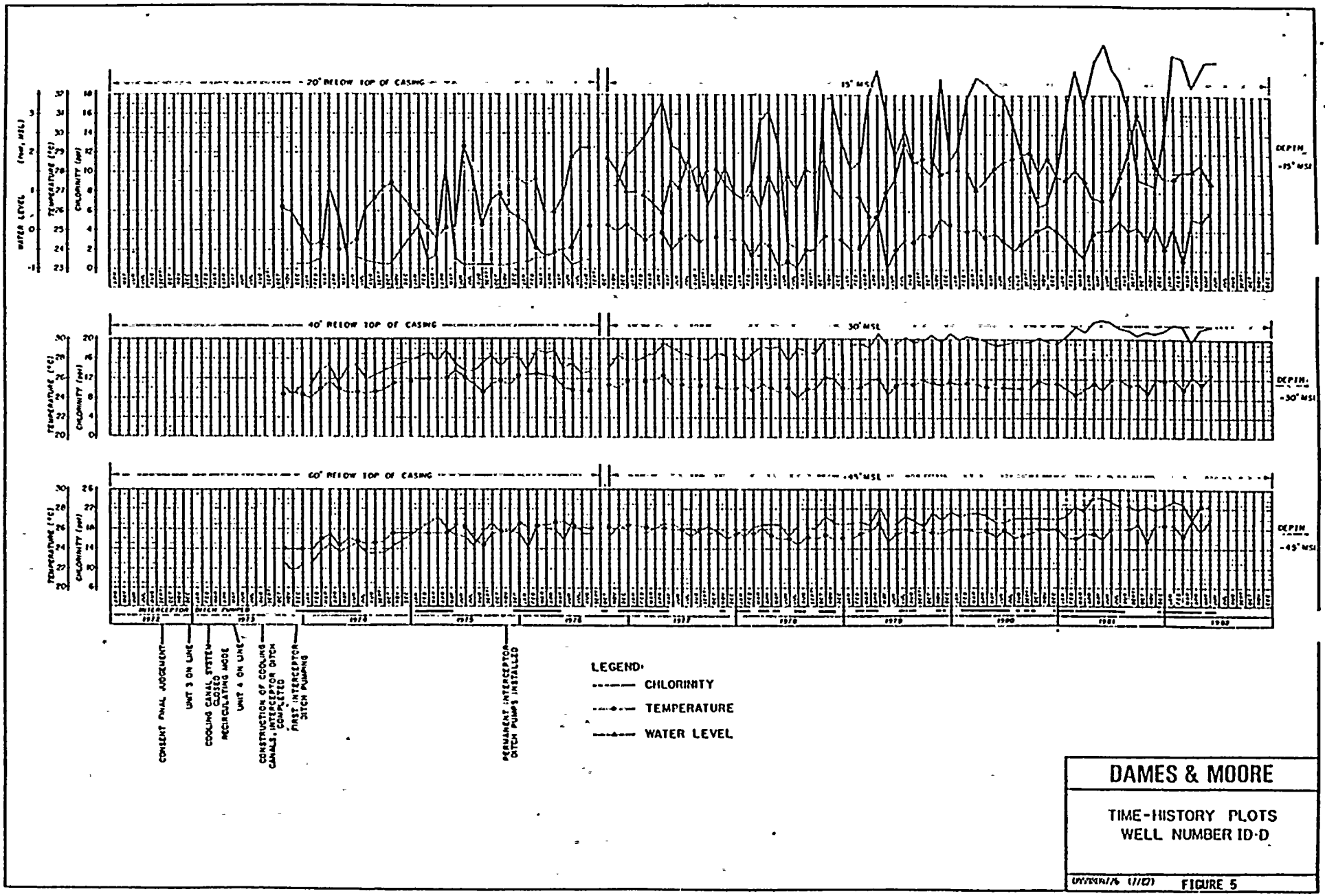
DM5920/26 (7/82) FIGURE 3



DAMES & MOORE

TIME-HISTORY PLOTS
WELL NUMBER ID-C

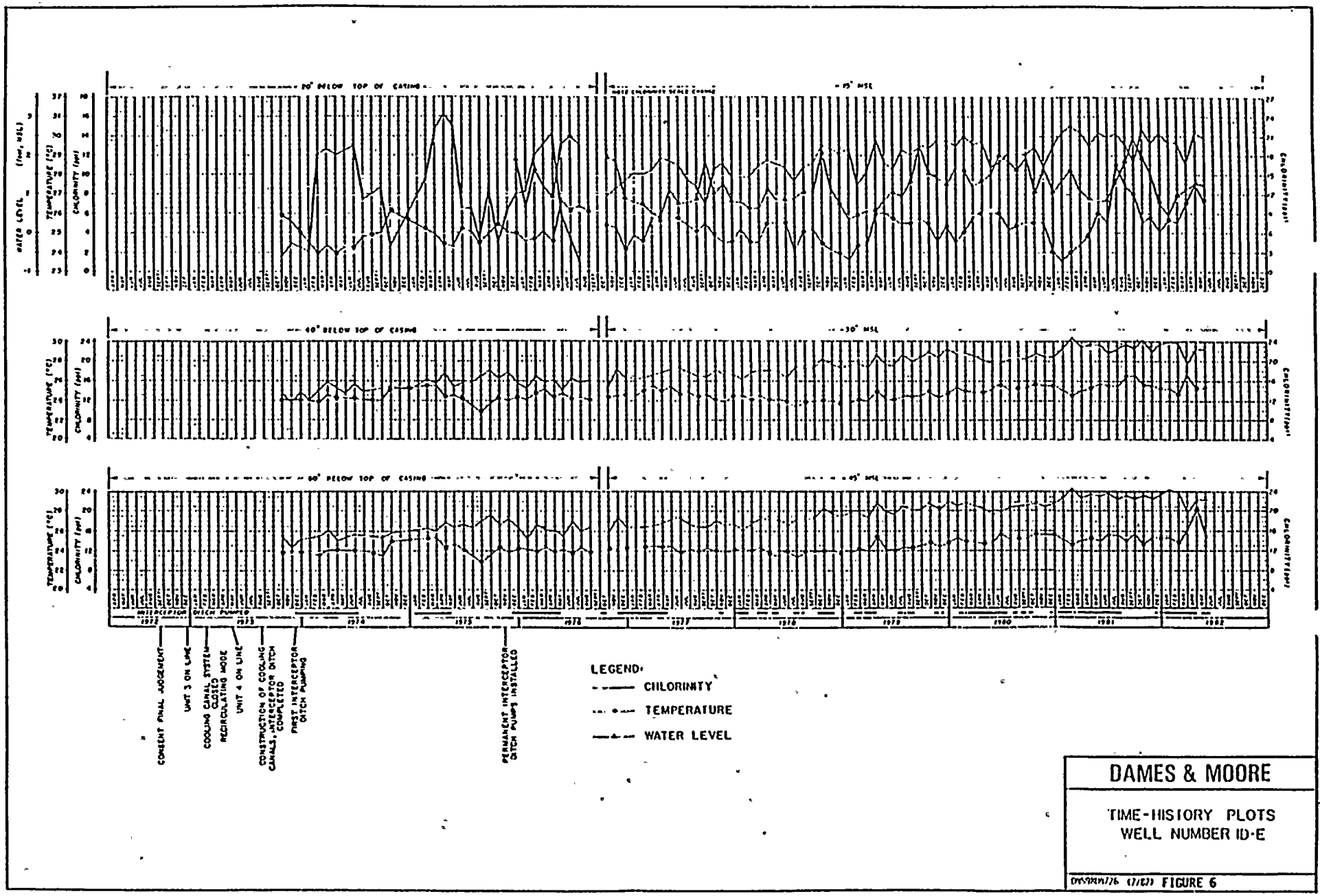
FIGURE 4



DAMES & MOORE

TIME-HISTORY PLOTS
WELL NUMBER ID-D

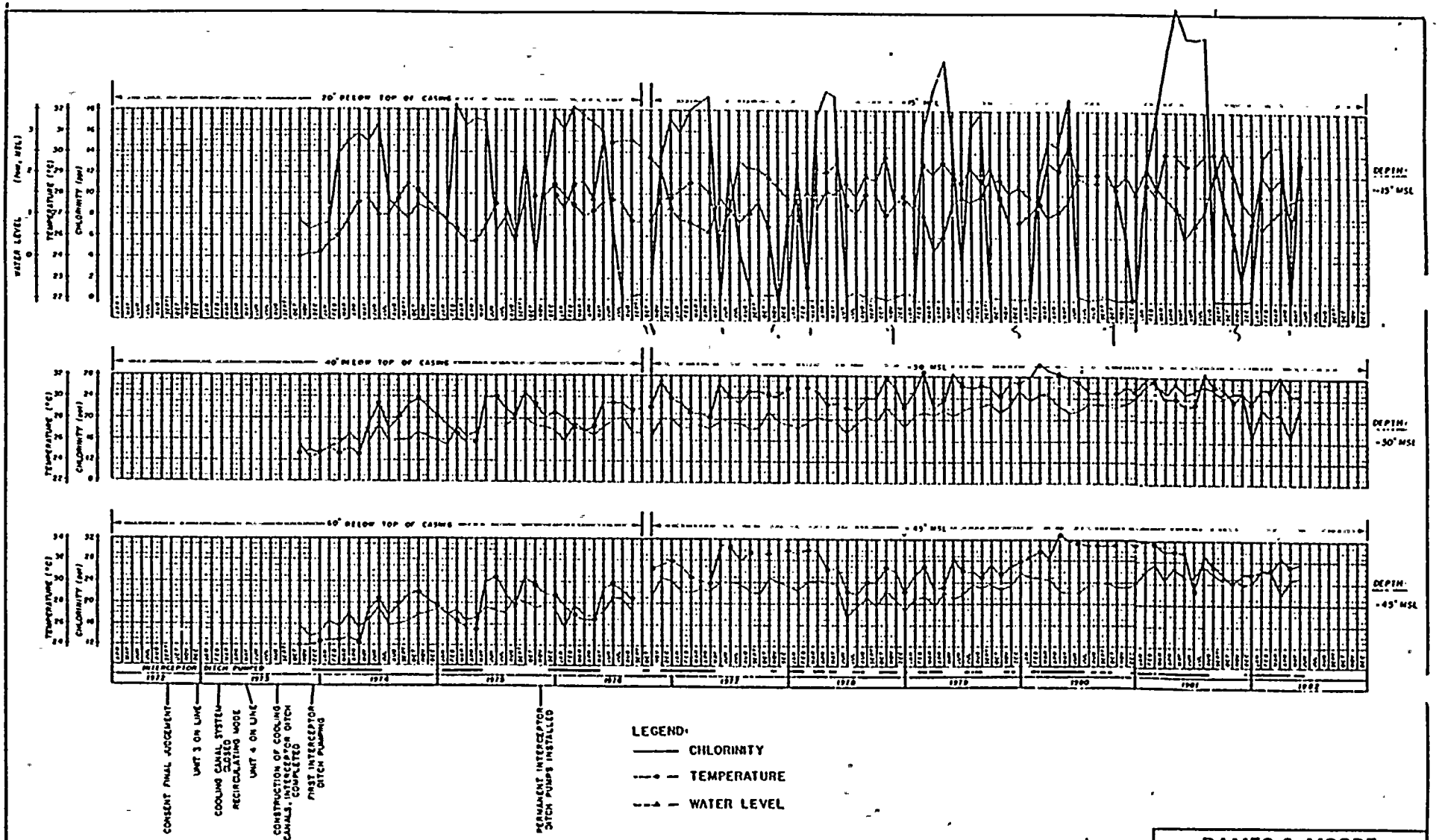
FIGURE 5



DAMES & MOORE

TIME-HISTORY PLOTS
WELL NUMBER ID-E

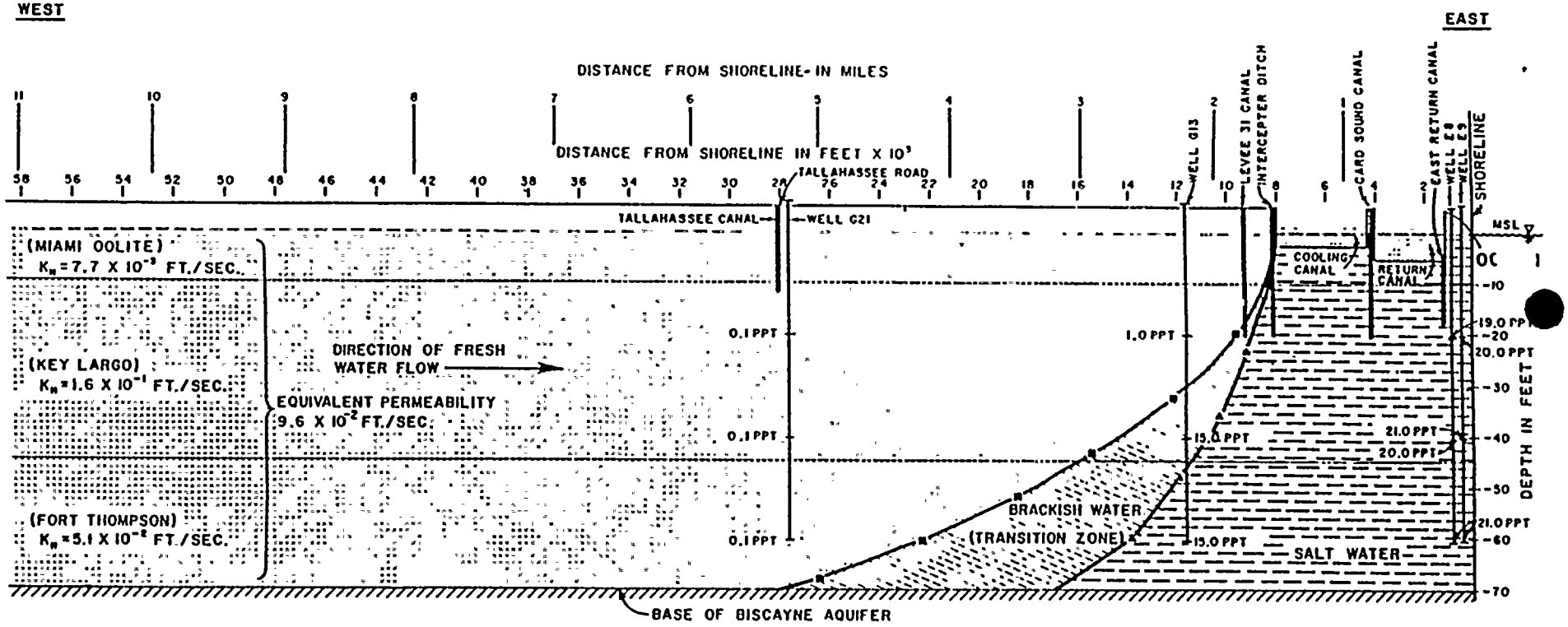
DM5XM176 (7/82) FIGURE 6



DAMES & MOORE

TIME-HISTORY PLOTS
WELL NUMBER ID-A

FIGURE 7



SECTION B - B'

LEGEND:

—■— CALCULATED POSITION OF INTERFACE FOR DRY PERIODS.

—▲— CALCULATED POSITION OF INTERFACE FOR WET PERIODS.

2.0 PPT — LOCATION OF WELL AND REPRESENTATIVE CHLORIDE CONTENT IN PARTS PER THOUSAND FOR 1974–1976 AT DEPTHS OF 20, 40 AND 60 FEET

SCALE:
HORIZONTAL 1"= 4000 FEET
VERTICAL 1"= 20 FEET

DAMES & MOORE

FRESH WATER - SALT WATER INTERFACE UNDER PROJECTED GROUND WATER CONDITIONS

FIGURE 8

ATTACHMENT 5

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

SOUTHEAST FLORIDA
DISTRICT

P.O. BOX 3858
3301 GUN CLUB ROAD
WEST PALM BEACH, FLORIDA 33402-3858

BOB GRAHAM
GOVERNOR

VICTORIA J. TSCHINKEL
SECRETARY

ROY M. DUKE
DISTRICT MANAGER

September 6, 1983

Mr. W.J. Barrow, Jr.
Manager of Permitting & Programs
Florida Power & Light Company
Environmental Affairs Department
Post Office Box 14000
Juno Beach, Florida 33408

IW - Dade County
Florida Power & Light Co.
Turkey Point Power Plant

Dear Mr. Barrow:

Re: Request to Amend Operating Permit IO 13-57079, Florida Power & Light Company Turkey Point Power Plant Wastewater Treatment Plant, to Change the designation of the Groundwater from Class G-II to Class G-III

This office has reviewed your request to amend your operating permit, IO 13-57079 to change the designation of the groundwater from Class G-II to Class G-III. Based on the August 5, 1983 meeting at our office and related documentation and review it was decided that a certain portion of the area should be designated as Class G-III groundwaters. Your request for the amendment of operating permit IO 13-57079 is hereby approved.

The permit is changed as follows:

Page 1 - Description change to:

To operate a Liquid Industrial Waste Treatment and Disposal Facility treating and disposing of Liquid Industrial Waste from the generation of electricity by steam. A volume of 2853.3 MGD of condenser cooling water and a volume of 55,470 GPD of treated waste water is discharged to a closed loop cooling canal system. A part of the water contained in the canal is recirculated through the cooling system for the steam plant condensers, a part is discharged through an area of 6,700 acres to groundwater as described in Specific Condition #2. Residues in the solids settling basins and the oil in the Oil/Water Separators are removed periodically by outside contractors.

Page 3 - Specific Condition 2 Change to:

Specific Condition

2. The Zone of Discharge shall be in accordance with 17-4.245 FAC and is described as follows:

The area bounded by a line along the west bank of the interceptor ditch and extending northeasterly to the Turkey Point Plant entry road; then due eastward from this junction to Biscayne Bay; and a line along the west bank of the interceptor ditch extending southward to the Sea Dade Canal, to Card Sound, then north along the coastline to intersect with the north boundary.

The groundwaters contained in this area are classified as G-III Groundwaters.

All other conditions of the original permit shall remain in effect for the duration of the permit. This letter shall be attached to the original permit and becomes a part thereof.

Should you have any questions please contact this office, telephone 305/689-5800.

Sincerely,

Roy M. Duke

Roy M. Duke
District Manager

RMD:wkj/b

cc: Metro Dade County Environmental Resource Management
Don Kell, Groundwater Section

ATTACHMENT 6

Evaluation of Environmental Impact of
Reclassifying the Groundwater Underlying the
Turkey Point site from Class G-II to Class G-III

As is evident in all coastal areas of Florida and particularly South Florida, naturally induced salt water intrusion is inherent. The condition is brought about by the highly permeable and shallow geologic section and the low relief topography that characterizes this area. Over the last twelve years an extensive groundwater monitoring program has been conducted at the site. This program originally mandated by Federal agencies is now conducted as part of an agreement between FPL and the South Florida Water Management District. Based on the historic groundwater monitoring data, no major impact on the environmental framework of the area will occur as the result of the reclassification of the groundwater from G-II to G-III at the site as approved by the Florida Department of Environmental Regulation in September, 1983. The rationale for this change was supported by the historic data which showed that the total dissolved solids content (TDS) of the groundwater under the site inclusive of the canal system exceeded the 10,000 ppm threshold for G-III as cited in Section 17-3.403 of the Florida Administrative Code.