



Consumers  
Power  
Company

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July 25, 1983

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US Nuclear Regulatory Commission  
Region III  
799 Roosevelt Road  
Glen Ellyn, IL 60137

MIDLAND ENERGY CENTER  
MIDLAND DOCKET NOS 50-329, 50-330  
GROUNDWATER LEVEL AND REACTOR BUILDING SETTLEMENT  
FILE: 0505.6, C-74, C-27, 0505.2 SERIAL: 23874

This letter is pursuant to the telephone conversation with members of my staff and yours on July 13, 1983. Some of the enclosed documents were delivered to NRC's Mr Kane. This letter provides the information not yet submitted and also formally documents the information previously delivered. The following is a list of the documents enclosed.

1. Semi-log plots of groundwater well elevation vs time (11 sheets).
2. Plan of dewatering and observation wells (1 sheet).
3. Semi-log plots of settlement vs time for settlement markers C-1 through C-8 on the reactor building (8 sheets).
4. Semi-log plots of settlement vs time, reactor building FSAR SKG-414, (Rev 7).
5. Semi-log plots of settlement vs time since July 12, 1980 of markers on the reactor building (3 sheets.)
6. Hydrographs of observation wells MP-2, MP-4, MP-4A, LOW-7 and LOW-9 (16 sheets.)

The following is an explanation of why certain settlement markers were relocated.

Marker C-1

Marker C-1 was initially set on 5/17/77. The marker was relocated twice. The date of the final reported settlement before its first relocation was

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11/16/79. The marker was relocated on 1/8/80. The reason for the relocation is unknown. The final reported settlement date before the second relocation was 9/12/81. Before this last reading on 9/12/81, a new marker was established on 8/21/81 because the old marker was blocked by the Unit 1 Emergency Airlock Wall.

For its first relocation, marker C-1 was replaced after the old one was destroyed. There was a period of almost two months (11/16/79 to 1/8/80) between the time the marker was destroyed and the time it was replaced. Settlement could have occurred during this period that was not monitored. However, approximate total settlements for this marker are obtained by algebraically adding the final reported settlement of 0.063 ft (on 11/16/79), to all subsequent settlements. Settlement of this containment based on surrounding markers was minimal during this period (less than 0.003 ft between 11/16/79 and 1/12/80).

For its second relocation, marker C-1 was replaced before the old marker was destroyed. A final settlement reading was taken after an elevation was determined for the new marker. Total settlement is obtained by algebraically adding the final reported settlement prior to the first relocation, 0.063 ft (on 11/16/79), plus the final reported settlement prior to the second relocation, 0.028 ft (on 9/12/81), plus the settlement presently read.

#### Marker C-4

Marker C-4 was initially set on 3/25/78. This marker was relocated once. The date of the final reported settlement before relocation was 9/27/82. The marker was relocated on 9/27/82 to clear the shield box.

Marker C-4 was replaced before the old one was destroyed. A final settlement reading for this marker was taken the same day as an elevation was determined for the new marker. Total settlement for this marker is obtained by algebraically adding the final reported settlement of 0.066 ft (on 9/27/82) to all subsequent settlements.

#### Marker C-5

Marker C-5 was initially set on 3/25/78. This marker was relocated once. The date of the final reported settlement before relocation was 9/27/82. The marker was relocated on 9/27/82 to clear the shield box.

Marker C-5 was replaced before the old one was destroyed. A final settlement reading for this marker was taken the same day as an elevation was determined for the new marker. Total settlement for this marker is obtained by algebraically adding the final reported settlement of 0.061 ft (on 9/27/82) to all subsequent settlements.

#### Marker C-8

Marker C-8 was initially set on 5/7/77. The marker was relocated twice. The date of the final reported settlement before its first relocation was 7/17/79. The marker was relocated on 1/3/80, because the old marker was destroyed. The

final reported settlement date before the second relocation was 7/23/82. After this last reading on 7/23/82, a new marker was established on 9/27/82 because the old marker was blocked by Unit 2 Emergency Airlock Wall.

For its first relocation, marker C-8 was replaced after the old one was destroyed. There was a period of over five months (7/17/79 to 1/3/80) between the time the marker was destroyed and the time it was replaced. Settlement could have occurred during this period that was not monitored. However, approximate total settlements for this marker are obtained by algebraically adding the final reported settlement of 0.039 ft (on 7/17/79) to all subsequent settlements. Settlement of this containment based on surrounding markers was minimal during this period (less than 0.027 ft between 7/17/79 and 1/12/80).

For its second relocation, marker C-8 was replaced before the old marker was destroyed. A settlement reading was taken after an elevation was determined for the new marker. Total settlement is obtained by algebraically adding the final reported settlement prior to the first relocation, 0.039 (on 7/17/79), plus the final reported settlement before the second relocation, 0.027 (on 7/23/82), plus the settlement presently read.

Note that settlement monitoring did not start until mid-1977, when load intensity was between 5-1/2 and 6-1/2 KSF, in Unit 1 and Unit 2, respectively (refer to Drawing SK-G-414, Rev 7).

The following is an evaluation of groundwater level data from observation well MP-4.

The hydrograph of observation well MP-4 (attached) indicates that since November 1982, the groundwater level has fluctuated between elevation 581 and 604 without any apparent regularity, whereas the water level in observation wells MP-2, MP-4A, LOW-7 and LOW-9 (hydrographs attached) has remained relatively unchanged over this same period. This would indicate that MP-4 is not functioning properly or that some form of artificial recharge is occurring which is closely confined to the vicinity of MP-4.

The subcontractor has flushed the observation well on numerous occasions and recently performed a response test which indicates the observation well is functioning properly. The contractor has also pointed out that MP-4 is located within a few feet of a discharge hose that extends from a turbine building service water line. Visual examination indicates that water has often been spilled in this area and ponding occurs when it rains. The ground in the area of the observation well MP-4 is such that standing water could flow into the observation well since the top of the riser is recessed below ground surface to prevent damage (MP-4 is located in a heavily travelled area immediately adjacent to the main equipment access to the turbine building). Therefore, the fluctuations in groundwater level at MP-4 are attributed to the heavy use of the construction water outlet and/or poor surface drainage. Thus, this well is not considered representative of the true ground water level when compared to the other observation wells in the area.

Although the groundwater level data from observation well MP-4 exhibits anomalous fluctuation, the data is still evaluated relative to the adjacent observation wells and is assumed to represent the groundwater level in the vicinity of the observation well when used in preparation of groundwater level contour maps.

If this information provided is unclear or inadequate, please contact myself or Nate Leech (517) 788-1489 and we will make every effort to provide you with further information.

*J. Amcooney*

JAM/JNL/bjb

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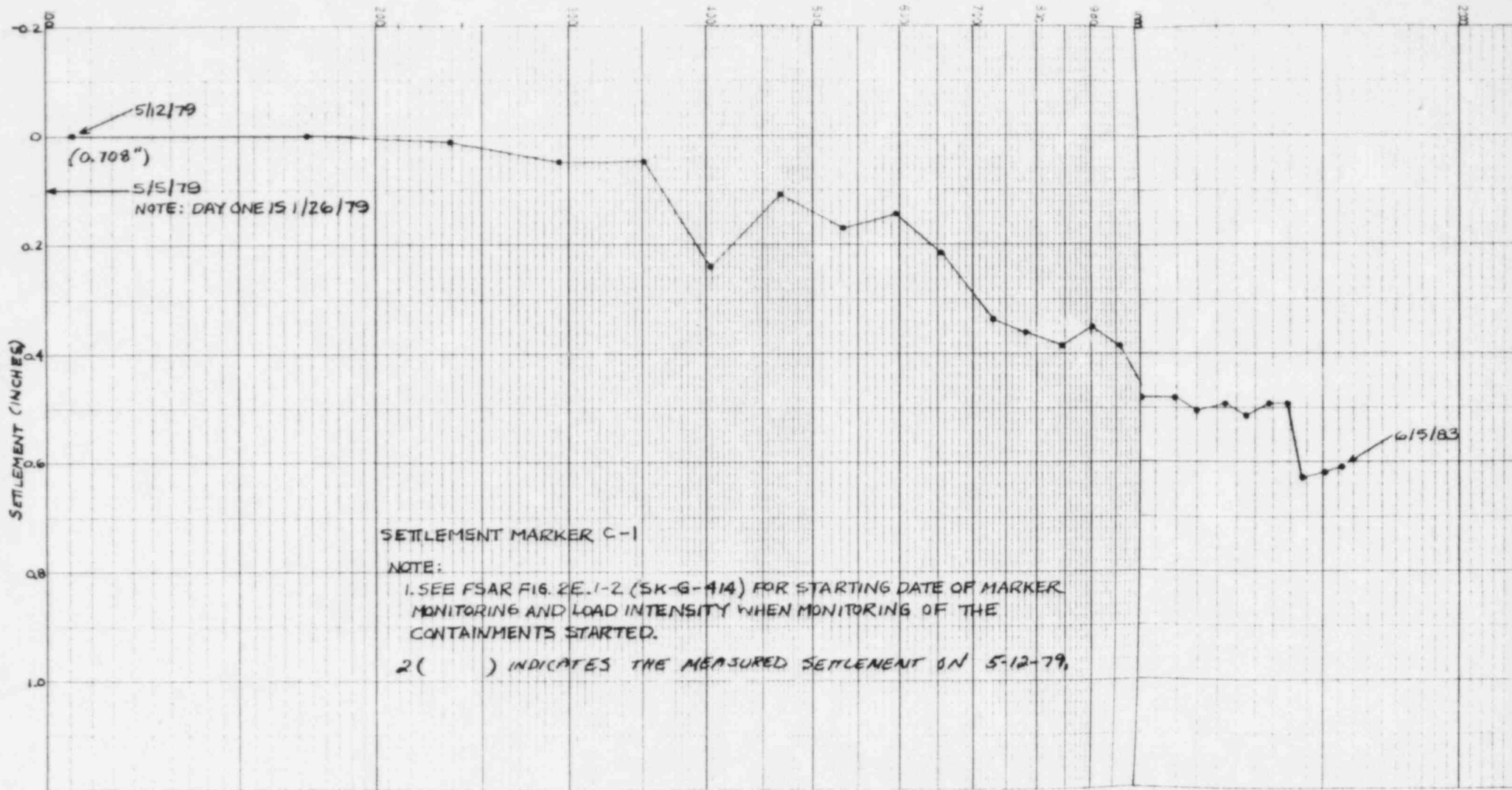
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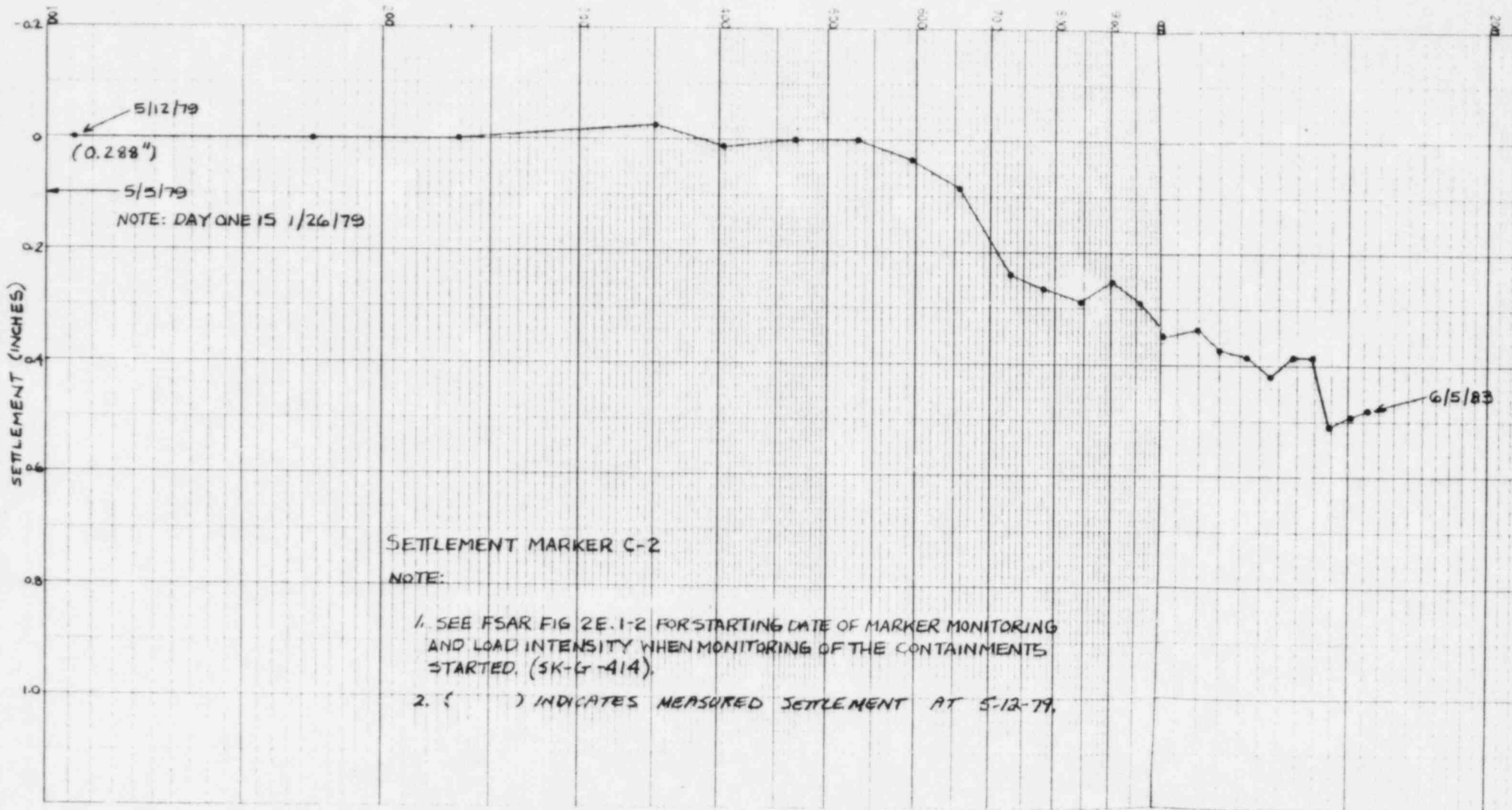
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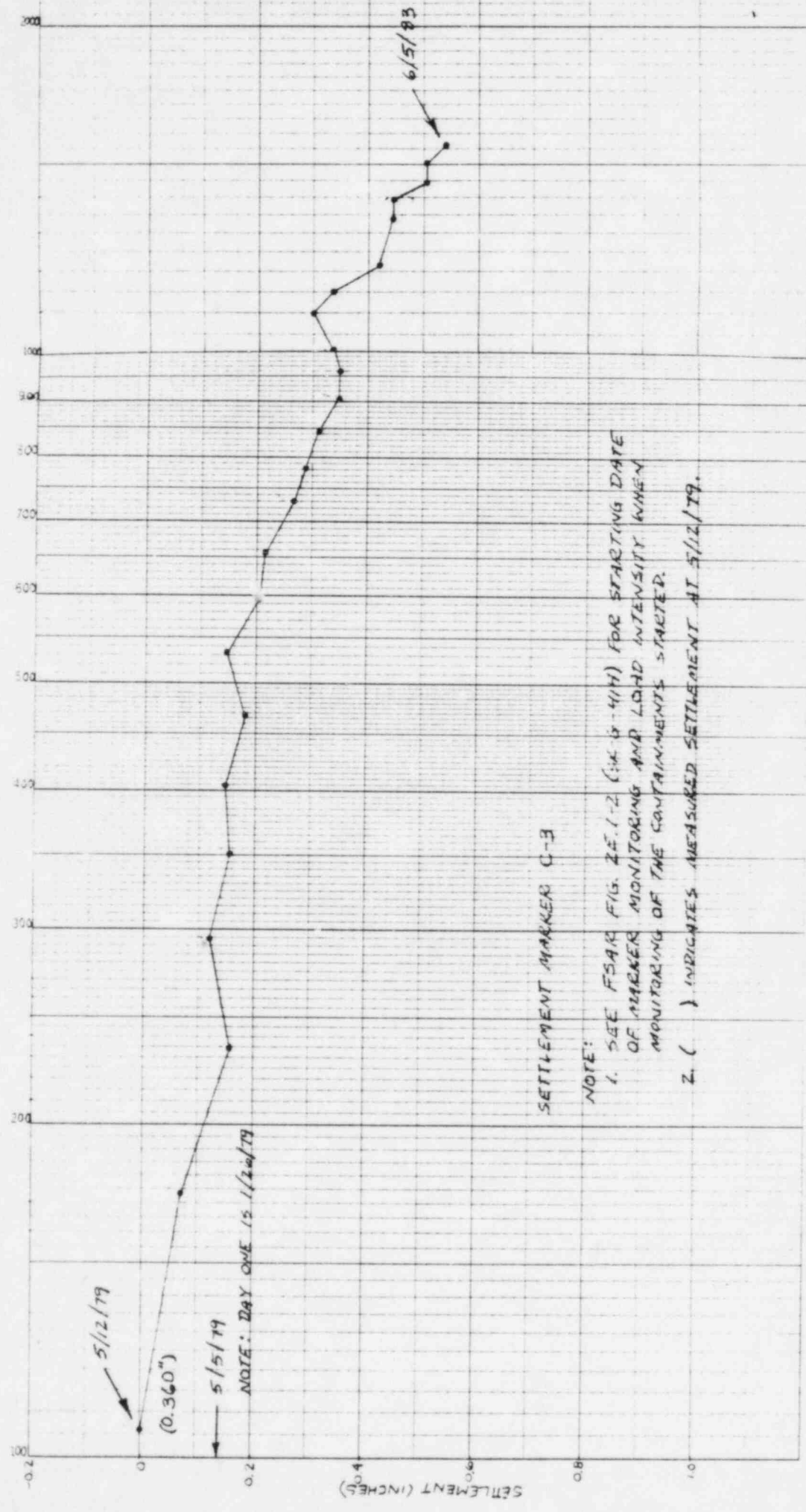
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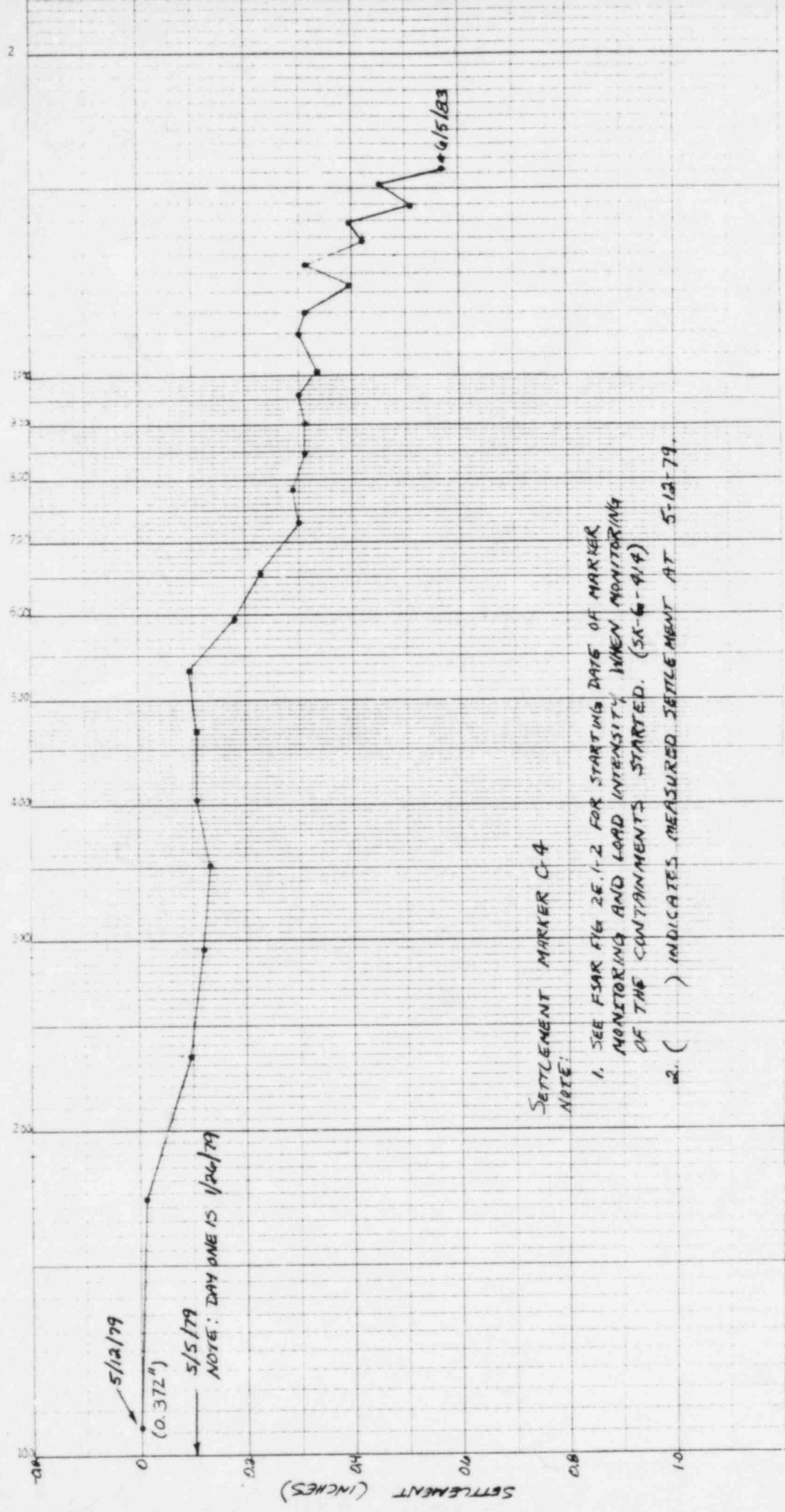


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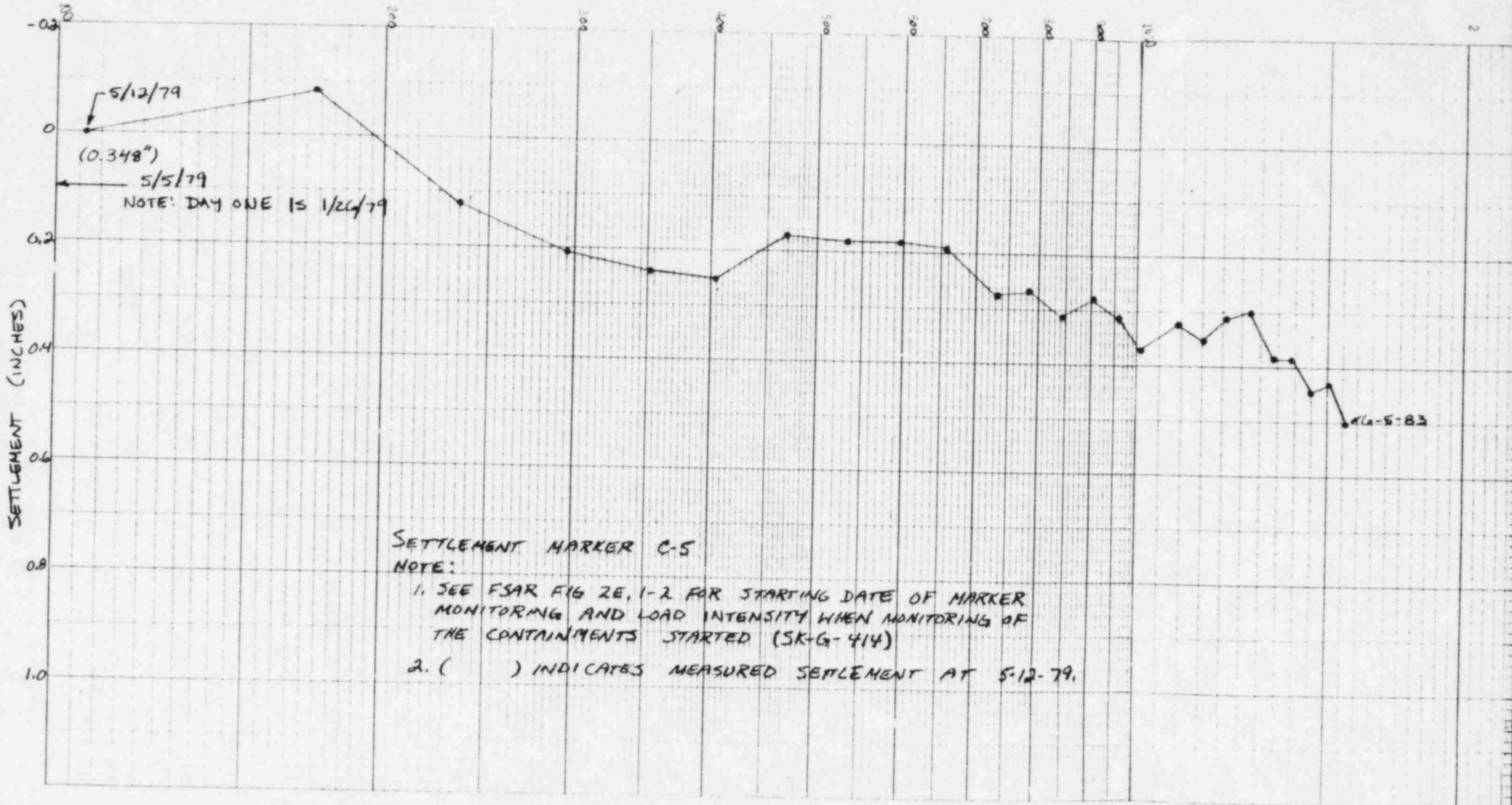
5/5/79  
NOTE: DAY ONE IS 1/26/79

6/5/83

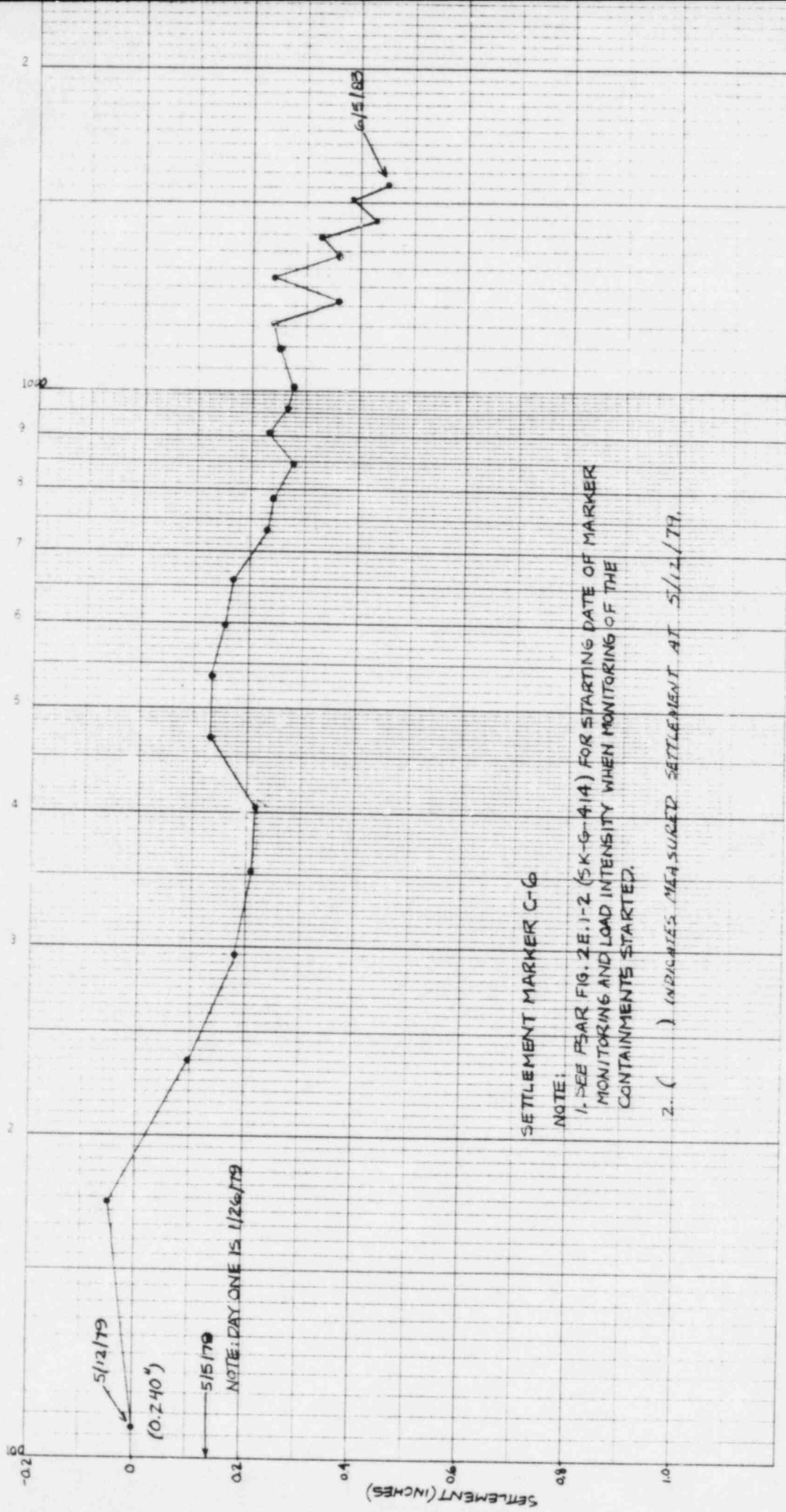
SETTLEMENT MARKER C-4  
NOTE:

1. SEE FSAR FIG 2E.1-2 FOR STARTING DATE OF MARKER MONITORING AND LOAD INTENSITY WHEN MONITORING OF THE CONTAINMENTS STARTED. (5X-6-914)
2. ( ) INDICATES MEASURED SETTLEMENT AT 5-12-79.

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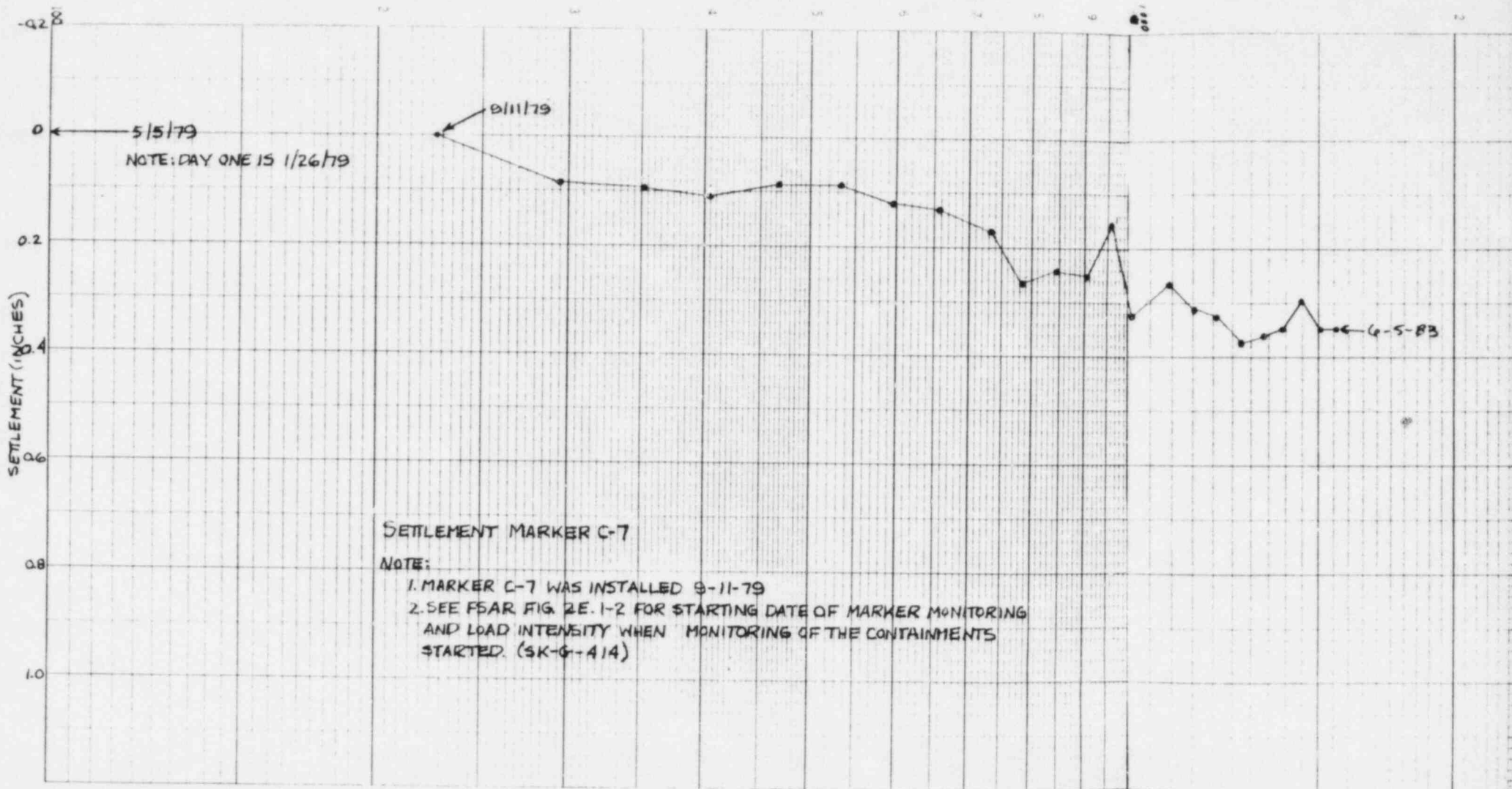
SETTLEMENT MARKER C-6

NOTE:

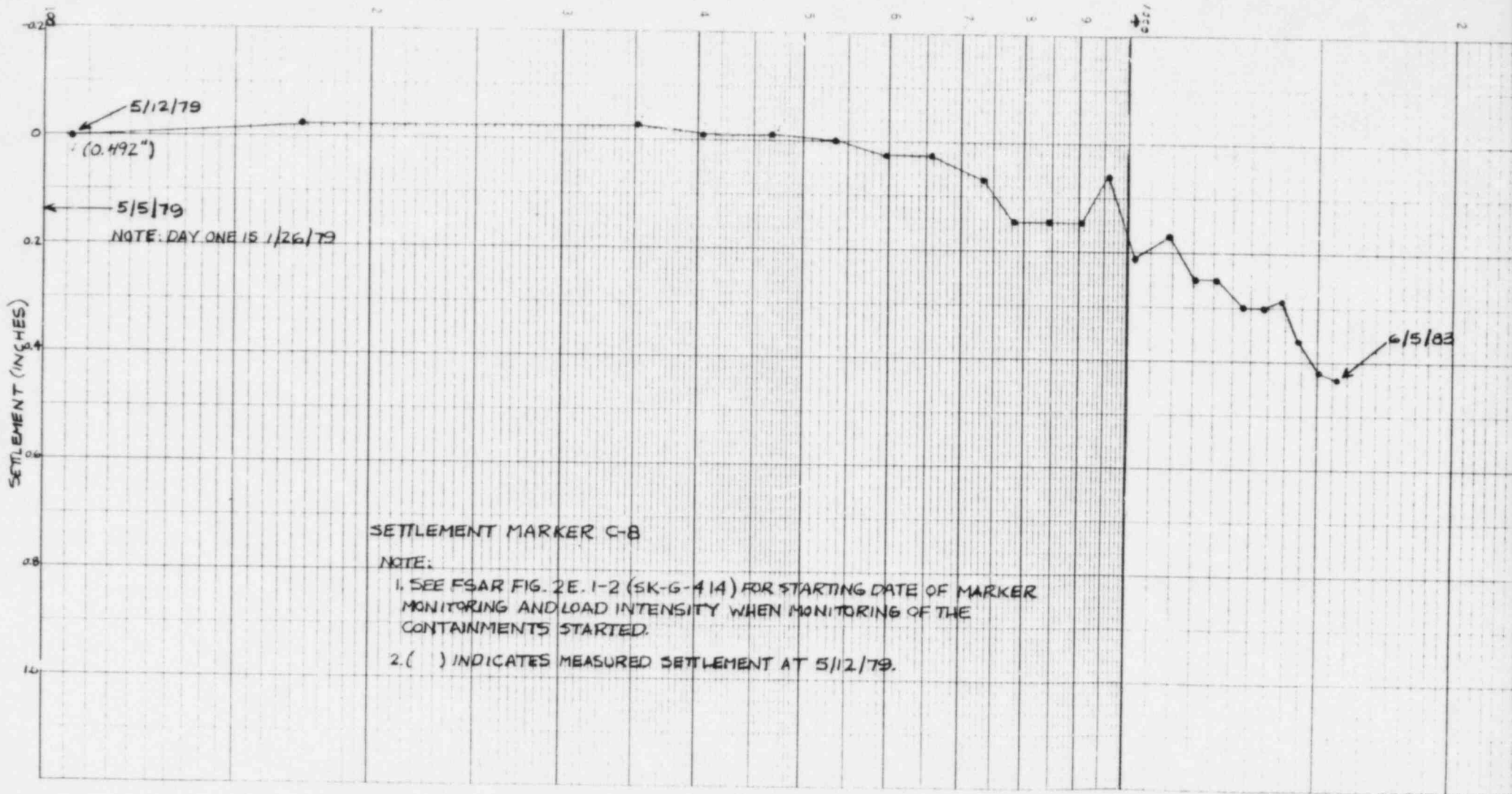
1. SEE PSAR FIG. 2E.1-2 (SK-G-414) FOR STARTING DATE OF MARKER MONITORING AND LOAD INTENSITY WHEN MONITORING OF THE CONTAINMENTS STARTED.

2. ( ) INDICATES MEASURED SETTLEMENT AT 5/12/79.

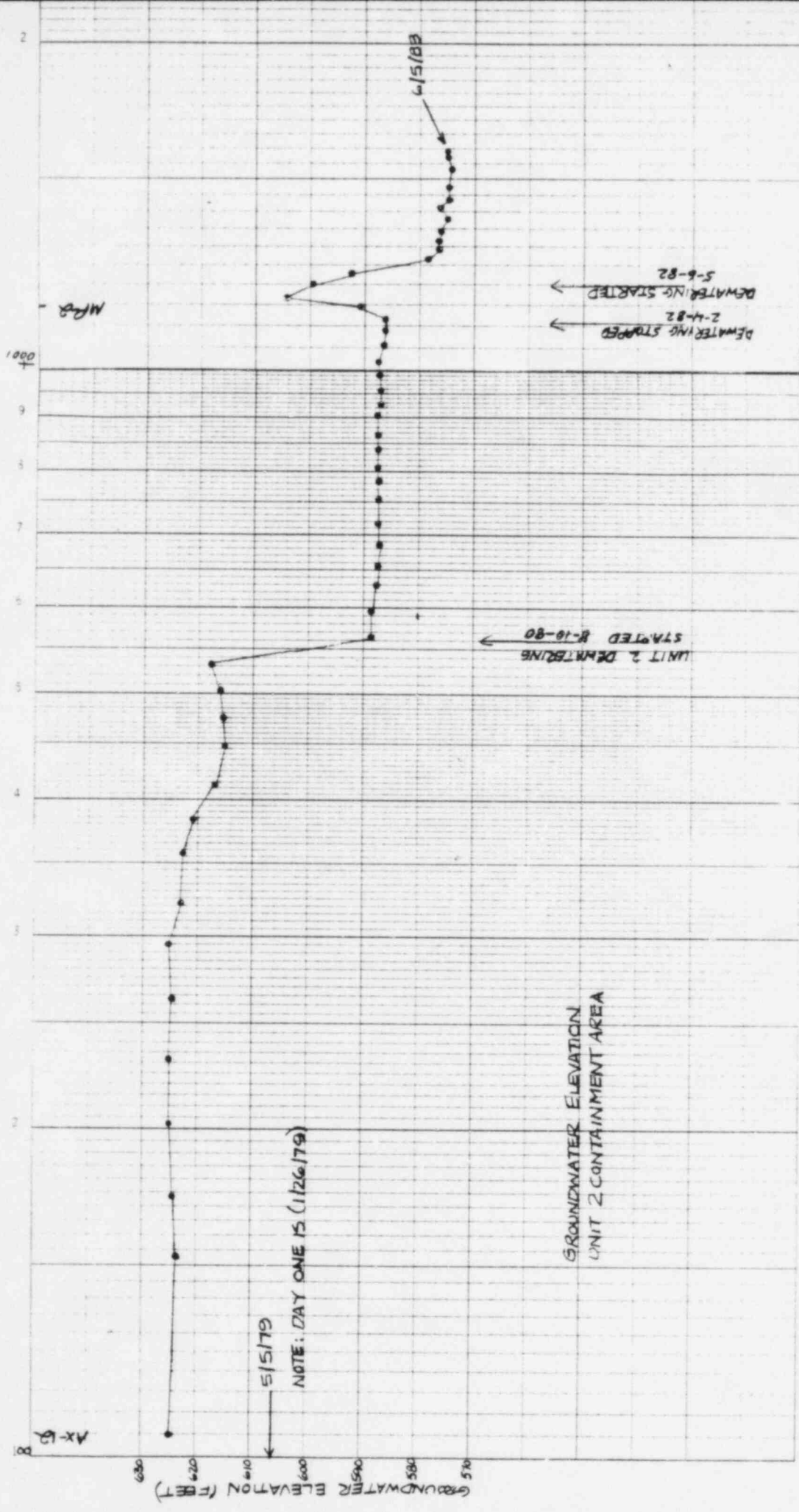
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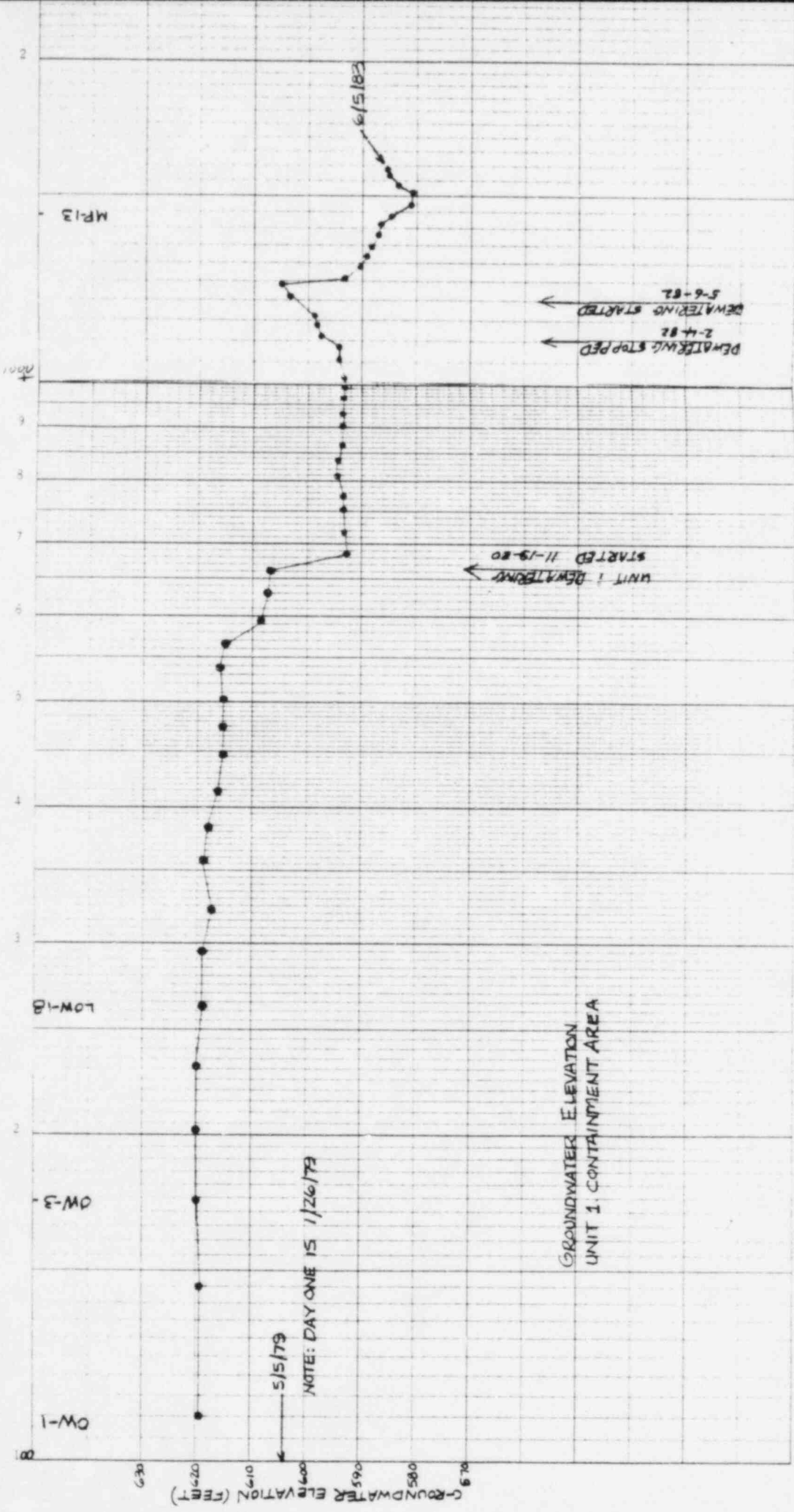


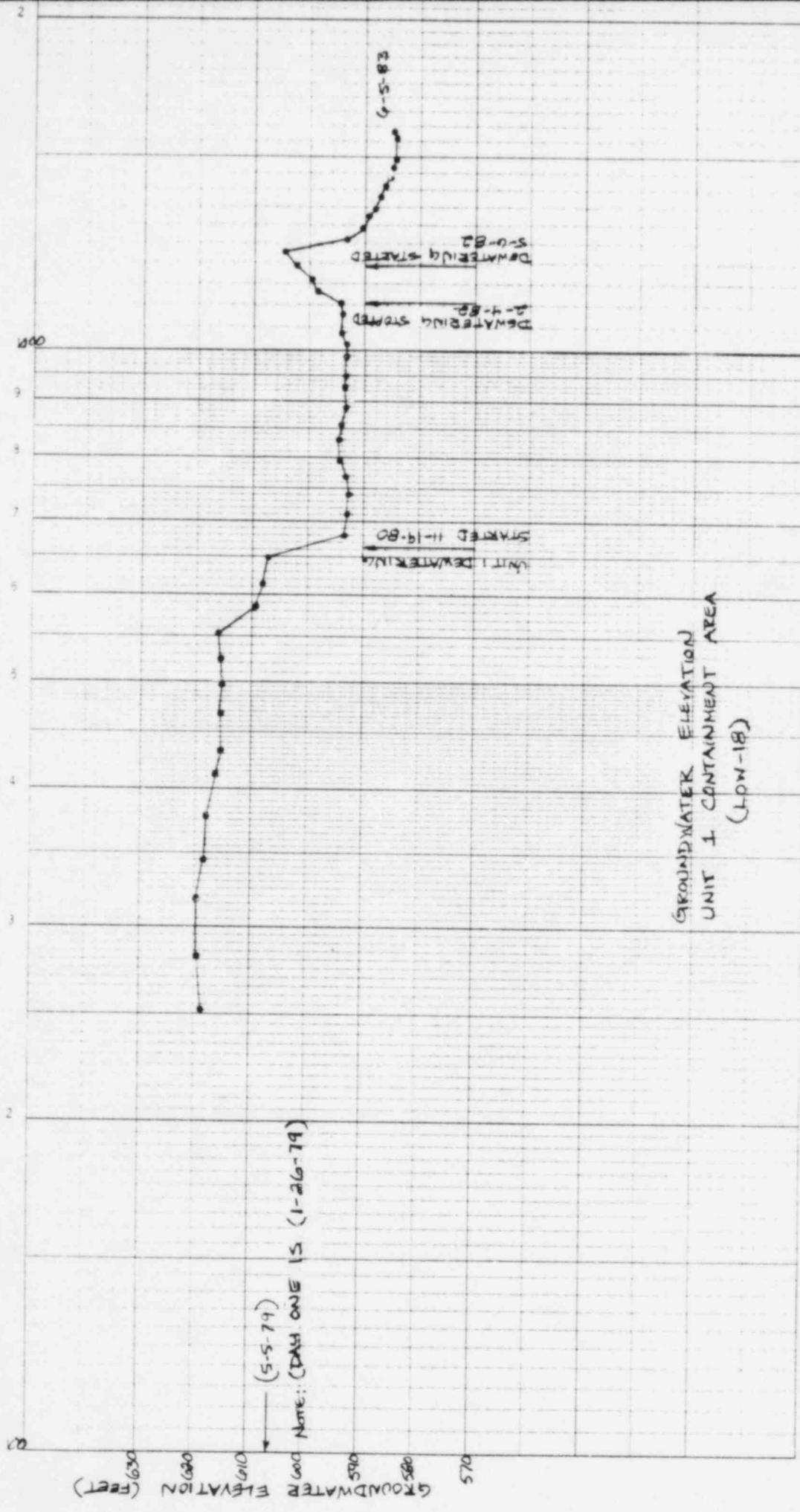
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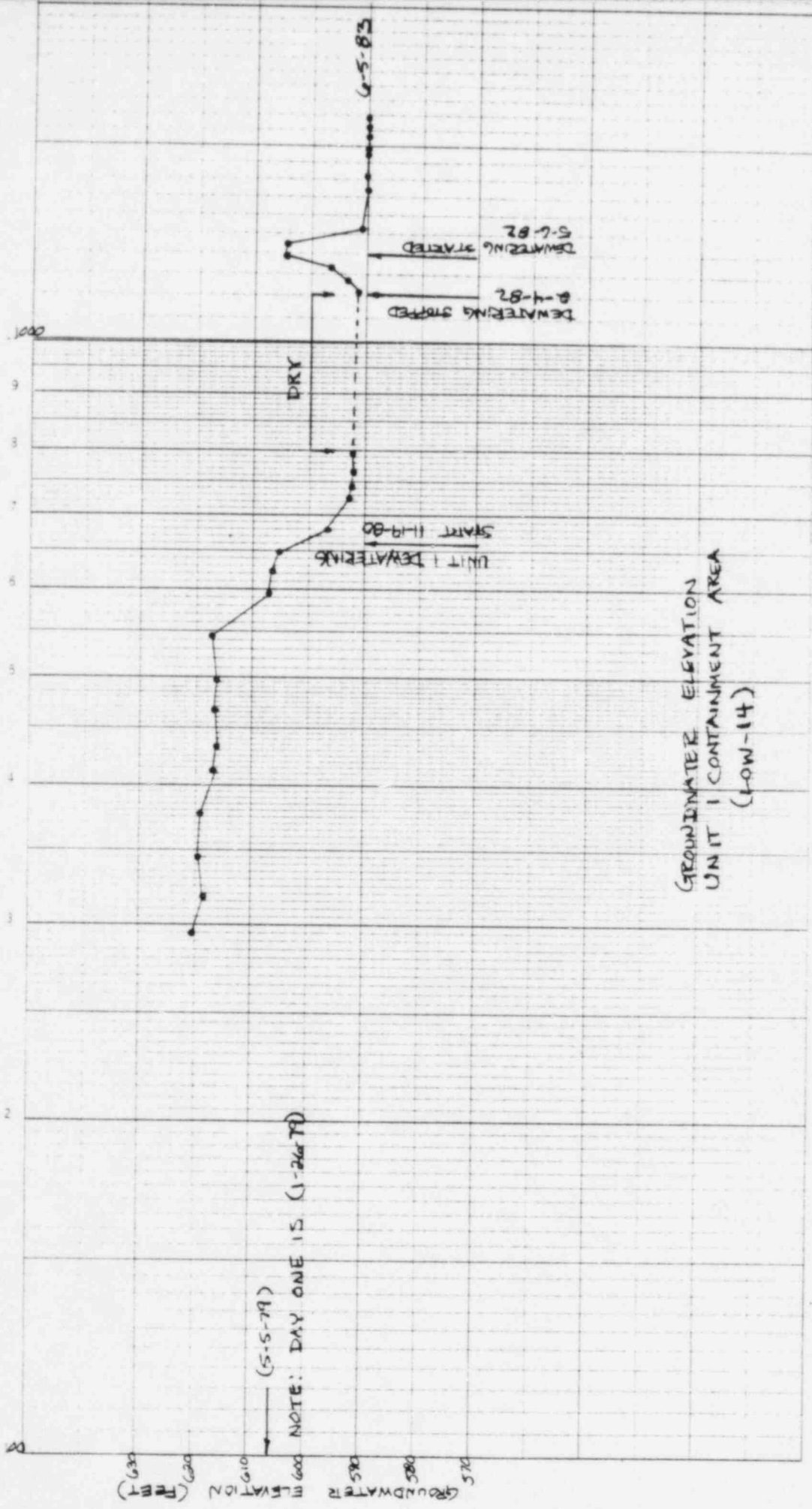


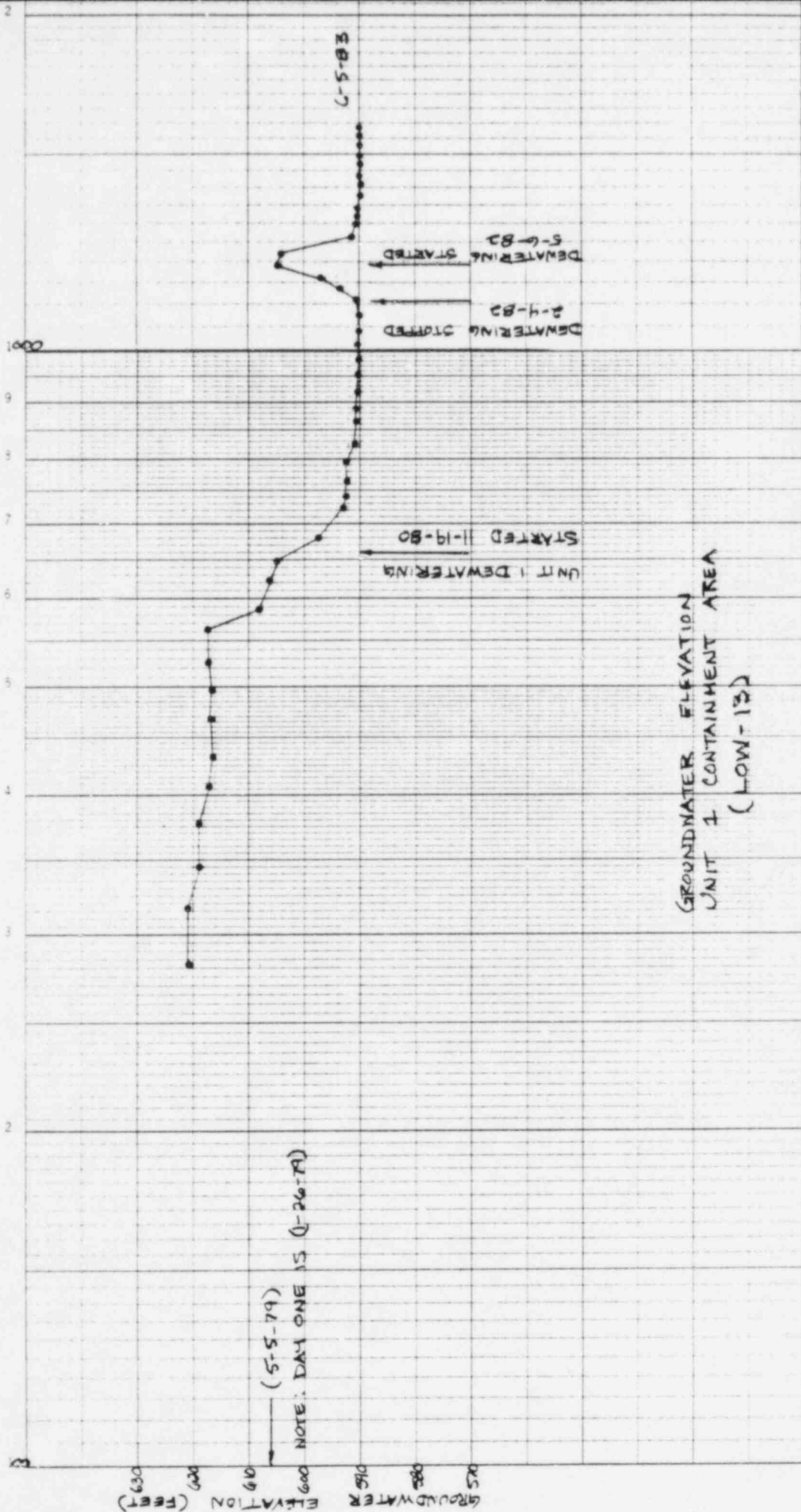




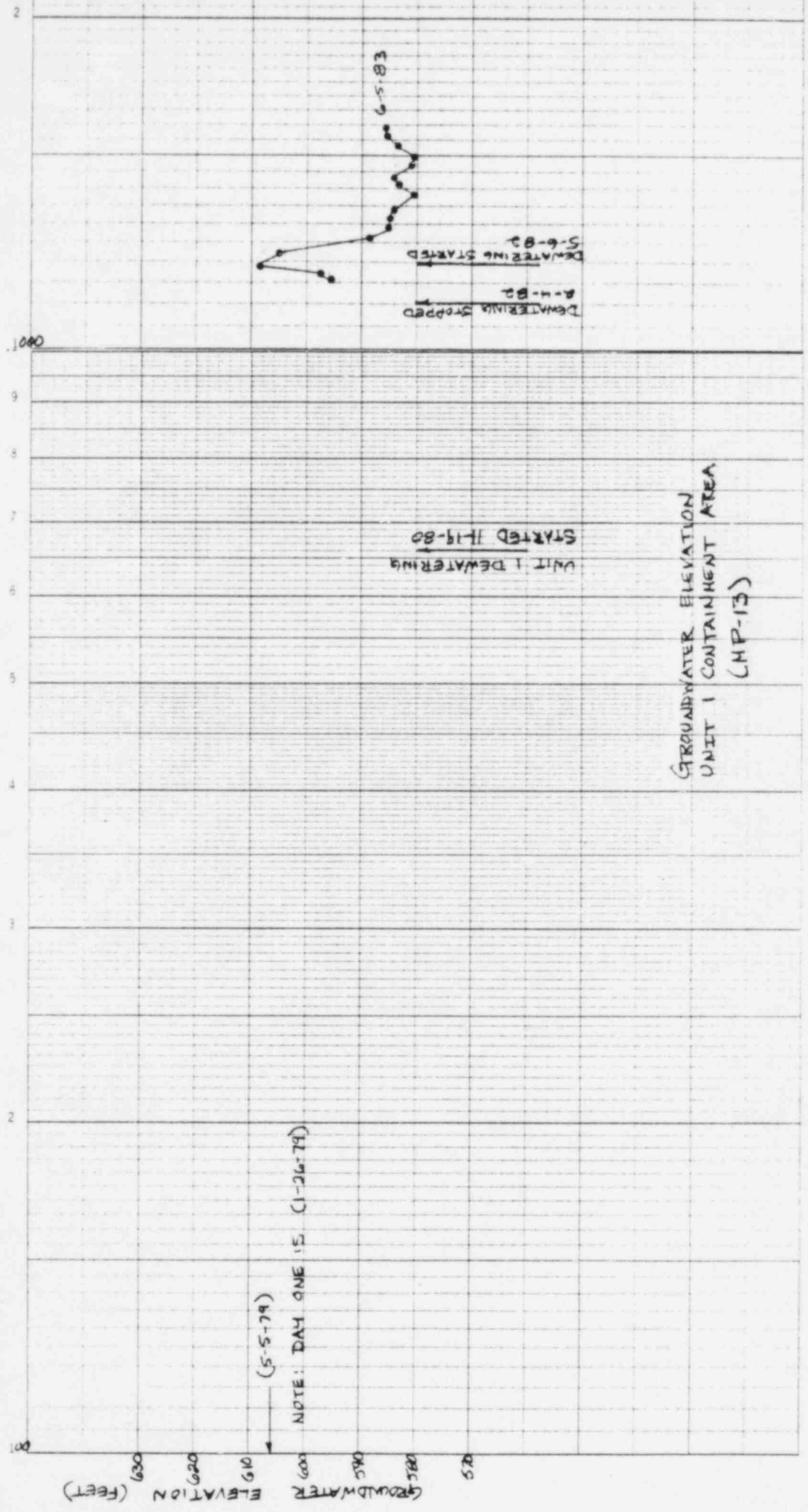
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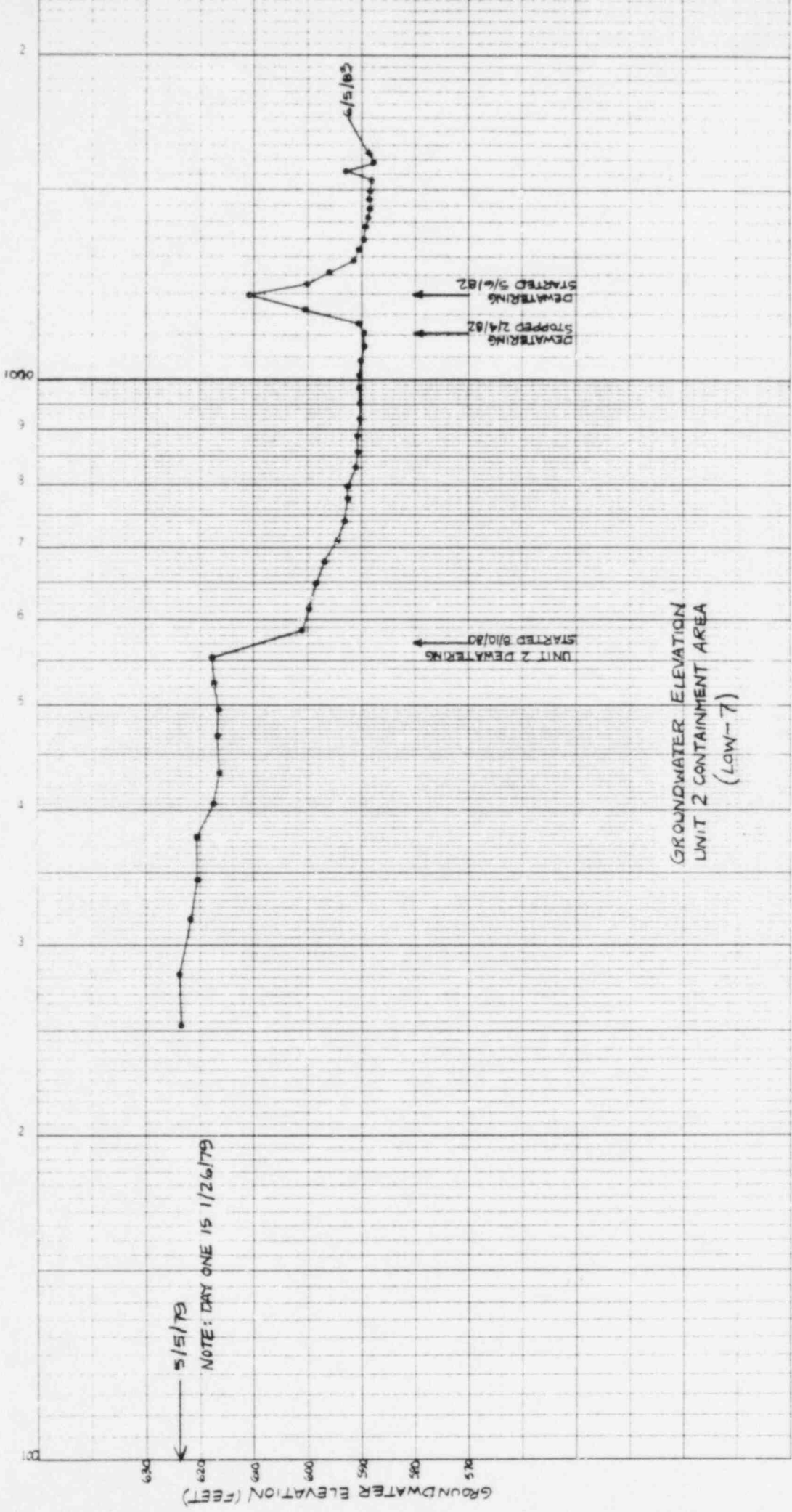




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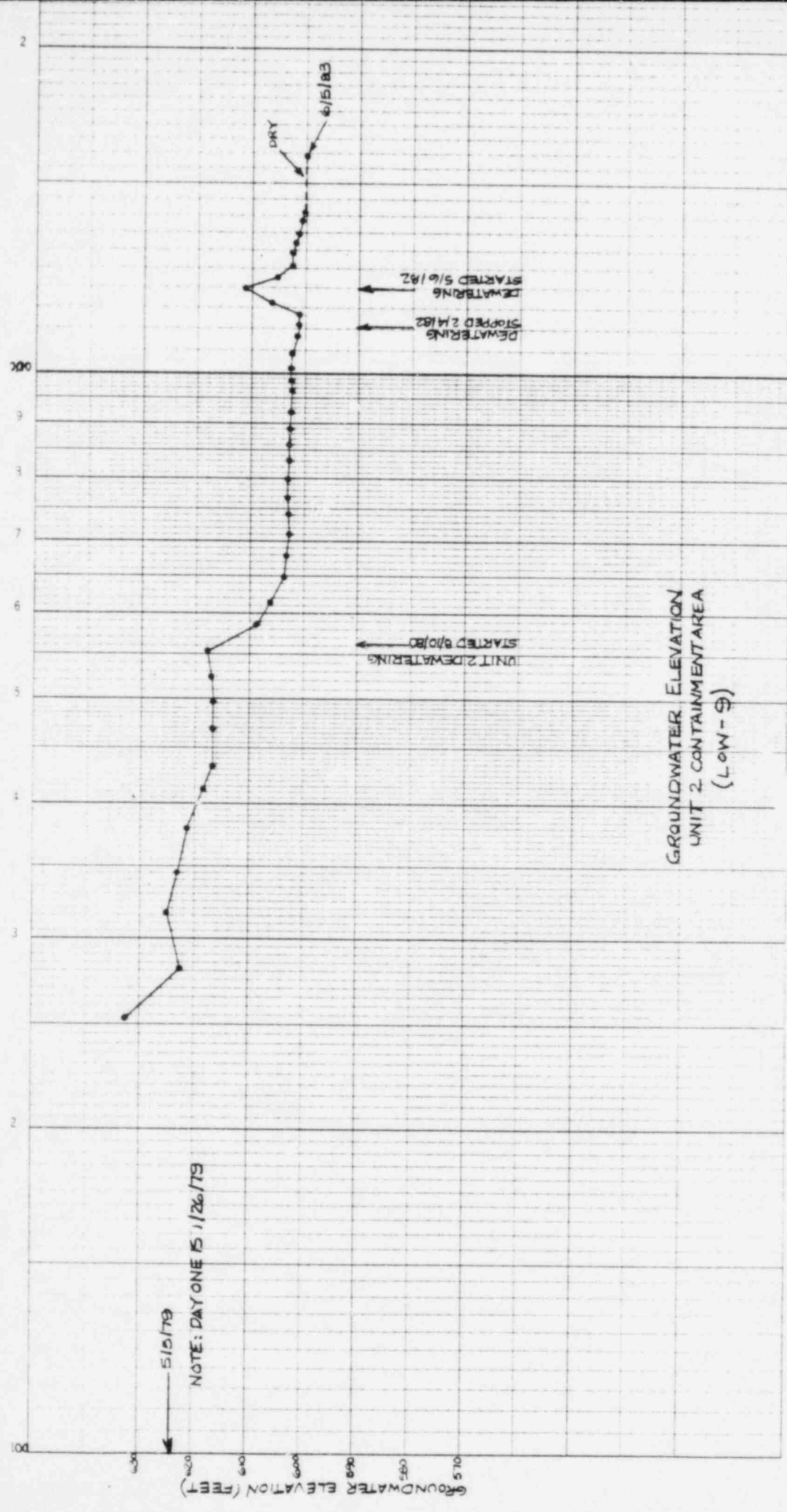


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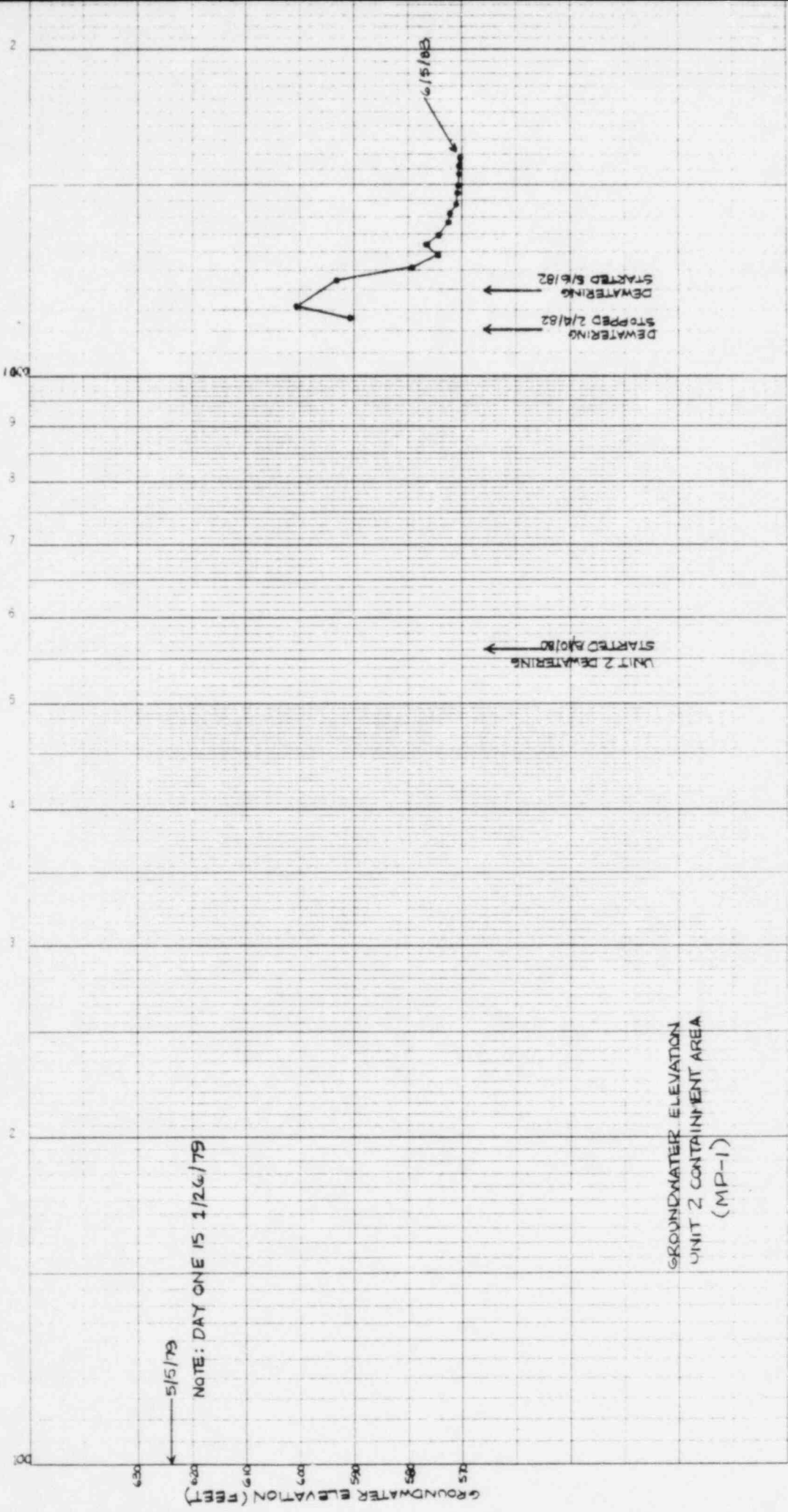


GROUNDWATER ELEVATION  
UNIT 2 CONTAINMENT AREA  
(LOW-7)

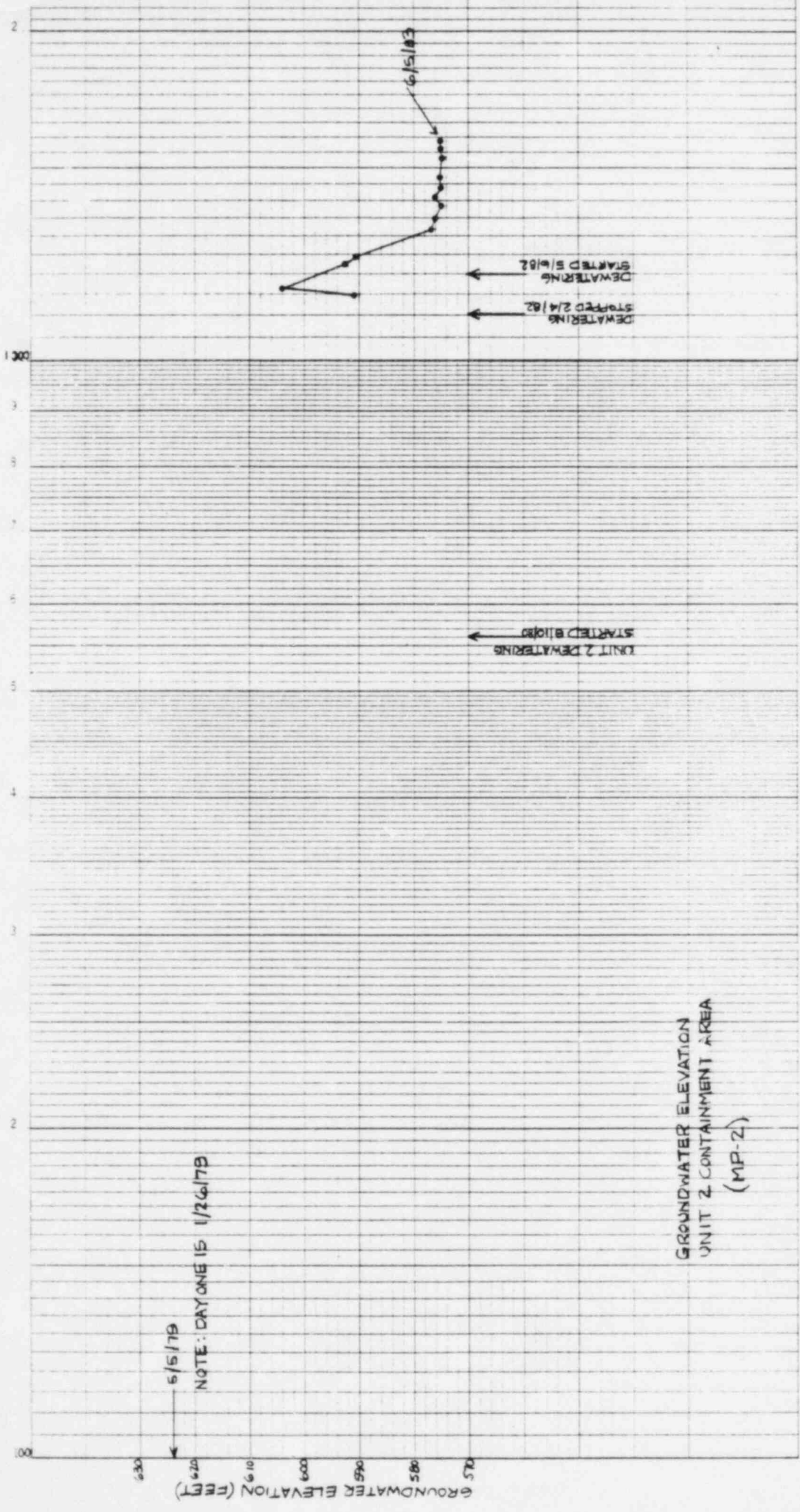
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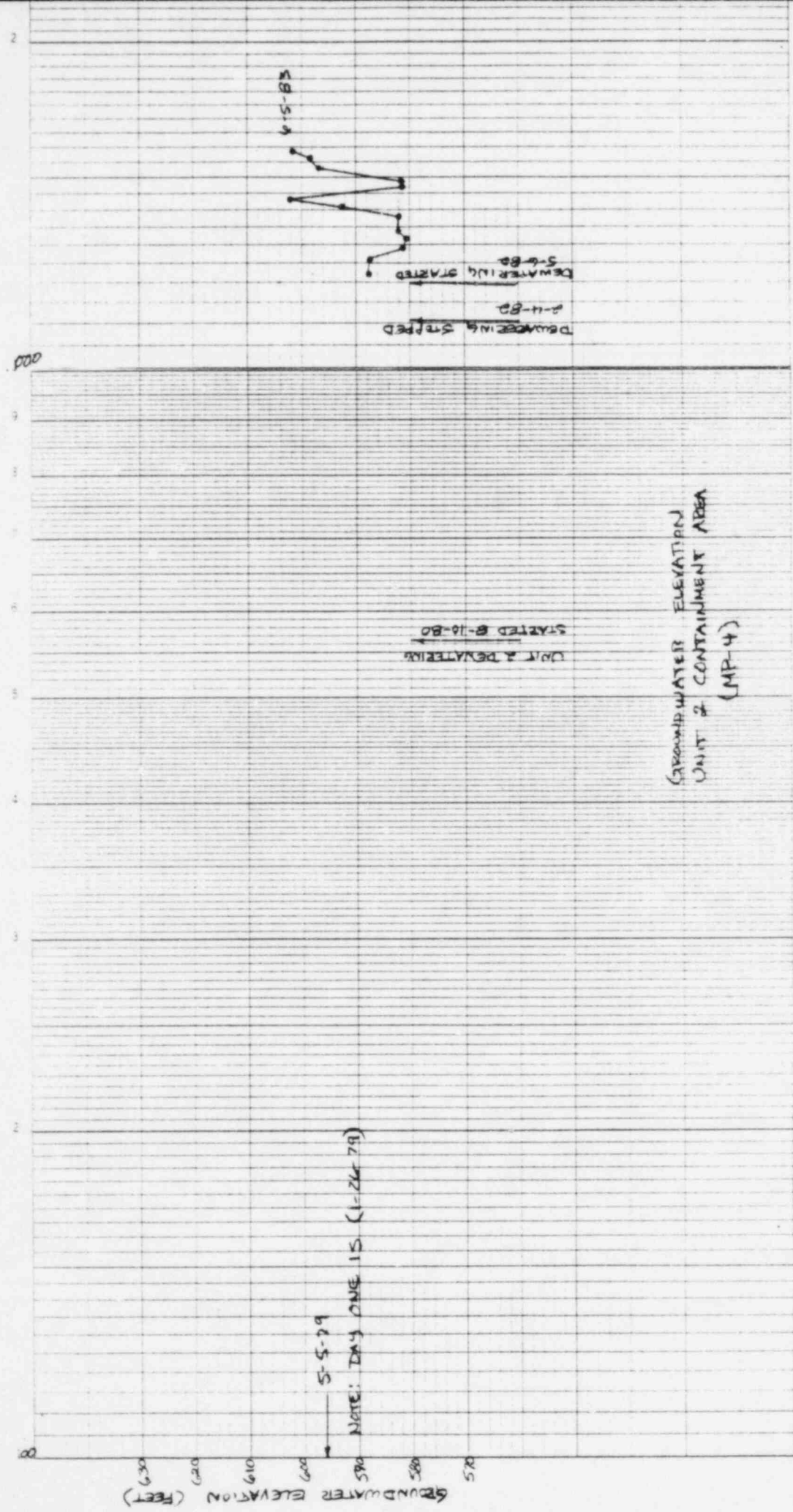


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GROUNDWATER ELEVATION  
UNIT 2 CONTAINMENT AREA  
(MP-2)

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GROUNDWATER ELEVATION  
UNIT 2 CONTAINMENT AREA  
(MP-4)

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