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Firesteel Creek/Lake Mitchell Water Quality Study Area Report

Prepared by the
South Dakota Department of Water and Natural Resources
Water Quality Management Section

September 1985

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Appendix A. SCS Soil Erosion and Sediment Yield Study

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Firesteel Creek/Lake Mitchell WQSA Summary

The Firesteel Creek/Lake Mitchell Water Quality Study Area encompasses some 230,000 acres in Jerauld, Aurora, and Davison Counties. Major population centers within the study area include the municipalities of Mitchell (population 13,425) and Wessington Springs (population 1,300). Lake Mitchell is an artificial impoundment on lower Firesteel Creek in northeastern Davison County. The dam is situated about 3 miles above the confluence of Firesteel Creek with the James River which receives the reservoir outflow. Lake Mitchell has a surface area of 671 acres, a maximum depth of 29 feet and a mean depth of about 12 feet.

Lake Mitchell is classified under the South Dakota State Water Quality Standards for the beneficial uses of domestic water supply, warm water permanent fish life propagation, immersion recreation, limited contact recreation, wildlife propagation and stock watering. Aquatic weeds are not particularly abundant; but the reservoir supports large populations of algae. Common fish species in Lake Mitchell are walleye, northern pike, crappie, and bullhead. No fish kills have been documented to date.

Land use in the watershed is predominantly agricultural. Approximately 41% is estimated to be cropland and 59% rangeland or pasture. SCS estimated that 58% of the watershed was adequately treated in 1981.

At least half of the reservoir shoreline has been developed with lakeside residences, beaches, and public access areas. The present number of lakeside dwellings has not been determined.

Lake Mitchell has extensive public use as a recreational area and there is local interest in the reservoir as evidenced by the existence of the Lake Mitchell Improvement Association.

To determine water quality characteristics and identify water quality problems within the Firesteel Creek watershed samples were taken at 12 sites. Three (3) were in-lake sites and 9 were established on Firesteel Creek. Samples were collected after rainfall events and during snowmelt runoff.

In-lake sampling indicated Lake Mitchell to be hypereutrophic with regard to total phosphorus concentrations and eutrophic as indicated by organic nitrogen concentrations. The principal problem at Lake Mitchell appears to be extensive nutrient loading from the Firesteel Creek watershed. The annual phosphorus and nitrogen loads to Lake Mitchell for 1982 were 0.50 and 2.65 g/m^2/year, respectively. For lakes with mean depths of 5 meters or less, phosphorus and nitrogen loads greater than 0.13 and 2.0 g/m^2/year, respectively, are considered dangerous (Vollenweider, 1968).

Excessive fecal coliform levels (>1,000/100 ml) were found in 30% of Firesteel Creek samples but in only 7% of in-lake samples. Generally, fecal coliforms were not a serious problem in Lake Mitchell.

Watershed erosion, primarily from cropland, provided 6,411 tons and shoreline erosion contributed 1,060 tons of sediment to Lake Mitchell. Total sediment yield amounted to about 6.81 acre-feet per year or .08% of reservoir water capacity. Non-point sources of pollution from the watershed are probably inadequate crop cover on agricultural land, lack of fertilizer management practices, and over grazing on streamside land. Secondary sources of nutrients as well as primary sources of excessive fecal coliform levels to the reservoir

are watershed livestock operations without pollution controls and possible failing individual septic tank systems around the reservoir periphery.

Recommendations

Nutrient loading to Lake Mitchell from the watershed may be reduced by utilizing BMP's on the land including implementation of fertilizer management practices, and conservation tillage to reduce erosion. Proper grazing use and feedlot waste management systems will help in the reduction of nutrients, particularly phosphorus, and possible bacterial contamination to the reservoir. Vegetative sediment barrier strips can be seeded to protect overgrazed and eroding streamside land and further reduce sediment and nutrient input into the tributaries. A septic tank survey should be conducted around Lake Mitchell to identify any problem areas and technical assistance should be provided to control existing problems. Lake bank and streambank stabilization is recommended in areas that are rapidly eroding.

After the above measures are implemented, a selective dredging program and chemical phosphorus flocculation are recommended, if proven feasible, to improve water quality and the overall recreational potential of the reservoir.

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I. Firesteel Creek/Lake Mitchell Watershed Description

A. General Description

The Firesteel Creek/Lake Mitchell WQSA is about 58 miles long and averages about 10 miles wide encompassing some 230,000 acres primarily in Jerauld, Aurora, and Davison Counties (Figure 1). A small portion of the watershed also extends into Sanborn County. Major population centers within the study area include the municipalities of Mitchell and Wessington Springs.

Lake Mitchell is an artificial impoundment on lower Firesteel Creek about 3 miles above its confluence with the James River which receives the reservoir outflow. The reservoir has a surface area of 671 acres, a maximum depth of 29 feet and a mean depth of about 12 feet. Shoreline length is approximately 10 miles. The bottom varies from accumulated silt and muck in the reservoir basin to sand and gravel in near shore areas. Less than 5% of the shoreline is covered with cattails and bullrushes. Emergent and submerged aquatic vegetation is common but not particularly abundant. No information is available regarding the occurrence of blue-green algal blooms in Lake Mitchell but a lake survey conducted by the South Dakota Department of Water and Natural Resources (DWNR) in 1979 noted reduced water clarity and high algal densities in the reservoir which is suggestive of eutrophic conditions (Koth, 1981). Common fish species in Lake Mitchell are walleye, northern pike, crappie, and bullhead. No fish kills have been documented to date.

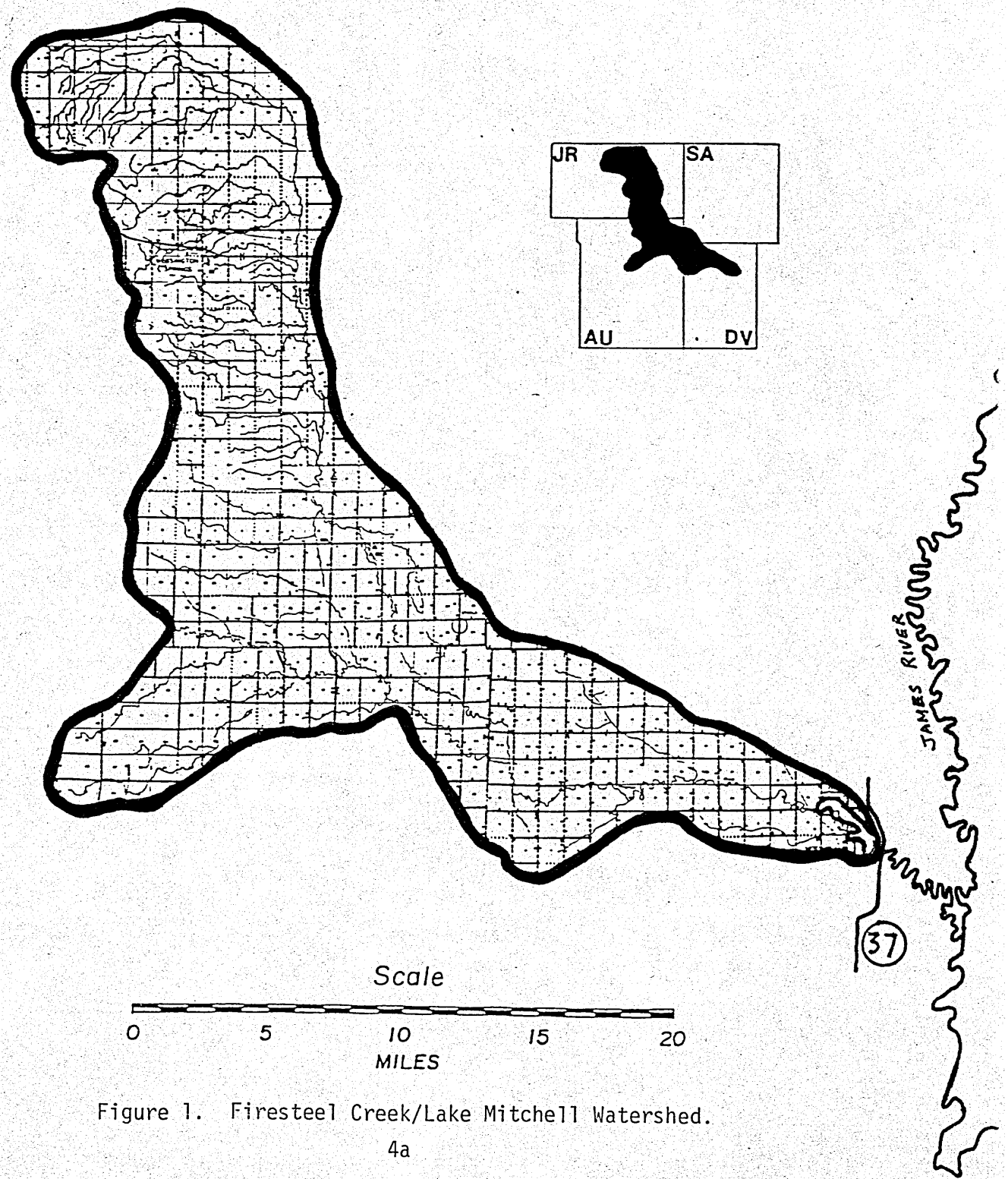


Figure 1. Firesteel Creek/Lake Mitchell Watershed.

B. Beneficial Uses and Impairments

Lake Mitchell is a popular recreation lake providing swimming, fishing, picnicking, waterskiing, and boating. It helps to serve the recreational needs of a population estimated at 242,807 within a 65-mile radius of the reservoir (Koth, 1981). Lake Mitchell is the major source of domestic water for the nearby City of Mitchell.

According to the South Dakota Board of Water and Natural Resources Regulations, Chapter 74:03:02, "Surface Water Quality Standards", Lake Mitchell is classified as having the beneficial use designations of domestic water supply, warm water permanent fish life propagation, immersion recreation, limited contact recreation, wildlife propagation and stockwatering.

All streams in South Dakota are assigned the beneficial uses of irrigation, wildlife propagation, and stock watering. Certain sections of Firesteel Creek also have the following beneficial use classifications: 1) Firesteel Creek from the James River to its confluence with the west fork of the Firesteel Creek (warm water permanent fish life propagation and limited contact recreation); 2) Firesteel Creek from its confluence with the west fork of Firesteel Creek to South Dakota Highway 34 (warm water semipermanent fish life propagation and limited contact recreation); and 3) the west fork of Firesteel Creek from Firesteel Creek to Wilmarth Lake (warm water marginal fish life propagation and limited contact recreation).

Although some upstream segments of Firesteel Creek have less stringent water quality criteria, they must not cause the more stringent criteria of downstream waters to be exceeded (Table 1).

Impairments to reservoir water quality include nutrient and sediment loading from the Firesteel Creek drainage as well as sediments and nutrients derived from streambank and lakeshore erosion. Secondary sources of nutrients and primary sources of fecal coliform contamination may be overgrazing on streamside land, runoff from watershed livestock operations, and seepage from individual septic tank systems around the reservoir periphery.

C. Land Use

Land use in the watershed is predominantly agricultural. Approximately 41% is estimated to be cropland and 59% rangeland or pasture. SCS estimated that about 58% of the watershed had been adequately treated in 1981.

At least half of the reservoir shoreline has been developed. Included are lakeside residences, beaches, and public access areas.

D. Climate, Geology, and Major Soils

Climate

The climate of southeastern South Dakota is continental with cold, dry winters, and relatively short springs marked by appreciable rainfall and rapid weather changes. About 70% of recorded yearly precipitation falls during the growing season (April-August) with highest precipitation occurring in June.

SURFACE WATER QUALITY STANDARDS

ARSD 74:03:02:30. Beneficial Uses of Public Waters Established

Parameters	1 Domestic water supply	2 Cold water permanent fish life propagation	3 Cold water marginal fish life propagation	4 Warm water permanent fish life propagation	5 Warm water semipermanent fish life propagation	6 Warm water marginal fish life propagation	7 Immersion recreation	8 Limited contact recreation	9 Wildlife propagation and stock watering	10 Irrigation waters (May 15 - Sept. 30)	11 Commerce and industry
Alkalinity, Total as $CaCO_3$ mg/l									750		
Arsenic mg/l	.05										
Barium mg/l	1.0										
Cadmium mg/l	.01										
Chloride mg/l	250	100									
Chlorine, Total Residual mg/l		.02	.02	.02	.02	.02					
Chromium mg/l	.05										
Coliform #/100 ml	5000										
Coliform Fecal #/100 ml							200	1000			
Conductivity Micromhos/cm @ 25° C									4000	2500	
Cyanide, Free mg/l		.005	.005	.005	.005	.005					
Cyanide, Total mg/l		.02	.02	.02	.02	.02					
Hydrogen Sulfide		.002	.002	.002	.002	.002					
Lead mg/l	.05										
Mercury mg/l	.002										
Nitrogen, Nitrates as N mg/l	10								50		
Nitrogen, Ammonia as N mg/l		.02	.02	.04	.04	.05					
Oxygen, Dissolved mg/l		6.0	5.0	5.0*	5.0	4.0	5.0	5.0			
Oxygen, Dissolved mg/l (spawning areas)		7.0		6.0*							
pH, Standard Units	6.5-9	6.6-8.6	6.5-8.5	6.5-9	6.3-9	6-9	6.5-8.3	6-9	6-9.5		6-9.5
Polychlorinated biphenyls		.000001	.000001	.000001	.000001	.000001					
Selenium mg/l	.01										
Sodium, absorption ratio										10	
Solids, suspended mg/l		30	90	90	90	150					
Solids, Total Dissolved mg/l	1000								2500		2000
Sulfate mg/l	500										
Temperature, Fahrenheit		65	75	80	90	90					
Silver mg/l	.05										
Fluoride mg/l	2.4										

* Greater than 6.0 in Big Stone and Traverse Lakes, May-April

Table 1.

Average minimum and maximum temperatures are 62° and 91°F in July; 6° and 28°F in January. Mean annual temperature is 47°F. Average annual precipitation and lake evaporation amount to 22 inches and 37 inches, respectively.

Geology

Most of the soils in the Firesteel Creek watershed formed in glacial material (drift) that was derived from preglacial formations of granite, gneiss, limestone, sandstone, and shale. The glacier ground up and mixed these materials as it transported them. It then redeposited them as it melted. Some deposits are unsorted material or glacial till; others are sorted either by water during deposition (outwash) or by wind after deposition (loess).

Major Soils

According to soil surveys conducted by the SCS in the watershed, the following major soil associations are found in the Firesteel Creek drainage area (Koth, 1981):

Houdeck-Prosper: Nearly level to gently undulating, well drained, and moderately well drained soils.

Houdeck-Stickney: Nearly level, well and moderately well drained, loamy soils formed in glacial till; on uplands.

Beadle-Stickney-Dudley: Nearly level, deep, loamy, well drained, and moderately well drained silty soils with claypan subsoils that formed in glacial till; on uplands.

Clarno-Houdeck Belts: Nearly level to steep, well to excessively drained, loamy soils formed in glacial till; on uplands.

Lane: Nearly level to gently sloping, well drained silty soils that formed in local clayey alluvial sediments.

II. Firesteel Creek/Lake Mitchell Water Quality Study Area Selection

Nominations for designation as a Water Quality Study Area (WQSA) within the Third Planning and Development District were solicited by DWNR from the Third District Commission. In February, 1980, nominations were open to all commissioners and the following watersheds were nominated: Burke Lake (Gregory County); Corsica Lake (Douglas County); State Lake (Yankton County); Wolf Creek (Hutchinson County); Firesteel Creek/Lake Mitchell (Davison County); and Rock Creek (Hanson County).

The criteria established for ranking purposes were the State Lakes Preservation Committee criteria, the South Dakota Lake Significance Ranking criteria, input from the Third Planning and Development District Commission, the availability of land use and soils data, plus water quality data and identification of water problems in the watershed. Each nominated watershed was examined under the same criteria.

The Firesteel Creek/Lake Mitchell watershed received designation as the WQSA in the Third Planning and Development District for 1980. The reasons for selecting this area for study included, that it is the source of community drinking water for the City of Mitchell, that it has been studied extensively in the past, and there had been a great deal of money spent on bank stabilization projects along Lake Mitchell.

III. Soil Erosion and Sediment Yield Summary

SCS conducted soil erosion and sediment yield studies of the Firesteel Creek/Lake Mitchell watershed during 1980 and 1981. The studies detailed the type and extent of erosion and sedimentation problems including the contribution from cropland, grassland, streambanks, gullies, and other sources. Detailed results of these studies are presented in Appendix A.

SCS estimated erosion in the watershed to be 308,318 tons per year with total sediment deposited in Lake Mitchell at 8,158 tons or 6.81 acre-feet per year. About 79% of this sediment is derived from watershed erosion, primarily from cropland, 13% from lakeshore erosion, and 8% from gully and streambank erosion.

SCS selected Best Management Practices (BMPs) for the watershed to reduce sediment and nutrients to Lake Mitchell. Examples of needed conservation practices are crop residue use, conservation tillage, proper range, and agricultural waste management, deferred grazing, proper grazing use, and seeding adapted grasses on critical erosion areas. Total cost for application of BMPs was at $1,062,920 or $4.62 per acre (Table 2). The SCS estimated that 132,665 acres or about 58% of the Firesteel Creek/Lake Mitchell watershed was adequately treated in 1981.

IV. Water Quality Status Report for Firesteel Creek/Lake Mitchell

Lake Mitchell is an impoundment of Firesteel Creek and is located in Davison County, South Dakota (Latitude 43 Deg., 45 Min., 0 Sec. N., Longitude 98 Deg., 2 Min., 6 Sec. W., Township 103, 104N, Range 60W, and Sections 4, 5, 9, 31, 32). Firesteel Creek is the major inflow. The major

Table 2. BEST MANAGEMENT PRACTICES (Conservation Practices and Measures) 1/ 2/ 3/
FIRESTEEL CREEK - LAKE MITCHELL WATERSHED AREA

Conservation Practices	Unit	Unit Cost 4/	Subwatershed "A" Amount Needed	Subwatershed "A" Cost	Subwatershed "B" Amount Needed	Subwatershed "B" Cost	Subwatershed "C" Amount Needed	Subwatershed "C" Cost	Total Watershed Amount Needed	Total Watershed Cost
		(Dollars)		(Dollars)		(Dollars)		(Dollars)		(Dollars)
Cropland-97,728 Acres										
Conservation Cropping System	acre	-	8,836	-	70,844	-	18,048	-	97,728	-
Conservation Tillage System	acre	5	8,836	44,180	70,844	354,220	18,048	90,240	97,728	488,640
Grass & Legumes in Rotation	acre	18	904	16,272	7,249	130,482	1,847	33,246	10,000	180,000
Grass Waterways	acre	500	5	2,500	44	22,000	11	5,500	60	30,000
Waste Utilization	acre	3	814	2,442	6,524	19,572	1,662	4,986	9,000	27,000
Minimize Fall Tillage	acre	-	1,808	-	14,498	-	3,694	-	20,000	-
Pasture & Hayland Planting	acre	20	362	7,240	2,900	58,000	738	14,760	4,000	80,000
Minimize Pesticide Use	acre	-	452	-	3,625	-	923	-	5,000	-
Windstrip Cropping	acre	6	542	3,252	4,350	26,100	1,108	6,648	6,000	36,000
Terraces	mile	2,112	.5	1,056	3.5	7,392	1.0	2,112	5	10,560
			40,391		53,139		29,534			
Grassland -123,064 Acres										
Proper Grazing Use	acre	-	30,195		39,731		22,674	-	92,000	-
Pasture and Hayland Planting	acre	20	985	19,700	1,295	25,900	720	14,400	3,000	60,000
Deferred Grazing	acre	-	14,770	-	19,430	-	10,800	-	45,000	-
Planned Grazing Systems	acre	-	9,845	-	12,955	-	7,200	-	30,000	-
Livestock Water Stations	No.	1,000	3	3,000	4	4,000	3	3,000	10	10,000
Critical Area Planting	acre	1,000	7	7,000	9	9,000	4	4,000	20	20,000
Pasture & Hayland Management	acre	-	9,845	-	12,955	-	7,200	-	30,000	-
Waste Management Systems	No.	20,000	1	20,000	3	60,000	0		4	80,000
Wildlife Upland Habitat Mgmt.	acre	5	26	130	35	175	19	95	80	400
Wildlife Wetland Habitat Mtnce.	acre	4	26	104	35	140	19	76	80	320
Farmsteads, Urban & Other, 8,448 acres										
Sediment Control Measures 5/	acre	2,000	2	4,000	18	36,000	0	-	20	40,000
TOTALS - Total acres - 229,911 acres		-	-	130,876	-	752,981	-	179,063	-	1,062,920 or 4.62 per acre

1/ Needed to get (Land Adequately Treated).
2/ Refer to Soil Conservation Service Technical Guide for South Dakota 1981.
3/ On site investigation and planning are necessary to determine kinds, locations, sizes, extent & costs of practices (BMP's).
4/ Refer to Soil Conservation Service Cost-Return Handbook for South Dakota 1981.
5/ Examples of measures are: cover and green manure crop, filter strips, lined and grassed waterways, diversions, mulching, sediment basins, streambank protection, and critical area planting.

outflow is at the dam and water is released back into Firesteel Creek.

Morphological characteristics of Lake Mitchell are given below:

Area	671 A (271.3 ha)
Shoreline Length	52,800 ft. (16,093 m)
Maximum Depth	29 ft. (8.8 m)
Mean Depth	12.2 ft. (3.7 m)
Volume	8,207 acre-feet ($1.012 \times 10^7 m^3$)
Watershed/Lake Surface Area Ratio	343
Origin of Lake Basin	Impoundment
Thermal Stratification	Yes

The following beneficial uses have been assigned to Lake Mitchell by the State of South Dakota.

° Domestic water supply;

° Warm water permanent fish life propagation;

° Immersion recreation;

° Limited contact recreation; and

° Wildlife propagation and stock watering.

Twelve sampling sights were chosen to monitor the Firesteel Creek/Lake Hanson system. Three of the sites (Sites 2, 3, and 6) were in-lake sites. The remaining were located on Firesteel Creek (Sites 1, 4, 7, 8, 9, 10, 11, and 12) and one small tributary (Site 5) of Lake Mitchell. Table IV-1 and Figure 2 describe in detail the location of the sampling sites.

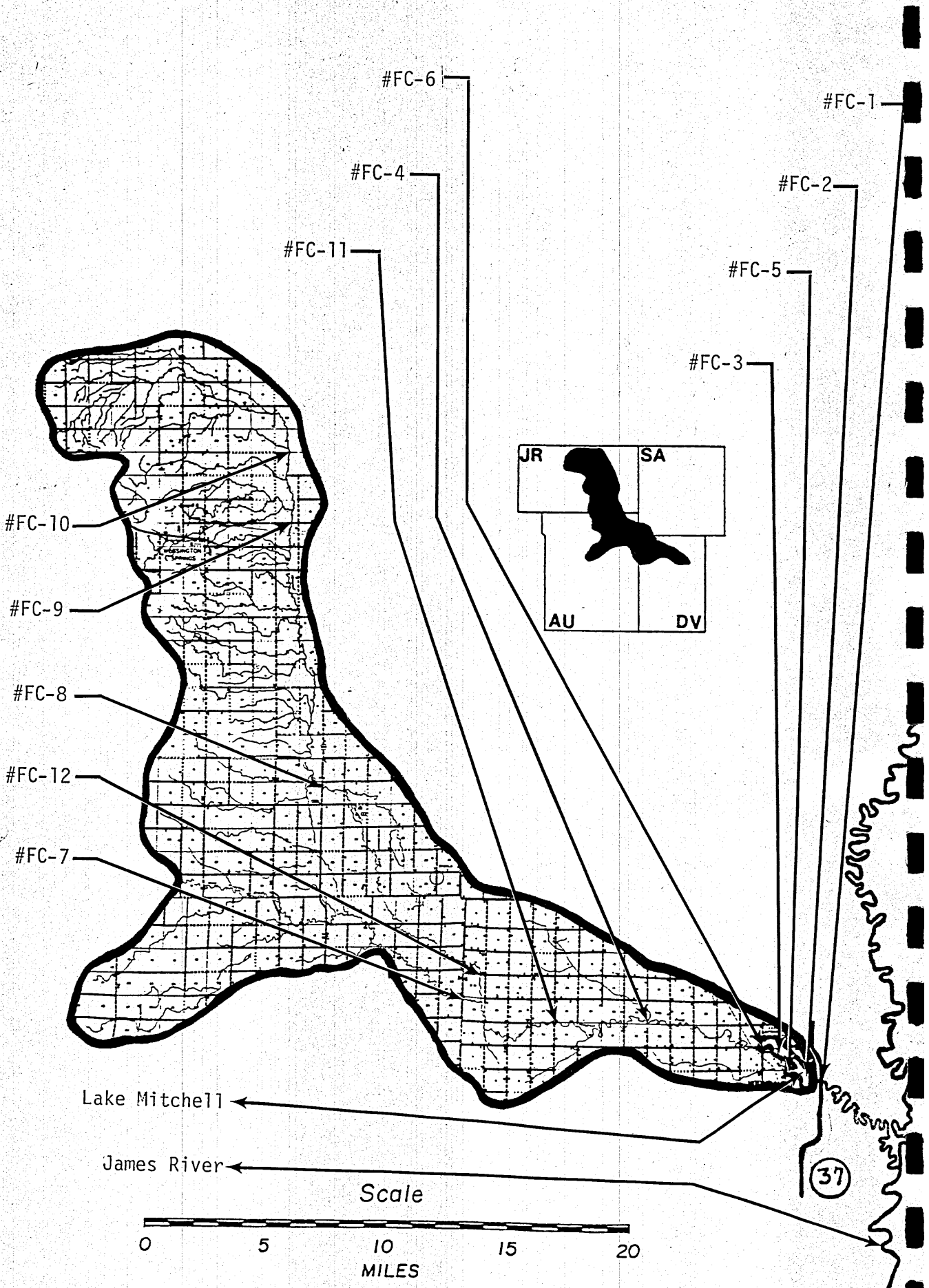


Figure 2. Firesteel Creek/Lake Mitchell sample sites.

Site	Description
46FC01 (FC-1)	Latitude 43 Deg., 44 Min., 25 Sec., Longitude 98 Deg., 1 Min., 32 Sec., Township 103N, Range 60W, Section 10. NE1/4, SW1/4, SW1/4, NW1/4. This site is located on the east side of the bridge over the spillway on Highway #37 north.
46FC02 (FC-2)	Latitude 43 Deg., 44 Min., 39 Sec., Longitude 98 Deg., 1 Min., 34 Sec., Township 103N, Range 60W, Section 10. SE1/4, NW1/4, NW1/4, NW1/4. This in-lake site is located in the northeast corner of Lake Mitchell, 0.5 miles north of the outlet.
46FC03 (FC-3)	Latitude 43 Deg., 45 Min., 22 Sec., Longitude 98 Deg., 3 Min., 26 Sec., Township 103N, Range 60W, Section 5. NW1/4, NW1/4, SW1/4, NE1/4. This in-lake site is located just off the west side of the boat ramp, .75 miles southeast of the Firesteel Creek inlet.
46FC04 (FC-4)	Latitude 43 Deg., 46 Min., 43 Sec., Longitude 98 Deg., 9 Min., 58 Sec., Township 104N, Range 61W, Section 28. SW1/4, SW1/4, NW1/4, SW1/4. This site is located 4.5 miles west of Lake Mitchell and .25 miles north on the road marked "travel at own risk".
46FC05 (FC-5)	Latitude 43 Deg., 44 Min., 41 Sec., Longitude 98 Deg., 2 Min., 51 Sec., Township 103N, Range 60W, Section 8. SE1/4, NE1/4, NE1/4, NE1/4. This site is located at the concrete bridge 1.5 miles south 100 feet west of the Firesteel Creek inlet.
46FC06 (FC-6)	Latitude 43 Deg., 45 Min., 34 Sec., Longitude 98 Deg., 4 Min., 14 Sec., Township 103N, Range 60W, Section 6. NE1/4, NW1/4, NE1/4, NE1/4. This in-lake site is near the bridge that spans the Firesteel Creek inlet.
46FC07 (FC-7)	Latitude 43 Deg., 47 Min., 22 Sec., Longitude 98 Deg., 19 Min., 32 Sec., Township 104N, Range 62W, Section 25. NE1/4, NE1/4, NE1/4, NE1/4. This site is located 50 feet approximately WNW of bridge, 12 miles west and 2 miles north of Firesteel Creek inlet.
46FC08 (FC-8)	Latitude 43 Deg., 55 Min., 9 Sec., Longitude 98 Deg., 27 Min., 4 Sec., Township 105N, Range 63W, Section 7. SW1/4, SW1/4, NW1/4, NW1/4. This site is located 19 miles west and 11 miles north of the Firesteel Creek inlet.
46FC09 (FC-9)	Latitude 44 Deg., 4 Min., 3 Sec., Longitude 98 Deg., 28 Min., 46 Sec., Township 107N, Range 64W, Section 23. NE1/4, NW1/4, NW1/4, NE1/4. This stream site is located 1.5 miles west of the junction of Highways 34 and 281 on Highway 34.
46FC10 (FC-10)	Latitude 44 Deg., 6 Min., 40 Sec., Longitude 98 Deg., 28 Min., 58 Sec., Township 107N, Range 64W, Section 2. NE1/4, NE1/4, NE1/4, NW1/4. This stream site is located 3 miles north and

Figure 2 (cont.). Firesteel Creek/Lake Mitchell sample site descriptions.

1.5 miles west of the junction of Highways 34 and 281, ten feet south of north fence along road.

46FC11 (FC-11) Latitude 43 Deg., 46 Min., 36 Sec., Longitude 98 Deg., 14 Min., 44 Sec., Township 104N, Range 62W, Section 27. NE1/4, SE1/4, SE1/4, SE1/4. This stream site is located 9 miles west and 1 mile north of the Firesteel Creek inlet.

46FC12 (FC-12) Latitude 43 Deg., 48 Min., 16 Sec., Longitude 98 Deg., 18 Min., 32 Sec., Township 104N, Range 62W, Section 19. NE1/4, NE1/4, NW1/4, NE1/4. This stream site is located 3 miles north and 11 miles west of the Firesteel Creek inlet or 3 miles west and 2 miles north of Site 11.

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Figure 2 (cont.). Firesteel Creek/Lake Mitchell sample site descriptions.

The monitoring program was operational from 1981 to 1983. Most of the sampling during 1981 and 1983 was limited to the spring and summer months. During 1982, sampling was more intensive although the spring and summer months were also the months of highest sampling frequency.

The following parameters were monitored to assess the water quality of Firesteel Creek and Lake Mitchell: dissolved oxygen; fecal coliforms; pH; total solids; total suspended solids; total dissolved solids; nitrate; nitrite; ammonia, total Kjeldahl nitrogen; orthophosphate; and total phosphorus.

Summary statistics of the data are presented in Tables IV-2 to IV-24. Violation of the parameters' criteria or limits relative to an assigned beneficial use are given in Tables IV-25 to IV-48. Tables IV-49 to IV-52 show summary statistics or inorganic and organic nitrogen concentrations. Finally, graphical presentations of the data are given in Figures IV-1 to IV-190. Tables and Figures IV-1 to IV-190 are contained in Appendix B.

Dissolved Oxygen (DO)

The State of South Dakota has assigned the beneficial use of warm water permanent fish life propagation to Lake Mitchell. Therefore, DO concentrations should not decrease below 5.0 mg/l.

In general, DO concentrations were adequate (Tables IV-2 to IV-24 and Figures IV-1 to IV-12). Annual mean values for all the sampling sites ranged from 6.3 to 11.0 mg/l. Three exceedences occurred during the monitoring program: at Site 6 on 4 June 1982, 4.6 mg/l; and at Site 8 on 20 May 1982, 4.6 mg/l; and at Site 9 on 14 June 1983, 4.4 mg/l. Spatial or temporal differences or trends were not apparent.

Fecal Coliforms

Lake Mitchell is used for immersion recreation; therefore, fecal coliform counts should not exceed 400/100 ml in any one sample from May 1 to September 30.

The annual means for in-lake Sites 2, 3, and 6 ranged from 7 to 248/100 (Tables IV-2 to IV-24). In addition, only three exceedences occurred out of 46 fecal coliform counts which is about 7% of the in-lake samples. These data indicate that fecal coliforms are generally not a problem in Lake Mitchell.

Some reaches of Firesteel Creek are used for limited contact recreation; therefore, fecal coliforms should not exceed 1000/100 ml. The annual means of stream Sites 1, 4, 5, and 7 through 12 ranged from 12 to 3675/100 ml. Twenty out of seventy-seven samples (about 30%) exceeded 1000/10 ml when the limited contact recreation criterion is used. Using the immersion recreation criterion, about 40% of the samples would be violations. It is clear that fecal coliforms are excessive in Firesteel Creek. Although these high fecal coliform levels have not been reflected in the lake data, these coliforms may potentially pose a health hazard to users of Lake Mitchell and Firesteel Creek.

pH

The pH criterion for surface waters in South Dakota which are used for immersion recreation ranges from 6.5 to 8.3 units, this range applies to Lake Mitchell.

The pH values ranged from 6.3 to 9.0 and about 86% of the samples complied with the criterion (Tables IV-2 to Iv-48). The highest percentage of violations occurred with in-lake samples (Sites 2 and 3) and the tributary samples (Site 5). Samples taken from Firesteel Creek (Sites 4, 7-12) and in-lake Site 6 near the inlet violated the criterion 0 to 11% of the time whereas those sites

which were lake related (Sites 2 and 3 and outlet Site 1) violated the criterion 22 to 42% of the times sampled. Also, 40% of the samples from tributary Site 5 violated the criterion. These data imply that either the small tributary is having a large influence on Lake Mitchell pH or that in-lake processes are largely determining in-lake pH levels.

Total Solids, Suspended Solids, Total Dissolved Solids

The State of South Dakota does not have a standard for total solids concentrations. The 1981 samples had total solids concentrations ranging from 811 to 2,277 mg/l with a mean of 1,215 mg/l. In 1982, the concentrations ranged from 92 to 1,346 mg/l with a mean of 582 mg/l. In 1983, the mean concentration of total solids was 787 mg/l and ranged from 628 to 1,112 mg/l (Tables IV-2 to IV-24). Seasonal trends were not apparent (Figures IV-37 to IV-48).

Lake Mitchell has been assigned the beneficial use of warm water permanent fish life propagation; therefore, suspended solids concentrations must not exceed 90 mg/l. The annual means of all samples combined for 1981, 1982, and 1983 were 27, 36, and 49 mg/l. These values are not considered excessive. Thirteen violations occurred during the study and most of these were less than 150 mg/l. Only one violation involved an in-lake site and twelve violations were from stream waters. Some of these violations coincided with observed high flows, erosion, or road construction.

Since Lake Mitchell is used as a domestic water supply, total dissolved solids concentrations should not exceed 1,000 mg/l. This limit was never exceeded by water taken from in-lake Sites 2, 3, and 6 which had values ranging from 141 to 893 mg/l (Tables IV-2 to IV-24). Some stream site water samples, however, exceeded 1,000 mg/l and these comprised about 11% of the stream samples. These

violations had total dissolved solids concentrations ranging from 1,064 to 1,312 mg/l. Nine out of the eleven violations occurred in May and these may partially be a result of spring rains and high erosion.

Nitrate

Since Lake Mitchell is used for domestic water supply, nitrate nitrogen concentrations must not exceed 10 mg/l in order to comply with the surface water quality standards of South Dakota.

The nitrate nitrogen concentrations of the water samples were far below 10 mg/l (Tables IV-2 to IV-24 and Figures IV-73 to IV-84). The sample means for 1981, 1982, and 1983 were; less than .10 mg/l, .23 mg/l, and less than .10 mg/l, respectively. During 1982, the values ranged from below the detection limit to 1.6 mg/l and about 70% of the sample were below .10 mg/l. As with nitrite nitrogen, many of the samples containing nitrate nitrogen greater than .10 mg/l were collected on 22-23 February. In general, nitrate nitrogen concentrations were sufficiently low to enable domestic water supply use without the danger of nitrate pollution.

Nitrite

No State standards exist for nitrite nitrogen in South Dakota. However, nitrite concentrations in natural waters are usually between 0 and .01 mg/l (Wetzel, 1975).

The analytical detection limit for this parameter is .01 mg/l and this level was never exceeded in 1981 and 1983 (Tables IV-2 to IV-24 and Figures IV-85 to IV-96). Nitrite nitrogen concentrations greater than .01 mg/l did occur in 1982. The mean of all samples taken in 1982 was .013 mg/l and this value is not

appreciably greater than the detection limit. In fact, 94% of the samples had nitrite nitrogen concentrations less than .01 mg/l. Of the remaining 6% (10 samples), seven of these were collected on 22-23 February. This suggests either analytical error or a temporary but widespread phenomenon which is causing nitrite pollution.

Ammonia

The State of South Dakota has assigned to Lake Mitchell the beneficial use of warm water permanent fish life propagation. Therefore, un-ionized ammonia nitrogen concentrations must not exceed .04 mg/l.

This limit was never exceeded during the 1981-1983 monitoring program. The sampling sites' means ranged from .0008 to .0039 mg/l (Tables IV-2 to IV-24). These levels are relatively low.

Inorganic and Organic Nitrogen

Inorganic nitrogen concentrations were calculated by adding together nitrite nitrogen, nitrate nitrogen, and ammonia nitrogen concentrations. Many of the nitrite and nitrate nitrogen concentrations were below the detection limits of .01 and 0.1 mg/l, respectively. These data were assumed to be the same concentration as the appropriate detection limit. In addition, a general relationship between trophic state and epilimnetic nitrogen concentrations was used to relate the inorganic and organic nitrogen concentrations to trophic state (see Wetzel, 1975; Table 11-4).

The inorganic nitrogen concentrations of water from in-lake Sites 2, 3, 6 ranged from 0.13 to 1.43 mg/l and these data indicated ultra-oligotrophy to eutrophy (Tables IV-49 to IV-52). The annual mean inorganic nitrogen concentrations

ranged from 0.14 to 0.48 mg/l and indicated ultra-oligotrophy to meso-eutrophy. The water samples taken from the stream sites exhibited a wide range of values (0.13 to 3.00 mg/l) which implied ultra-oligotrophy to hypereutrophy.

Organic nitrogen concentrations were calculated by subtracting ammonia nitrogen concentrations from total Kjeldahl nitrogen concentrations. The organic nitrogen concentrations determined for in-lake Sites 2, 3, and 6 ranged from 0.04 to 2.59 mg/l and suggested ultra-oligotrophy to hypereutrophy. The annual means of the same sites ranged from 0.48 to 1.07 mg/l and implied meso-eutrophy to eutrophy. Water from the stream sites had organic nitrogen concentrations ranging from 0.02 to 2.36 mg/l. These data indicated ultra-oligotrophy to hypereutrophy.

In general, organic nitrogen is the major form of nitrogen in Firesteel Creek and Lake Mitchell. Organic nitrogen comprised from 55 to 90% of the total nitrogen in the samples.

Phosphorus

Three forms of phosphorus were monitored: total phosphorus (TP), orthophosphate (OP), and orthophosphate plus hydrolyzable phosphorus. Total phosphorus concentrations were determined throughout the study duration and OP concentrations were determined only in 1983. Orthophosphate plus hydrolyzable phosphorus concentrations were determined in 1981 and 1982 but were called OP in the Tables and Figures.

Although the State of South Dakota has not set any surface water standards for phosphorus, phytoplankton may be largely dependent on the soluble inorganic phosphorus available in the water column. In addition, total phosphorus has been commonly used as an index of lake productivity and trophic state.

One such index was proposed by Reckhow, et al., (1980) which related TP concentration to trophic state. This index is used in this report. In the index, TP concentrations between .02 and .05 mg/l are indicative of eutrophy and TP concentrations greater than .05 mg/l suggest hypereutrophy.

The OP concentrations of water from in-lake Sites 2, 3, and 6 ranged from .005 to .084 mg/l and the annual mean OP concentrations ranged from .010 to .039 mg/l (Table IV-2 to IV-24 and Figures IV-167 to IV-178). In general, the OP concentrations were higher in Firesteel Creek than in Lake Mitchell. This phenomenon could be due to algal uptake of OP in Lake Mitchell.

Orthophosphate plus hydrolyzable phosphorus concentrations from in-lake Sites 2, 3, and 6 ranged from .005 to .440 mg/l and the annual mean concentrations ranged from .033 to .146 mg/l. The stream sites had concentrations ranging from .017 to 1.52 mg/l and annual means from .040 to .823 mg/l (Tables IV-2 to IV-24).

The TP concentrations of water from in-lake Sites 2, 3, and 6 ranged from .031 to .495 mg/l. The annual mean TP concentrations from these sites ranged from .060 to .232 mg/l and denoted hypereutrophy. The stream sites had TP concentrations ranging from .058 to 2.31 mg/l. These concentrations also indicate hypereutrophy. Seasonally, TP concentrations were greatest in the spring and early summer (Figures IV-179 to IV-190).

Trophic State Index

Carlson's (1977) total phosphorus trophic state index was used to describe the trophic state of Lake Mitchell. This index uses a scale of 0 to 100 instead of the traditional descriptions (i.e., oligotrophic, mesotrophic, and eutrophic). Values greater than 50 are characteristic of eutrophic lakes (Carlson, 1979).

According to Carlson's index, Lake Mitchell is eutrophic. The mean values for in-lake Sites 2, 3, and 6 were 67.65, 71.41, and 76.35, respectively (Table IV-53). Appreciable differences in the values between sampling years 1981, 1982, and 1983 were not apparent.

Nutrient Limitation

Total nitrogen:total phosphorus weight ratios were used to determine limiting nutrient in Lake Mitchell. Ratios below a value of 15 are indicative of nitrogen limitation and ratios above 15 are indicative of phosphorus limitation. Forsberg (1980) suggested that values between 10 and 17 indicate nutrient co-limitation.

The total nitrogen concentrations were calculated by adding together the concentrations of total Kjeldahl nitrogen, nitrite, and nitrate. In many cases the nitrite and/or nitrate concentrations were below the analytical detection limit. Therefore, for calculation purposes, these nitrite and nitrate concentrations were assumed to be the concentrations of the detection limits.

The nutrient ratios of samples taken from in-lake Sites 2, 3, and 6 suggested either nitrogen or co-limitation (Table IV-54). This was not unexpected and nitrogen limitation is common for lakes in eastern South Dakota (see SDDWNR, 1981).

Nutrient Loading

Total nitrogen and total phosphorus loadings were calculated with existing streamflow and nutrient concentration data. Only flow data collected in 1982 were adequate to estimate annual loads. The areal total nitrogen and total phosphorus loadings to Lake Mitchell during 1982 were 2.65 and 0.50 $g/m^2/yr$,

respectively. According to the dangerous loading levels proposed by Vollenweider (1968), these nutrient loads are dangerous.

Summary

Lake Mitchell is a shallow (mean depth 3.7 meters) impoundment of Firesteel Creek located in Davison County, South Dakota. The lake has been assigned the following beneficial uses.

° Domestic water supply;

° Warm water permanent fish life propagation;

° Immersion recreation;

° Limited contact recreation; and

° Wildlife propagation and stock watering.

The results of the 1981-1983 monitoring of Firesteel Creek and Lake Mitchell are summarized below:

1. Dissolved oxygen concentrations were usually greater than 5.0 mg/l and were not considered dangerously low.

2. Fecal coliforms were excessive in Firesteel Creek. About 30% of the Firesteel Creek samples violated the 1,000/100 ml criterion for limited contact recreation. Lake Mitchell was generally free of high fecal coliform levels. Only about 7% of its samples were greater than 400/100 ml.

3. The pH values ranged from 6.3 to 9.0 and about 86% of the samples complied with the 6.5-8.3 criterion. Values of pH greater than 8.3 were usually found in water taken from Lake Mitchell.

4. Total solids concentrations ranged from 92 to 2,277 mg/l. The annual means of all samples during 1981, 1982, and 1983 were 1,215, 582, and 787 mg/l.

5. Suspended solids concentrations were never greater than 90 mg/l, the standard applied to Lake Mitchell, and were not considered excessive.

6. Water from Lake Mitchell never exceeded the 1,000 mg/l limit for total dissolved solids. Some water samples taken from Firesteel Creek had total dissolved concentrations greater than 1,000 mg/l. These samples comprised about 11% of the samples taken on Firesteel Creek.

7. Nitrate and nitrite nitrogen concentrations were far below dangerous levels. Seventy and ninety-four percent of the samples analyzed for nitrate and nitrite nitrogen, respectively, had concentrations below the analytical detection limits.

8. Un-ionized ammonia concentrations never exceeded the .04 mg/l critical limit. Mean values ranged from .0008 to .0039 mg/l.

9. Water taken from in-lake Sites 2, 3, and 6 had inorganic nitrogen concentrations ranging from .013 to 1.43 mg/l. These levels indicated ultra-oligotrophy to eutrophy. Annual mean values indicated similar conditions although the upper limit was meso-eutrophy rather than eutrophy. The stream sites exhibited a wide range of organic nitrogen concentrations (0.13 to 3.00 mg/l) and indicated ultra-oligotrophy to hypereutrophy.

10. Organic nitrogen is the major form of nitrogen in Lake Mitchell and Firesteel Creek and concentrations varied widely from 0.02 to 2.59 mg/l. Most of the concentrations were indicative of meso-eutrophy to eutrophy.

11. Orthophosphate concentrations of Lake Mitchell water samples ranged from .005 to .084 mg/l. The annual mean OP concentrations of water from Sites 2, 3, and 6 ranged from .010 to .039 mg/l.

12. Total phosphorus concentrations ranged from .031 to .495 mg/l in water from Lake Mitchell. These values denote eutrophic to hypereutrophic conditions. The stream sites also had hypereutrohpic levels of total phosphorus.

13. According to Carlson's (1977) total phosphorus trophic state index, Lake Mitchell is eutrophic. Mean values ranged from 67.65 to 76.35.

14. Total nitrogen:total phosphorus weight ratios were usually less than 15:1 and indicated nitrogen limitation for Lake Mitchell.

Recommendations

Firesteel Creek has two major problems; excessive amounts of nitrogen and phosphorus, and high numbers of fecal coliforms. Although the fecal coliforms in Firesteel Creek did not seem to have an impact on Lake Mitchell, the potential for a health hazard is present. Fecal Coliforms are generally indicative of fecal contamination by warm blooded animals. On Firesteel Creek, cattle have been observed in the creek on numerous occasions and these animals could be causing high fecal coliform levels. If this is true, then keeping cattle (and cattle feces) away from the creek could lead to a decrease in fecal coliform levels. It is recommended that a statistically sound monitoring program be conducted to discern whether specific areas of high livestock density are linked to high fecal coliform levels.

The high nutrient levels in Firesteel Creek undoubtedly has an impact on Lake Mitchell and decreasing these nutrient loads may indirectly improve Lake Mitchell's water quality. The effectiveness of decreasing nutrient loading from Firesteel Creek cannot be estimated accurately until it is known whether the lake sediments contribute significant amounts of nitrogen and phosphorus to the overlying water. A study assessing the nutrient uptake and release capabilities of Lake Mitchell sediments is recommended.

V. Firesteel Creek/Lake Mitchell Watershed Problems and Recommendations

A. Watershed Problems and Recommendations

Problem:

Excessive nutrient and sediment loads from the Firesteel Creek watershed are primary causes for the present eutrophic condition of Lake Mitchell. The annual phosphorus and nitrogen areal loads to Lake Mitchell for 1982 were 0.50 and 2.65 g/m^2/year, respectively. For a lake with a mean depth of 5 meters or less, phosphorus and nitrogen loads greater than 0.13 and 2.0 g/m^2/year, respectively, are considered dangerous (Vollenweider, 1968).

A 1969 SCS report indicated that the reservoir had lost about 15.6% of its original water storage capacity since 1928 due to siltation primarily from the Firesteel Creek watershed and secondarily from shoreline erosion. Average annual siltation rates appear to have doubled since 1948 and further increases were reported by the 1981 SCS sediment yield study. Between 1958 and 1969, an average of 5.12 acre-feet of sediment per year was deposited in Lake Mitchell. Recent (1979) sedimentation rates have been estimated at 6.81 acre-feet per year or about .08% of reservoir water capacity. A comparison of the 1979 reservoir volume of 8,207 acre-feet with its original water capacity of 10,943 acre-feet in 1928, indicated that Lake Mitchell had lost 25% of its water storage capacity over its then 51-year life span.

Fecal coliform levels were frequently excessive in Firesteel Creek during the study period. Twenty (20) out of 77 creek samples (30%) exceeded limited contact recreation standards (1,000/100 ml). Although these high coliform levels were not reflected in reservoir samples, they may indicate a potential a health hazard to users of Firesteel Creek and Lake Mitchell (Chapter IV).

Recommendations

Nutrient and sediment input to Lake Mitchell can be reduced by utilizing BMPs in the watershed. Appropriate BMPs include applying fertilizer management practices where needed, conservation tillage, and leaving crop residue to reduce erosion. Proper rangeland management should be used to prevent rangeland deterioration and streambank degradation. Vegetative sediment barrier strips can be seeded to protect overgrazed and eroding streamside land and thereby reduce sediment and nutrient input into the tributaries. Critical streamside erosion areas on lower Firesteel Creek need to be stabilized by appropriate structures.

Drainage patterns and nutrient contributions of existing livestock operations in the watershed need to be established and monitored to determine their impact on Lake Mitchell water quality. Appropriate waste treatment systems can then be constructed, where needed, to reduce nutrient levels and fecal coliform contamination entering the reservoir.

A comprehensive septic tank survey is required to establish the location of septic tank systems around the reservoir, their age,

construction, maintenance practices, and identify potential problem areas.

B. In-Lake Problems and Recommendations

Problems:

1. Eutrophication and Sedimentation

Eutrophication and loss of reservoir storage capacity are the principal problems in Lake Mitchell as evidenced by reduced water depth and clarity, high concentrations of phosphorus and nitrogen, and high reservoir algal densities.

Annual mean concentrations of organic nitrogen for in-lake sites in 1982 ranged from 0.48 to 1.07 mg/l. Corresponding values for total phosphorus ranged from .060 to .232 mg/l and are indicative of hypereutrophic conditions.

Recommendations

The watershed treatments recommended in the previous section will help alleviate the nutrient and sediment problems in Lake Mitchell. Following watershed stabilization, in-lake treatments such as selective dredging and chemical phosphorus precipitation may be considered. The latter involves the application of a chemical such as aluminum sulfate (alum) to the reservoir surface to tie up the soluble phosphorus which forms a precipitate, settles out, and creates a partial bottom seal. Treatment may have to be repeated every 1 to 3 years depending on lake conditions. Cost effectiveness of both in-lake treatments should be determined before any action is taken.

2. Shoreline Erosion

Lakeshore erosion contributes 1,060 tons (0.9 acre-foot) or about 13% of the total sediment volume deposited in Lake Mitchell each year.

Recommendations

Lake shoreline stabilization normally involves shaping existing slough banks to a flatter, stable 3:1 slope by cut and/or fill, placing stone riprap in the new slope and establishing grass above the riprap.

VI. Summary and Conclusions

The future use of Lake Mitchell, particularly as a source of drinking water for the City of Mitchell, will require management efforts to be focused in two areas. First, due to the large watershed drained by Firesteel Creek (230,000 acres) and the rate of accumulation of bottom sediments in the reservoir, loss of reservoir volume may become a significant problem with the passage of time. Efforts should be made to compare past with the most recent sedimentation rates and project when reservoir volume losses will become critical. Based on these estimates, efforts can be directed at dealing with sediment in the watershed and/or by selective dredging of Lake Mitchell.

Second, a significant amount of development is currently being planned on the James River. Future projects may have an impact on Lake Mitchell since water is diverted from the James River to Lake Mitchell. However, Lake Mitchell's diversion should have top priority since it is for public

consumption. The future use of Lake Mitchell therefore requires that the needs of the reservoir be considered in plans for any development projects and in the management of any diversions to the reservoir.

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Appendix A

SCS Soil Erosion and Sediment Yield Study

SECTION 208 - WATER QUALITY STUDY AREAS

SOIL EROSION AND SEDIMENT YIELD STUDY

IN

FIRESTEEL CREEK-LAKE MITCHELL WATERSHED

DAVISON, AURORA AND JERAULD COUNTIES

SOUTH DAKOTA

SOIL CONSERVATION SERVICE
U. S. DEPARTMENT OF AGRICULTURE
HURON, SOUTH DAKOTA

ASSISTED BY
SOUTH DAKOTA DEPARTMENT OF WATER AND NATURAL RESOURCES
PIERRE, SOUTH DAKOTA

September 1981

SOIL EROSION AND SEDIMENT YIELD

IN

FIRESTEEK CREEK-LAKE MITCHELL WATER QUALITY STUDY AREA

DAVISON, AURORA, JERAULD COUNTIES,

SOUTH DAKOTA

Introduction

Intense use of our natural resources over the years has caused a general deterioration of our environment. Some of our air, soil, and water resources have become polluted. Increased public awareness of this situation helped to bring about the Federal Water Pollution Control Act Amendments of 1972 (Public Law 92-500). Section 208 of P.L. 92-500 addresses water pollution problems as it calls for management practices "...(to) be developed and implemented to assure adequate control of sources of pollutants in each state."

The South Dakota Department of Water and Natural Resources has responsibility for formulating a section 208 water quality management plan for South Dakota. Firesteel Creek-Lake Mitchell Watershed was one of four selected for study in 1981 to facilitate formulation of the plan. (See Figure 1.)

It is generally thought that sediment and nutrients are the principal pollutants in South Dakota lakes and streams. 1/, 2/, 3/

This report outlines more detailed information on soil erosion, sediment sources and quantities, management practices to control sediment, and costs for those practices. This information was developed by the USDA Soil Conservation Service (SCS) for the South Dakota Department of Water and Natural Resources.

1/ Mathew, F.L., "Water Pollution in South Dakota, Part I: Natural Water Quality and Pollution Sources," 1970, South Dakota Water Resources Institute, South Dakota State University, Brookings, South Dakota, 34 pages.

2/ "Development Components of the South Dakota Water Plan, Volume II-B" 1977, Division of Resources Management, South Dakota Department of Water and Natural Resources, Pierre, South Dakota.

3/ "A plan for the Classification-Preservation-Restoration of Lakes in Northeastern South Dakota" 1977, State Lakes Preservation Committee, State of South Dakota and the Old West Regional Commission, Pierre, South Dakota.

Summary

Sediment was determined to be a major pollutant in the Firesteel Creek-Lake Mitchell Water Quality Study Area (WQSA). The source of these sediments is from sheet and rill erosion from cropland, grassland, woodland, and from gully, streambank and lake bank erosion.

The volume of soil entering the lake annually is the gross erosion from all sources multiplied by estimated sediment delivery ratios developed by a watershed shape analysis. 1/ The Universal Soil Loss Equation 2/ 3/ was used to estimate the gross erosion from sheet and rill erosion. Gross erosion from gullies, streambanks and lake banks was estimated by direct volume calculation methods.

Soil and water conservation practices needed to control erosion are outlined in detail in the Technical Guide for South Dakota (available at all Soil Conservation Service offices). Those most appropriate for reducing sediment are identified in the Technical Guide as best management practices (BMP's). The kind and amount of these practices were estimated by the SCS district conservationists and the SCS state agronomist. Cost of the BMP's were abstracted from the SCS Cost-Return Handbook.

No quantification of reductions in sediment yield due to application of BMP's was attempted because the collection of the necessary data was overly time consuming. It was also felt that time spent in this endeavor would not be productive since the actual selection of practices applied ultimately rests with the farmer-operator.

The Universal Soil Loss Equation (USLE), 2/, 3/ was used to estimate sheet and rill erosion in the WQSA's. SCS personnel familiar with each WQSA provided the data needed for the USLE from their field experience, Section III of the South Dakota Technical Guide and detailed soils maps.

1/ "Sediment Yield versus Gross Erosion in Minnesota" by O.M. Finkelson, Geologist, SCS, St. Paul, Minnesota 1978.

2/ Wischmeier, W.H., and Smith, D.D., "Predicting Rainfall Erosion Losses, A Guide to Conservation Planning", Agricultural Handbook, No. 537, December 1978, Science & Education Administration.

3/ "Estimating Soil Loss Resulting from Water and Wind Erosion in South Dakota," June 1977, South Dakota Technical Guide III-1, USDA, SCS, Huron, South Dakota.

Definition and Outline of Study Methods

Erosion

Sheet erosion occurs as water flows overland and moves layers of soil particles loosened by raindrop impact. Rill erosion is move- ment of soil particles as overland flow concentrates into small channels, or rills, 2 to 12 inches deep. Soil particles are loosened in rills by shear force exerted on the bottom and banks of the rill by the channelized water. Bank sloughing, or miniature landslides, occur as the bottom and lower banks are eroded.

Data for the estimation of gross erosion was derived from the sample quarter sections previously selected for the National Resource Inventory Study. There are fifty-four sample areas in the Firesteel Creek-Lake Mitchell Watershed. Each sample quarter contained three sample points. Each sample point was inspected by SCS technicians. They recorded the land use, crops grown and cropping history, conservation practices now applied, the adequacy of present treatment and data needed for the USLE soil loss calculations. With this data they calculated the soil losses for each sample point. This data was expanded to obtain the land use data (Table 1) and the present gross erosion from sheet and rill erosion (Table 2).

Erosion from construction sites, roads and roadbanks was estimated using a direct volume method (multiplying the area of erosion by an estimated rate of erosion and the volume weight of the eroding soil). 1/ Sample areas were observed, calculations were made and expanded to the entire watershed.

Gully and streambank erosion is soil moved by water flowing in channels that are greater than 12 inches deep. The mechanisms of loosening and moving soil particles are the same as in rill erosion except for the larger scale. Lake shore erosion occurs as wave action loosens and moves soil particles. The direct volume method was used to estimate gully, streambank, and lake shore erosion. The effects of ice were also considered in the erosion rate. Sample areas were observed and aerial photographs were used to expand the sample data.

Sediment Yield

Sediment yield is the amount of soil removed from a drainage basin. 2/, 3/ It is measured (or estimated) at a point or at a stream channel cross section and only represents a fraction of the total soil eroded in the basin above that point.

1/ Method is outlined in the "Erosion and Sediment Inventory Handbook," USDA-SCS, Syracuse, New York (1972) and in "Guide to Sedimentation Investigations," Technical Guide 12, South Technical Service Center, USDA-SCS, Fort Worth, Texas (1976).

2/ "Sedimentation," 1975 National Engineering Handbook, Section 3, USDA, SCS, Washington, D.C.

3/ "Predicting Sediment Yields," in "Proceedings of the National Symposium on Soil Erosion and Sedimentation by Water," 1977, American Society of Agricultural Engineers, Publication 4-77, St. Joseph, Michigan.

In this study, gross erosion was estimated and them multiplied by an estimated sediment delivery ratio to obtain sediment yield delivered to Lake Mitchell. This ratio is expressed as a percent and represents the amount of soil removed from a watershed (sediment) divided by the amount of soil moved in the watershed (erosion). It is thus inversely proportional to the amount of deposition occurring between points of erosion and the point where sediment yield is measured. The results of these calculations were compared with estimates of sediment accumulation made from previous studies 1/ and modified as needed.

Many factors affect sediment yield including watershed size, shape, hydrology, channel density, land use, vegetative cover, geology and topography, soil structure, texture, and permeability. The interaction between all of these factors was subjectively analyzed to select a delivery ratio for the drainage area. Higher ratios were used to estimate sediment yield from gully, streambank, and lakeshore erosion, since these areas are closer to the sediment damage area (Lake Mitchell).

Best Management Practices

The Environmental Protection Agency (EPA) has defined "best management practices", as published in the Federal Register, as follows:

> "The term, best management practices (BMP), means a practice, or combination of practices, that is determined by a State (or designated areawide planning agency) after problem assessment, examination of alternative practices, and appropriate public participation to be the most effective, practicable (including technological, economic, and institutional considerations) means of preventing or reducing the amount of pollution generated by nonpoint sources to a level compatible with water quality goals (40 CFR Part 130)."

Thus best management practices in section 208 water quality management plans are primarily those management practices that are believed to have a beneficial impact on water quality. 2/ Since sediment yield affects water quality adversely in these study areas, management practices that reduce sediment yield will be BMP's. Best management practices were selected from Section III of the South Dakota Technical Guide and costs were taken from the SCS Cost-Return Handbook.

Narrative Comments

The Soil Conservation Service completed a study of the Firesteel Creek-Lake Mitchell Watershed. The purpose of this study was to identify the water erosion and sedimentation problems in Lake Mitchell and its drainage area. (See Watershed Map)

1/ Report on the Sediment Survey of Lake Mitchell, USQA, SCS, Huron, South Dakota, July 1979.

2/ "Environmental Impact of Land Use on Water Quality, Final Report on the Black Creek Project (Summary," 1977, U.S. Environmental Protection Agency 905/9-77-007-A, Great Lakes National Program Office, Chicago, Illinois.

Narrative Comments (cont.)

This study identifies the kind, amount and location of the major erosion problems. Sediment problems noted are entirely within Lake Mitchell.

Table 1 shows the present "Land Uses and Acres Needing Treatment" in the Firesteel Creek-Lake Mitchell Watershed by sub watersheds. The sub watersheds were selected by the South Dakota Department of Water and Natural Resources for use in water quality monitoring studies they are currently making. Local SCS personnel estimate that about 133,000 acres of the 230,000 acre or about 58 percent is adequately treated. The remaining 97,000 acres needs treatment by some combination of best management practices which will contribute to water quality improvement as well as erosion control on the land in the watershed area.

Table 2 - "Soil Erosion and Sediment Yield" shows estimates of grass erosion by sub watersheds. Estimates were made of sheet and rill erosion as well as erosion from other sources. The table also shows estimates of the amount of sediment by sources actually reaching Lake Mitchell annually. This is estimated to be 8,158 tons. It is estimated that it will displace 6.81 acre feet of water or about .08 of a percent of the total lake's capacity.

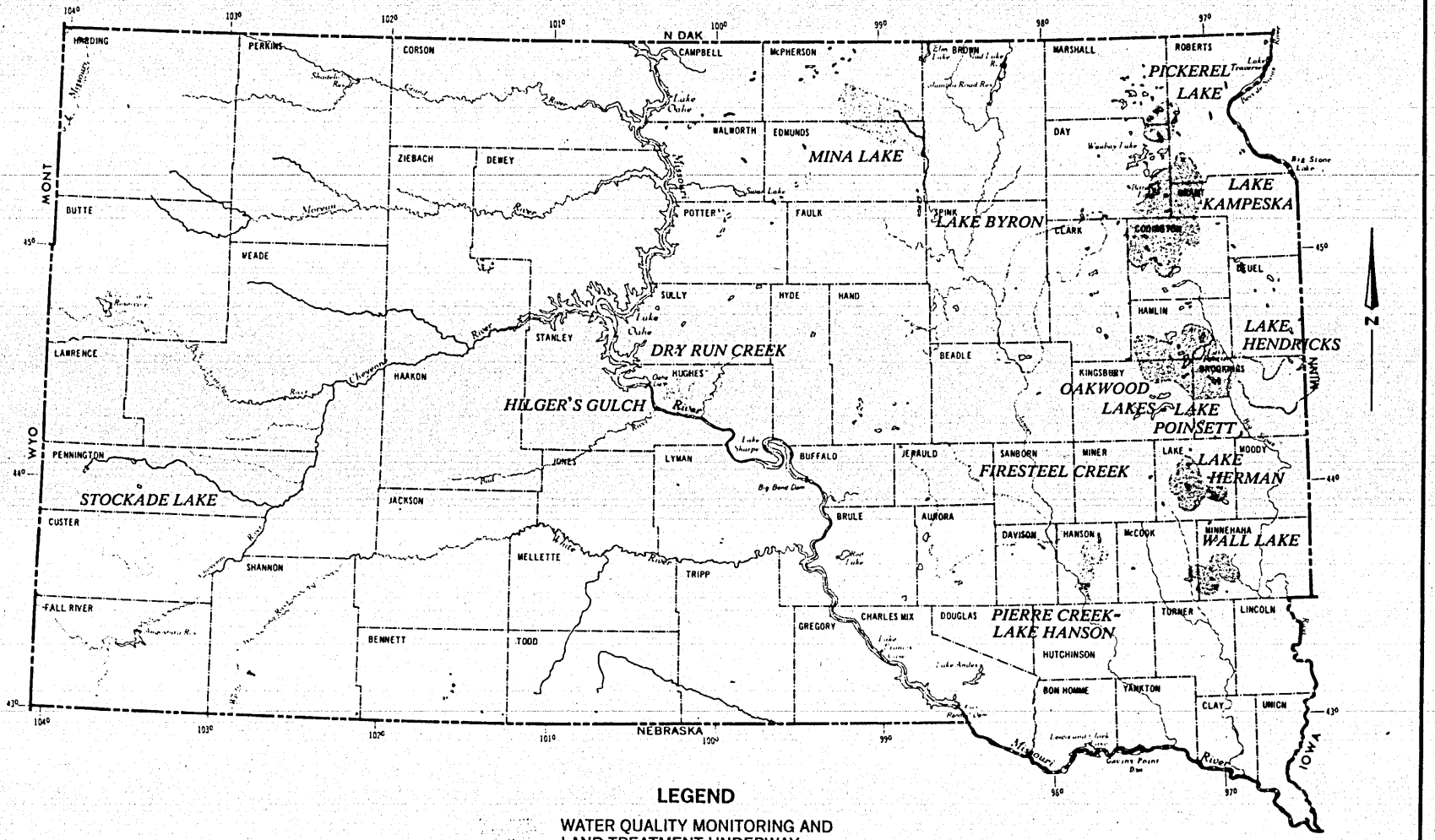
Wind erosion is a potential problem in this watershed. No estimates were developed showing the extent of the problem, since wind erosion will have little effect on water quality.

Table 3 - "Best Management Practices (Conservation Practices and Measures)" shows the major land treatment needed in this watershed area. The table also shows estimated amounts and probable costs to get the land in this watershed "adequately treated". It must be kept in mind, that these are "estimates" only, and that specific practices, and accurate amounts together with precise costs can only be obtained in a planning process with the owners and operators of each tract of land, based on their decisions on how each field is to be used and treated. This study does not show this sort of detailed information.

U. S. DEPARTMENT OF AGRICULTURE

SOIL CONSERVATION SERVICE

WATER QUALITY PROJECTS
SOUTH DAKOTA



LEGEND

WATER QUALITY MONITORING AND LAND TREATMENT UNDERWAY.

SEDIMENT DELIVERY AND LAND TREATMENT NEEDS TO BE STUDIED IN 1981

SOURCE:
SCS DRAWING NO. 5,S-32,929,
SCS DRAWING NO. 5,0-36,220, AND
INFORMATION FROM SCS FIELD PERSONNEL
ALBERS EQUAL AREA PROJECTION
USDA—SCS—LINCOLN, NEBR. 1981

SCALE 0 10 20 30 40 50 60 70 80 MILES
0 20 40 60 80 100 120 KILOMETERS

1-2-81
5,0-38,011

FIRESTEEL CREEK
(Lake Mitchell)

229,911 acres

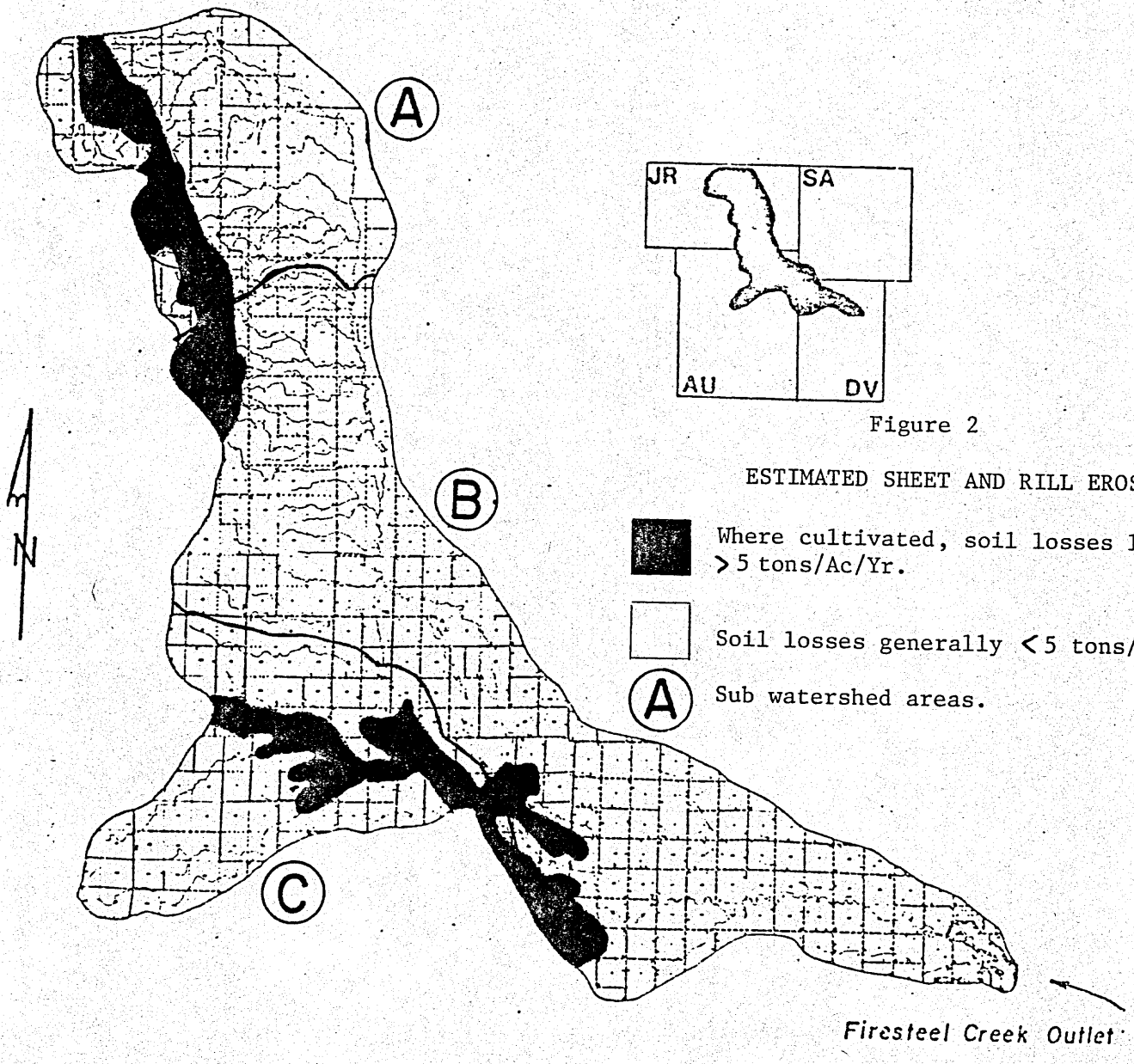


Figure 2

ESTIMATED SHEET AND RILL EROSION

Where cultivated, soil losses likely to b
> 5 tons/Ac/Yr.

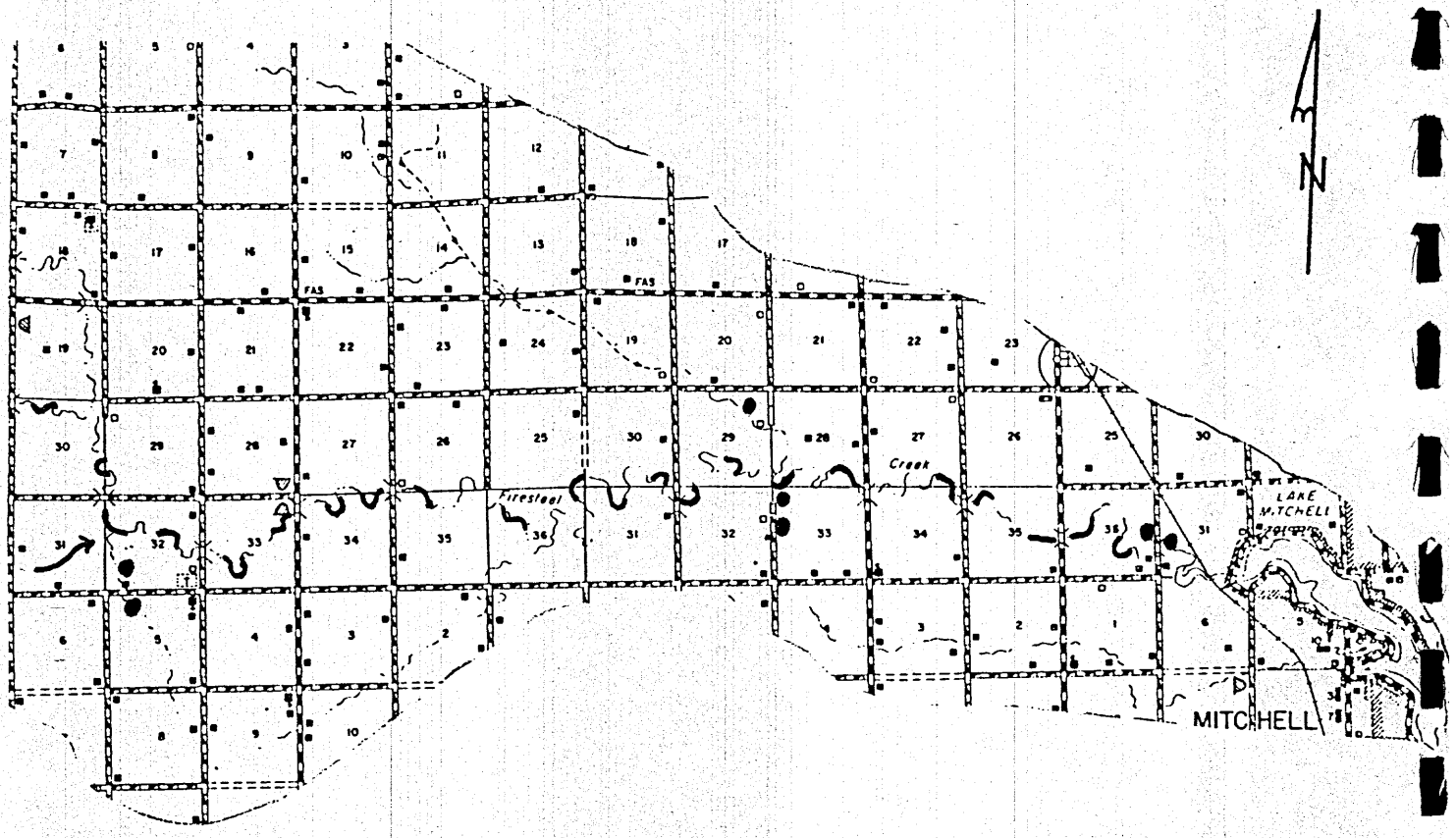
Soil losses generally < 5 tons/Ac/Yr.

A Sub watershed areas.

FIRESTEEL CREEK
(Lake Mitchell)

Critical Erosion

Davison County Portion



● Roadside Erosion

Streambank Erosion

Grassed Waterway Needed

TABLE 1

LAND USE AND ESTIMATED ACRES NEEDING TREATMENT
FIRESTEEL CREEK - LAKE MITCHELL WATERSHED

WQSA or SUBWATERSHEDS	LAND USE (Acres) and TREATMENT (Acres and Percent)											
	CROPLAND		GRASSLAND		WOODLAND		FARMSTEAD AND URBAN[1/]		NON SEDIMENT CONTRIBUTING[2/]		TOTAL	
	AC	%	AC	%	AC	%	AC	%	AC	%	AC	%
Subwatershed "A"	8,836	100	40,391	100	-	-	1,913[3/]	100			51,140	100
Adequately Treated	3,534	40	28,274	70	-	-	1,530	80			33,338	65
Needs Treatment	5,302	60	12,117	30	-	-	383	20			17,802	35
Subwatershed "B"	70,844	100	53,139	100	-	-	4,687[4/]	100	671	100	129,341	100
Adequately Treated	28,338	40	37,197	70	-	-	3,750	80	671	100	69,956	54
Needs Treatment	42,506	60	15,942	30	-	-	937	20	0	0	59,385	46
Subwatershed "C"	18,048	100	29,534	100	-	-	1,848	100			49,430	100
Adequately Treated	7,219	40	20,674	70	-	-	1,478	80			29,371	59
Needs Treatment	10,829	60	8,860	30	-	-	370	20	0	0	20,059	41
TOTAL FOR WATERSHED	97,728	100	123,064	100	-	-	8,448	100	671	100	229,911	100
Adequately Treated	39,091	40	86,145	70	-	-	6,758	80	671	100	132,665	58
Needs Treatment	58,637	60	36,919	30	-	-	1, 690	20	0	0	97,246	42

1/ Includes roads
2/ Lake Mitchell surface area
3/ 400 Acres Urban (Wessington Springs)
4/ 415 Acres Urban (Storla 40 acres, Mitchell and Lake Mitchell developments 375 acres)

TABLE 2

SOIL EROSION AND SEDIMENT YIELD
FIRESTEEL CREEK - LAKE MITCHELL WATERSHED AREA

WQSA or Subwatershed		Cropland	Grassland	Sub Total	Channels	Lakeshore	Construction [1]	Sub Total	Total	Acre Feet Per Yr. [2]	Percent [3]
Subwatershed "A"	Erosion Tons/Yr.	31,524	12,117	43,641				0	43,641		
	Sed. Yield [4] Tons/Yr.	19	7	26				0	26	.02	-
Subwatershed "B"	Erosion Tons/Yr.	191,148	15,942	207,090		1,060		1,060	208,150		
	Sed. Yield [4] Tons/Yr.	5,711	476	6,187	687 [5]	1,060		1,747	7,934	6.62	.08
Subwatershed "C"	Erosion Tons/Yr.	47,667	8,860	56,527				0	56,527		
	Sed. Yield [4] Tons/Yr.	167	31	198				0	198	.17	-
TOTAL WATERSHED	Erosion Tons/Yr.	270,339	36,919	307,258		1,060		1,060	308,318		
	Sed. Yield [4] Tons/Yr.	5,897	514	6,411	687	1,060		1,747	8,158	6.81 [6]	.08

1/ Not estimated, but has high potential. Planned developments should include a sediment control plan for before, during, and after construction.

2/ Tons converted to acre feet. Sediment in lake volume computed at 55 pounds per cubic foot due to submerged sediment.

3/ Annual sediment yield expressed as a percent of total lake volume. Lake volume of Lake Mitchell is 8,207 acre feet.

4/ Sediment deposited in Lake Mitchell.

5/ Total sediment in Lake Mitchell from Subwatershed "B" is 6,862 Tons/Yr. It is estimated that 10% of this is from channel bank erosion. Gross channel bank erosion was not estimated.

6/ Estimated present annual rate of sediment accumulation-source-Lake Mitchell Sediment Survey dated July 1979.

TABLE 3

BEST MANAGEMENT PRACTICES (Conservation Practices and Measures) 1/ 2/ 3/
FIRESTEEL CREEK - LAKE MITCHELL WATERSHED AREA

Conservation Practices	Unit	Unit 4/ Cost	Subwatershed "A"		Subwatershed "B"		Subwatershed "C"		Total Watershed	
			Amount Needed	Cost	Amount Needed	Cost	Amount Needed	Cost	Amount Needed	Cost
		(Dollars)		(Dollars)		(Dollars)		(Dollars)		(Dollars)
Cropland-97,728 Acres										
Conservation Cropping System	acre	-	8,836	-	70,844	-	18,048	-	97,728	-
Conservation Tillage System	acre	5	8,836	44,180	70,844	354,220	18,048	90,240	97,728	488,640
Grass & Legumes in Rotation	acre	18	904	16,272	7,249	130,482	1,847	33,246	10,000	180,000
Grass Waterways	acre	500	5	2,500	44	22,000	11	5,500	60	30,000
Waste Utilization	acre	3	814	2,442	6,524	19,572	1,662	4,986	9,000	27,000
Minimize Fall Tillage	acre	-	1,808	-	14,498	-	3,694	-	20,000	-
Pasture & Hayland Planting	acre	20	362	7,240	2,900	58,000	738	14,760	4,000	80,000
Minimize Pesticide Use	acre	-	452	-	3,625	-	923	-	5,000	-
Windstrip Cropping	acre	6	542	3,252	4,350	26,100	1,108	6,648	6,000	36,000
Terraces	mile	2,112	.5	1,056	3.5	7,392	1.0	2,112	5	10,560
Grassland -123,064 Acres			40,391		53,139		29,534			
Proper Grazing Use	acre	-	30,195		39,731		22,674	-	92,000	-
Pasture and Hayland Planting	acre	20	985	19,700	1,295	25,900	720	14,400	3,000	60,000
Deferred Grazing	acre	-	14,770	-	19,430	-	10,800	-	45,000	-
Planned Grazing Systems	acre	-	9,845	-	12,955	-	7,200	-	30,000	-
Livestock Water Stations	No.	1,000	3	3,000	4	4,000	3	3,000	10	10,000
Critical Area Planting	acre	1,000	7	7,000	9	9,000	4	4,000	20	20,000
Pasture & Hayland Management	acre	-	9,845	-	12,955	-	7,200	-	30,000	-
Waste Management Systems	No.	20,000	1	20,000	3	60,000	0		4	80,000
Wildlife Upland Habitat Mgmt.	acre	5	26	130	35	175	19	95	80	400
Wildlife Wetland Habitat Mtnce.	acre	4	26	104	35	140	19	76	80	320
Farmsteads, Urban & Other, 8,448 acres										
Sediment Control Measures 5/	acre	2,000	2	4,000	18	36,000	0	-	20	40,000
TOTALS - Total acres - 229,911 acres		-	-	130,876	-	752,981	-	179,063	-	1,062,920 or 4.62 per acre

1/ Needed to get (Land Adequately Treated).
2/ Refer to Soil Conservation Service Technical Guide for South Dakota 1981.
3/ On site investigation and planning are necessary to determine kinds, locations, sizes, extent & costs of practices (BMP's).
4/ Refer to Soil Conservation Service Cost-Return Handbook for South Dakota 1981.
5/ Examples of measures are: cover and green manure crop, filter strips, lined and grassed waterways, diversions, mulching, sediment basins, streambank protection, and critical area planting.

Appendix B

Water Quality Summary Tables and Figures

Site	Description
46FC01 (FC-1)	Latitude 43 Deg., 44 Min., 25 Sec., Longitude 98 Deg., 1 Min., 32 Sec., Township 103N, Range 60W, Section 10. NE1/4, SW1/4, SW1/4, NW1/4. This site is located on the east side of the bridge over the spillway on Highway #37 north.
46FC02 (FC-2)	Latitude 43 Deg., 44 Min., 39 Sec., Longitude 98 Deg., 1 Min., 34 Sec., Township 103N, Range 60W, Section 10. SE1/4, NW1/4, NW1/4, NW1/4. This in-lake site is located in the northeast corner of Lake Mitchell, 0.5 miles north of the outlet.
46FC03 (FC-3)	Latitude 43 Deg., 45 Min., 22 Sec., Longitude 98 Deg., 3 Min., 26 Sec., Township 103N, Range 60W, Section 5. NW1/4, NW1/4, SW1/4, NE1/4. This in-lake site is located just off the west side of the boat ramp, .75 miles southeast of the Firesteel Creek inlet.
46FC04 (FC-4)	Latitude 43 Deg., 46 Min., 43 Sec., Longitude 98 Deg., 9 Min., 58 Sec., Township 104N, Range 61W, Section 28. SW1/4, SW1/4, NW1/4, SW1/4. This site is located 4.5 miles west of Lake Mitchell and .25 miles north on the road marked "travel at own risk".
46FC05 (FC-5)	Latitude 43 Deg., 44 Min., 41 Sec., Longitude 98 Deg., 2 Min., 51 Sec., Township 103N, Range 60W, Section 8. SE1/4, NE1/4, NE1/4, NE1/4. This site is located at the concrete bridge 1.5 miles south 100 feet west of the Firesteel Creek inlet.
46FC06 (FC-6)	Latitude 43 Deg., 45 Min., 34 Sec., Longitude 98 Deg., 4 Min., 14 Sec., Township 103N, Range 60W, Section 6. NE1/4, NW1/4, NE1/4, NE1/4. This in-lake site is near the bridge that spans the Firesteel Creek inlet.
46FC07 (FC-7)	Latitude 43 Deg., 47 Min., 22 Sec., Longitude 98 Deg., 19 Min., 32 Sec., Township 104N, Range 62W, Section 25. NE1/4, NE1/4, NE1/4, NE1/4. This site is located 50 feet approximately WNW of bridge, 12 miles west and 2 miles north of Firesteel Creek inlet.
46FC08 (FC-8)	Latitude 43 Deg., 55 Min., 9 Sec., Longitude 98 Deg., 27 Min., 4 Sec., Township 105N, Range 63W, Section 7. SW1/4, SW1/4, NW1/4, NW1/4. This site is located 19 miles west and 11 miles north of the Firesteel Creek inlet.
46FC09 (FC-9)	Latitude 44 Deg., 4 Min., 3 Sec., Longitude 98 Deg., 28 Min., 46 Sec., Township 107N, Range 64W, Section 23. NE1/4, NW1/4, NW1/4, NE1/4. This stream site is located 1.5 miles west of the junction of Highways 34 and 281 on Highway 34.
46FC10 (FC-10)	Latitude 44 Deg., 6 Min., 40 Sec., Longitude 98 Deg., 28 Min., 58 Sec., Township 107N, Range 64W, Section 2. NE1/4, NE1/4, NE1/4, NW1/4. This stream site is located 3 miles north and 1.5 miles west of the junction of Highways 34 and 281, ten feet south of north fence along road.

Table IV-1. Firesteel Creek/Lake Mitchell sample site descriptions.

46FC11 (FC-11)	Latitude 43 Deg., 46 Min., 36 Sec., Longitude 98 Deg., 14 Min., 44 Sec., Township 104N, Range 62W, Section 27. NE1/4, SE1/4, SE1/4, SE1/4. This stream site is located 9 miles west and 1 mile north of the Firesteel Creek inlet.
46FC12 (FC-12)	Latitude 43 Deg., 48 Min., 16 Sec., Longitude 98 Deg., 18 Min., 32 Sec., Township 104N, Range 62W, Section 19. NE1/4, NE1/4, NW1/4, NE1/4. This stream site is located 3 miles north and 11 miles west of the Firesteel Creek inlet or 3 miles west and 2 miles north of Site 11.

B90302HB.wq

Table IV-1. Firesteel Creek/Lake Mitchell sample site descriptions.

STORET RETRIEVAL DATE 84/08/09 - INVENT - VERSION OF SEP. 1981

46FC01
43 44 25.0 098 01 31.0 2
LK MITCHELL OUTLET SD HWY 37 N 103N-60W-S10 BCCA
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 CLASS 00 CSN-RSP 0663787-0693805

/TYPA/AMBNT/STREAM

PARAMETER				RMK	NUMBER	MEAN	VARIANCE	STAN DEV	MAXIMUM	MINIMUM	BEG DATE	END DATE
00010	WATER	TEMP	CENT		2	20.5000	.500000	.707107	21.0000	20.0000	82/06/01	82/06/14
00011	WATER	TEMP	FAHN		1	64.4000			64.4000	64.4000	82/06/04	82/06/04
00020	AIR	TEMP	CENT		3	24.0000	4.00000	2.00000	26.0000	22.0000	82/06/01	82/06/14
00021	AIR	TEMP	FAHN		3	75.2000	12.9629	3.60040	78.8000	71.6000	82/06/01	82/06/14
00300	DO		MG/L		3	8.96666	.223503	.472761	9.50000	8.60000	82/06/01	82/06/14
00400	PH		SU		3	8.43333	.083481	.288930	8.60000	8.10000	82/06/01	82/06/14
00500	RESIDUE	TOTAL	MG/L		3	677.333	1374.50	37.0742	719.000	648.000	82/06/01	82/06/14
00530	RESIDUE	TOT NFLT	MG/L		3	27.6667	434.334	20.8407	46.0000	5.00000	82/06/01	82/06/14
00610	NH3+NH4-	N TOTAL	MG/L		3	.166667	.003433	.058595	.210000	.100000	82/06/01	82/06/14
00613	NO2-N	DISS	MG/L	K	3	.010000	.000000	.000000	.010000	.010000	82/06/01	82/06/14
00620	NO3-N	TOTAL	MG/L	K	3	.100000	-.186E-08	.000000	.100000	.100000	82/06/01	82/06/14
00625	TOT KJEL	N	MG/L		3	.506666	.012434	.111507	.590000	.380000	82/06/01	82/06/14
31616	FEC COLI	MFM-FCBR	/100ML		1	17.0000			17.0000	17.0000	82/06/01	82/06/01
				K	1	10.0000			10.0000	10.0000	82/06/14	82/06/14
70300	RESIDUE	DISS-180	C MG/L	TOT	2	13.5000	24.5000	4.94975	17.0000	10.0000	82/06/01	82/06/14
70505	T PO4	P-COL	MG/L		3	649.666	1190.00	34.4964	687.000	619.000	82/06/01	82/06/14
70507	PHOS-T	ORTHO	MG/L P		3	.100667	.004729	.068770	.180000	.058000	82/06/01	82/06/14
					3	.049000	.001687	.041073	.096000	.020000	82/06/01	82/06/14

Table IV-2.

STORET RETRIEVAL DATE 84/08/09 - INVENT - VERSION OF SEP. 1981

46FC01
43 44 25.0 098 01 31.0 2
LK MITCHELL OUTLET SD HWY 37 N 103N-60W-S10 BCCA
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
/TYPA/AMBNT/STREAM 21SDLAKE 820904
0000 CLASS 00 CSN-RSP 0663787-0693805

PARAMETER				RMK	NUMBER	MEAN	VARIANCE	STAN DEV	MAXIMUM	MINIMUM	BEG DATE	END DATE
00010	WATER	TEMP	CENT		4	11.3900	53.9951	7.34814	20.0000	5.00000	83/03/30	83/06/28
00011	WATER	TEMP	FAHN		4	52.5000	175.000	13.2288	68.0000	41.0000	83/03/30	83/06/28
00020	AIR	TEMP	CENT		3	11.4867	31.1259	5.57905	17.8000	7.22000	83/03/30	83/06/28
00021	AIR	TEMP	FAHN		3	52.6667	100.336	10.0168	64.0000	45.0000	83/03/30	83/06/28
00400	PH		SU		4	7.39999	.126770	.356048	7.80000	7.10000	83/03/30	83/06/28
00403	LAB	PH	SU		3	8.11666	.037865	.194588	8.33000	7.95000	83/03/30	83/06/28
00500	RESIDUE	TOTAL	MG/L		4	688.750	2653.00	51.5073	754.000	628.000	83/03/30	83/06/28
00530	RESIDUE	TOT NFLT	MG/L		4	8.00000	51.3333	7.16473	16.0000	1.00000	83/03/30	83/06/28
00610	NH3+NH4-	N TOTAL	MG/L		4	.050000	.000800	.028284	.090000	.030000	83/03/30	83/06/28
00613	NO2-N	DISS	MG/L	K	3	.010000	.000000	.000000	.010000	.010000	83/03/30	83/06/28
00620	NO3-N	TOTAL	MG/L	K	3	.100000	-.186E-08	.000000	.100000	.100000	83/03/30	83/06/28
00625	TOT KJEL	N	MG/L		4	.677500	.052692	.229547	.940000	.480000	83/03/30	83/06/28
31616	FEC COLI	MFM-FCBR	/100ML		1	310.000			310.000	310.000	83/06/28	83/06/28
				K	3	10.0000	.000000	.000000	10.0000	10.0000	83/03/30	83/05/12
				TOT	4	85.0000	22500.0	150.000	310.000	10.0000	83/03/30	83/06/28
70300	RESIDUE	DISS-180	C MG/L		4	680.750	3090.33	55.5908	751.000	616.000	83/03/30	83/06/28
70505	T PO4	P-COL	MG/L		4	.076250	.000355	.018839	.102000	.058000	83/03/30	83/06/28
70507	PHOS-T	ORTHO	MG/L P		4	.014000	.000125	.011165	.030000	.005000	83/03/30	83/06/28

Table IV-3.

STORET RETRIEVAL DATE 84/08/09 - INVENT - VERSION OF SEP. 1981

46FC02
43 44 39.0 098 01 34.0 2
NE LK MTCHLL .5 MI N OF OUTLET 103N 60W S10 BBBC
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 CLASS 00 CSN-RSP 0663788-0693806

/TYPA/AMBNT/LAKE

PARAMETER				RMK	NUMBER	MEAN	VARIANCE	STAN DEV	MAXIMUM	MINIMUM	BEG DATE	END DATE
00011	WATER	TEMP	FAHN		3	43.3333	37.3359	6.11031	50.0000	38.0000	81/03/29	81/04/04
00020	AIR	TEMP	CENT		3	5.73999	7.80341	2.79346	8.33000	2.78000	81/03/29	81/04/04
00021	AIR	TEMP	FAHN		3	42.3333	25.3340	5.03329	47.0000	37.0000	81/03/29	81/04/04
00300	DO		MG/L		3	10.8000	.390381	.624805	11.3000	10.1000	81/03/29	81/04/04
00400	PH		SU		3	8.06667	.003349	.057873	8.10000	8.00000	81/03/29	81/04/04
00500	RESIDUE	TOTAL	MG/L		3	824.000	76.0000	8.71780	830.000	814.000	81/03/29	81/04/04
00515	RESIDUE	DISS-105	C MG/L		2	801.000	72.0000	8.48528	807.000	795.000	81/03/29	81/04/01
00530	RESIDUE	TOT NFLT	MG/L		3	17.6667	37.3340	6.11015	23.0000	11.0000	81/03/29	81/04/04
00610	NH3+NH4-	N TOTAL	MG/L		1	.060000			.060000	.060000	81/03/29	81/03/29
				K	2	.020000	-.232E-09	.000000	.020000	.020000	81/04/01	81/04/04
00613	NO2-N	DISS	MG/L	TOT	3	.033333	.000533	.023094	.060000	.020000	81/03/29	81/04/04
00620	NO3-N	TOTAL	MG/L	K	3	.010000	.000000	.000000	.010000	.010000	81/03/29	81/04/04
00625	TOT KJEL	N	MG/L	K	3	.100000	-.186E-08	.000000	.100000	.100000	81/03/29	81/04/04
00671	PHOS-DIS	ORTHO	MG/L P		3	.560000	.004901	.070004	.610000	.480000	81/03/29	81/04/04
31616	FEC COLI	MFM-FCBR	/100ML		2	.022000	.000008	.002828	.024000	.020000	81/03/29	81/04/01
					1	60.0000			60.0000	60.0000	81/04/01	81/04/01
70300	RESIDUE	DISS-180	C MG/L	K	1	3.00000			3.00000	3.00000	81/03/29	81/03/29
70505	T PO4	P-COL	MG/L	TOT	2	31.5000	1624.50	40.3051	60.0000	3.00000	81/03/29	81/04/01
70507	PHOS-T	ORTHO	MG/L P		1	817.000			817.000	817.000	81/04/04	81/04/04
					3	.060000	.000073	.008544	.068000	.051000	81/03/29	81/04/04
					1	.040000			.040000	.040000	81/04/04	81/04/04

Table IV-4.

STORET RETRIEVAL DATE 84/08/09 - INVENT - VERSION OF SEP. 1981

46FC02
43 44 39.0 098 01 34.0 2
NE LK MTCHLL .5 MI N OF OUTLET 103N 60W S10 BBBC
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
/TYPA/AMBNT/LAKE 21SDLAKE 820904
0000 CLASS 00 CSN-RSP 0663788-0693806

PARAMETER				RMK	NUMBER	MEAN	VARIANCE	STAN DEV	MAXIMUM	MINIMUM	BEG DATE	END DATE
00010	WATER	TEMP	CENT		12	15.5417	76.2481	8.73202	28.0000	.000000	82/03/16	82/10/15
00011	WATER	TEMP	FAHN		2	53.6000	317.520	17.8191	66.2000	41.0000	82/06/04	82/10/15
00020	AIR	TEMP	CENT		12	14.7633	137.007	11.7050	34.0000	-.221E+01	82/02/23	82/10/15
00021	AIR	TEMP	FAHN		12	58.5666	444.384	21.0804	93.2000	28.0000	82/02/23	82/10/15
00078	TRANSP	SECCHI	METERS		1	10.9000			10.9000	10.9000	82/10/15	82/10/15
00300	DO		MG/L		13	8.75769	5.86249	2.42126	13.7000	6.00000	82/02/23	82/10/15
00400	PH		SU		11	8.08636	.140039	.374218	8.55000	7.40000	82/02/23	82/08/04
00403	LAB	PH	SU		1	7.93000			7.93000	7.93000	82/05/26	82/05/26
00410	T ALK	CACO3	MG/L		1	167.000			167.000	167.000	82/10/15	82/10/15
00500	RESIDUE	TOTAL	MG/L		13	654.846	25065.2	158.320	763.000	145.000	82/02/23	82/10/15
00530	RESIDUE	TOT NFLT	MG/L		12	14.1667	149.788	12.2388	41.0000	4.00000	82/02/23	82/08/04
00610	NH3+NH4-	N TOTAL	MG/L		12	.155833	.013208	.114928	.340000	.020000	82/02/23	82/10/15
				K	1	.020000			.020000	.020000	82/03/23	82/03/23
				TOT	13	.145384	.013527	.116306	.340000	.020000	82/02/23	82/10/15
00613	NO2-N	DISS	MG/L		1	.040000			.040000	.040000	82/03/23	82/03/23
				K	12	.010000	.634E-10	.000008	.010000	.010000	82/02/23	82/10/15
				TOT	13	.012308	.000069	.008321	.040000	.010000	82/02/23	82/10/15
00620	NO3-N	TOTAL	MG/L		3	.266667	.003333	.057735	.300000	.200000	82/02/23	82/05/24
				K	10	.100000	.000000	.000000	.100000	.100000	82/03/23	82/10/15
				TOT	13	.138461	.005897	.076795	.300000	.100000	82/02/23	82/10/15
00625	TOT KJEL	N	MG/L		13	.953846	.189442	.435249	1.78000	.220000	82/02/23	82/10/15
31616	FEC COLI	MFM-FCBR	/100ML		5	222.000	189830	435.694	1000.00	3.00000	82/05/16	82/06/14
				K	5	8.60000	9.80005	3.13050	10.0000	3.00000	82/02/23	82/08/04
				TOT	10	115.300	97022.8	311.485	1000.00	3.00000	82/02/23	82/08/04
70300	RESIDUE	DISS-180	C MG/L		13	633.231	23095.3	151.971	723.000	141.000	82/02/23	82/10/15
70505	T PO4	P-COL	MG/L		12	.118166	.004627	.068021	.200000	.031000	82/02/23	82/08/04
70506	SOL PO4-	T P-COL	MG/L		1	.071000			.071000	.071000	82/10/15	82/10/15
70507	PHOS-T	ORTHO	MG/L P		13	.065692	.002041	.045178	.160000	.017000	82/02/23	82/10/15

Table IV-5.

STORET RETRIEVAL DATE 84/08/09 - INVENT - VERSION OF SEP. 1981

46FC02
43 44 39.0 098 01 34.0 2
NE LK MTCHLL .5 MI N OF OUTLET 103N 60W S10 BBBC
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 CLASS 00 CSN-RSP 0663788-0693806

/TYPA/AMBNT/LAKE

PARAMETER			
00010	WATER	TEMP	CENT
00011	WATER	TEMP	FAHN
00020	AIR	TEMP	CENT
00021	AIR	TEMP	FAHN
00300	DO		MG/L
00400	PH		SU
00403	LAB	PH	SU
00500	RESIDUE	TOTAL	MG/L
00530	RESIDUE	TOT NFLT	MG/L
00610	NH3+NH4-	N TOTAL	MG/L
00613	NO2-N	DISS	MG/L
00620	NO3-N	TOTAL	MG/L
00625	TOT KJEL	N	MG/L
31616	FEC COLI	MFM-FCBR	/100ML
70300	RESIDUE	DISS-180 C	MG/L
70505	T PO4	P-COL	MG/L
70507	PHOS-T	ORTHO	MG/L P

RMK	NUMBER	MEAN	VARIANCE	STAN DEV	MAXIMUM	MINIMUM	BEG DATE	END DATE
	4	11.2500	56.4591	7.51393	20.0000	4.44000	83/03/30	83/06/28
	4	52.2500	182.917	13.5247	68.0000	40.0000	83/03/30	83/06/28
	3	11.1167	33.8082	5.81448	17.8000	7.22000	83/03/30	83/06/28
	3	52.0000	109.000	10.4403	64.0000	45.0000	83/03/30	83/06/28
	3	10.8667	1.42346	1.19309	11.7000	9.50000	83/03/30	83/05/12
	4	7.77499	.242615	.492559	8.40000	7.20000	83/03/30	83/06/28
	3	8.23333	.096832	.311179	8.59000	8.02000	83/03/30	83/06/28
	4	694.500	2350.33	48.4802	758.000	640.000	83/03/30	83/06/28
	3	12.0000	112.000	10.5830	24.0000	4.00000	83/03/30	83/06/28
K	1	1.00000			1.00000	1.00000	83/05/12	83/05/12
TOT	4	9.25000	104.917	10.2429	24.0000	1.00000	83/03/30	83/06/28
	4	.052500	.001025	.032016	.100000	.030000	83/03/30	83/06/28
K	3	.010000	.000000	.000000	.010000	.010000	83/03/30	83/06/28
K	3	.100000	-.186E-08	.000000	.100000	.100000	83/03/30	83/06/28
	4	.555000	.032900	.181384	.780000	.340000	83/03/30	83/06/28
	1	10.0000			10.0000	10.0000	83/04/19	83/04/19
K	3	10.0000	.000000	.000000	10.0000	10.0000	83/03/30	83/06/28
TOT	4	10.0000	.000000	.000000	10.0000	10.0000	83/03/30	83/06/28
	4	685.250	3194.33	56.5184	754.000	616.000	83/03/30	83/06/28
	4	.063000	.000039	.006218	.068000	.054000	83/03/30	83/06/28
	4	.012250	.000015	.003862	.016000	.008000	83/03/30	83/06/28

Table IV-6.

STORET RETRIEVAL DATE 84/08/09 - INVENT - VERSION OF SEP. 1981

46FC03
43 45 22.0 098 03 26.0 2
NW LK MTCHLL .75 MI SE FC INLET 103N 60W S5 ACBB
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 CLASS 00 CSN-RSP 0663789-0693807

/TYPA/AMBNT/LAKE

PARAMETER				RMK	NUMBER	MEAN	VARIANCE	STAN DEV	MAXIMUM	MINIMUM	BEG DATE	END DATE
00011	WATER	TEMP	FAHN		3	47.0000	21.0000	4.58258	52.0000	43.0000	81/03/29	81/04/04
00020	AIR	TEMP	CENT		2	2.50000	1.37780	1.17380	3.33000	1.67000	81/04/01	81/04/04
00021	AIR	TEMP	FAHN		2	36.5000	4.50000	2.12132	38.0000	35.0000	81/04/01	81/04/04
00300	DO		MG/L		2	10.4000	.080246	.283277	10.6000	10.2000	81/04/01	81/04/04
00400	PH		SU		3	7.93333	.543495	.737221	8.50000	7.10000	81/03/29	81/04/04
00500	RESIDUE	TOTAL	MG/L		3	820.666	91.0000	9.53939	830.000	811.000	81/03/29	81/04/04
00515	RESIDUE	DISS-105 C	MG/L		3	801.000	49.0000	7.00000	809.000	796.000	81/03/29	81/04/04
00530	RESIDUE	TOT NFLT	MG/L		3	19.6667	116.334	10.7858	32.0000	12.0000	81/03/29	81/04/04
00610	NH3+NH4-	N TOTAL	MG/L		1	.040000			.040000	.040000	81/03/29	81/03/29
				K	2	.020000	-.232E-09	.000000	.020000	.020000	81/04/01	81/04/04
				TOT	3	.026667	.000133	.011547	.040000	.020000	81/03/29	81/04/04
00613	NO2-N	DISS	MG/L	K	3	.010000	.000000	.000000	.010000	.010000	81/03/29	81/04/04
00620	NO3-N	TOTAL	MG/L	K	3	.100000	-.186E-08	.000000	.100000	.100000	81/03/29	81/04/04
00625	TOT KJEL	N	MG/L		3	.570000	.000700	.026466	.590000	.540000	81/03/29	81/04/04
31616	FEC COLI	MFM-FCBR	/100ML		2	6.50000	24.5000	4.94975	10.0000	3.00000	81/03/29	81/04/01
70505	T PO4	P-COL	MG/L		3	.079000	.000343	.018521	.098000	.061000	81/03/29	81/04/04
70507	PHOS-T	ORTHO	MG/L P		2	.047500	.000544	.023335	.064000	.031000	81/03/29	81/04/01
				K	1	.005000			.005000	.005000	81/04/04	81/04/04
				TOT	3	.033333	.000874	.029569	.064000	.005000	81/03/29	81/04/04

Table IV-7.

STORET RETRIEVAL DATE 84/08/09 - INVENT - VERSION OF SEP. 1981

46FC03
43 45 22.0 098 03 26.0 2
NW LK MTCHLL .75 MI SE FC INLET 103N 60W S5 ACBB
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 CLASS 00 CSN-RSP 0663789-0693807

/TYPA/AMBNT/LAKE

PARAMETER				RMK	NUMBER	MEAN	VARIANCE	STAN DEV	MAXIMUM	MINIMUM	BEG DATE	END DATE
00010	WATER	TEMP	CENT		13	14.4615	90.2693	9.50101	29.0000	.000000	82/02/23	82/10/15
00011	WATER	TEMP	FAHN		2	54.5000	364.500	19.0919	68.0000	41.0000	82/06/04	82/10/15
00020	AIR	TEMP	CENT		12	14.3892	121.598	11.0272	31.0000	-.221E+01	82/02/23	82/10/15
00021	AIR	TEMP	FAHN		12	57.8999	394.018	19.8499	87.8000	28.0000	82/02/23	82/10/15
00300	DO		MG/L		13	9.36153	1.47095	1.21283	11.6000	7.70000	82/02/23	82/10/15
00400	PH		SU		12	8.07499	.161621	.402021	8.60000	7.40000	82/02/23	82/10/15
00403	LAB	PH	SU		1	7.87000			7.87000	7.87000	82/05/26	82/05/26
00410	T ALK	CACO3	MG/L		1	168.000			168.000	168.000	82/10/15	82/10/15
00500	RESIDUE	TOTAL	MG/L		13	643.308	26745.0	163.539	740.000	112.000	82/02/23	82/10/15
00515	RESIDUE	DISS-105	C MG/L		1	643.000			643.000	643.000	82/10/15	82/10/15
00530	RESIDUE	TOT NFLT	MG/L		13	24.0000	896.833	29.9472	118.000	3.00000	82/02/23	82/10/15
00610	NH3+NH4-	N TOTAL	MG/L		12	.166666	.005461	.073897	.280000	.040000	82/02/23	82/08/04
				K	1	.020000			.020000	.020000	82/10/15	82/10/15
				TOT	13	.155384	.006660	.081611	.280000	.020000	82/02/23	82/10/15
00613	NO2-N	DISS	MG/L		1	.010000			.010000	.010000	82/08/04	82/08/04
				K	12	.010000	.634E-10	.000008	.010000	.010000	82/02/23	82/10/15
				TOT	13	.010000	.582E-10	.000008	.010000	.010000	82/02/23	82/10/15
00620	NO3-N	TOTAL	MG/L		3	.433333	.003334	.057740	.500000	.400000	82/02/23	82/03/23
				K	10	.100000	.000000	.000000	.100000	.100000	82/05/16	82/10/15
				TOT	13	.176923	.021923	.148065	.500000	.100000	82/02/23	82/10/15
00625	TOT KJEL	N	MG/L		13	.826923	.124256	.352500	1.51000	.080000	82/02/23	82/10/15
31616	FEC COLI	MFM-FCBR	/100ML		6	26.6667	521.468	22.8357	60.0000	6.00000	82/05/20	82/08/04
				K	3	10.0000	.000000	.000000	10.0000	10.0000	82/02/23	82/03/23
				TOT	9	21.1111	395.362	19.8837	60.0000	6.00000	82/02/23	82/08/04
70300	RESIDUE	DISS-180	C MG/L		12	617.333	26970.0	164.225	715.000	109.000	82/02/23	82/08/04
70505	T PO4	P-COL	MG/L		12	.154250	.008875	.094209	.369000	.064000	82/02/23	82/08/04
70506	SOL PO4-	T P-COL	MG/L		1	.068000			.068000	.068000	82/10/15	82/10/15
70507	PHOS-T	ORTHO	MG/L P		13	.075231	.003886	.062334	.222000	.026000	82/02/23	82/10/15

Table IV-8.

STORET RETRIEVAL DATE 84/08/09 - INVENT - VERSION OF SEP. 1981

46FC03
43 45 22.0 098 03 26.0 2
NW LK MTCHLL .75 MI SE FC INLET 103N 60W S5 ACBB
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 CLASS 00 CSN-RSP 0663789-0693807

/TYPA/AMBNT/LAKE

PARAMETER				RMK	NUMBER	MEAN	VARIANCE	STAN DEV	MAXIMUM	MINIMUM	BEG DATE	END DATE
00010	WATER	TEMP	CENT		4	12.0925	59.7404	7.72919	21.7000	5.56000	83/03/30	83/06/28
00011	WATER	TEMP	FAHN		4	53.7500	192.917	13.8894	71.0000	42.0000	83/03/30	83/06/28
00020	AIR	TEMP	CENT		4	11.2400	23.5940	4.85736	18.3000	7.22000	83/03/30	83/06/28
00021	AIR	TEMP	FAHN		4	52.2500	76.9167	8.77021	65.0000	45.0000	83/03/30	83/06/28
00300	DO		MG/L		3	11.1667	3.36340	1.83396	12.6000	9.10000	83/03/30	83/05/12
00400	PH		SU		4	8.12500	.235921	.485717	8.60000	7.50000	83/03/30	83/06/28
00403	LAB	PH	SU		3	8.14999	.029221	.170940	8.34000	8.01000	83/03/30	83/06/28
00500	RESIDUE	TOTAL	MG/L		4	710.500	1780.33	42.1940	767.000	665.000	83/03/30	83/06/28
00530	RESIDUE	TOT NFLT	MG/L		4	23.0000	214.000	14.6287	44.0000	13.0000	83/03/30	83/06/28
00610	NH3+NH4-	N TOTAL	MG/L		4	.055000	.001367	.036968	.110000	.030000	83/03/30	83/06/28
00613	NO2-N	DISS	MG/L	K	3	.010000	.000000	.000000	.010000	.010000	83/03/30	83/06/28
00620	NO3-N	TOTAL	MG/L	K	3	.100000	-.186E-08	.000000	.100000	.100000	83/03/30	83/06/28
00625	TOT KJEL	N	MG/L		4	.575000	.068033	.260832	.900000	.310000	83/03/30	83/06/28
31616	FEC COLI	MFM-FCBR	/100ML		1	50.0000			50.0000	50.0000	83/06/28	83/06/28
				K	3	10.0000	.000000	.000000	10.0000	10.0000	83/03/30	83/05/12
70300	RESIDUE	DISS-180	C MG/L	TOT	4	20.0000	400.000	20.0000	50.0000	10.0000	83/03/30	83/06/28
70505	T PO4	P-COL	MG/L		4	687.500	2949.67	54.3108	754.000	621.000	83/03/30	83/06/28
70507	PHOS-T	ORTHO	MG/L P		4	.077750	.000069	.008302	.088000	.071000	83/03/30	83/06/28
					3	.011333	.000037	.006110	.018000	.006000	83/04/19	83/06/28
				K	1	.005000			.005000	.005000	83/03/30	83/03/30
				TOT	4	.009750	.000035	.005909	.018000	.005000	83/03/30	83/06/28

Table IV-9.

STORET RETRIEVAL DATE 84/08/09 - INVENT - VERSION OF SEP. 1981

46FC04
43 46 43.0 098 09 58.0 2
4.5 MI W .75 MI N OF FC INLET 104N 61W S28 CCBB
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 CLASS 00 CSN-RSP 0663790-0693808

/TYPA/AMBNT/STREAM/RUNOFF

PARAMETER				RMK	NUMBER	MEAN	VARIANCE	STAN DEV	MAXIMUM	MINIMUM	BEG DATE	END DATE
00011	WATER	TEMP	FAHN		3	45.0000	37.0000	6.08276	52.0000	41.0000	81/03/29	81/04/04
00020	AIR	TEMP	CENT		3	4.81333	21.4082	4.62690	10.0000	1.11000	81/03/29	81/04/04
00021	AIR	TEMP	FAHN		3	40.6667	69.3359	8.32682	50.0000	34.0000	81/03/29	81/04/04
00300	DO		MG/L		3	9.99999	.210205	.458481	10.5000	9.60000	81/03/29	81/04/04
00400	PH		SU		3	7.46666	.093422	.305650	7.80000	7.20000	81/03/29	81/04/04
00500	RESIDUE	TOTAL	MG/L		3	2171.00	22116.0	148.714	2277.00	2001.00	81/03/29	81/04/04
00515	RESIDUE	DISS-105	C MG/L		3	2136.33	36795.0	191.820	2266.00	1916.00	81/03/29	81/04/04
00530	RESIDUE	TOT NFLT	MG/L		3	34.6667	1902.33	43.6157	85.0000	8.00000	81/03/29	81/04/04
00610	NH3+NH4-	N TOTAL	MG/L		2	.065000	.001250	.035355	.090000	.040000	81/03/29	81/04/04
				K	1	.020000			.020000	.020000	81/04/01	81/04/01
				TOT	3	.050000	.001300	.036056	.090000	.020000	81/03/29	81/04/04
00613	NO2-N	DISS	MG/L	K	3	.010000	.000000	.000000	.010000	.010000	81/03/29	81/04/04
00620	NO3-N	TOTAL	MG/L	K	3	.100000	-.186E-08	.000000	.100000	.100000	81/03/29	81/04/04
00625	TOT KJEL	N	MG/L		3	.776666	.233234	.482943	1.33000	.440000	81/03/29	81/04/04
00671	PHOS-DIS	ORTHO	MG/L P		2	.081500	.001105	.033234	.105000	.058000	81/04/01	81/04/04
31616	FEC COLI	MFM-FCBR	/100ML		1	20.0000			20.0000	20.0000	81/04/01	81/04/01
				K	1	3.00000			3.00000	3.00000	81/03/29	81/03/29
70505	T PO4	P-COL	MG/L	TOT	2	11.5000	144.500	12.0208	20.0000	3.00000	81/03/29	81/04/01
70506	SOL PO4-	T P-COL	MG/L		1	.078000			.078000	.078000	81/03/29	81/03/29
70507	PHOS-T	ORTHO	MG/L P		2	.112000	.005832	.076368	.166000	.058000	81/04/01	81/04/04
					1	.017000			.017000	.017000	81/03/29	81/03/29

Table IV-10.

STORET RETRIEVAL DATE 84/08/09 - INVENT - VERSION OF SEP. 1981

46FC04
43 46 43.0 098 09 58.0 2
4.5 MI W .75 MI N OF FC INLET 104N 61W S28 CCBB
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 CLASS 00 CSN-RSP 0663790-0693808

/TYPA/AMBNT/STREAM/RUNOFF

PARAMETER				RMK	NUMBER	MEAN	VARIANCE	STAN DEV	MAXIMUM	MINIMUM	BEG DATE	END DATE
00010	WATER	TEMP	CENT		15	12.9000	100.293	10.0146	29.0000	.000000	82/02/22	82/10/19
00011	WATER	TEMP	FAHN		3	48.2000	294.838	17.1708	68.0000	37.4000	82/06/04	82/10/19
00020	AIR	TEMP	CENT		14	15.9364	293.414	17.1293	59.0000	-.277E+01	82/02/22	82/10/19
00021	AIR	TEMP	FAHN		13	53.1384	588.952	24.2683	91.4000	15.0000	82/02/23	82/10/19
00300	DO		MG/L		13	7.89999	5.13002	2.26496	11.2000	5.50000	82/02/22	82/08/04
00400	PH		SU		12	7.63749	.078724	.280578	8.00000	7.00000	82/02/23	82/10/15
00403	LAB	PH	SU		3	7.45000	.035141	.187459	7.66000	7.30000	82/02/22	82/10/19
00500	RESIDUE	TOTAL	MG/L		15	737.000	123126	350.893	1346.00	388.000	82/02/22	82/10/19
00530	RESIDUE	TOT NFLT	MG/L		15	55.3333	2311.52	48.0783	180.000	19.0000	82/02/22	82/10/19
00608	NH3+NH4-	N DISS	MG/L		1	.030000			.030000	.030000	82/10/15	82/10/15
				K	1	.020000			.020000	.020000	82/10/19	82/10/19
00610	NH3+NH4-	N TOTAL	MG/L	TOT	2	.025000	.000050	.007071	.030000	.020000	82/10/15	82/10/19
00613	NO2-N	DISS	MG/L		13	.204615	.022927	.151417	.490000	.020000	82/02/22	82/08/04
					2	.015000	.000050	.007071	.020000	.010000	82/02/22	82/02/23
				K	13	.010000	.582E-10	.000008	.010000	.010000	82/03/16	82/10/19
				TOT	15	.010667	.000007	.002582	.020000	.010000	82/02/22	82/10/19
00618	NO3-N	DISS	MG/L	K	2	.100000	-.372E-08	.000000	.100000	.100000	82/10/15	82/10/19
00620	NO3-N	TOTAL	MG/L		6	.449999	.099000	.314643	.900000	.100000	82/02/22	82/06/04
				K	7	.100000	.000000	.000000	.100000	.100000	82/05/16	82/08/04
				TOT	13	.261538	.074231	.272453	.900000	.100000	82/02/22	82/08/04
00623	KJELDL N	DISS	MG/L		2	.360000	.072200	.268700	.550000	.170000	82/10/15	82/10/19
00625	TOT KJEL	N	MG/L		13	1.37769	.377235	.614195	2.26000	.330000	82/02/22	82/08/04
00671	PHOS-DIS	ORTHO	MG/L P		2	.497000	.005202	.072125	.548000	.446000	82/10/15	82/10/19
31615	FEC COLI	MPNECMED	/100ML		1	250.000			250.000	250.000	82/10/19	82/10/19
31616	FEC COLI	MFM-FCBR	/100ML		9	1085.56	956378	977.946	2800.00	80.0000	82/02/22	82/08/04
				K	2	10.0000	.000000	.000000	10.0000	10.0000	82/03/16	82/03/23
				TOT	11	890.000	954399	976.933	2800.00	10.0000	82/02/22	82/08/04
70300	RESIDUE	DISS-180	C MG/L		15	681.666	132087	363.438	1294.00	263.000	82/02/22	82/10/19
70505	T PO4	P-COL	MG/L		13	.376153	.044280	.210429	.739000	.076000	82/02/22	82/08/04
70506	SOL PO4-	T P-COL	MG/L		2	.802999	.094178	.306885	1.02000	.586000	82/10/15	82/10/19
70507	PHOS-T	ORTHO	MG/L P		13	.296769	.049236	.221892	.693000	.064000	82/02/22	82/08/04

Table IV-11.

STORET RETRIEVAL DATE 84/08/09 - INVENT - VERSION OF SEP. 1981

46FC05
43 44 41.0 098 02 51.0 2
1.5 MI S 100 FT W OF FC INLET 103N 60W S8 AAAD
46035 SOUTH DAKOTA
MISSOURI RIVER BASIN
JAMES RIVER BASIN
21SDLAKE 820904
DAVISON
090600
0000 CLASS 00 CSN-RSP 0663791-0693809

/TYPA/AMBNT/STREAM/RUNOFF

PARAMETER				RMK	NUMBER	MEAN	VARIANCE	STAN DEV	MAXIMUM	MINIMUM	BEG DATE	END DATE
00010	WATER	TEMP	CENT		3	2.33333	6.33334	2.51661	5.00000	.000000	82/02/22	82/10/15
00011	WATER	TEMP	FAHN		1	41.0000			41.0000	41.0000	82/10/15	82/10/15
00020	AIR	TEMP	CENT		3	1.44333	8.26962	2.87569	4.00000	-.166E+01	82/02/22	82/10/15
00021	AIR		FAHN		3	34.6000	26.7604	5.17304	39.2000	29.0000	82/02/22	82/10/15
00300	DO		MG/L		3	10.1000	.490112	.700080	10.6000	9.30000	82/02/22	82/10/15
00400	PH	PH	SU		2	7.30000	.180008	.424273	7.60000	7.00000	82/02/23	82/10/15
00403	LAB		SU		1	6.82000			6.82000	6.82000	82/02/22	82/02/22
00410	T ALK	CACO3	MG/L		1	213.000			213.000	213.000	82/10/15	82/10/15
00500	RESIDUE	TOTAL	MG/L		3	334.333	169006	411.104	809.000	92.0000	82/02/22	82/10/15
00530	RESIDUE	TOT NFLT	MG/L		3	42.3333	1620.33	40.2534	88.0000	12.0000	82/02/22	82/10/15
00610	NH3+NH4-	N TOTAL	MG/L		3	.416666	.106634	.326548	.620000	.040000	82/02/22	82/02/23
00613	NO2-N	DISS	MG/L	K	2	.025000	.000450	.021213	.040000	.010000	82/10/15	82/10/15
				TOT	1	.010000			.010000	.010000	82/02/22	82/02/23
00620	NO3-N	TOTAL	MG/L	K	3	.020000	.000300	.017321	.040000	.010000	82/02/22	82/10/15
				TOT	2	.800000	.020000	.141423	.900000	.700000	82/10/15	82/10/15
00625	TOT KJEL	N	MG/L		1	.100000			.100000	.100000	82/02/22	82/10/15
31616	FEC COLI	MFM-FCBR	/100ML		3	.566666	.173334	.416333	.900000	.100000	82/02/22	82/10/15
70300	RESIDUE	DISS-180	C MG/L		3	1.85333	.654236	.808849	2.35000	.920000	82/02/22	82/02/23
70505	T PO4	P-COL	MG/L		2	205.000	2450.00	49.4975	240.000	170.000	82/02/22	82/10/15
70506	SOL PO4-	T P-COL	MG/L		3	292.000	138037	371.533	721.000	75.0000	82/02/22	82/02/23
70507	PHOS-T	ORTHO	MG/L P		2	.666000	.000128	.011323	.674000	.658000	82/02/22	82/10/15
					1	.120000			.120000	.120000	82/10/15	82/10/15
					3	.464000	.114871	.338927	.674000	.073000	82/02/22	82/10/15

STORET RETRIEVAL DATE 84/08/09 - INVENT - VERSION OF SEP. 1981

46FC05
43 44 41.0 098 02 51.0 2
1.5 MI S 100 FT W OF FC INLET 103N 60W S8 AAAD
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 CLASS 00 CSN-RSP 0663791-0693809

/TYPA/AMBNT/STREAM/RUNOFF

PARAMETER				RMK	NUMBER	MEAN	VARIANCE	STAN DEV	MAXIMUM	MINIMUM	BEG DATE	END DATE
00010	WATER	TEMP	CENT		3	26.8267	658.205	25.6555	56.0000	7.78000	83/03/30	83/05/12
00011	WATER	TEMP	FAHN		3	50.0000	112.000	10.5830	62.0000	42.0000	83/03/30	83/05/12
00020	AIR	TEMP	CENT		4	10.8225	25.6717	5.06673	18.3000	7.22000	83/03/30	83/06/28
00021	AIR	TEMP	FAHN		4	51.5000	83.6667	9.14695	65.0000	45.0000	83/03/30	83/06/28
00400	PH		SU		3	8.46666	.703453	.838721	9.00000	7.50000	83/03/30	83/05/12
00403	LAB	PH	SU		3	7.94666	.127830	.357534	8.21000	7.54000	83/03/30	83/06/28
00500	RESIDUE	TOTAL	MG/L		3	839.666	44117.0	210.040	1082.00	710.000	83/03/30	83/06/28
00530	RESIDUE	TOT NFLT	MG/L		4	219.750	166112	407.569	831.000	6.00000	83/03/30	83/06/28
00610	NH3+NH4-	N TOTAL	MG/L		4	.055000	.001500	.038730	.110000	.020000	83/03/30	83/06/28
00613	NO2-N	DISS	MG/L	K	3	.010000	.000000	.000000	.010000	.010000	83/03/30	83/06/28
00620	NO3-N	TOTAL	MG/L	K	3	.100000	-.186E-08	.000000	.100000	.100000	83/03/30	83/06/28
00625	TOT KJEL	N	MG/L		4	1.65000	2.84966	1.68809	4.17000	.660000	83/03/30	83/06/28
00916	CALCIUM	CA-TOT	MG/L		1	34.0000			34.0000	34.0000	83/04/19	83/04/19
31616	FEC COLI	MFM-FCBR	/100ML		2	4445.00	.379E+08	6158.90	8800.00	90.0000	83/05/12	83/06/28
				K	2	10.0000	.000000	.000000	10.0000	10.0000	83/03/30	83/04/19
70300	RESIDUE	DISS-180	C MG/L	TOT	4	2227.50	.192E+08	4381.83	8800.00	10.0000	83/03/30	83/06/28
70505	T PO4	P-COL	MG/L		4	834.000	29307.3	171.194	1064.00	703.000	83/03/30	83/06/28
70507	PHOS-T	ORTHO	MG/L P		4	.335000	.060725	.246424	.651000	.092000	83/03/30	83/06/28
					4	.208500	.057139	.239038	.521000	.017000	83/03/30	83/06/28

Table IV-13.

STORET RETRIEVAL DATE 84/08/09 - INVENT - VERSION OF SEP. 1981

46FC06
43 45 34.0 098 04 14.0 2
FC INLET TO LK MITCHELL 103N 60W 56 AABB
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 CLASS 00 CSN-RSP 0663792-0693810

/TYPA/AMBNT/LAKE

PARAMETER				RMK	NUMBER	MEAN	VARIANCE	STAN DEV	MAXIMUM	MINIMUM	BEG DATE	END DATE
00011	WATER	TEMP	FAHN		3	46.3333	26.3359	5.13185	52.0000	42.0000	81/03/29	81/04/04
00020	AIR	TEMP	CENT		2	2.50000	1.37780	1.17380	3.33000	1.67000	81/04/01	81/04/04
00021	AIR	TEMP	FAHN		2	36.5000	4.50000	2.12132	38.0000	35.0000	81/04/01	81/04/04
00300	DO		MG/L		3	9.93333	.463623	.680899	10.7000	9.40000	81/03/29	81/04/04
00400	PH		SU		3	7.90000	.370079	.608341	8.30000	7.20000	81/03/29	81/04/04
00500	RESIDUE	TOTAL	MG/L		3	871.666	101.000	10.0499	882.000	862.000	81/03/29	81/04/04
00515	RESIDUE	DISS-105	C MG/L		3	852.666	185.000	13.6015	867.000	840.000	81/03/29	81/04/04
00530	RESIDUE	TOT NFLT	MG/L		3	19.0000	13.0000	3.60555	22.0000	15.0000	81/03/29	81/04/04
00610	NH3+NH4-	N TOTAL	MG/L		1	.040000			.040000	.040000	81/03/29	81/03/29
				K	2	.020000	-.232E-09	.000000	.020000	.020000	81/04/01	81/04/04
				TOT	3	.026667	.000133	.011547	.040000	.020000	81/03/29	81/04/04
00613	NO2-N	DISS	MG/L	K	3	.010000	.000000	.000000	.010000	.010000	81/03/29	81/04/04
00620	NO3-N	TOTAL	MG/L	K	3	.100000	-.186E-08	.000000	.100000	.100000	81/03/29	81/04/04
00625	TOT KJEL	N	MG/L		3	.506666	.000234	.015289	.520000	.490000	81/03/29	81/04/04
31616	FEC COLI	MFM-FCBR	/100ML		1	80.0000			80.0000	80.0000	81/04/01	81/04/01
				K	1	3.00000			3.00000	3.00000	81/03/29	81/03/29
				TOT	2	41.5000	2964.50	54.4472	80.0000	3.00000	81/03/29	81/04/01
70505	T PO4	P-COL	MG/L		3	.077000	.000171	.013077	.092000	.068000	81/03/29	81/04/04
70507	PHOS-T	ORTHO	MG/L P		3	.035667	.000508	.022546	.059000	.014000	81/03/29	81/04/04

Table IV-14.

STORET RETRIEVAL DATE 84/08/09 - INVENT - VERSION OF SEP. 1981

46FC06
43 45 34.0 098 04 14.0 2
FC INLET TO LK MITCHELL 103N 60W 56 AABB
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 CLASS 00 CSN-RSP 0663792-0693810

/TYPA/AMBNT/LAKE

PARAMETER				RMK	NUMBER	MEAN	VARIANCE	STAN DEV	MAXIMUM	MINIMUM	BEG DATE	END DATE
00010	WATER	TEMP	CENT		12	15.1250	81.8238	9.04565	28.5000	.000000	82/02/23	82/08/04
00011	WATER	TEMP	FAHN		1	66.0000			66.0000	66.0000	82/06/04	82/06/04
00020	AIR	TEMP	CENT		11	15.1009	129.655	11.3866	32.0000	-.277E+01	82/02/23	82/08/04
00021	AIR	TEMP	FAHN		11	59.1636	419.436	20.4801	89.6000	27.0000	82/02/23	82/08/04
00300	DO		MG/L		12	8.94999	4.66821	2.16060	12.0000	4.60000	82/02/23	82/08/04
00400	PH		SU		11	7.81818	.099658	.315687	8.30000	7.40000	82/02/23	82/08/04
00403	LAB	PH	SU		1	7.79000			7.79000	7.79000	82/05/26	82/05/26
00500	RESIDUE	TOTAL	MG/L		12	646.000	24673.5	157.078	865.000	384.000	82/02/23	82/08/04
00530	RESIDUE	TOT NFLT	MG/L		12	20.6667	243.516	15.6050	60.0000	5.00000	82/02/23	82/08/04
00610	NH3+NH4-	N TOTAL	MG/L		11	.205454	.043747	.209159	.620000	.030000	82/02/23	82/08/04
				K	1	.020000			.020000	.020000	82/05/16	82/05/16
				TOT	12	.190000	.042636	.206486	.620000	.020000	82/02/23	82/08/04
00613	NO2-N	DISS	MG/L	K	12	.010000	.634E-10	.000008	.010000	.010000	82/02/23	82/08/04
00620	NO3-N	TOTAL	MG/L		4	.500000	.086667	.294392	.800000	.100000	82/02/23	82/06/04
				K	8	.100000	.000000	.000000	.100000	.100000	82/05/16	82/08/04
				TOT	12	.233333	.062424	.249848	.800000	.100000	82/02/23	82/08/04
00625	TOT KJEL	N	MG/L		12	1.25833	.499664	.706869	3.04000	.490000	82/02/23	82/08/04
00671	PHOS-DIS	ORTHO	MG/L P		1	.051000			.051000	.051000	82/08/04	82/08/04
31616	FEC COLI	MFM-FCBR	/100ML		7	315.714	201895	449.328	1100.00	20.0000	82/02/23	82/08/04
				K	2	10.0000	.000000	.000000	10.0000	10.0000	82/03/16	82/03/23
				TOT	9	247.778	169594	411.818	1100.00	10.0000	82/02/23	82/08/04
70300	RESIDUE	DISS-180	C MG/L		12	625.333	28064.7	167.525	860.000	347.000	82/02/23	82/08/04
70505	T PO4	P-COL	MG/L		11	.231909	.013203	.114906	.495000	.119000	82/02/23	82/06/14
70506	SOL PO4-	T P-COL	MG/L		1	.112000			.112000	.112000	82/08/04	82/08/04
70507	PHOS-T	ORTHO	MG/L P		11	.146273	.021138	.145389	.440000	.033000	82/02/23	82/06/14

Table IV-15.

STORET RETRIEVAL DATE 84/08/09 - INVENT - VERSION OF SEP. 1981

46FC06
43 45 34.0 098 04 14.0 2
FC INLET TO LK MITCHELL 103N 60W 56 AABB
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 CLASS 00 CSN-RSP 0663792-0693810

/TYPA/AMBNT/LAKE

PARAMETER				RMK	NUMBER	MEAN	VARIANCE	STAN DEV	MAXIMUM	MINIMUM	BEG DATE	END DATE
00010	WATER	TEMP	CENT		4	11.9550	62.0097	7.87462	21.7000	5.56000	83/03/30	83/06/28
00011	WATER	TEMP	FAHN		4	53.5000	200.333	14.1539	71.0000	42.0000	83/03/30	83/06/28
00020	AIR	TEMP	CENT		4	11.5175	20.9272	4.57463	18.3000	8.33000	83/03/30	83/06/28
00021	AIR	TEMP	FAHN		4	52.7500	68.2500	8.26136	65.0000	47.0000	83/03/30	83/06/28
00300	DO		MG/L		2	9.80000	5.12015	2.26277	11.4000	8.20000	83/04/19	83/05/12
00400	PH		SU		4	8.07500	.255859	.505825	8.70000	7.50000	33/03/30	83/06/28
00403	LAB	PH	SU		3	8.01666	.015709	.125335	8.14000	7.89000	83/03/30	83/06/28
00500	RESIDUE	TOTAL	MG/L		4	851.250	3981.00	63.0952	901.000	764.000	83/03/30	83/06/28
00530	RESIDUE	TOT NFLT	MG/L		4	16.2500	30.9167	5.56027	20.0000	8.00000	83/03/30	83/06/28
00610	NH3+NH4-	N TOTAL	MG/L		4	.067500	.003958	.062915	.160000	.020000	83/03/30	83/06/28
00613	NO2-N	DISS	MG/L	K	3	.010000	.000000	.000000	.010000	.010000	83/03/30	83/06/28
00620	NO3-N	TOTAL	MG/L	K	3	.100000	-.186E-08	.000000	.100000	.100000	83/03/30	83/06/28
00625	TOT KJEL	N	MG/L		4	.897500	.332425	.576563	1.66000	.340000	83/03/30	83/06/28
31616	FEC COLI	MFM-FCBR	/100ML		2	65.0000	2450.00	49.4975	100.000	30.0000	83/05/12	83/06/28
				K	2	10.0000	.000000	.000000	10.0000	10.0000	83/03/30	83/04/19
70300	RESIDUE	DISS-180	C MG/L	TOT	4	37.5000	1825.00	42.7200	100.000	10.0000	83/03/30	83/06/28
70505	T PO4	P-COL	MG/L		4	835.000	4431.33	66.5682	893.000	744.000	83/03/30	83/06/28
70507	PHOS-T	ORTHO	MG/L P		4	.113500	.002787	.052792	.160000	.051000	83/03/30	83/06/28
					4	.038500	.001038	.032223	.084000	.012000	83/03/30	83/06/28

Table IV-16.

STORET RETRIEVAL DATE 84/08/09 - INVENT - VERSION OF SEP. 1981

46FC07
43 47 22.0 098 19 31.0 2
12.5 MI W 2 MI N OF FC INLET 104N 62W S30 BBBB
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 CLASS 00 CSN-RSP 0663793-0693811

/TYPA/AMBNT/STREAM/RUNOFF

PARAMETER				RMK	NUMBER	MEAN	VARIANCE	STAN DEV	MAXIMUM	MINIMUM	BEG DATE	END DATE
00010	WATER	TEMP	CENT		12	13.9167	91.5379	9.56754	24.0000	.000000	82/02/22	82/10/15
00011	WATER	TEMP	FAHN		3	57.6667	212.336	14.5718	68.0000	41.0000	82/06/01	82/10/15
00020	AIR	TEMP	CENT		12	13.6667	88.9697	9.43238	25.0000	.000000	82/02/22	82/10/15
00021	AIR	TEMP	FAHN		12	56.5999	288.268	16.9784	77.0000	32.0000	82/02/22	82/10/15
00061	STREAM	FLOW,	INST-CFS		1	.000000			.000000	.000000	82/10/19	82/10/19
00300	DO		MG/L		11	8.63636	4.85256	2.20285	12.6000	5.90000	82/02/22	82/06/14
00400	PH		SU		11	7.34545	.256738	.506693	8.20000	6.50000	82/02/22	82/06/14
00403	LAB	PH	SU		1	6.77000			6.77000	6.77000	82/02/22	82/02/22
00500	RESIDUE	TOTAL	MG/L		12	739.500	227398	476.863	1317.00	175.000	82/02/22	82/10/15
00530	RESIDUE	TOT NFLT	MG/L		12	32.0000	1093.27	33.0647	106.000	5.00000	82/02/22	82/10/15
00610	NH3+NH4-	N TOTAL	MG/L		11	.188181	.023016	.151712	.390000	.040000	82/02/22	82/10/15
				K	1	.020000			.020000	.020000	82/05/16	82/05/16
				TOT	12	.174166	.023281	.152582	.390000	.020000	82/02/22	82/10/15
00613	NO2-N	DISS	MG/L		1	.020000			.020000	.020000	82/02/22	82/02/22
				K	11	.010000	.465E-10	.000007	.010000	.010000	82/03/16	82/10/15
				TOT	12	.010833	.000008	.002887	.020000	.010000	82/02/22	82/10/15
00620	NO3-N	TOTAL	MG/L		5	.560000	.163000	.403733	1.00000	.100000	82/02/22	82/06/04
				K	7	.100000	.000000	.000000	.100000	.100000	82/05/16	82/10/15
				TOT	12	.291666	.115379	.339675	1.00000	.100000	82/02/22	82/10/15
00625	TOT KJEL	N	MG/L		12	1.19083	.144537	.380180	2.17000	.770000	82/02/22	82/10/15
31616	FEC COLI	MFM-FCBR	/100ML		7	544.286	286862	535.595	1500.00	40.0000	82/02/22	82/06/14
				K	2	10.0000	.000000	.000000	10.0000	10.0000	82/03/16	82/03/23
				TOT	9	425.555	270653	520.243	1500.00	10.0000	82/02/22	82/06/14
70300	RESIDUE	DISS-180	C MG/L		12	707.500	240188	490.090	1312.00	89.0000	82/02/22	82/10/15
70505	T PO4	P-COL	MG/L		11	.513181	.110857	.332952	1.06000	.092000	82/02/22	82/06/14
70506	SOL PO4-	T P-COL	MG/L		1	.146000			.146000	.146000	82/10/15	82/10/15
70507	PHOS-T	ORTHO	MG/L P		12	.439000	.102806	.320634	1.00000	.074000	82/02/22	82/10/15

Table IV-17.

STORET RETRIEVAL DATE 84/08/09 - INVENT - VERSION OF SEP. 1981

46FC08
43 55 09.0 098 27 04.0 2
18.5 MI W 11 MI N OF FC INLET 105N 63W S7 BBCC
46003 SOUTH DAKOTA AURORA
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 CLASS 00 CSN-RSP 0663794-0693812

/TYPA/AMBNT/STREAM/RUNOFF

PARAMETER				RMK	NUMBER	MEAN	VARIANCE	STAN DEV	MAXIMUM	MINIMUM	BEG DATE	END DATE
00010	WATER	TEMP	CENT		10	13.4000	72.7111	8.52708	21.0000	.000000	82/02/22	82/10/15
00011	WATER	TEMP	FAHN		3	56.6000	234.359	15.3088	68.0000	39.2000	82/06/01	82/10/15
00020	AIR	TEMP	CENT		10	13.4000	67.8223	8.23543	23.0000	1.00000	82/02/22	82/10/15
00021	AIR	TEMP	FAHN		10	56.1199	219.751	14.8240	73.4000	33.8000	82/02/22	82/10/15
00300	DO		MG/L		9	7.18888	3.74112	1.93420	10.4000	4.60000	82/02/22	82/06/04
00400	PH		SU		10	7.31999	.104004	.322496	7.70000	6.70000	82/02/22	82/10/15
00403	LAB	PH	SU		1	6.59000			6.59000	6.59000	82/02/22	82/02/22
00500	RESIDUE	TOTAL	MG/L		10	423.600	16167.9	127.153	727.000	276.000	82/02/22	82/10/15
00530	RESIDUE	TOT NFLT	MG/L		10	54.5000	2779.39	52.7199	188.000	18.0000	82/02/22	82/10/15
00608	NH3+NH4-	N DISS	MG/L		1	.020000			.020000	.020000	82/10/15	82/10/15
00610	NH3+NH4-	N TOTAL	MG/L		9	.166666	.013250	.115109	.450000	.090000	82/02/22	82/06/04
00613	NO2-N	DISS	MG/L		2	.100000	.007200	.084853	.160000	.040000	82/02/22	82/05/24
				K	8	.010000	.665E-10	.000008	.010000	.010000	82/03/16	82/10/15
00618	NO3-N	DISS	MG/L	TOT	10	.028000	.002240	.047329	.160000	.010000	82/02/22	82/10/15
00620	NO3-N	TOTAL	MG/L	K	1	.100000			.100000	.100000	82/10/15	82/10/15
					4	.575000	.469166	.684957	1.60000	.200000	82/02/22	82/05/24
00623	KJELDL N	DISS	MG/L	K	5	.100000	-.279E-08	.000000	.100000	.100000	82/05/20	82/06/04
00625	TOT KJEL	N	MG/L	TOT	9	.311111	.238611	.488478	1.60000	.100000	82/02/22	82/06/04
00671	PHOS-DIS	ORTHO	MG/L P		1	.520000			.520000	.520000	82/10/15	82/10/15
31616	FEC COLI	MFM-FCBR	/100ML		9	1.10000	.347000	.589067	2.00000	.350000	82/02/22	82/06/04
70300	RESIDUE	DISS-180	C MG/L		1	.397000			.397000	.397000	82/10/15	82/10/15
70505	T PO4	P-COL	MG/L		7	815.714	866096	930.643	2200.00	30.0000	82/02/22	82/06/01
70506	SOL PO4-	T P-COL	MG/L		10	379.100	24582.3	156.788	694.000	104.000	82/02/22	82/10/15
70507	PHOS-T	ORTHO	MG/L P		9	.660111	.019439	.139425	.936000	.498000	82/02/22	82/06/04
					1	.417000			.417000	.417000	82/10/15	82/10/15
					9	.530333	.008168	.090378	.597000	.319000	82/02/22	82/06/04

Table IV-18.

STORET RETRIEVAL DATE 84/08/09 - INVENT - VERSION OF SEP. 1981

46FC09
44 04 03.0 098 28 46.0 2
1.5 MI W OF JCT 34 AND 281 107N 64W S23 ABBA
46073 SOUTH DAKOTA JERAULD
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 CLASS 00 CSN-RSP 0663795-0693813

/TYPA/AMBNT/STREAM/RUNOFF

PARAMETER				RMK	NUMBER	MEAN	VARIANCE	STAN DEV	MAXIMUM	MINIMUM	BEG DATE	END DATE
00010	WATER	TEMP	CENT		10	15.5000	53.8333	7.33712	23.0000	.000000	82/03/16	82/10/15
00011	WATER	TEMP	FAHN		3	57.2000	204.121	14.2871	68.0000	41.0000	82/06/01	82/10/15
00020	AIR	TEMP	CENT		10	14.8000	64.4000	8.02496	24.0000	1.00000	82/03/16	82/10/15
00021	AIR	TEMP	FAHN		10	58.6399	208.664	14.4452	75.2000	33.8000	82/03/16	82/10/15
00300	DO		MG/L		9	6.29999	4.57501	2.13893	11.1000	4.40000	82/03/16	82/06/14
00400	PH		SU		10	7.12999	.157905	.397372	7.70000	6.40000	82/03/16	82/10/15
00500	RESIDUE	TOTAL	MG/L		10	436.100	9252.22	96.1885	639.000	312.000	82/03/16	82/10/15
00530	RESIDUE	TOT NFLT	MG/L		10	39.5000	967.833	31.1100	103.000	1.00000	82/03/16	82/10/15
00608	NH3+NH4-	N DISS	MG/L		1	.030000			.030000	.030000	82/10/15	82/10/15
00610	NH3+NH4-	N TOTAL	MG/L		7	.062857	.000724	.026904	.120000	.040000	82/05/20	82/06/14
				K	2	.020000	-.232E-09	.000000	.020000	.020000	82/03/16	82/05/16
				TOT	9	.053333	.000900	.030000	.120000	.020000	82/03/16	82/06/14
00613	NO2-N	DISS	MG/L	K	10	.010000	.517E-10	.000007	.010000	.010000	82/03/16	82/10/15
00618	NO3-N	DISS	MG/L	K	1	.100000			.100000	.100000	82/10/15	82/10/15
00620	NO3-N	TOTAL	MG/L	K	9	.100000	.000000	.000000	.100000	.100000	82/03/16	82/06/14
00623	KJELDL N	DISS	MG/L		1	.560000			.560000	.560000	82/10/15	82/10/15
00625	TOT KJEL	N	MG/L		9	1.05444	.403204	.634984	2.38000	.270000	82/03/16	82/06/14
00671	PHOS-DIS	ORTHO	MG/L P		1	.379000			.379000	.379000	82/10/15	82/10/15
31616	FEC COLI	MFM-FCBR	/100ML		6	453.833	346248	588.429	1500.00	40.0000	82/05/16	82/06/14
70300	RESIDUE	DISS-180	C MG/L		10	396.600	11679.8	108.073	636.000	237.000	82/03/16	82/10/15
70505	T PO4	P-COL	MG/L		9	.899555	.160564	.400704	1.63000	.505000	82/03/16	82/06/14
70506	SOL PO4-	T P-COL	MG/L		1	.383000			.383000	.383000	82/10/15	82/10/15
70507	PHOS-T	ORTHO	MG/L P		9	.618777	.049326	.222094	1.15500	.470000	82/03/16	82/06/14

Table IV-19.

STORET RETRIEVAL DATE 84/08/09 - INVENT - VERSION OF SEP. 1981

46FC10
44 06 40.0 098 28 58.0 2
3 MI W 1.5 MI W JCT 34 AND 281 107N 64W S2 BAAA
46073 SOUTH DAKOTA JERAULD
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 CLASS 00 CSN-RSP 0663796-0693814

/TYPA/AMBNT/STREAM/RUNOFF

PARAMETER				RMK	NUMBER	MEAN	VARIANCE	STAN DEV	MAXIMUM	MINIMUM	BEG DATE	END DATE
00010	WATER	TEMP	CENT		8	17.1250	30.9821	5.56616	21.0000	4.00000	82/05/16	82/10/15
00011	WATER	TEMP	FAHN		3	59.0000	243.000	15.5885	68.0000	41.0000	82/06/01	82/10/15
00020	AIR	TEMP	CENT		8	17.4375	60.6741	7.78936	26.0000	3.00000	82/05/16	82/10/15
00021	AIR	TEMP	FAHN		8	63.3874	196.593	14.0212	78.8000	37.4000	82/05/16	82/10/15
00300	DO		MG/L		7	6.51428	.728149	.853317	8.10000	5.60000	82/05/16	82/06/04
00400	PH		SU		8	7.19999	.162912	.403623	7.70000	6.50000	82/05/16	82/10/15
00500	RESIDUE	TOTAL	MG/L		8	361.875	6208.98	78.7971	503.000	287.000	82/05/16	82/10/15
00530	RESIDUE	TOT NFLT	MG/L		8	35.8750	561.553	23.6971	74.0000	7.00000	82/05/16	82/10/15
00608	NH3+NH4-	N DISS	MG/L		1	.030000			.030000	.030000	82/10/15	82/10/15
00610	NH3+NH4-	N TOTAL	MG/L		6	.203333	.116987	.342033	.900000	.040000	82/05/20	82/06/04
				K	1	.020000			.020000	.020000	82/05/16	82/05/16
				TOT	7	.177142	.102291	.319829	.900000	.020000	82/05/16	82/06/04
00613	NO2-N	DISS	MG/L	K	8	.010000	.665E-10	.000008	.010000	.010000	82/05/16	82/10/15
00618	NO3-N	DISS	MG/L	K	1	.100000			.100000	.100000	82/10/15	82/10/15
00620	NO3-N	TOTAL	MG/L	K	7	.100000	.000000	.000000	.100000	.100000	82/05/16	82/06/04
00623	KJELDL N	DISS	MG/L		1	.480000			.480000	.480000	82/10/15	82/10/15
00625	TOT KJEL	N	MG/L		7	.881428	.138381	.371995	1.23000	.120000	82/05/16	82/06/04
00671	PHOS-DIS	ORTHO	MG/L P		1	.538000			.538000	.538000	82/10/15	82/10/15
31616	FEC COLI	MFM-FCBR	/100ML		5	3674.60	.641E+08	8008.44	18000.0	33.0000	82/05/16	82/06/01
70300	RESIDUE	DISS-180	C MG/L		8	326.000	5222.85	72.2693	455.000	243.000	82/05/16	82/10/15
70505	T PO4	P-COL	MG/L		7	.848571	.082913	.287946	1.46000	.573000	82/05/16	82/06/04
70506	SOL PO4-	T P-COL	MG/L		1	.563000			.563000	.563000	82/10/15	82/10/15
70507	PHOS-T	ORTHO	MG/L P		7	.585142	.029175	.170808	.833000	.301000	82/05/16	82/06/04

Table IV-20.

STORET RETRIEVAL DATE 84/08/09 - INVENT - VERSION OF SEP. 1981

46FC11
43 46 36.0 098 14 44.0 2
8.5 MI W 1 MI N OF FC INLET 104N 62W S26 CCCB
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 CLASS 00 CSN-RSP 0663797-0693815

/TYPA/AMBNT/STREAM/RUNOFF

PARAMETER				RMK	NUMBER	MEAN	VARIANCE	STAN DEV	MAXIMUM	MINIMUM	BEG DATE	END DATE
00011	WATER	TEMP	FAHN		1	38.0000			38.0000	38.0000	81/04/04	81/04/04
00020	AIR	TEMP	CENT		1	2.22000			2.22000	2.22000	81/04/04	81/04/04
00021	AIR	TEMP	FAHN		1	36.0000			36.0000	36.0000	81/04/04	81/04/04
00300	DO		MG/L		1	11.0000			11.0000	11.0000	81/04/04	81/04/04
00400	PH		SU		1	8.10000			8.10000	8.10000	81/04/04	81/04/04
00500	RESIDUE	TOTAL	MG/L		1	1726.00			1726.00	1726.00	81/04/04	81/04/04
00515	RESIDUE	DISS-105	C MG/L		1	1649.00			1649.00	1649.00	81/04/04	81/04/04
00530	RESIDUE	TOT NFLT	MG/L		1	77.0000			77.0000	77.0000	81/04/04	81/04/04
00610	NH3+NH4-	N TOTAL	MG/L		1	.090000			.090000	.090000	81/04/04	81/04/04
00613	NO2-N	DISS	MG/L	K	1	.010000			.010000	.010000	81/04/04	81/04/04
00620	NO3-N	TOTAL	MG/L	K	1	.100000			.100000	.100000	81/04/04	81/04/04
00625	TOT KJEL	N	MG/L		1	.350000			.350000	.350000	81/04/04	81/04/04
00671	PHOS-DIS	ORTHO	MG/L P		1	.020000			.020000	.020000	81/04/04	81/04/04
70506	SOL PO4-	T P-COL	MG/L		1	.085000			.085000	.085000	81/04/04	81/04/04

Table IV-21.

STORET RETRIEVAL DATE 84/08/09 - INVENT - VERSION OF SEP. 1981

46FC11
43 46 36.0 098 14 44.0 2
8.5 MI W 1 MI N OF FC INLET 104N 62W S26 CCCB
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 CLASS 00 CSN-RSP 0663797-0693815

/TYPA/AMBNT/STREAM/RUNOFF

PARAMETER				RMK	NUMBER	MEAN	VARIANCE	STAN DEV	MAXIMUM	MINIMUM	BEG DATE	END DATE
00010	WATER	TEMP	CENT		15	13.2667	95.0667	9.75021	28.0000	.000000	82/02/23	82/10/19
00011	WATER	TEMP	FAHN		4	54.0500	182.250	13.5000	68.0000	39.2000	82/06/01	82/10/19
00020	AIR	TEMP	CENT		14	12.2936	132.701	11.5196	33.0000	-.277E+01	82/02/23	82/10/19
00021	AIR	TEMP	FAHN		14	54.1285	429.947	20.7352	91.4000	27.0000	82/02/22	82/10/19
00300	DO		MG/L		13	8.33846	4.07760	2.01931	11.1000	6.00000	82/02/23	82/08/04
00400	PH		SU		12	7.58749	.155518	.394357	8.20000	6.80000	82/02/23	82/10/15
00403	LAB	PH	SU		3	7.44666	.020317	.142538	7.61000	7.35000	82/02/23	82/10/19
00500	RESIDUE	TOTAL	MG/L		15	595.000	110012	331.681	1256.00	237.000	82/02/23	82/10/19
00530	RESIDUE	TOT NFLT	MG/L		15	40.7333	796.925	28.2299	104.000	12.0000	82/02/23	82/10/19
00608	NH3+NH4-	N DISS	MG/L		2	.030000	.000200	.014142	.040000	.020000	82/10/15	82/10/19
00610	NH3+NH4-	N TOTAL	MG/L		13	.195384	.027177	.164855	.510000	.030000	82/02/23	82/08/04
00613	NO2-N	DISS	MG/L		2	.025000	.000050	.007071	.030000	.020000	82/02/23	82/02/23
				K	13	.010000	.582E-10	.000008	.010000	.010000	82/03/16	82/10/19
				TOT	15	.012000	.000031	.005606	.030000	.010000	82/02/23	82/10/19
00618	NO3-N	DISS	MG/L	K	2	.100000	-.372E-08	.000000	.100000	.100000	82/10/15	82/10/19
00620	NO3-N	TOTAL	MG/L		5	.660000	.133000	.364692	1.00000	.100000	82/02/23	82/06/01
				K	8	.100000	.000000	.000000	.100000	.100000	82/05/16	82/08/04
				TOT	13	.315384	.124744	.353191	1.00000	.100000	82/02/23	82/08/04
00623	KJELDL N	DISS	MG/L		2	.690000	.024201	.155567	.800000	.580000	82/10/15	82/10/19
00625	TOT KJEL	N	MG/L		13	1.16308	.213188	.461723	2.07000	.330000	82/02/23	82/08/04
00671	PHOS-DIS	ORTHO	MG/L P		2	.529500	.006161	.078495	.585000	.474000	82/10/15	82/10/19
31616	FEC COLI	MFM-FCBR	/100ML		11	1036.91	937089	968.034	2700.00	20.0000	82/02/23	82/10/19
				K	1	10.0000			10.0000	10.0000	82/03/23	82/03/23
				TOT	12	951.333	939777	969.421	2700.00	10.0000	82/02/23	82/10/19
70300	RESIDUE	DISS-180	C MG/L		15	554.267	114740	338.733	1225.00	200.000	82/02/22	82/10/19
70505	T PO4	P-COL	MG/L		10	.616500	.061858	.248713	.851000	.197000	82/02/23	82/08/04
70506	SOL PO4-	T P-COL	MG/L		5	.520000	.003269	.057173	.607000	.464000	82/02/23	82/10/19
70507	PHOS-T	ORTHO	MG/L P		13	.475384	.040274	.200685	.797000	.095000	82/02/23	82/08/04

Table IV-22.

STORET RETRIEVAL DATE 84/08/09 - INVENT - VERSION OF SEP. 1981

46FC11
43 46 36.0 098 14 44.0 2
8.5 MI W 1 MI N OF FC INLET 104N 62W S26 CCCB
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 CLASS 00 CSN-RSP 0663797-0693815

/TYPA/AMBNT/STREAM/RUNOFF

PARAMETER				RMK	NUMBER	MEAN	VARIANCE	STAN DEV	MAXIMUM	MINIMUM	BEG DATE	END DATE
00010	WATER	TEMP	CENT		4	11.9575	50.9451	7.13758	20.6000	5.56000	83/03/30	83/06/28
00011	WATER	TEMP	FAHN		4	53.5000	164.333	12.8193	69.0000	42.0000	83/03/30	83/06/28
00020	AIR	TEMP	CENT		4	11.1000	31.2375	5.58906	19.4000	7.22000	83/03/30	83/06/28
00021	AIR	TEMP	FAHN		4	52.0000	102.000	10.0995	67.0000	45.0000	83/03/30	83/06/28
00400	PH		SU		4	8.05000	.303467	.550878	8.70000	7.50000	83/03/30	83/06/28
00403	LAB	PH	SU		3	8.13999	.000885	.029749	8.16000	8.11000	83/03/30	83/06/28
00500	RESIDUE	TOTAL	MG/L		4	952.250	25084.3	158.380	1112.00	735.000	83/03/30	83/06/28
00530	RESIDUE	TOT NFLT	MG/L		4	16.5000	161.000	12.6886	34.0000	4.00000	83/03/30	83/06/28
00608	NH3+NH4-	N DISS	MG/L		1	.020000			.020000	.020000	83/03/30	83/03/30
00610	NH3+NH4-	N TOTAL	MG/L		3	.040000	.372E-08	.000061	.040000	.040000	83/04/19	83/06/28
00613	NO2-N	DISS	MG/L	K	3	.010000	.000000	.000000	.010000	.010000	83/03/30	83/06/28
00618	NO3-N	DISS	MG/L	K	1	.100000			.100000	.100000	83/03/30	83/03/30
00620	NO3-N	TOTAL	MG/L	K	2	.100000	-.372E-08	.000000	.100000	.100000	83/05/12	83/06/28
00623	KJELDL N	DISS	MG/L		1	.890000			.890000	.890000	83/03/30	83/03/30
00625	TOT KJEL	N	MG/L		3	.903333	.138133	.371662	1.21000	.490000	83/04/19	83/06/28
31615	FEC COLI	MPNECMED	/100ML	K	1	10.0000			10.0000	10.0000	83/03/30	83/03/30
31616	FEC COLI	MFM-FCBR	/100ML		3	162.333	12476.4	111.698	270.000	47.0000	83/04/19	83/06/28
70300	RESIDUE	DISS-180	C MG/L		4	935.750	28047.0	167.472	1096.00	701.000	83/03/30	83/06/28
70505	T PO4	P-COL	MG/L		4	.230750	.005315	.072903	.302000	.129000	83/03/30	83/06/28
70507	PHOS-T	ORTHO	MG/L P		4	.154750	.003006	.054829	.200000	.082000	83/03/30	83/06/28

Table IV-23.

STORET RETRIEVAL DATE 84/08/09 - INVENT - VERSION OF SEP. 1981

46FC12
43 48 16.0 098 18 32.0 2
3 MI N 12 MI W OF FC INLET 104N 62W S19 AABA
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 CLASS 00 CSN-RSP 0663798-0693816

/TYPA/AMBNT/STREAM/RUNOFF

PARAMETER				RMK	NUMBER	MEAN	VARIANCE	STAN DEV	MAXIMUM	MINIMUM	BEG DATE	END DATE
00010	WATER	TEMP	CENT		13	12.3846	86.2564	9.28743	24.0000	.000000	82/02/22	82/10/19
00011	WATER	TEMP	FAHN		4	52.2500	262.169	16.1916	68.0000	37.4000	82/06/01	82/10/19
00020	AIR	TEMP	CENT		12	12.1667	101.970	10.0980	25.0000	.000000	82/02/22	82/10/19
00021	AIR	TEMP	FAHN		11	55.5636	326.890	18.0801	77.0000	32.0000	82/03/16	82/10/19
00300	DO		MG/L		12	7.38333	3.63064	1.90542	10.8000	5.40000	82/02/22	82/10/15
00400	PH		SU		9	7.36111	.199310	.446442	7.75000	6.30000	82/03/16	82/06/14
00403	LAB	PH	SU		3	7.28333	.069351	.263346	7.52000	7.00000	82/02/22	82/10/19
00500	RESIDUE	TOTAL	MG/L		13	454.461	25753.3	160.478	905.000	295.000	82/02/22	82/10/19
00530	RESIDUE	TOT NFLT	MG/L		13	38.0000	987.500	31.4245	100.000	2.00000	82/02/22	82/10/19
00608	NH3+NH4-	N DISS	MG/L		1	.020000			.020000	.020000	82/10/15	82/10/15
				K	1	.020000			.020000	.020000	82/10/19	82/10/19
				TOT	2	.020000	-.232E-09	.000000	.020000	.020000	82/10/15	82/10/19
00610	NH3+NH4-	N TOTAL	MG/L		11	.297272	.292761	.541074	1.91000	.060000	82/02/22	82/06/14
00613	NO2-N	DISS	MG/L		1	.050000			.050000	.050000	82/02/22	82/02/22
				K	12	.010000	.634E-10	.000008	.010000	.010000	82/03/16	82/10/19
				TOT	13	.013077	.000123	.011094	.050000	.010000	82/02/22	82/10/19
00618	NO3-N	DISS	MG/L	K	2	.100000	-.372E-08	.000000	.100000	.100000	82/10/15	82/10/19
00620	NO3-N	TOTAL	MG/L		3	.766666	.063334	.251662	1.00000	.500000	82/02/22	82/03/23
				K	8	.100000	.000000	.000000	.100000	.100000	82/05/16	82/06/14
				TOT	11	.281818	.109636	.331114	1.00000	.100000	82/02/22	82/06/14
00623	KJELDL N	DISS	MG/L		2	.585000	.092451	.304057	.800000	.370000	82/10/15	82/10/19
00625	TOT KJEL	N	MG/L		11	1.41818	.804651	.897023	3.90000	.280000	82/02/22	82/06/14
00671	PHOS-DIS	ORTHO	MG/L P		2	.506000	.002313	.048091	.540000	.472000	82/10/15	82/10/19
31616	FEC COLI	MFM-FCBR	/100ML		9	5061.11	.452E+08	6729.57	19000.0	20.0000	82/02/22	82/10/19
				K	1	10.0000			10.0000	10.0000	82/03/16	82/03/16
				TOT	10	4556.00	.428E+08	6542.67	19000.0	10.0000	82/02/22	82/10/19
70300	RESIDUE	DISS-180 C	MG/L		13	416.461	28969.0	170.203	884.000	231.000	82/02/22	82/10/19
70505	T PO4	P-COL	MG/L		11	1.06964	.259592	.509501	2.31000	.647000	82/02/22	82/06/14
70506	SOL PO4-	T P-COL	MG/L		2	.509000	.002738	.052328	.546000	.472000	82/10/15	82/10/19
70507	PHOS-T	ORTHO	MG/L P		11	.822999	.078118	.279496	1.52000	.583000	82/02/22	82/06/14

Table IV-24.

STORET RETRIEVAL DATE 84/06/09 - STAND - VERSION OF APR. 1983 STN 1.SUMMARY.1

461C01
43 44 25.0 098 01 31.0 2
LK MITCHELL OUTLET SD HWY 37 N 103N-60W-S10 DCCA
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663787-0693805

/TYPA/AMENT/STREAM

SUMMARY OF VIOLATIONS ON SAMPLES COLLECTED FROM 82/06/01 TO 83/06/28

	00300 DO MG/L	00400 PH SU	31616 FEC COLI MFM-FCLR /100ML	70300 RESIDUE DISS-180 C MG/L	00530 RESIDUE TOT NFLT MG/L	00619 UN-IONZD NH3-NH3 MG/L	00610 NH3+NH4- N TOTAL MG/L	00620 NO3-N TOTAL MG/L	00011 WATER TEMP FAHN
NO OF VALUES	3	7	6	7	7	5	7	6	5
MEAN	8.967	7.843	61.2	667.	16.43	0.0025	0.100	0.100	54.88
MEDIAN	8.800	7.800	10.0	670.	12.00	0.0002	0.090	0.100	59.00
NO OF VIOLS	0	2	1	0	0	0	0	0	0
PERCENT VIOL	0.	29.	17.	0.	0.	0.	0.	0.	0.
MINIMUM VIOL	0.0	8.600	310.0	0.	0.0	0.0	0.0	0.0	0.0
MEAN VIOL	0.0	8.600	310.0	0.	0.0	0.0	0.0	0.0	0.0
MAXIMUM VIOL	0.0	8.600	310.0	0.	0.0	0.0	0.0	0.0	0.0
MIN CRITERIA	4.000	6.500	*********	*********	*********	*********	*********	*********	*********
MAX CRITERIA	*********	8.300	200.0	1000.	90.00	0.0400	*********	10.000	80.00

Table IV-25.

STORET RETRIEVAL DATE 84/08/09 - STAND - VERSION OF APR. 1983 STN 1 PAGE 1.1
VIOLATIONS ONLY

46FC01
43 44 25.0 098 01 31.0 2
LK MITCHELL OUTLET SD HWY 37 N 103N-60W-S10 BCCA
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663787-0693805

/TYPA/AMBNT/STREAM

DATE	TIME	00300 DO MG/L	00400 PH SU	31616 FEC COLI MPN-FCBR /100ML	70300 RESIDUE DISS-180 C MG/L	00530 RESIDUE TOT NFLT MG/L	00619 UN-IONZD NH3-NH3 MG/L	00610 NH3+NH4- N TOTAL MG/L	00620 NO3-N TOTAL MG/L	00011 WATER TEMP FAHN
82/06/01	1610		8.600*							
82/06/14			8.600*							
83/06/28	1309			310.0*						

Table IV-26.

STORET RETRIEVAL DATE 84/08/09 - STAND - VERSION OF APR. 1983 STN 2.SUMMARY.1

46FC02
43 44 39.0 098 01 34.0 2
NE LK MTCHLL .5 MI N OF OUTLET 103N 60W S10 BEDC
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663788-0693806

/TYPA/AMBNT/LAKE

SUMMARY OF VIOLATIONS ON SAMPLES COLLECTED FROM 81/03/29 TO 83/06/28

	00300 DO MG/L	00400 PH SU	31616 FEC COLI MPN-FCLR /100ML	70300 RESIDUE DISS-180 C MG/L	00530 RESIDUE TOT NFLT MG/L	00619 UN-IONZD NH3-NH3 MG/L	00610 NH3+NH4- N TOTAL MG/L	00620 NO3-N TOTAL MG/L	00011 WATER TEMP FAHN
NO OF VALUES	19	18	16	18	19	8	20	19	9
MEAN	9.413	8.014	78.5	655.	13.68	0.0020	0.110	0.126	49.58
MEDIAN	9.500	8.100	10.0	686.	9.00	0.0009	0.060	0.100	42.00
NO OF VIOLS	0	4	1	0	0	0	0	0	0
PERCENT VIOL	0.	22.	6.	0.	0.	0.	0.	0.	0.
MINIMUM VIOL	0.0	8.400	1000.0	0.	0.0	0.0	0.0	0.0	0.0
MEAN VIOL	0.0	8.462	1000.0	0.	0.0	0.0	0.0	0.0	0.0
MAXIMUM VIOL	0.0	8.550	1000.0	0.	0.0	0.0	0.0	0.0	0.0
MIN CRITERIA	4.000	6.500	*********	*********	*********	*********	*********	*********	*********
MAX CRITERIA	*********	8.300	200.0	1000.	90.00	0.0400	*********	10.000	80.00

Table IV-27.

STORET RETRIEVAL DATE 84/08/09 - STAND - VERSION OF APR. 1983 S1N 2 PAGE 1.1
VIOLATIONS ONLY

46FC02
43 44 39.0 098 01 34.0 2
NE LK MTCHLL .5 MI N OF OUTLET 103N 60W S10 BBBC
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0063788-0093806

/TYPA/AMBNT/LAKE

DATE	TIME	00300 DO MG/L	00400 PH SU	31616 FEC COLI MFM-FCBR /100ML	70300 RESIDUE DISS-180 C MG/L	00530 RESIDUE TOT NFLT MG/L	00619 UN-IONZD NH3-NH3 MG/L	00610 NH3+NH4- N TOTAL MG/L	00620 NO3-N TOTAL MG/L	00011 WATER TEMP FAH N
82/06/01	1545		8.500*	1000.0*						
82/06/04	1445		8.400*							
82/06/14	1730		8.550*							
83/03/30	1323		8.400*							

Table IV-28.

STORET RETRIEVAL DATE 84/08/09 - STAND - VERSION OF APR. 1983 STN 3.SUMMARY.1

46FC03
43 45 22.0 098 03 26.0 2
NW LK MTCHLL .75 MI SE FC INLET 103N 60W S5 ACEB
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
215DLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663789-0693807

/TYPA/AMBNT/LAKE

SUMMARY OF VIOLATIONS ON SAMPLES COLLECTED FROM 81/03/29 TO 83/06/28

	00300 DO MG/L	00400 PH SU	31616 FEC COLI MPN-FCBR /100ML	70300 RESIDUE DISS-180 C MG/L	00530 RESIDUE TOT NFLT MG/L	00619 UN-IONZD NH3-NH3 MG/L	00610 NH3+NH4- N TOTAL MG/L	00620 NO3-N TOTAL MG/L	00011 WATER TEMP FAHN
NO OF VALUES	18	19	15	16	20	9	20	19	9
MEAN	9.778	8.063	18.9	635.	23.15	0.0022	0.116	0.153	51.67
MEDIAN	9.750	8.200	10.0	673.	14.00	0.0024	0.110	0.100	46.00
NO OF VIOLS	0	8	0	0	1	0	0	0	0
PERCENT VIOL	0.	42.	0.	0.	5.	0.	0.	0.	0.
MINIMUM VIOL	0.0	8.350	0.0	0.	118.00	0.0	0.0	0.0	0.0
MEAN VIOL	0.0	8.462	0.0	0.	118.00	0.0	0.0	0.0	0.0
MAXIMUM VIOL	0.0	8.600	0.0	0.	118.00	0.0	0.0	0.0	0.0
MIN CRITERIA	4.000	6.500 *********	*********	*********	*********	*********	*********	*********	*********
MAX CRITERIA*********		8.300	200.0	1000.	90.00	0.0400 *********		10.000	80.00

Table IV-29.

STORET RETRIEVAL DATE 84/08/09 - STAND - VERSION OF APR. 1983 STN 3 PAGE 1.1
VIOLATIONS ONLY

46FC03
43 45 22.0 098 03 26.0 2
NW LK MTCHLL .75 MI SE FC INLET 103N 60W S5 ACBB
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663789-0693807

/TYPA/AMBNT/LAKE

DATE	TIME	00300 DO MG/L	00400 PH SU	31616 FEC COLI MFM-FCBR /100ML	70300 RESIDUE DISS-180 C MG/L	00530 RESIDUE TOT NFLT MG/L	00619 UN-IONZD NH3-NH3 MG/L	00610 NH3+NH4- N TOTAL MG/L	00620 NO3-N TOTAL MG/L	00011 WATER TEMP FAHN
81/03/29	0835		8.500*							
82/05/16	1120		8.350*							
82/06/01	1500		8.500*							
82/06/04	1430		8.400*			118.00*				
82/06/14	1800		8.600*							
82/08/04	1345		8.350*							
83/03/30	1355		8.600*							
83/05/12	1510		8.400*							

Table IV-30.

STORET RETRIEVAL DATE 84/08/09 - STAND - VERSION OF APR. 1983 STN 4.SUMMARY.1

46FC04
43 46 43.0 098 09 58.0 2
4.5 MI W .75 MI N OF FC INLET T04N R61W S28 CCBB
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663790-0693808

/TYPA/AMBNT/STREAM/RONOLF

SUMMARY OF VIOLATIONS ON SAMPLES COLLECTED FROM 81/03/29 TO 82/10/19

	00300 DO MG/L	00400 PH SU	31616 FEC COLI MEM-FCBR /100ML	70300 RESIDUE DISS-180 C MG/L	00530 RESIDUE TOT NFLT MG/L	00619 UN-IONZD NH3-NH3 MG/L	00610 NH3+NH4- N TOTAL MG/L	00620 NO3-N TOTAL MG/L	00011 WATER TEMP FAHN
NO OF VALUES	16	15	13	15	18	4	16	16	6
MEAN	8.294	7.603	754.8	682.	51.89	0.0013	0.176	0.231	46.60
MEDIAN	8.200	7.600	420.0	602.	34.00	0.0006	0.100	0.100	41.50
NO OF VIOLS	0	0	8	3	3	0	0	0	0
PERCENT VIOL	0.	0.	62.	20.	17.	0.	0.	0.	0.
MINIMUM VIOL	0.0	0.0	290.0	1238.	96.00	0.0	0.0	0.0	0.0
MEAN VIOL	0.0	0.0	1211.2	1271.	139.67	0.0	0.0	0.0	0.0
MAXIMUM VIOL	0.0	0.0	2800.0	1294.	180.00	0.0	0.0	0.0	0.0
MIN CRITERIA	4.000	6.500	********	********	********	********	********	********	********
MAX CRITERIA	********	8.500	200.0	1000.	90.00	0.0400	********	10.000	80.00

Table IV-31.

STORET RETRIEVAL DATE 84/08/09 - STAND - VERSION OF APR. 1983 STN 4 PAGE 1.1
VIOLATIONS ONLY

46FC04
43 46 43.0 098 09 58.0 2
4.5 MI W .75 MI N OF FC INLET 104N 61W S28 CCBB
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663790-0693608

/TYPA/AMBNT/STREAM/RUNOFF

DATE	TIME	00300 DO MG/L	00400 PH SU	31616 FEC COLI MFM-FCBR /100ML	70300 RESIDUE DISS-180 C MG/L	00530 RESIDUE TOT NFLT MG/L	00619 UN-IONZD NH3-NH3 MG/L	00610 NH3+NH4- N TOTAL MG/L	00620 NO3-N TOTAL MG/L	00011 WATER TEMP FAHN
82/02/23	1715			290.0*						
82/05/16	1200				1294.*					
82/05/16				860.0*						
82/05/20	1540			2800.0*	1238.*					
82/05/25	1700			520.0*						
82/05/26	1750			800.0*						
82/06/01	1440			1500.0*		143.00*				
82/06/04	1345					96.00*				
82/06/14	1645			2500.0*						
82/06/04	1300			420.0*	1282.*					
82/10/15	0930					180.00*				

Table IV-32.

STORET RETRIEVAL DATE 84/08/09 - STAND - VERSION OF APR. 1983 STN 5.SUMMARY.1

46PC05
43 44 41.0 098 02 51.0 2
1.5 MI S 100 FT W OF PC INLET T03N R60W S8 AAAD
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663791-0693809

/TYPA/AMBNT/STREAM/RUNOFF

SUMMARY OF VIOLATIONS ON SAMPLES COLLECTED FROM 82/02/22 TO 83/06/28

	00300 DO MG/L	00400 PH SU	31616 FEC COLI MFM-FCBR /100ML	70300 RESIDUE DISS-180 C MG/L	00530 RESIDUE TOT NFLT MG/L	00619 UN-IONZD NH3-NH3 MG/L	00610 NH3+NH4- N TOTAL MG/L	00620 NO3-N TOTAL MG/L	00011 WATER TEMP FAHN
NO OF VALUES	3	5	6	7	7	4	7	6	4
MEAN	10.100	8.000	1553.3	602.	143.71	0.0039	0.210	0.333	47.75
MEDIAN	10.400	7.600	130.0	704.	24.00	0.0018	0.050	0.100	44.00
NO OF VIOLS	0	2	2	1	1	0	0	0	0
PERCENT VIOL	0.	40.	33.	14.	14.	0.	0.	0.	0.
MINIMUM VIOL	0.0	8.900	240.0	1064.	831.00	0.0	0.0	0.0	0.0
MEAN VIOL	0.0	8.950	4520.0	1064.	831.00	0.0	0.0	0.0	0.0
MAXIMUM VIOL	0.0	9.000	8800.0	1064.	831.00	0.0	0.0	0.0	0.0
MIN CRITERIA	4.000	6.500	*********	*********	*********	*********	*********	*********	*********
MAX CRITERIA	*********	8.300	200.0	1000.	90.00	0.0400	*********	10.000	80.00

Table IV-33.

STORET RETRIEVAL DATE 84/08/09 - STAND - VERSION OF APR. 1983 - STN 5 PAGE 1.1
VIOLATIONS ONLY

46FC05
43 44 41.0 098 02 51.0 2
1.5 MI S 100 FT W OF FC INLET 103N 60W S8 AAAD
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663791-0693809

/TYPA/AMBNT/STREAM/RUNOFF

DATE	TIME	00300 DO MG/L	00400 PH SU	31616 FEC COLI MFM-FCBR /100ML	70300 RESIDUE DISS-180 C MG/L	00530 RESIDUE TOT NFLT MG/L	00619 UN-IONZD NH3-NH3 MG/L	00610 NH3+NH4- N TOTAL MG/L	00620 NO3-N TOTAL MG/L	00011 WATER TEMP FAHN
82/02/22	1700			240.0*						
83/03/30	1438		9.000*							
83/04/19	1300					831.00*				
83/05/12	1545		8.900*		1064.*					
83/06/28	1406			8800.0*						

Table IV-34.

STORET RETRIEVAL DATE 84/08/09 - STAND - VERSION OF APR. 1983 STN 6.SUMMARY.1

46FC06
43 45 34.0 098 04 14.0 2
FC INLET TO LK MITCHELL 103N 60W 56 AABB
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663792-0693810

/TYPA/AMENT/LAKE

SUMMARY OF VIOLATIONS ON SAMPLES COLLECTED FROM 81/03/29 TO 83/06/28

	00300 DO MG/L	00400 PH SU	31616 FEC COLI MFM-FCER /100ML	70300 RESIDUE DISS-180 C MG/L	00530 RESIDUE TOT NFLT MG/L	00619 UN-IONZD NH3-NH3 MG/L	00610 NH3+NH4- N TOTAL MG/L	00620 NO3-N TOTAL MG/L	00011 WATER TEMP FAHN
NO OF VALUES	17	18	15	16	19	8	19	18	8
MEAN	9.224	7.889	164.2	678.	19.47	0.0021	0.138	0.189	52.38
MEDIAN	9.700	7.900	30.0	711.	19.00	0.0015	0.050	0.100	48.50
NO OF VIOLS	0	1	2	0	0	0	0	0	0
PERCENT VIOL	0.	6.	13.	0.	0.	0.	0.	0.	0.
MINIMUM VIOL	0.0	8.700	820.0	0.	0.0	0.0	0.0	0.0	0.0
MEAN VIOL	0.0	8.700	960.0	0.	0.0	0.0	0.0	0.0	0.0
MAXIMUM VIOL	0.0	8.700	1100.0	0.	0.0	0.0	0.0	0.0	0.0
MIN CRITERIA	4.000	6.500	*********	*********	*********	*********	*********	*********	*********
MAX CRITERIA	*********	8.300	200.0	1000.	90.00	0.0400	*********	10.000	80.00

Table IV-35.

STORET RETRIEVAL DATE 84/08/09 - STAND - VERSION OF APR. 1983 STN 6 PAGE 1.1
VIOLATIONS ONLY

46FC06
43 45 34.0 098 04 14.0 2
FC INLET TO LK MITCHELL 103N 60W 56 AABB
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663792-0693810

/TYPA/AMBNT/LAKE

DATE	TIME	00300 DO MG/L	00400 PH SU	31616 FEC COLI MPN-PCBR /100ML	70300 RESIDUE DISS-180 C MG/L	00530 RESIDUE TOT NFLT MG/L	00619 UN-IONZD NH3-NH3 MG/L	00610 NH3+NH4- N TOTAL MG/L	00620 NO3-N TOTAL MG/L	00011 WATER TEMP FAHN
82/05/24	1810			820.0*						
82/06/01	1520			1100.0*						
83/03/30	1430		8.700*							

Table IV-36.

STORET RETRIEVAL DATE 84/08/09 - STAND - VERSION OF APR. 1983 STN 7.SUMMARY.1

46FC07
43 47 22.0 098 19 31.0 2
12.5 MI W 2 MI N OF FC INLET 104N 62W S30 DEBB
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663793-0693811

/TYIA/AMBNT/STREAM/RUNOFF

SUMMARY OF VIOLATIONS ON SAMPLES COLLECTED FROM 82/02/22 TO 82/10/15

	00300 DO MG/L	00400 PH SU	31616 FEC COLI MFM-FCBR /100ML	70300 RESIDUE DISS-180 C MG/L	00530 RESIDUE TOT NFLT MG/L	00619 UN-IONZD NH3-NH3 MG/L	00610 NH3+NH4- N TOTAL MG/L	00620 NO3-N TOTAL MG/L	00011 WATER TEMP FAHN
NO OF VALUES	11	11	9	12	12	2	12	12	3
MEAN	8.636	7.345	425.6	708.	32.00	0.0032	0.174	0.292	57.67
MEDIAN	8.000	7.400	140.0	564.	20.50	0.0032	0.080	0.100	64.00
NO OF VIOLS	0	0	4	4	1	0	0	0	0
PERCENT VIOL	0.	0.	44.	33.	8.	0.	0.	0.	0.
MINIMUM VIOL	0.0	0.0	390.0	1278.	106.00	0.0	0.0	0.0	0.0
MEAN VIOL	0.0	0.0	877.5	1298.	106.00	0.0	0.0	0.0	0.0
MAXIMUM VIOL	0.0	0.0	1500.0	1312.	106.00	0.0	0.0	0.0	0.0
MIN CRITERIA	4.000	6.500 *********	*********	*********	*********	*********	*********	*********	*********
MAX CRITERIA*********		8.500	200.0	1000.	90.00	0.0400 *********		10.000	80.00

Table IV-37.

STORET RETRIEVAL DATE 84/08/09 - STAND - VERSION OF APR. 1983 STN 7 PAGE 1.1
VIOLATIONS ONLY

46FC07
43 47 22.0 098 19 31.0 2
12.5 MI W 2 MI N OF FC INLET 104N 62W S30 BBBB
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663793-0693811

/TYPA/AMBNT/STREAM/RUNOFF

DATE	TIME	00300 DO MG/L	00400 PH SU	31616 FEC COLI MFM-FCBR /100ML	70300 RESIDUE DISS-180 C MG/L	00530 RESIDUE TOT NFLT MG/L	00619 UN-IONZD NH3-NH3 MG/L	00610 NH3+NH4- N TOTAL MG/L	00620 NO3-N TOTAL MG/L	00011 WATER TEMP FAH
82/02/22	1440			390.0*						
82/05/16	1257			660.0*	1293.*					
82/05/20	1440				1307.*					
82/05/21	1240				1312.*					
82/05/24	1705				1278.*					
82/05/26	1650			960.0*						
82/06/01	1330			1500.0*						
82/10/15	0830					106.00*				

Table IV-38.

STORET RETRIEVAL DATE 84/08/09 - STAND - VERSION OF APR. 1983 STN 8.SUMMARY.1

46FC08
43 55 09.0 098 27 04.0 2
18.5 MI W 11 MI N OF FC INLET 105N 63W S7 BBCC
46003 SOUTH DAKOTA AURORA
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663794-0693812

/TYIA/AMBNT/STREAM/RUNOFF

SUMMARY OF VIOLATIONS ON SAMPLES COLLECTED FROM 82/02/22 TO 82/10/15

	00300 DO MG/L	00400 PH SU	31616 FEC COLI MFM-FCBR /100ML	70300 RESIDUE DISS-180 C MG/L	00530 RESIDUE TOT NFLT MG/L	00619 UN-IONZD NH3-NH3 MG/L	00610 NH3+NH4- N TOTAL MG/L	00620 NO3-N TOTAL MG/L	00011 WATER TEMP FAHN
NO OF VALUES	9	10	7	10	10	2	9	9	3
MEAN	7.189	7.320	815.7	379.	54.50	0.0021	0.167	0.311	56.60
MEDIAN	6.600	7.400	500.0	396.	33.00	0.0021	0.130	0.100	62.60
NO OF VIOLS	0	0	5	0	2	0	0	0	0
PERCENT VIOL	0.	0.	71.	0.	20.	0.	0.	0.	0.
MINIMUM VIOL	0.0	0.0	250.0	0.	95.00	0.0	0.0	0.0	0.0
MEAN VIOL	0.0	0.0	1116.0	0.	141.50	0.0	0.0	0.0	0.0
MAXIMUM VIOL	0.0	0.0	2200.0	0.	188.00	0.0	0.0	0.0	0.0
MIN CRITERIA	4.000	6.500	*********	*********	*********	*********	*********	*********	*********
MAX CRITERIA	*********	8.300	200.0	1000.	90.00	0.0400	*********	10.000	80.00

Table IV-39.

46FC08
43 55 09.0 098 27 04.0 2
18.5 MI W 11 MI N OF FC INLET 105N 63W S7 BBCC
46003 SOUTH DAKOTA AURORA
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663794-0693812

/TYPA/AMBNT/STREAM/RUNOFF

DATE	TIME	00300 DO MG/L	00400 PH SU	31616 FEC COLI MFM-FCBR /100ML	70300 RESIDUE DISS-180 C MG/L	00530 RESIDUE TOT NFLT MG/L	00619 UN-IONZD NH3-NH3 MG/L	00610 NH3+NH4- N TOTAL MG/L	00620 NO3-N TOTAL MG/L	00011 WATER TEMP FAH N
82/02/22	1340			2200.0*		188.00*				
82/05/16	1232			500.0*						
82/05/24	1635			250.0*						
82/05/26	1650			530.0*						
82/06/01	1300			2100.0*						
82/10/15	0800					95.00*				

Table IV-40.

STORET RETRIEVAL DATE 84/06/09 - STAND - VERSION OF APR. 1983 STN 9.SUMMARY.1

46FC09
44 04 03.0 098 28 46.0 2
1.5 MI W OF JCT 34 AND 281 107N 64W S23 ABBA
46073 SOUTH DAKOTA JERAULD
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663795-0693813

/TYPA/AMBNT/STREAM/RUNOFF

SUMMARY OF VIOLATIONS ON SAMPLES COLLECTED FROM 82/03/16 TO 82/10/15

	00300 DO MG/L	00400 PH SU	31616 FEC COLI MFM-FCBR /100ML	70300 RESIDUE DISS-180 C MG/L	00530 RESIDUE TOT NFLT MG/L	00619 UN-IONZD NH3-NH3 MG/L	00610 NH3+NH4-N TOTAL MG/L	00620 NO3-N TOTAL MG/L	00011 WATER TEMP FAHN
NO OF VALUES	9	10	6	10	10	2	9	9	3
MEAN	6.300	7.130	453.8	397.	39.50	0.0008	0.053	0.100	57.20
MEDIAN	5.300	7.250	166.5	382.	35.00	0.0008	0.050	0.100	62.60
NO OF VIOLS	0	1	3	0	1	0	0	0	0
PERCENT VIOL	0.	10.	50.	0.	10.	0.	0.	0.	0.
MINIMUM VIOL	0.0	6.400	260.0	0.	103.00	0.0	0.0	0.0	0.0
MEAN VIOL	0.0	6.400	853.3	0.	103.00	0.0	0.0	0.0	0.0
MAXIMUM VIOL	0.0	6.400	3500.0	0.	103.00	0.0	0.0	0.0	0.0
MIN CRITERIA	4.000	6.500	*********	*********	*********	*********	*********	*********	*********
MAX CRITERIA	*********	8.300	200.0	1000.	90.00	0.0400	*********	10.000	80.00

Table IV-41.

STORET RETRIEVAL DATE 84/08/09 - STAND - VERSION OF APR. 1983 STN 9 PAGE 1.1
VIOLATIONS ONLY

46FC09
44 04 03.0 098 28 46.0 2
1.5 MI W OF JCT 34 AND 281 107N 64W S23 ABBA
46073 SOUTH DAKOTA JERAULD
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663795-0693813

/TYPA/AMBNT/STREAM/RUNOFF

DATE	TIME	00300 DO MG/L	00400 PH SU	31616 FEC COLI MFM-FCBR /100ML	70300 RESIDUE DISS-180 C MG/L	00530 RESIDUE TOT NFLT MG/L	00619 UN-IONZD NH3-NH3 MG/L	00610 NH3+NH4- N TOTAL MG/L	00620 NO3-N TOTAL MG/L	00011 WATER TEMP FAHN
82/05/16	1400			1500.0*		103.00*				
82/05/20	1300		6.400*							
82/05/26				800.0*						
82/06/14	1500			260.0*						

Table IV-42.

STORET RETRIEVAL DATE 84/08/09 - STAND - VERSION OF APR. 1983 STN 10.SUMMARY.1

46FC10
44 06 40.0 098 28 58.0 2
3 MI W 1.5 MI W JCT 34 AND 281 107N 64W S2 BAAA
46073 SOUTH DAKOTA JERAULD
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSF 0663796-0693814

/TYIA/AMBNT/STREAM/RUNOFF

SUMMARY OF VIOLATIONS ON SAMPLES COLLECTED FROM 82/05/16 TO 82/10/15

	00300 DO MG/L	00400 PH SU	31616 FEC COLI MFM-FCBK /100ML	70300 RESIDUE DISS-180 C MG/L	00530 RESIDUE TOT NFLT MG/L	00619 UN-IONZD NH3-NH3 MG/L	00610 NH3+NH4- N TOTAL MG/L	00620 NO3-N TOTAL MG/L	00011 WATER TEMP FAHN
NO OF VALUES	7	8	5	8	8	2	7	7	3
MEAN	6.514	7.200	3674.6	326.	35.88	0.0011	0.1771	0.100	59.00
MEDIAN	6.200	7.200	80.0	319.	38.00	0.0011	0.0700	0.100	68.00
NO OF VIOLS	0	0	2	0	0	0	0	0	0
PERCENT VIOL	0.	0.	40.	0.	0.	0.	0.	0.	0.
MINIMUM VIOL	0.0	0.0	210.0	0.	0.0	0.0	0.0	0.0	0.0
MEAN VIOL	0.0	0.0	9105.0	0.	0.0	0.0	0.0	0.0	0.0
MAXIMUM VIOL	0.0	0.0	18000.0	0.	0.0	0.0	0.0	0.0	0.0
MIN CRITERIA	4.000	6.500	*********	*********	*********	*********	*********	*********	*********
MAX CRITERIA	*********	8.300	200.0	1000.	90.00	0.0400	*********	10.000	80.00

Table IV-43.

STORET RETRIEVAL DATE 84/08/09 - STAND - VERSION OF APR. 1983 STN 10 PAGE 1.1
VIOLATIONS ONLY

46FC10
44 06 40.0 098 28 58.0 2
3 MI W 1.5 MI W JCT 34 AND 281 107N 64W S2 BAAA
46073 SOUTH DAKOTA JERAULD
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663796-0693814

/TYPA/AMBNT/STREAM/RUNOFF

DATE	TIME	00300 DO MG/L	00400 PH SU	31616 FEC COLI MFM-FCBR /100ML	70300 RESIDUE DISS-180 C MG/L	00530 RESIDUE TOT NFLT MG/L	00619 UN-IONZD NH3-NH3 MG/L	00610 NH3+NH4- N TOTAL MG/L	00620 NO3-N TOTAL MG/L	00011 WATER TEMP FAHN
82/05/26	1540			16000.0*						
82/06/01	1215			210.0*						

Table IV-44.

STORET RETRIEVAL DATE 84/08/09 - STAND - VERSION OF APR. 1983 STN 11.SUMMARY.1

46FC11
43 46 36.0 098 14 44.0 2
8.5 MI W 1 MI N OF FC INLET 104N 62W S26 CCCb
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663797-0693815

/TYPA/AMBNT/STREAM/RUNOFF

SUMMARY OF VIOLATIONS ON SAMPLES COLLECTED FROM 81/04/04 TO 83/06/28

	00300 DO MG/L	00400 PH SU	31616 FEC COLI MFM-FCBR /100ML	70300 RESIDUE DISS-180 C MG/L	00530 RESIDUE TOT NFLT MG/L	00619 UN-IONZD NH3-NH3 MG/L	00610 NH3+NH4- N TOTAL MG/L	00620 NO3-N TOTAL MG/L	00011 WATER TEMP FAHN
NO OF VALUES	14	17	15	19	20	6	17	16	9
MEAN	8.529	7.726	793.5	635.	37.70	0.0027	0.162	0.275	52.02
MEDIAN	8.550	7.600	270.0	566.	30.50	0.0020	0.090	0.100	46.40
NO OF VIOLS	0	1	9	3	2	0	0	0	0
PERCENT VIOL	0.	6.	60.	16.	10.	0.	0.	0.	0.
MINIMUM VIOL	0.0	8.700	260.0	1096.	100.00	0.0	0.0	0.0	0.0
MEAN VIOL	0.0	8.700	1274.4	1170.	102.00	0.0	0.0	0.0	0.0
MAXIMUM VIOL	0.0	8.700	2700.0	1225.	104.00	0.0	0.0	0.0	0.0
MIN CRITERIA	4.000	6.500	*********	*********	*********	*********	*********	*********	*********
MAX CRITERIA	*********	8.300	200.0	1000.	90.00	0.0400	*********	10.000	80.00

Table IV-45.

STORET RETRIEVAL DATE 84/08/09 - STAND - VERSION OF APR. 1983 STN 11 PAGE 1.1
VIOLATIONS ONLY

46PC11
43 46 36.0 098 14 44.0 2
8.5 MI W 1 MI N OF FC INLET 104N 62W S26 CCCB
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663797-0693815

/TYPA/AMBNT/STREAM/RUNOFF

DATE	TIME	00300 DO MG/L	00400 PH SU	31616 FEC COLI MFM-FCLR /100ML	70300 RESIDUE DISS-180 C MG/L	00530 RESIDUE TOT NFLT MG/L	00619 UN-IONZD NH3-NH3 MG/L	00610 NH3+NH4- N TOTAL MG/L	00620 NO3-N TOTAL MG/L	00011 WATER TEMP FAHN
82/02/23	1535			440.0*						
82/05/16	1222				1225.*					
82/05/20	1515			2500.0*						
82/05/24	1725			1000.0*						
82/05/26	1730			1200.0*						
82/06/01	1415			2700.0*		104.00*				
82/06/14	1634			1800.0*						
82/08/04	1215			1300.0*	1188.*					
82/10/15	0910					100.00*				
82/10/19	1520			260.0*						
83/04/19	1335			270.0*						
83/05/12	1605		8.700*		1096.*					

Table IV-46.

STORET RETRIEVAL DATE 84/08/09 - STAND - VERSION OF APR. 1983 STN 12.SUMMARY.1

46FC12
43 48 16.0 098 18 32.0 2
3 MI N 12 MI W OF FC INLET 104N 62W S19 AAEA
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663798-0693816

/TYIA/AMBNT/STREAM/RUNOFF

SUMMARY OF VIOLATIONS ON SAMPLES COLLECTED FROM 82/02/22 TO 82/10/19

	00300 DO MG/L	00400 PH SU	31616 FEC COLI MFM-FCBR /100ML	70300 RESIDUE DISS-180 C MG/L	00530 RESIDUE TOT NFLT MG/L	00619 UN-IONZD NH3-NH3 MG/L	00610 NH3+NH4- N TOTAL MG/L	00620 NO3-N TOTAL MG/L	00011 WATER TEMP FAHN
NO OF VALUES	12	9	10	13	13	2	11	11	4
MEAN	7.383	7.361	4556.0	416.	38.00	0.0029	0.297	0.282	52.25
MEDIAN	6.700	7.500	850.0	402.	31.00	0.0029	0.110	0.100	51.80
NO OF VIOLS	0	1	6	0	2	0	0	0	0
PERCENT VIOL	0.	11.	60.	0.	15.	0.	0.	0.	0.
MINIMUM VIOL	0.0	6.300	700.0	0.	95.00	0.0	0.0	0.0	0.0
MEAN VIOL	0.0	6.300	7550.0	0.	97.50	0.0	0.0	0.0	0.0
MAXIMUM VIOL	0.0	6.300	19000.0	0.	100.00	0.0	0.0	0.0	0.0
MIN CRITERIA	4.000	6.500	*********	*********	*********	*********	*********	*********	*********
MAX CRITERIA	*********	8.300	200.0	1000.	90.00	0.0400	*********	10.000	80.00

Table IV-47.

VIOLATIONS ONLY

46FC12
43 48 16.0 098 18 32.0 2
3 MI N 12 MI W OF FC INLET 104N 62W S19 AABA
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663798-0693816

/TYPA/AMBNT/STREAM/RUNOFF

DATE	TIME	00300 DO MG/L	00400 PH SU	31616 FEC COLI MFM-FCLR /100ML	70300 RESIDUE DISS-180 C MG/L	00530 RESIDUE TOT NFLT MG/L	00619 UN-IONZD NH3-NH3 MG/L	00610 NH3+NH4- N TOTAL MG/L	00620 NO3-N TOTAL MG/L	00011 WATER TEMP FAHN
82/02/22	1500			11000.0*		95.00*				
82/05/16	1245			19000.0*						
82/05/24	1720		6.300*	700.0*						
82/05/26	1720			9700.0*						
82/06/01	1340			3900.0*						
82/06/14	1610			1000.0*						
82/10/15	0845					100.00*				

Table IV-48.

VARIABLE	N	MEAN	STANDARD DEVIATION	MINIMUM VALUE	MAXIMUM VALUE
STATION=21SDLAKE 46FC02					
ORGN	3	0.527	0.065	0.460	0.590
INORGN	3	0.143	0.023	0.130	0.170
STATION=21SDLAKE 46FC03					
ORGN	3	0.543	0.038	0.500	0.570
INORGN	3	0.137	0.012	0.130	0.150
STATION=21SDLAKE 46FC04					
ORGN	3	0.727	0.489	0.420	1.290
INORGN	3	0.160	0.036	0.130	0.200
STATION=21SDLAKE 46FC06					
ORGN	3	0.480	0.010	0.470	0.490
INORGN	3	0.137	0.012	0.130	0.150
STATION=21SDLAKE 46FC11					
ORGN	1	0.260	.	0.260	0.260
INORGN	1	0.200	.	0.200	0.200

Table IV-49.

VARIABLE	N	MEAN	STANDARD DEVIATION	MINIMUM VALUE	MAXIMUM VALUE
STATION=21SDLAKE 46FC01					
ORGN	3	0.340	0.150	0.190	0.490
INORGN	3	0.277	0.059	0.210	0.320
STATION=21SDLAKE 46FC02					
ORGN	13	0.808	0.468	0.130	1.760
INORGN	13	0.296	0.123	0.140	0.530
STATION=21SDLAKE 46FC03					
ORGN	13	0.672	0.300	0.040	1.230
INORGN	13	0.342	0.210	0.130	0.770
STATION=21SDLAKE 46FC04					
ORGN	13	1.173	0.583	0.050	1.910
INORGN	13	0.477	0.411	0.130	1.400
STATION=21SDLAKE 46FC05					
ORGN	3	1.437	0.482	0.880	1.730
INORGN	3	1.003	0.742	0.150	1.500
STATION=21SDLAKE 46FC06					
ORGN	12	1.068	0.582	0.300	2.590
INORGN	12	0.433	0.445	0.130	1.430
STATION=21SDLAKE 46FC07					
ORGN	12	1.017	0.338	0.410	1.790
INORGN	12	0.477	0.472	0.130	1.400
STATION=21SDLAKE 46FC08					
ORGN	9	0.933	0.557	0.190	1.910
INORGN	9	0.508	0.608	0.200	2.090
STATION=21SDLAKE 46FC09					
ORGN	9	1.001	0.655	0.200	2.360
INORGN	9	0.163	0.030	0.130	0.230
STATION=21SDLAKE 46FC10					
ORGN	7	0.704	0.451	0.020	1.160
INORGN	7	0.287	0.320	0.130	1.010

Table IV-50.

VARIABLE	N	MEAN	STANDARD DEVIATION	MINIMUM VALUE	MAXIMUM VALUE
STATION=21SDLAKE 46FC11					
ORGN	13	0.968	0.433	0.040	1.580
INORGN	13	0.523	0.508	0.140	1.530
STATION=21SDLAKE 46FC12					
ORGN	11	1.121	0.481	0.080	1.990
INORGN	11	0.593	0.841	0.170	2.960

Table IV-51.

VARIABLE	N	MEAN	STANDARD DEVIATION	MINIMUM VALUE	MAXIMUM VALUE
STATION=21SDLAKE 46FC01					
ORGN	4	0.627	0.244	0.390	0.910
INORGN	3	0.167	0.031	0.140	0.200
STATION=21SDLAKE 46FC02					
ORGN	4	0.502	0.157	0.300	0.680
INORGN	3	0.167	0.038	0.140	0.210
STATION=21SDLAKE 46FC03					
ORGN	4	0.520	0.252	0.280	0.860
INORGN	3	0.173	0.040	0.150	0.220
STATION=21SDLAKE 46FC05					
ORGN	4	1.595	1.688	0.620	4.120
INORGN	3	0.170	0.046	0.130	0.220
STATION=21SDLAKE 46FC06					
ORGN	4	0.830	0.562	0.320	1.610
INORGN	3	0.187	0.074	0.130	0.270
STATION=21SDLAKE 46FC11					
ORGN	3	0.863	0.372	0.450	1.170
INORGN	2	0.150	0.000	0.150	0.150

Table IV-52.

Date	Sampling Site		
	FC-2	FC-3	FC-6
3-29-81	63.46	70.30	65.03
4-01-81	60.87	63.46	65.65
4-04-81	65.03	67.00	69.39
2-23-82	59.07	65.65	79.54
3-16-82	80.07	83.28	87.59
3-23-82	80.37	81.77	87.90
5-16-82	79.85	89.43	77.90
5-20-82	78.24	77.00	80.59
5-21-82	80.59	83.28	81.09
5-24-82	53.69	64.15	84.76
5-26-82	69.85	71.29	73.46
6-01-82	68.74	68.24	74.59
6-04-82	59.70	72.61	93.66
6-14-82	59.70	65.03	73.10
8-04-82	72.61	73.10	72.22
10-15-82	65.65	65.03	—
3-30-83	65.03	67.55	60.87
4-19-83	64.59	65.65	79.07
5-12-83	61.70	65.65	71.70
6-28-83	64.15	68.74	72.61
X	67.65	71.41	76.35
s.d.	8.30	7.61	8.48
R	53.69 - 80.59	63.46 - 89.43	65.03 - 93.66
N	20	20	19

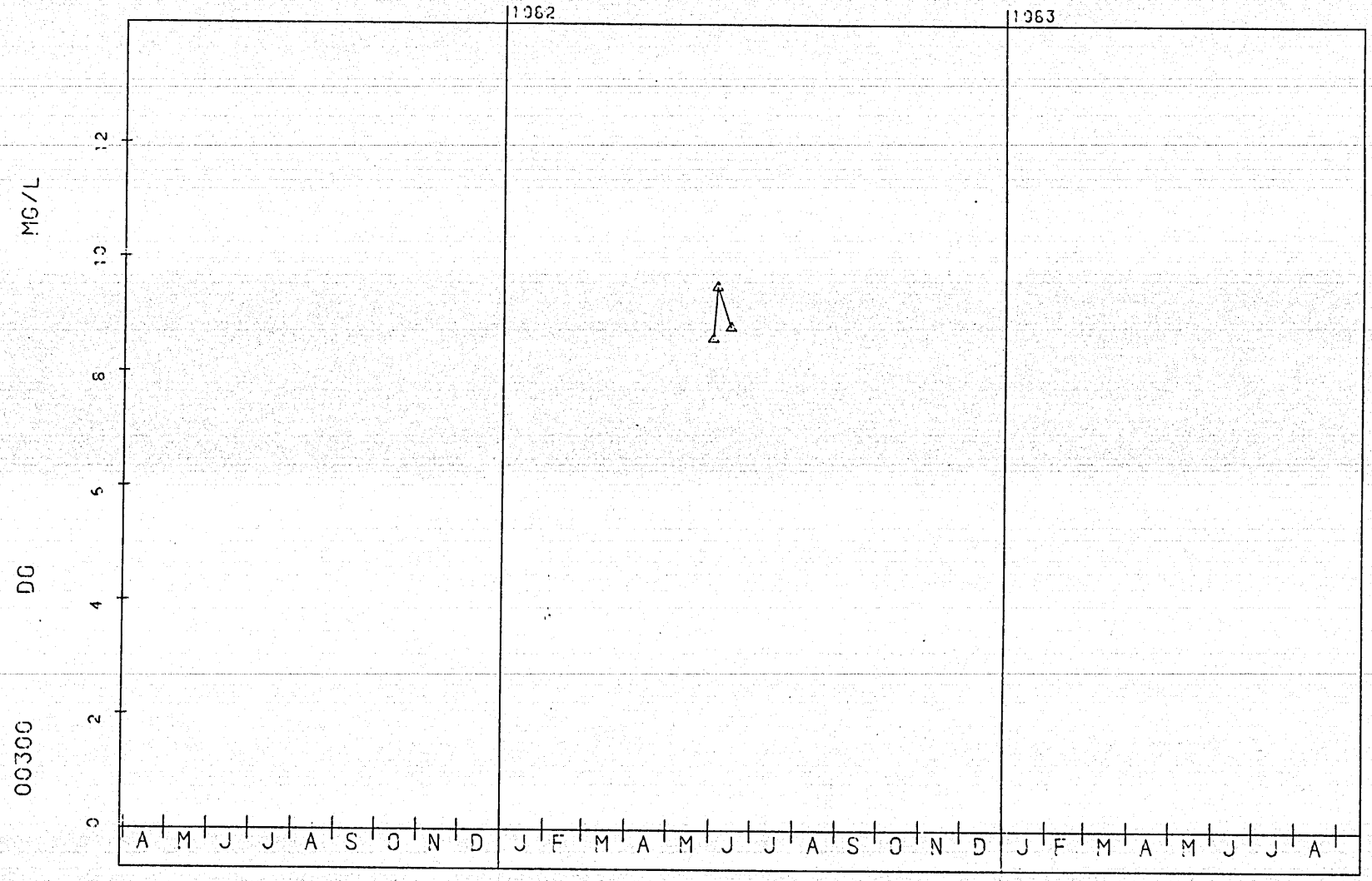
Table IV-53. Total Phosphorus Trophic State Index (TSI) Values for Lake Mitchell.

Date	Sampling Site		
	FC-2	FC-3	FC-6
3-29-81	11.5	6.63	9.26
4-01-81	11.6	11.5	8.73
4-04-81	10.6	8.85	6.52
2-23-82	17.6	12.0	16.0
3-16-82	8.24	7.97	10.9
3-23-82	9.75	7.74	6.45
5-16-82	7.58	3.20	7.11
5-20-82	5.94	6.79	5.45
5-21-82	6.35	4.11	4.64
5-24-82	40.0	14.5	4.57
5-26-82	12.1	9.90	8.77
6-01-82	8.30	11.4	8.18
6-04-82	7.02	7.91	1.54
6-14-82	30.9	11.3	11.8
8-04-82	7.22	7.98	5.36
10-15-82	8.59	9.56	—
3-30-83	9.26	6.67	8.82
5-12-83	12.8	14.2	16.4
6-28-83	13.9	8.75	9.65
X	12.6	9.00	8.34
s.d.	8.69	3.01	3.80
R	5.94 - 40.0	3.20 - 14.5	1.54 - 16.4
N	19	19	18

Table IV-54. Total Nitrogen:Total Phosphorus Weight Ratios for Lake Mitchell.

Figure IV-1.

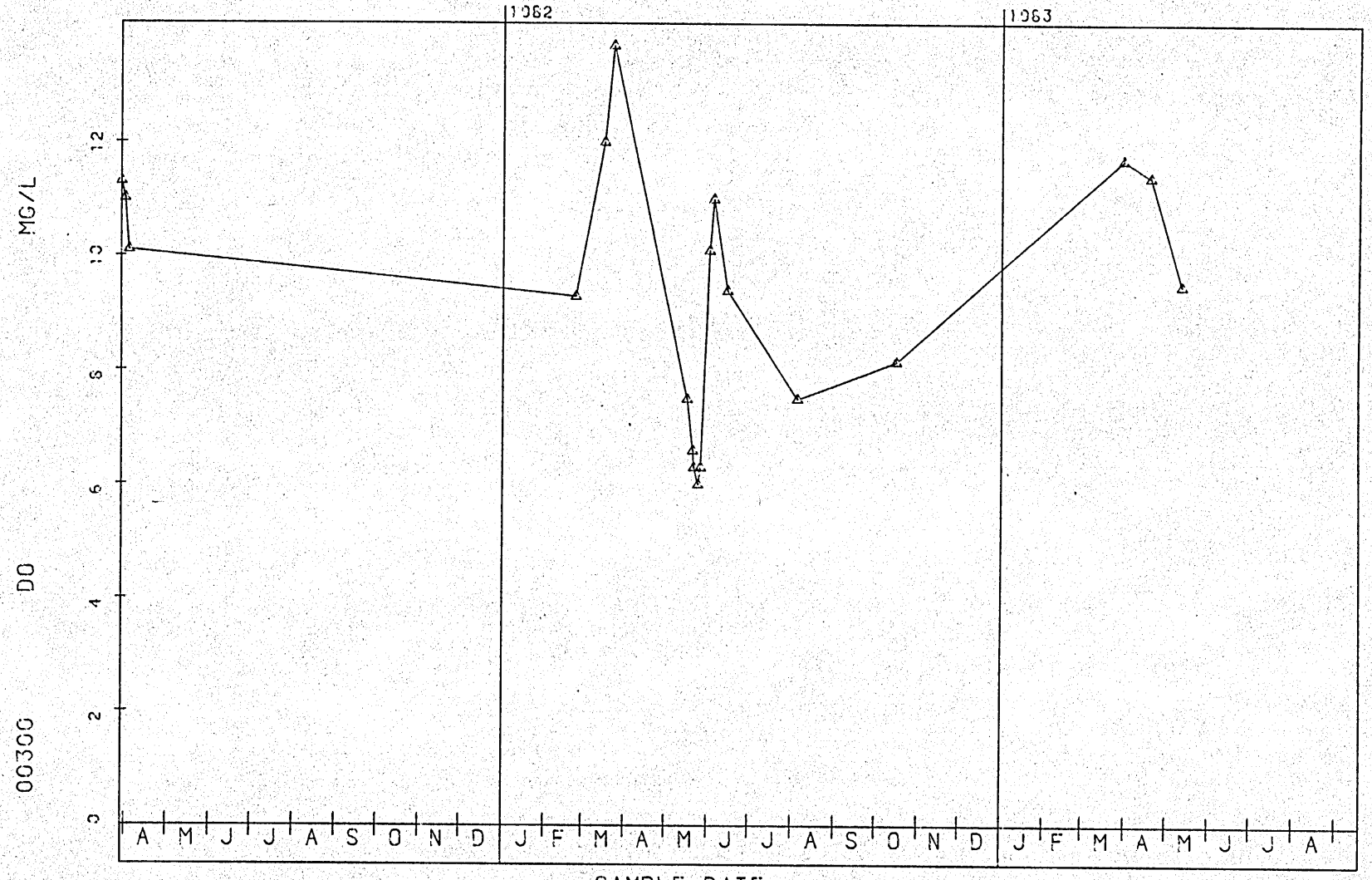
STORET
46FC01
43 44 25.0 098 01 31.0 2
LK MITCHELL OUTLET SD HWY 37 N 103N-60W-S10 BCCA
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663787-0693805



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STORET
46FC02
43 44 39.0 098 01 34.0 2
NE LK MITCHLL .5 MI N OF OUTLET 103N 60W S10 BBBC
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663788-0693806

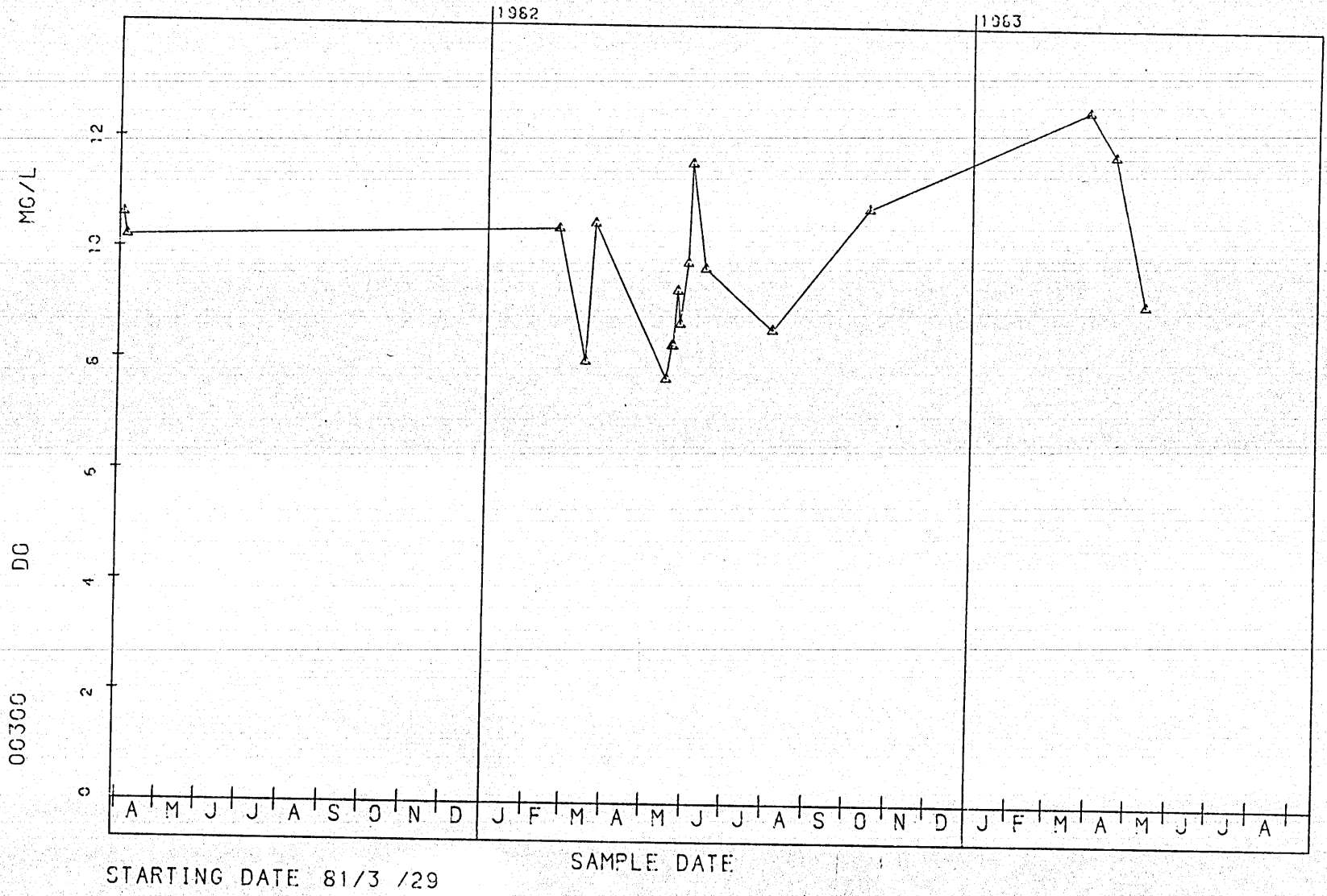
Figure IV-2.



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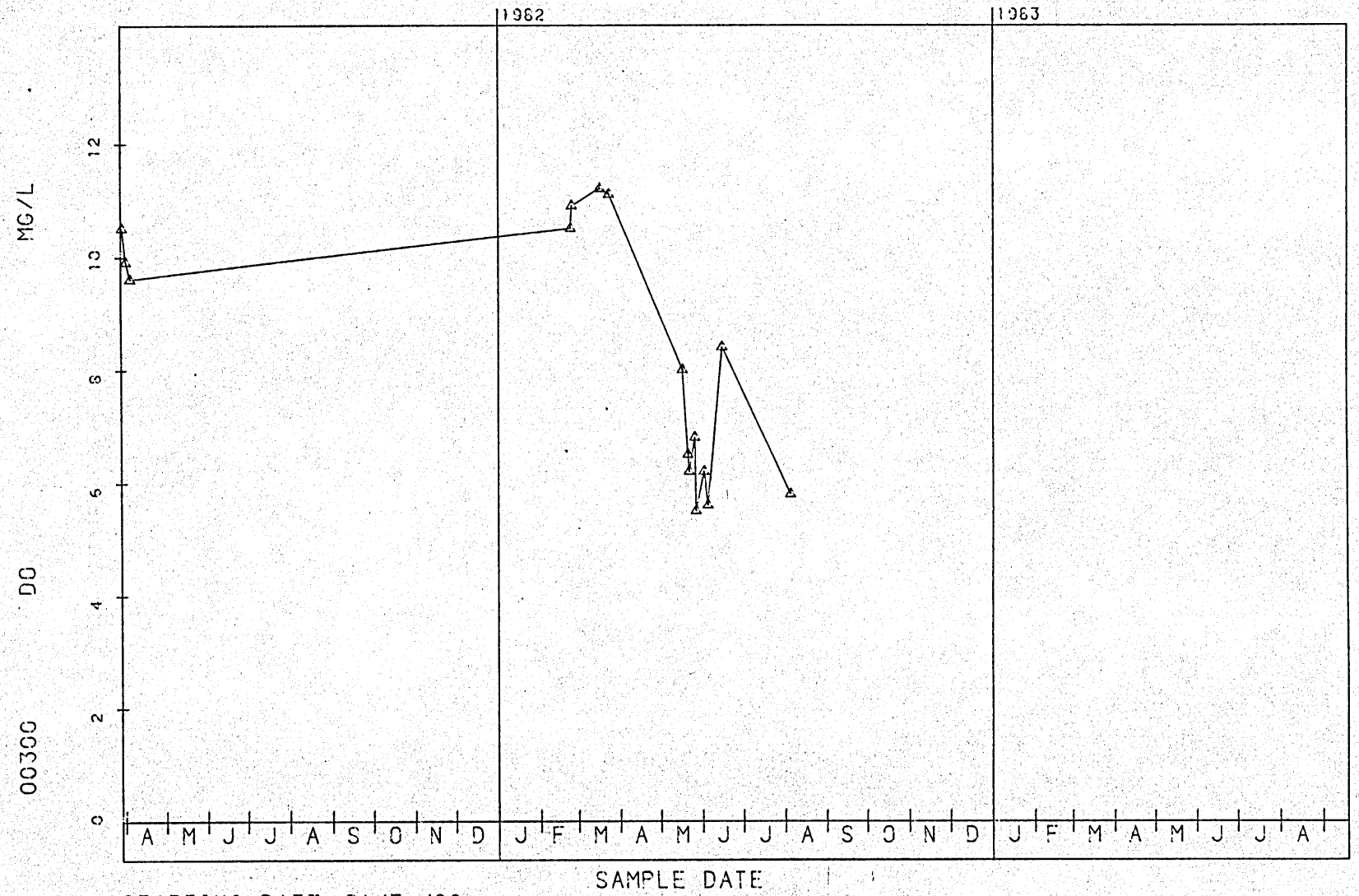
STORET
46FC03
43 45 22.0 098 03 26.0 2
NW LK MTCHLL .75 MI SE FC INLET 103N 60W S5 ACBB
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663789-0693807

Figure IV-3.



STORET
46FC04
43 46 43.0 098 09 58.0 2
4.5 MI W .75 MI N OF FC INLET 104N 61W S28 CCBB
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663790-0693808

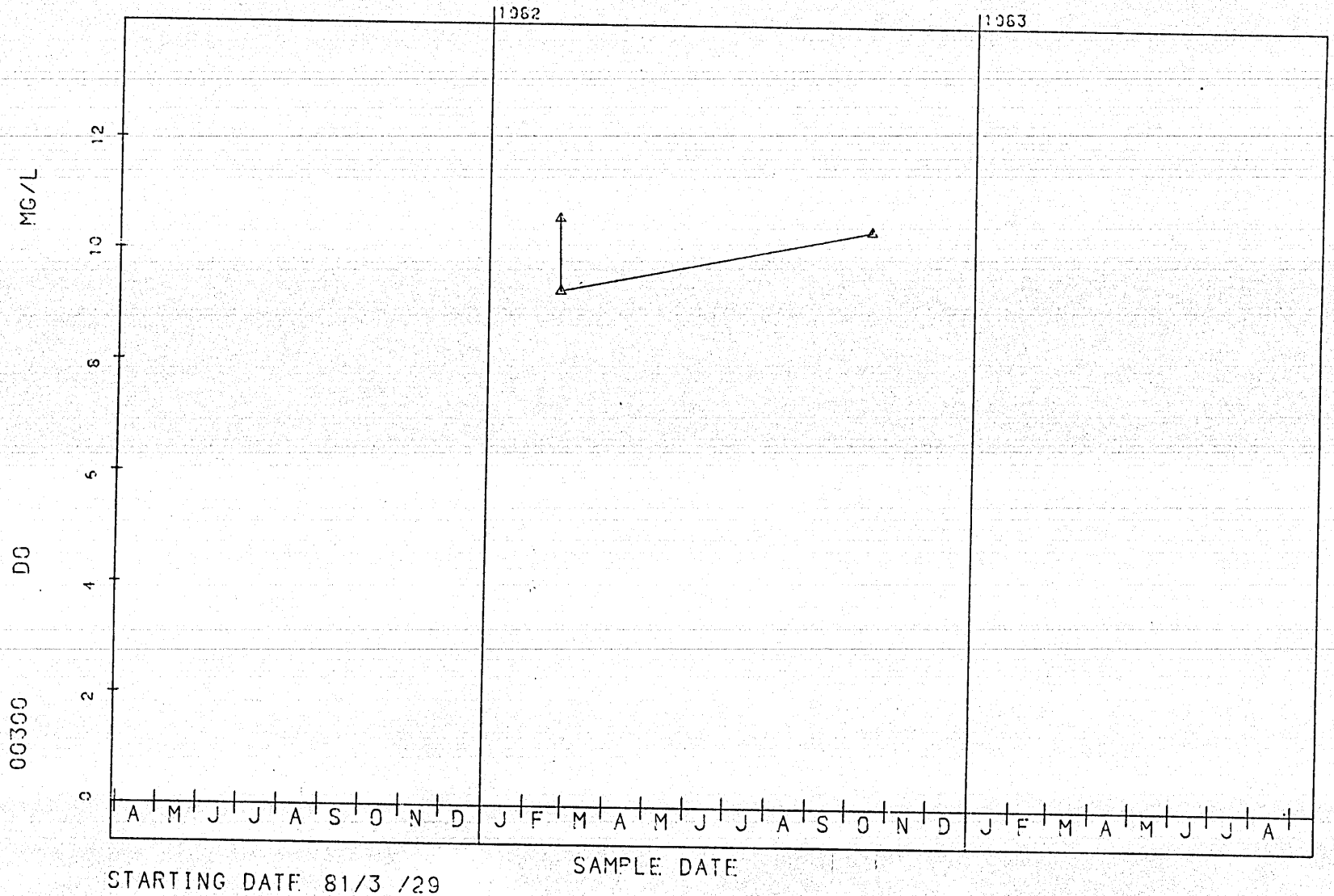
Figure IV-4.



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Figure IV-5.

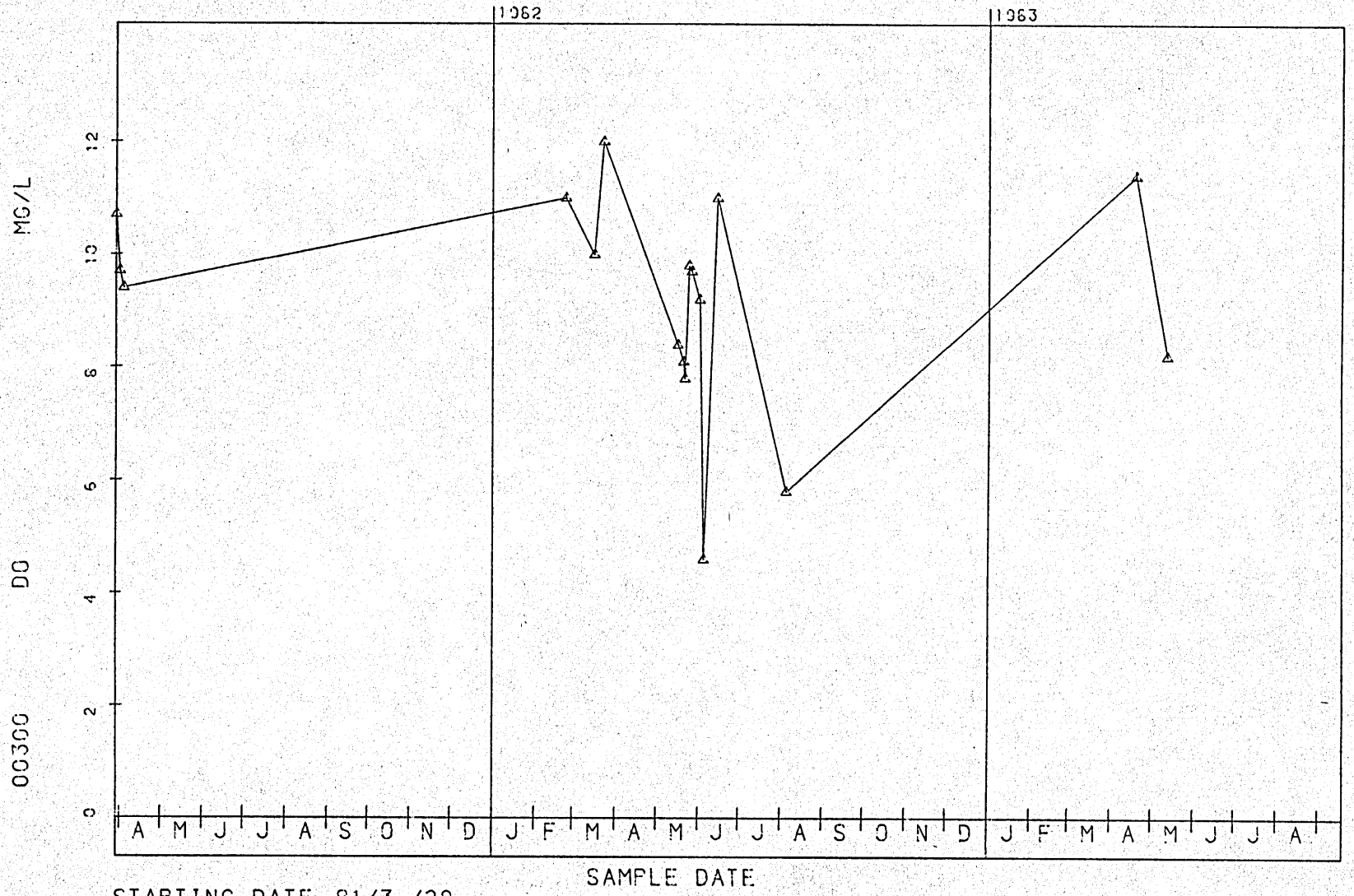
STORET
46FC05
43 44 41.0 098 02 51.0 2
1.5 MI S 100 FT W OF FC INLET 103N 60W S8 AAAD
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663791-0693809



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Figure IV-6.

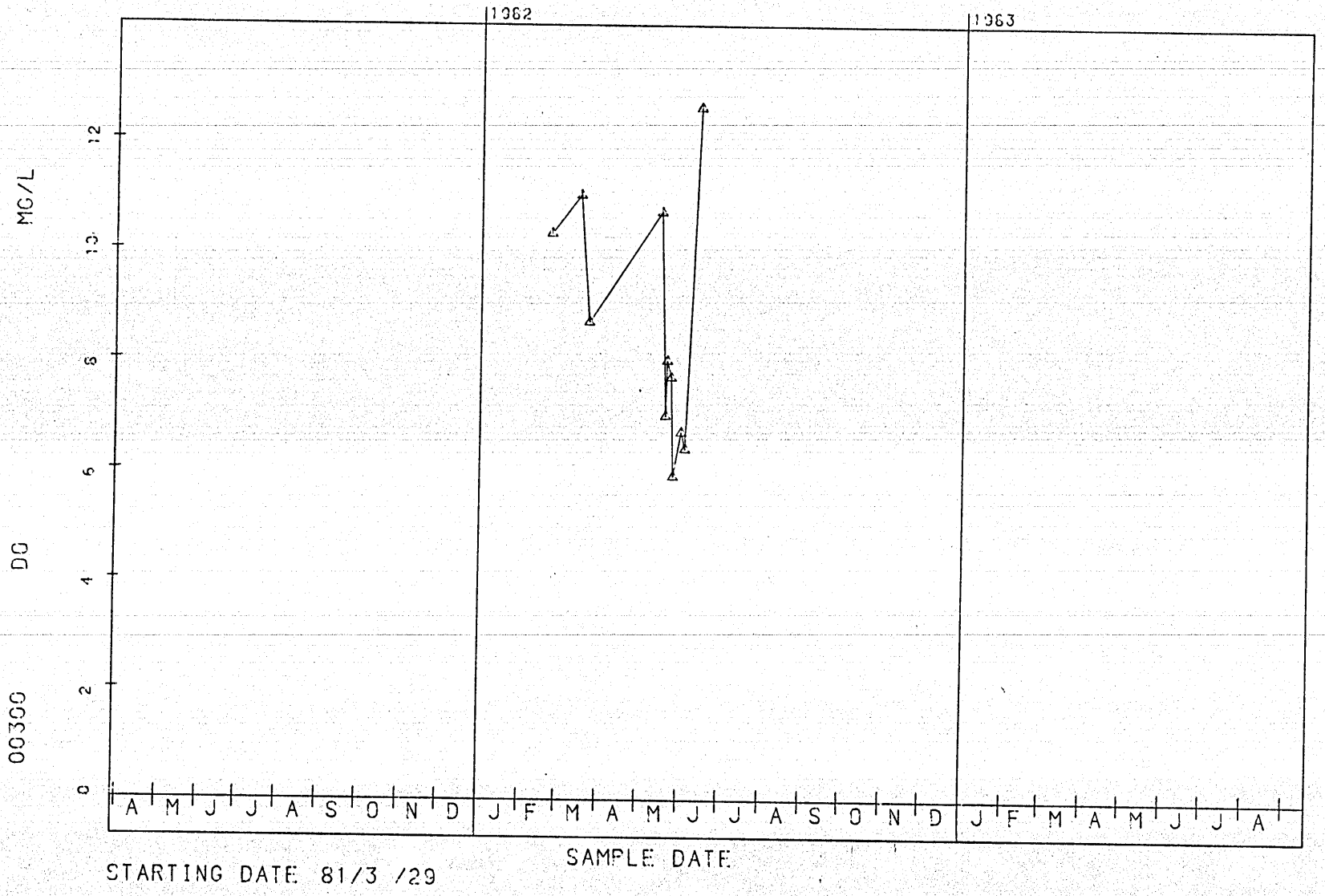
STORET
46FC06
43 45 34.0 098 04 14.0 2
FC INLET TO LK MITCHELL 103N 60W 56 AABB
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663792-0693810



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STORET
46FC07
43 47 22.0 098 19 31.0 2
12.5 MI W 2 MI N OF FC INLET 104N 62W S30 6666
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663793-0693811

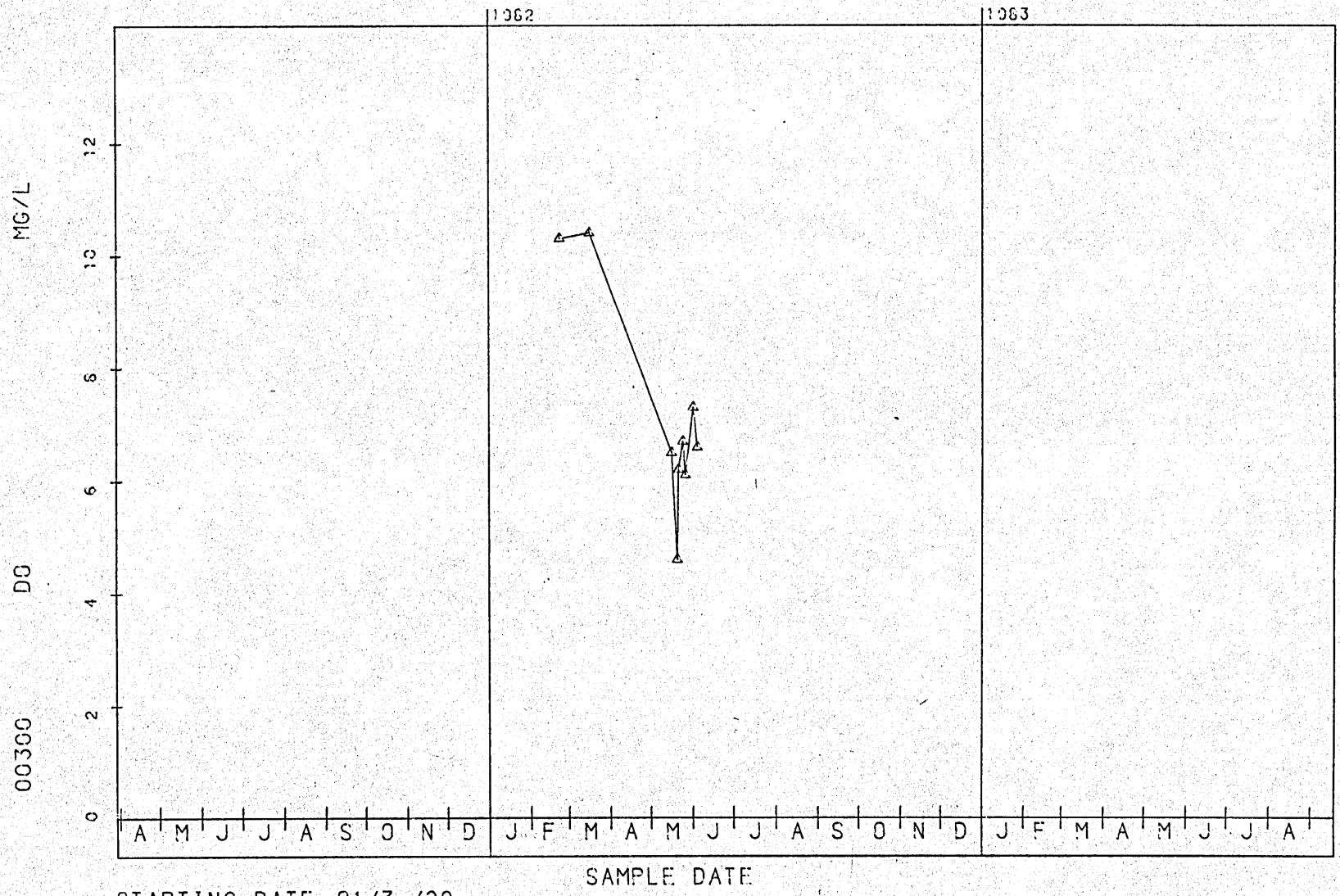
Figure IV-7.



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STORET
46FC08
43 55 09.0 098 27 04.0 2
18.5 MI W 11 MI N OF FC INLET 105N 63W S7 BBCC
46003 SOUTH DAKOTA AURORA
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663794-0693812

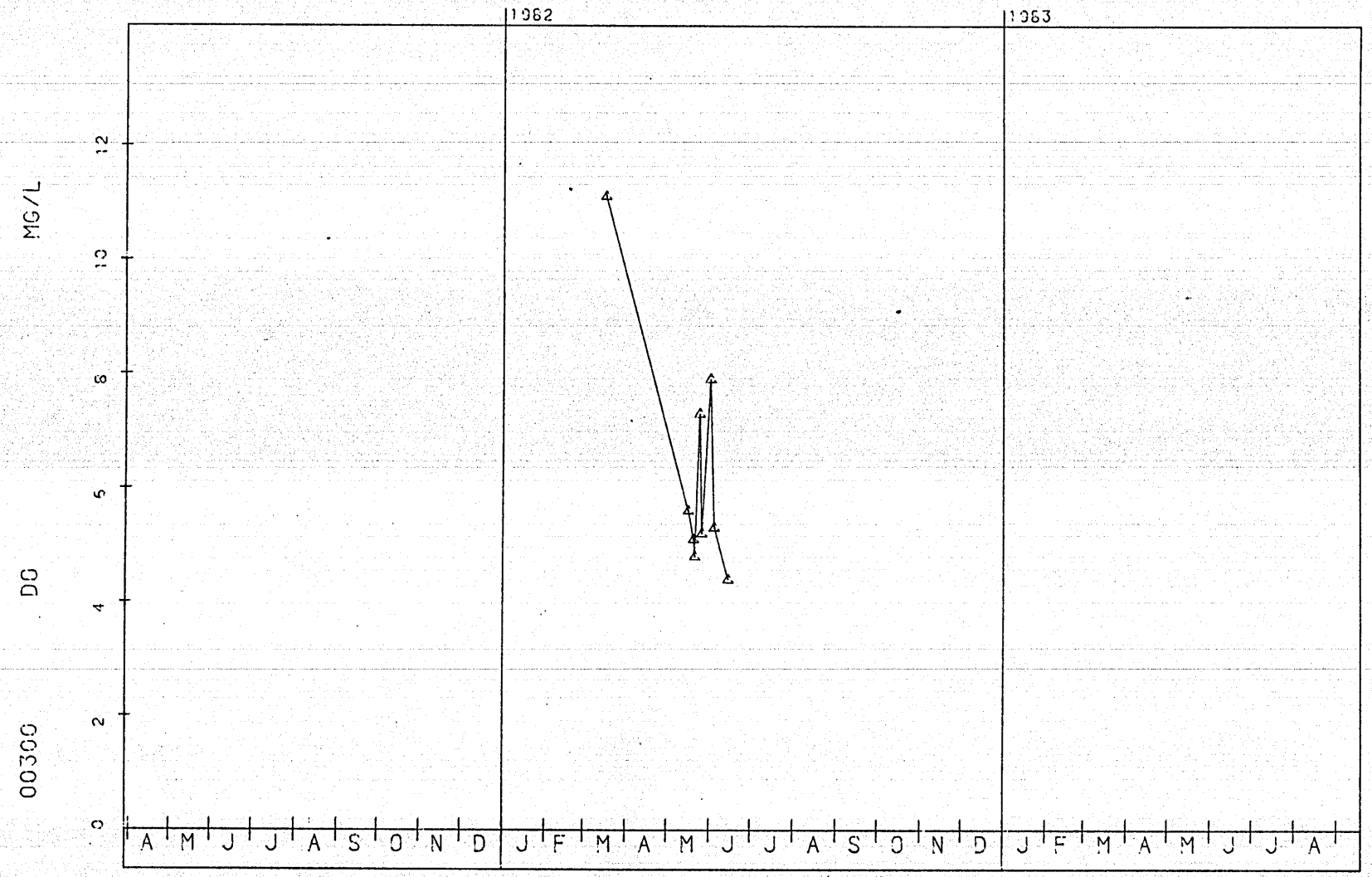
Figure IV-8.



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Figure IV-9.

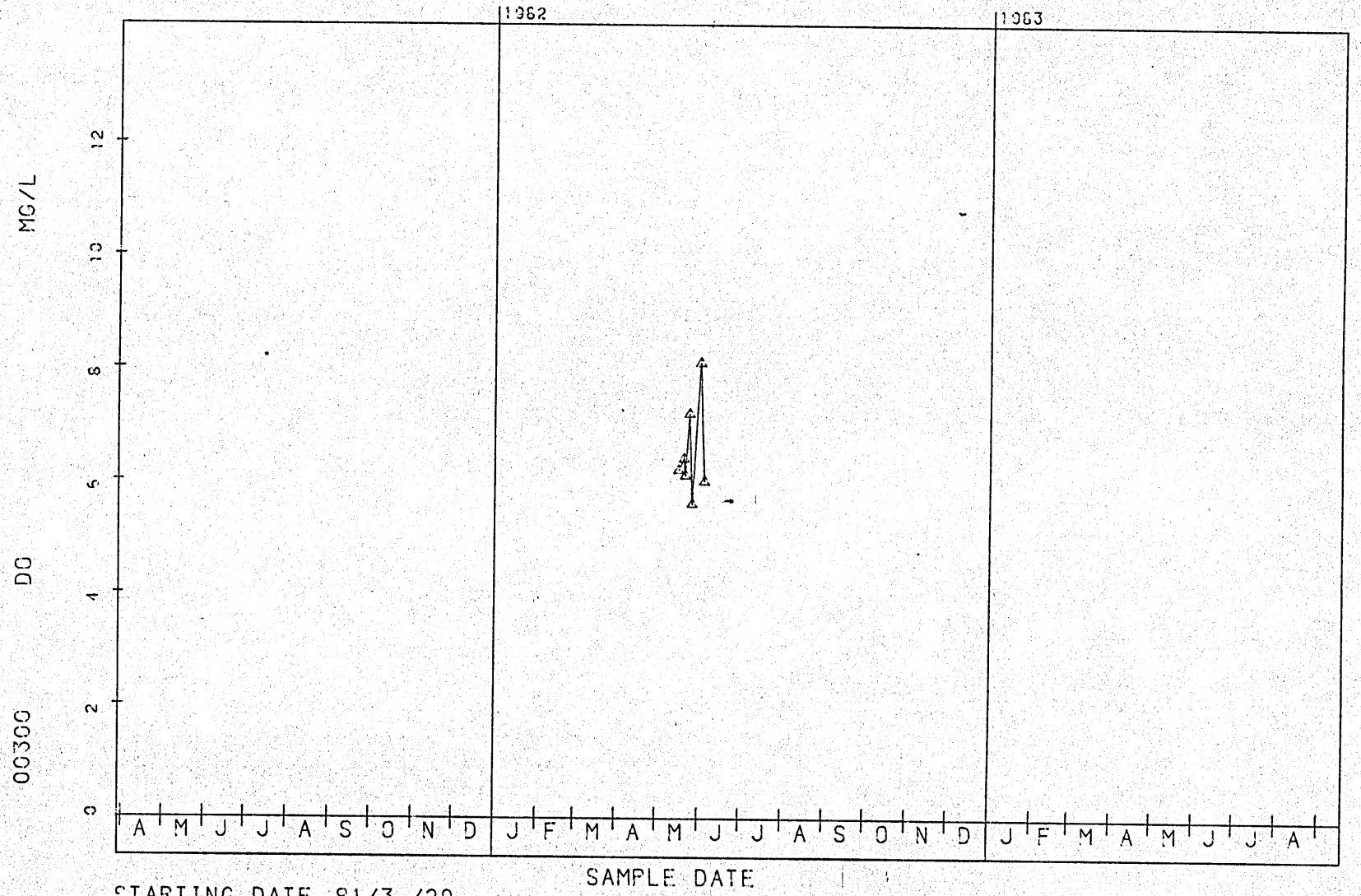
STORET
46FC09
44 04 03.0 098 28 46.0 2
1.5 MI W OF JCT 34 AND 281 107N 64W S23 ABBA
46073 SOUTH DAKOTA JERAULD
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663795-0693813



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STORET
46FC10
44 06 40.0 098 28 58.0 2
3 MI W 1.5 MI W JCT 34 AND 281 107N 64W S2 BAAA
46073 SOUTH DAKOTA JERAULD
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663796-0693814

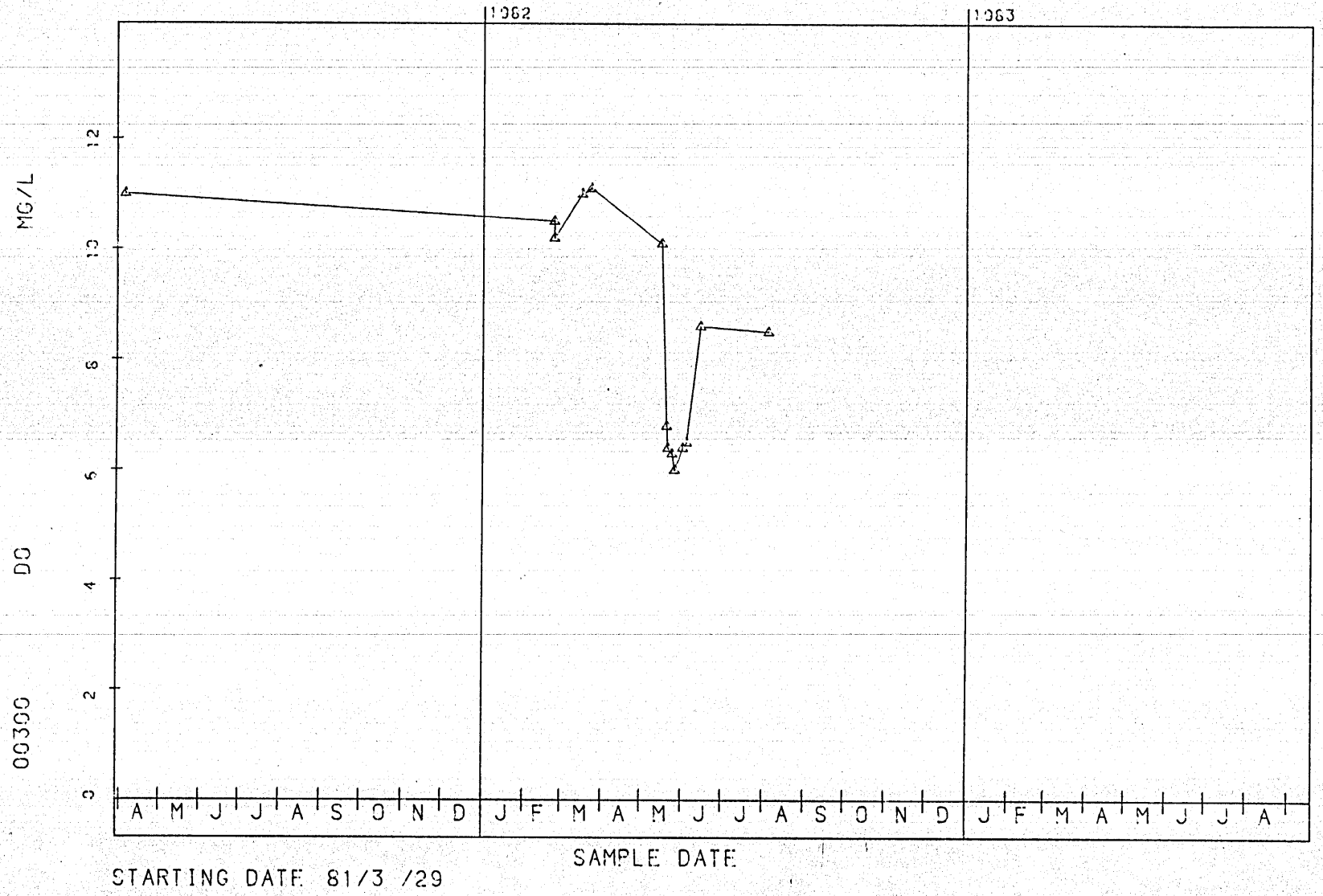
Figure IV-10.



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STORET
46FC11
43 46 36.0 098 14 44.0 2
8.5 MI W I MI N OF FC INLET 104N 62W S26 CCCB
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663797 0693815

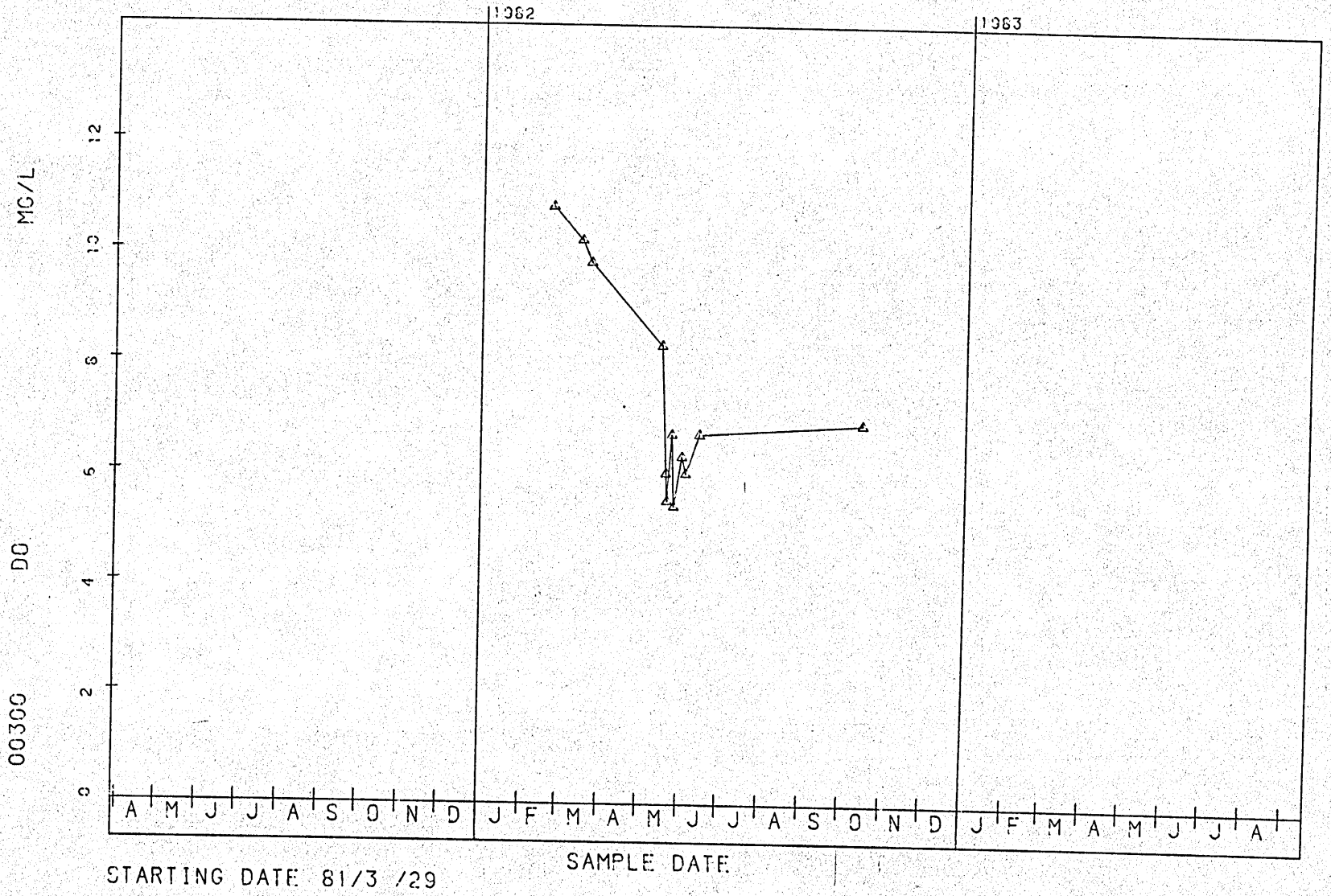
Figure IV-11.



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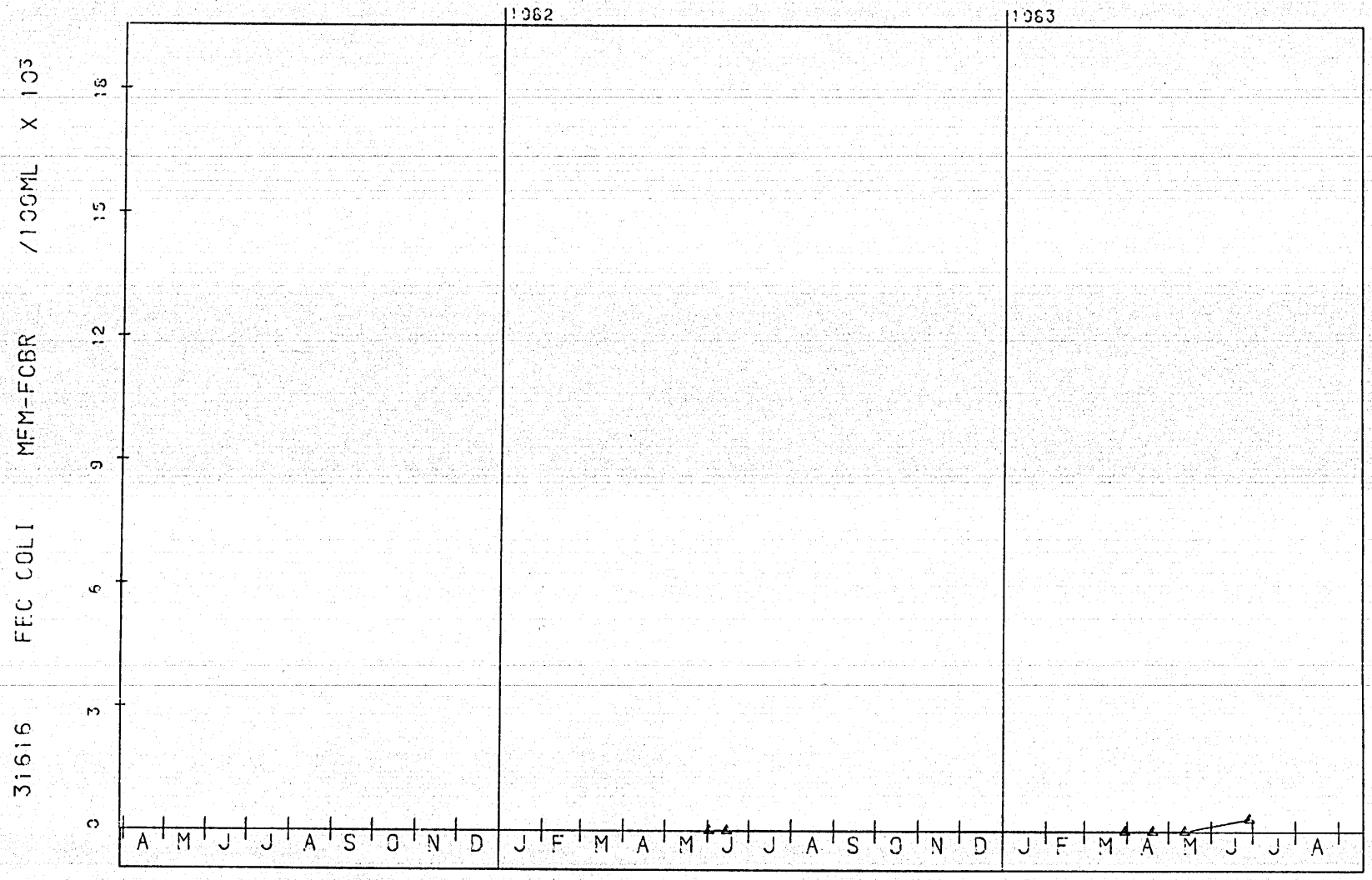
STORET
46FC12
43 48 16.0 098 18 32.0 2
3 MI N 12 MI W OF FC INLET 104N 62W S19 AABA
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663798-0693816

Figure IV-12.



STORET
46FC01
43 44 25.0 098 01 31.0 2
LK MITCHELL OUTLET SD HWY 37 N 103N-60W-S10 BCCA
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663787-0693805

Figure IV-13.



STORET
46FC02
43 44 39.0 098 01 34.0 2
NE LK MTCHLL .5 MI N OF OUTLET 103N 60W S10 BBBC
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663788-0693806

Figure IV-14.

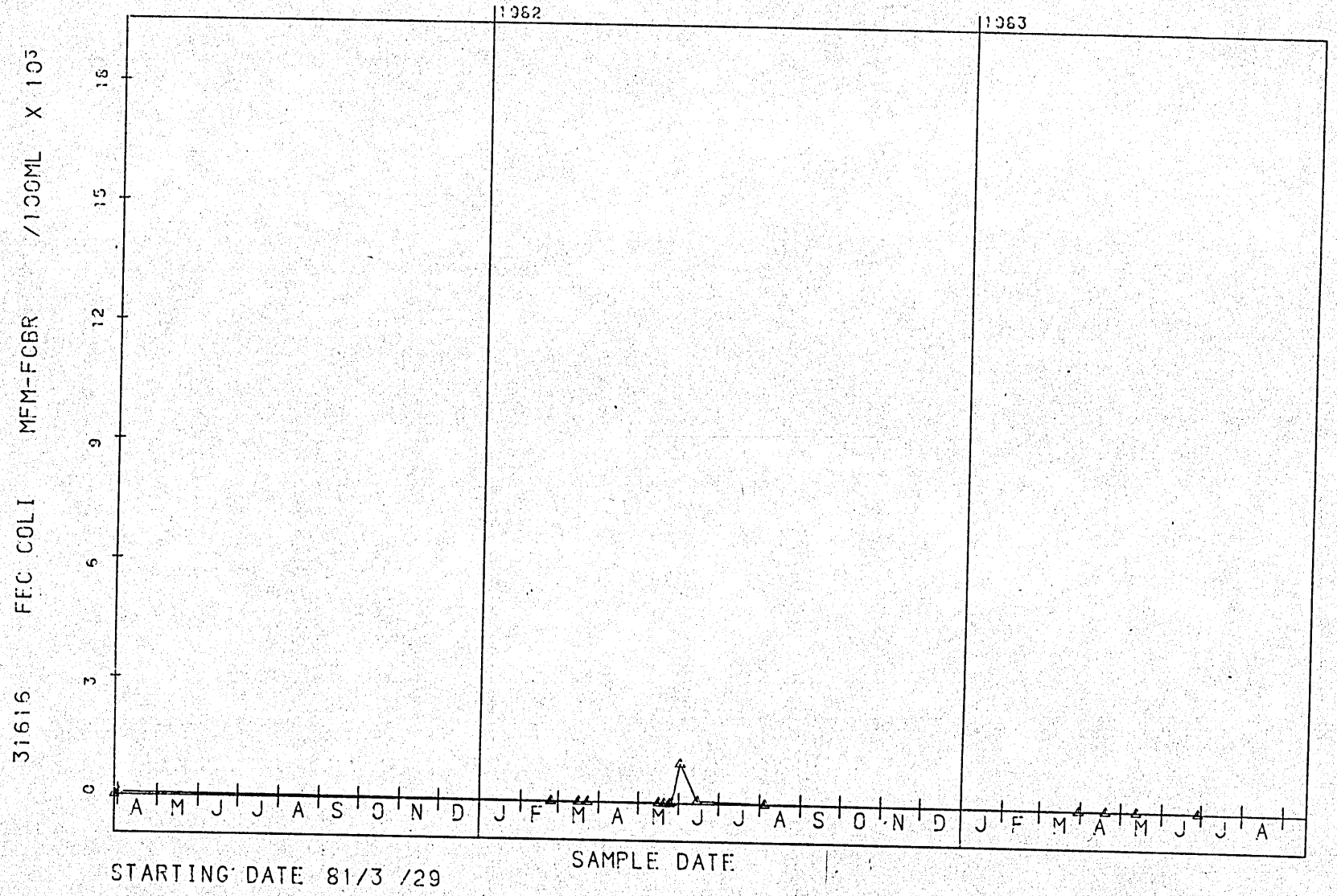
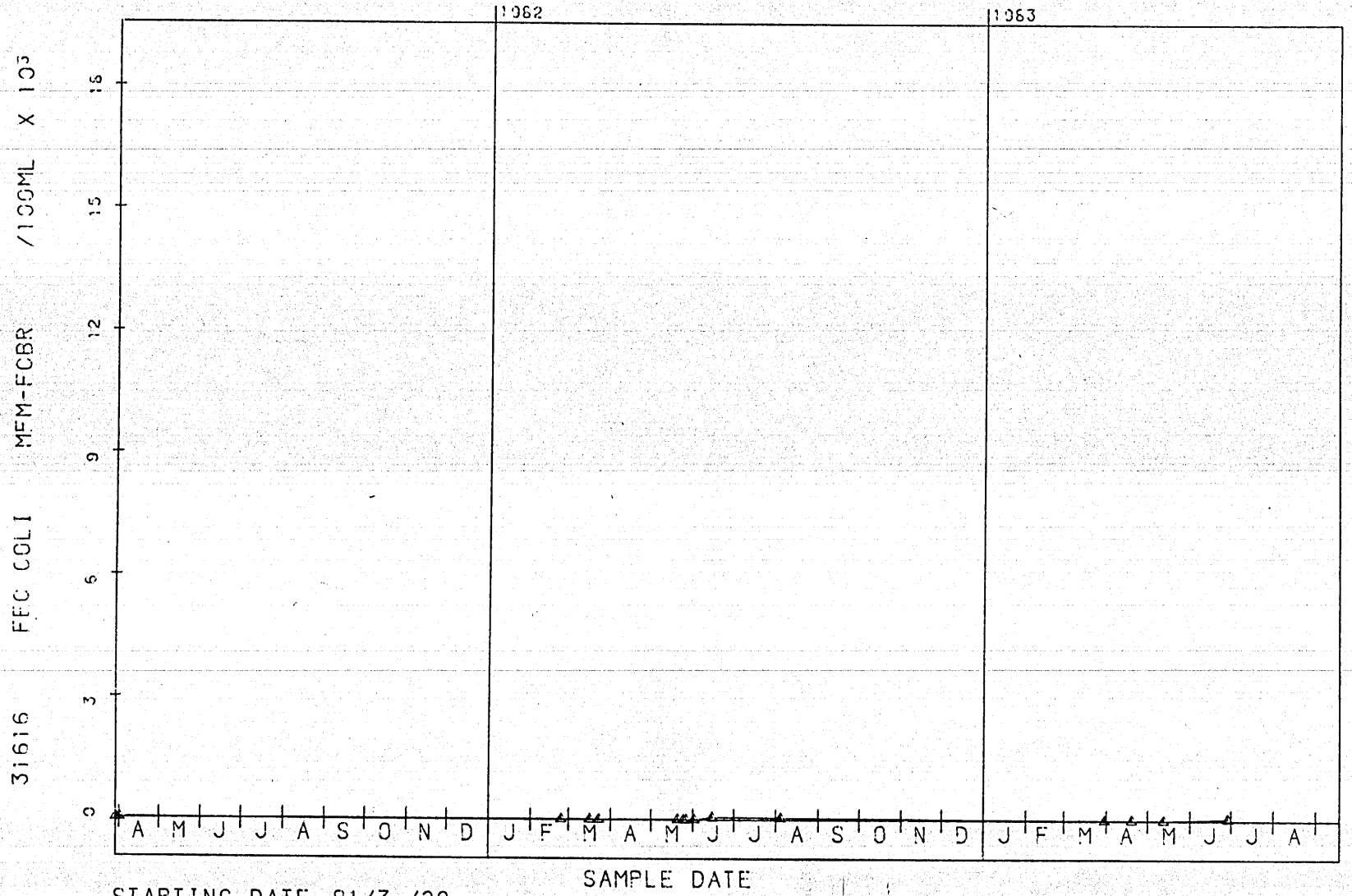


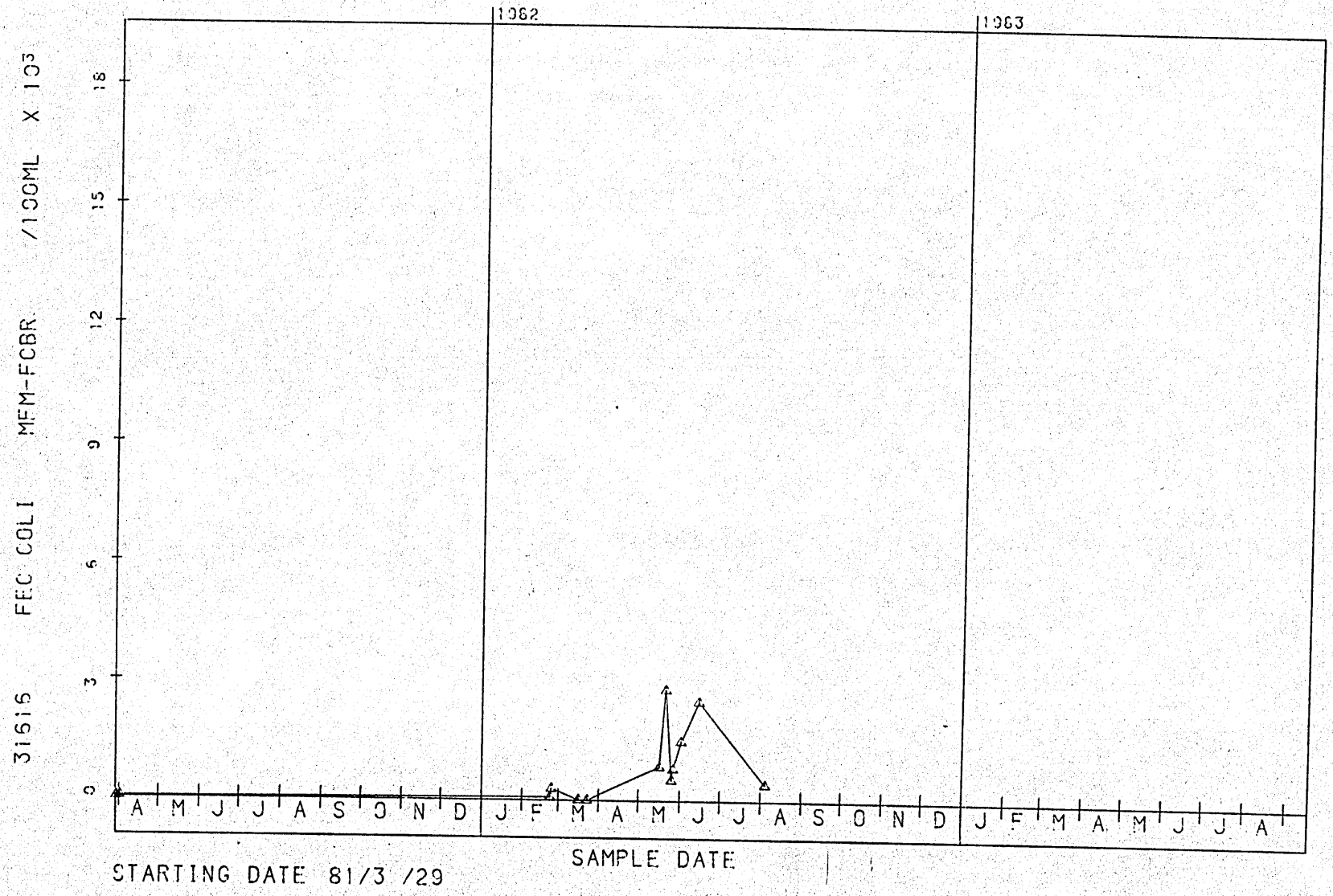
Figure IV-15.

STORET
46FC03
43 45 22.0 098 03 26.0 2
NW LK MTCHLL .75 MI SE FC INLET 103N 60W S5 ACBB
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663789-0693807



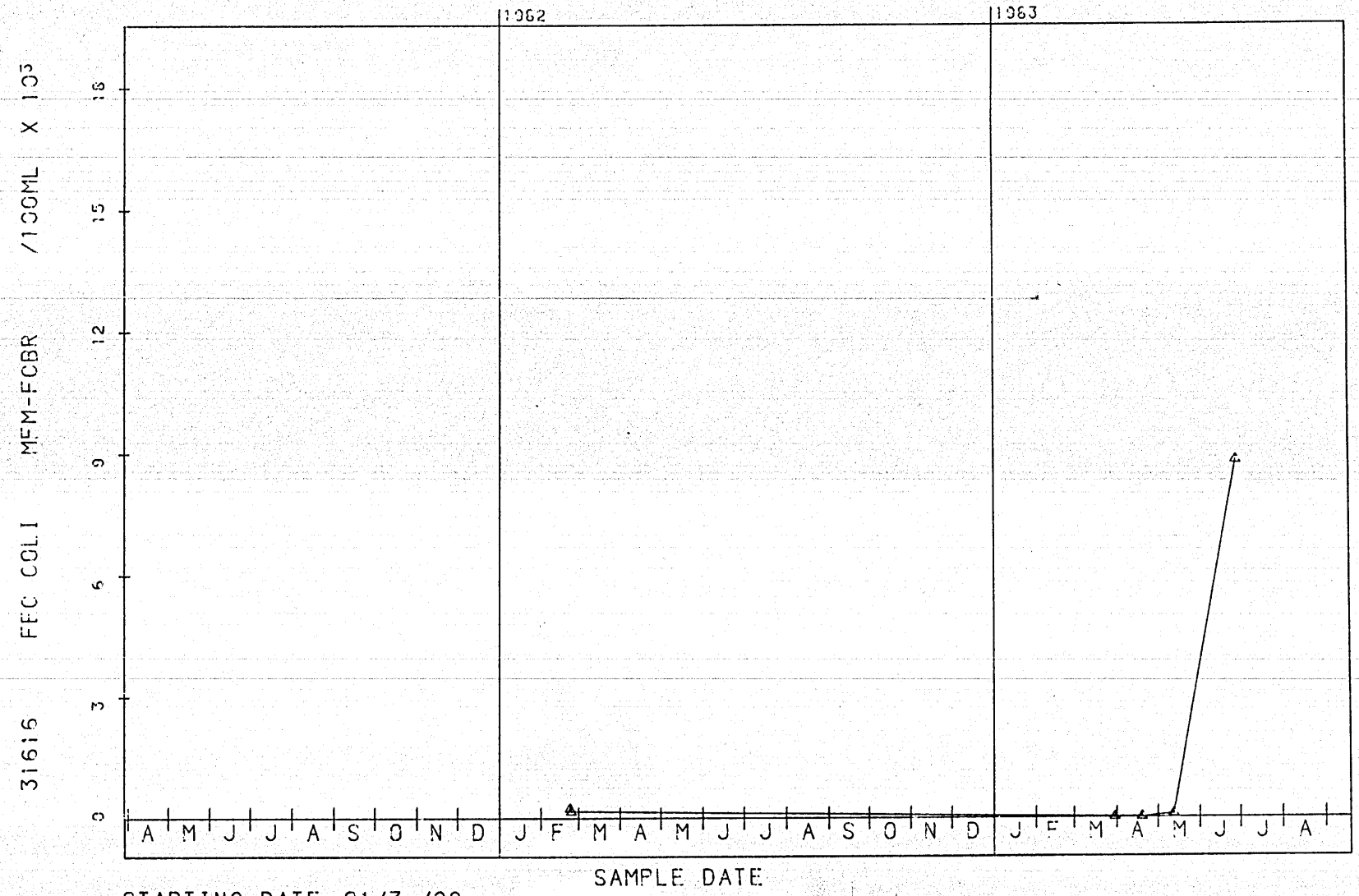
STORET
46FC04
43 46 43.0 098 09 58.0 2
4.5 MI W .75 MI N OF FC INLET 104N 61W S28 CCBB
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663790-0693808

Figure IV-16.



STORET
46FC05
43 44 41.0 098 02 51.0 2
1.5 MI S 100 FT W OF FC INLET 103N 60W S8 AAAD
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663791-0693809

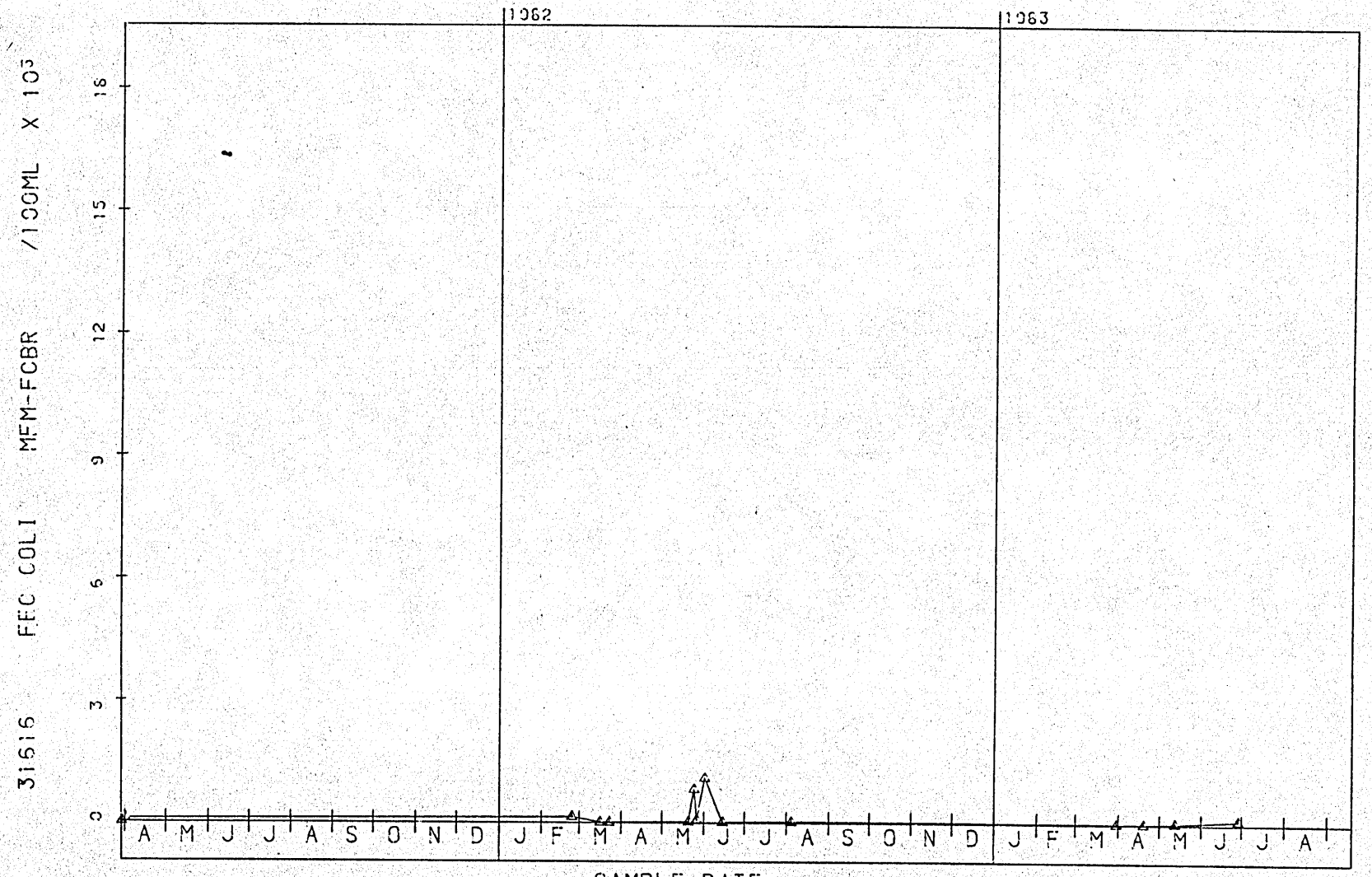
Figure IV-17.



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Figure IV-18.

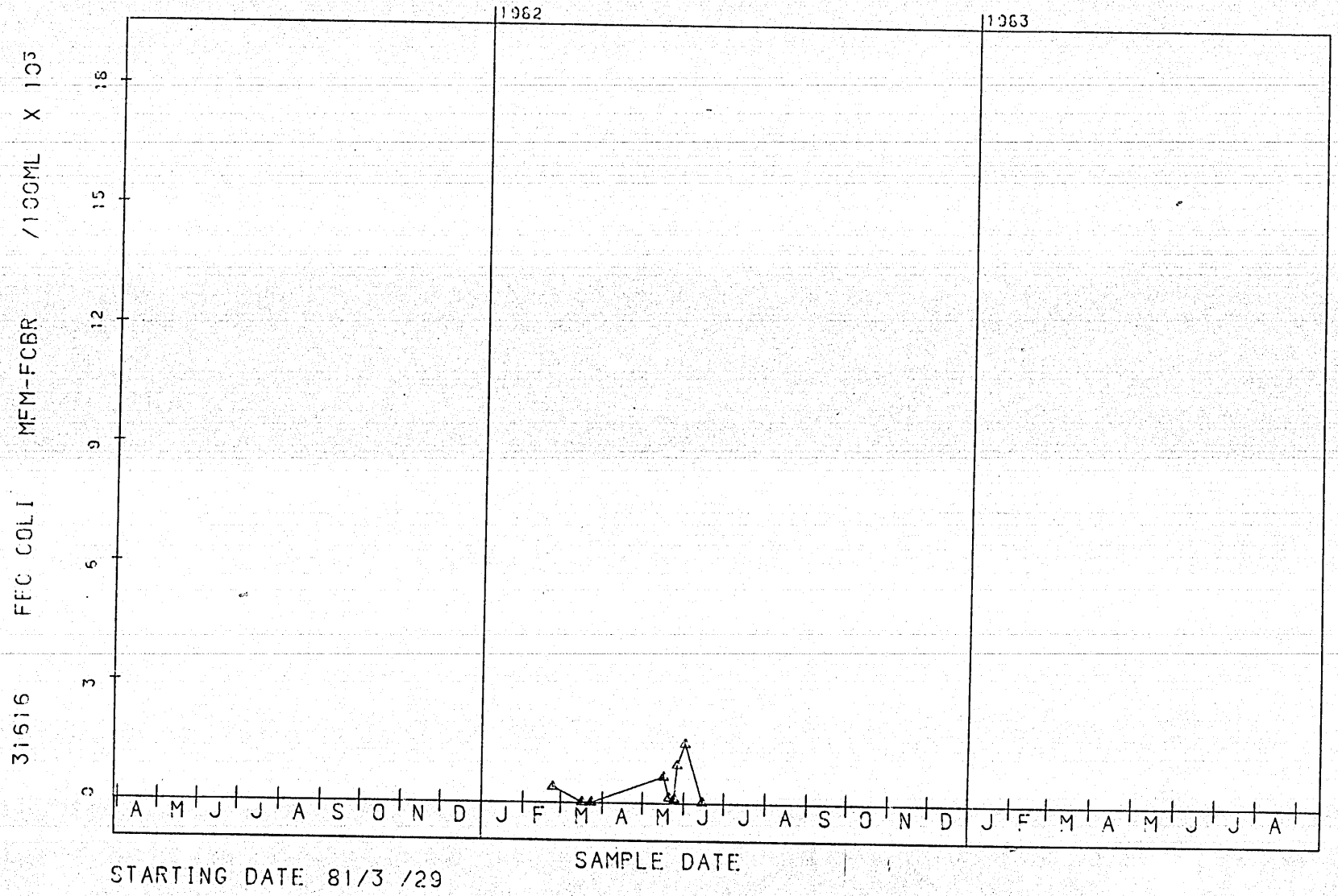
STORET
46FC06
43 45 34.0 098 04 14.0 2
FC INLET TO LK MITCHELL 103N 60W 56 AABB
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663792-0693810



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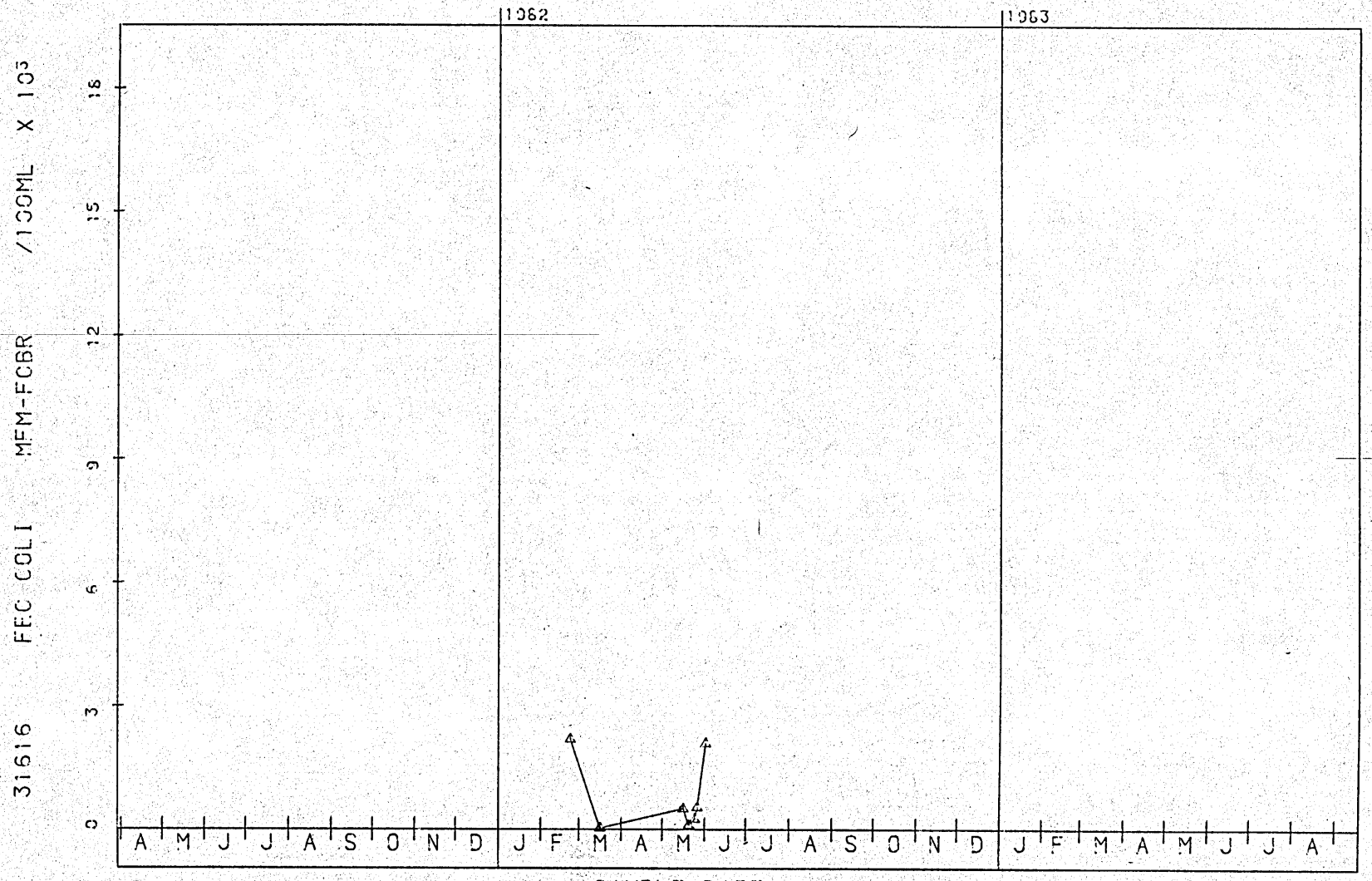
STORET
46FC07
43 47 22.0 098 19 31.0 2
12.5 MI W 2 MI N OF FC INLET 104N 62W S30 BBBB
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663793-0693811

Figure IV-19.



STORET
46FC08
43 55 09.0 098 27 04.0 2
18.5 MI W 11 MI N OF FC INLET 105N 63W S7 BBCC
46003 SOUTH DAKOTA AURORA
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00,CSN-RSP 0663794-0693812

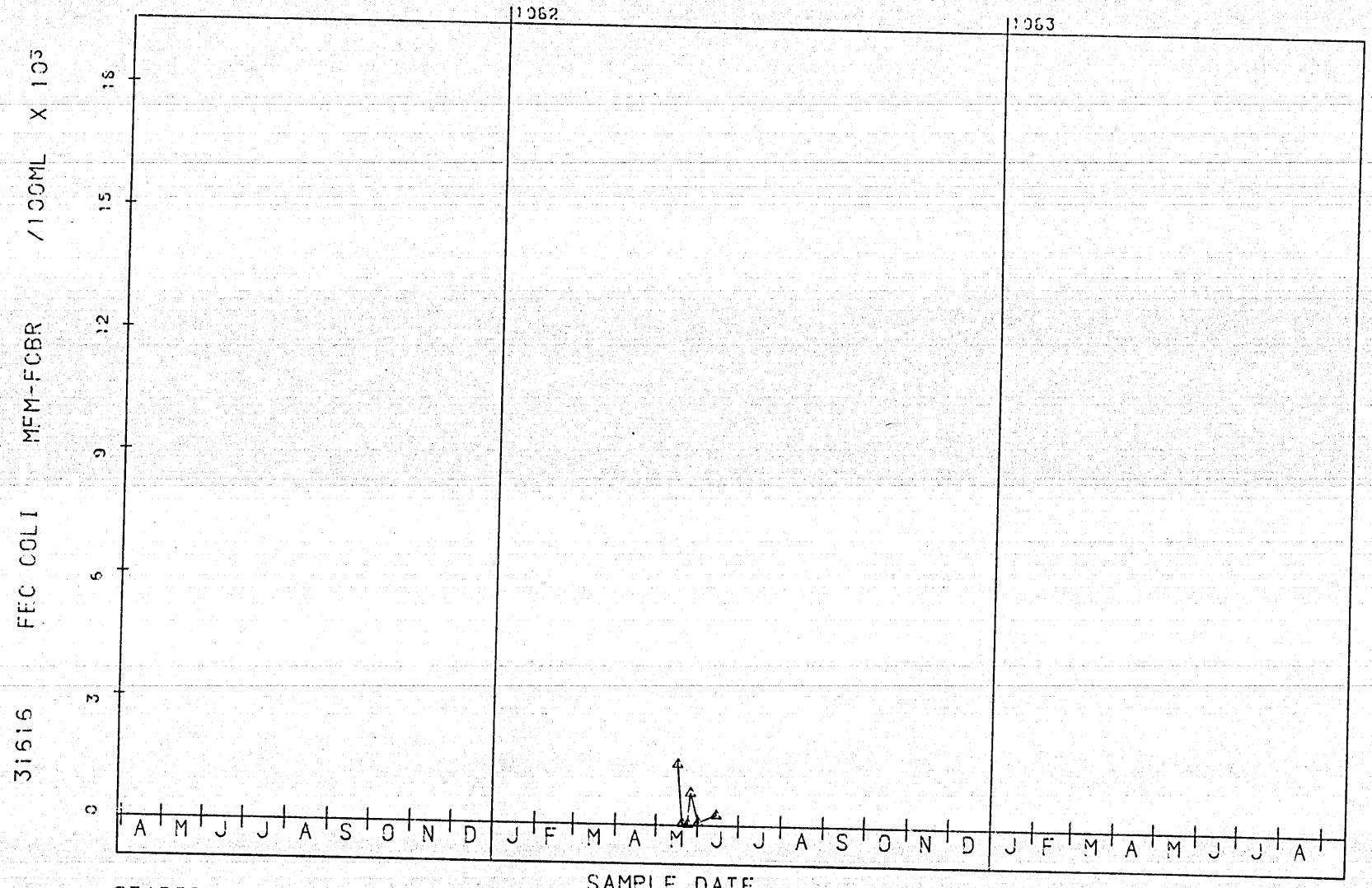
Figure IV-20.



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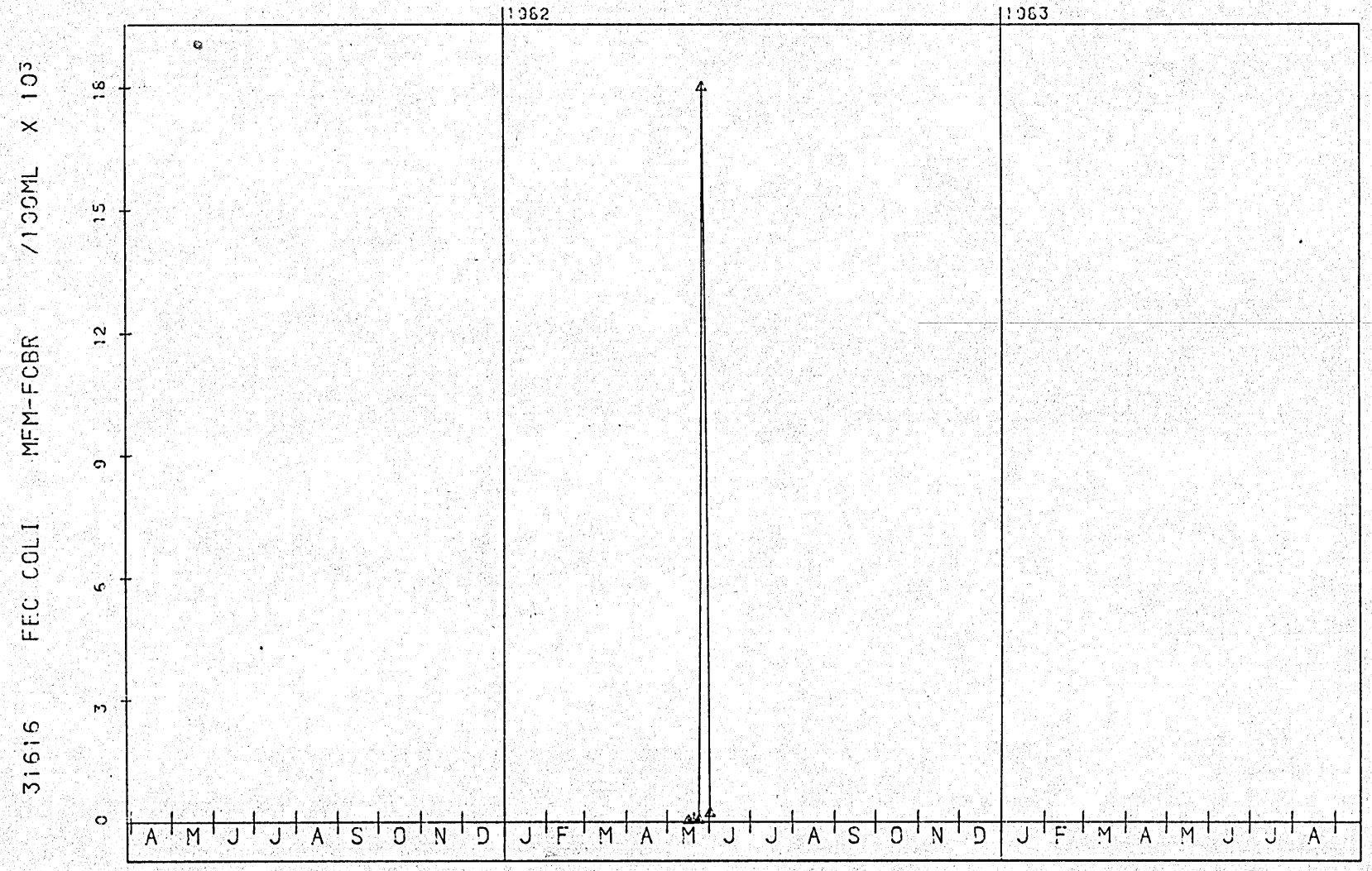
STORET
46FC09
44 04 03.0 098 28 46.0 2
1.5 MI W OF JCT 34 AND 281 107N 64W S23 ABBA
46073 SOUTH DAKOTA JERAULD
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663795-0693813

Figure IV-21.



STORET
46FC10
44 06 40.0 098 28 58.0 2
3 MI W 1.5 MI W JCT 34 AND 281 107N 64W S2 BAAA
46073 SOUTH DAKOTA JERAULD
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663796-0693814

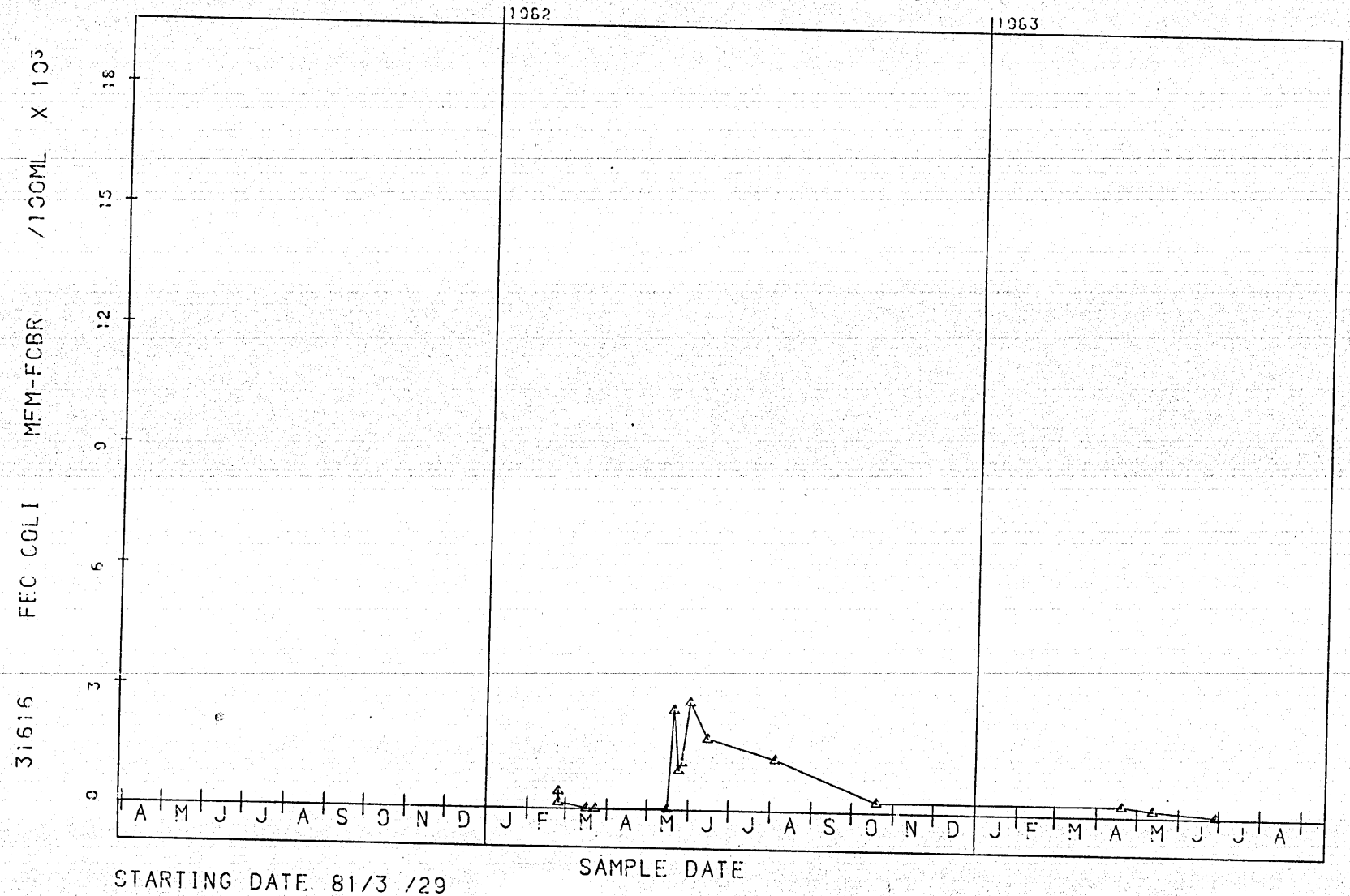
Figure IV-22.



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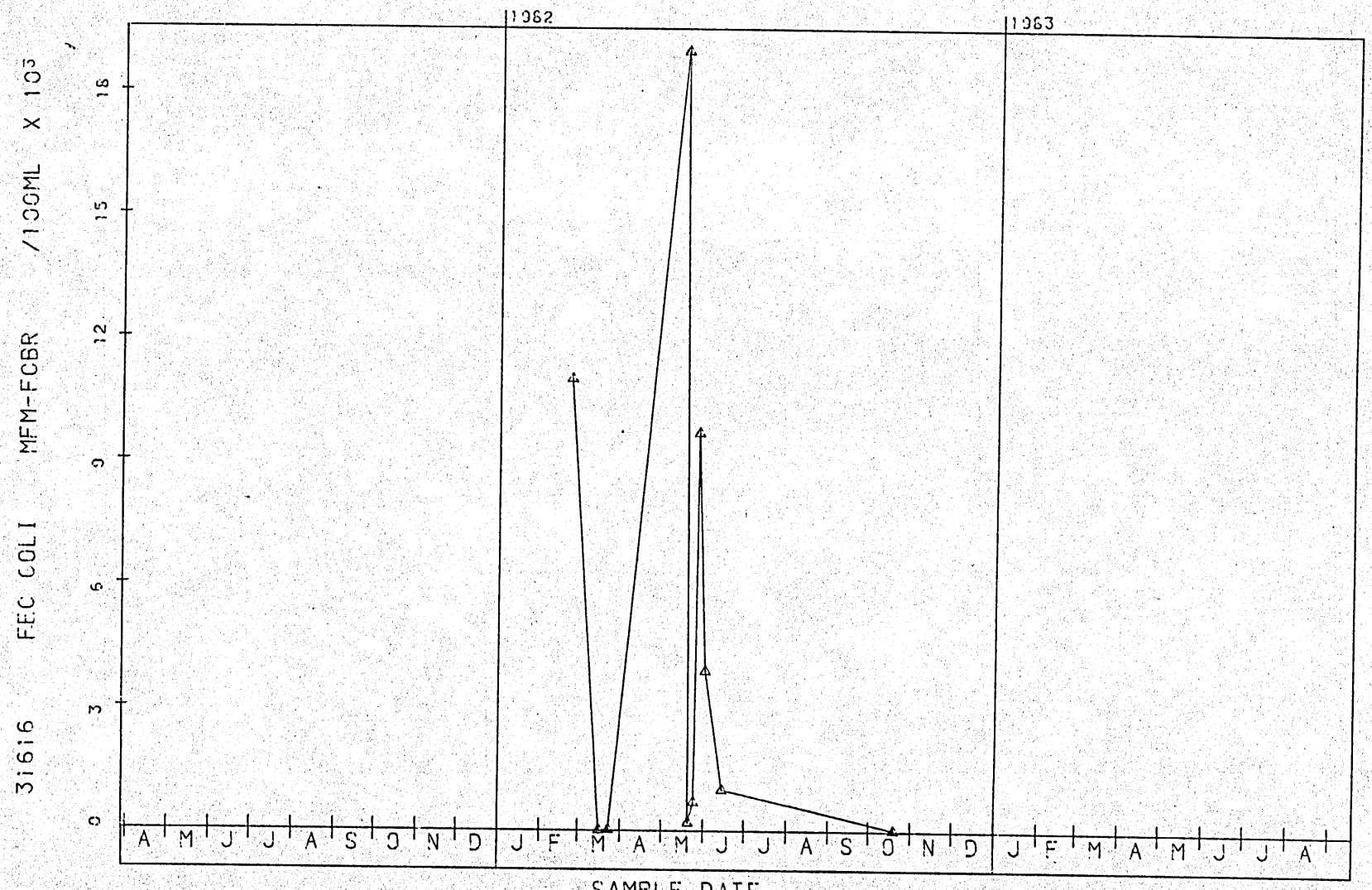
STORET
46FC11
43 46 36.0 098 14 44.0 2
8.5 MI W 1 MI N OF FC INLET 104N 62W S26 CCCB
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663797-0693815

Figure IV-23.



STORET
46FC12
43 48 16.0 098 18 32.0 2
3 MI N 12 MI W OF FC INLET 104N 62W S19 AABA
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663798-0693816

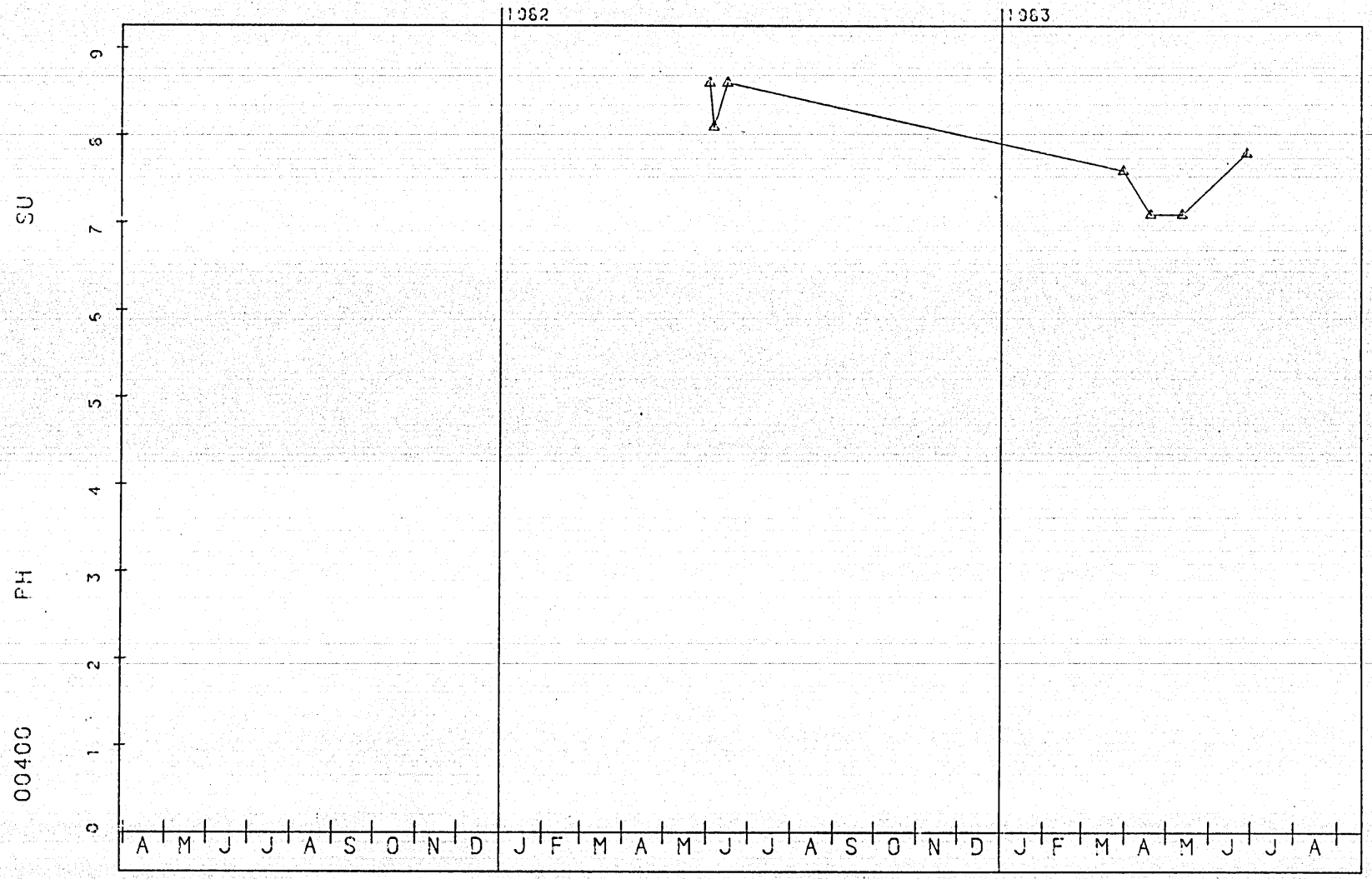
Figure IV-24.



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STORET
46FC01
43 44 25.0 098 01 31.0 2
LK MITCHELL OUTLET SD HWY 37 N 103N-60W-S10 BCCA
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663787--0693805

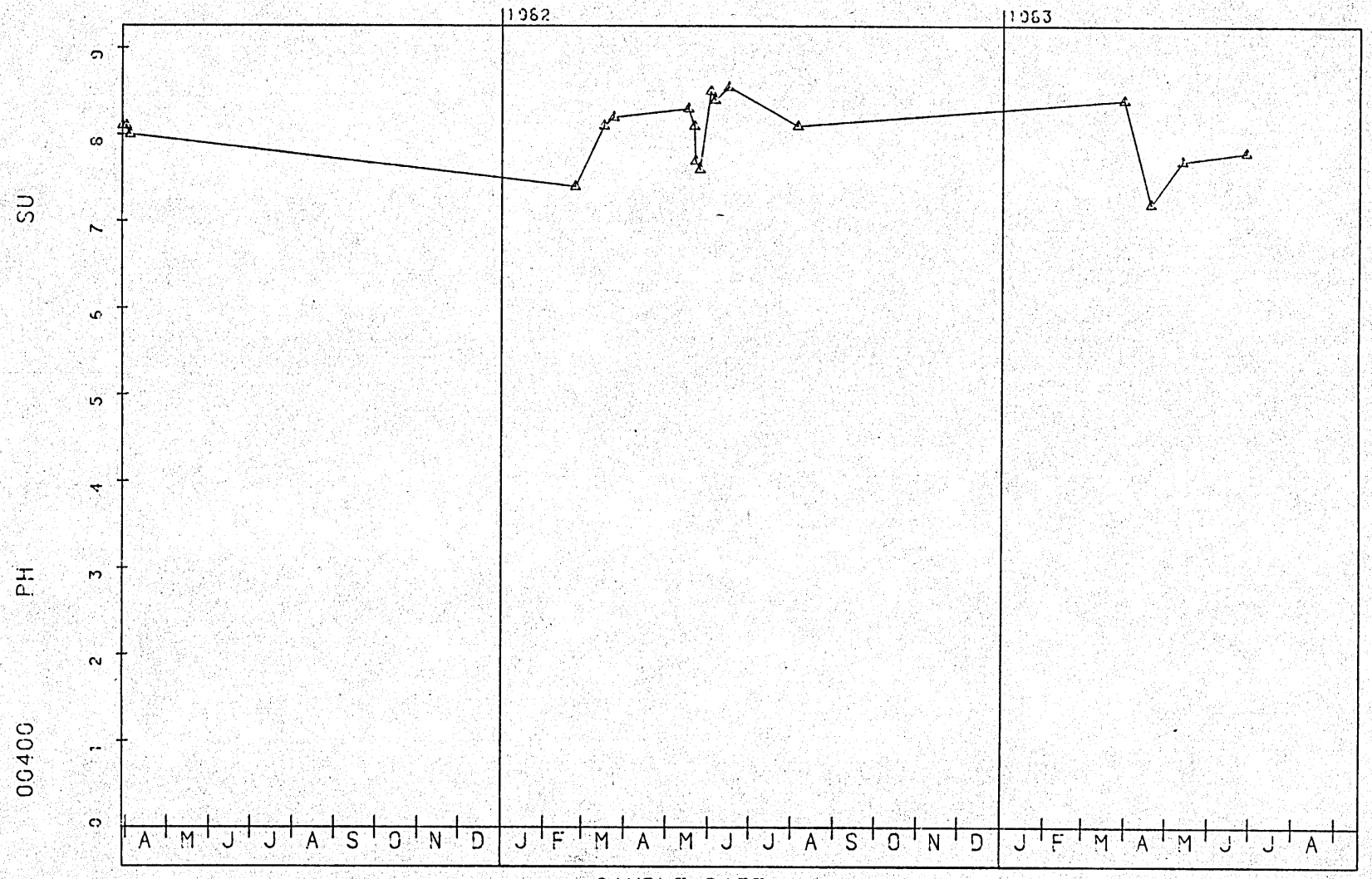
Figure IV-25.



STARTING DATE 81/3 /29

STORET
46FC02
43 44 39.0 098 01 34.0 2
NE LK MTCHLL .5 MI N OF OUTLET 103N 60W S10 BBBC
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663788-0693806

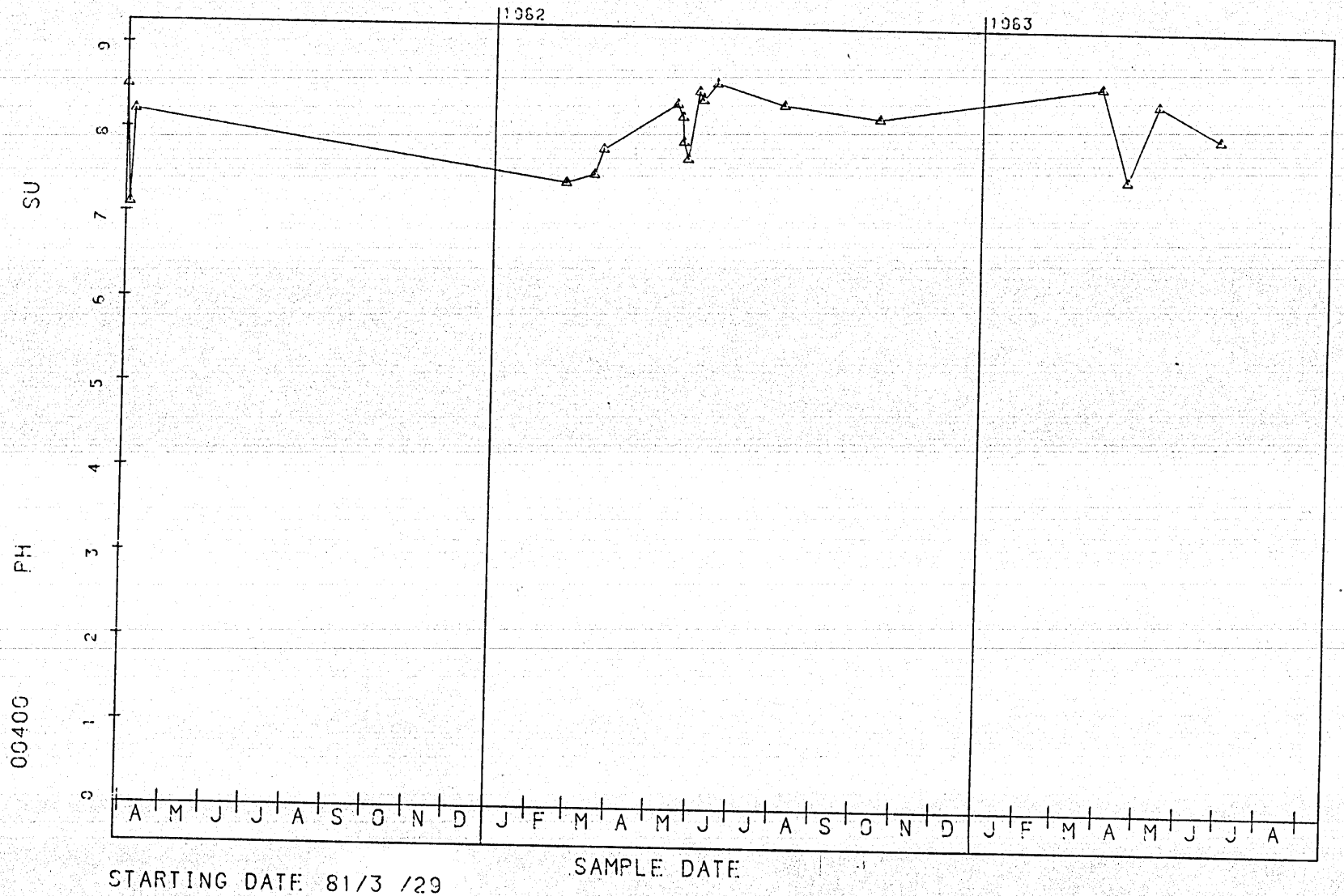
Figure IV-26.



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Figure IV-27.

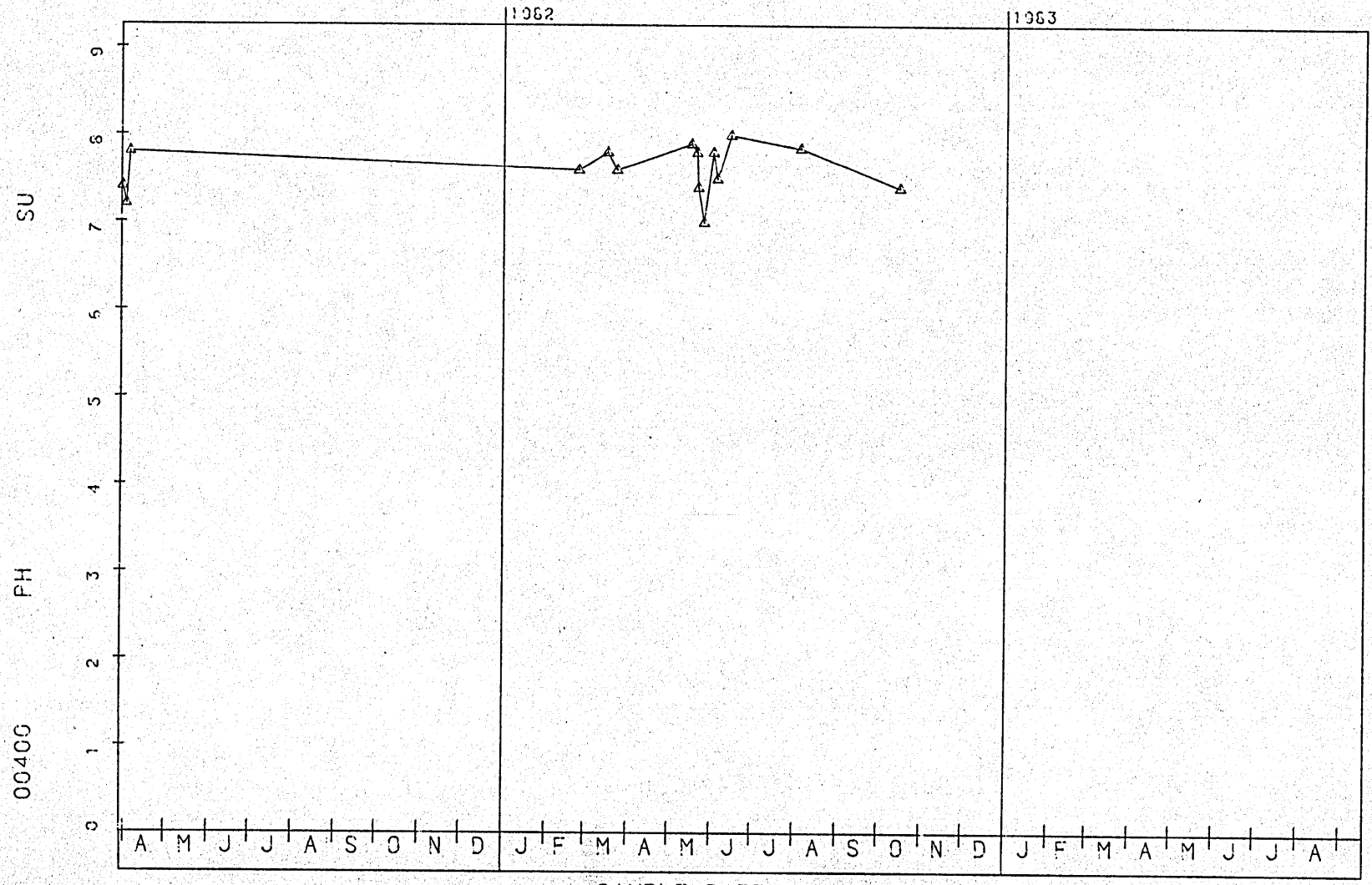
STORET
46FC03
43 45 22.0 098 03 26.0 2
NW LK MTCHLL .75 MI SE FC INLET 103N 60W S5 ACBB
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663789-0693807



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STORET
46FC04
43 46 43.0 098 09 58.0 2
4.5 MI W .75 MI N OF FC INLET 104N 61W S28 CCBB
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663790-0693808

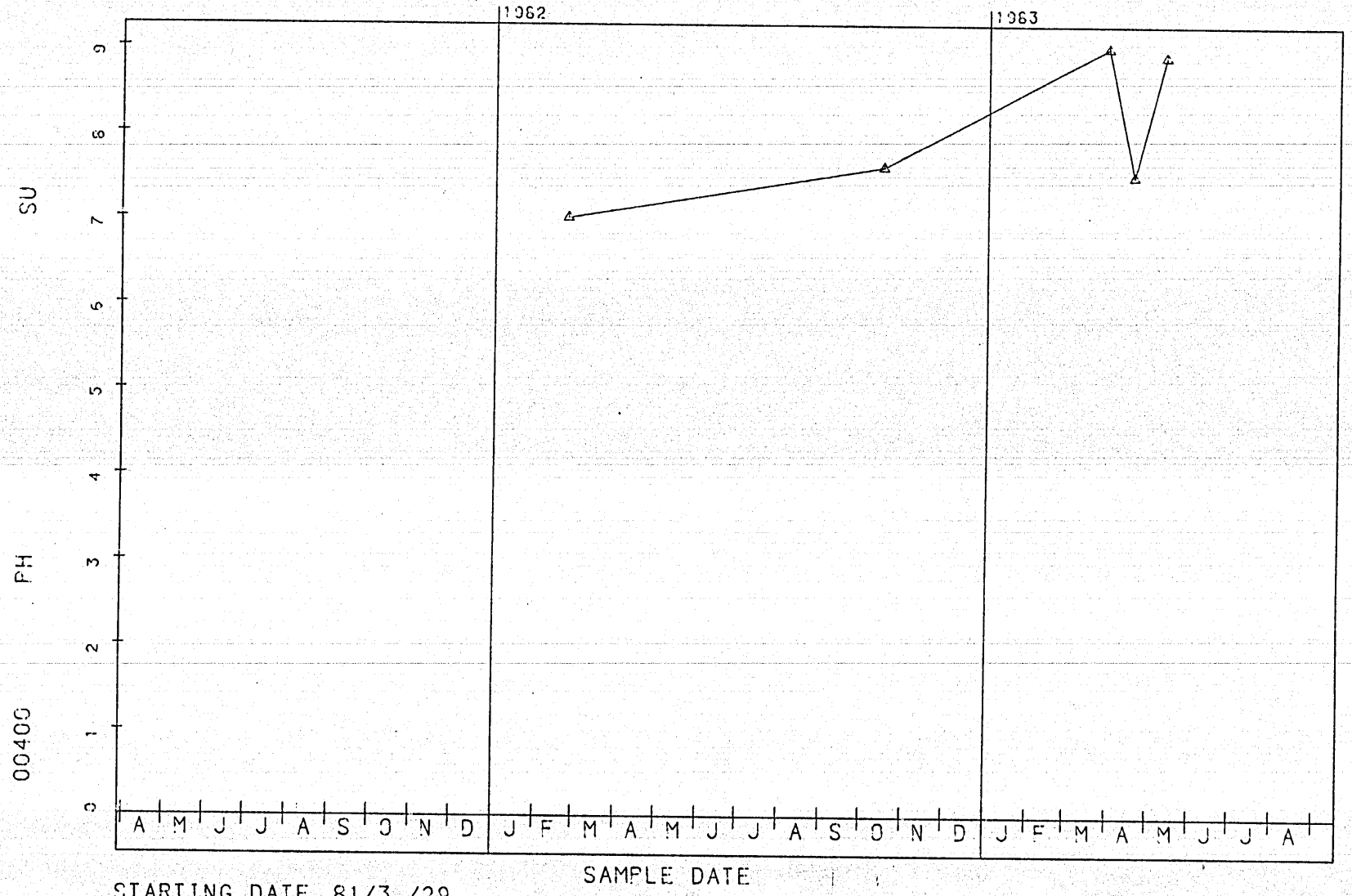
Figure IV-28.



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STORET
46FC05
43 44 41.0 098 02 51.0 2
1.5 MI S 100 FT W OF FC INLET 103N 60W S8 AAAD
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663791-0693809

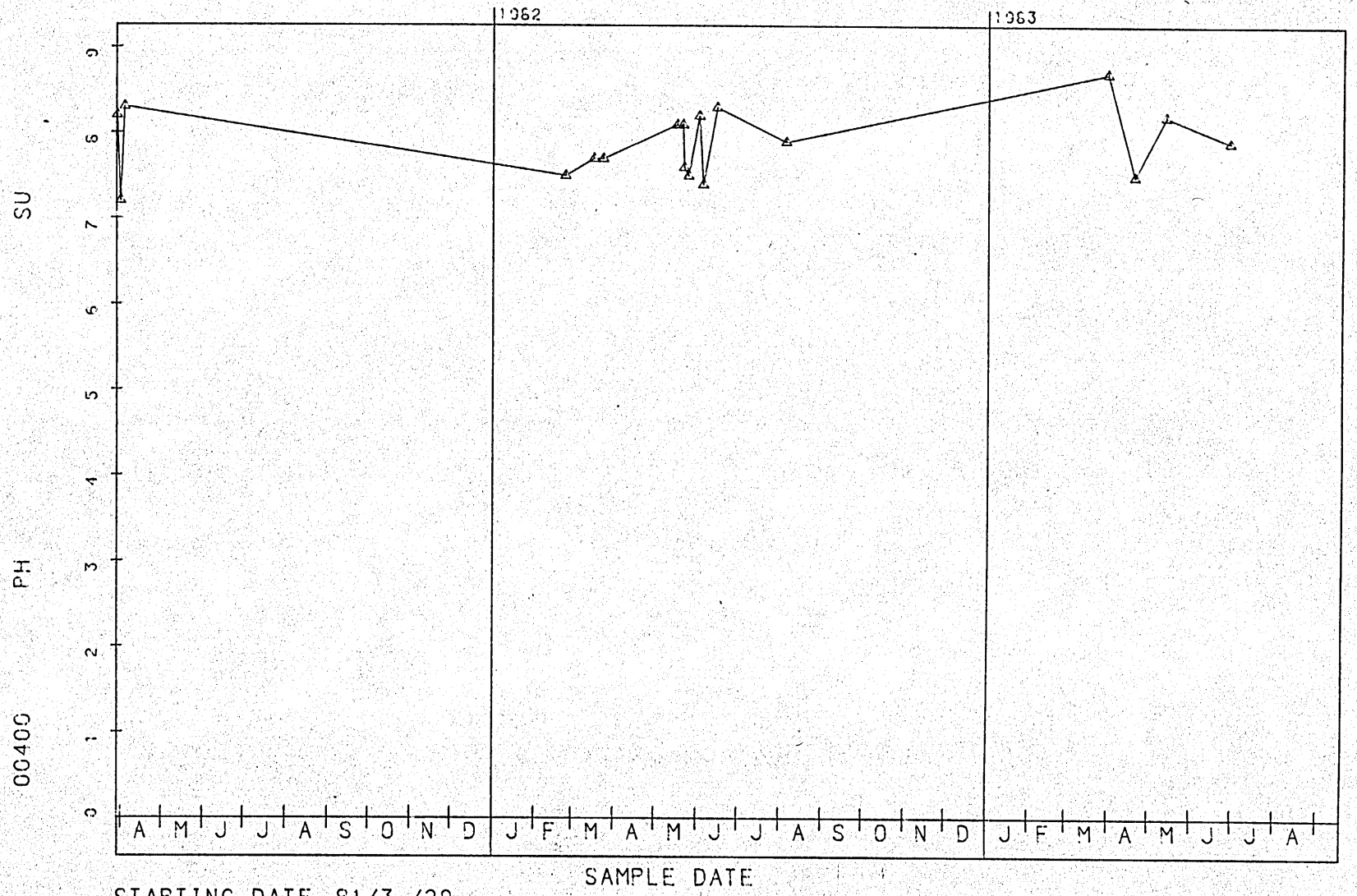
Figure IV-29.



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STORET
46FC06
43 45 34.0 098 04 14.0 2
FC INLET TO LK MITCHELL 103N 60W 56 AABB
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663792-0693810

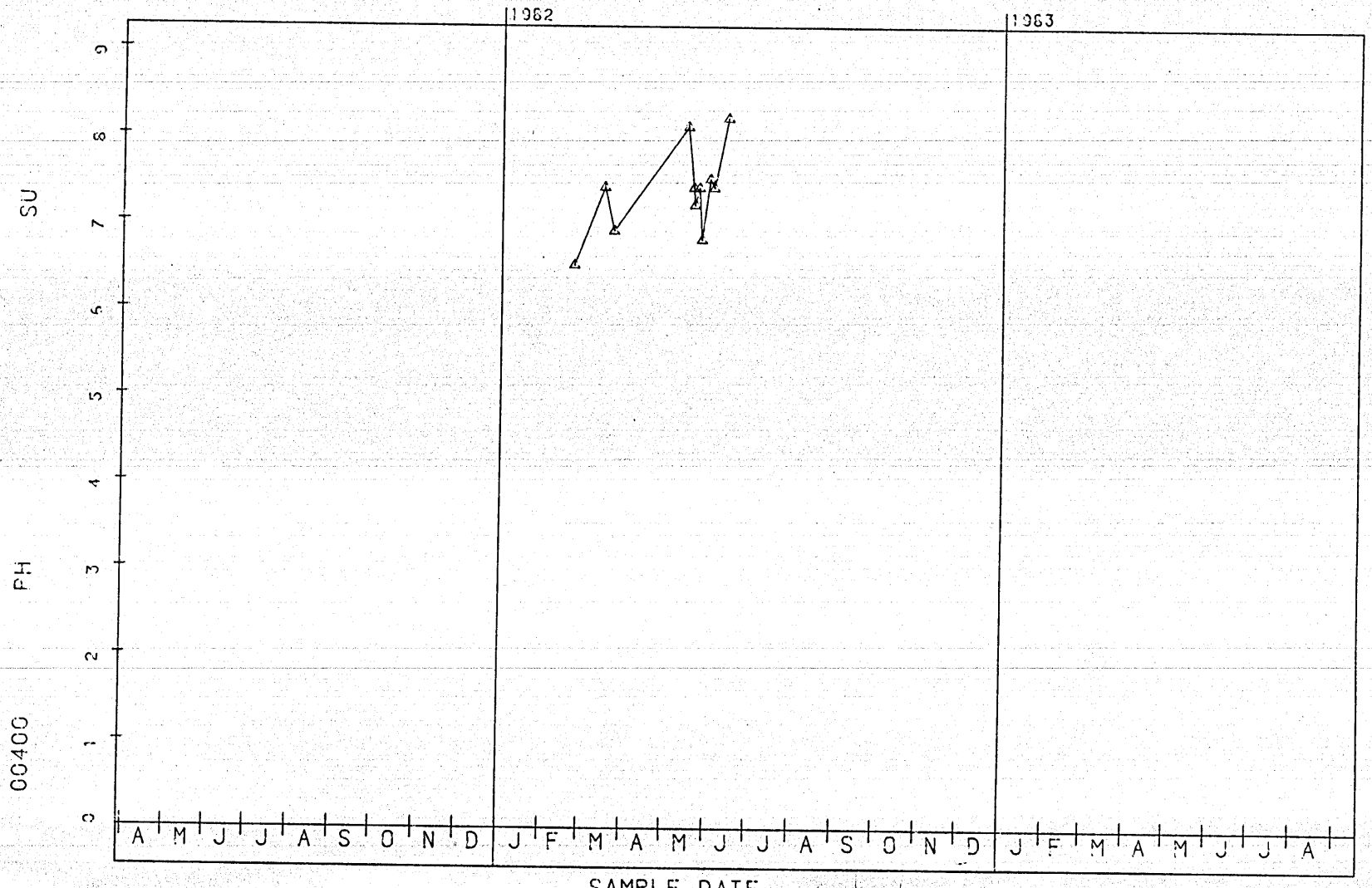
Figure IV-30.



STARTING DATE 81/3 /29

STORET
46FC07
43 47 22.0 098 19 31.0 2
12.5 MI W 2 MI N OF FC INLET 104N 62W S30 BBBB
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663793-0693811

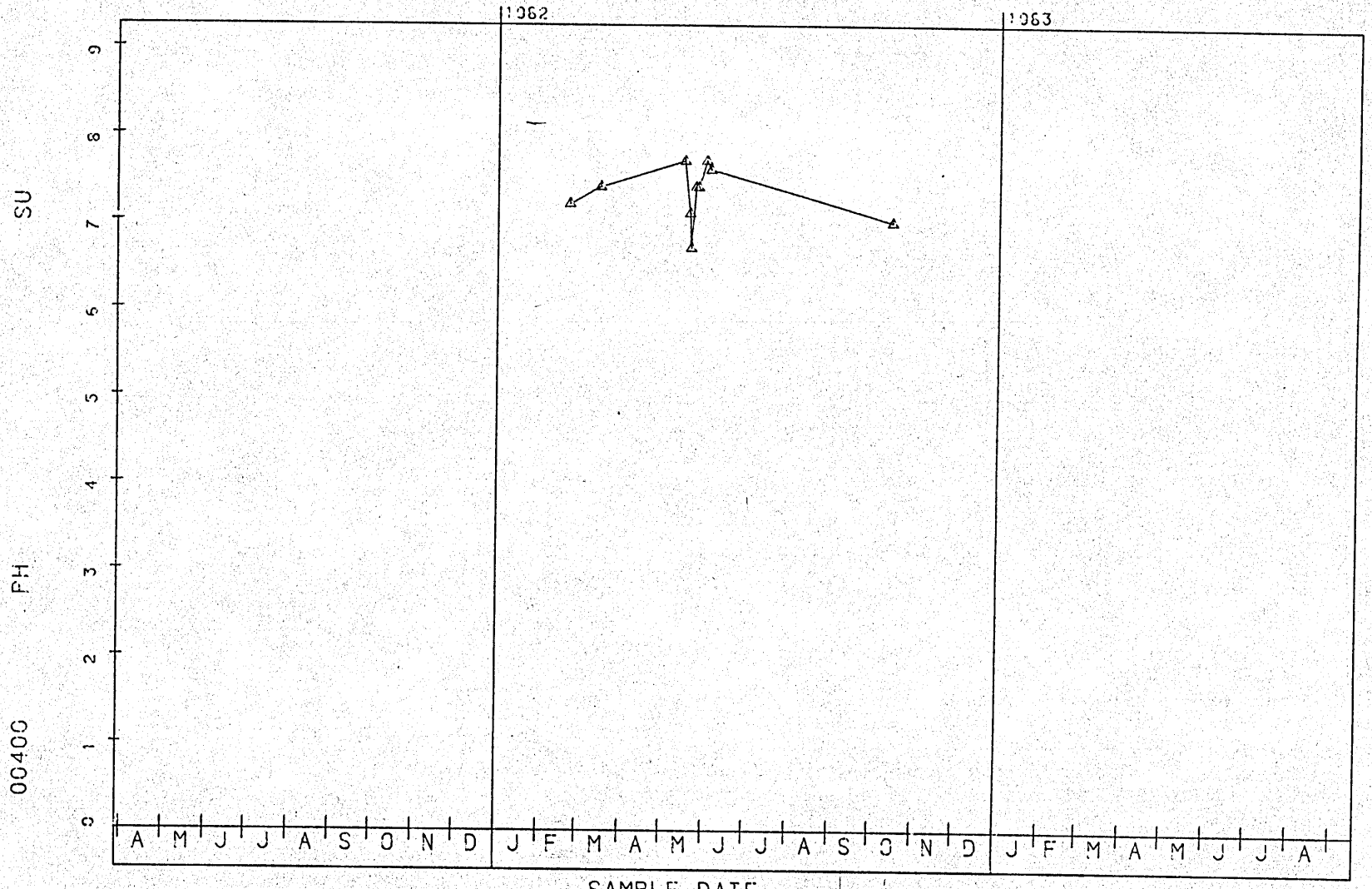
Figure IV-31.



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Figure IV-32.

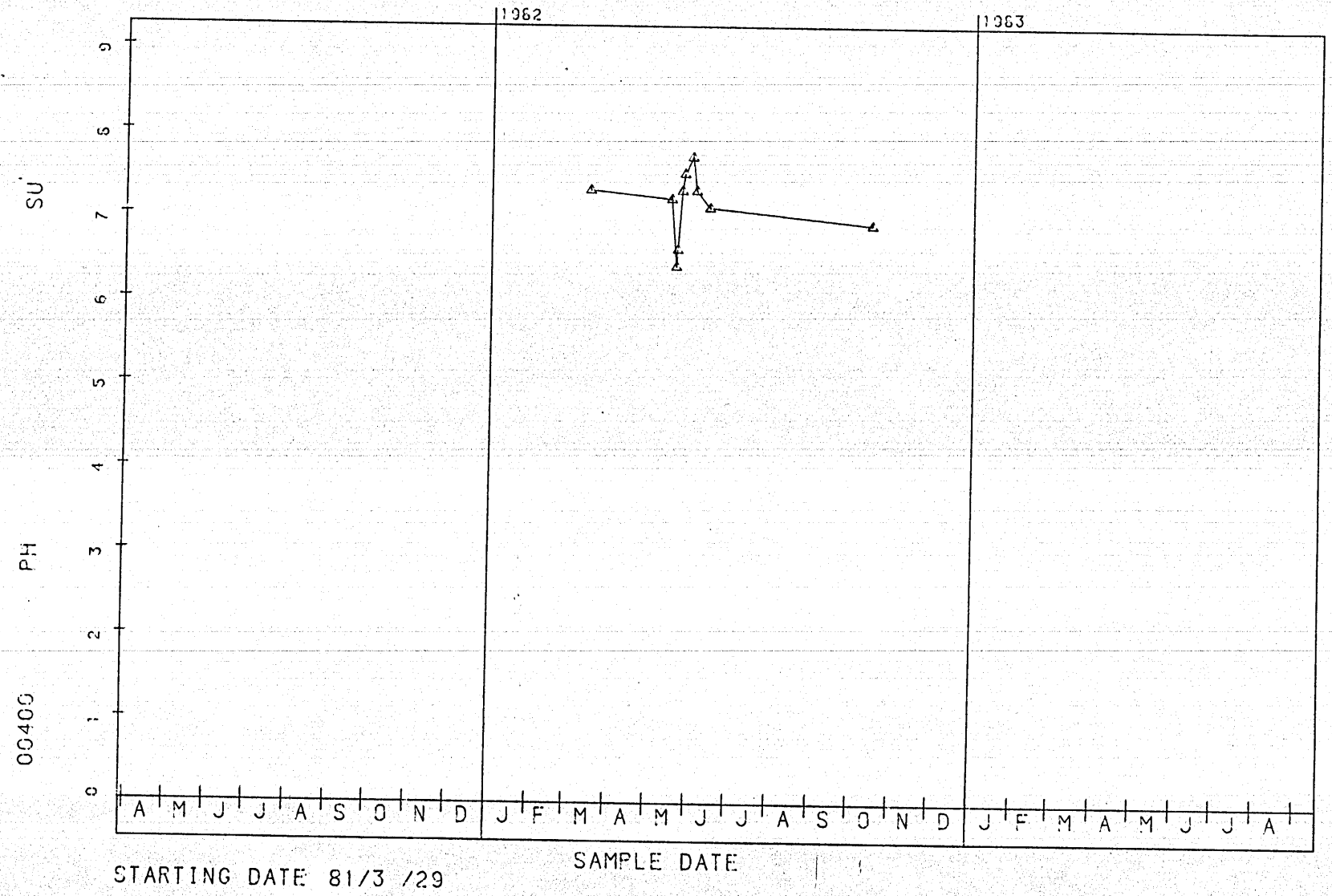
STORET
46FC08
43 55 09.0 098 27 04.0 2
18.5 MI W 11 MI N OF FC INLET 105N 63W S7 BBCC
46003 SOUTH DAKOTA AURORA
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663794-0693812



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STORET
46FC09
44 04 03.0 098 28 46.0 2
1.5 MI W OF JCT 34 AND 281 107N 64W S23 ABBA
46073 SOUTH DAKOTA JERAULD
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663795-0693813

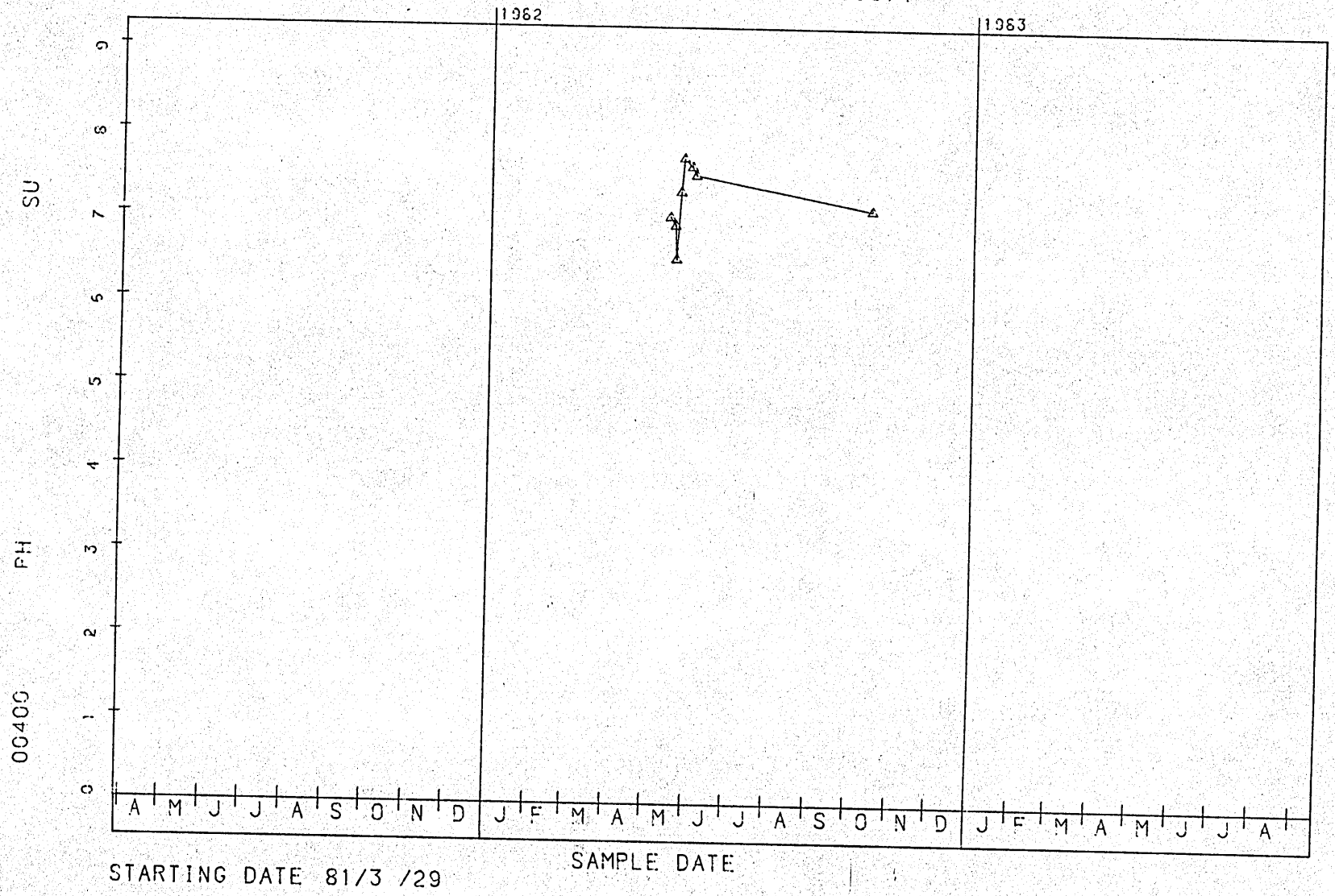
Figure IV-33.



STARTING DATE 81/3 /29

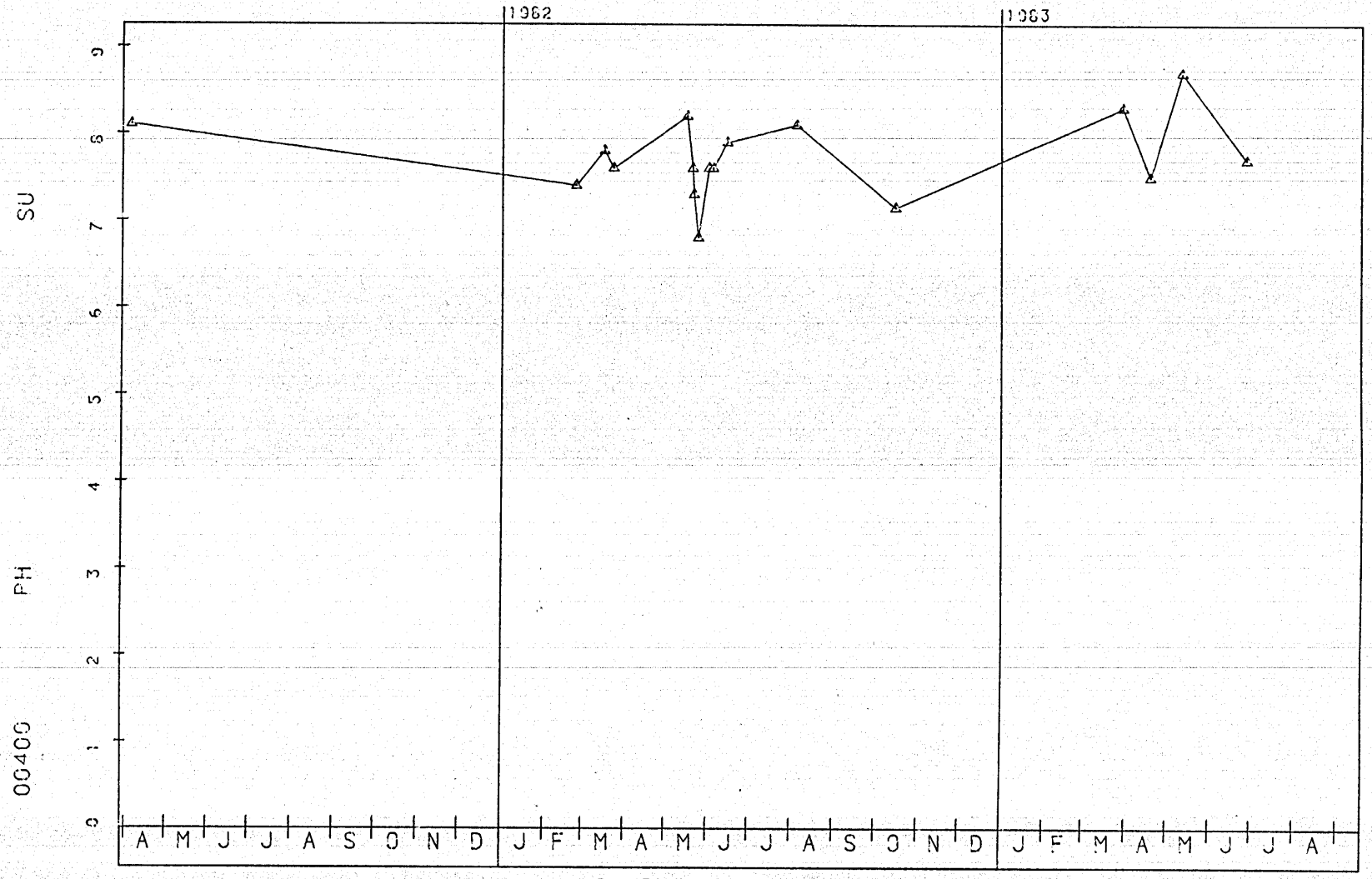
STORET
46FC10
44 06 40.0 098 28 58.0 2
3 MI W 1.5 MI W JCT 34 AND 281 107N 64W S2 BAAA
46073 SOUTH DAKOTA JERAULD
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663796-0693814

Figure IV-34.



STORET
46FC11
43 46 36.0 098 14 44.0 2
8.5 MI W I MI N OF FC INLET 104N 62W S26 CCCB
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663797 0693815

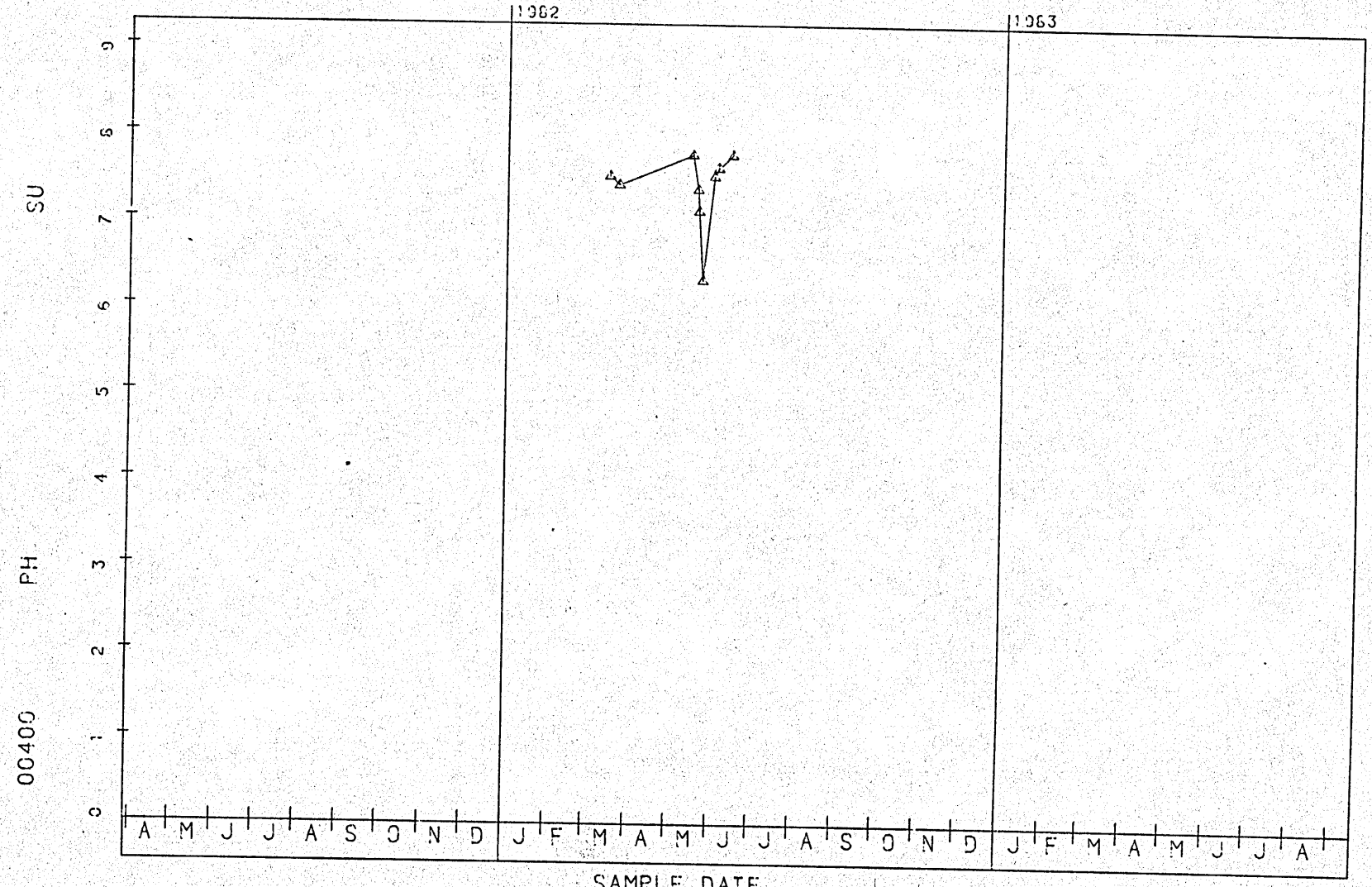
Figure IV-35.



STARTING DATE 81/3 /29

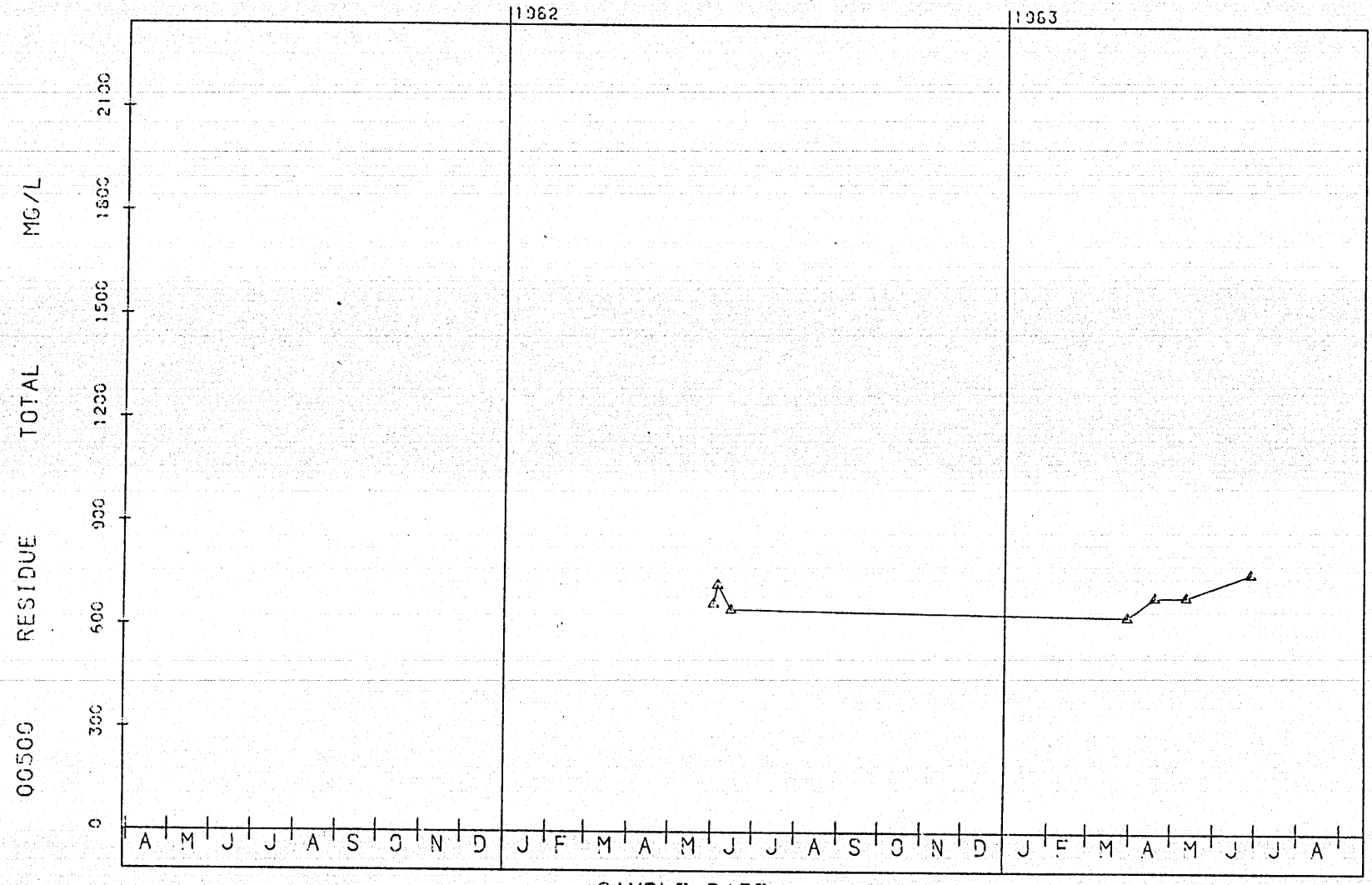
STORET
46FC12
43 48 16.0 098 18 32.0 2
3 MI N 12 MI W OF FC INLET 104N 62W S19 AABA
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663798-0693816

Figure IV-36.



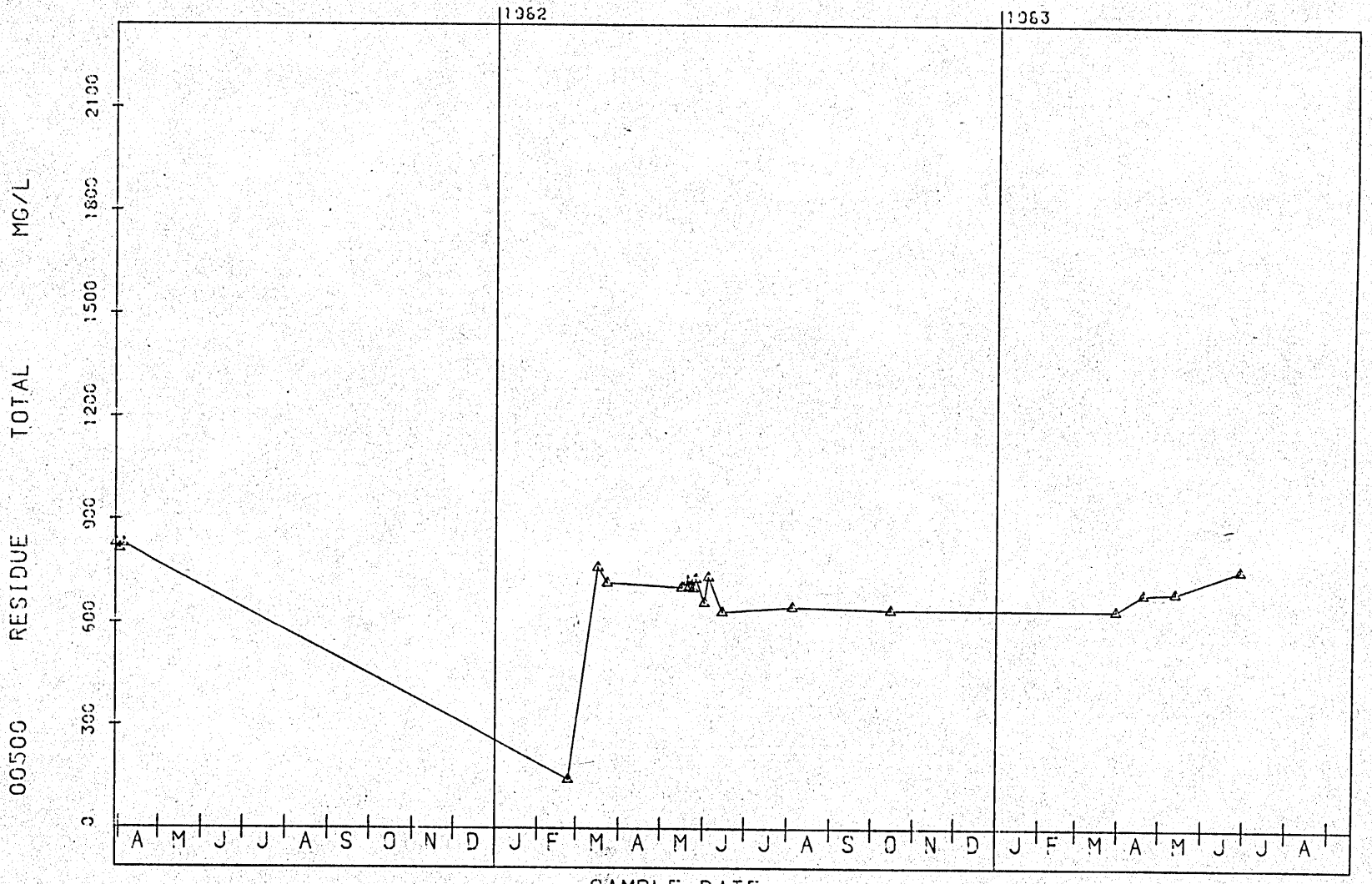
STORET
46FC01
43 44 25.0 098 01 31.0 2
LK MITCHELL OUTLET SD HWY 37 N 103N-60W-S13 BCCA
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663787-0693805

Figure IV-37.



STORET
46FC02
43 44 39.0 098 01 34.0 2
NE LK MTCHLL .5 MI N OF OUTLET 103N 60W S10 BBBC
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663788-0693806

Figure IV-38.



STARTING DATE 81/3 /29

STORET
46FC03
43 45 22.0 098 03 26.0 2
NW LK MTCHLL .75 MI SE FC INLET 103N 60W S5 ACBB
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663789-0693807

Figure IV-39.

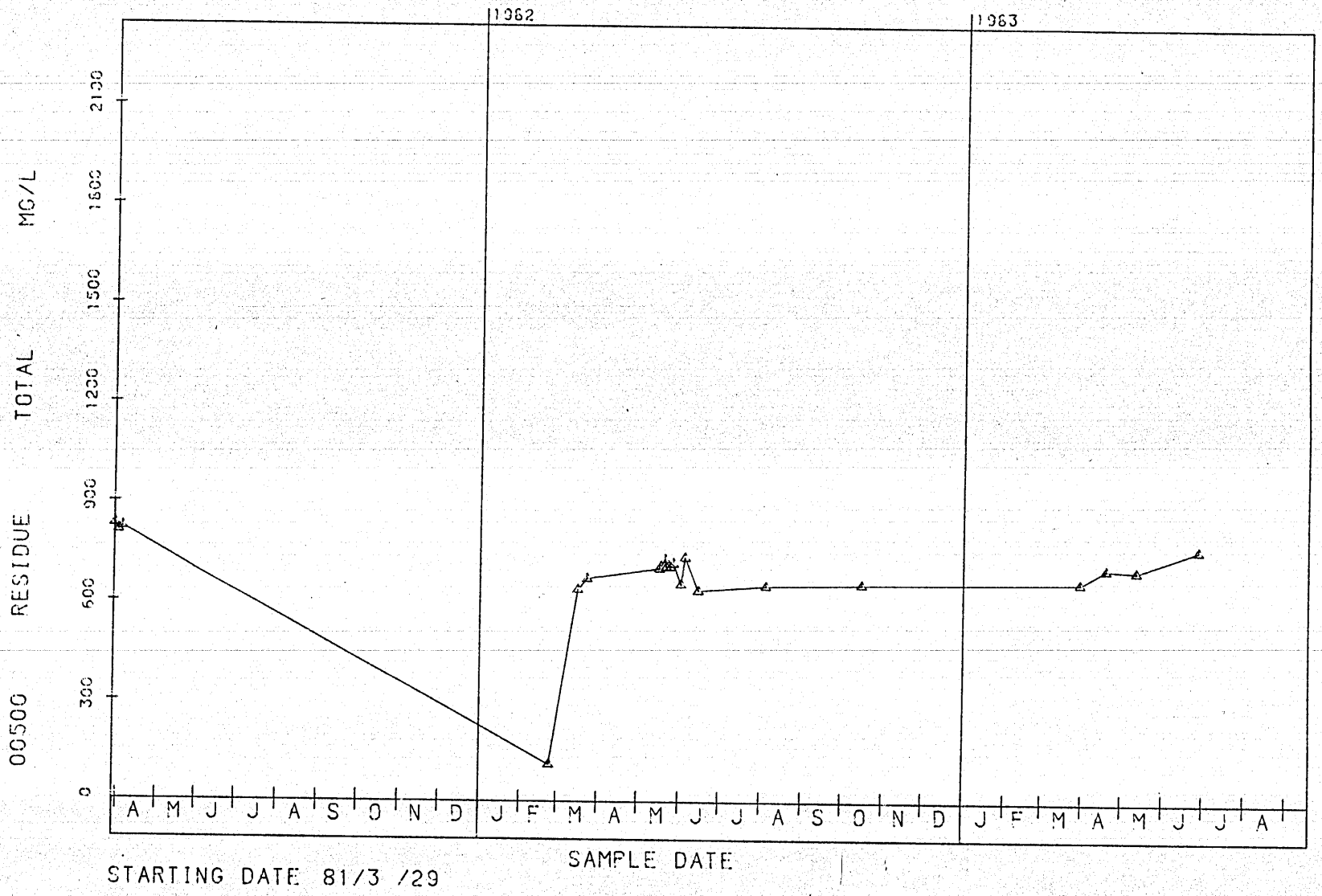
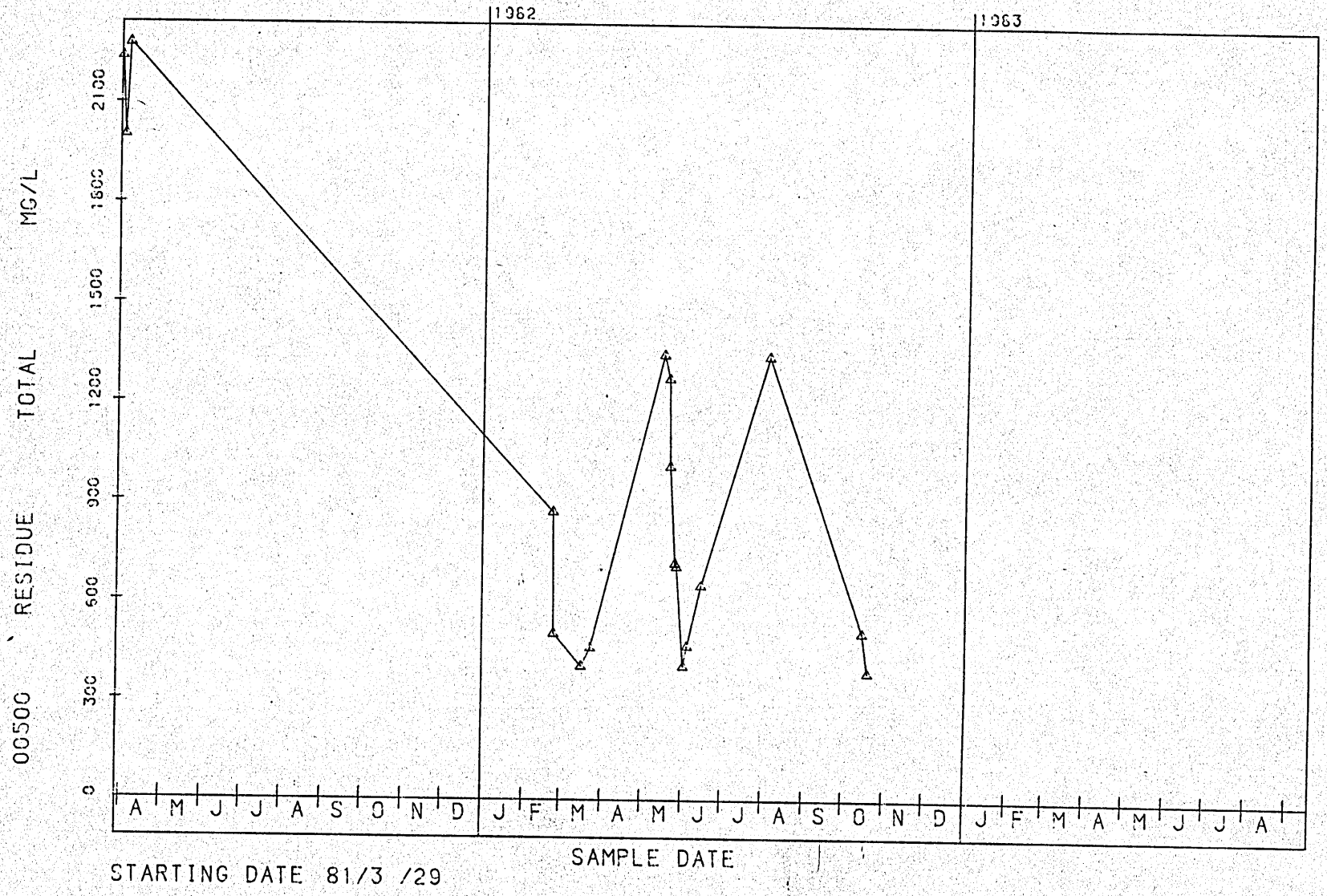


Figure IV-40.

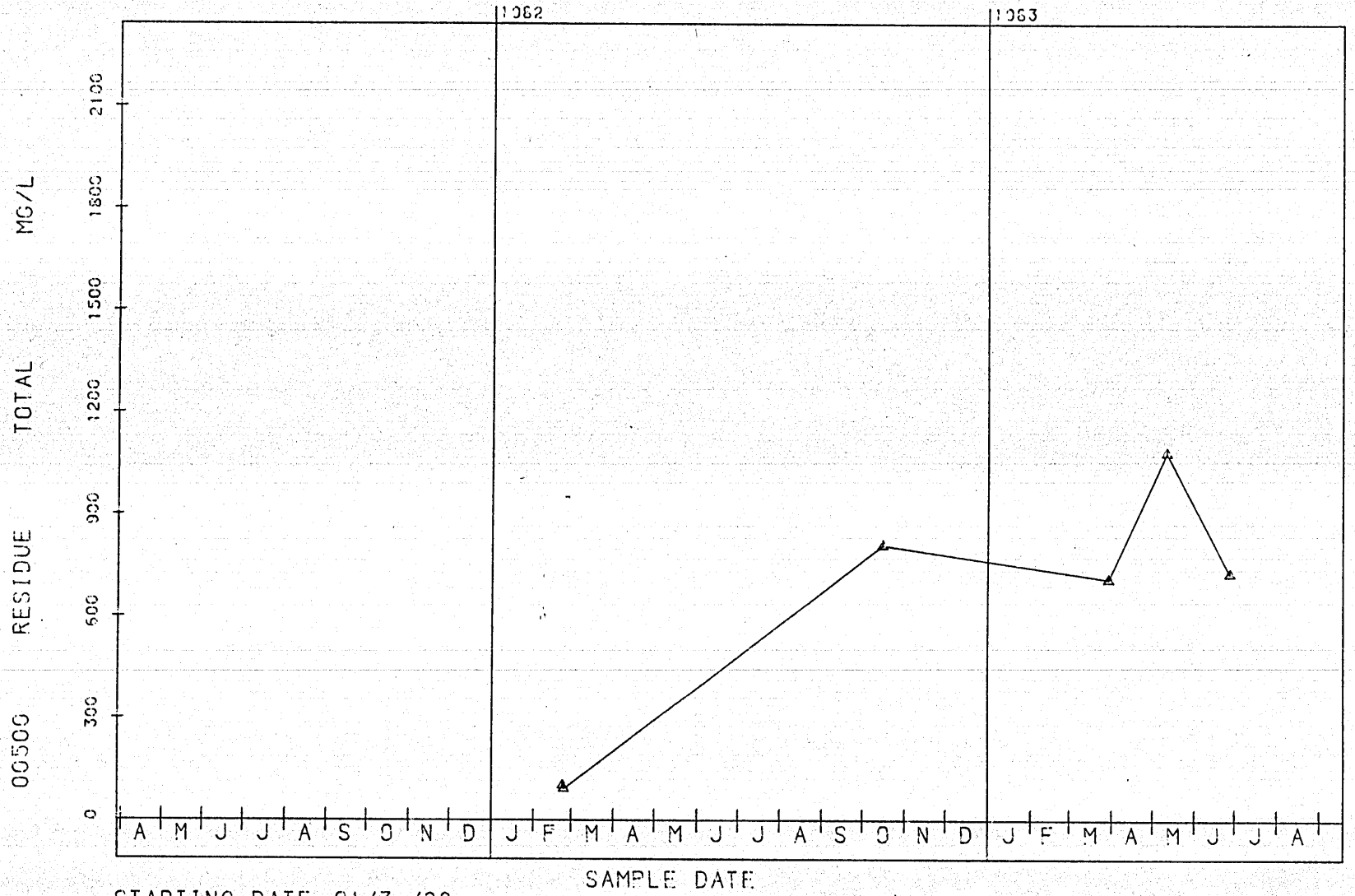
STORET
46FC04
43 46 43.0 098 09 58.0 2
4.5 MI W .75 MI N OF FC INLET 104N 61W S28 CCBB
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663790-0693808



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STORET
46FC05
43 44 41.0 098 02 51.0 2
1.5 MI S 100 FT W OF FC INLET 103N 60W S8 AAAD
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663791-0693809

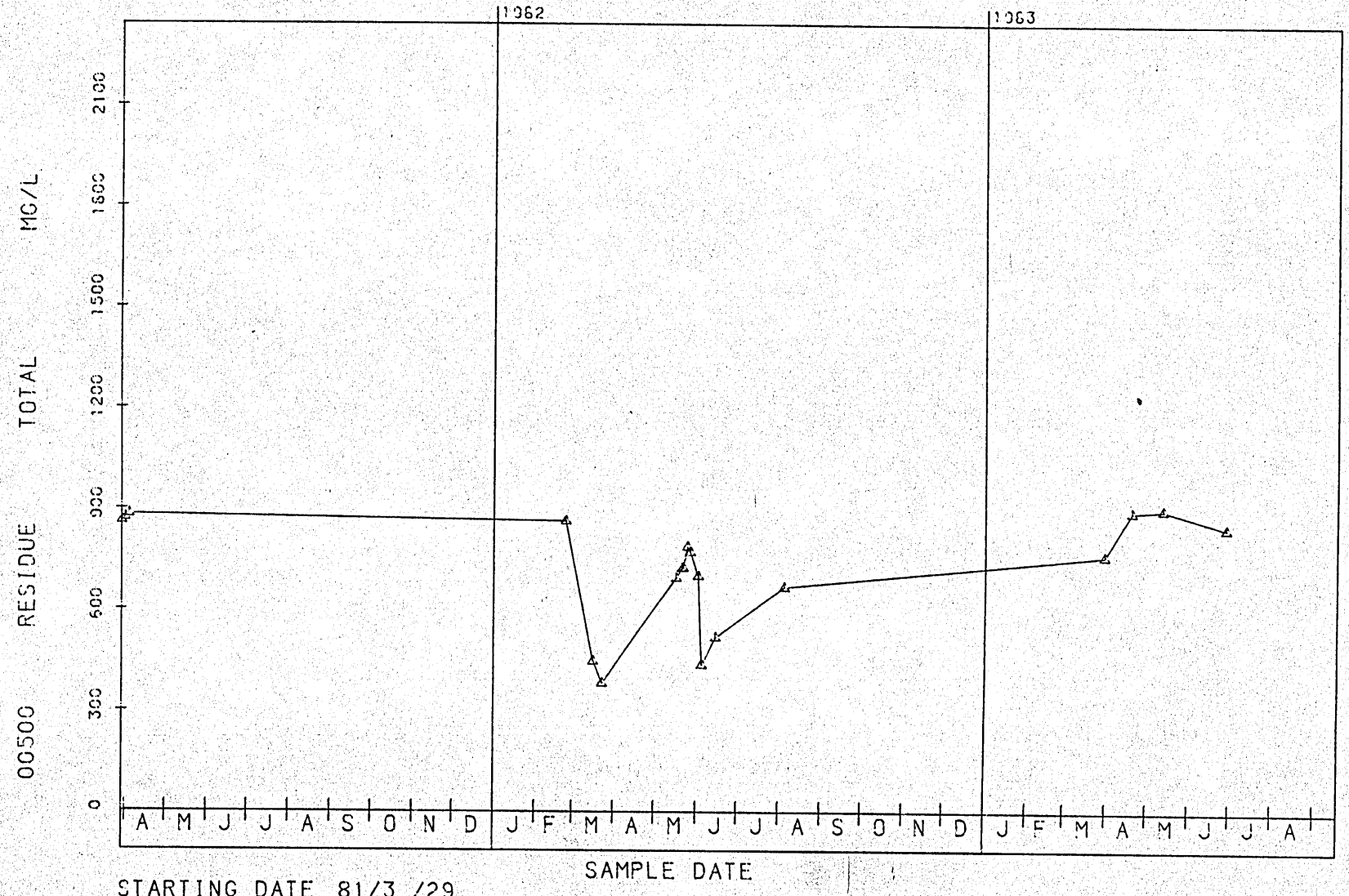
Figure IV-41.



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Figure IV-42.

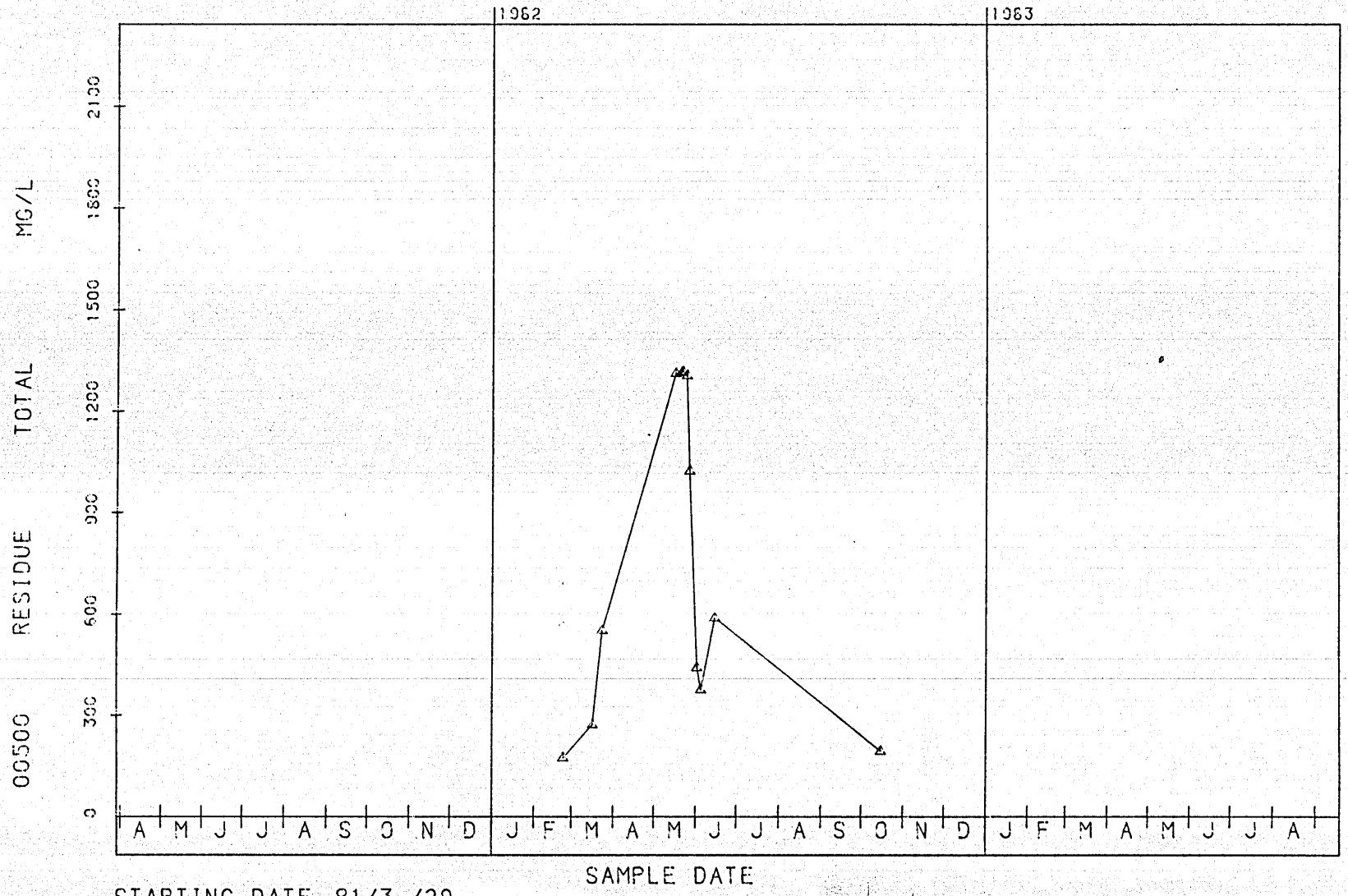
STORET
46FC06
43 45 34.0 098 04 14.0 2
FC INLET TO LK MITCHELL 103N 60W 56 AABB
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663792-0693810



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STORET
46FC07
43 47 22.0 098 19 31.0 2
12.5 MI W 2 MI N OF FC INLET 104N 62W S30 BBBB
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663793-0693811

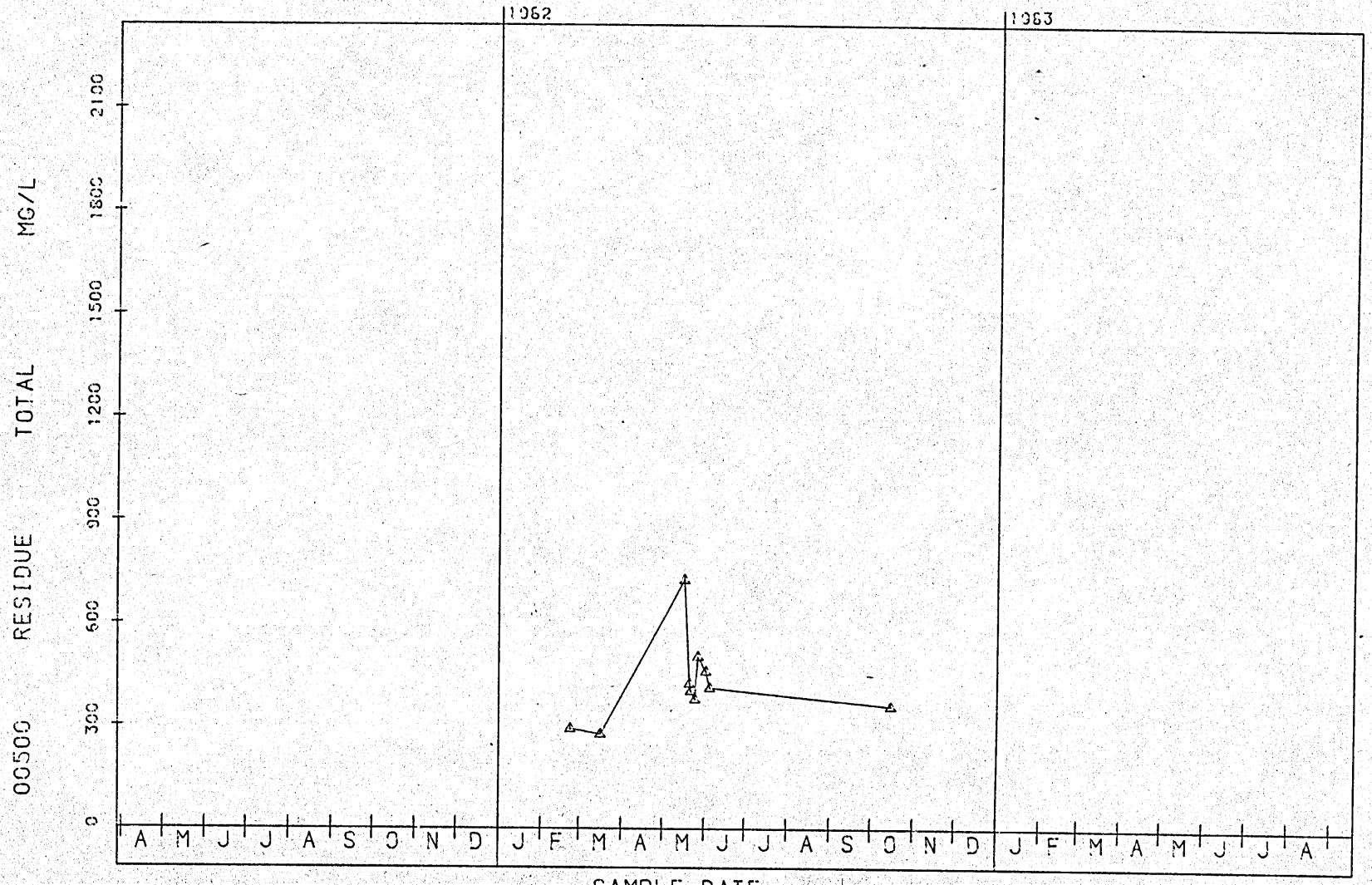
Figure IV-43.



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STORET
46FC08
43 55 09.0 098 27 04.0 2
18.5 MI W 11 MI N OF FC INLET 105N 63W S7 BBCC
46003 SOUTH DAKOTA AURORA
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663794-0693812

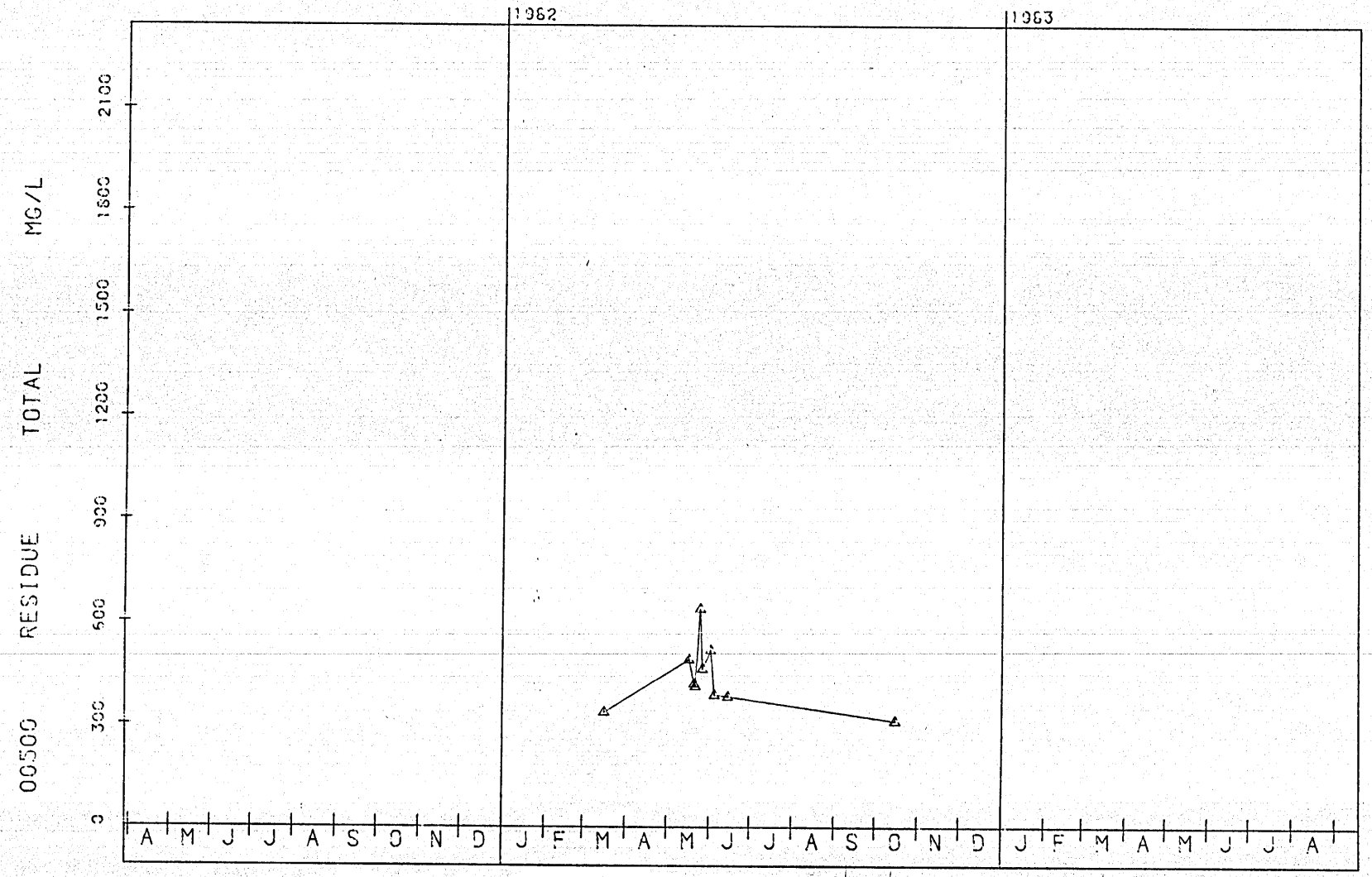
Figure IV-44.



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Figure IV-45.

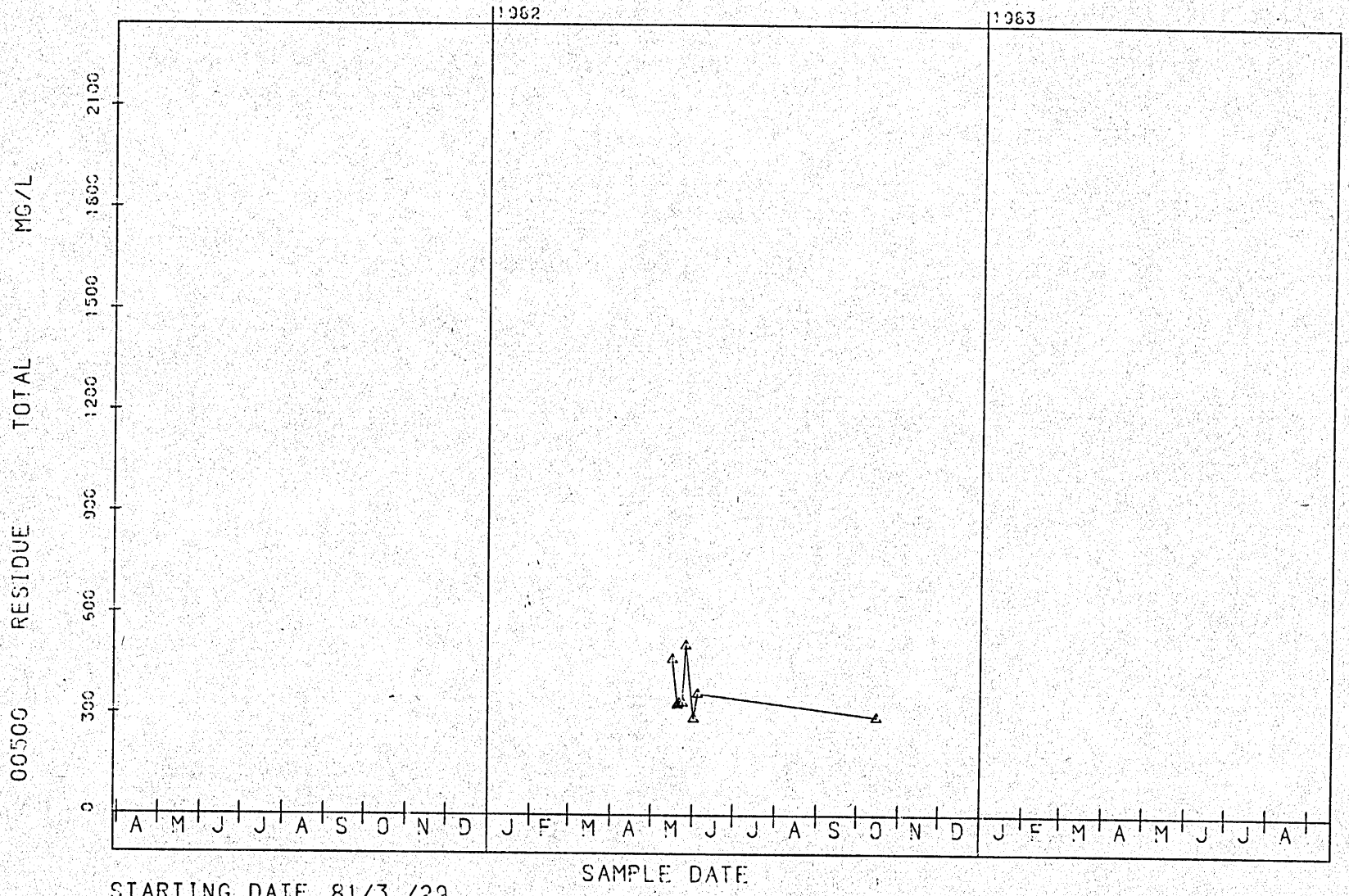
STORET
46FC09
44 04 03.0 098 28 46.0 2
1.5 MI W OF JCT 34 AND 281 107N 64W S23 ABBA
46073 SOUTH DAKOTA JERAULD
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663795-0693813



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Figure IV-46.

STORET
46FC10
44 06 40.0 098 28 58.0 2
3 MI W 1.5 MI W JCT 34 AND 281 107N 64W S2 BAAA
46073 SOUTH DAKOTA JERAULD
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663796-0693814



STARTING DATE 81/3 /29

STORET
46FC11
43 46 36.0 098 14 44.0 2
8.5 MI W 1 MI N OF FC INLET 104N 62W S26 CCCB
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663797-0693815

Figure IV-47.

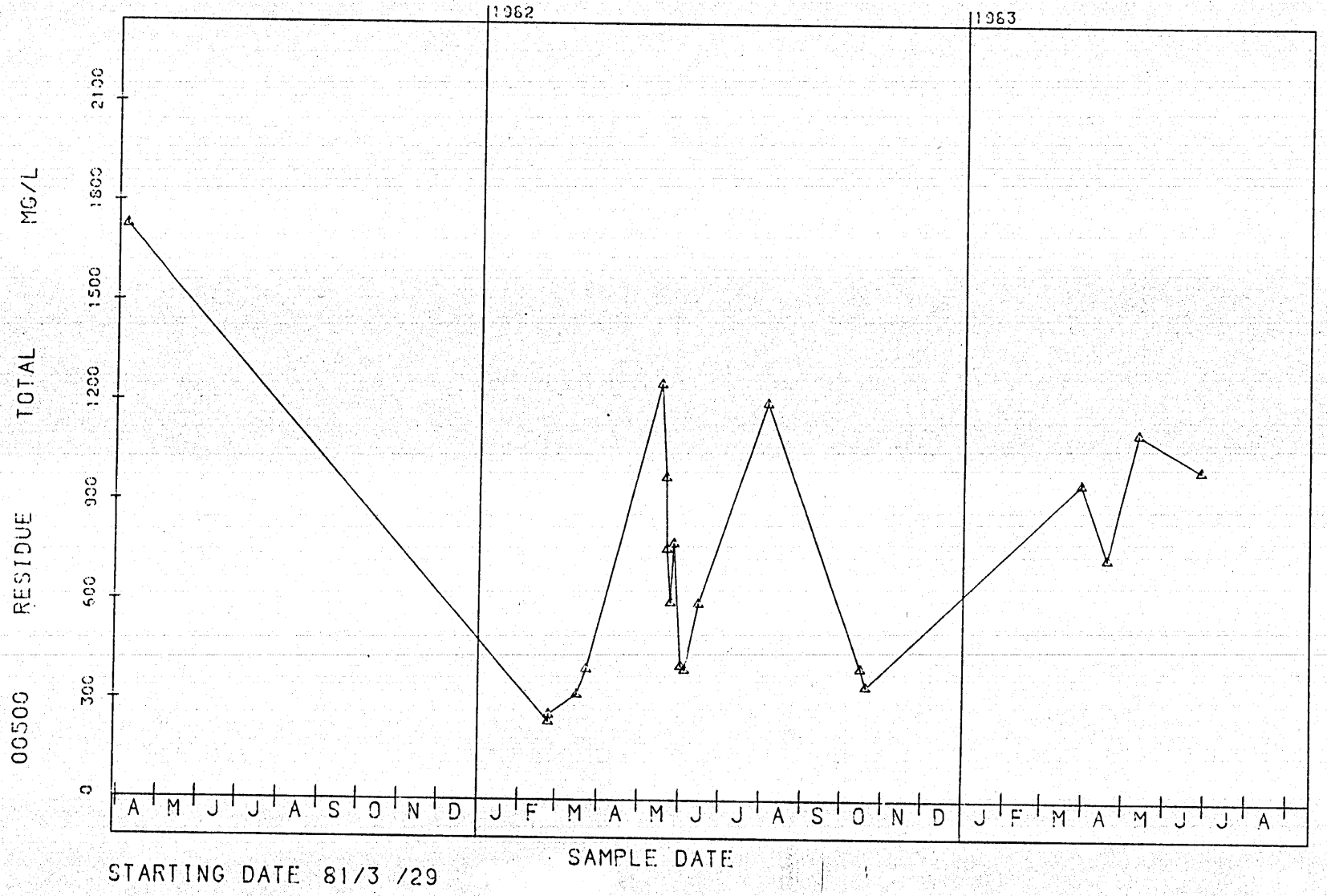
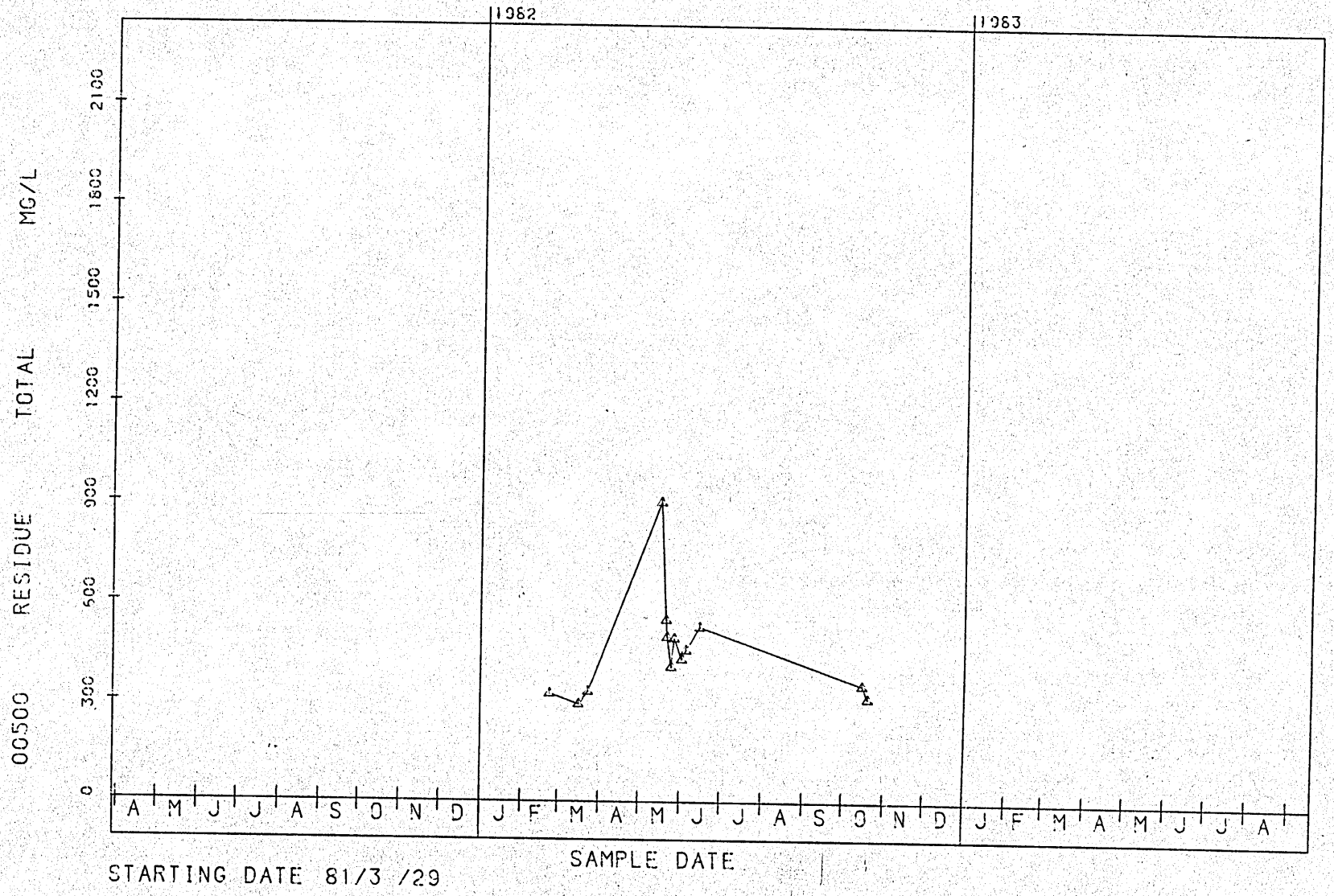


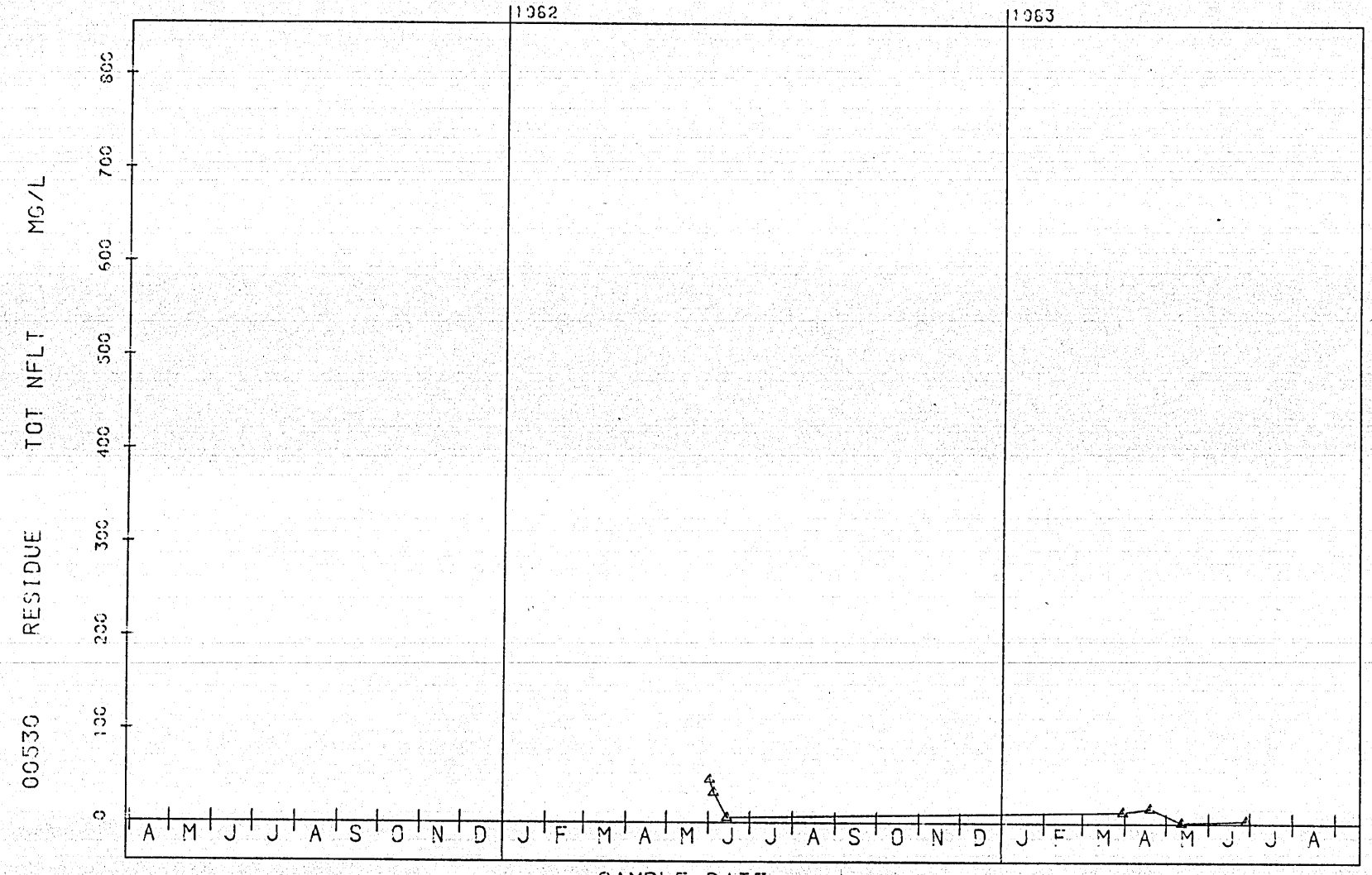
Figure IV-48.

STORET
46FC12
43 48 16.0 098 18 32.0 2
3 MI N 12 MI W OF FC INLET 104N 62W S19 AABA
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663798-0693816



STORET
46FC01
43 44 25.0 098 01 31.0 2
LK MITCHELL OUTLET SD HWY 37 N 103N-60W-S10 BCCA
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663787-0693805

Figure IV-49.



STARTING DATE 81/3 /29

STO
46FC02
43 44 39.0 098 01 34.0 2
NE LK MITCHLL .5 MI N OF OUTLET 103N 60W S10 B55C
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663788-0693806

Figure IV-50.

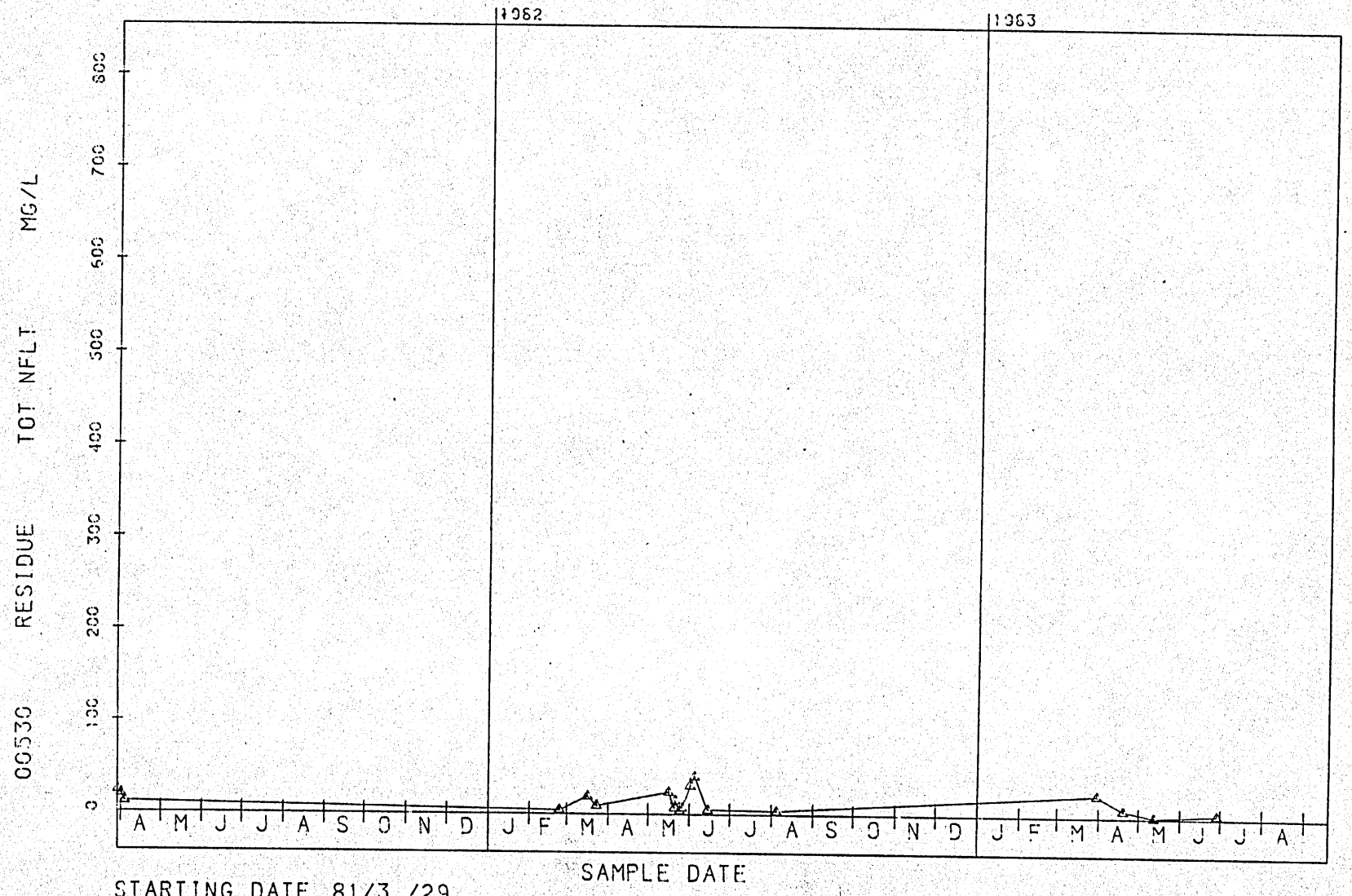
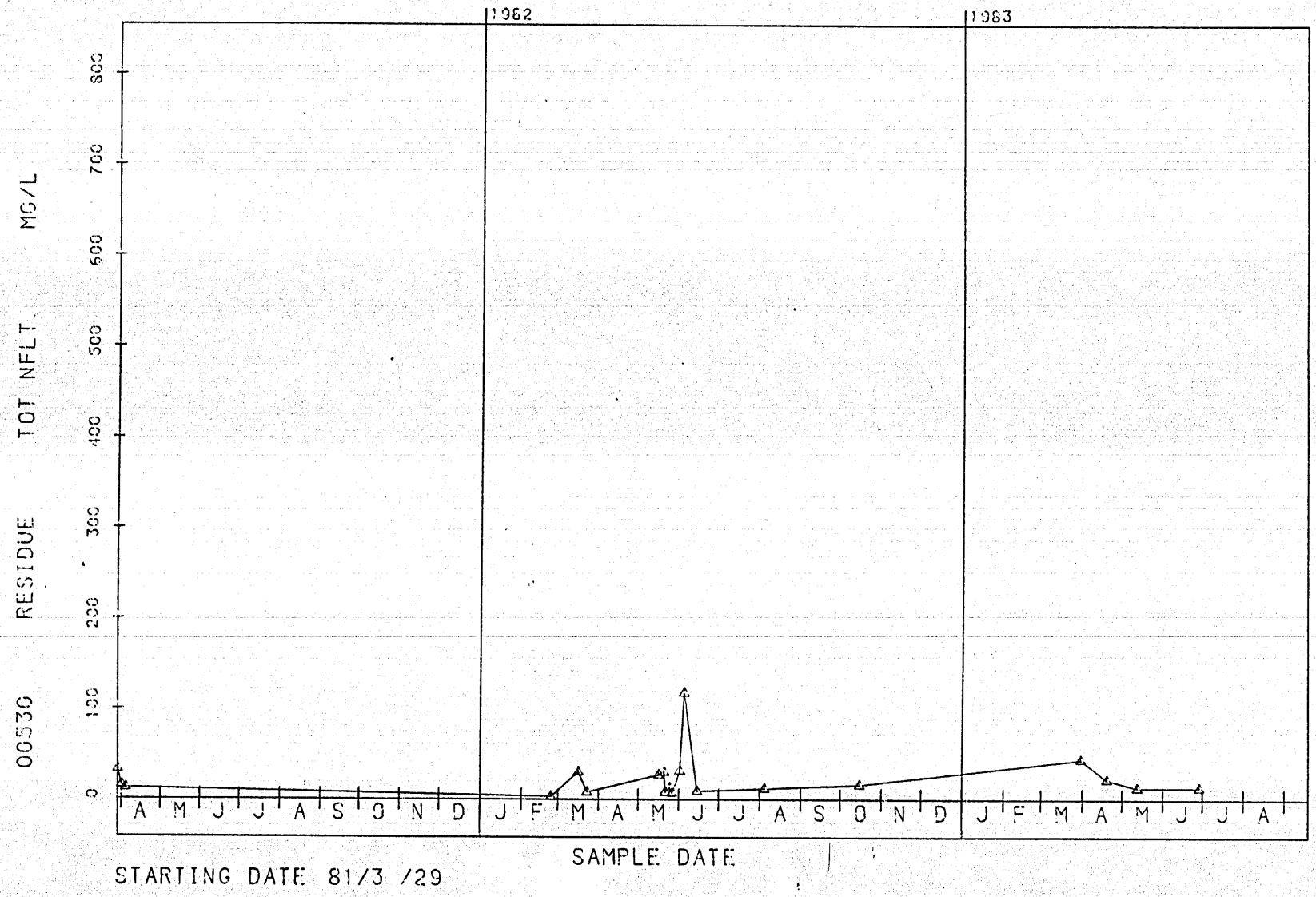


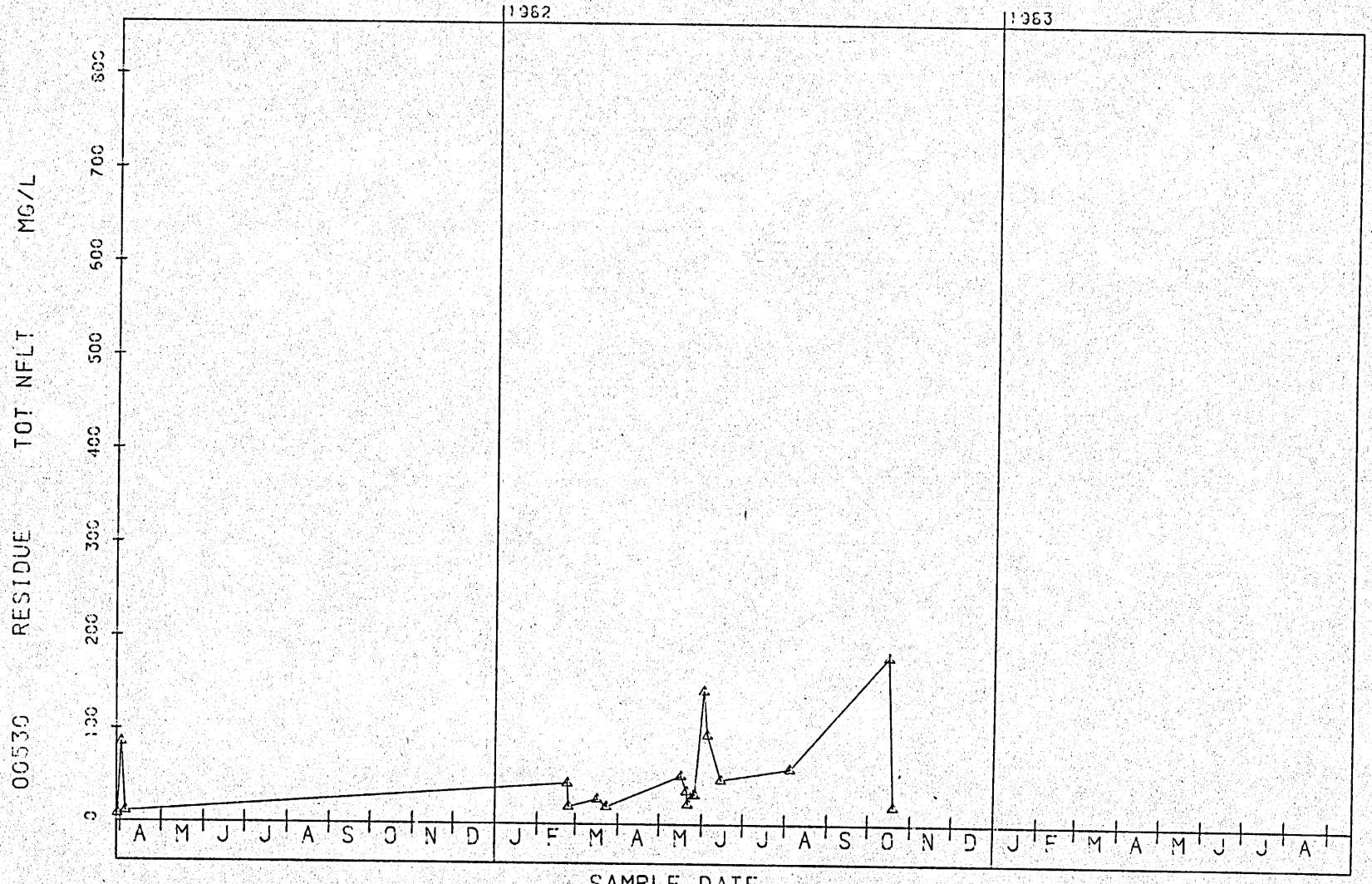
Figure IV-51.

STORET
46FC03
43 45 22.0 098 03 26.0 2
NW LK MTCHLL .75 MI SE FC INLET 103N 60W S5 ACBB
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663789-0693807



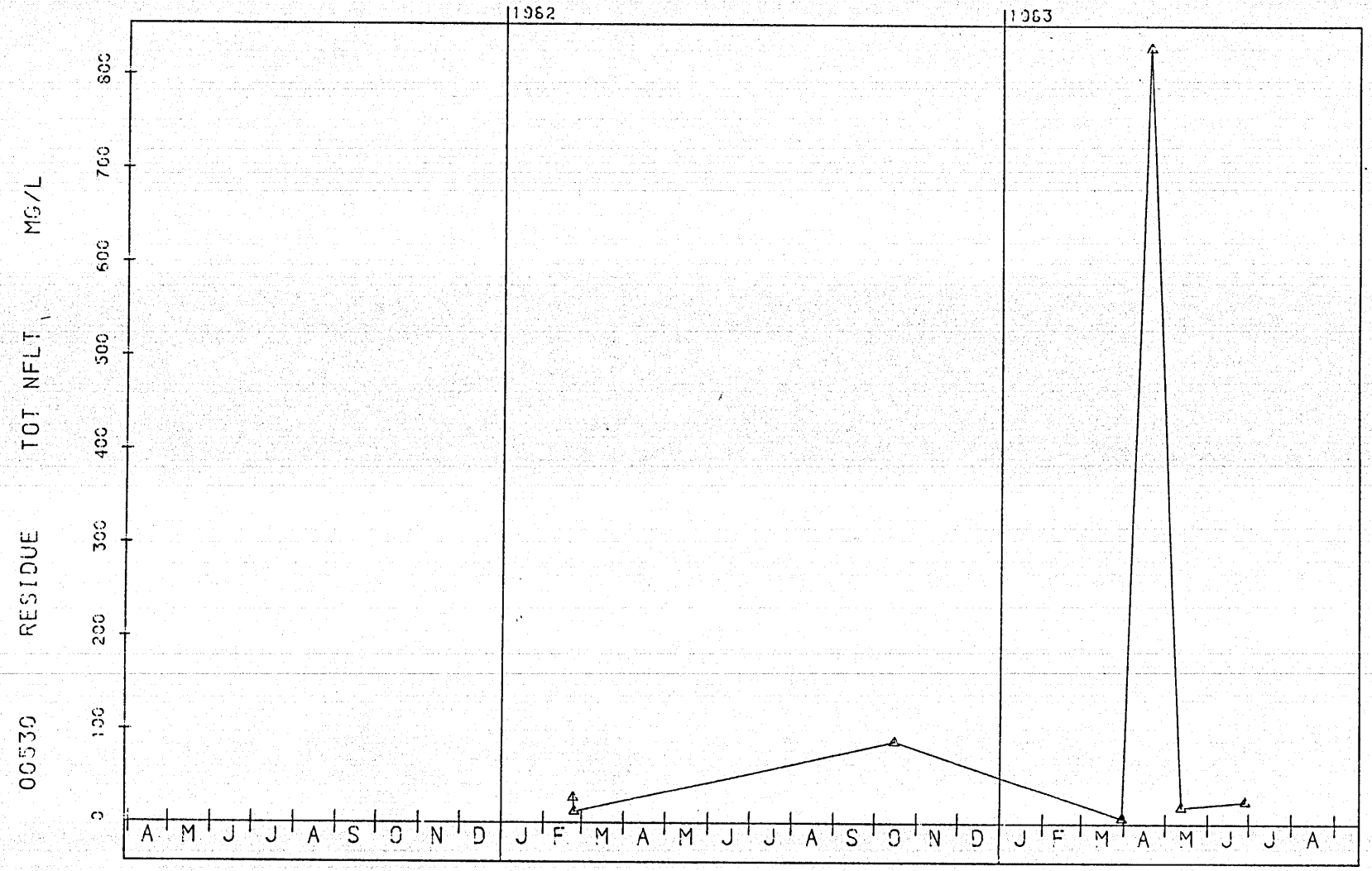
STORET
46FC04
43 46 43.0 098 09 58.0 2
4.5 MI W .75 MI N OF FC INLET 104N 61W S28 CCBB
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663790-0693808

Figure IV-52.



STORET
46FC05
43 44 41.0 098 02 51.0 2
1.5 MI S 100 FT W OF FC INLET 103N 60W S8 AAAD
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663791-0693809

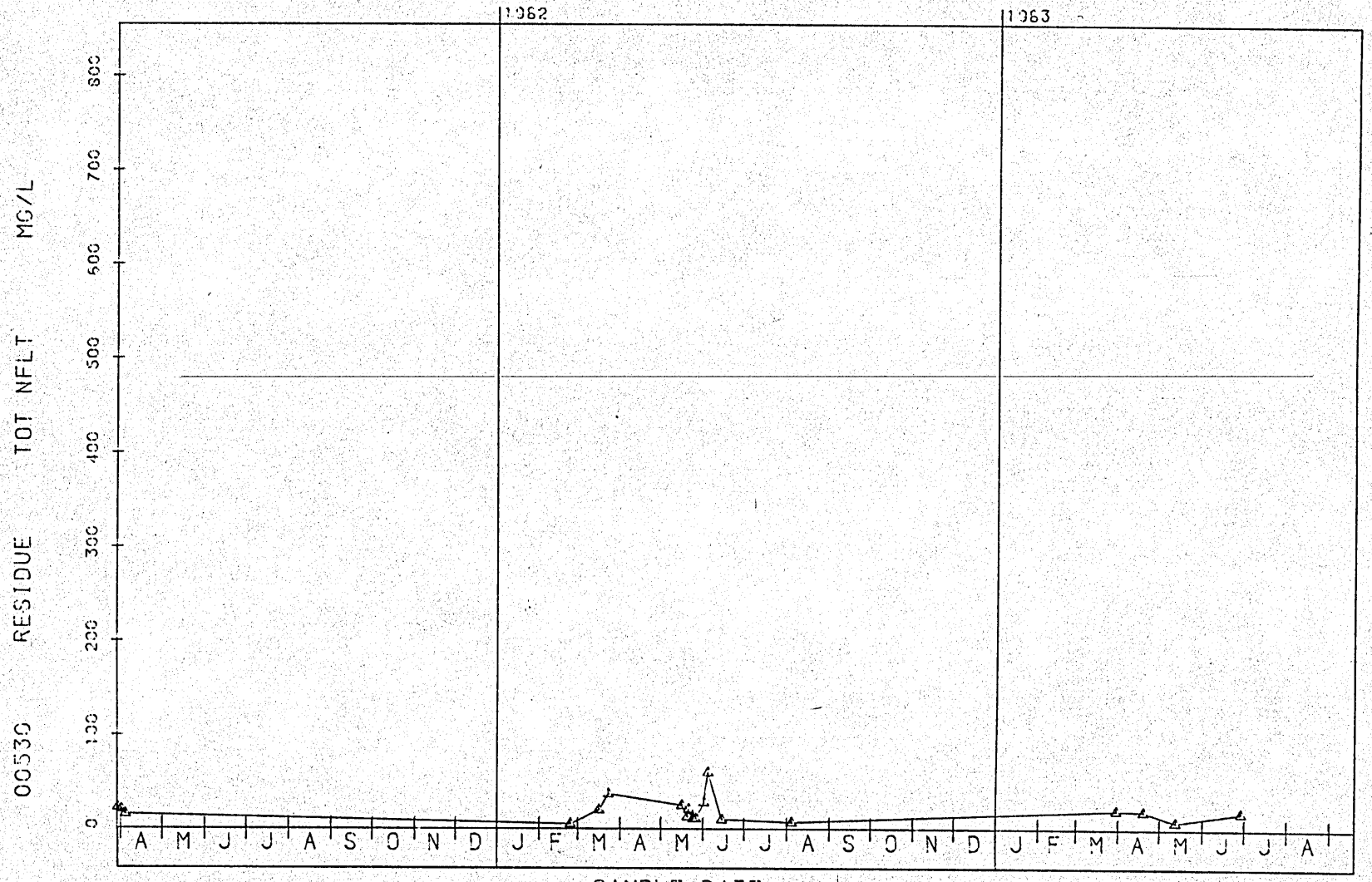
Figure IV-53.



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Figure IV-54.

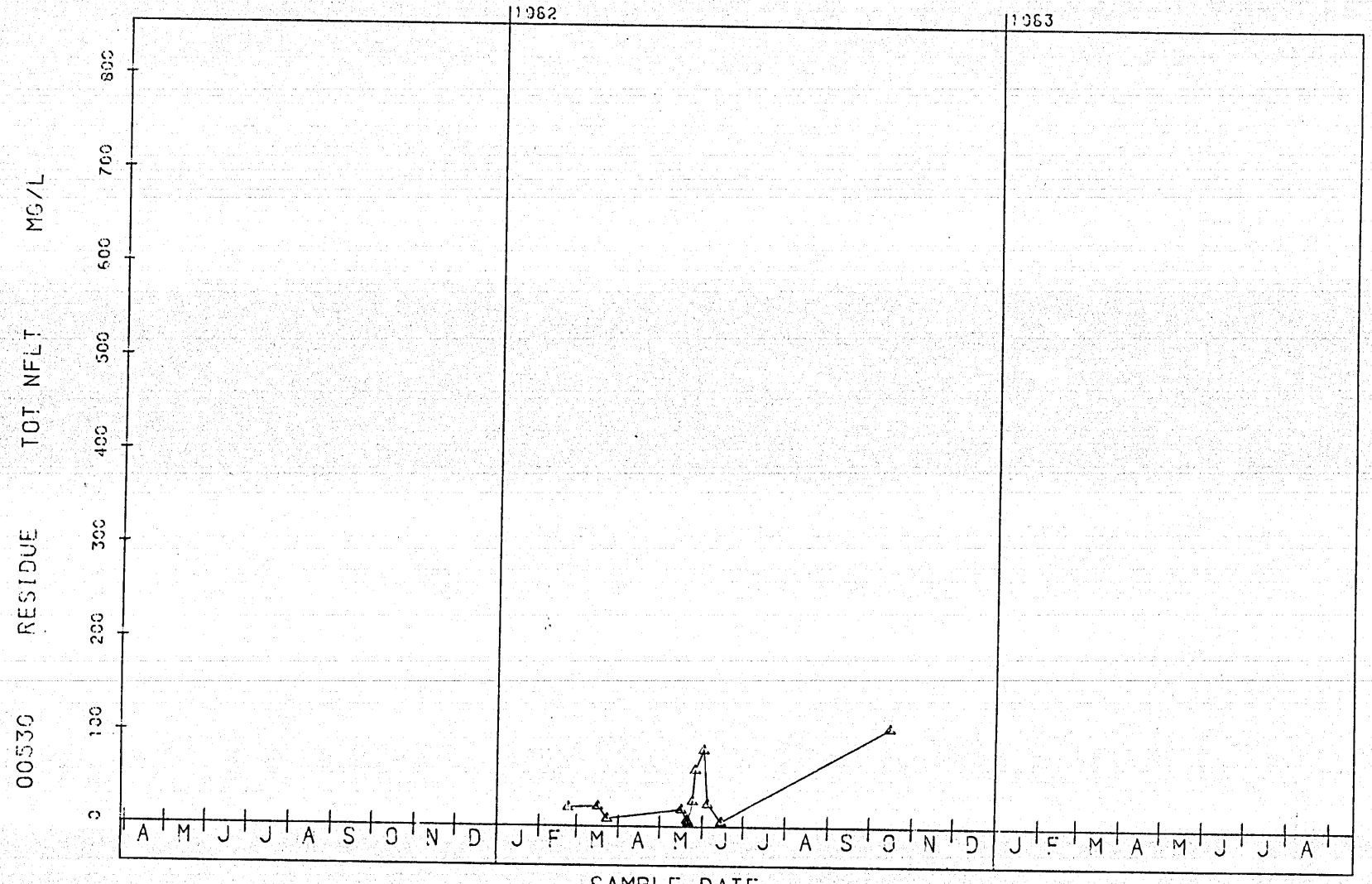
STORET
46FC06
43 45 34.0 098 04 14.0 2
FC INLET TO LK MITCHELL 103N 60W 56 AABB
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663792-0693810



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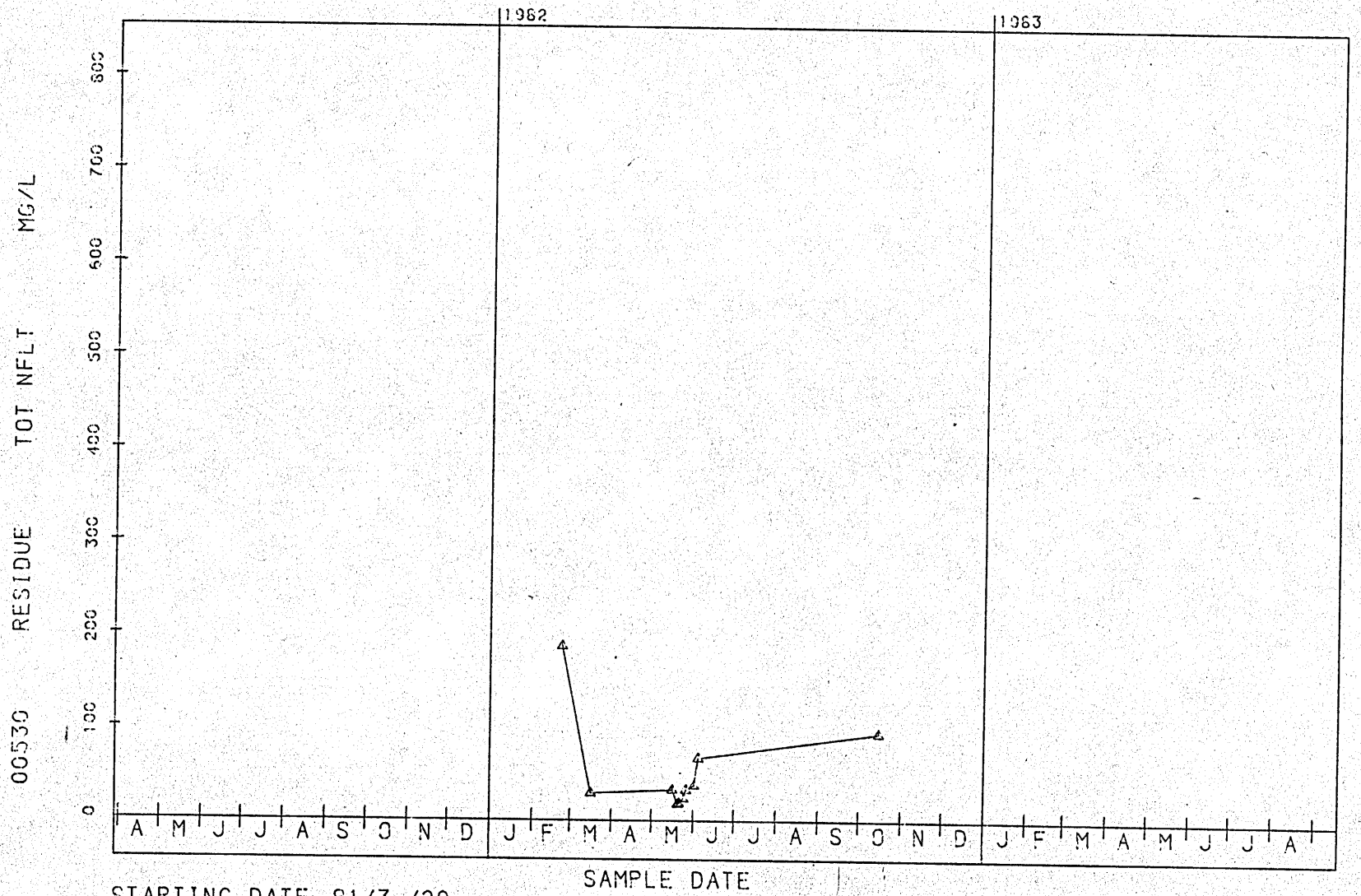
Figure IV-55.

STORET
46FC07
43 47 22.0 098 19 31.0 2
12.5 MI W 2 MI N OF FC INLET 104N 62W S30 BBBB
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663793-0693811



STORET
46FC08
43 55 09.0 098 27 04.0 2
18.5 MI W 11 MI N OF FC INLET 105N 63W S7 BBCC
46003 SOUTH DAKOTA AURORA
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663794-0693812

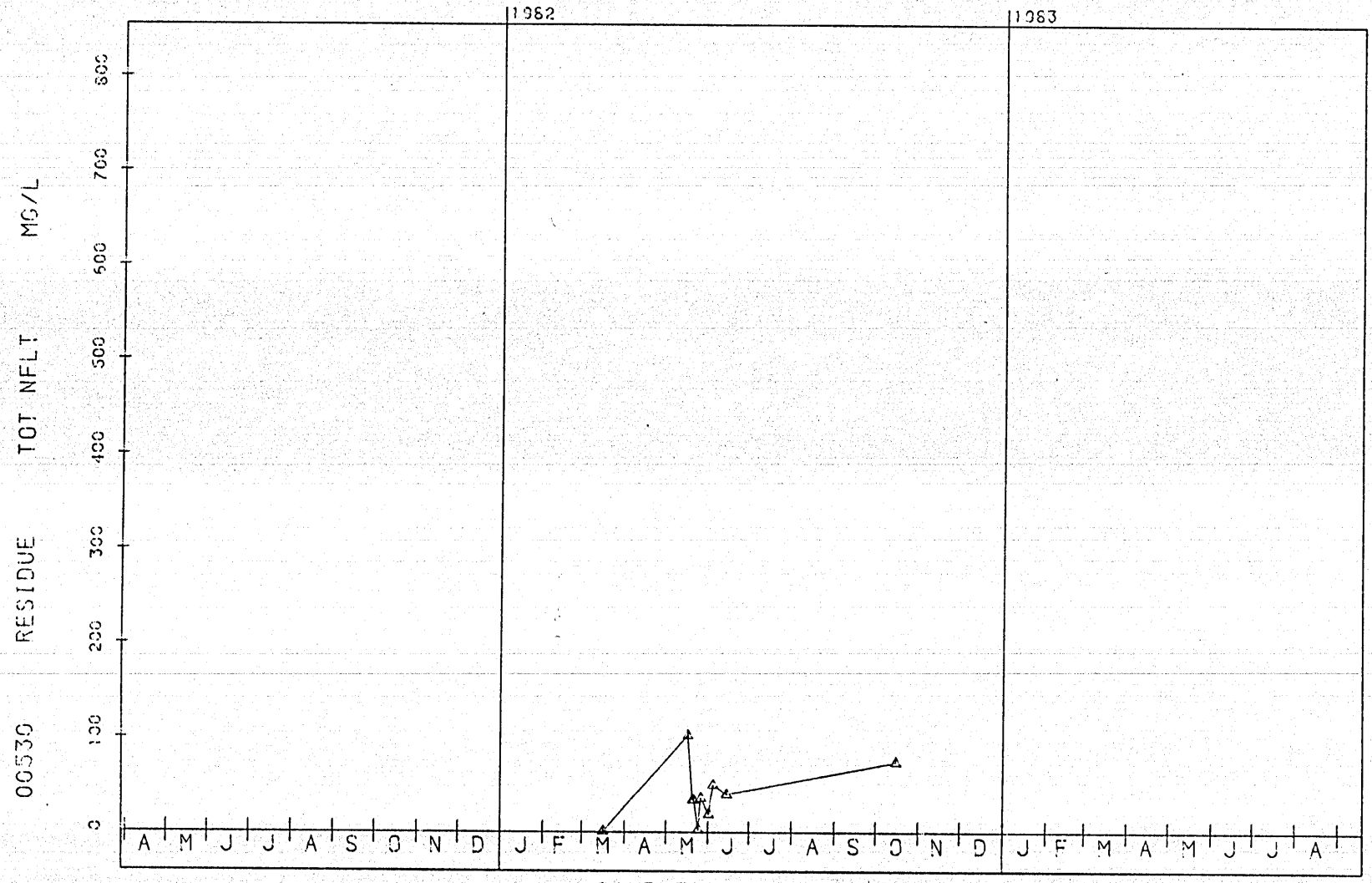
Figure IV-56.



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Figure IV-57.

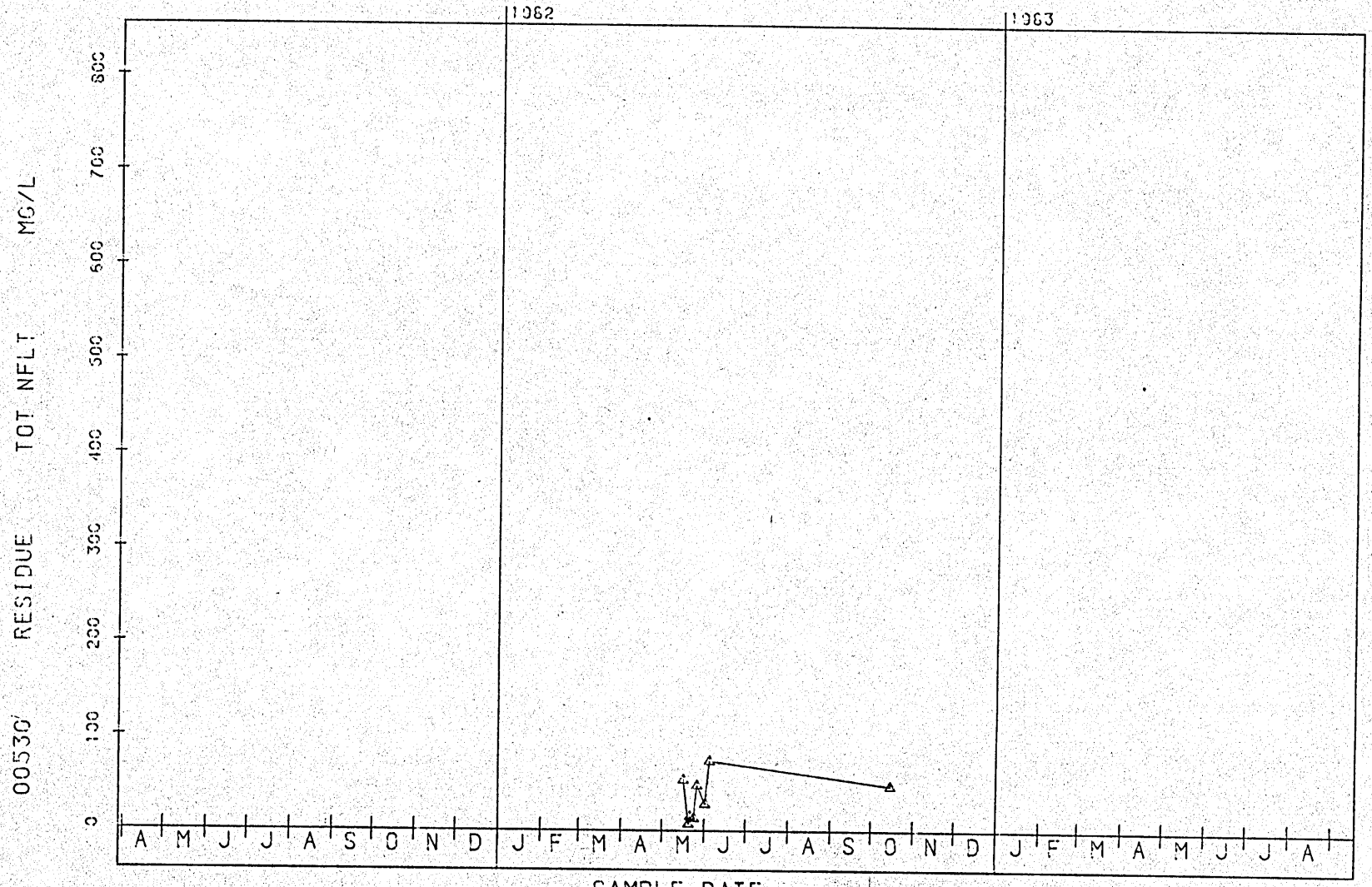
STORET
46FC09
44 04 03.0 098 28 46.0 2
1.5 MI W OF JCT 34 AND 281 107N 64W S23 ABBA
46073 SOUTH DAKOTA JERAULD
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663795-0693813



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Figure IV-58.

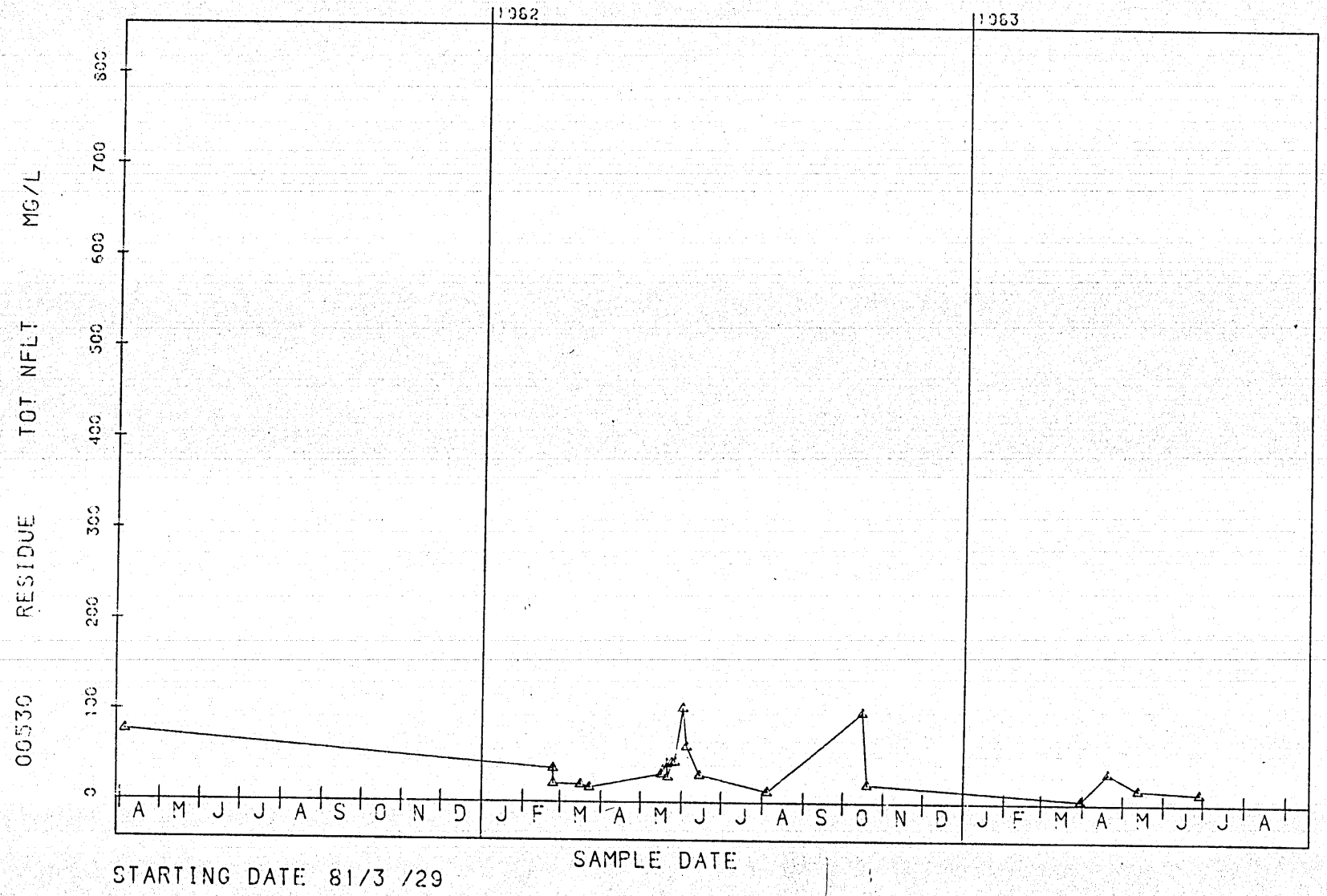
STORET
46FC10
44 06 40.0 098 28 58.0 2
3 MI W 1.5 MI W JCT 34 AND 281 107N 64W S2 BAAA
46073 SOUTH DAKOTA JERAULD
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663796-0693814



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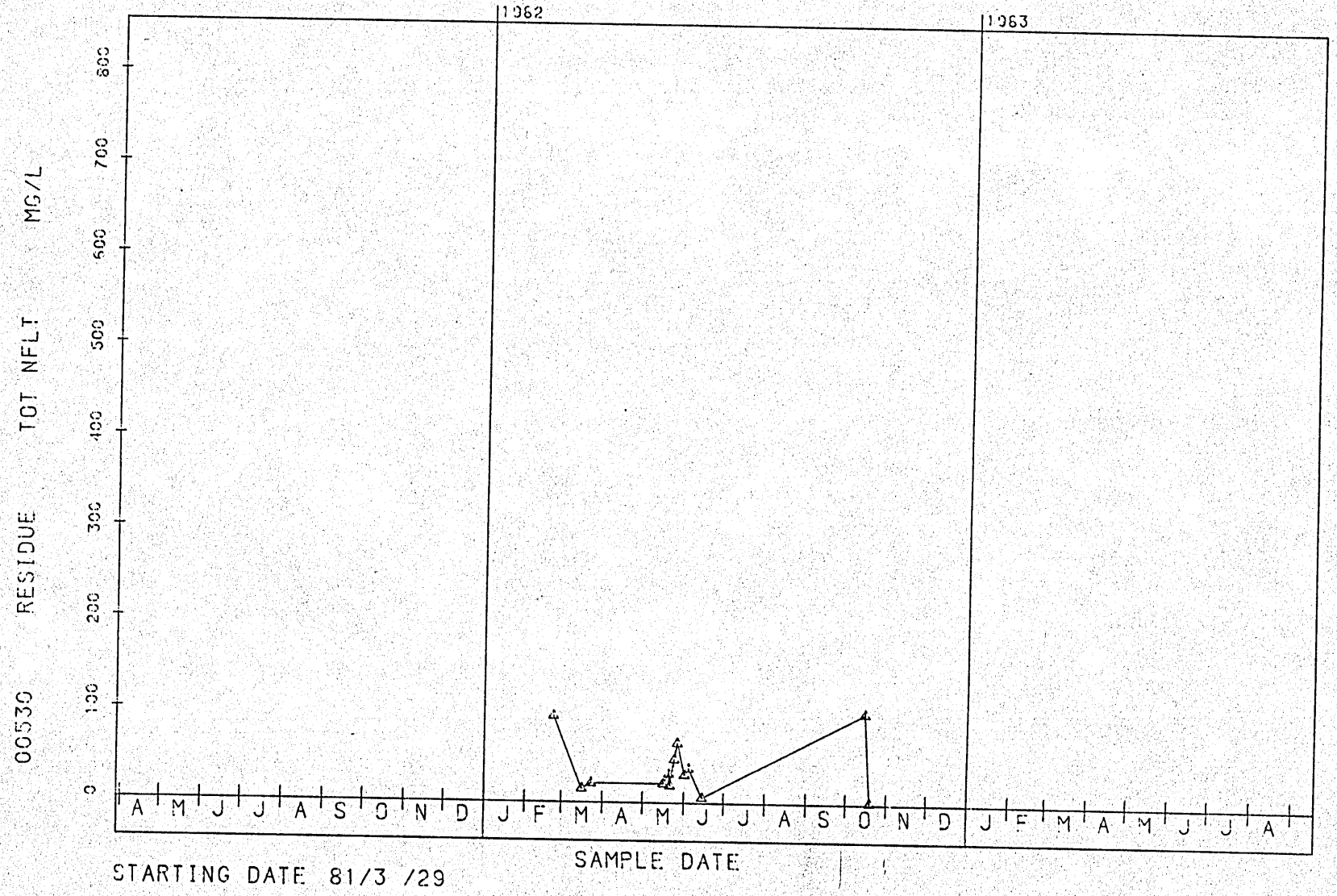
STORET
46FC11
43 46 36.0 098 14 44.0 2
8.5 MI W 1 MI N OF FC INLET 104N 62W S26 CCCB
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663797-0693815

Figure IV-59.



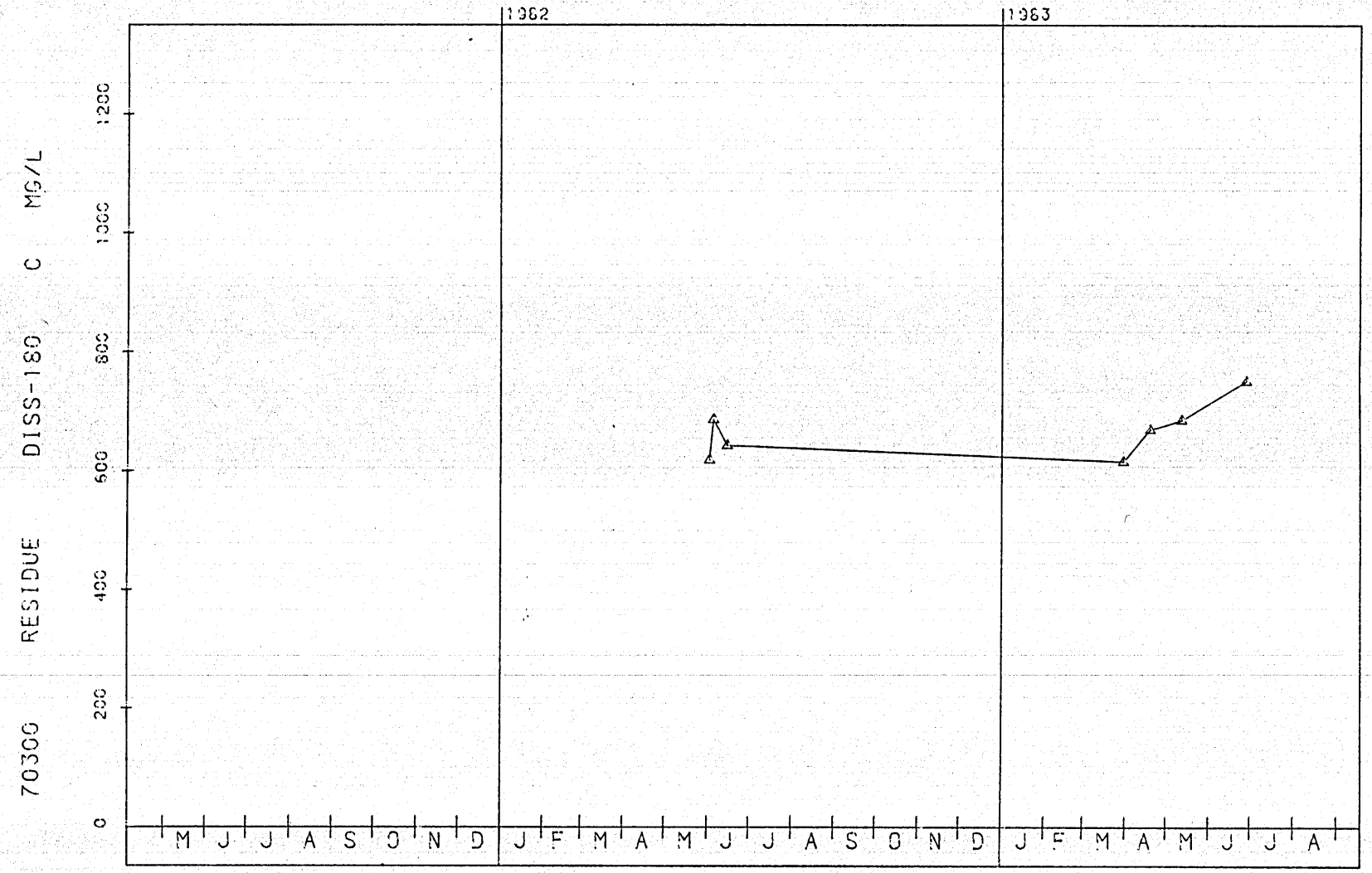
STORET
46FC12
43 48 16.0 098 18 32.0 2
3 MI N 12 MI W OF FC INLET 104N 62W S19 AABA
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663798-0693816

Figure IV-60.



STORET
46FC01
43 44 25.0 098 01 31.0 2
LK MITCHELL OUTLET SD HWY 37 N 103N-60W-S10 BCCA
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663787-0693805

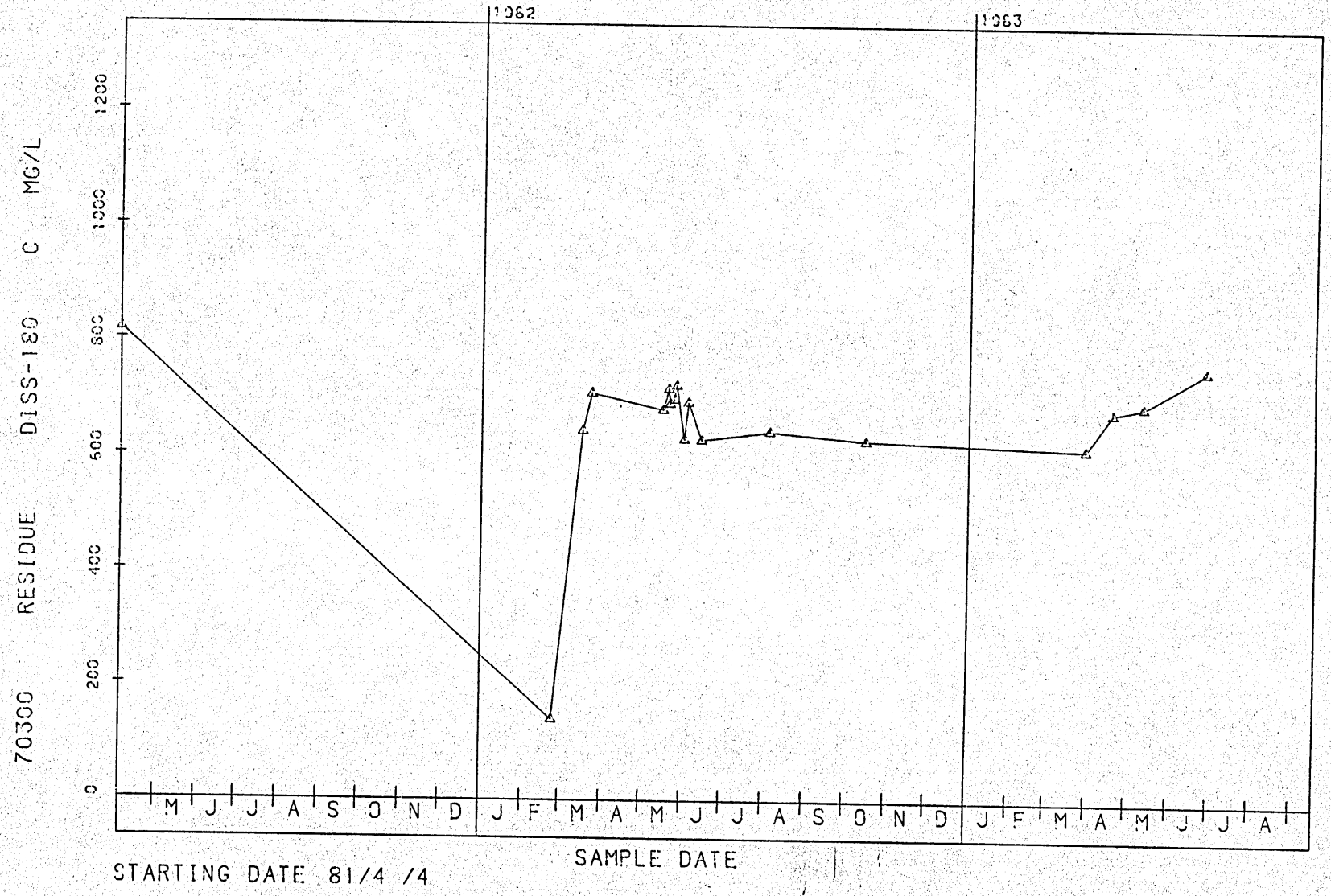
Figure IV-61.



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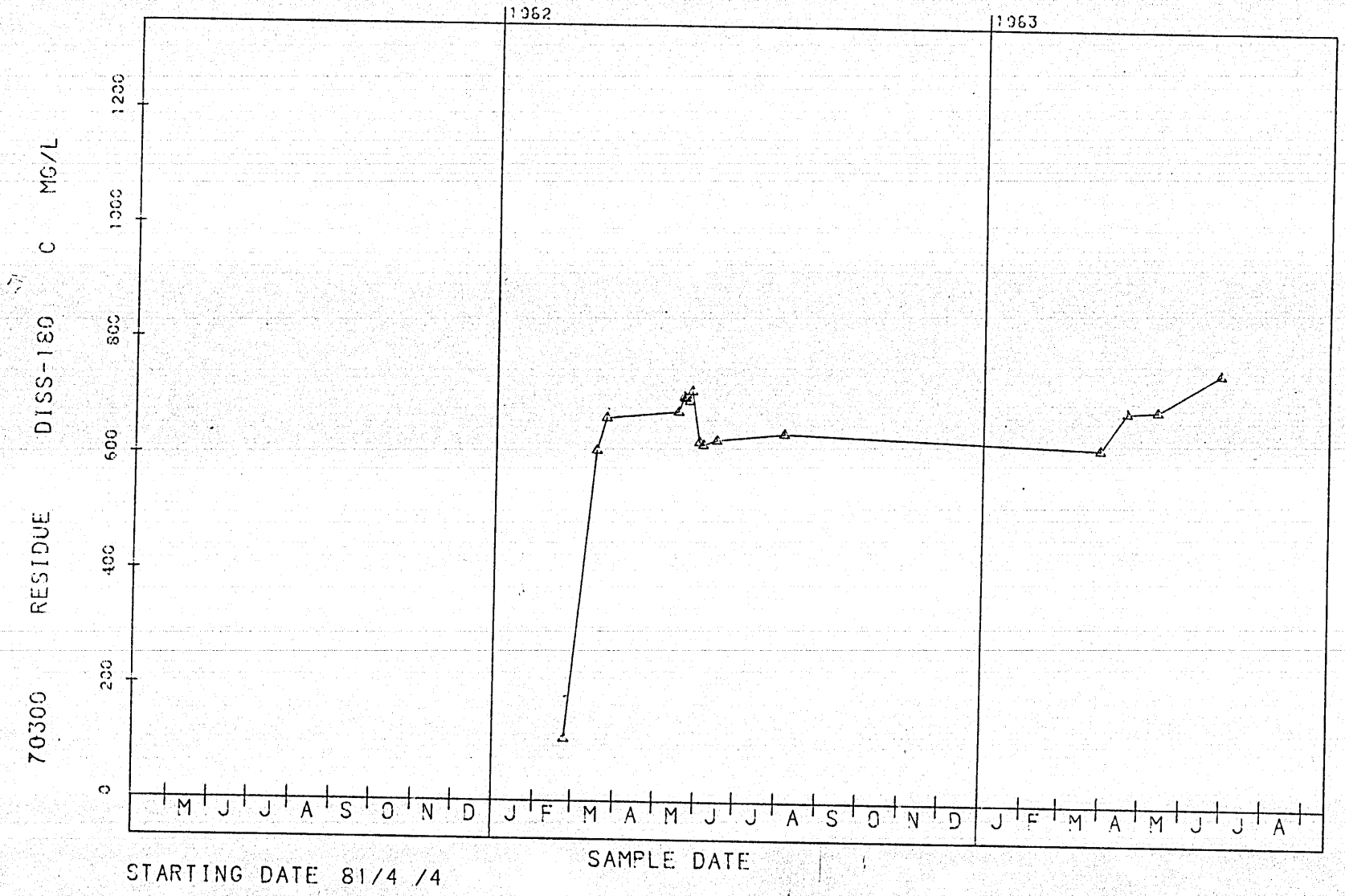
Figure IV-62.

STORET
46F002
43 44 39.0 098 01 34.0 2
NE LK MTCHLL .5 MI N OF OUTLET 103N 60W S10 BBBC
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663788-0693806



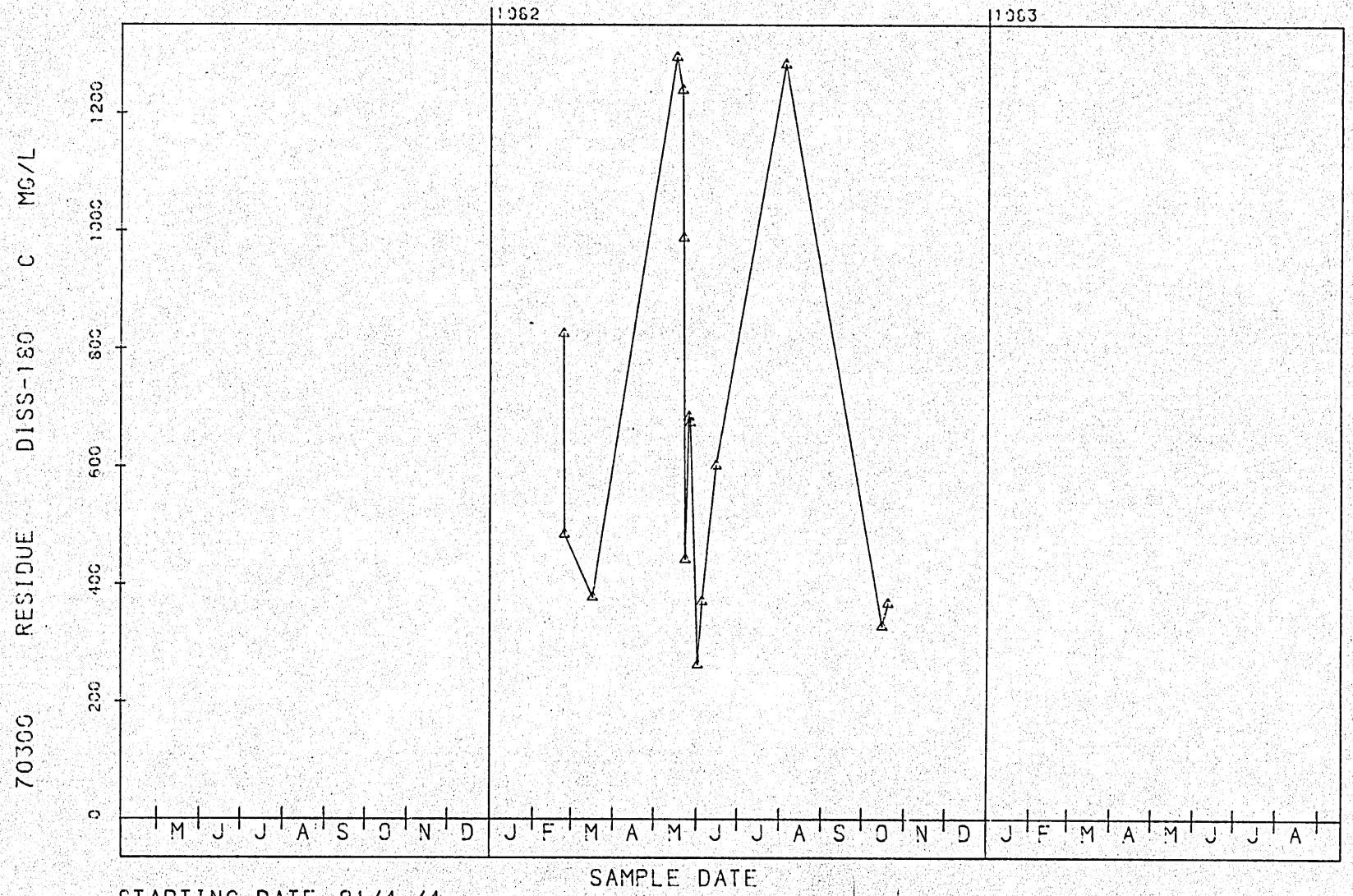
STORET
46FC03
43 45 22.0 098 03 26.0 2
NW LK MITCHLL .75 MI SE FC INLET 103N 60W S5 ACBB
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663789-0693807

Figure IV-63.



STORET
46FC04
43 46 43.0 098 09 58.0 2
4.5 MI W .75 MI N OF FC INLET 104N 61W S28 CCBB
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663790-0693808

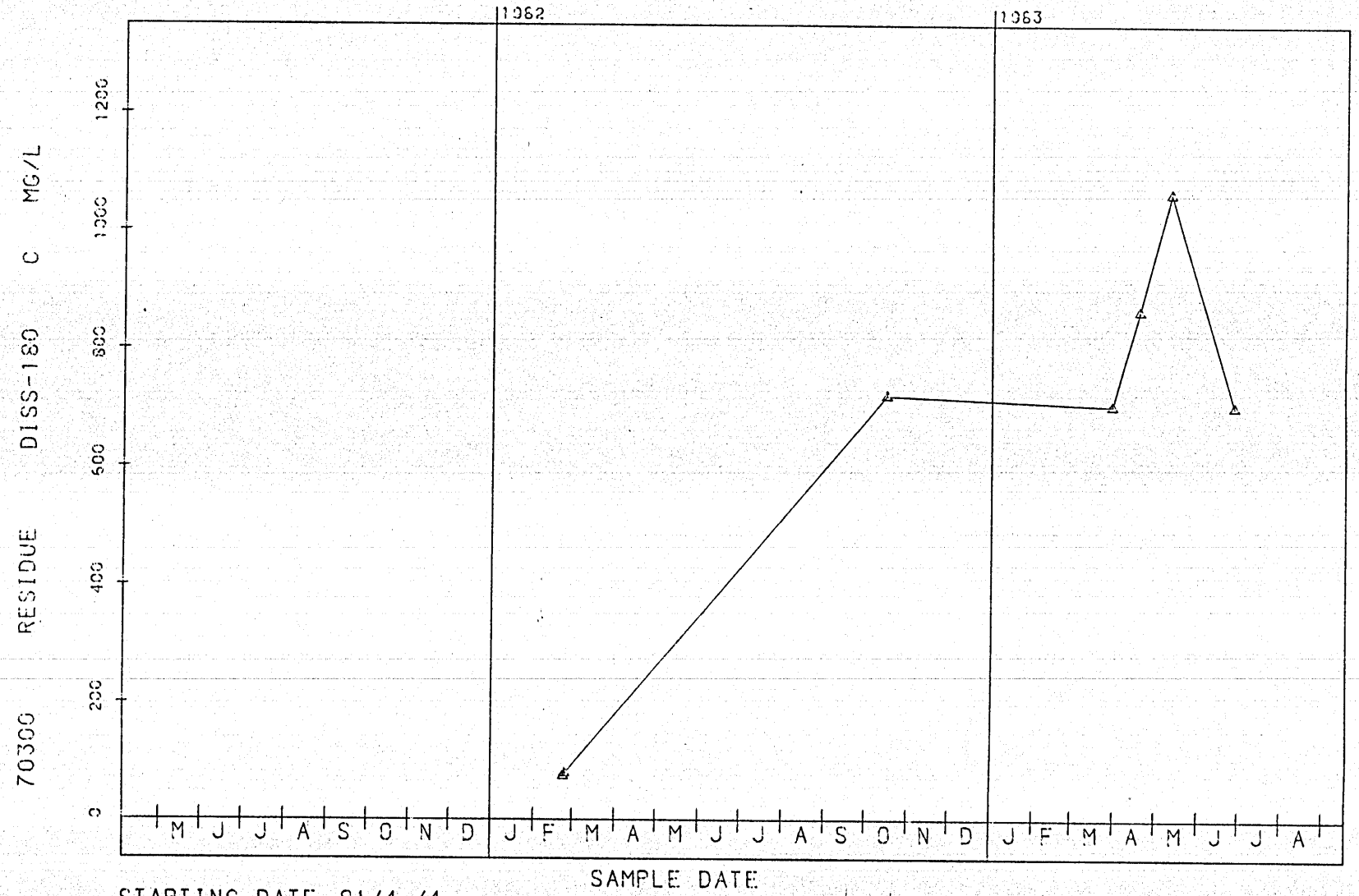
Figure IV-64.



STARTING DATE 81/4 /4

STORET
46FC05
43 44 41.0 098 02 51.0 2
1.5 MI S 100 FT W OF FC INLET 103N 60W S8 AAAD
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663791-0693809

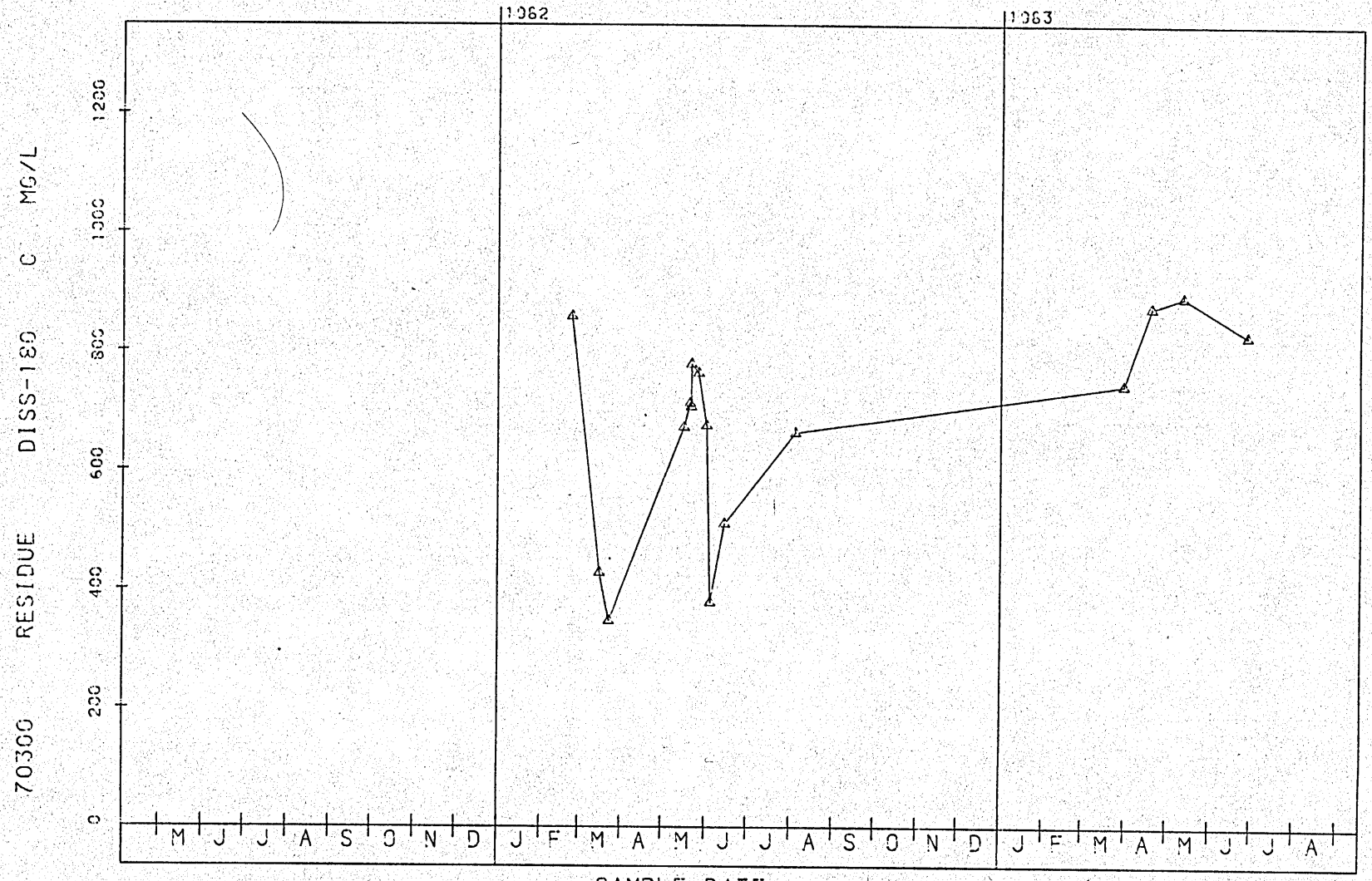
Figure IV-65.



STARTING DATE 81/4 /4

Figure IV-66.

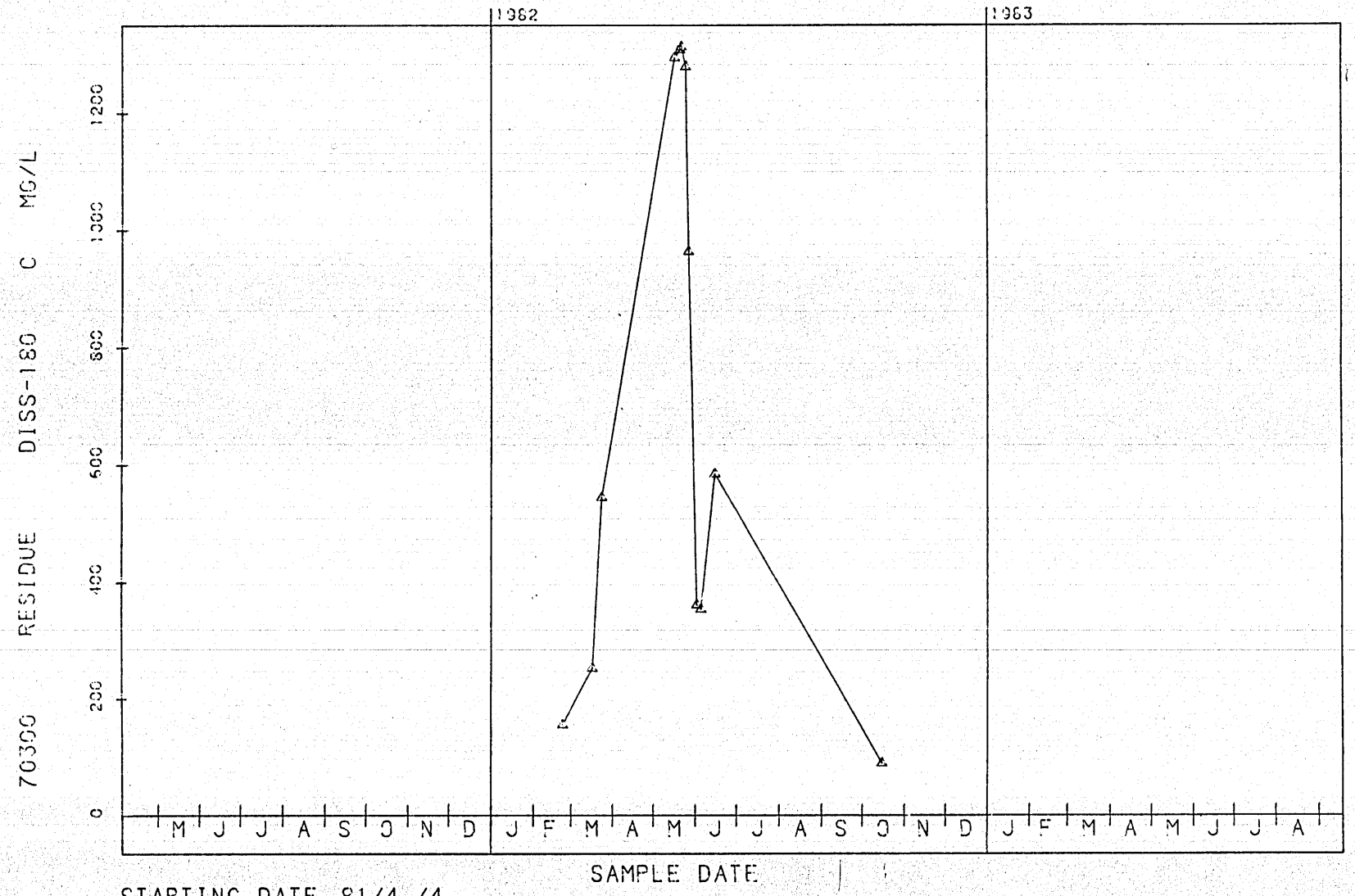
STORET
46FC06
43 45 34.0 098 04 14.0 2
FC INLET TO LK MITCHELL 103N 60W 56 AABB
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663792-0693810



STARTING DATE 81/4 /4

Figure IV-67.

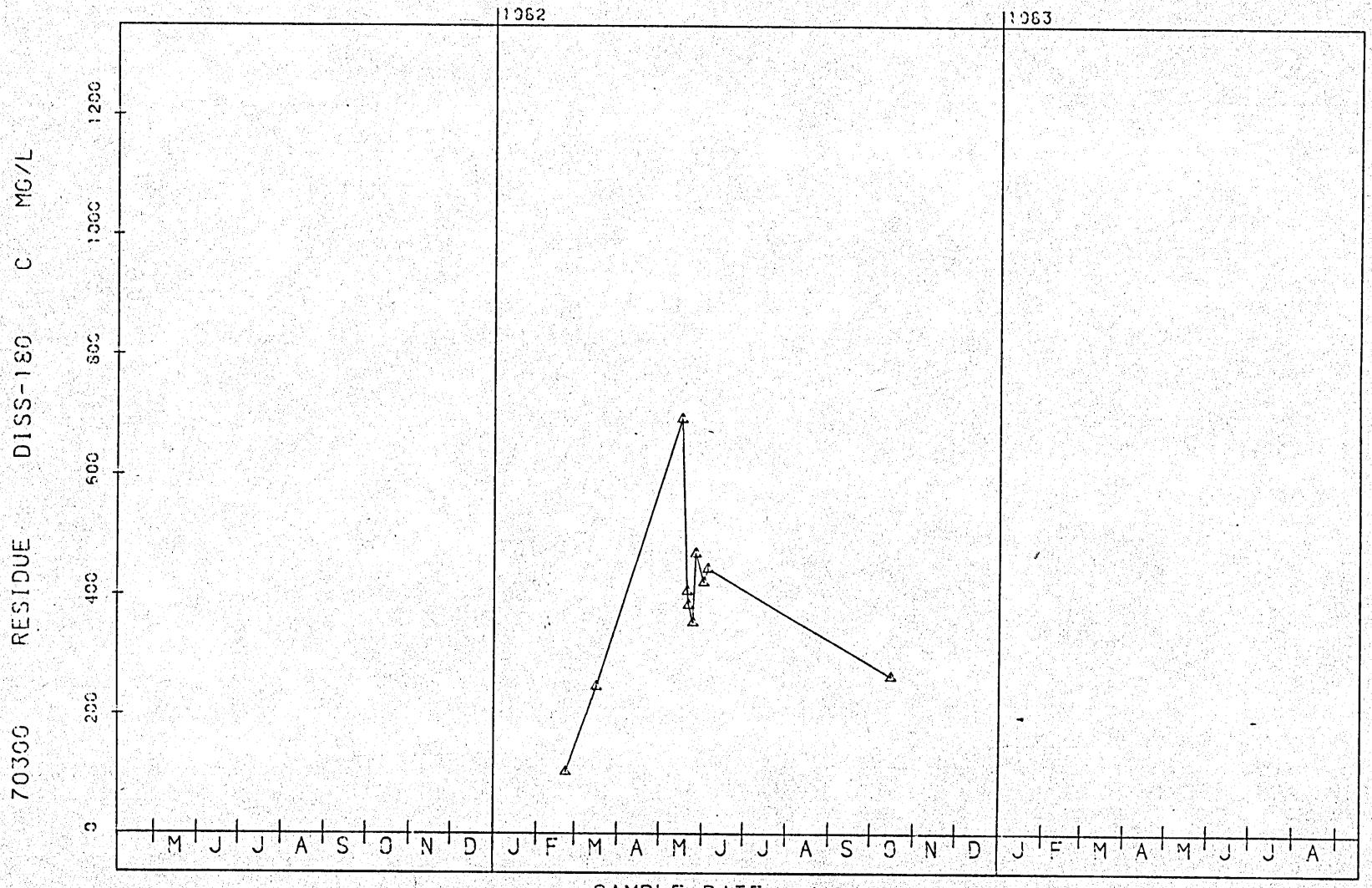
STORET
46FC07
43 47 22.0 098 19 31.0 2
12.5 MI W 2 MI N OF FC INLET 104N 62W S30 BBBB
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663793-0693811



STARTING DATE 81/4 /4

STORET
46FC08
43 55 09.0 098 27 04.0 2
18.5 MI W 11 MI N OF FC INLET 105N 63W S7 BBCC
46003 SOUTH DAKOTA AURORA
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663794-0693812

Figure IV-68.



STARTING DATE 81/4 /4

Figure IV-69.

STORET
46FC09
44 04 03.0 098 28 46.0 2
1.5 MI W OF JCT 34 AND 281 107N 64W S23 ABBA
46073 SOUTH DAKOTA JERAULD
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663795-0693813

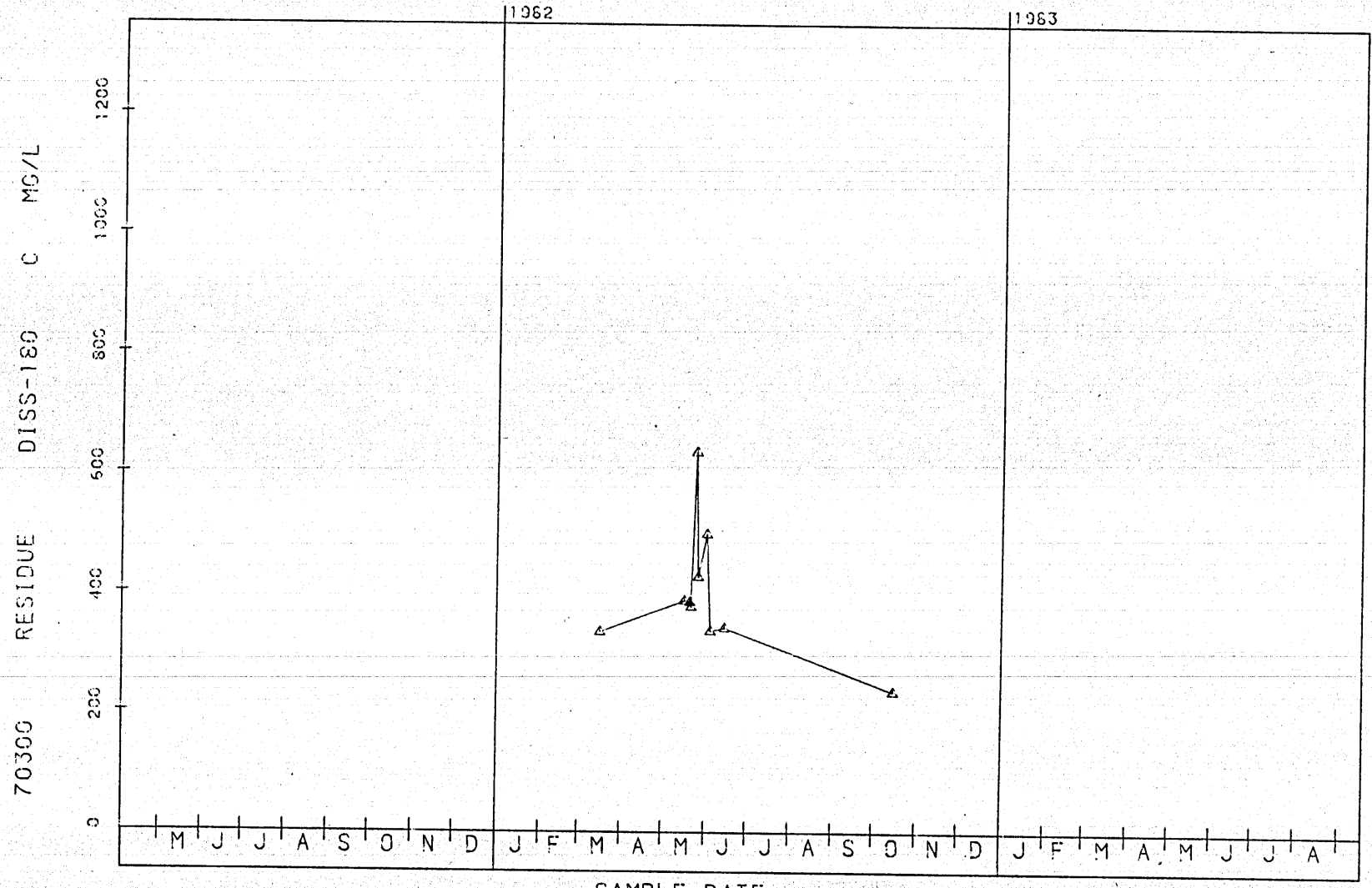
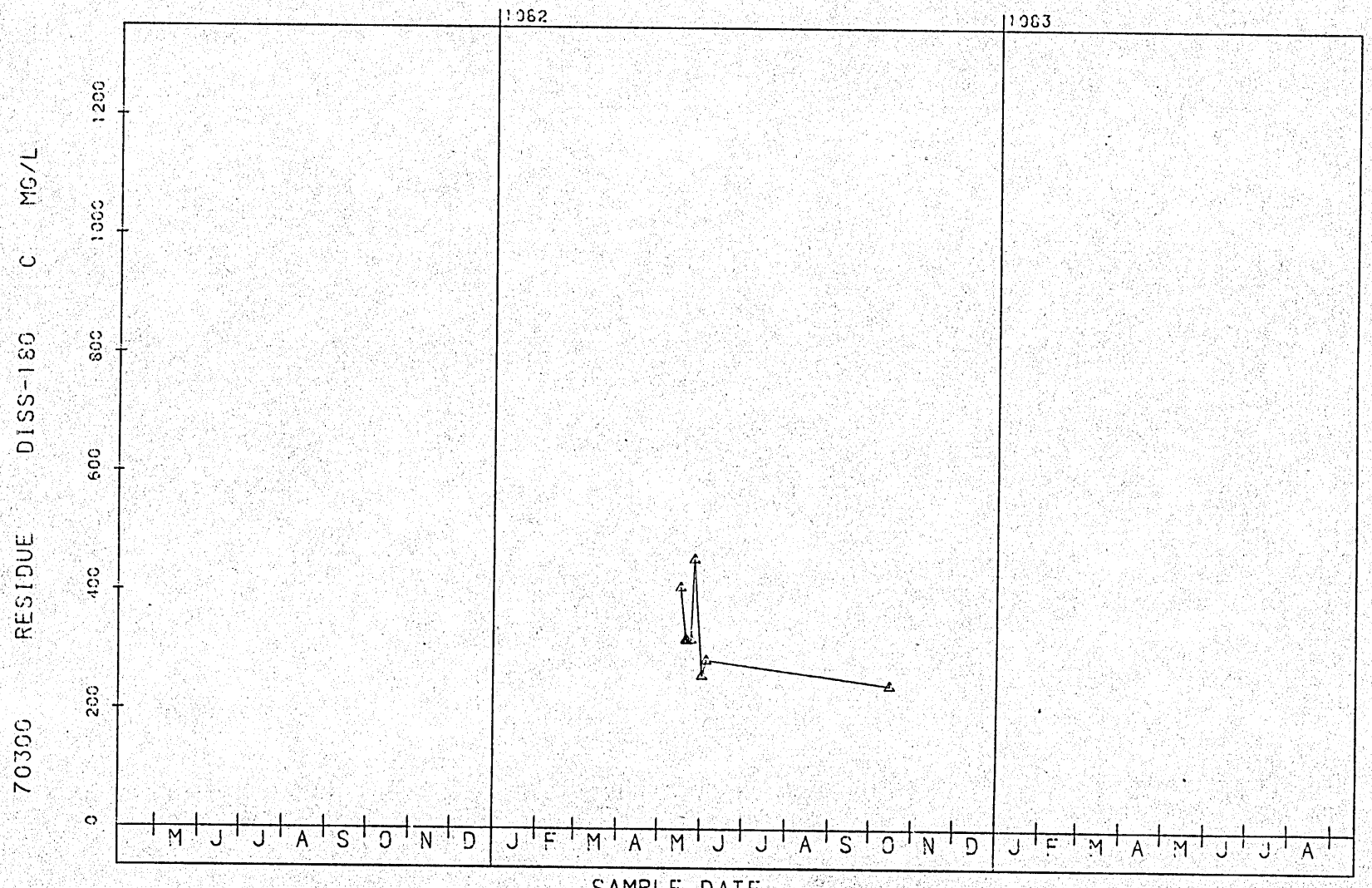


Figure IV-70.

STORET
46FC10
44 06 40.0 098 28 58.0 2
3 MI W 1.5 MI W JCT 34 AND 281 107N 64W S2 BAAA
46073 SOUTH DAKOTA JERAULD
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663796-0693814



STORET
46FC11
43 46 36.0 098 14 44.0 2
8.5 MI W 1 MI N OF FC INLET 104N 62W S26 CCCB
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663797-0693815

Figure IV-71.

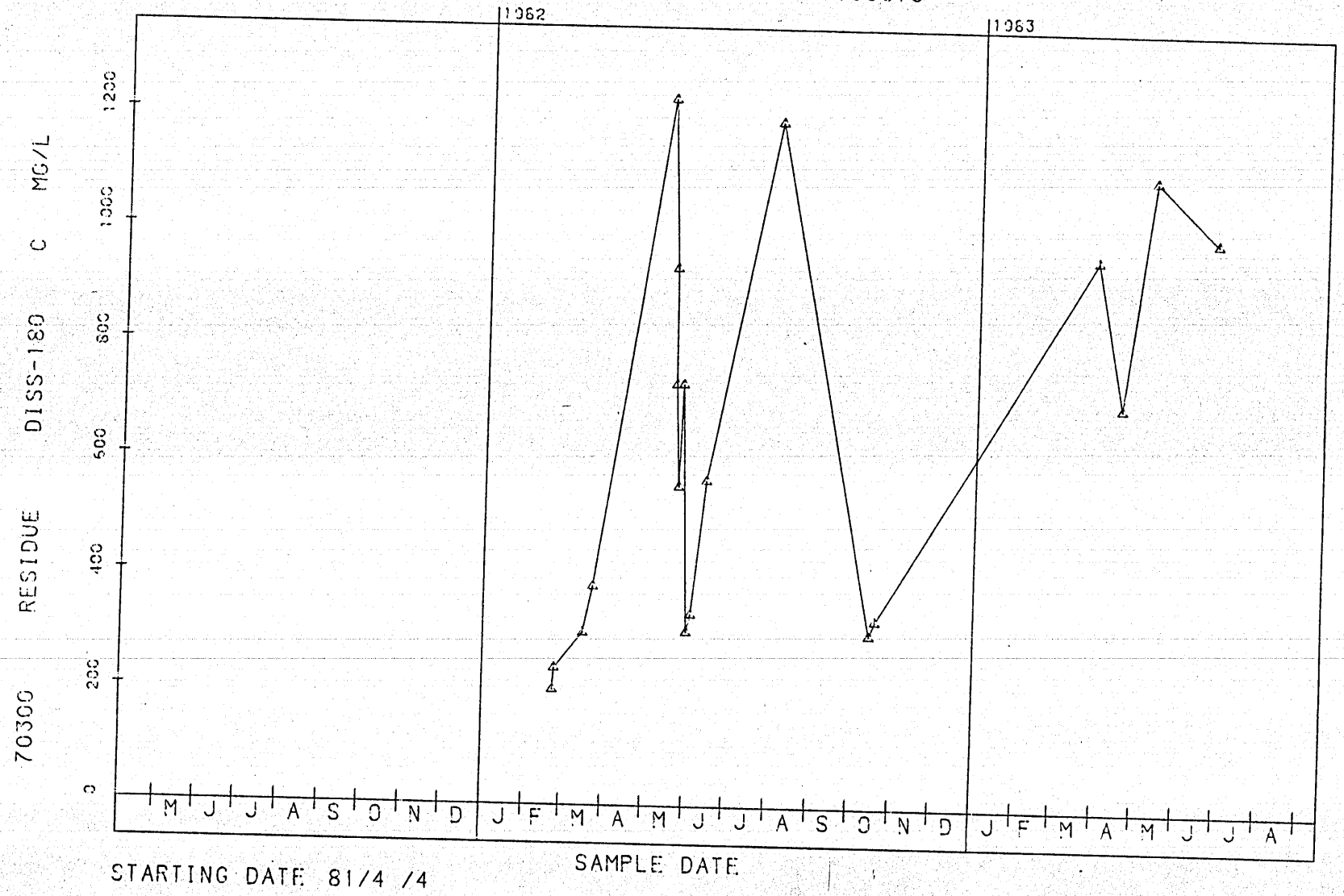
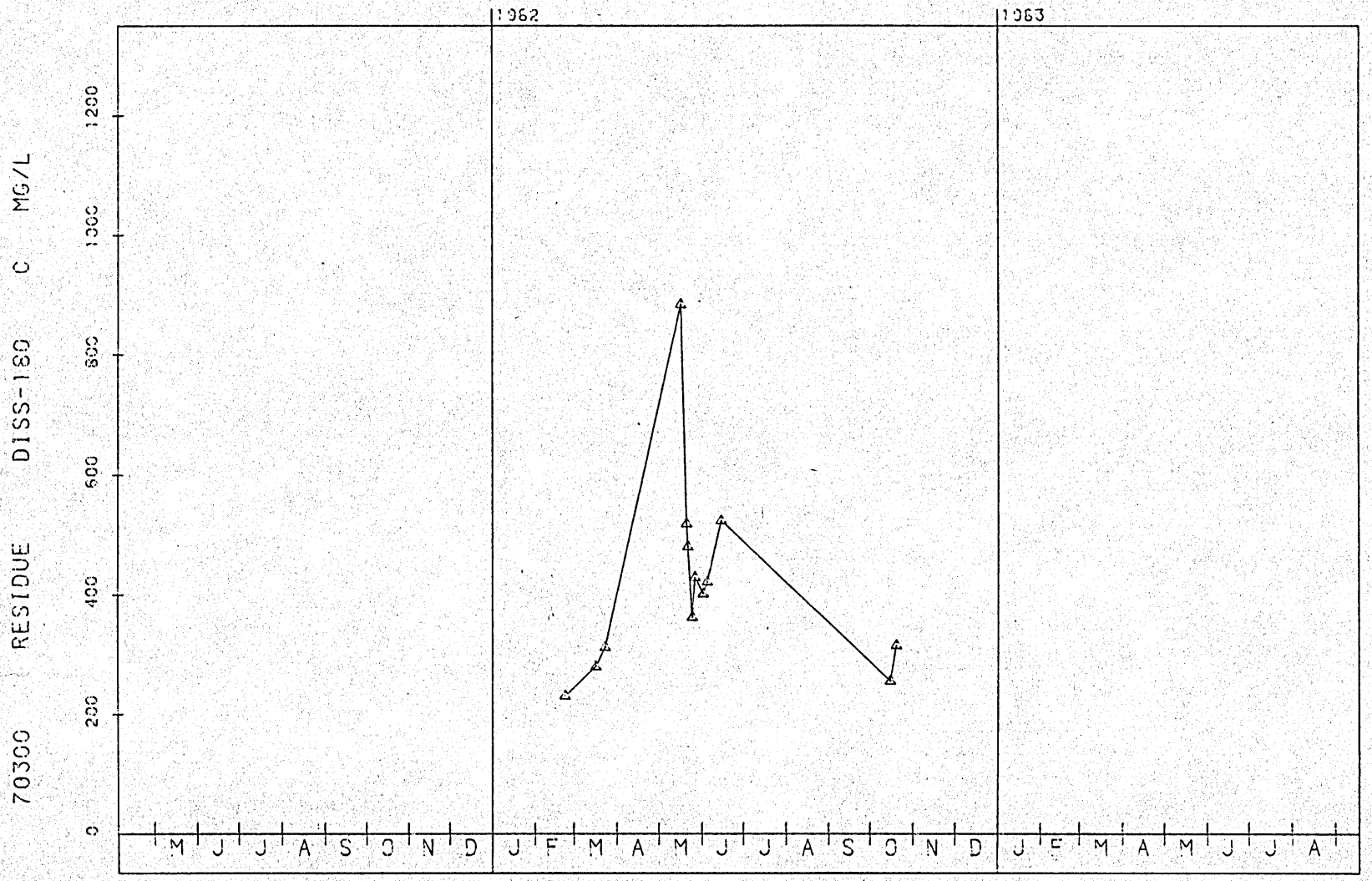


Figure IV-72.

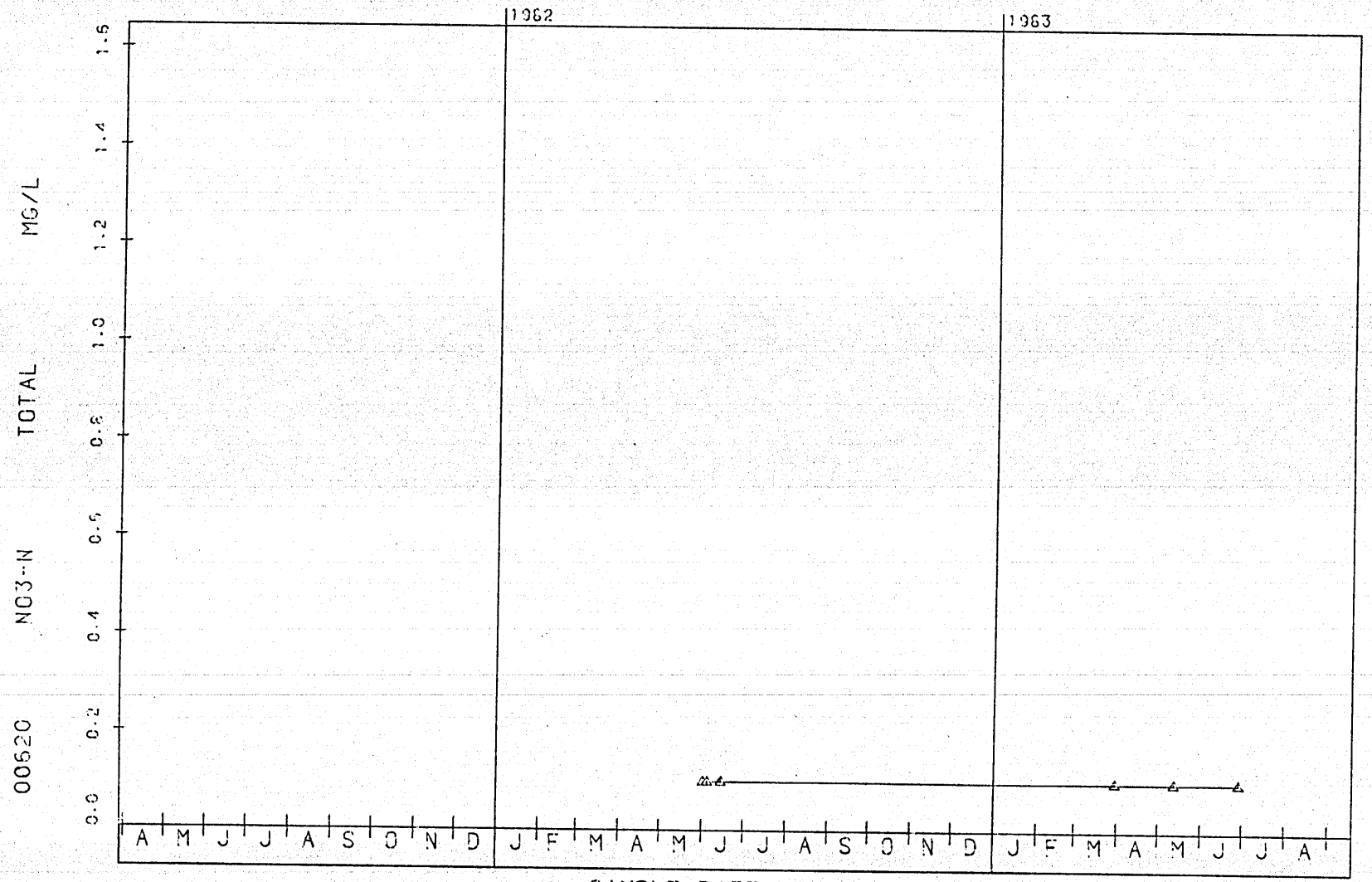
STORET
46FC12
43 48 16.0 098 18 32.0 2
3 MI N 12 MI W OF FC INLET 104N 62W S19 AABA
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663798-0693816



STARTING DATE 81/4 /4

STORET
46FC01
43 44 25.0 098 01 31.0 2
LK MITCHELL OUTLET SD HWY 37 N 103N-60W-S10 BCCA
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663787-0693805

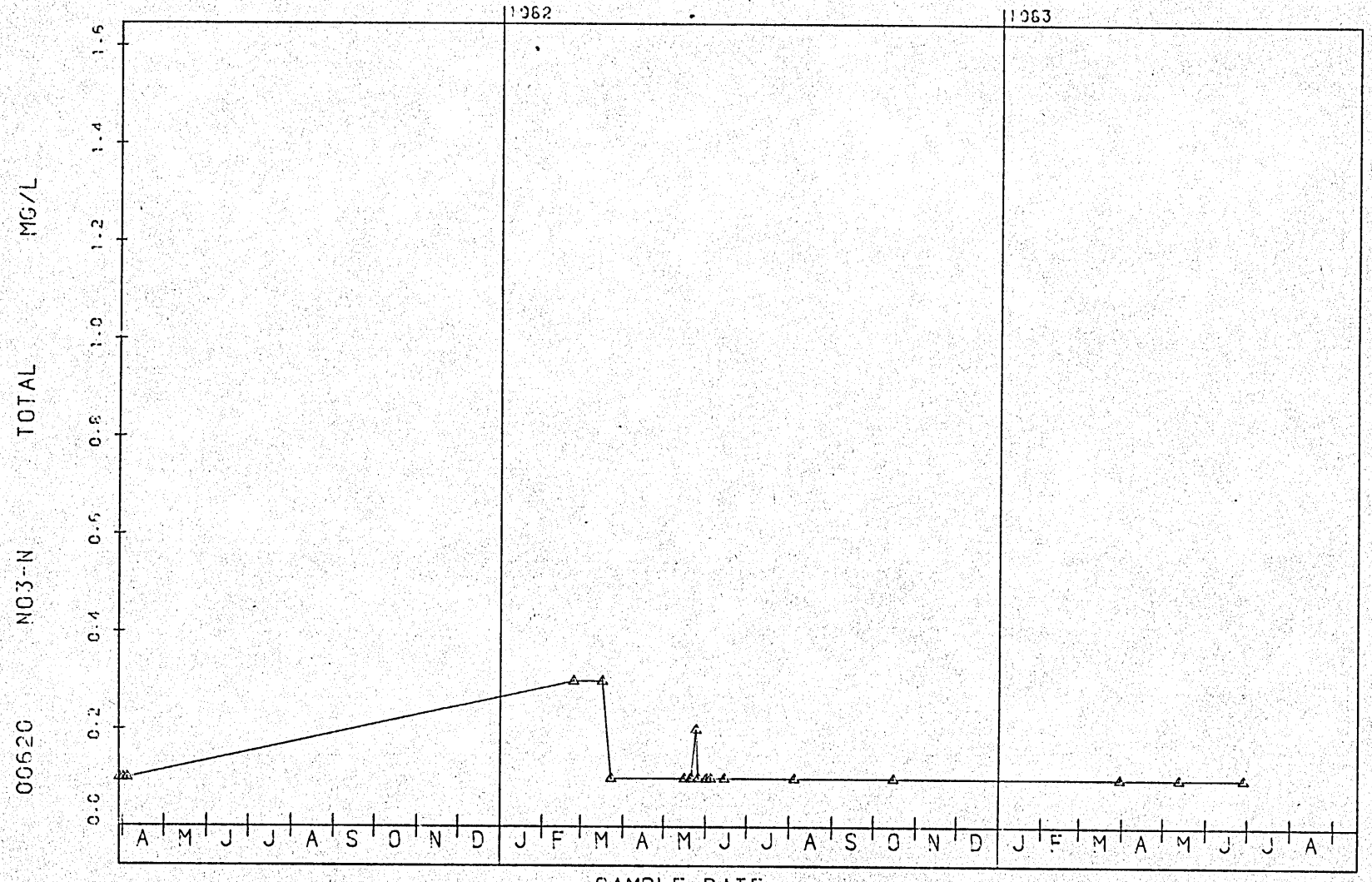
Figure IV-73.



STARTING DATE 81/3 /29

STORET
46FC02
43 44 39.0 098 01 34.0 2
NE LK MITCHLL .5 MI N OF OUTLET 103N 60W S10 BBBC
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663788-0693806

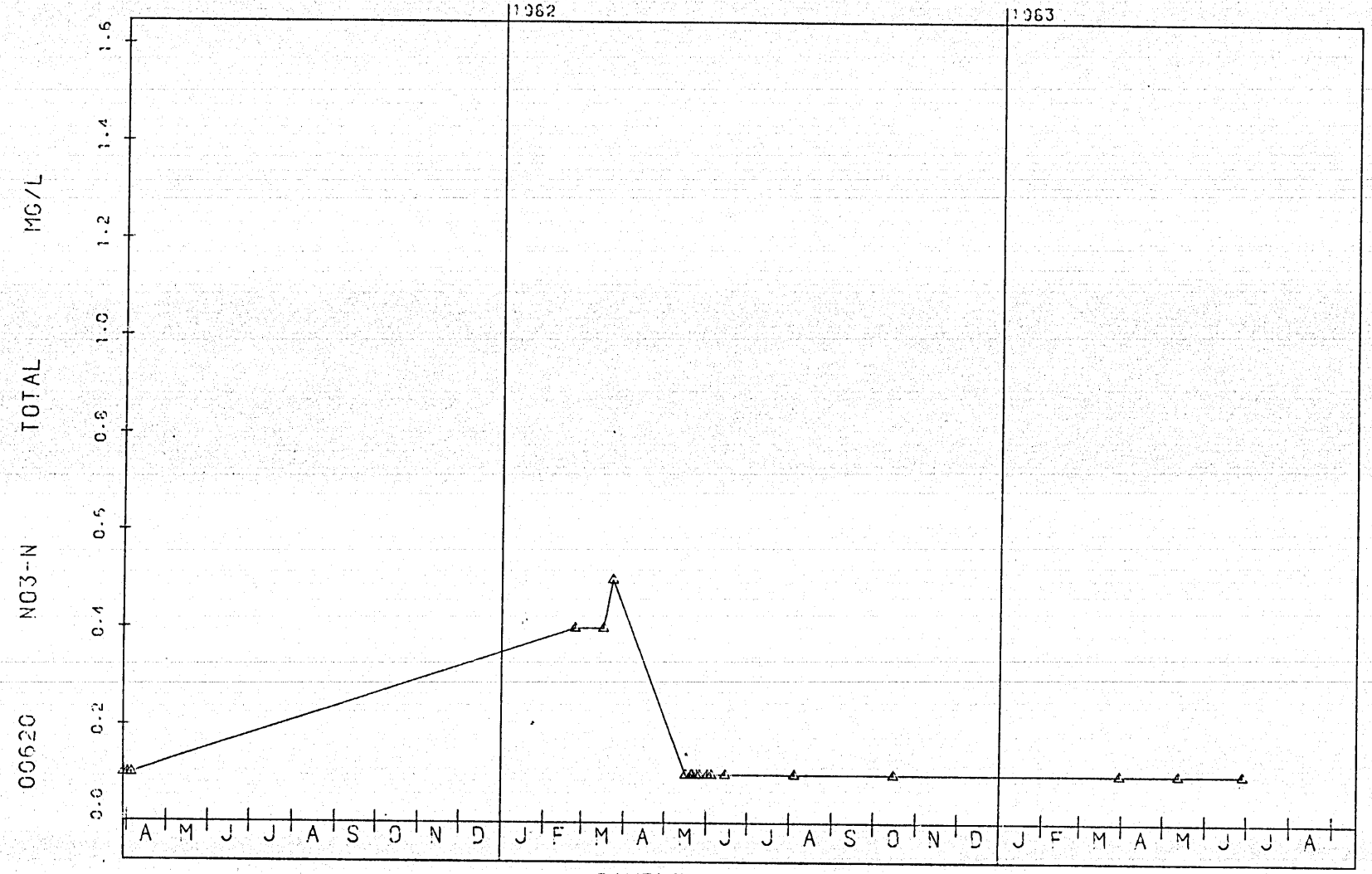
Figure IV-74.



STARTING DATE 81/3 /29

STORET
46FC03
43 45 22.0 098 03 26.0 2
NW LK MTCHLL .75 MI SE FC INLET 103N 60W S5 ACBB
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663789-0693807

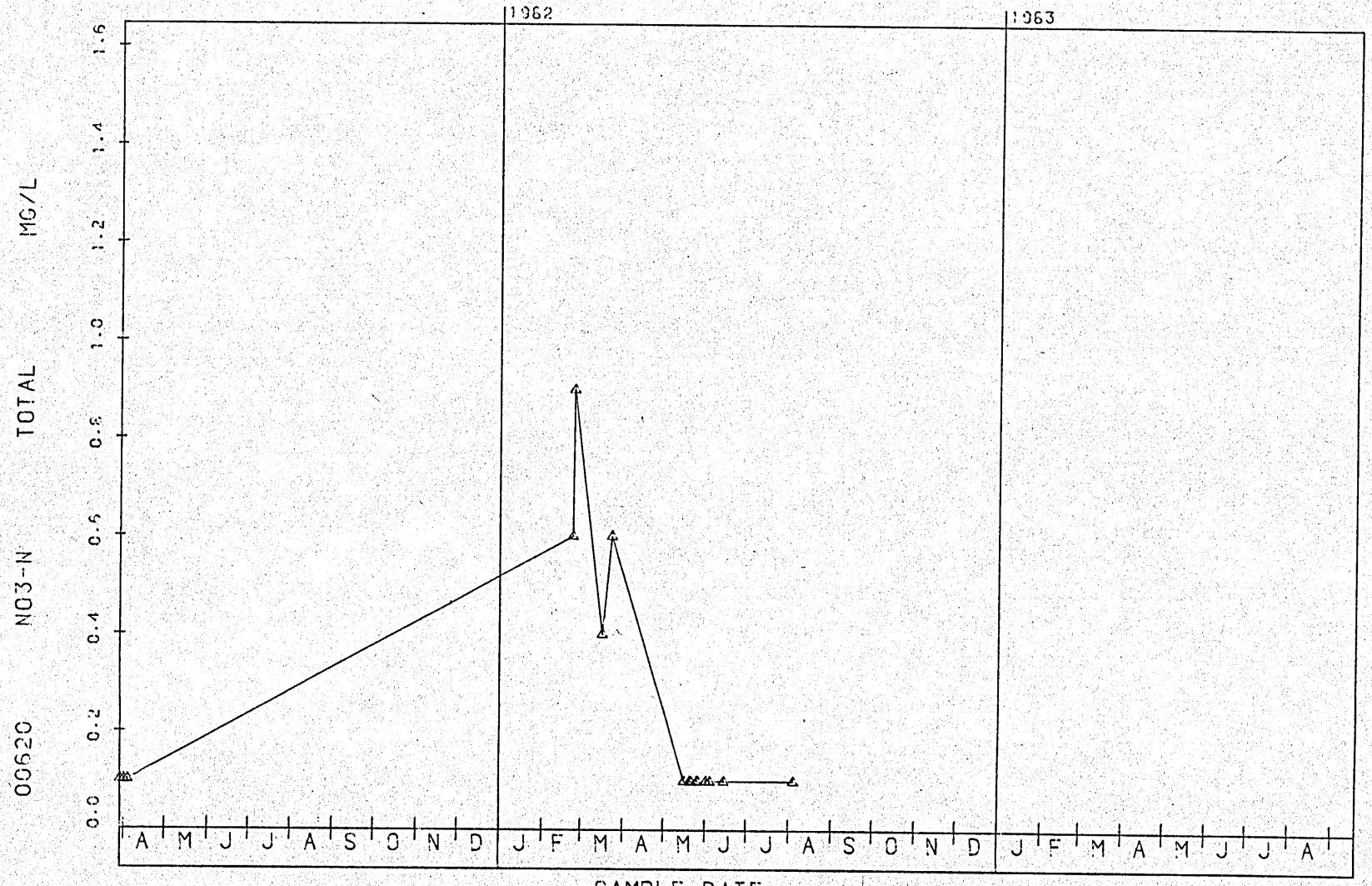
Figure IV-75.



STARTING DATE 81/3 /29

STORET
46FC04
43 46 43.0 098 09 58.0 2
4.5 MI W .75 MI N OF FC INLET 104N 61W S28 CCBB
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663790-0693808

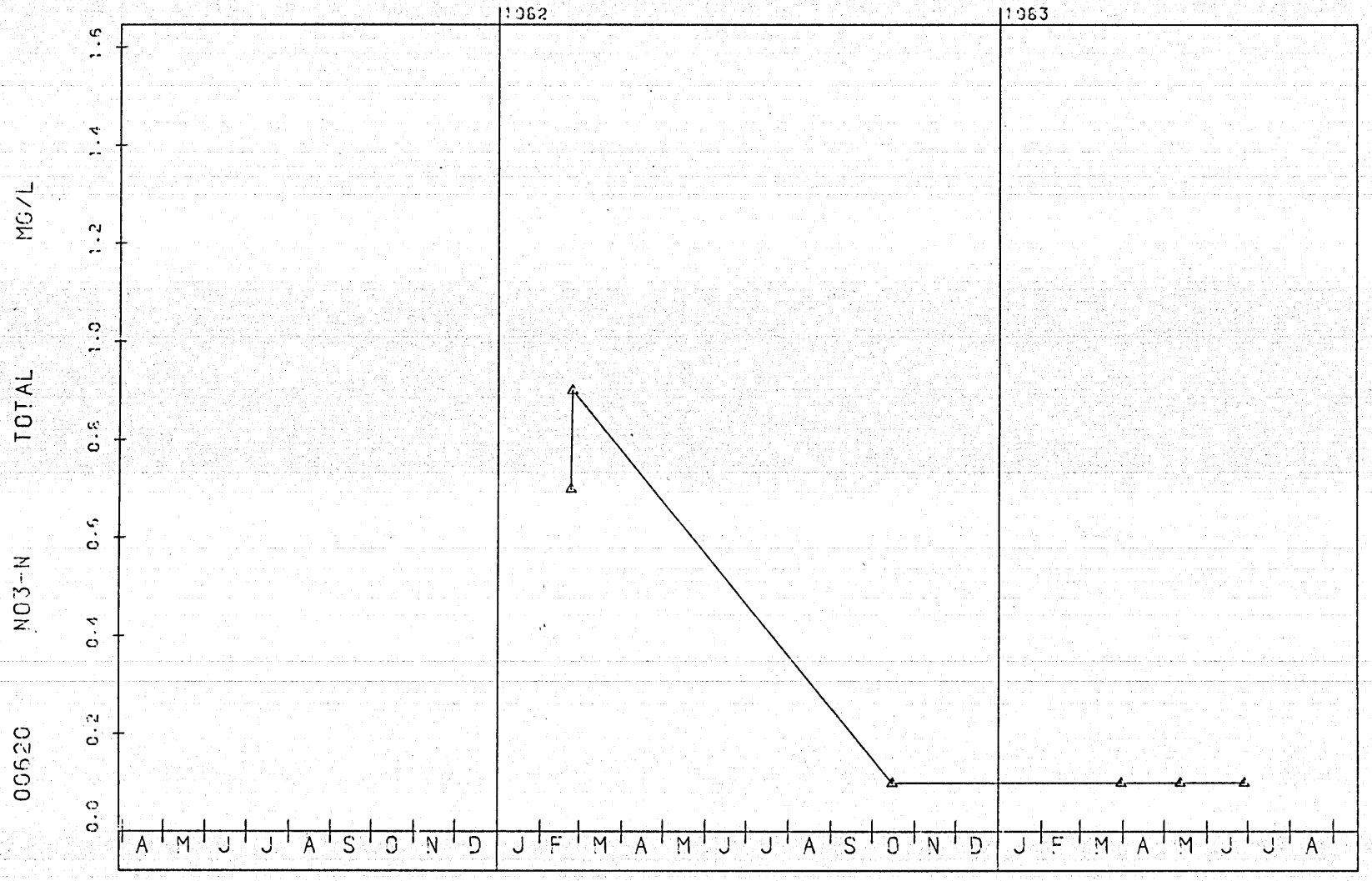
Figure IV-76.



STARTING DATE 81/3 /29

STORET
46FC05
43 44 41.0 098 02 51.0 2
1.5 MI S 100 FT W OF FC INLET 103N 60W S8 AAAD
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663791-0693809

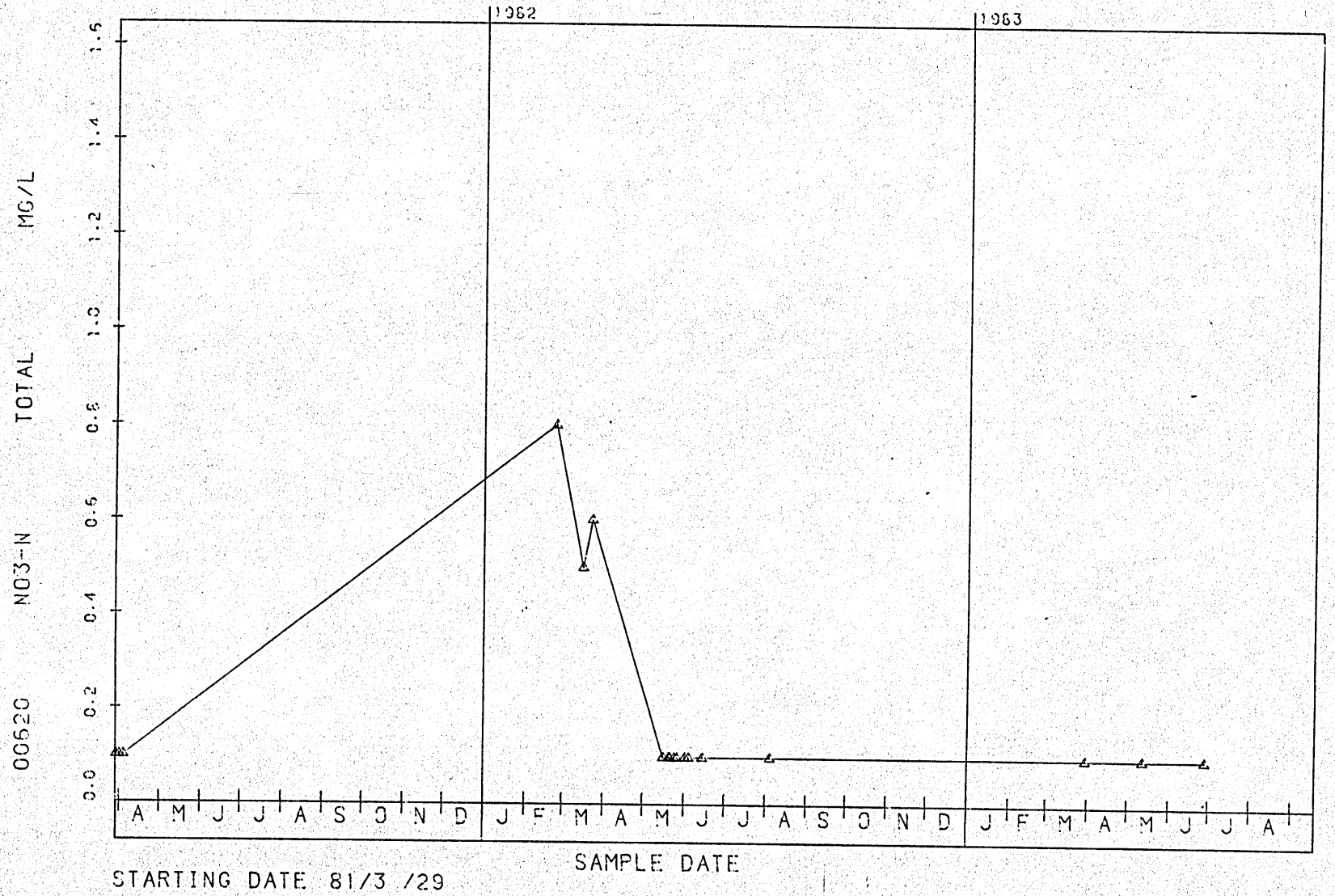
Figure IV-77.



STARTING DATE 81/3 /29

STORET
46FC06
43 45 34.0 098 04 14.0 2
FC INLET TO LK MITCHELL 103N 60W 56 AABB
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663792-0693810

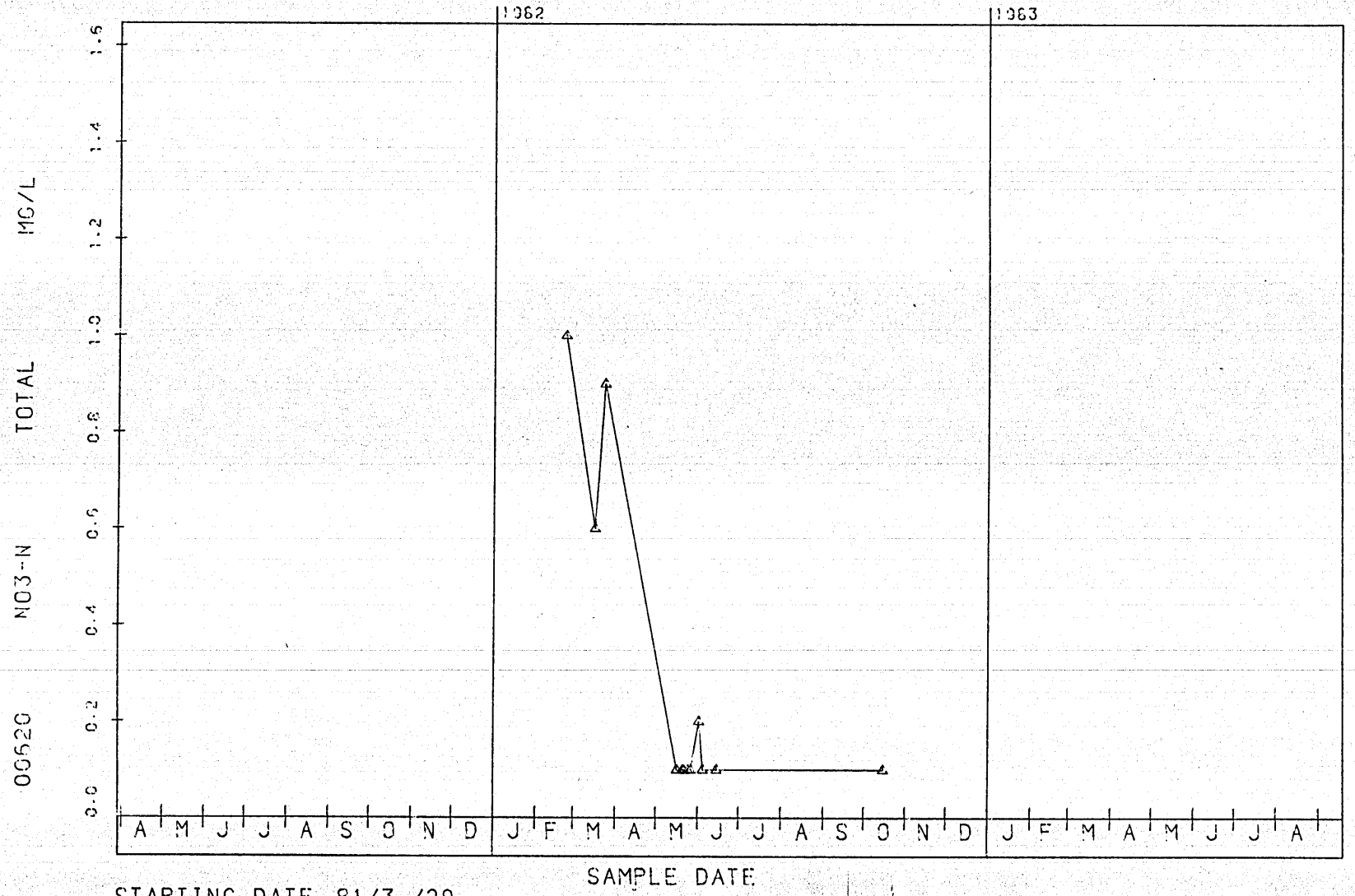
Figure IV-78.



STARTING DATE 81/3 /29

STORET
46FC07
43 47 22.0 098 19 31.0 2
12.5 MI W 2 MI N OF FC INLET 104N 62W S30 BBBB
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663793-0693811

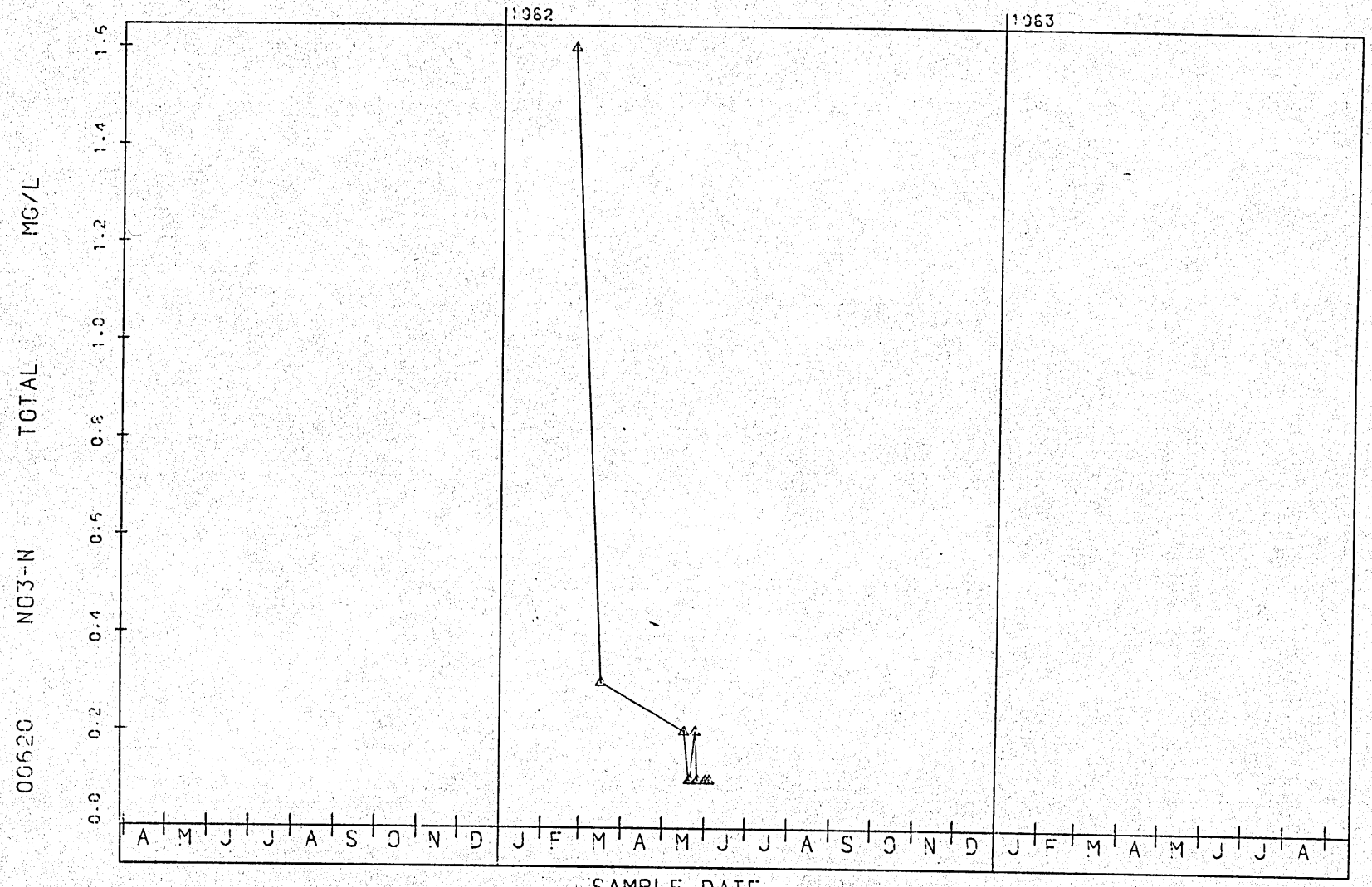
Figure IV-79.



STARTING DATE 81/3 /29

STORET
46FC08
43 55 09.0 098 27 04.0 2
18.5 MI W 11 MI N OF FC INLET 105N 63W S7 BBCC
46003 SOUTH DAKOTA AURORA
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663794-0693812

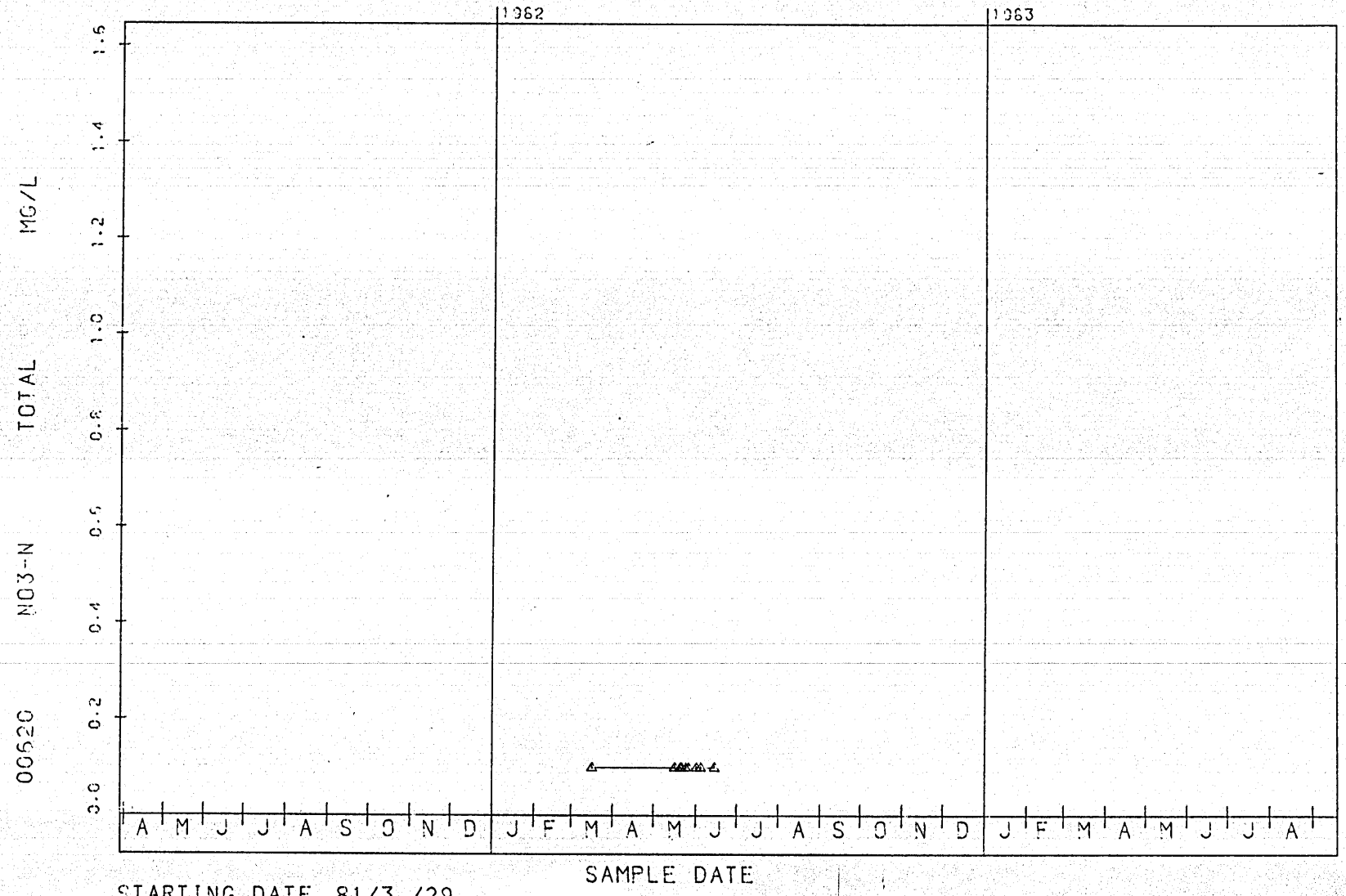
Figure IV-80.



STARTING DATE 81/3 /29

STORET
46FC09
44 04 03.0 098 28 46.0 2
1.5 MI W OF JCT 34 AND 281 107N 64W S23 ABBA
46073 SOUTH DAKOTA JERAULD
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663795-0693813

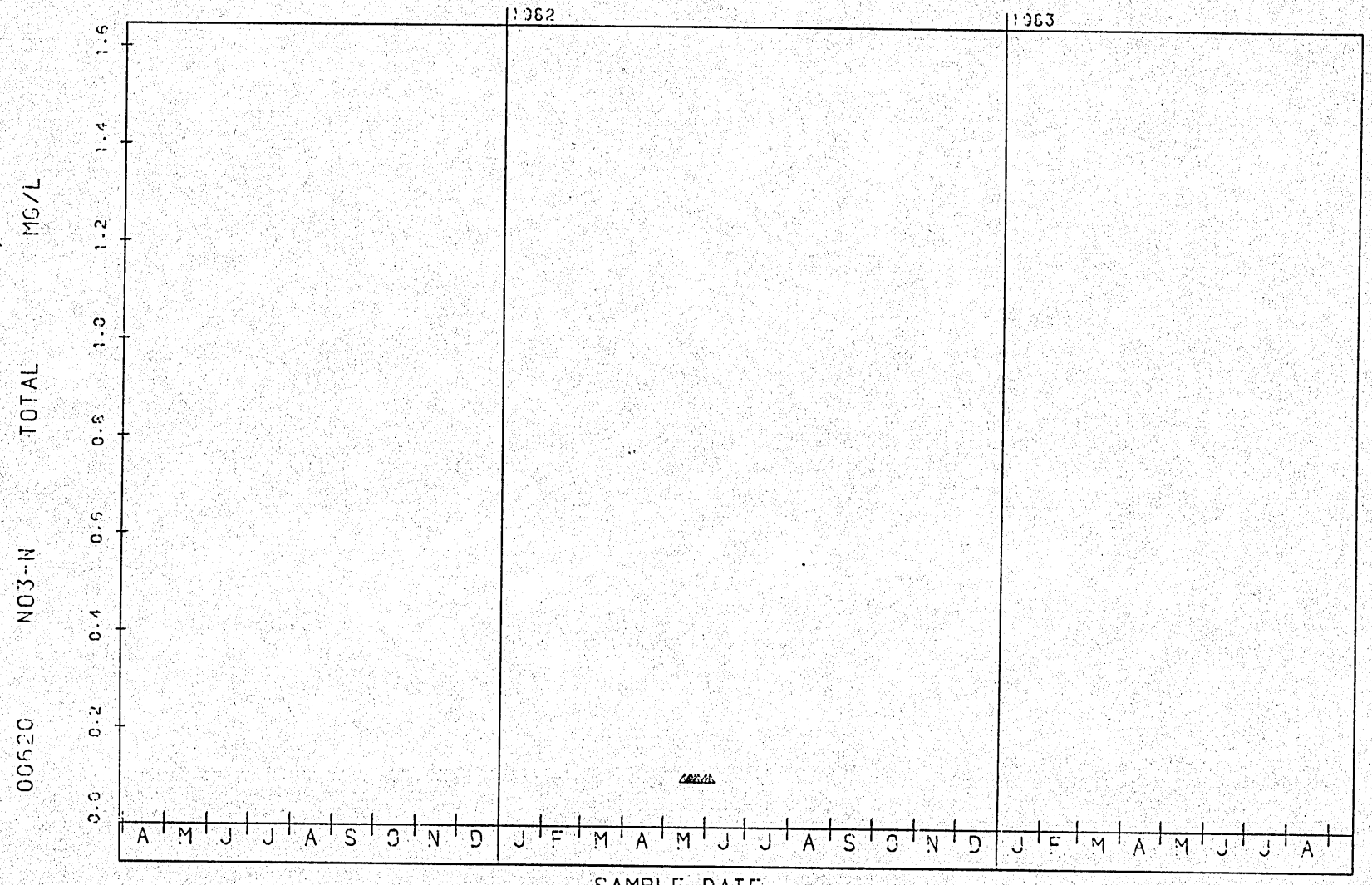
Figure IV-81.



STARTING DATE 81/3 /29

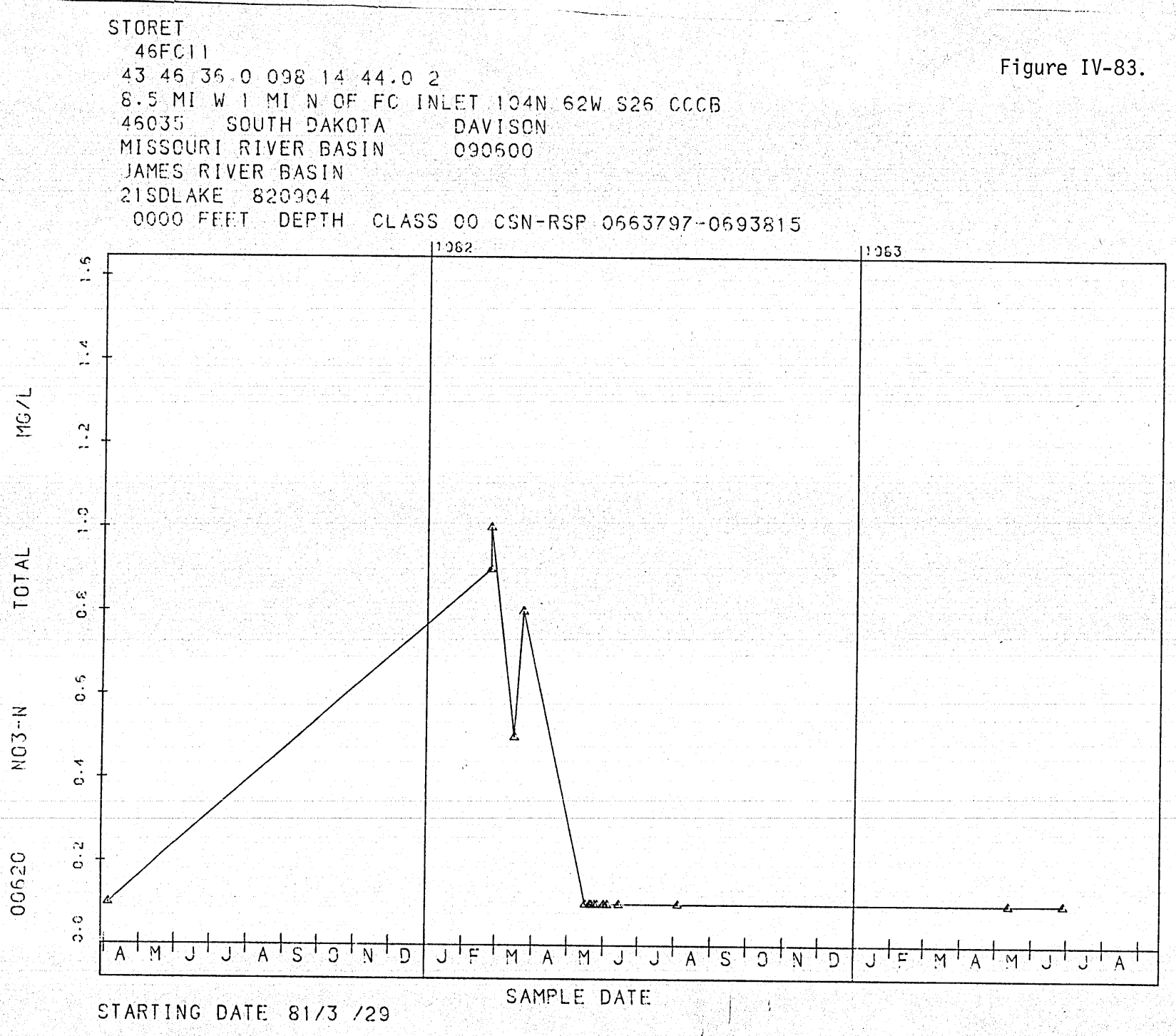
STO[redacted]
46FC10
44 06 40.0 098 28 58.0 2
3 MI W 1.5 MI W JCT 34 AND 281 107N 64W S2 BAAA
46073 SOUTH DAKOTA JERAULD
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663796-0693814

Figure IV-82.



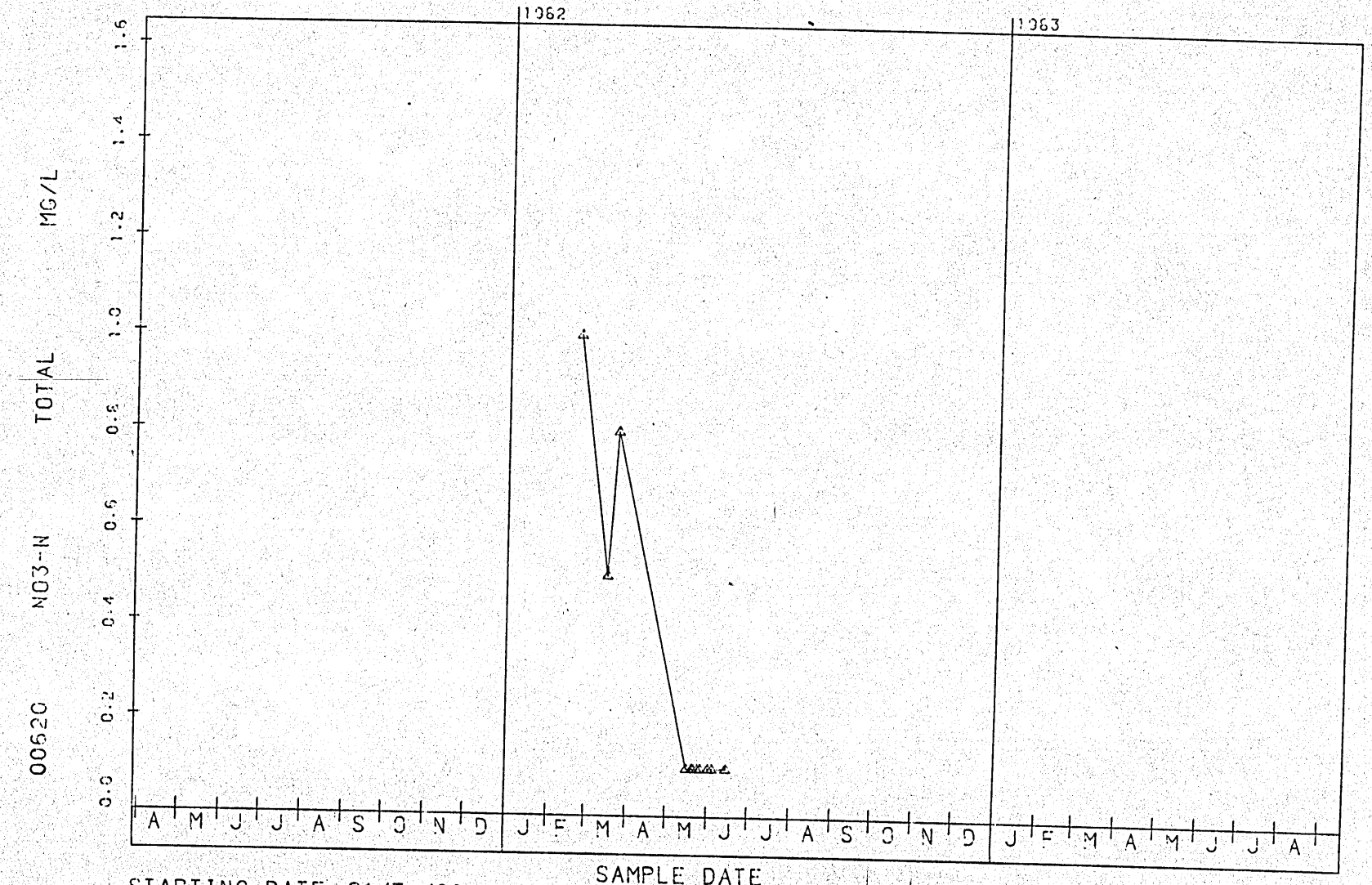
STARTING DATE 81/3 /29

Figure IV-83.


STORET
46FC11
43 46 36.0 098 14 44.0 2
8.5 MI W 1 MI N OF FC INLET 104N 62W S26 CCCB
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663797-0693815
00620 NO3-N TOTAL MG/L
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
1982
1983
A M J J A S O N D J F M A M J J A S O N D J F M A M J J A
SAMPLE DATE
STARTING DATE 81/3 /29

STORET
46FC12
43 48 16.0 098 18 32.0 2
3 MI N 12 MI W OF FC INLET 104N 62W S19 AABA
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663798-0693816

Figure IV-84.

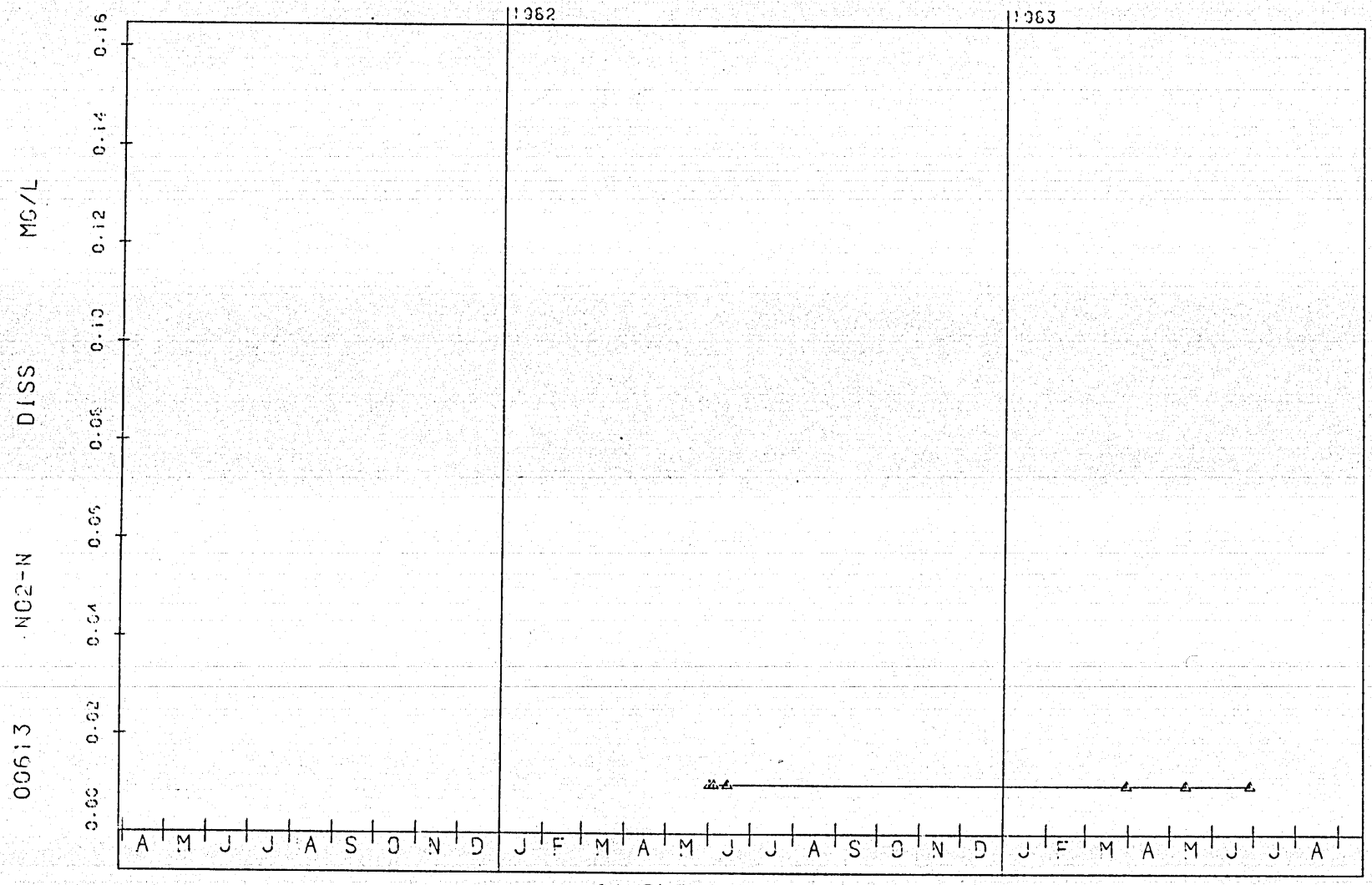


00620 NO3-N TOTAL MG/L

STARTING DATE 81/3 /29

STORET
46FC01
43 44 25.0 098 01 31.0 2
LK MITCHELL OUTLET SD HWY 37 N 103N-60W-S10 BCCA
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663787-0693805

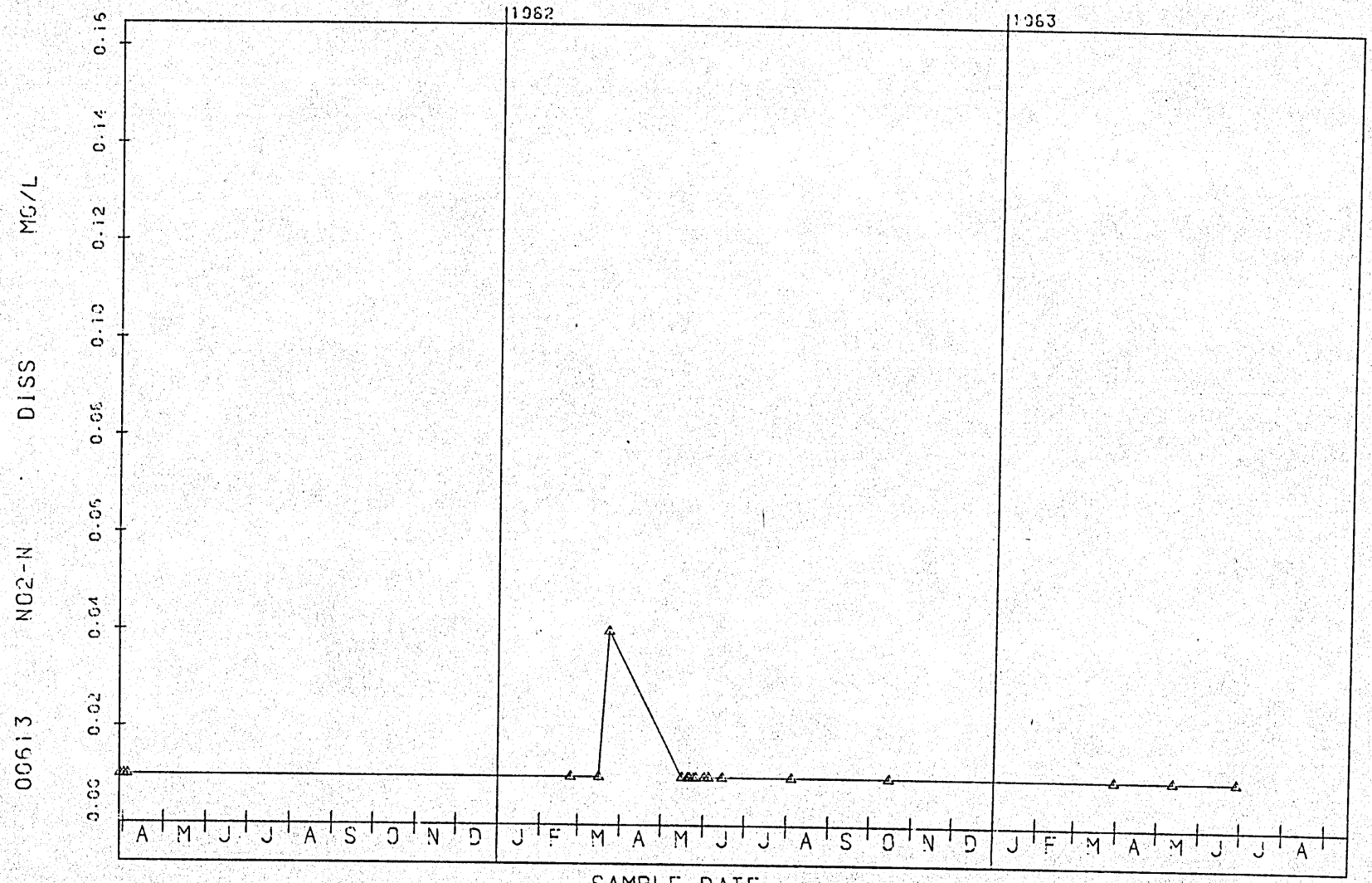
Figure IV-85.



STARTING DATE 81/3 /29

STORET
46FC02
43 44 39.0 098 01 34.0 2
NE LK MITCHLL .5 MI N OF OUTLET 103N 60W S10 BBBC
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663788-0693806

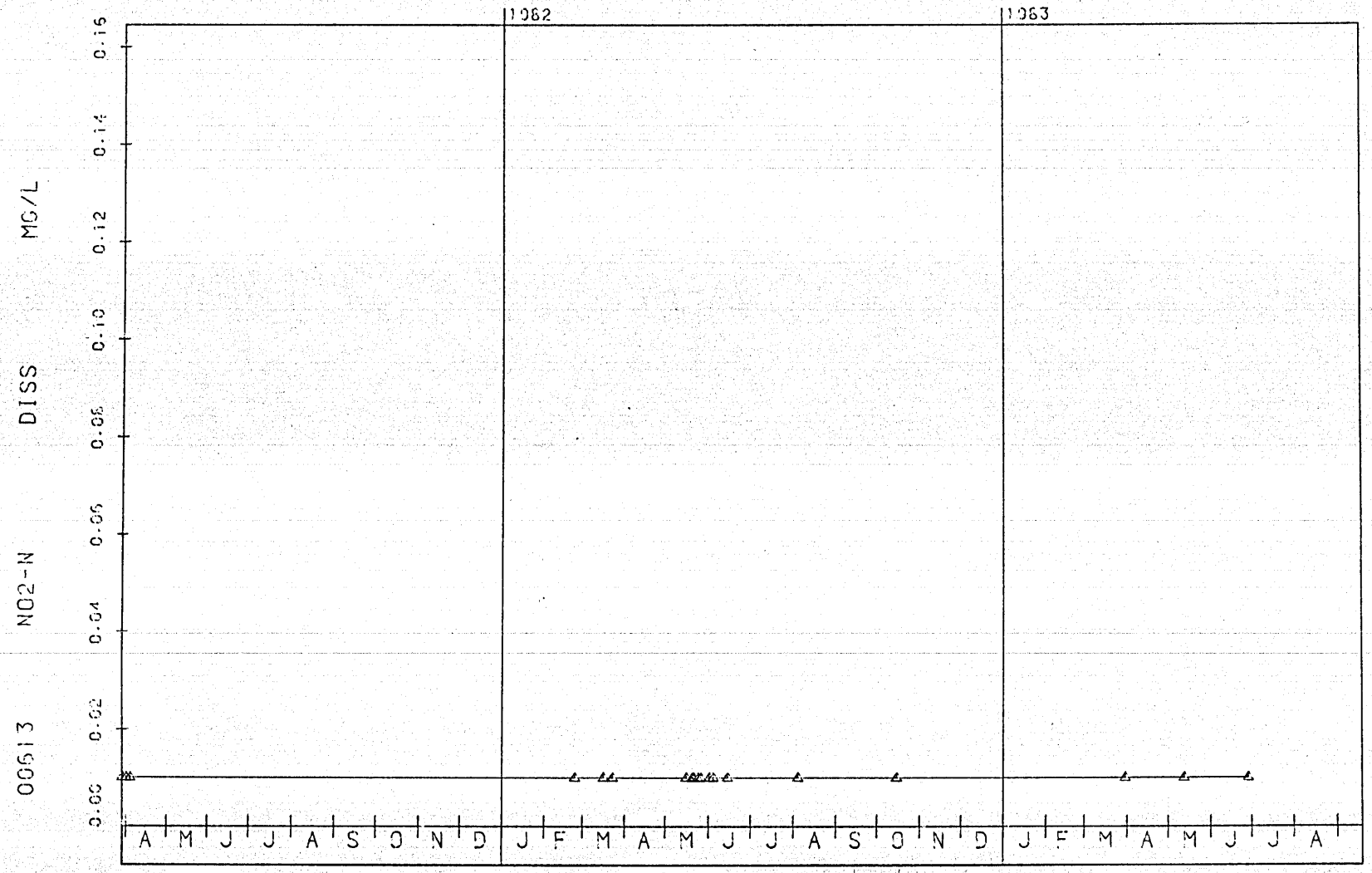
Figure IV-86.



STARTING DATE 81/3 /29

Figure IV-87.

STORET
46FC03
43 45 22.0 098 03 26.0 2
NW LK MTCHLL .75 MI SE FC INLET 103N 60W S5 ACBB
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663789-0693807

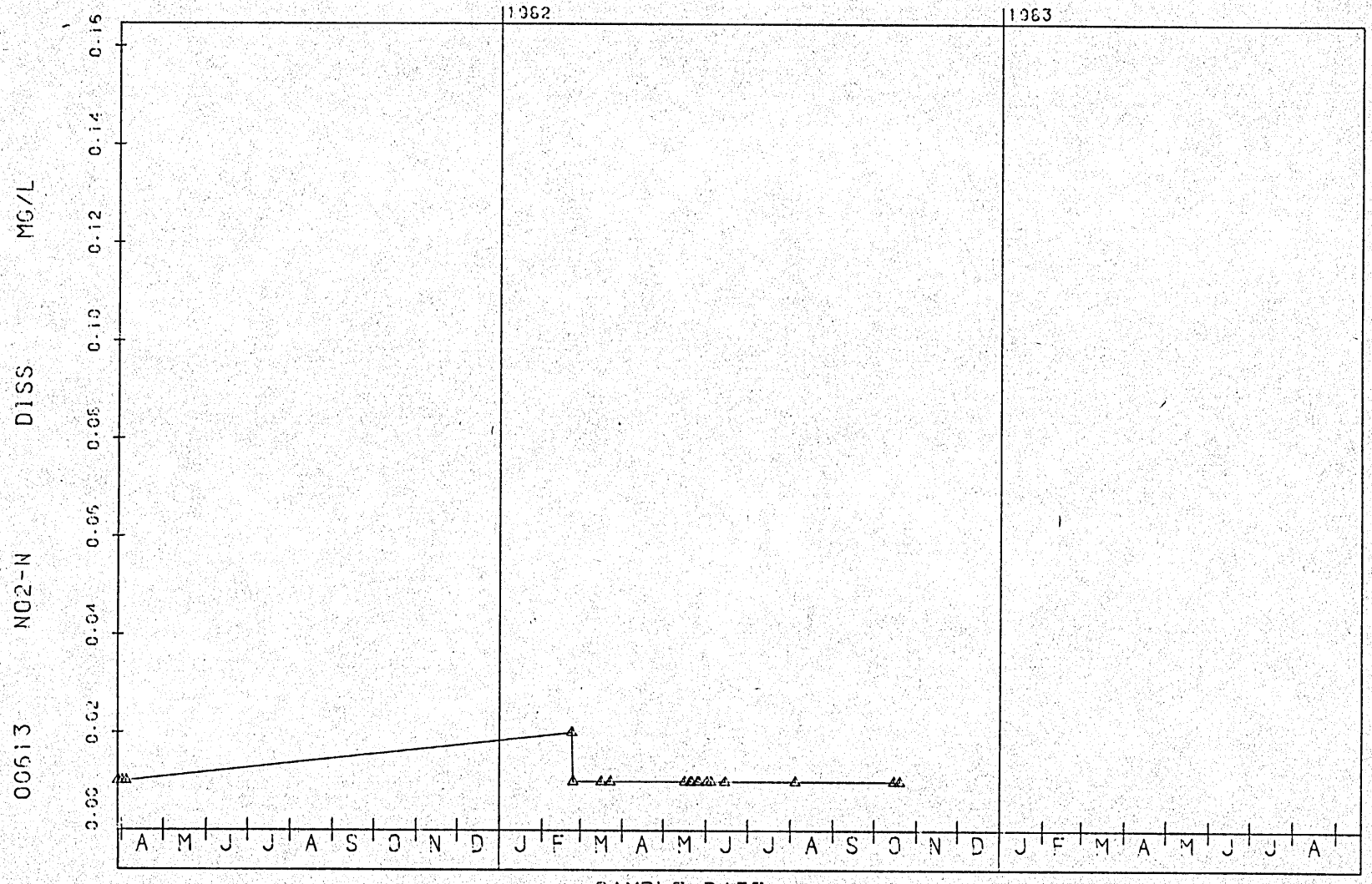


00613 NO2-N DISS MG/L

STARTING DATE 81/3 /29

STORET
46FC04
43 46 43.0 098 09 58.0 2
4.5 MI W .75 MI N OF FC INLET 104N 61W S28 CCBB
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663790-0693808

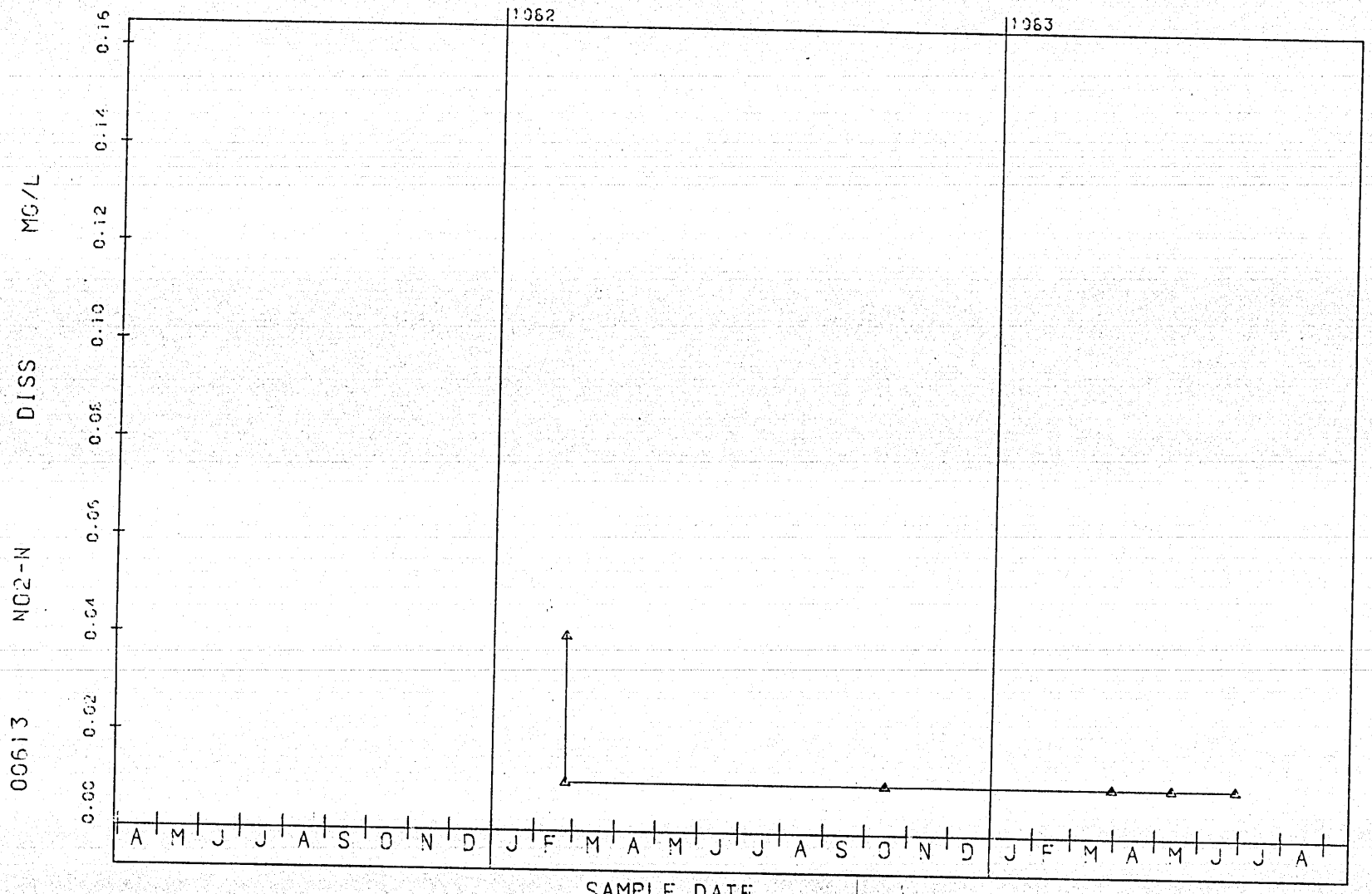
Figure IV-88.



STARTING DATE 81/3 /29

STORET
46FC05
43 44 41.0 098 02 51.0 2
1.5 MI S 100 FT W OF FC INLET 103N 60W S8 AAAD
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663791-0693809

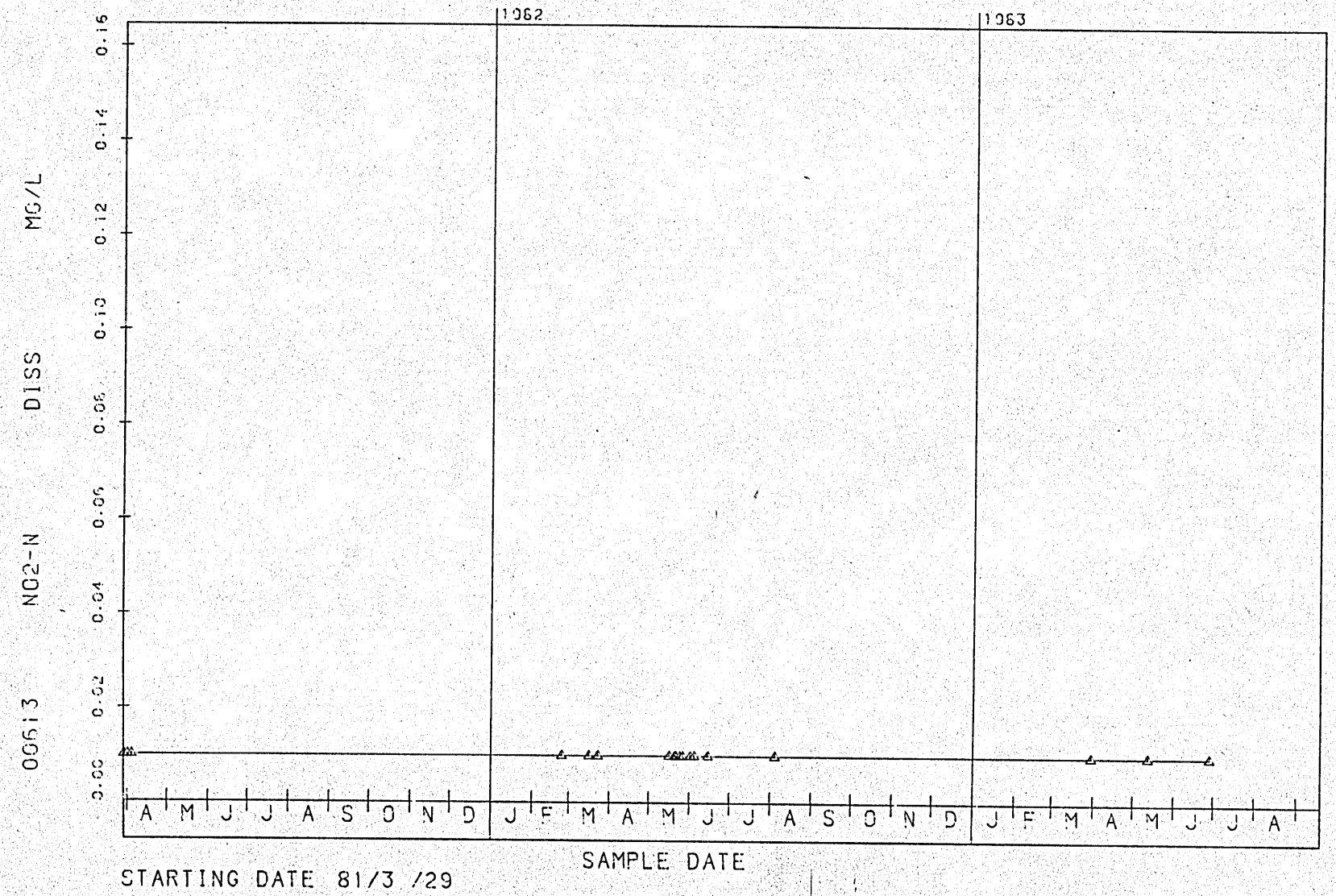
Figure IV-89.



STARTING DATE 81/3 /29

[redacted]
46FC05
43 45 34.0 098 04 14.0 2
FC INLET TO LK MITCHELL 103N 60W 56 AABB
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663792-0693810

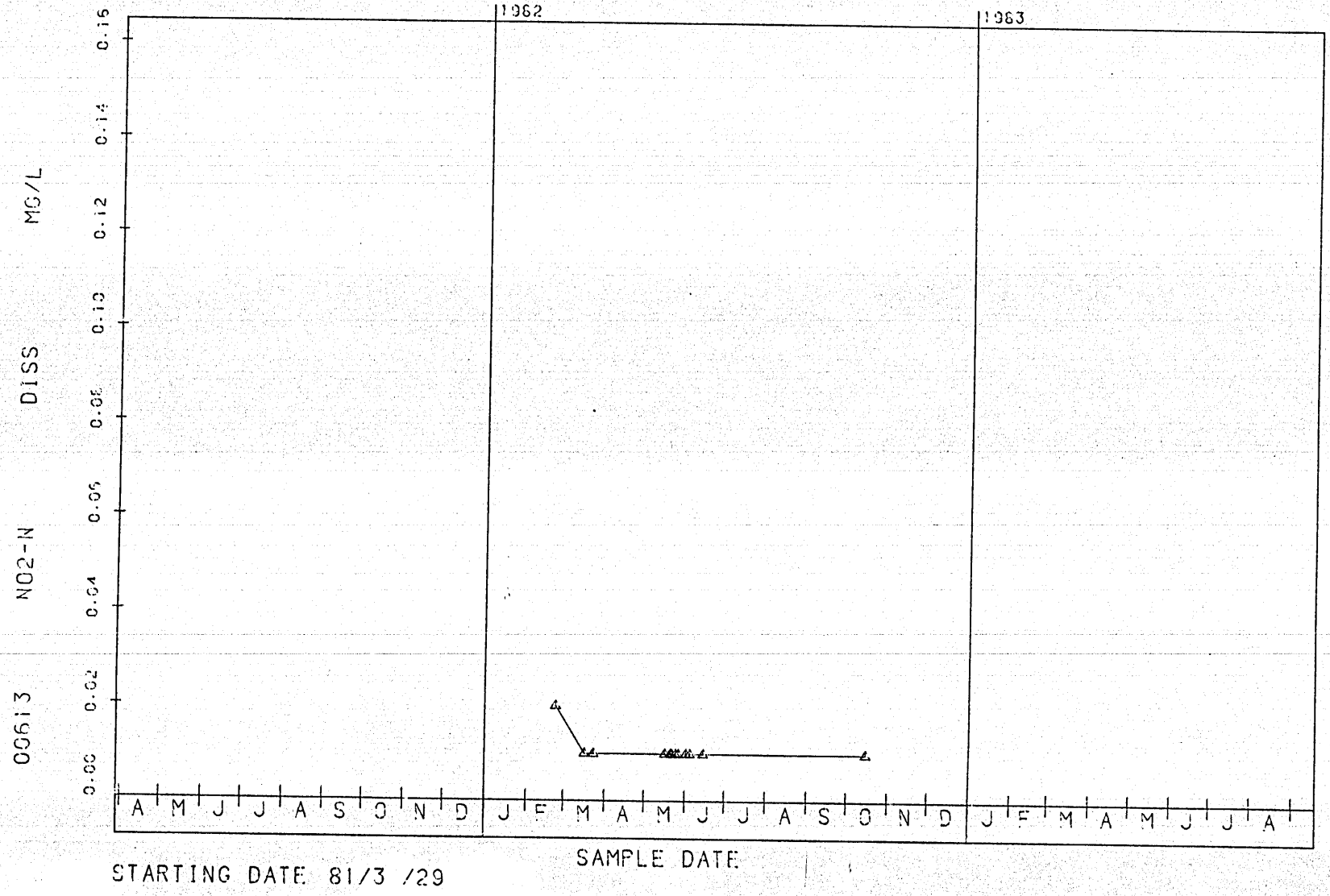
Figure IV-90.



STARTING DATE 81/3 /29

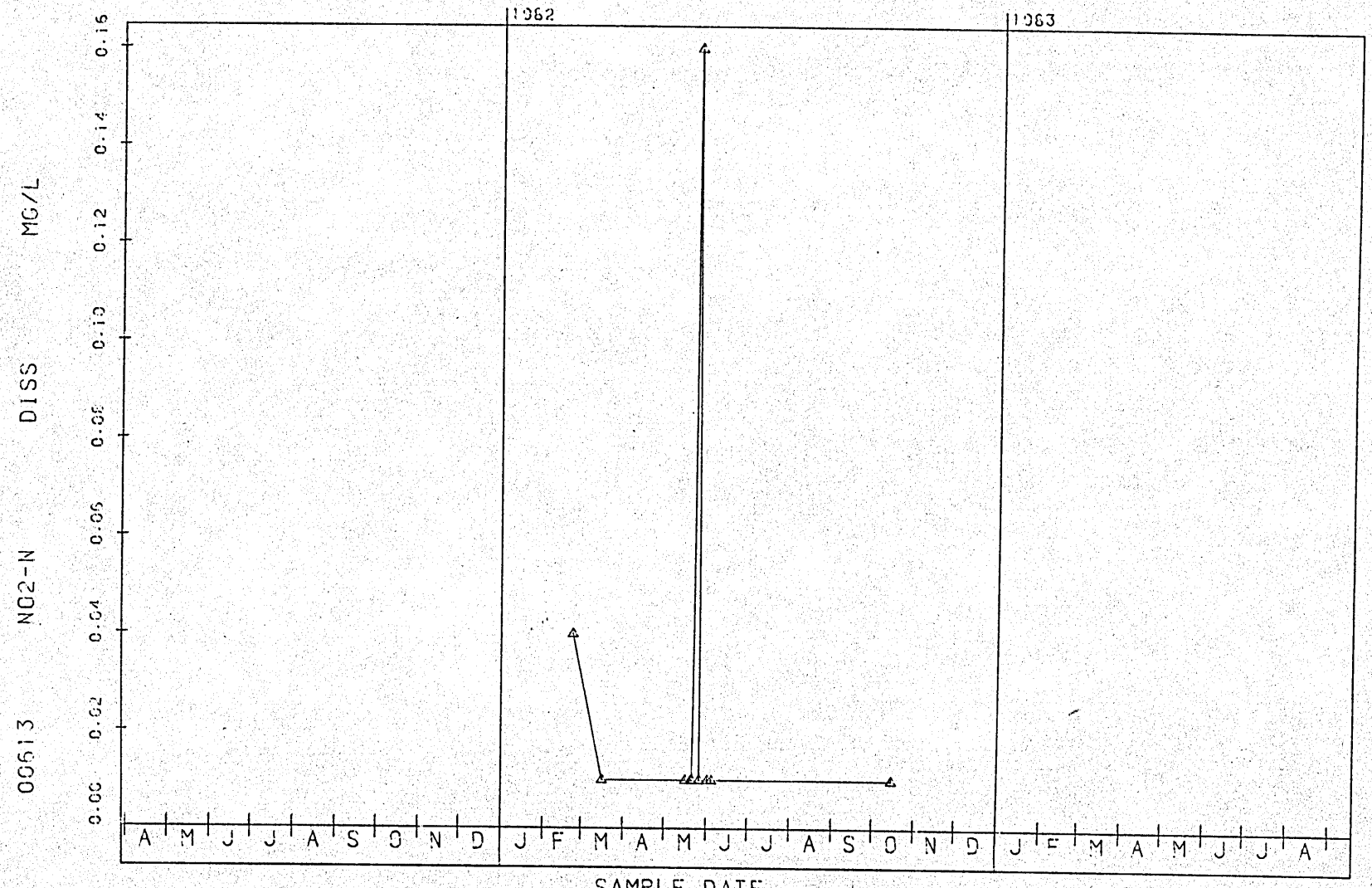
STORET
46FC07
43 47 22.0 098 19 31.0 2
12.5 MI W 2 MI N OF FC INLET 104N 62W S30 BBBB
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663793-0693811

Figure IV-91.



STORET
46FC08
43 55 09.0 098 27 04.0 2
18.5 MI W 11 MI N OF FC INLET 105N 63W S7 BBCC
46003 SOUTH DAKOTA AURORA
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663794-0693812

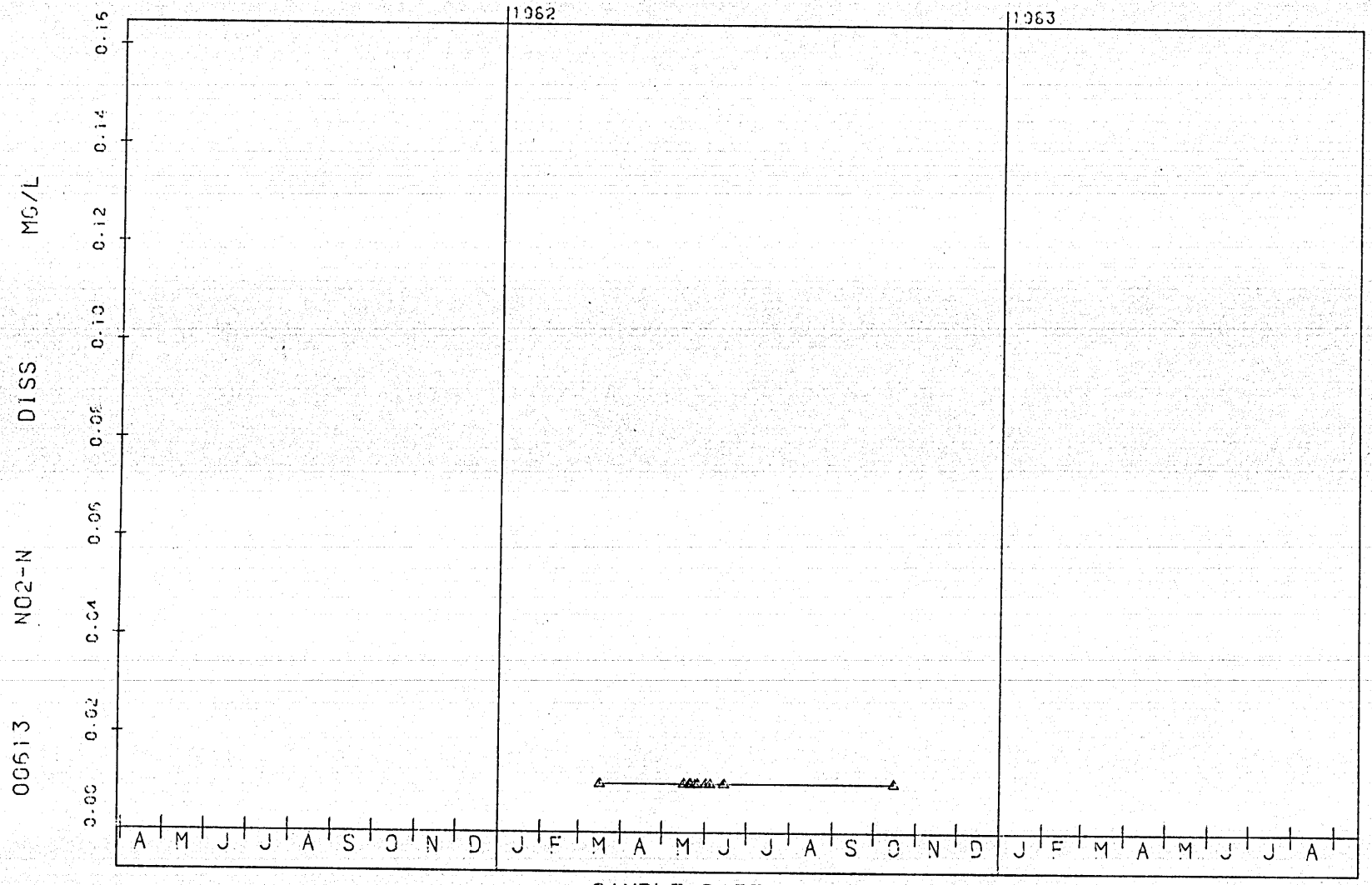
Figure IV-92.



STARTING DATE 81/3 /29

Figure IV-93.

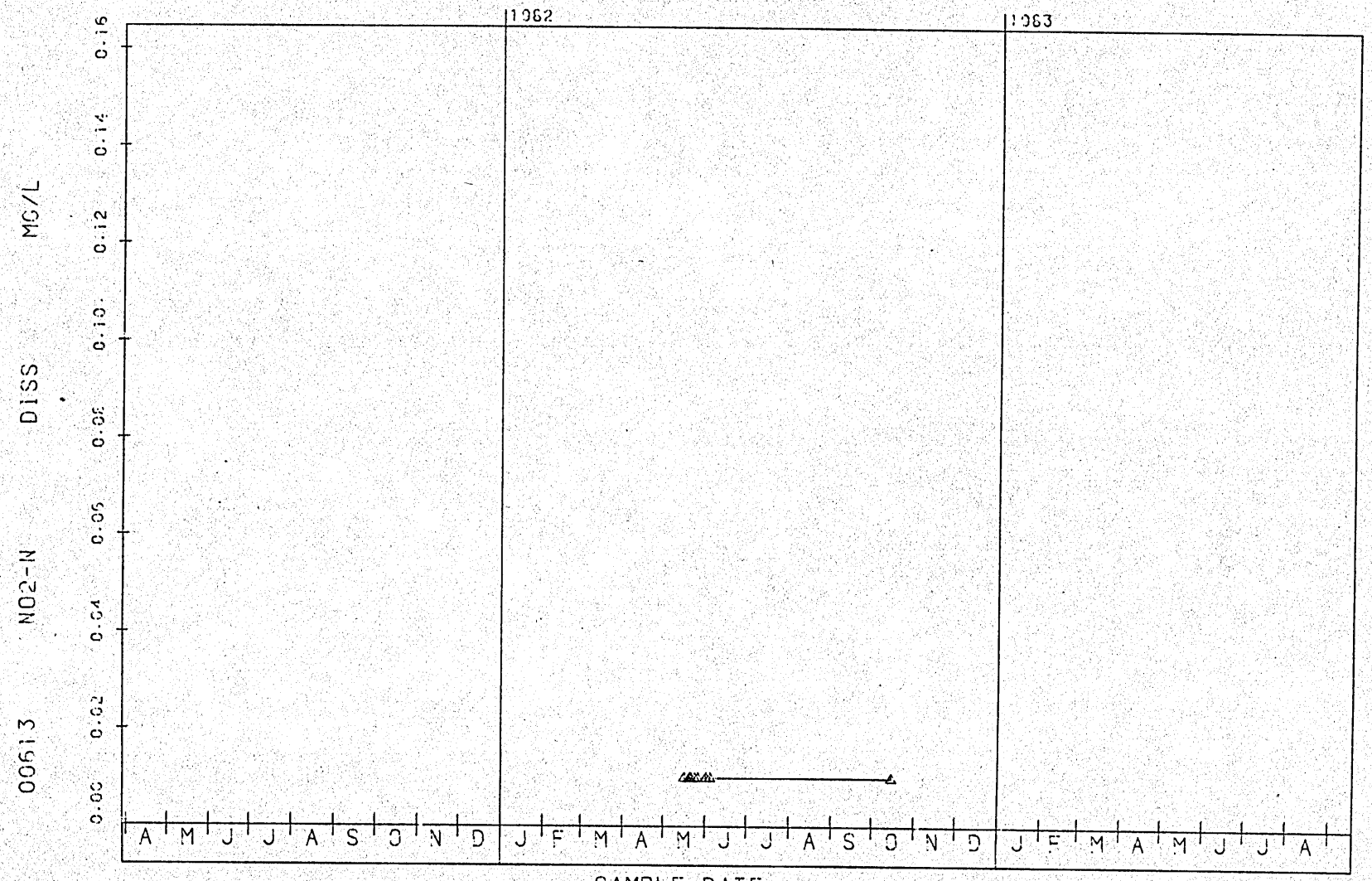
STORET
46FC09
44 04 03.0 098 28 46.0 2
1.5 MI W OF JCT 34 AND 281 107N 64W S23 ABBA
46073 SOUTH DAKOTA JERAULD
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663795-0693813



STARTING DATE 81/3 /29

STORET
46FC10
44 06 40.0 098 28 58.0 2
3 MI W 1.5 MI W JCT 34 AND 281 107N 64W S2 BAAA
46073 SOUTH DAKOTA JERAULD
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663796-0693814

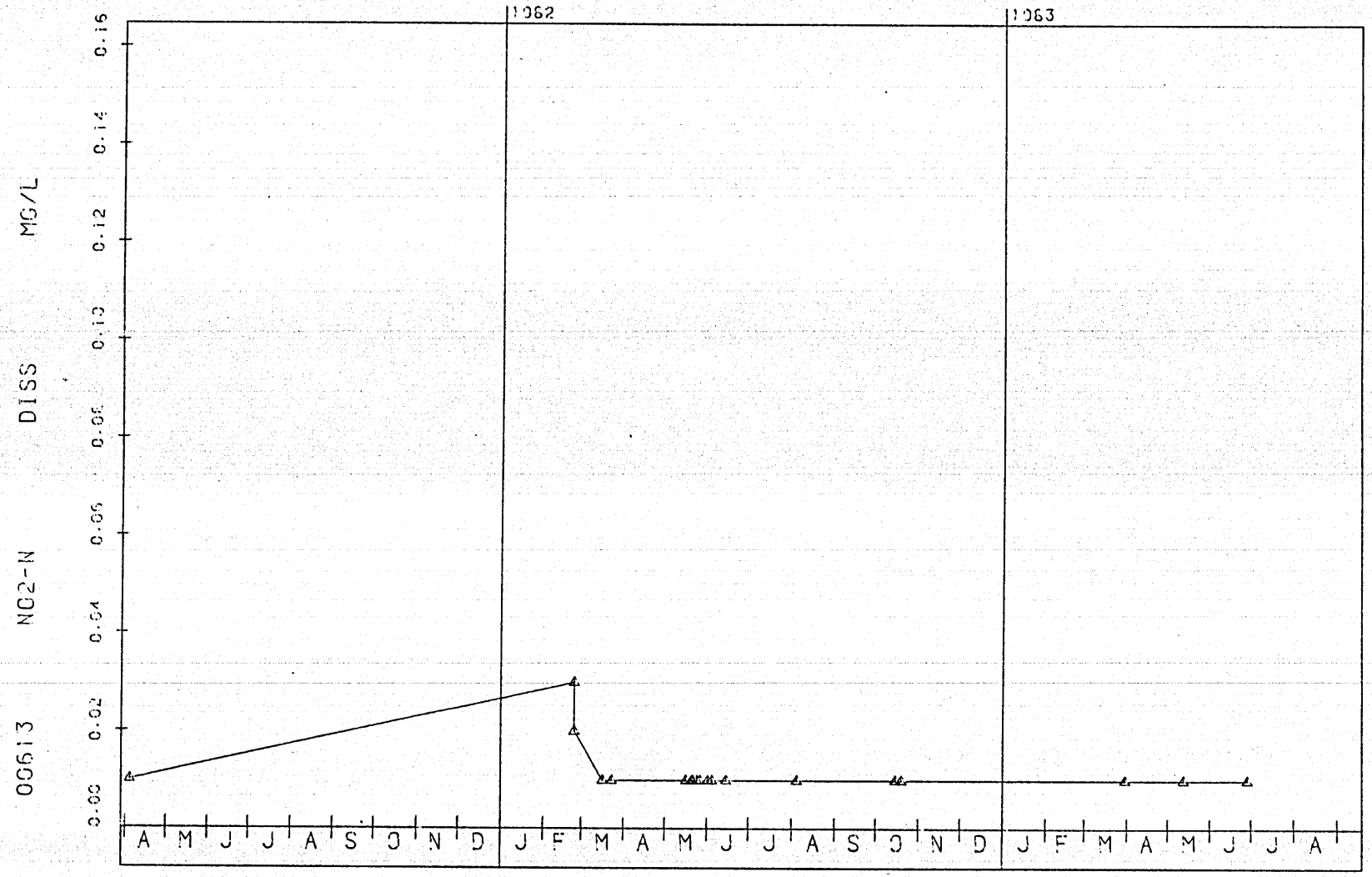
Figure IV-94.



STARTING DATE 81/3 /29

STORET
46FC11
43 46 36.0 098 14 44.0 2
8.5 MI W I MI N OF FC INLET 104N 62W S26 CCCB
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663797-0693815

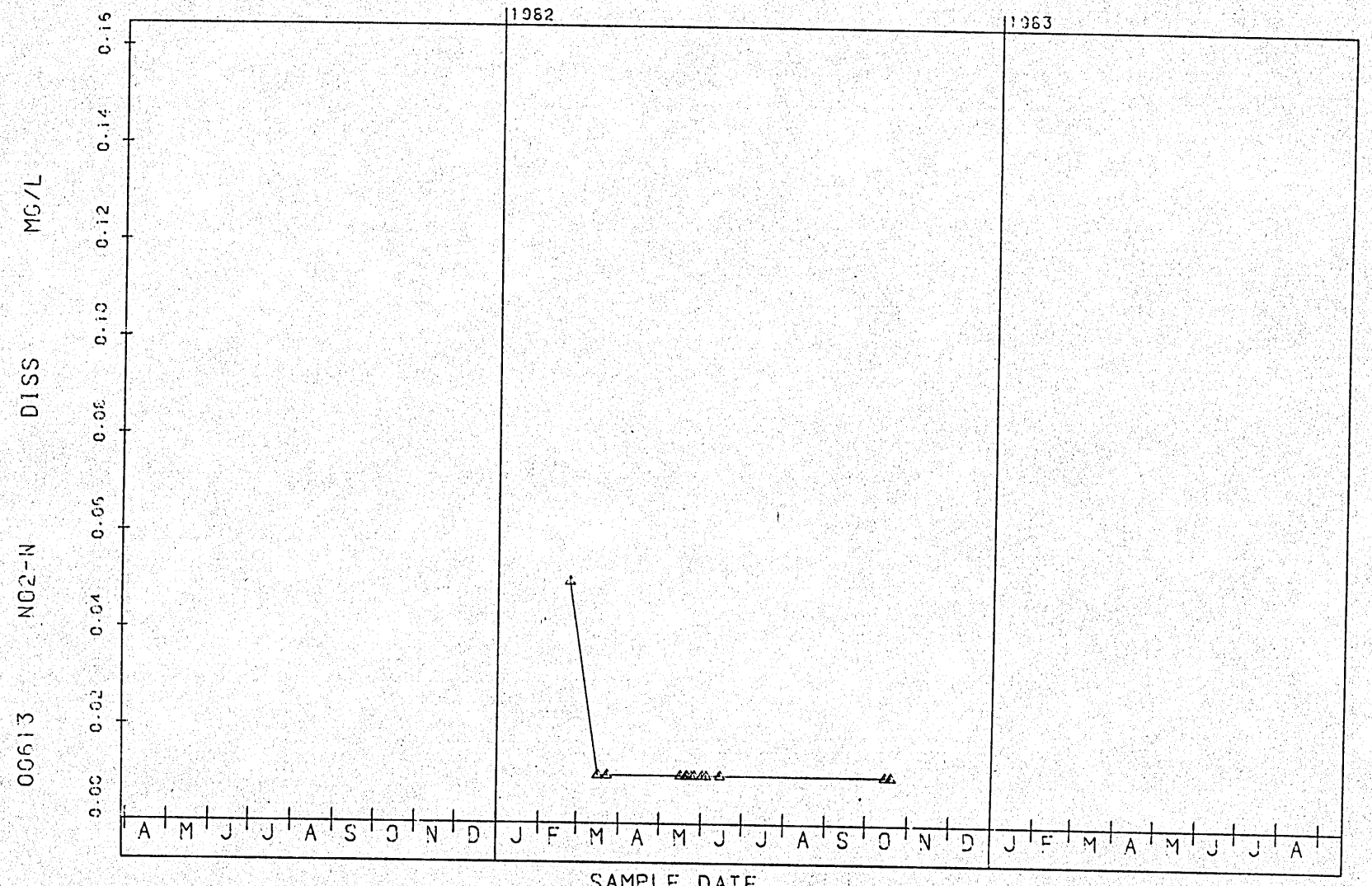
Figure IV-95.



STARTING DATE 81/3 /29

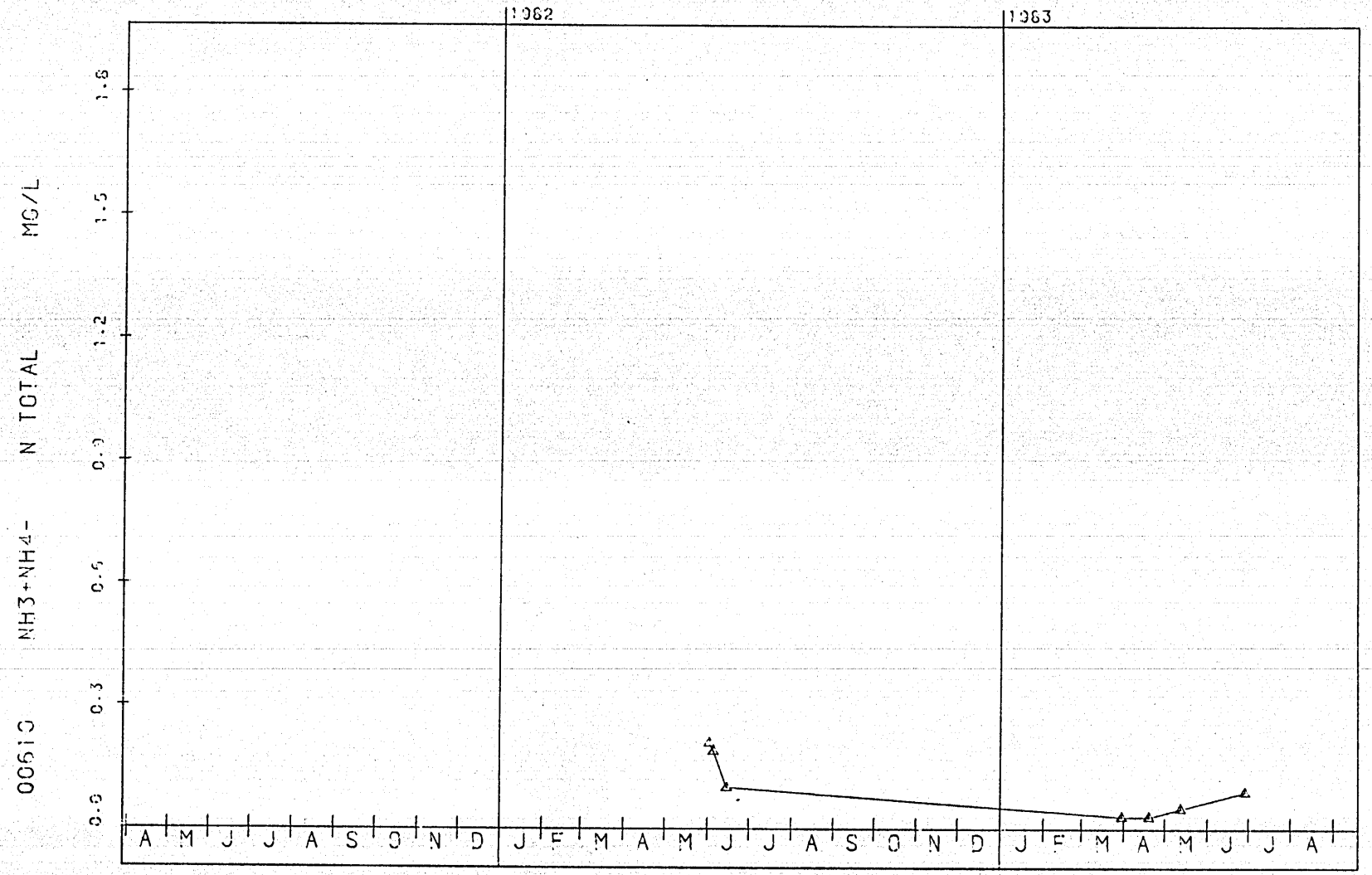
STORET
46FC12
43 48 16.0 098 18 32.0 2
3 MI N 12 MI W OF FC INLET 104N 62W S19 AABA
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663798-0693816

Figure IV-96.



STORET
46FC01
43 44 25.0 098 01 31.0 2
LK MITCHELL OUTLET SD HWY 37 N 103N-60W-S10 BCCA
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663787-0693805

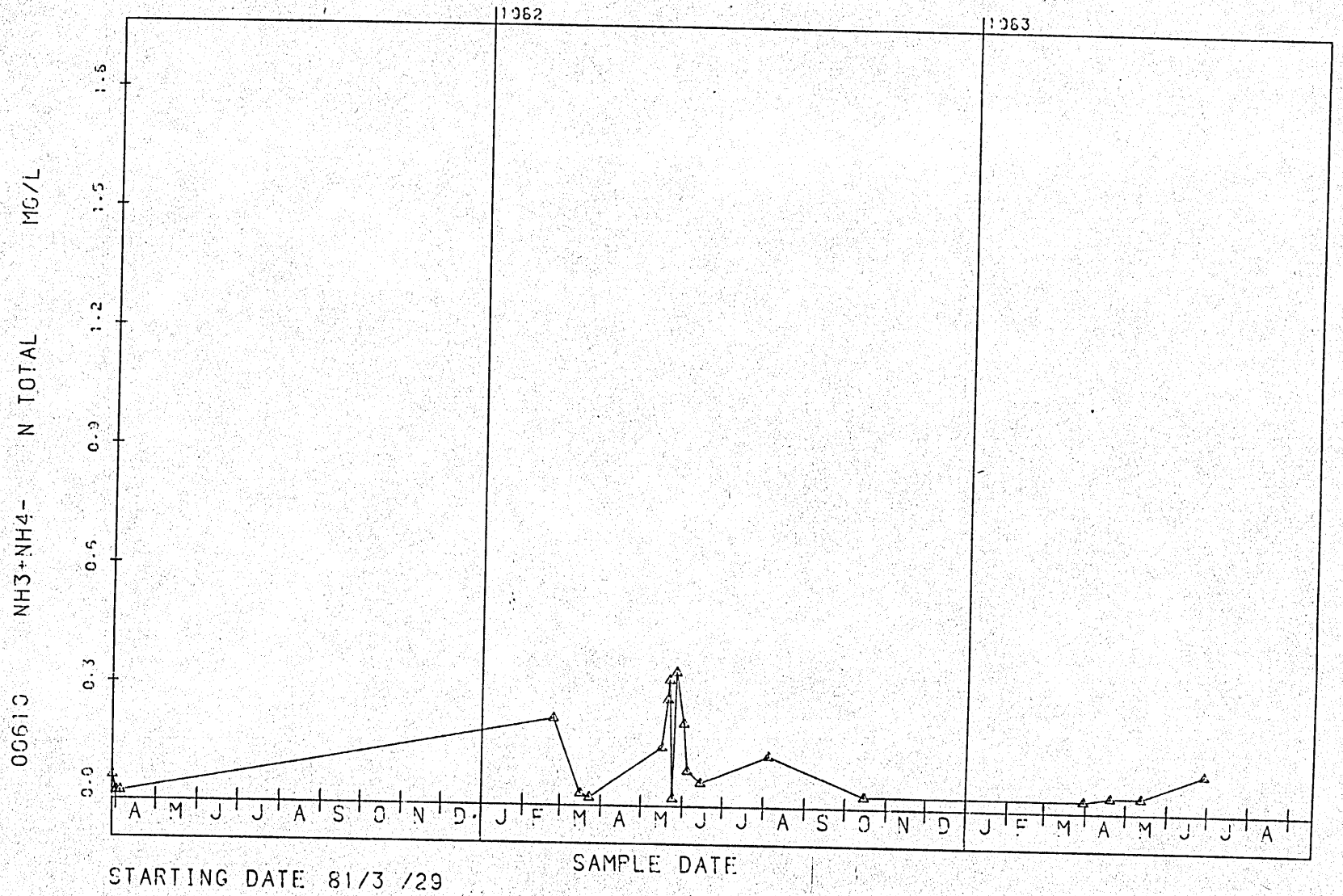
Figure IV-97.



STARTING DATE 81/3 /29

STORET
46FC02
43 44 39.0 098 01 34.0 2
NE LK MITCHLL .5 MI N OF OUTLET 103N 60W S10 BBBC
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663788-0693806

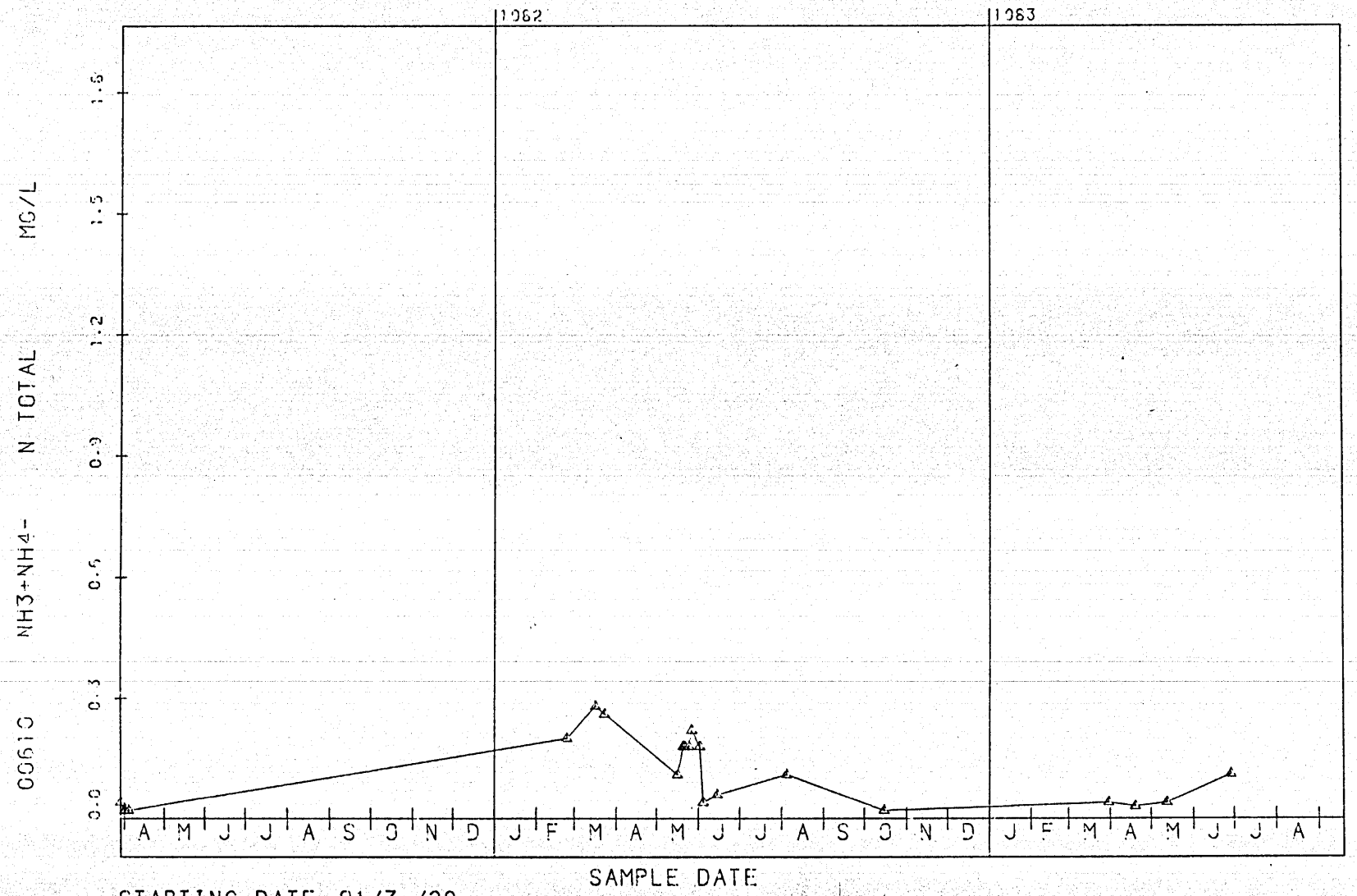
Figure IV-98.



STARTING DATE 81/3 /29

STORET
46FC03
43 45 22.0 098 03 26.0 2
NW LK MITCHLL .75 MI SE FC INLET 103N 60W S5 ACBB
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663789-0693807

Figure IV-99.



STARTING DATE 81/3 /29

STO
46FC04
43 46 43.0 098 09 58.0 2
4.5 MI W .75 MI N OF FC INLET 104N 61W S28 CCBB
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663790-0693808

Figure IV-100.

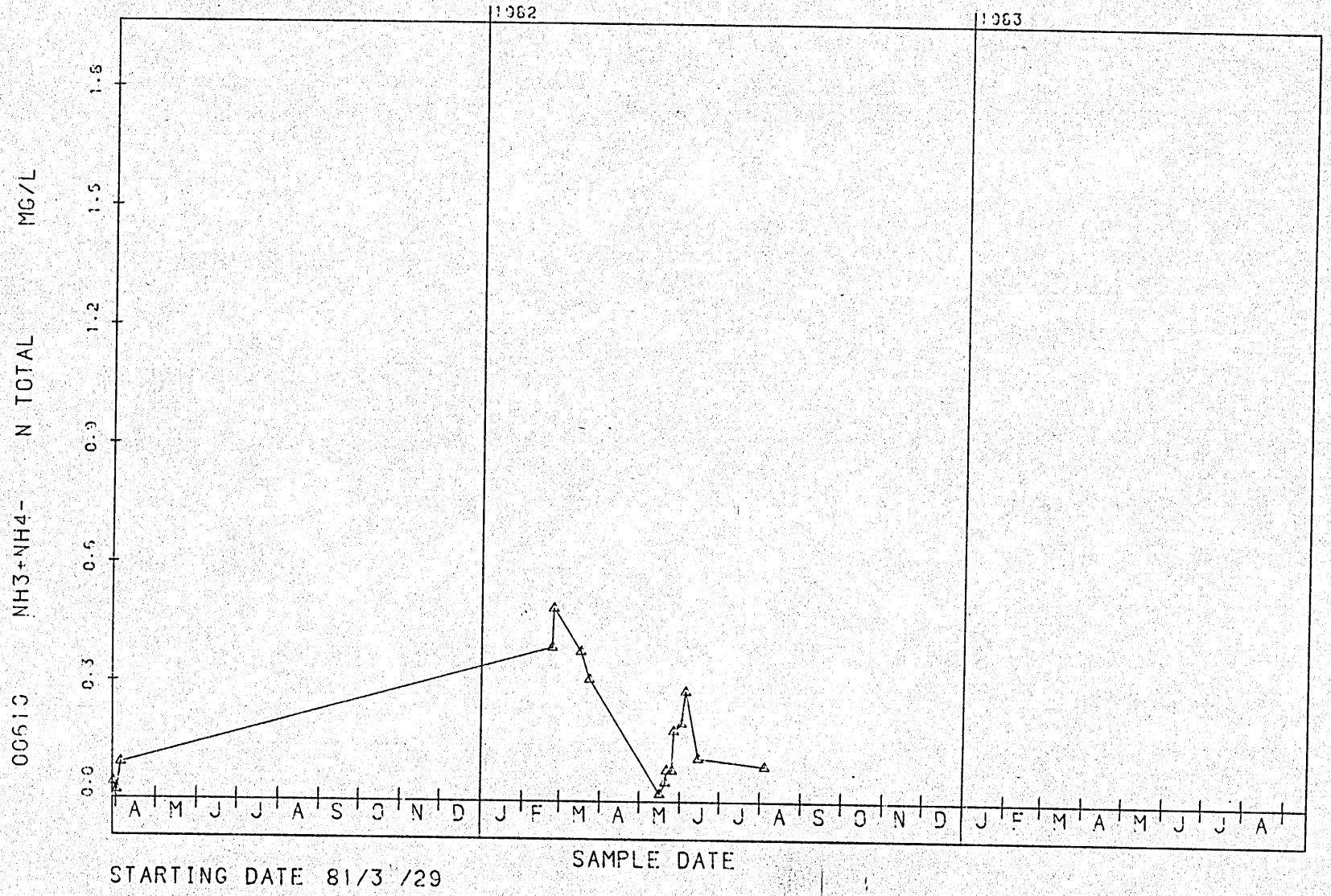
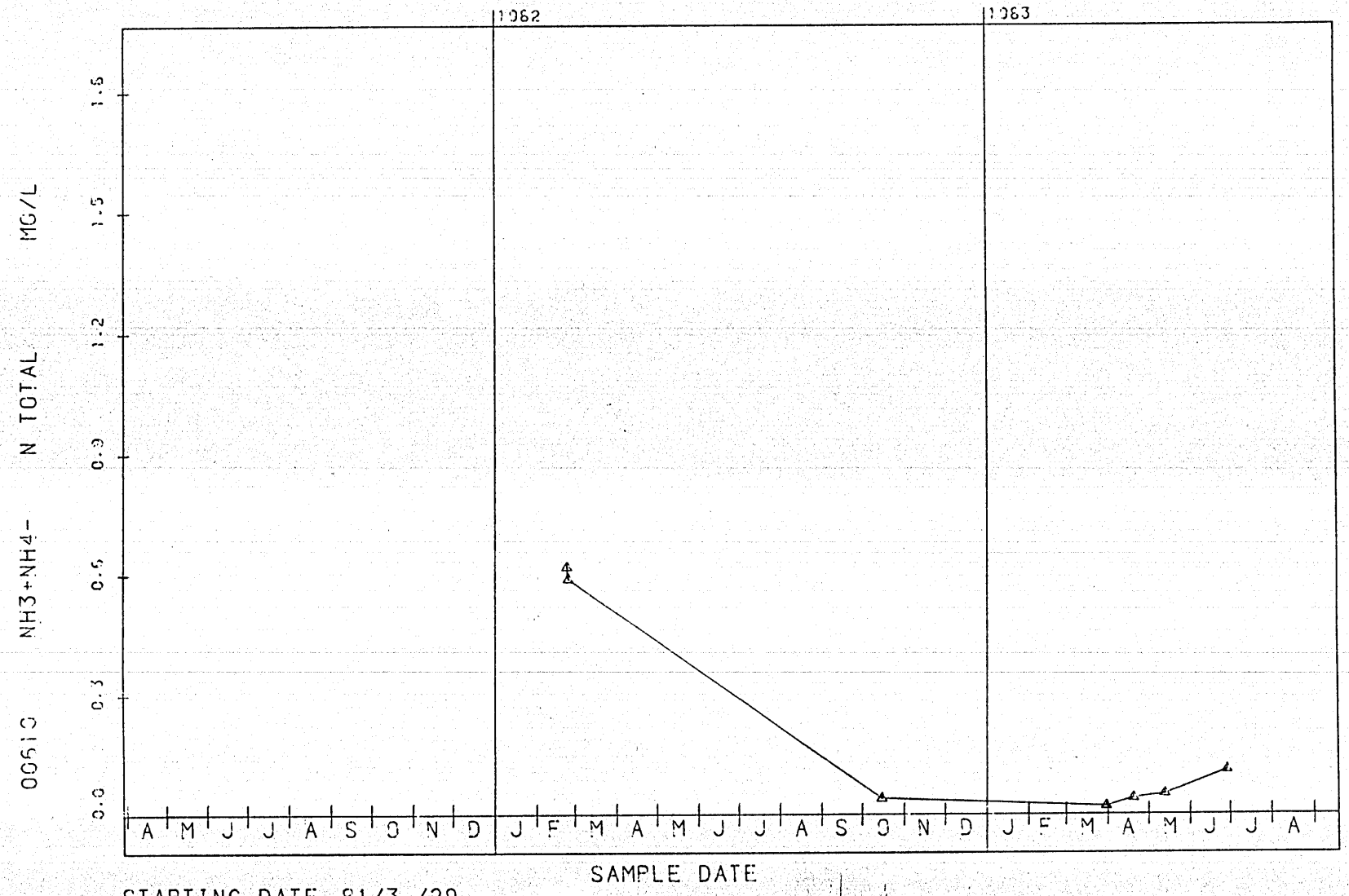


Figure IV-101.

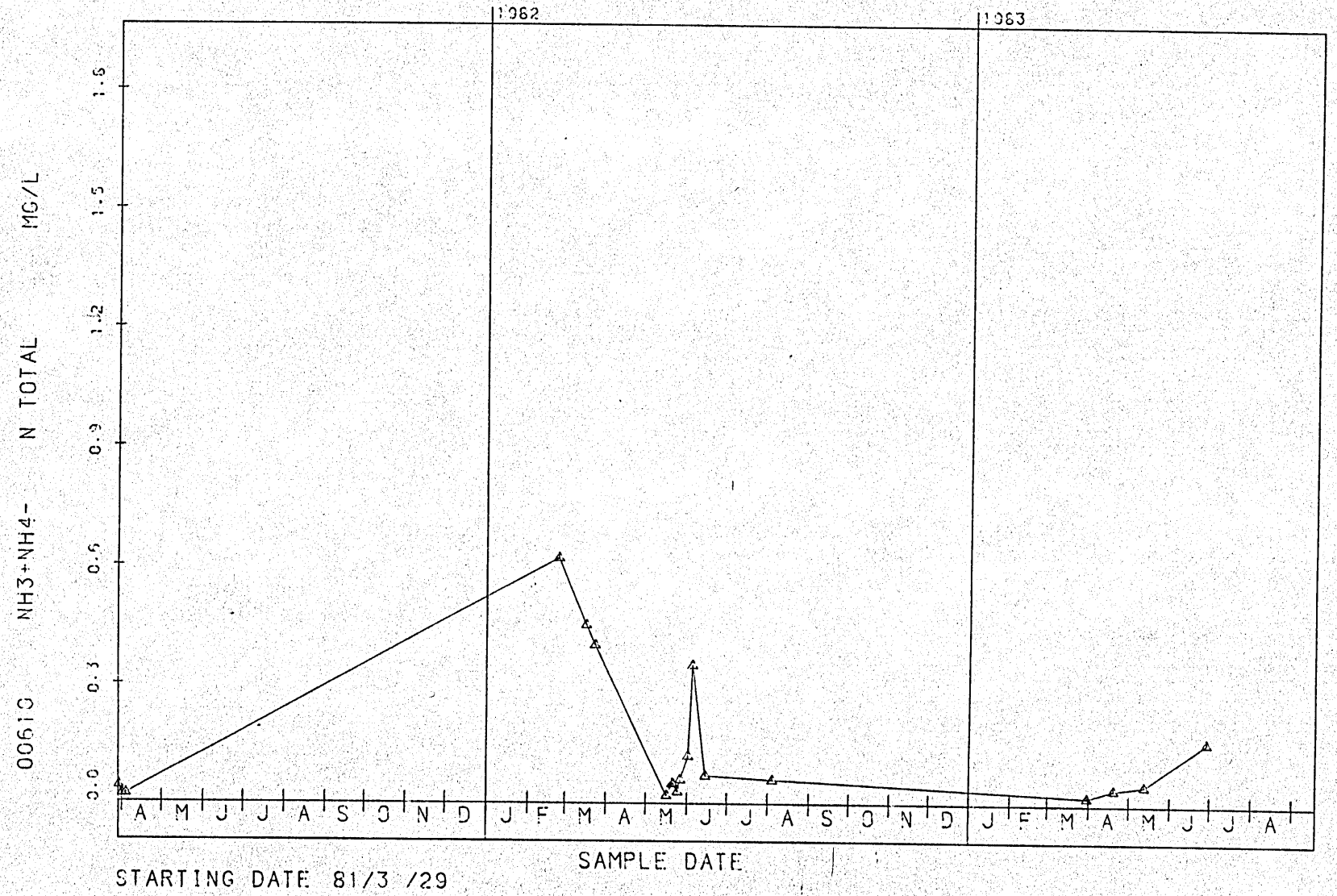
STORET
46FC05
43 44 41.0 098 02 51.0 2
1.5 MI S 100 FT W OF FC INLET 103N 60W S8 AAAD
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663791-0693809



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STORET
46FC06
43 45 34.0 098 04 14.0 2
FC INLET TO LK MITCHELL 103N 60W 56 AABB
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663792-0693810

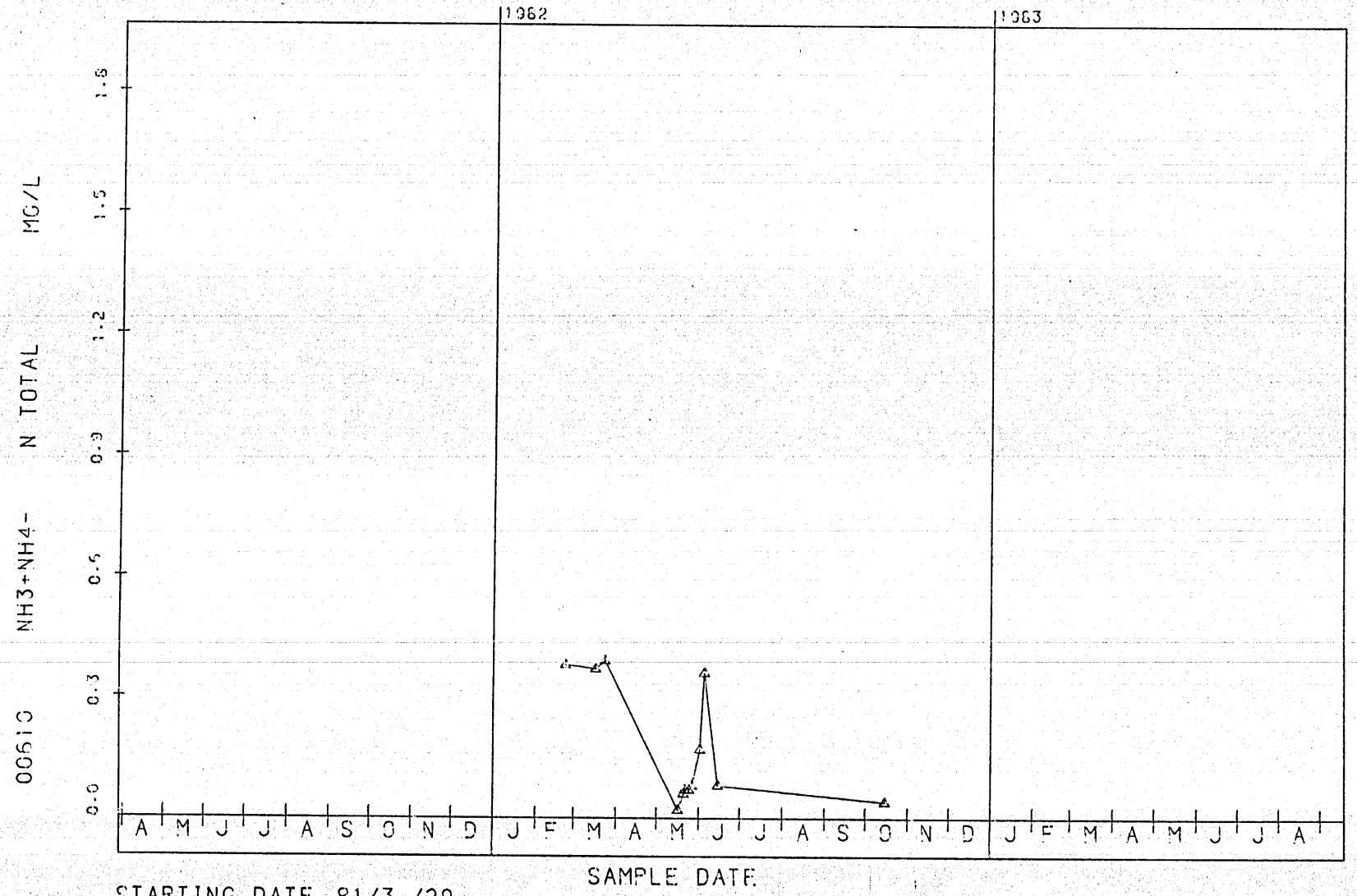
Figure IV-102.



STARTING DATE 81/3 /29

STORET
46FC07
43 47 22.0 098 19 31.0 2
12.5 MI W 2 MI N OF FC INLET 104N 62W S30 BBBB
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663793-0693811

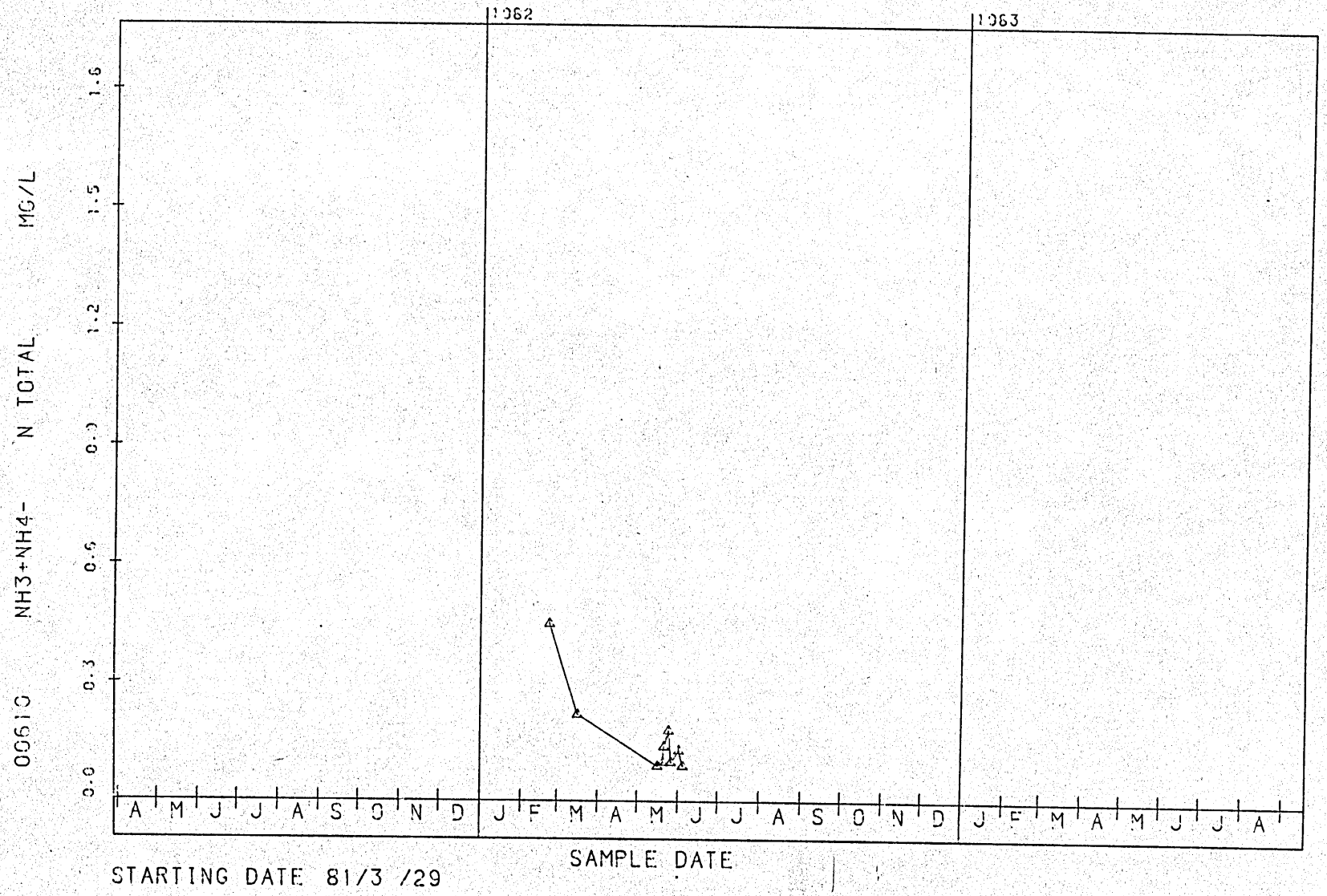
Figure IV-103.



STARTING DATE 81/3 /29

STORET
46FC08
43 55 09.0 098 27 04.0 2
18.5 MI W 11 MI N OF FC INLET 105N 63W S7 BBCC
46003 SOUTH DAKOTA AURORA
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663794-0693812

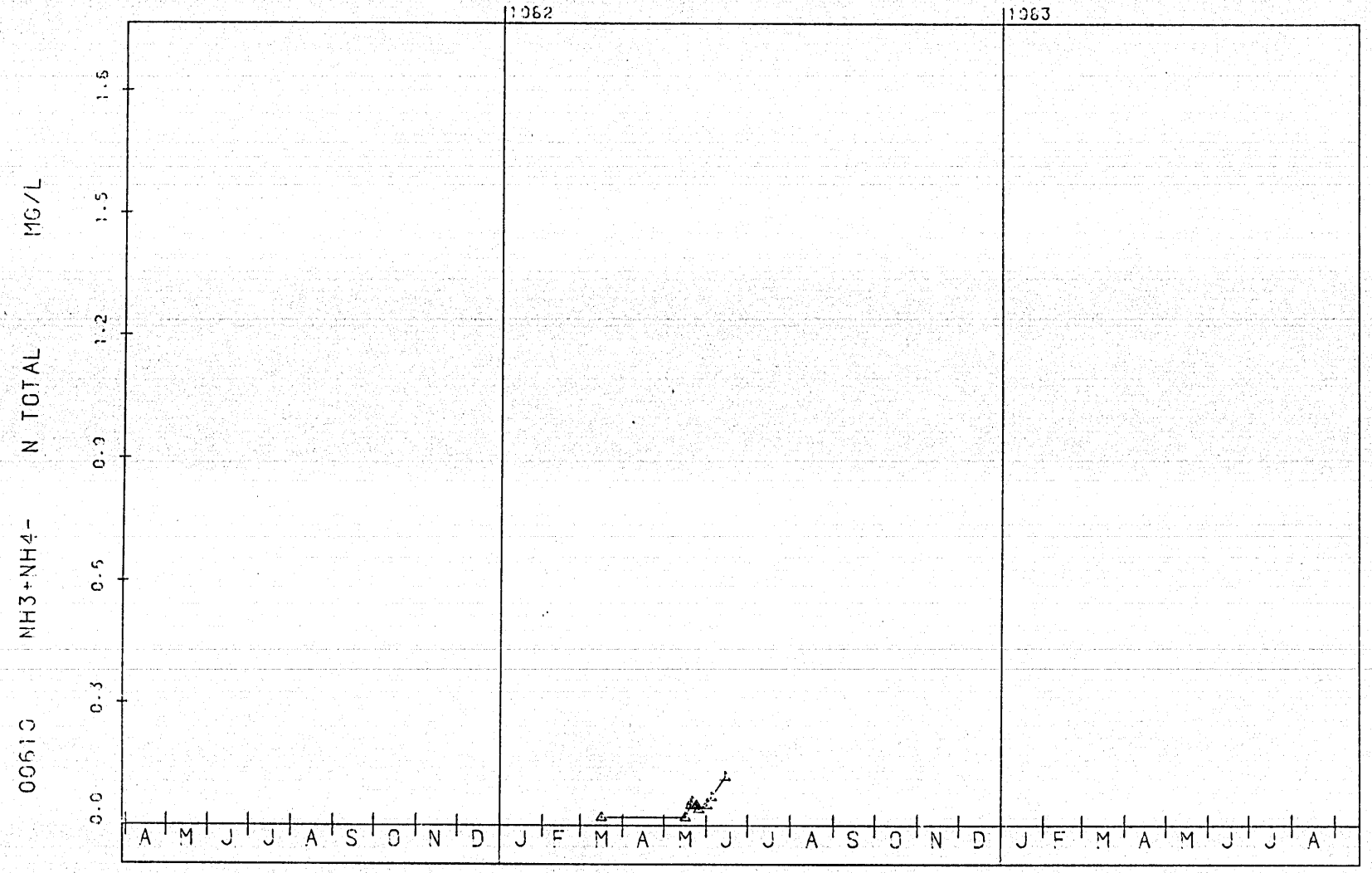
Figure IV-104.



STARTING DATE 81/3 /29

STORET
46FC09
44 04 03.0 098 28 46.0 2
1.5 MI W OF JCT 34 AND 281 107N 64W S23 ABBA
46073 SOUTH DAKOTA JERAULD
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663795-0693813

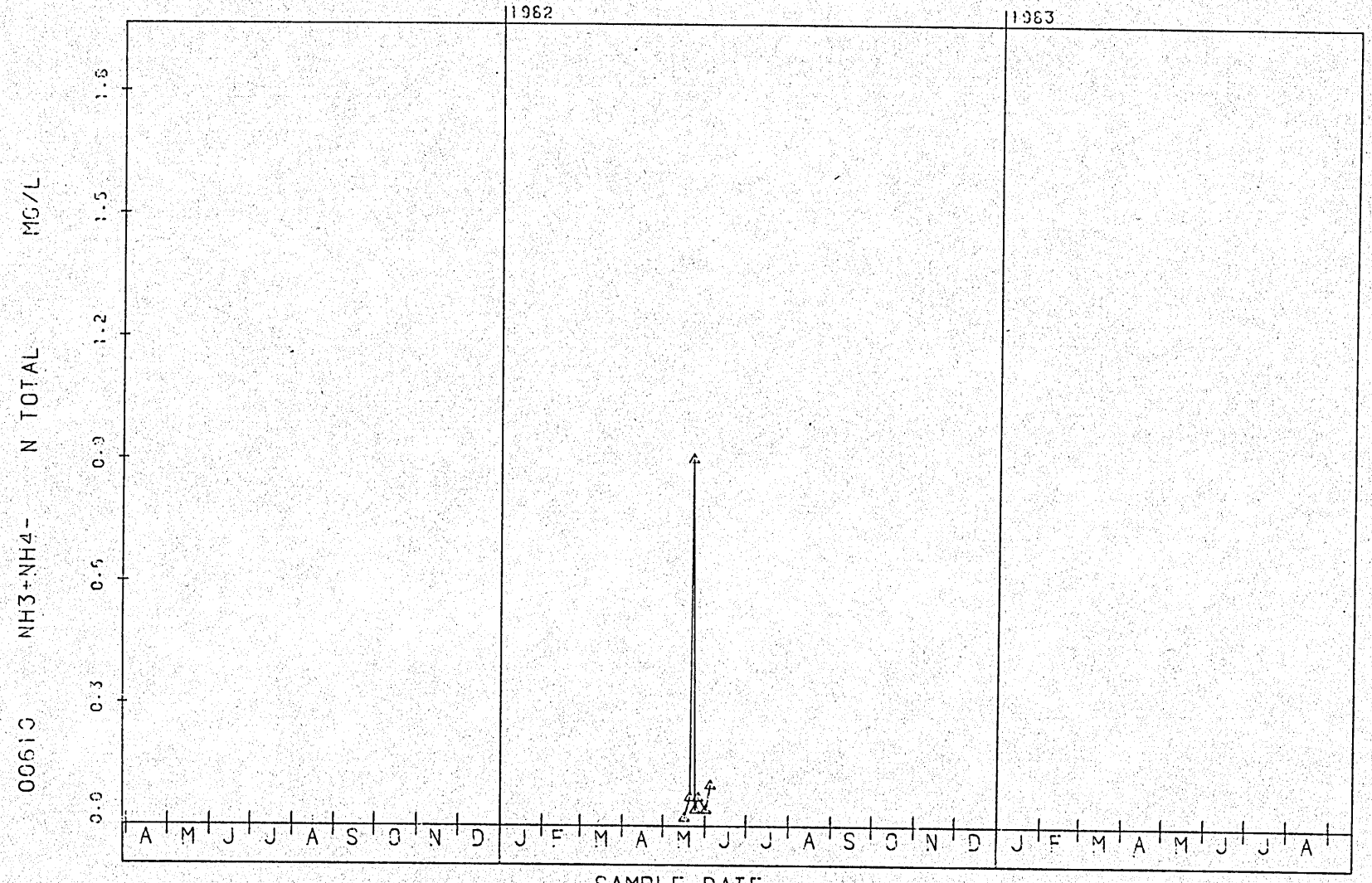
Figure IV-105.



STARTING DATE 81/3 /29

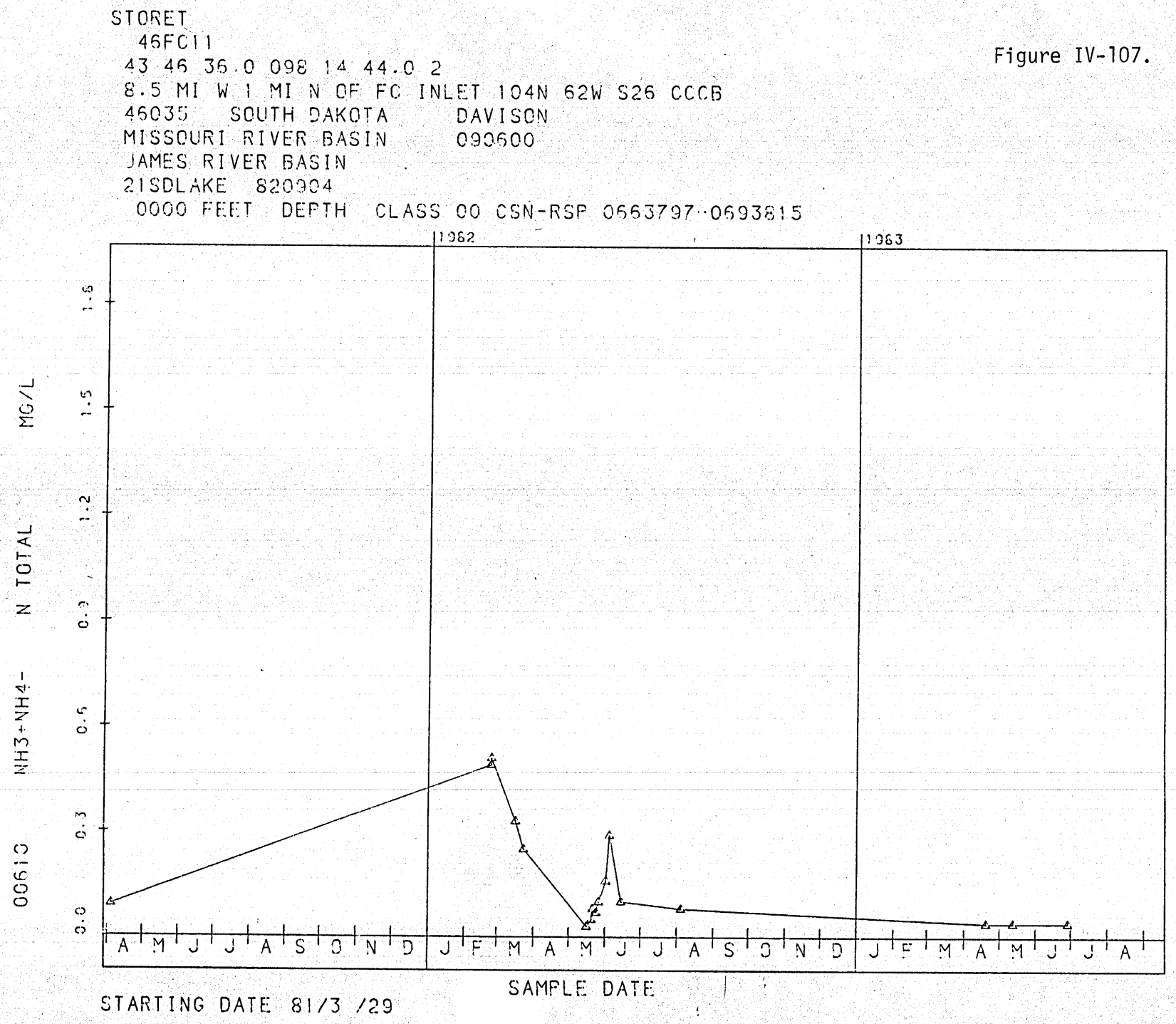
STORET
46FC10
44 06 40.0 098 28 58.0 2
3 MI W 1.5 MI W JCT 34 AND 281 107N 64W S2 BAAA
46073 SOUTH DAKOTA JERAULD
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663796-0693814

Figure IV-106.



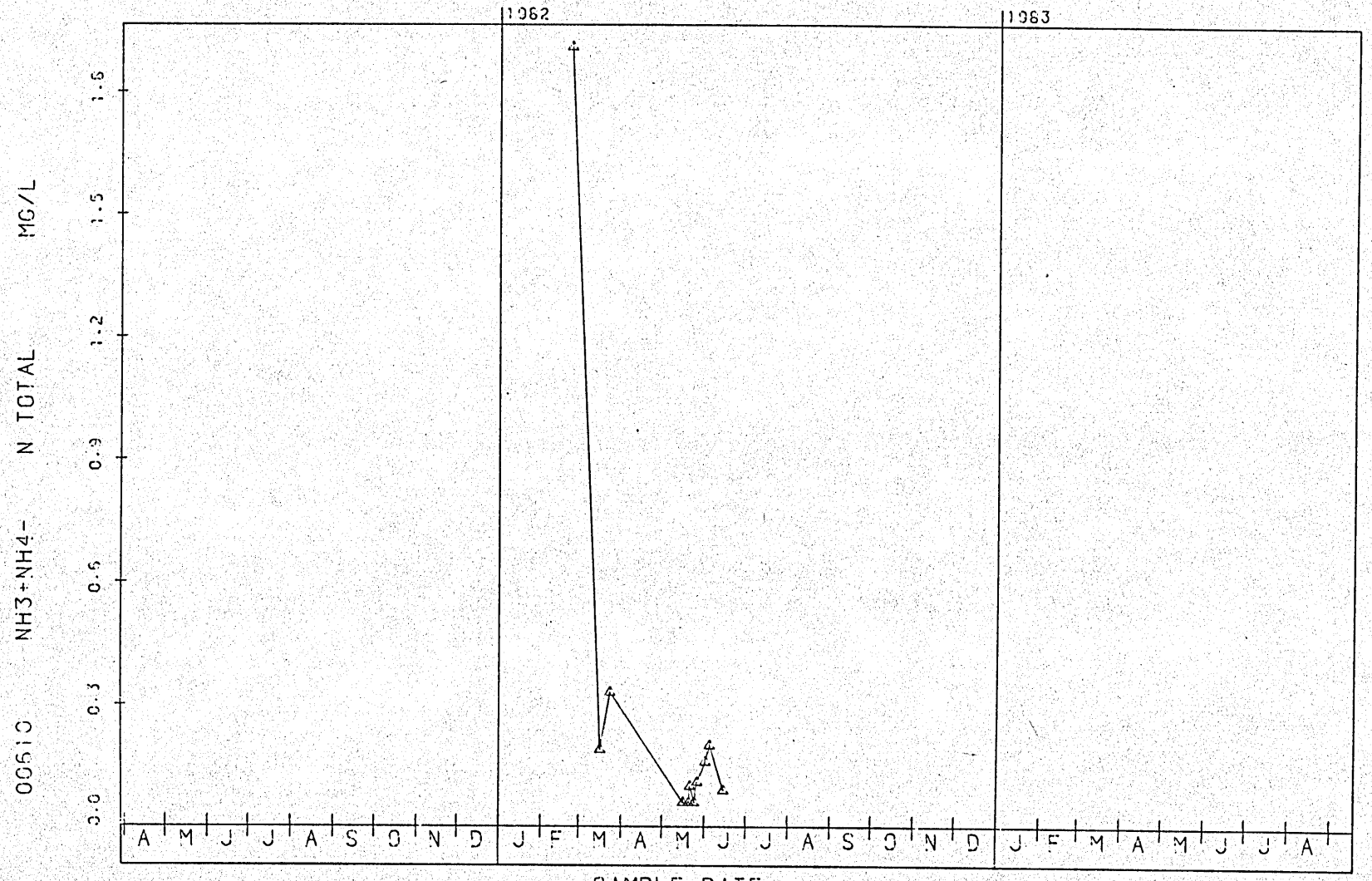
STARTING DATE 81/3 /29

Figure IV-107.



STORET
46FC12
43 48 16.0 098 18 32.0 2
3 MI N 12 MI W OF FC INLET 104N 62W S19 AABA
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663798-0693816

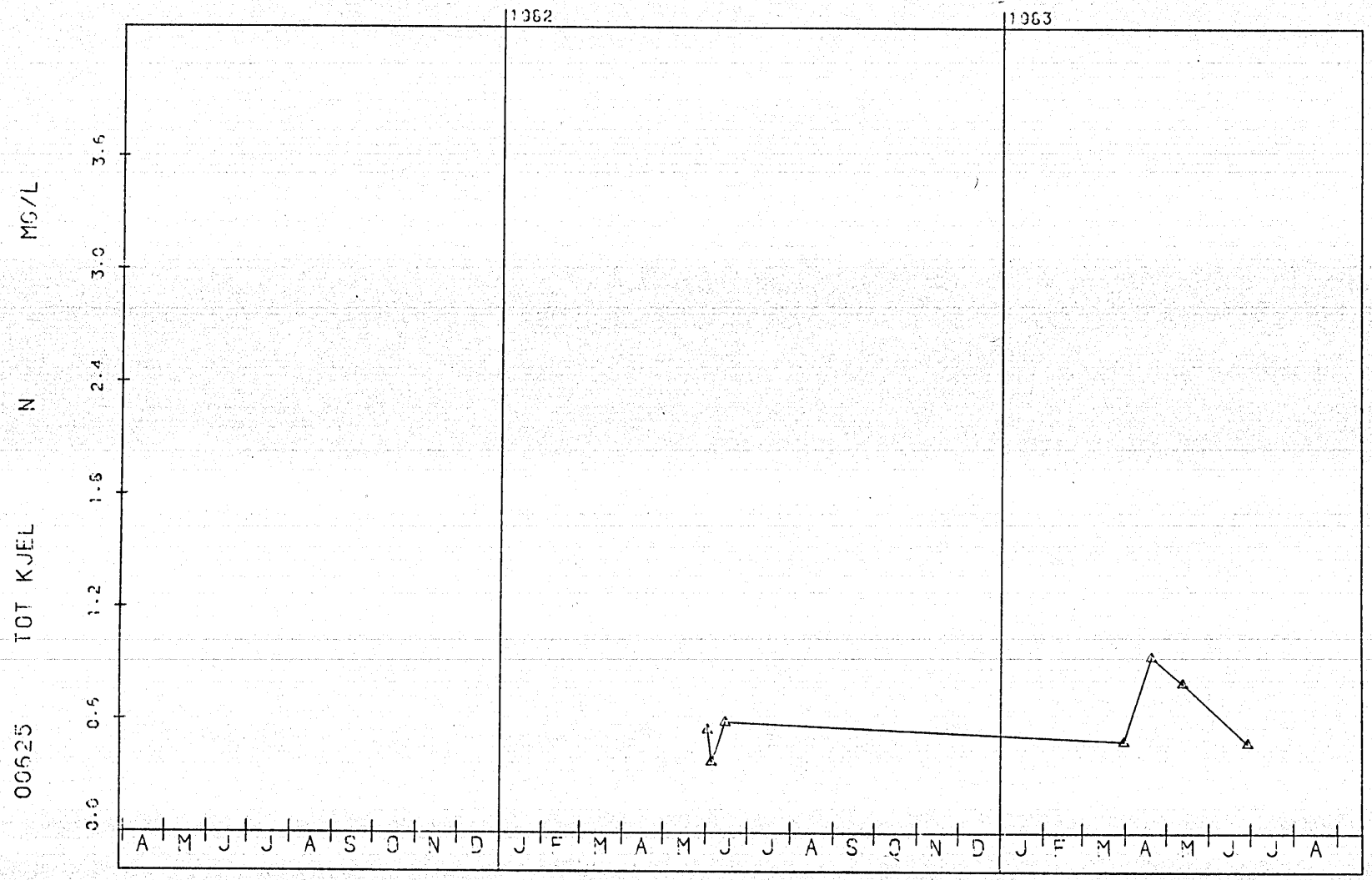
Figure IV-108.



STARTING DATE 81/3 /29

STORET
46FC01
43 44 25.0 098 01 31.0 2
LK MITCHELL OUTLET SD HWY 37 N 103N-60W-S10 BCCA
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663787-0693805

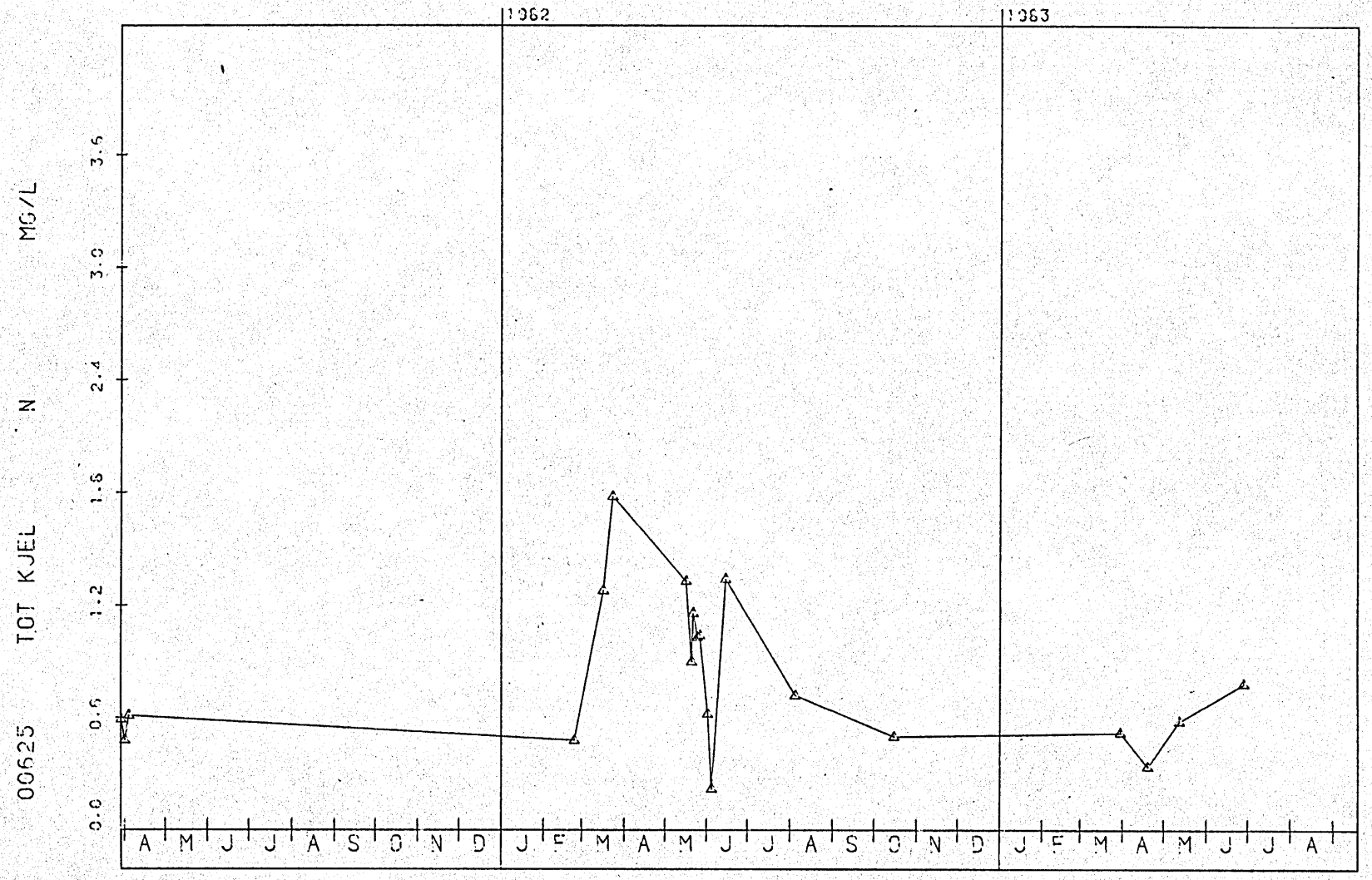
Figure IV-109.



STARTING DATE 81/3 /29

STORET
46FC02
43 44 39.0 098 01 34.0 2
NE LK MTCHLL .5 MI N OF OUTLET 103N 60W S10 BBBC
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663788-0693806

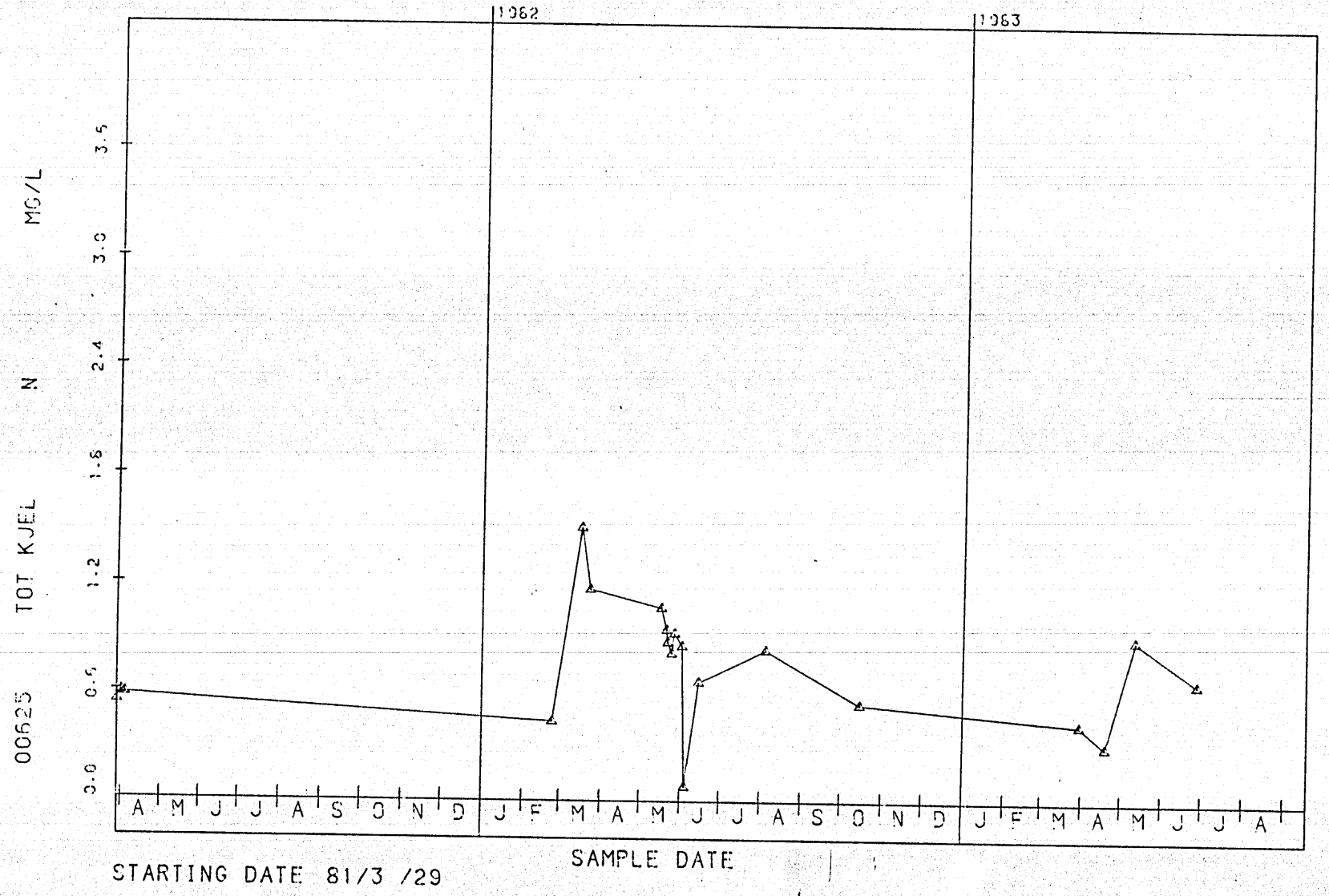
Figure IV-110.



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Figure IV-111.

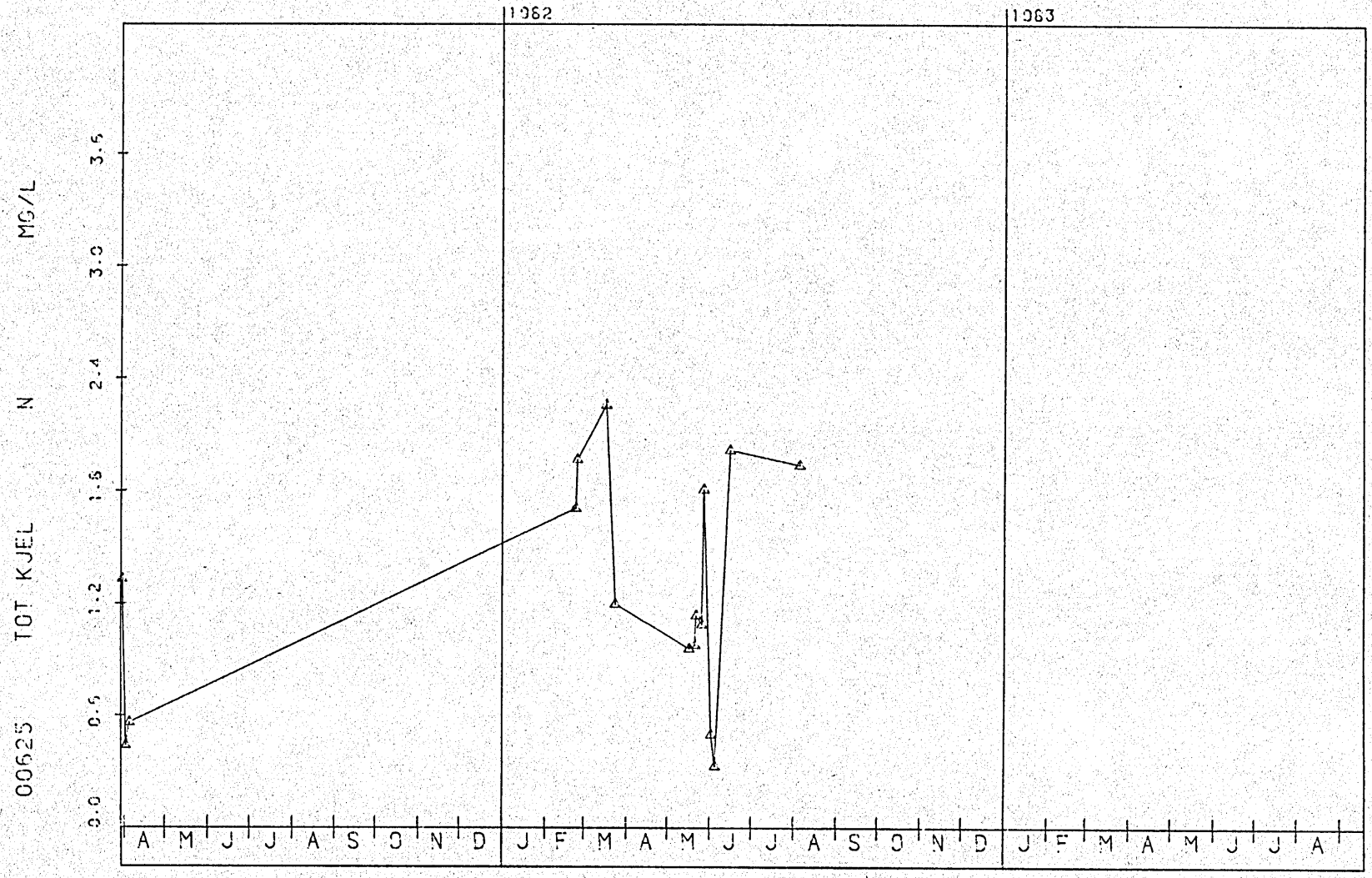
STORET
46FC03
43 45 22.0 098 03 26.0 2
NW LK MTCHLL .75 MI SE FC INLET 103N 60W S5 ACBB
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663789-0693807



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STORET
46FC04
43 46 43.0 098 09 58.0 2
4.5 MI W .75 MI N OF FC INLET 104N 61W S28 CCBB
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663790-0693808

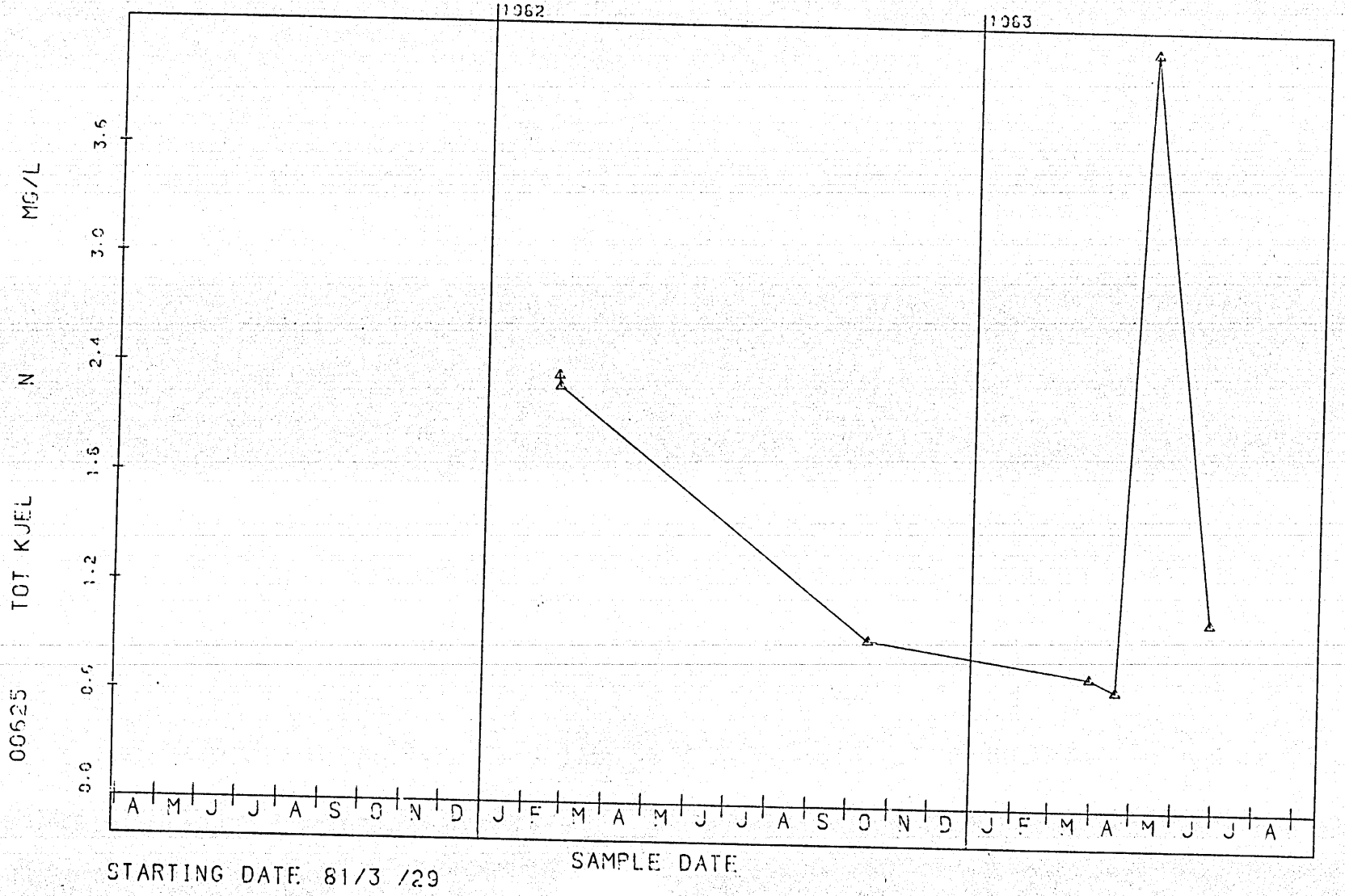
Figure IV-112.



STARTING DATE 81/3 /29

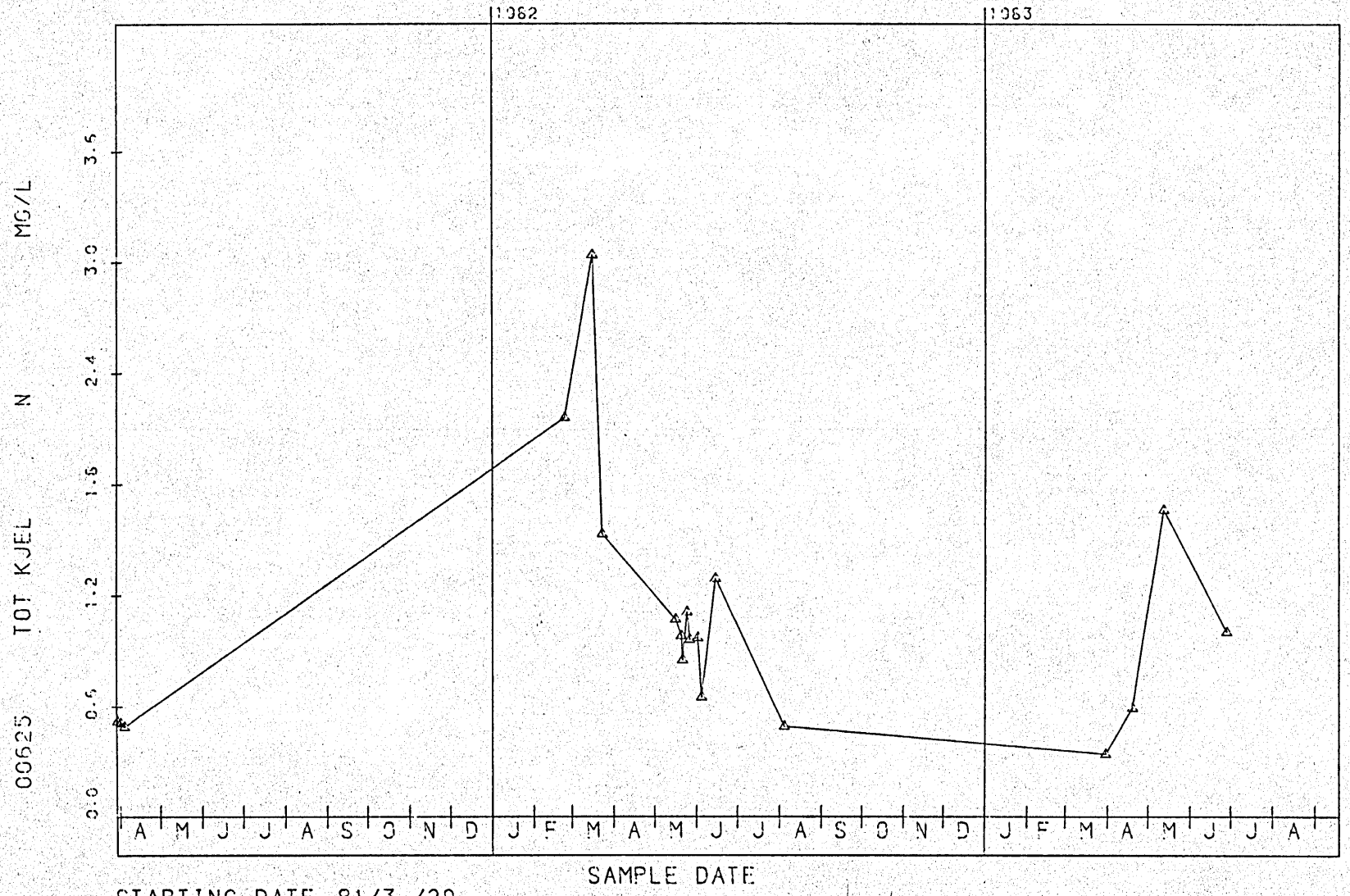
STORET
46FC05
43 44 41.0 098 02 51.0 2
1.5 MI S 100 FT W OF FC INLET 103N 60W S8 AAAD
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663791-0693809

Figure IV-113.



STORET
46FC06
43 45 34.0 098 04 14.0 2
FC INLET TO LK MITCHELL 103N 60W 56 AABB
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663792-0693810

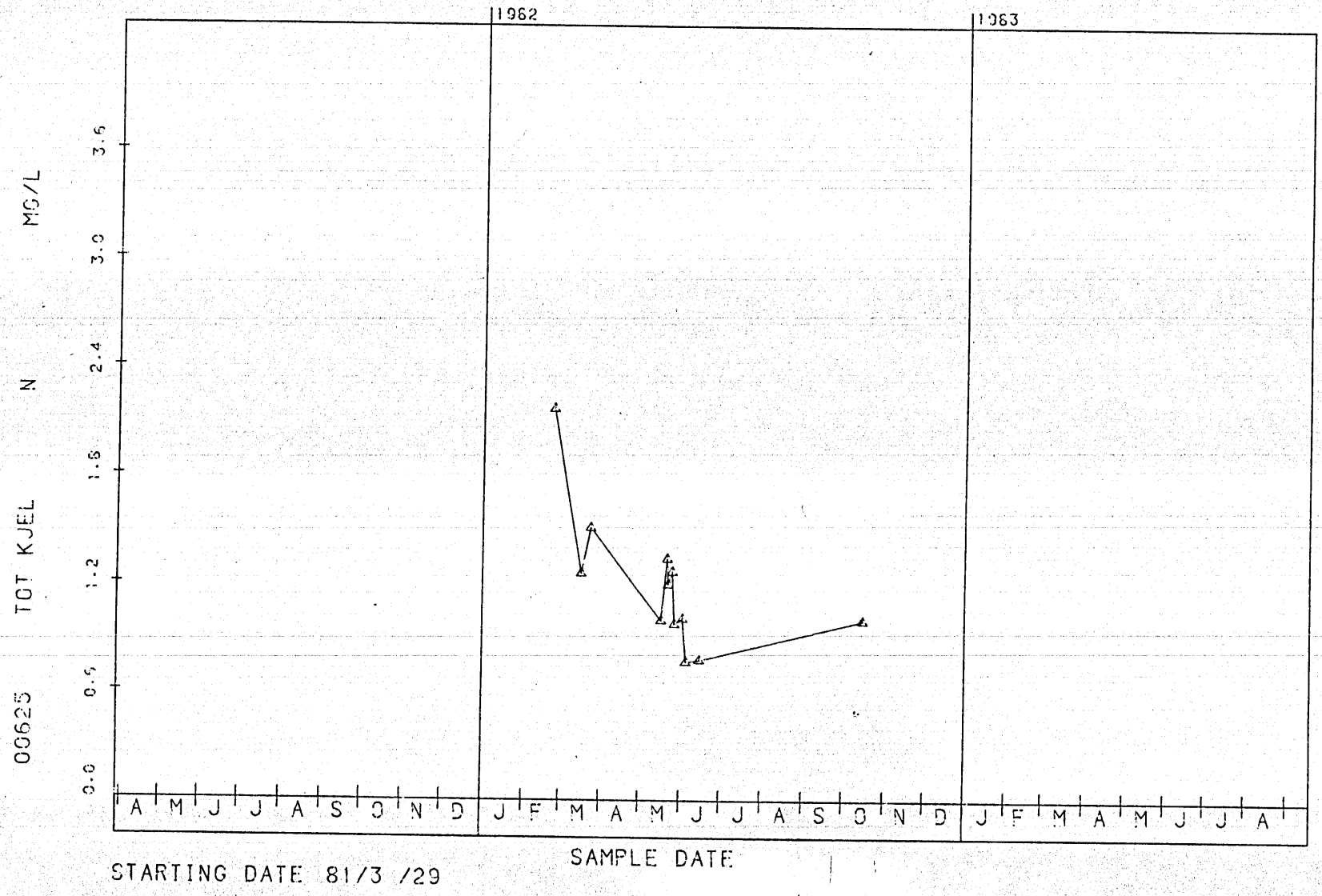
Figure IV-114.



STARTING DATE 81/3 /29

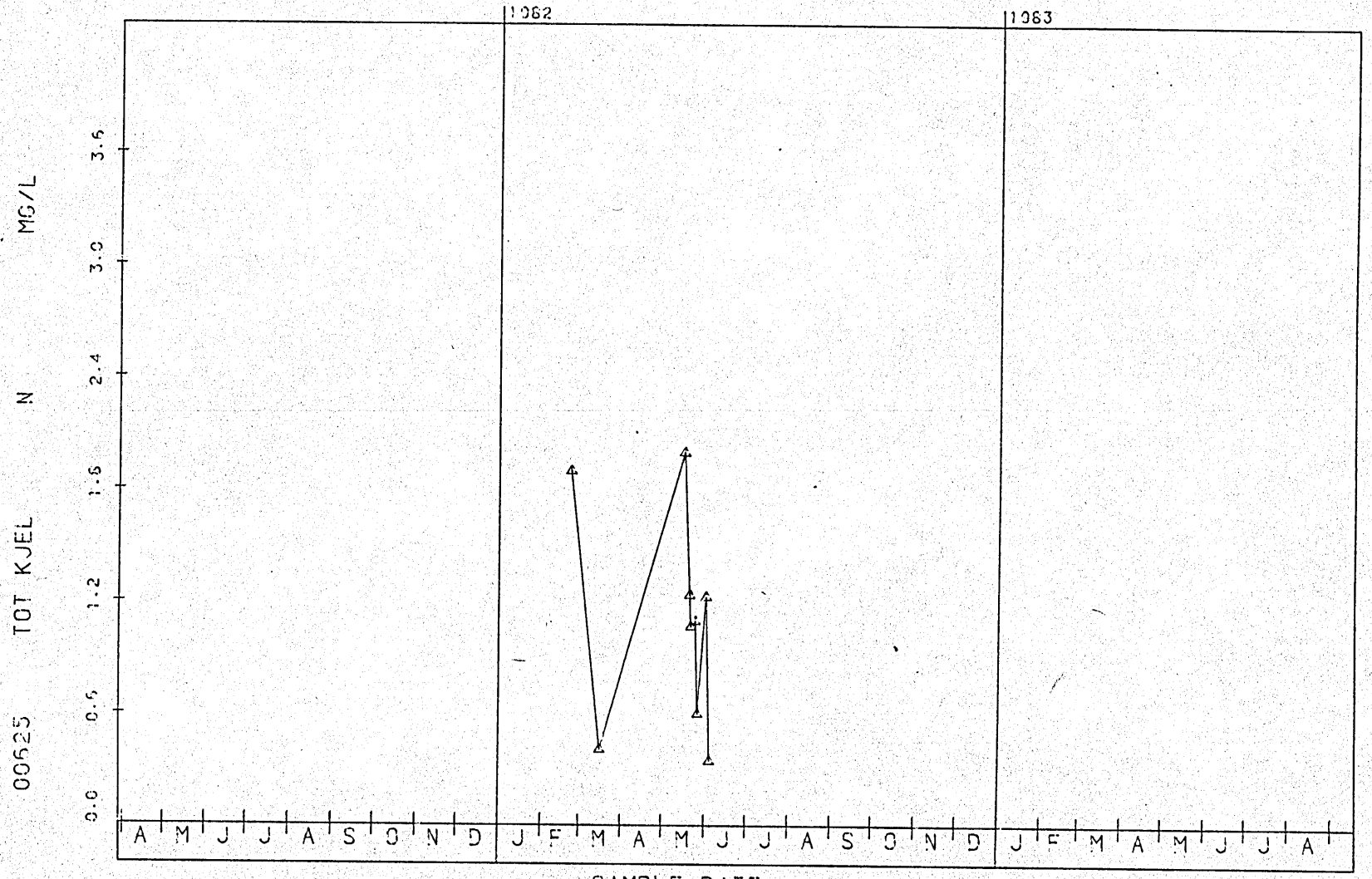
STORET
46FC07
43 47 22.0 098 19 31.0 2
12.5 MI W 2 MI N OF FC INLET 104N 62W S30 BBBB
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663793-0693811

Figure IV-115.



STORET
46FC08
43 55 09.0 098 27 04.0 2
18.5 MI W 11 MI N OF FC INLET 105N 63W S7 BBCC
46003 SOUTH DAKOTA AURORA
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663794-0693812

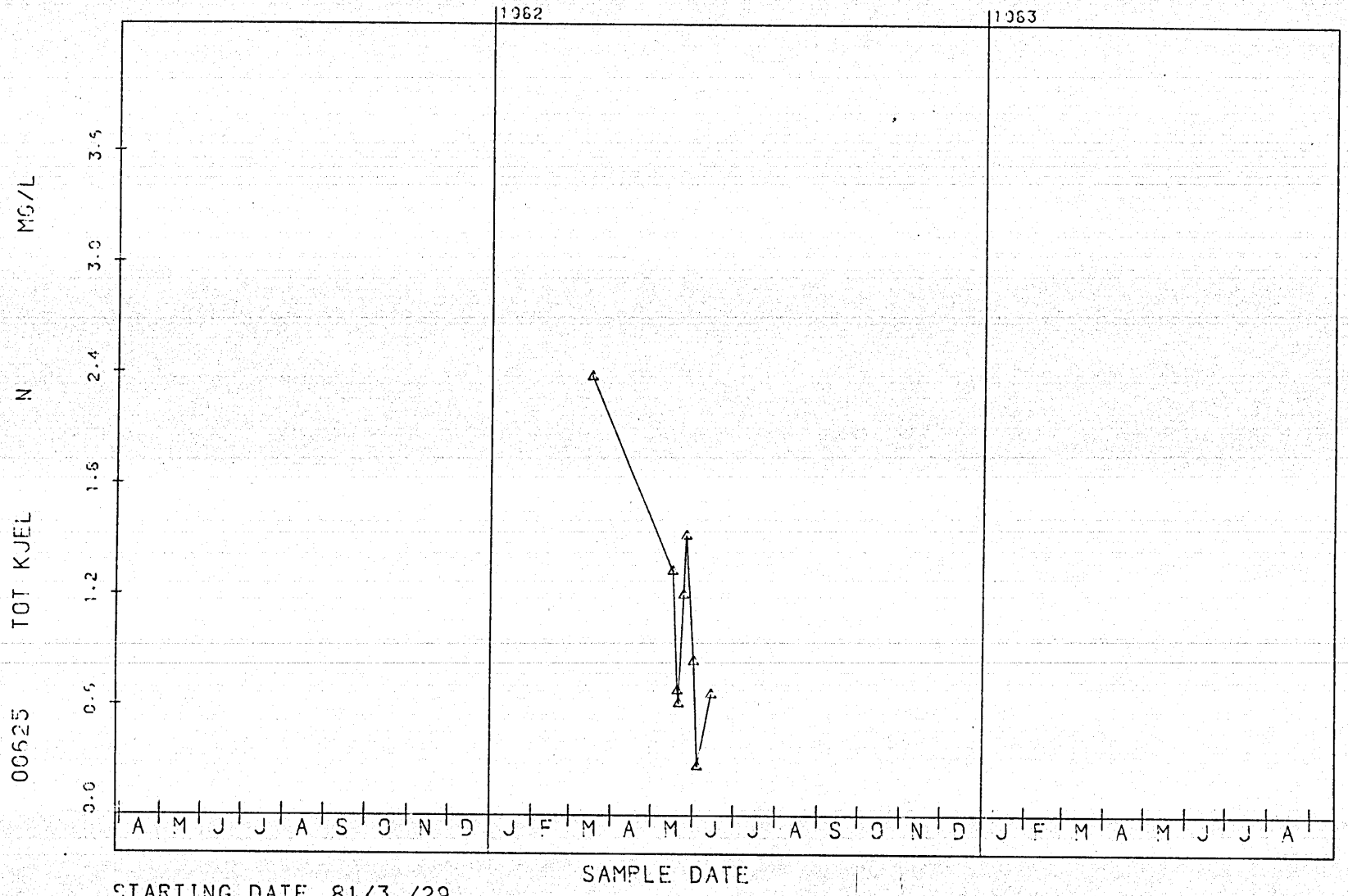
Figure IV-116.



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Figure IV-117.

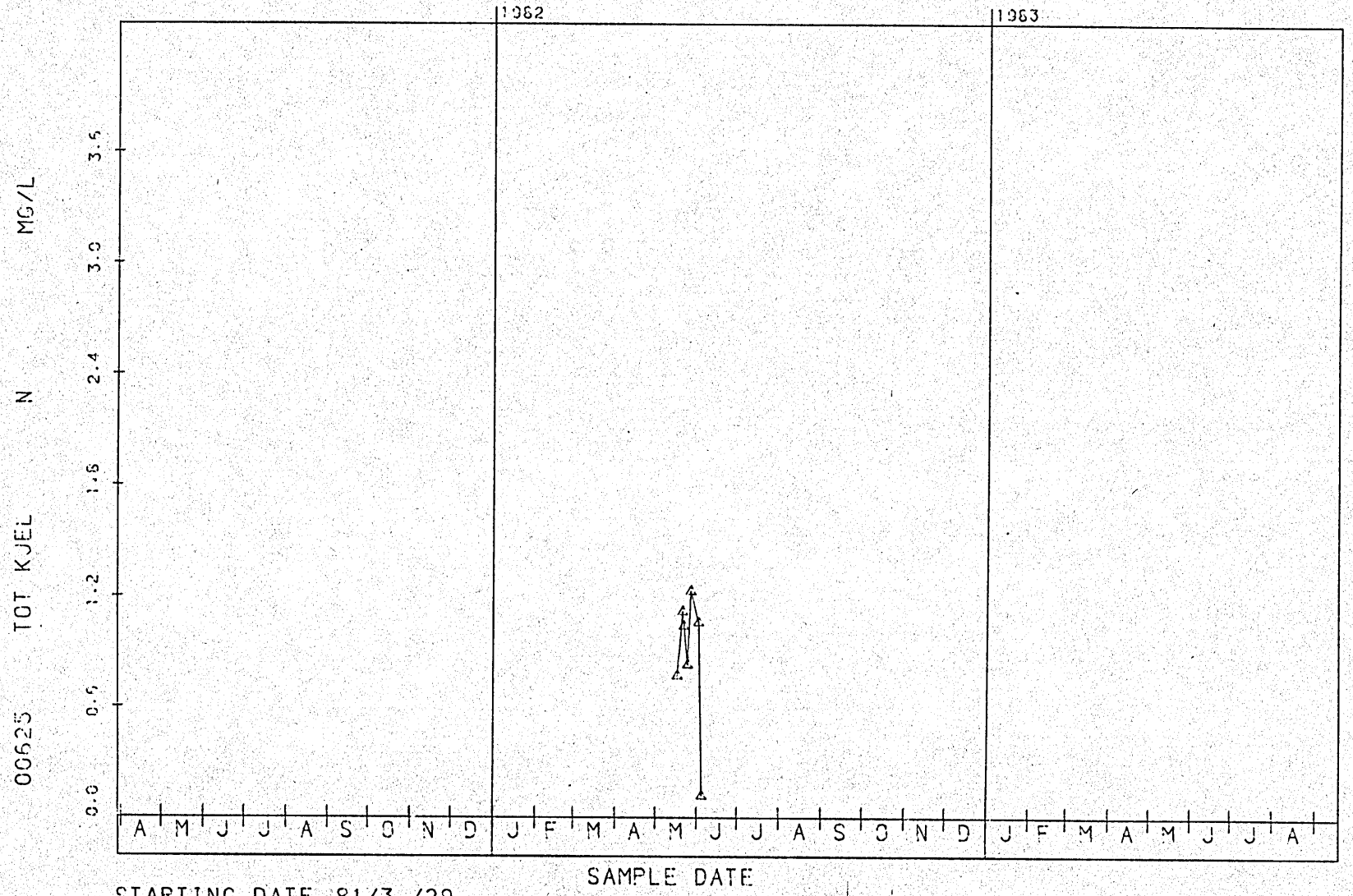
STORET
46FC09
44 04 03.0 098 28 46.0 2
1.5 MI W OF JCT 34 AND 281 107N 64W S23 ABBA
46073 SOUTH DAKOTA JERAULD
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663795-0693813



STARTING DATE 81/3 /29

STORET
46FC10
44 06 40.0 098 28 58.0 2
3 MI W 1.5 MI W JCT 34 AND 281 107N 64W S2 BAAA
46073 SOUTH DAKOTA JERAULD
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663796-0693814

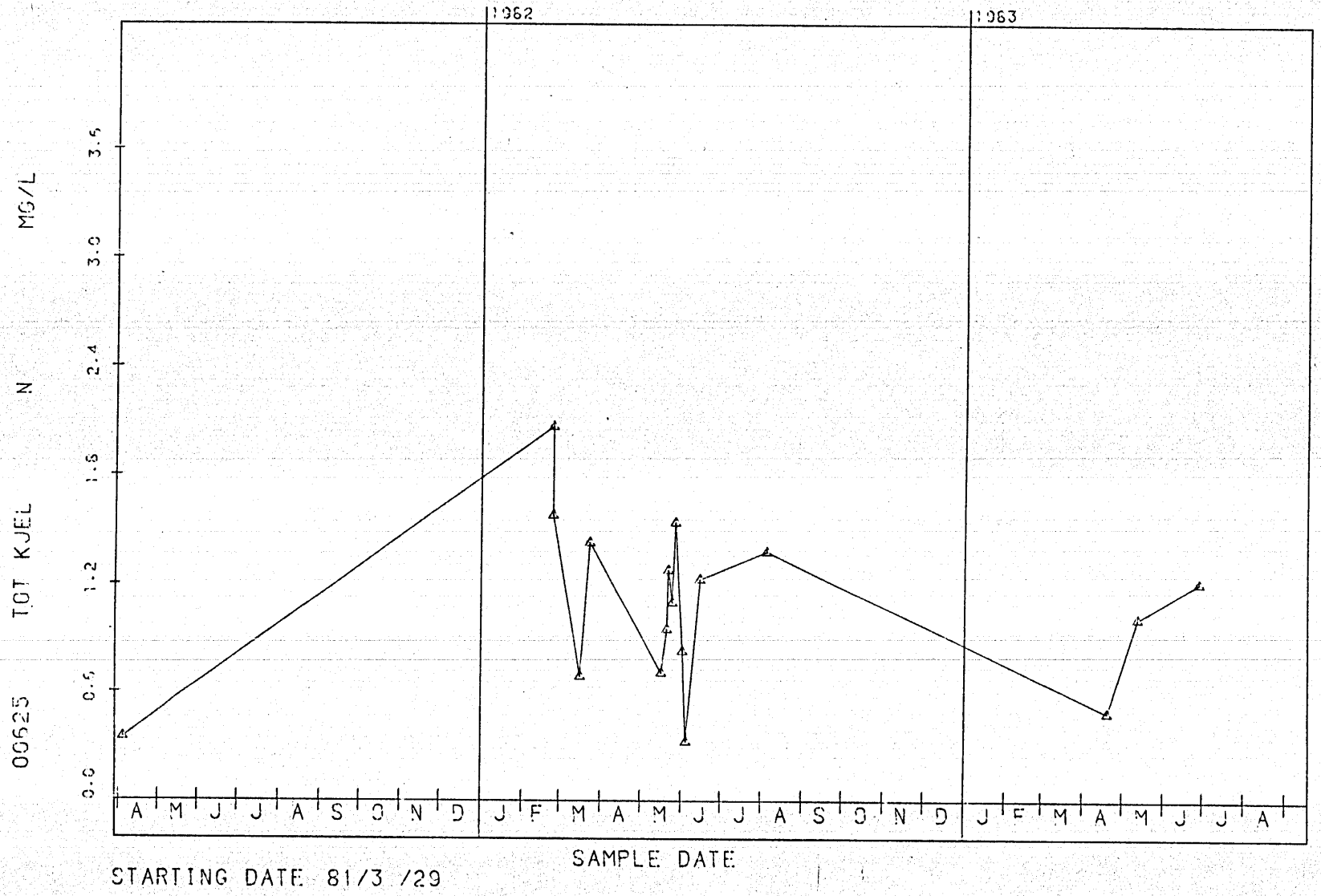
Figure IV-118.



STARTING DATE 81/3 /29

STORET
46FC11
43 46 36.0 098 14 44.0 2
8.5 MI W 1 MI N OF FC INLET 104N 62W S26 CCCB
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663797-0693815

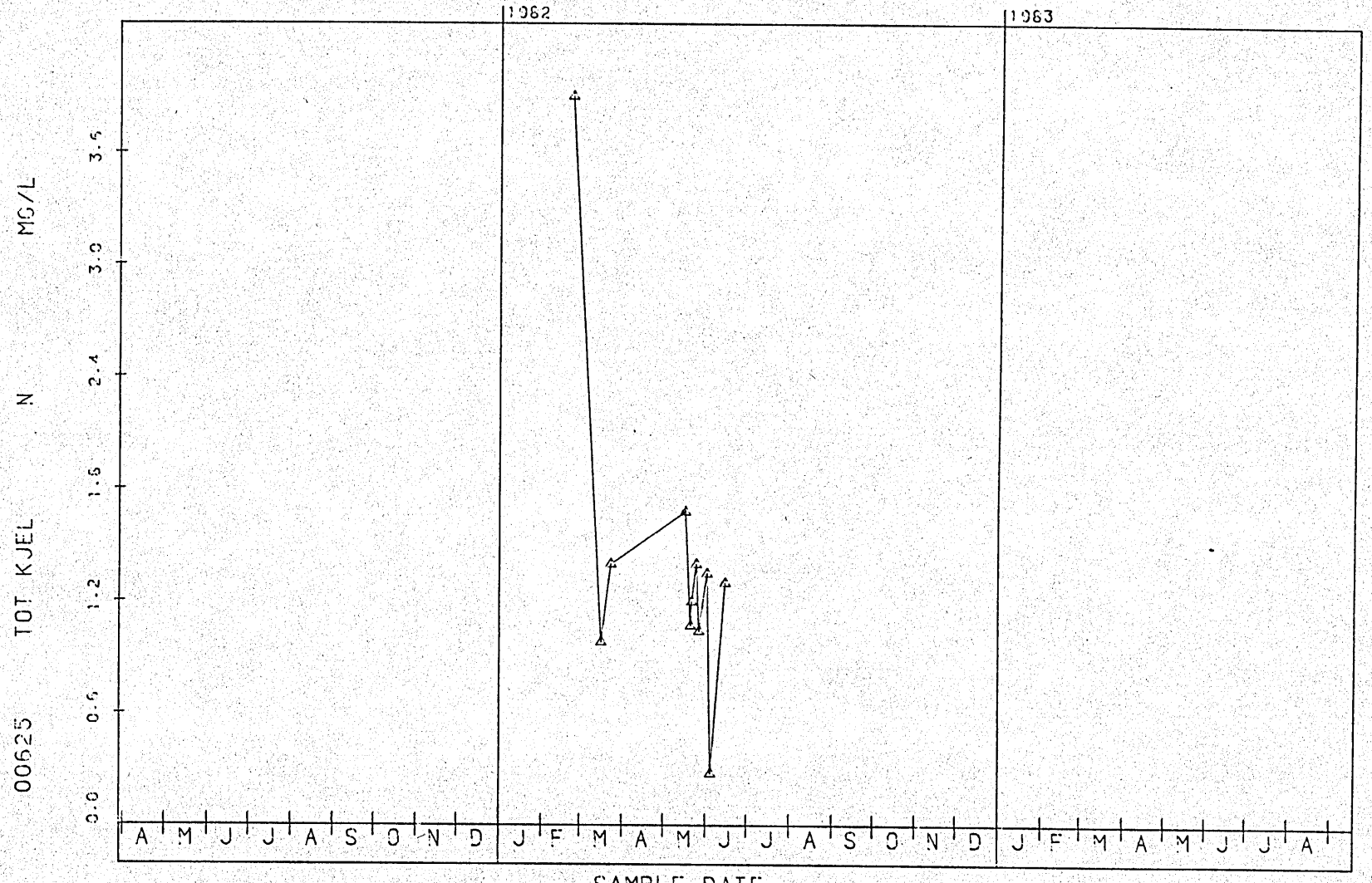
Figure IV-119.



STARTING DATE 81/3 /29

STORET
46FC12
43 48 16.0 098 18 32.0 2
3 MI N 12 MI W OF FC INLET 104N 62W S19 AABA
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663798-0693816

Figure IV-120.



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Figure IV-121.

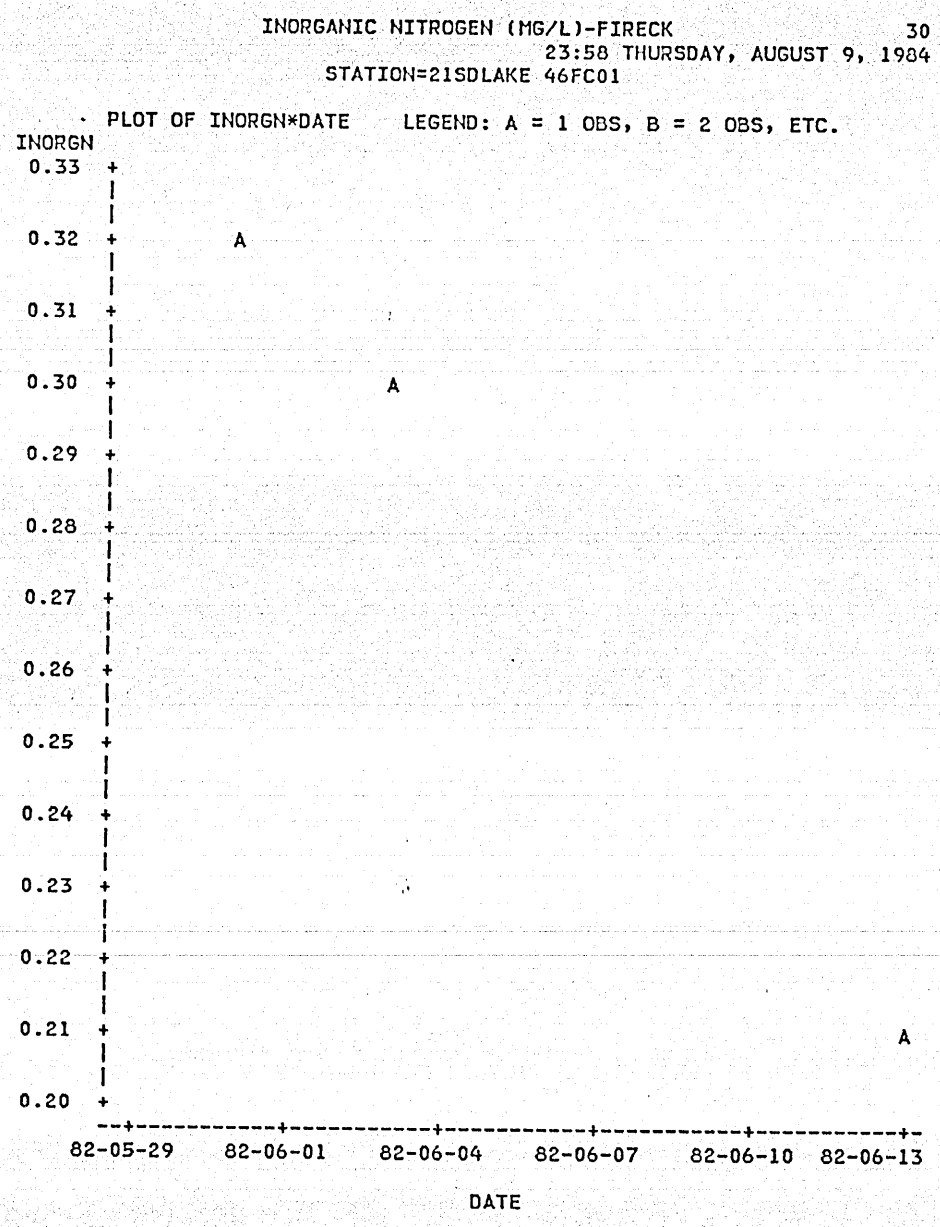


Figure IV-122.

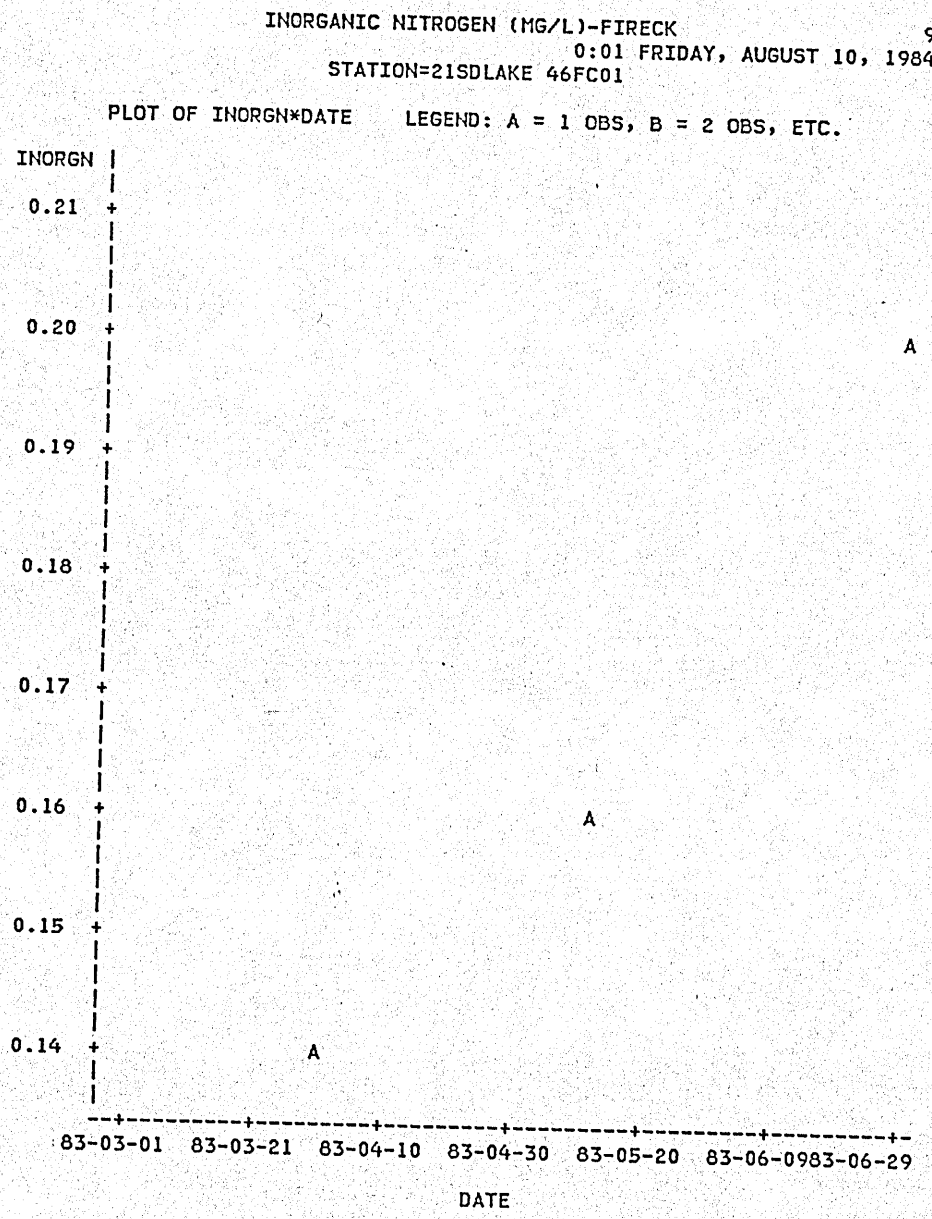


Figure IV-123.

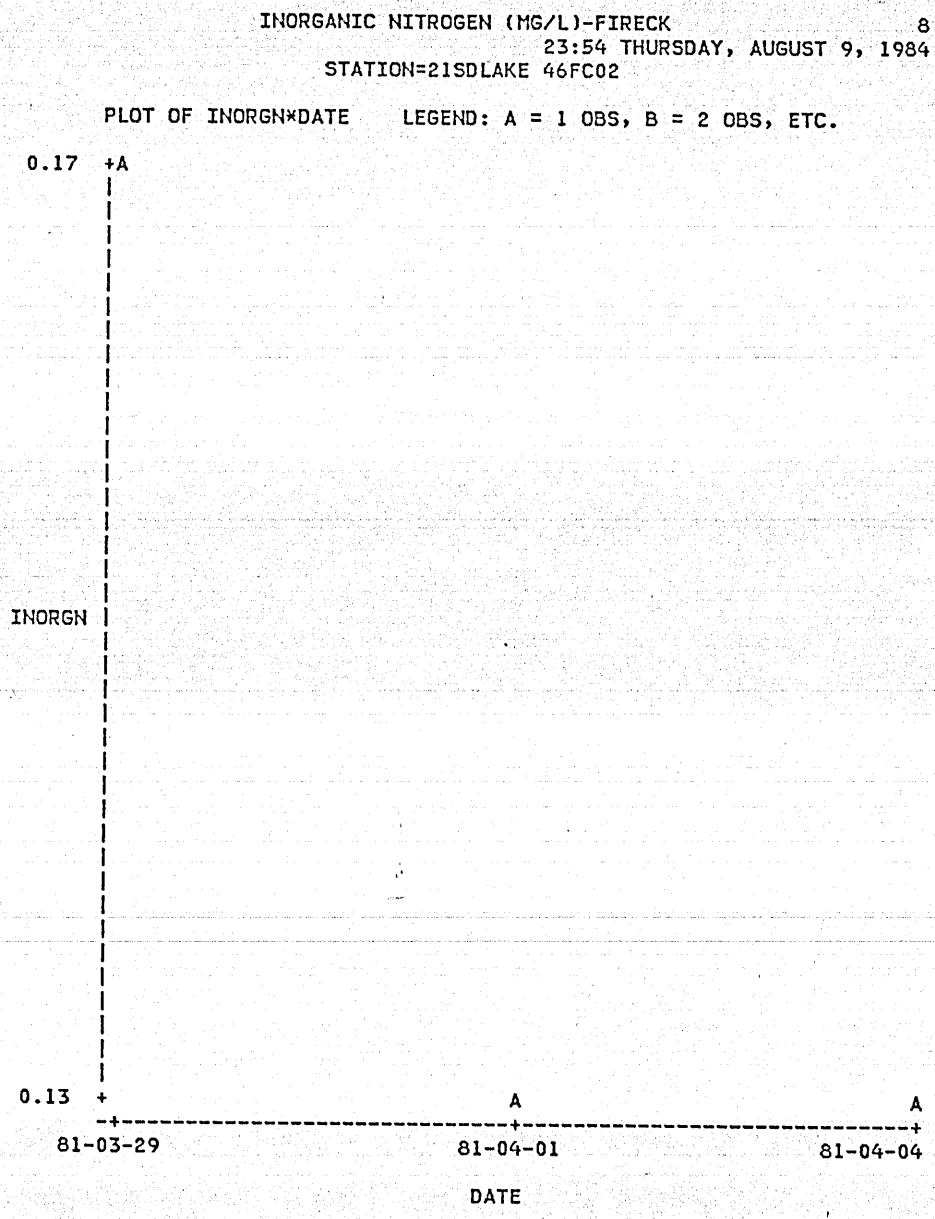


Figure IV-124.

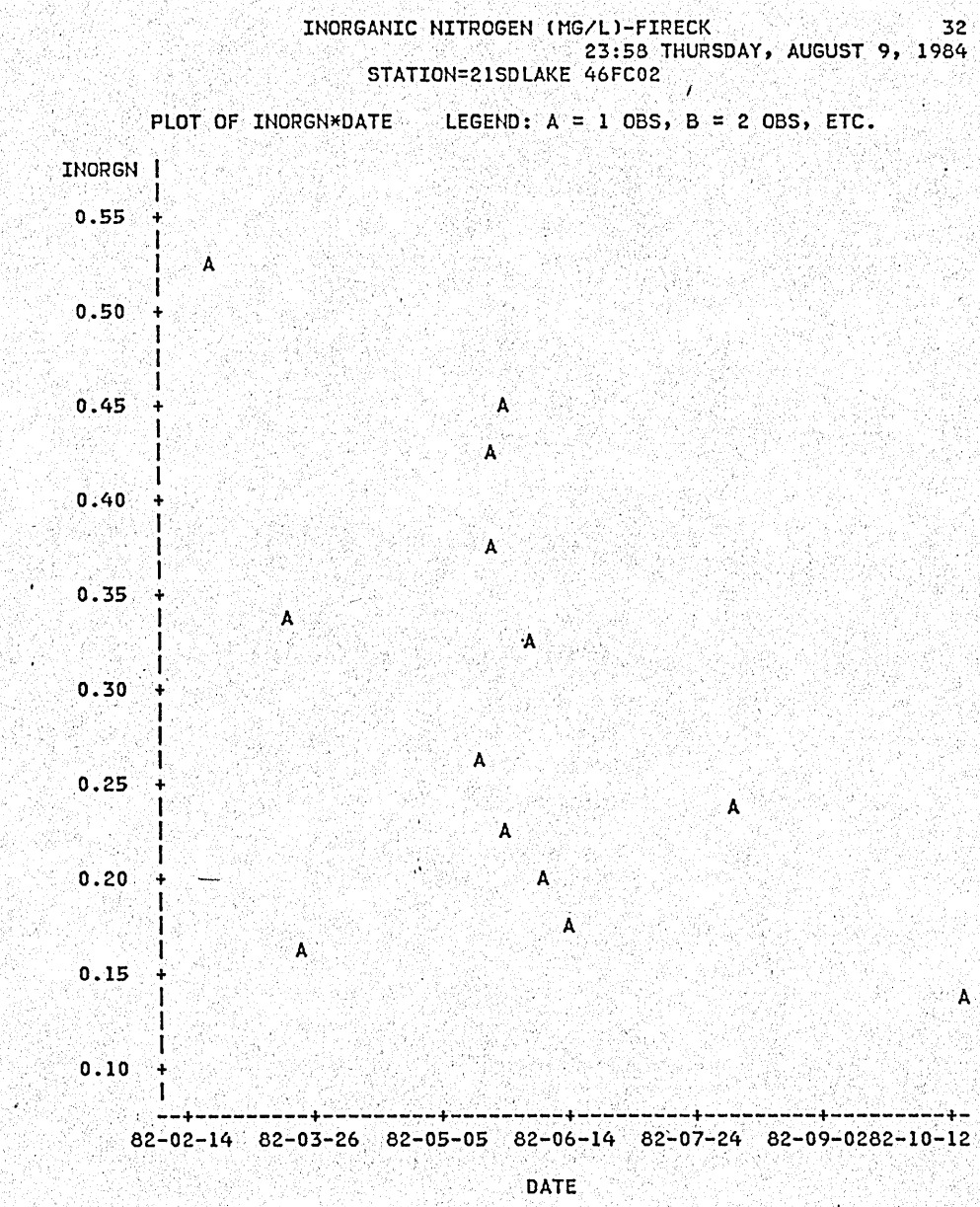


Figure IV-125.

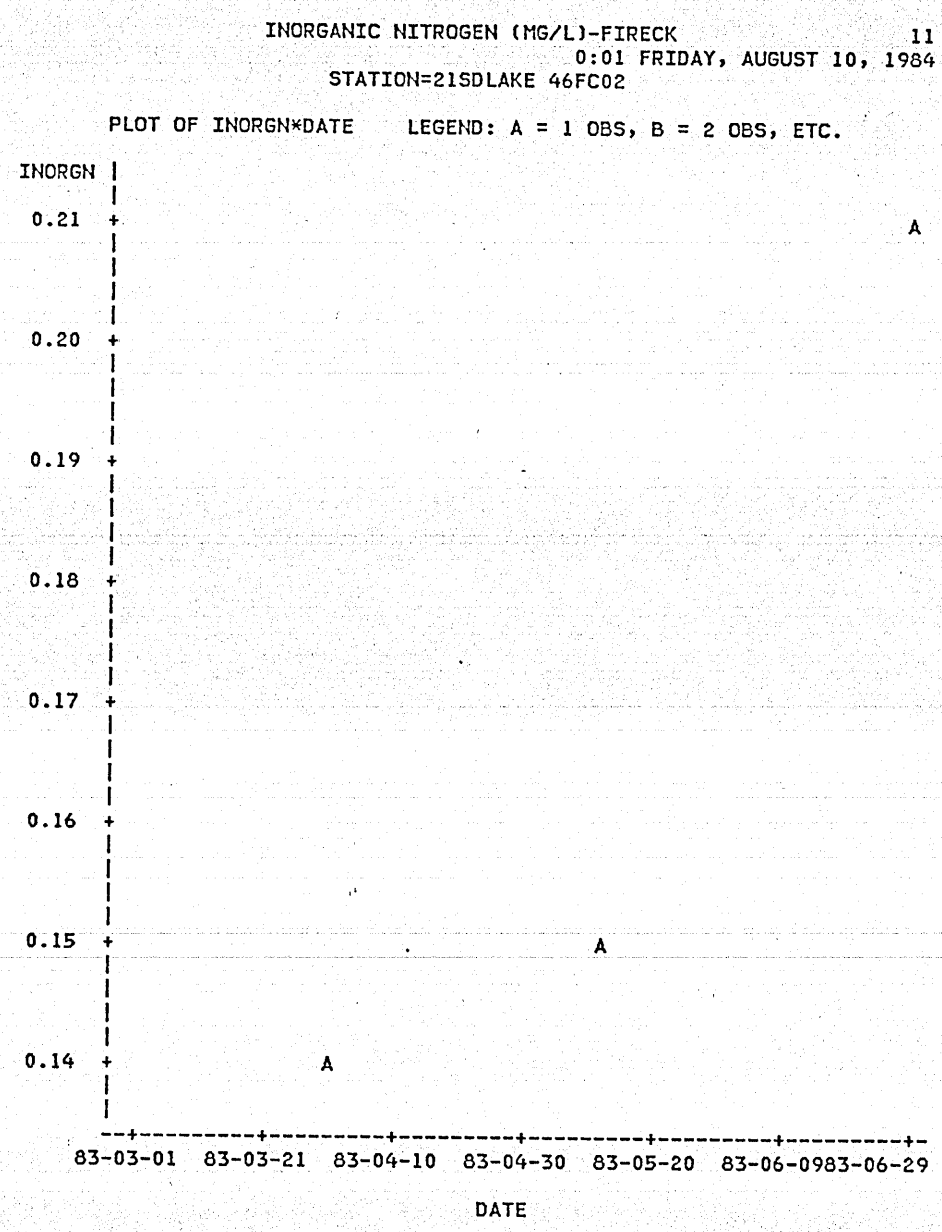


Figure IV-126.

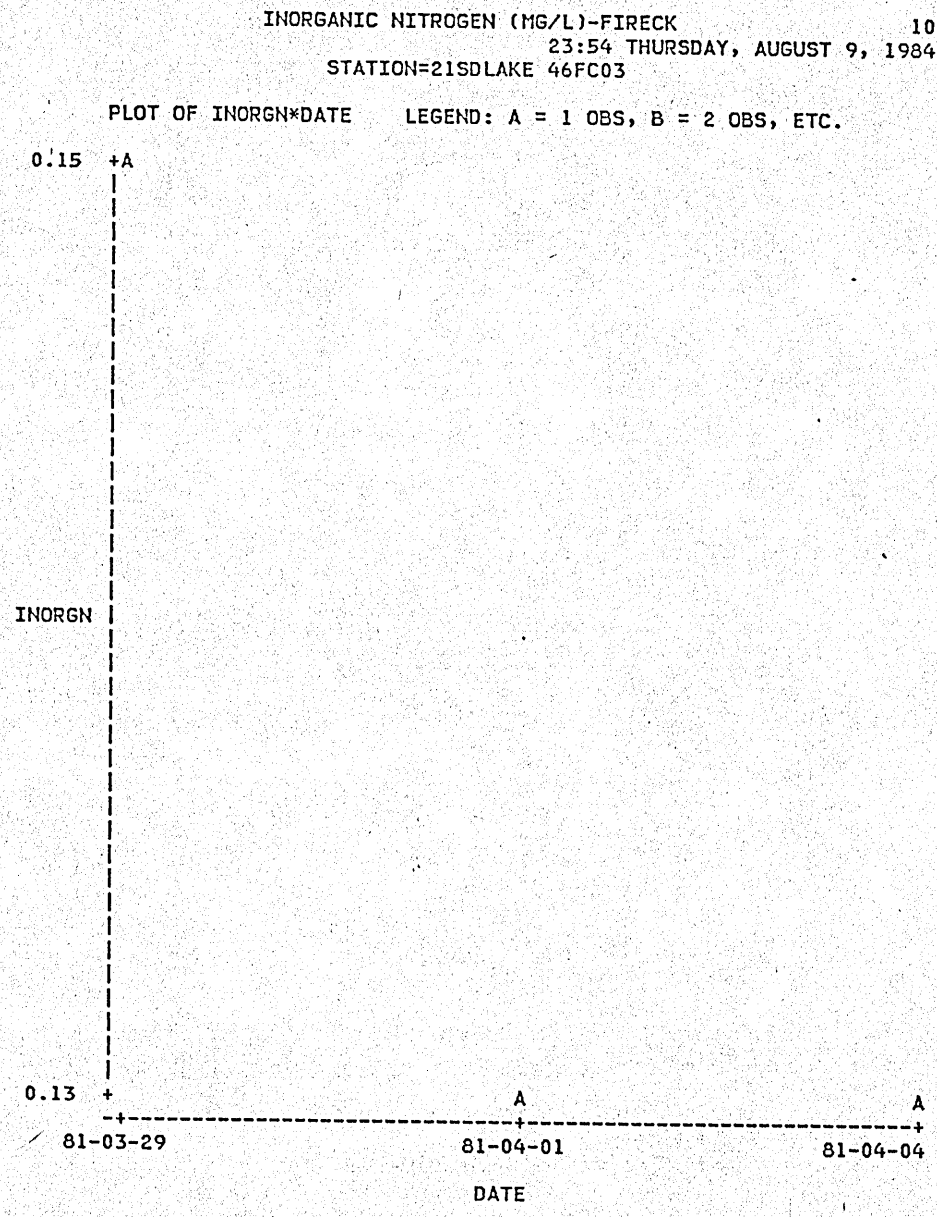


Figure IV-127.

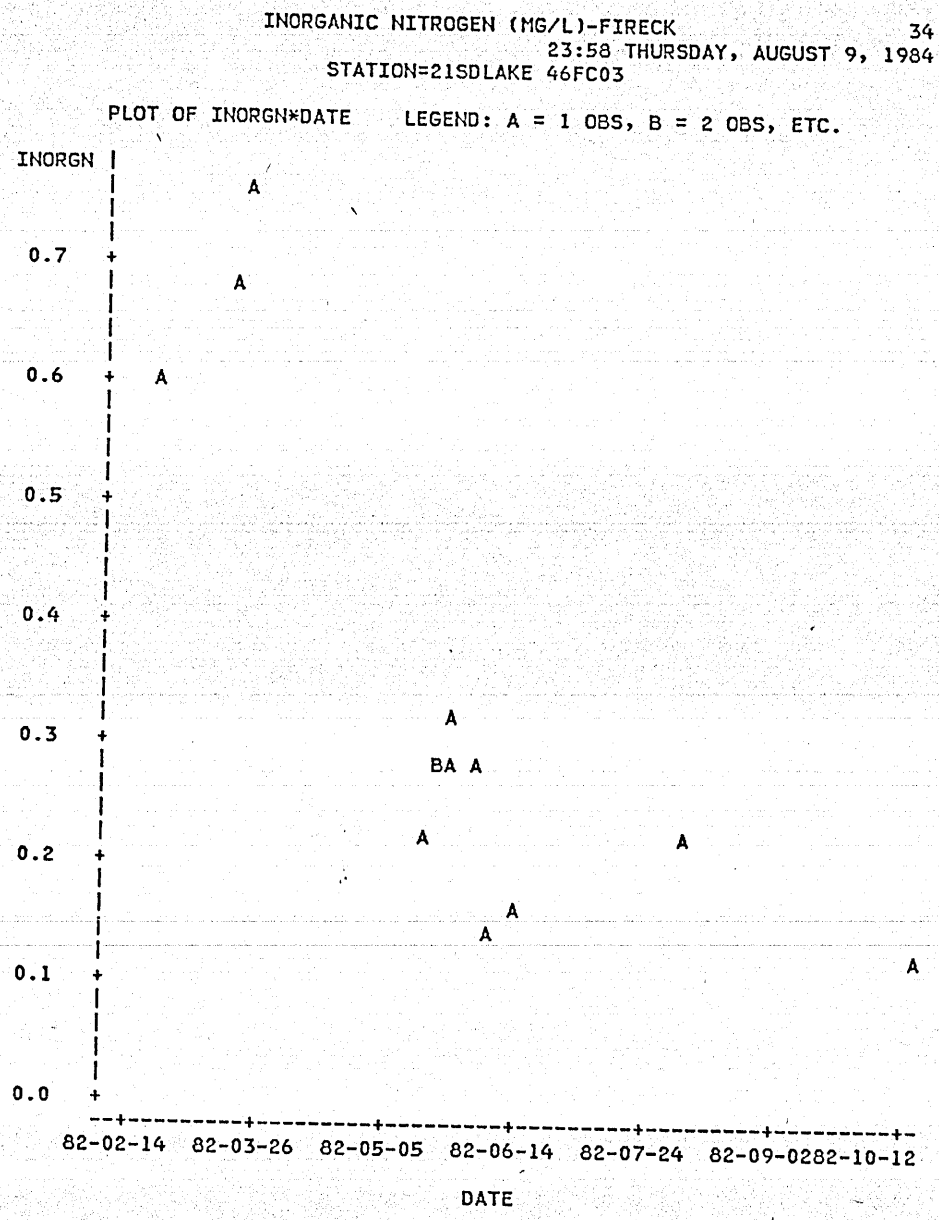


Figure IV-128.

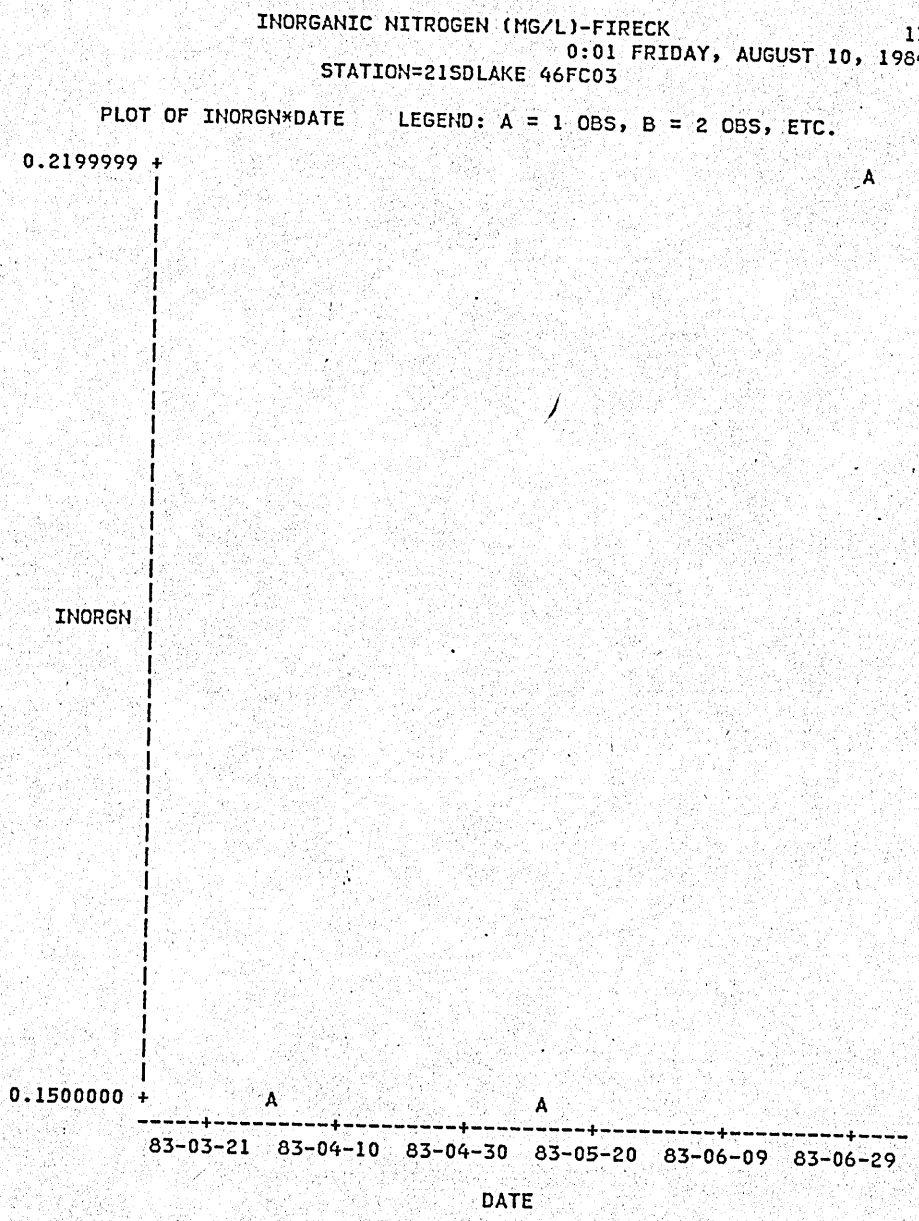


Figure IV-129.

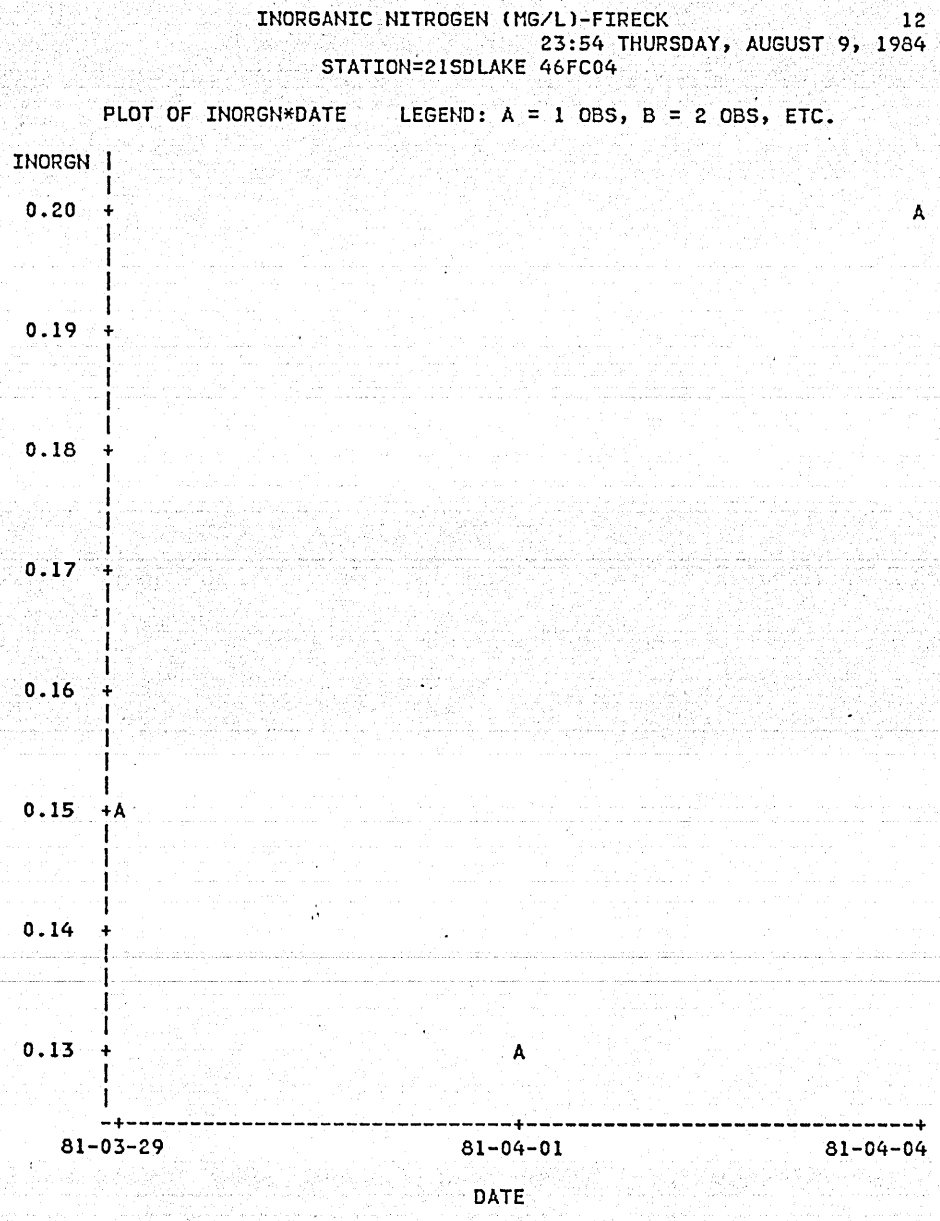


Figure IV-130.

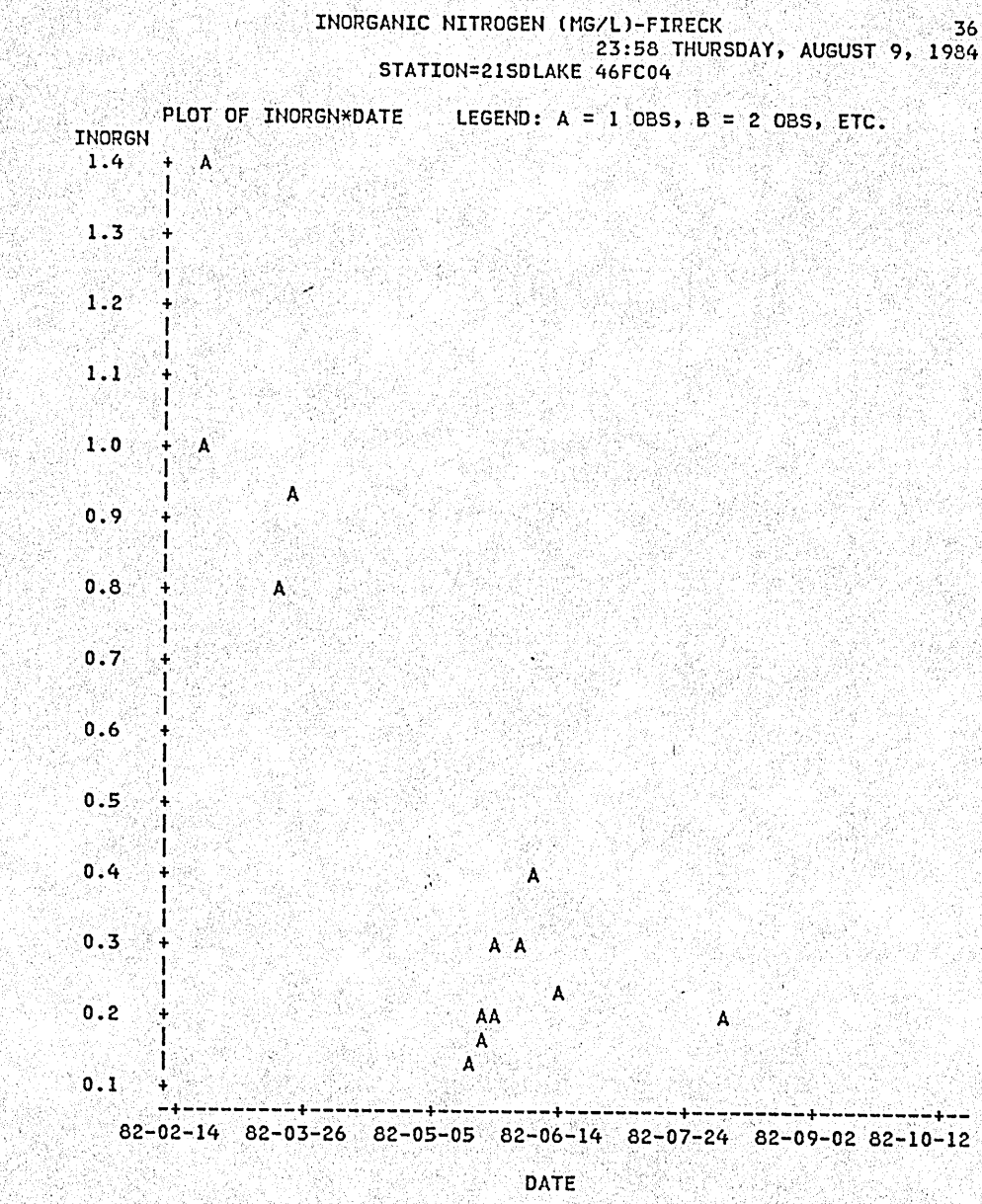


Figure IV-131.

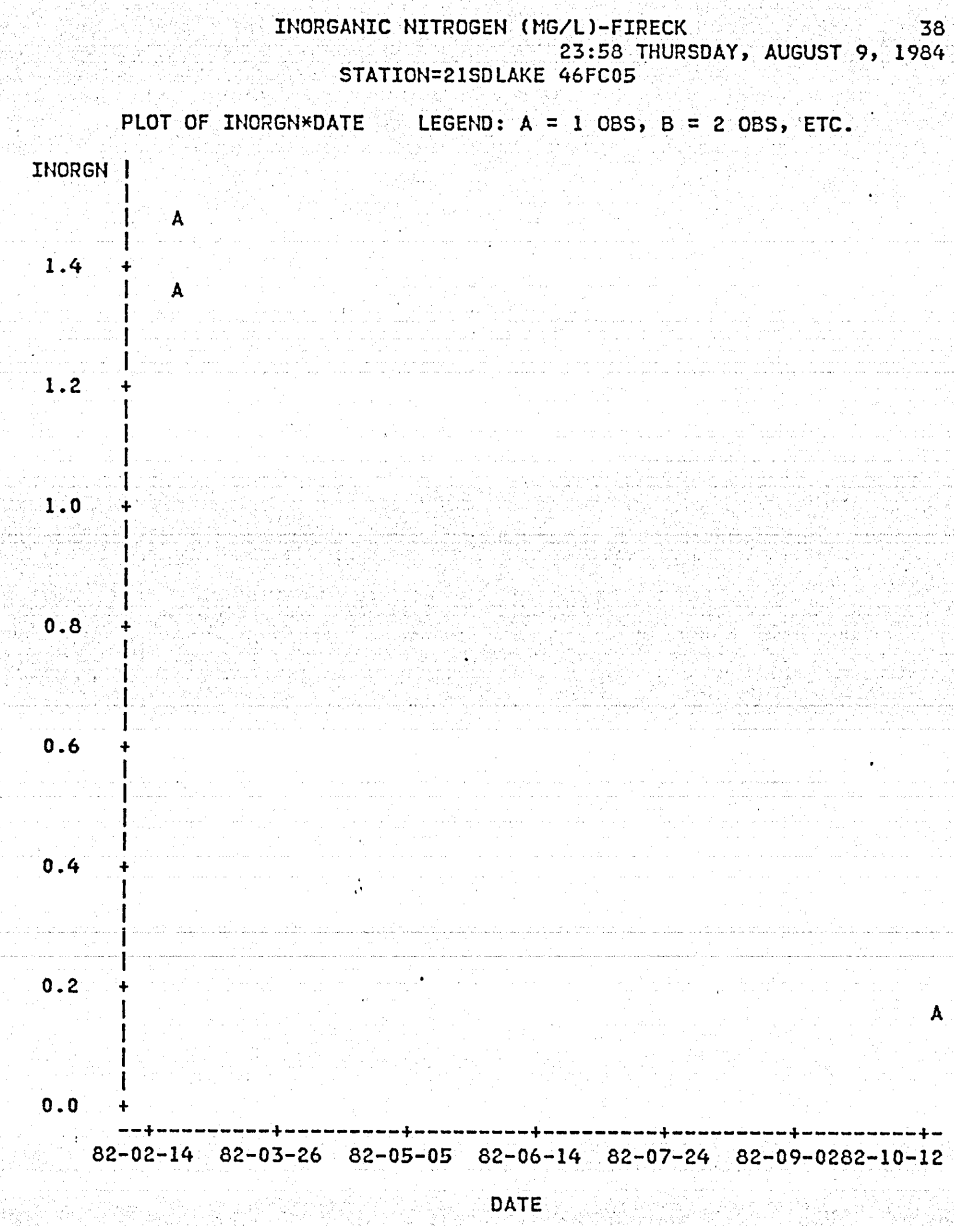


Figure IV-132.

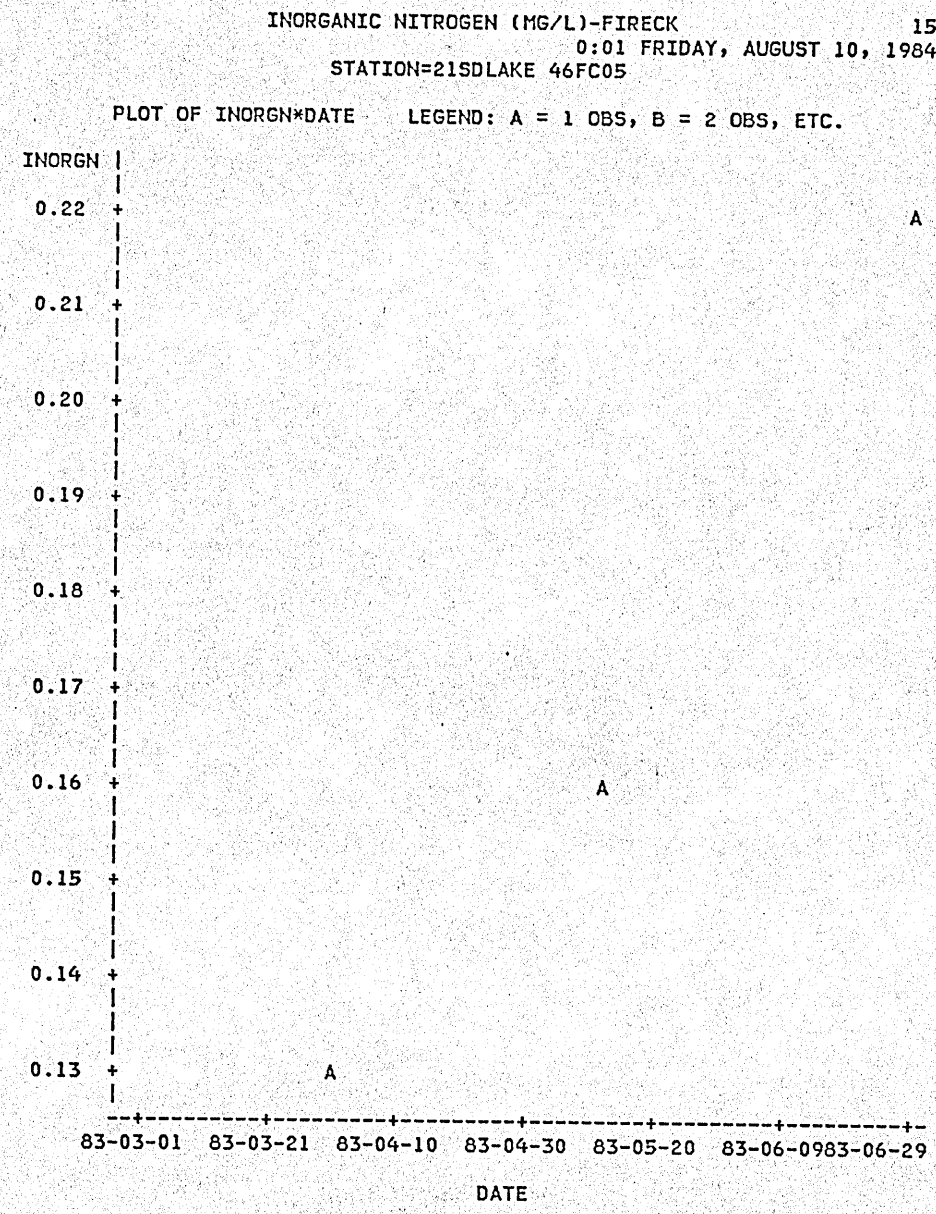


Figure IV-133.

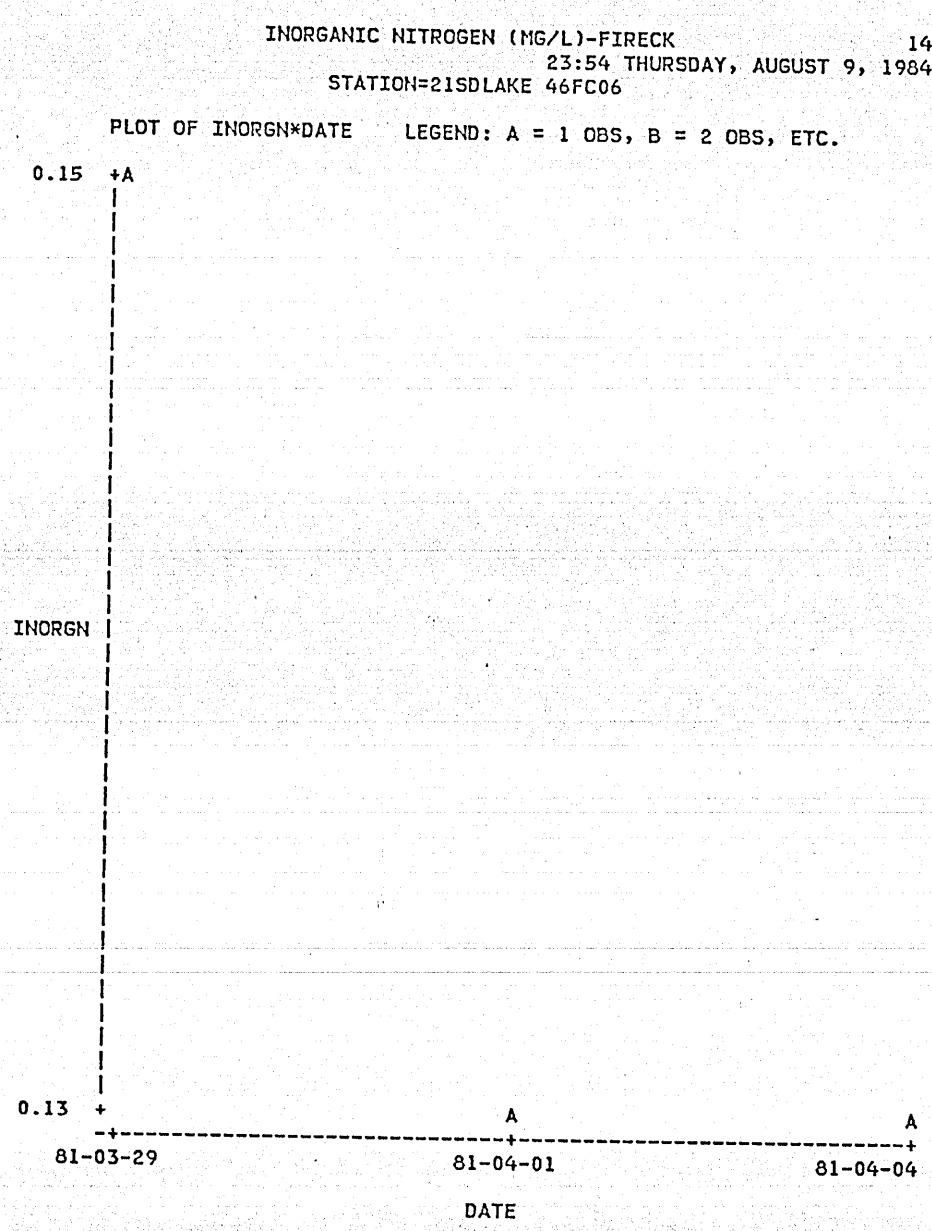


Figure IV-134.

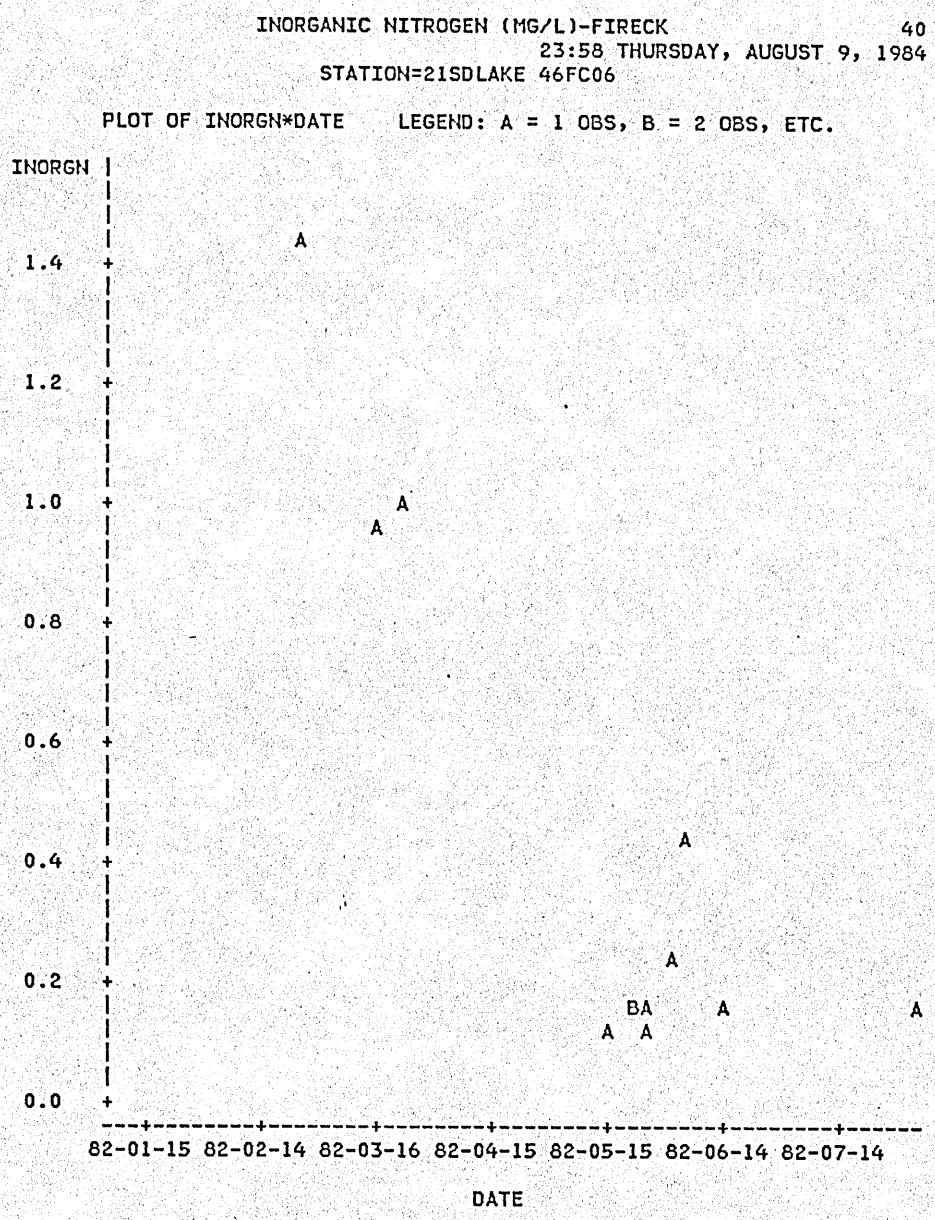


Figure IV-135.

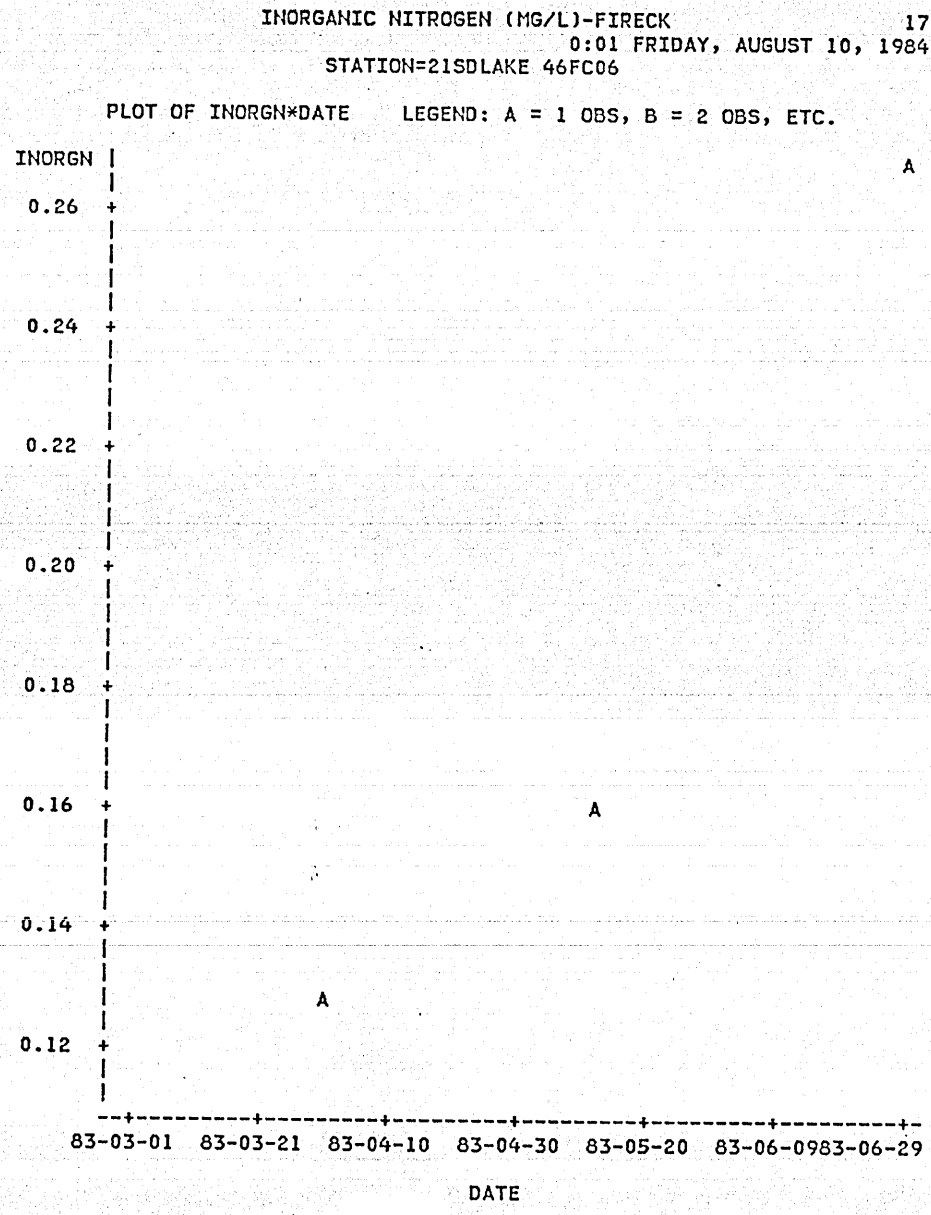


Figure IV-136.

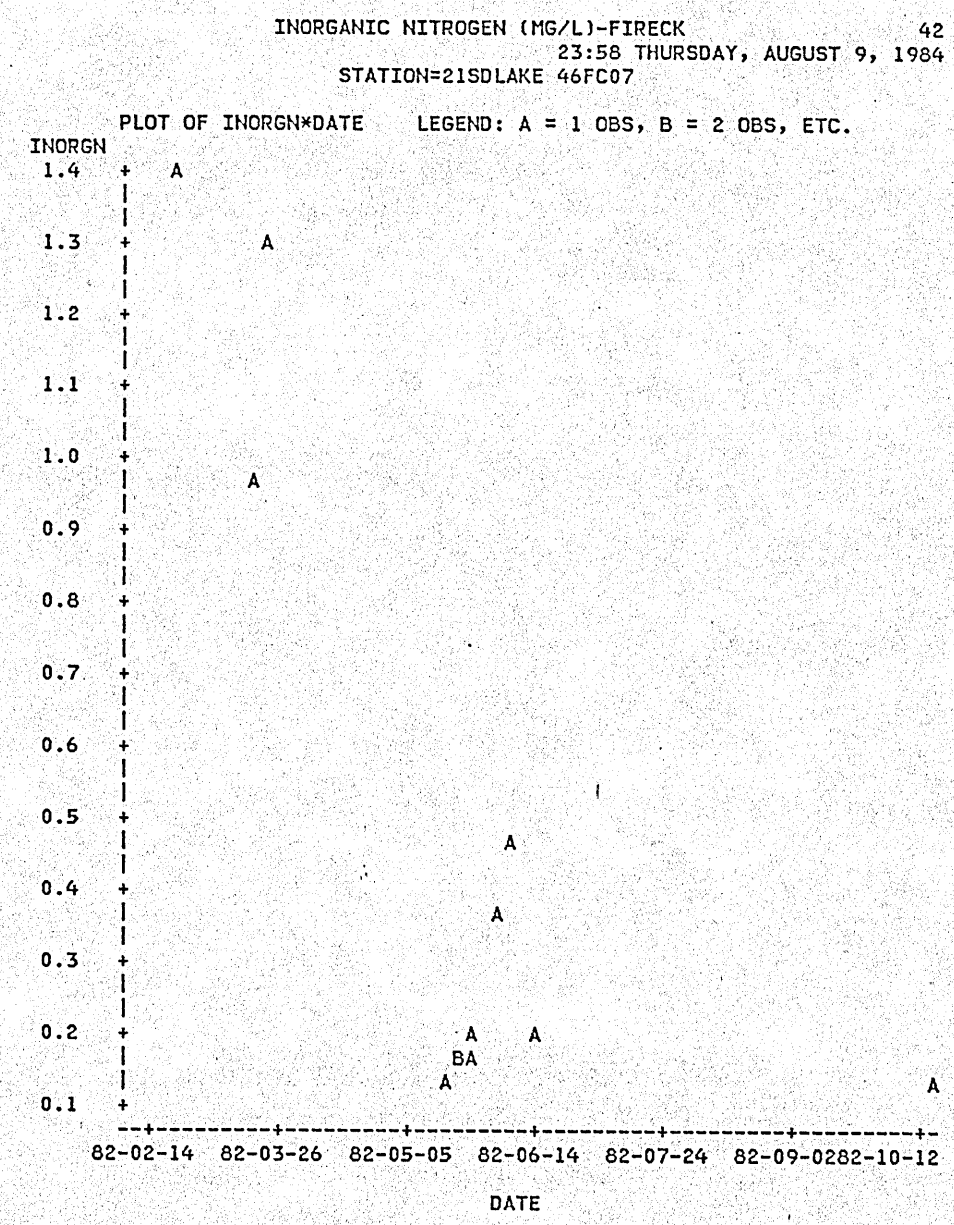


Figure IV-137.

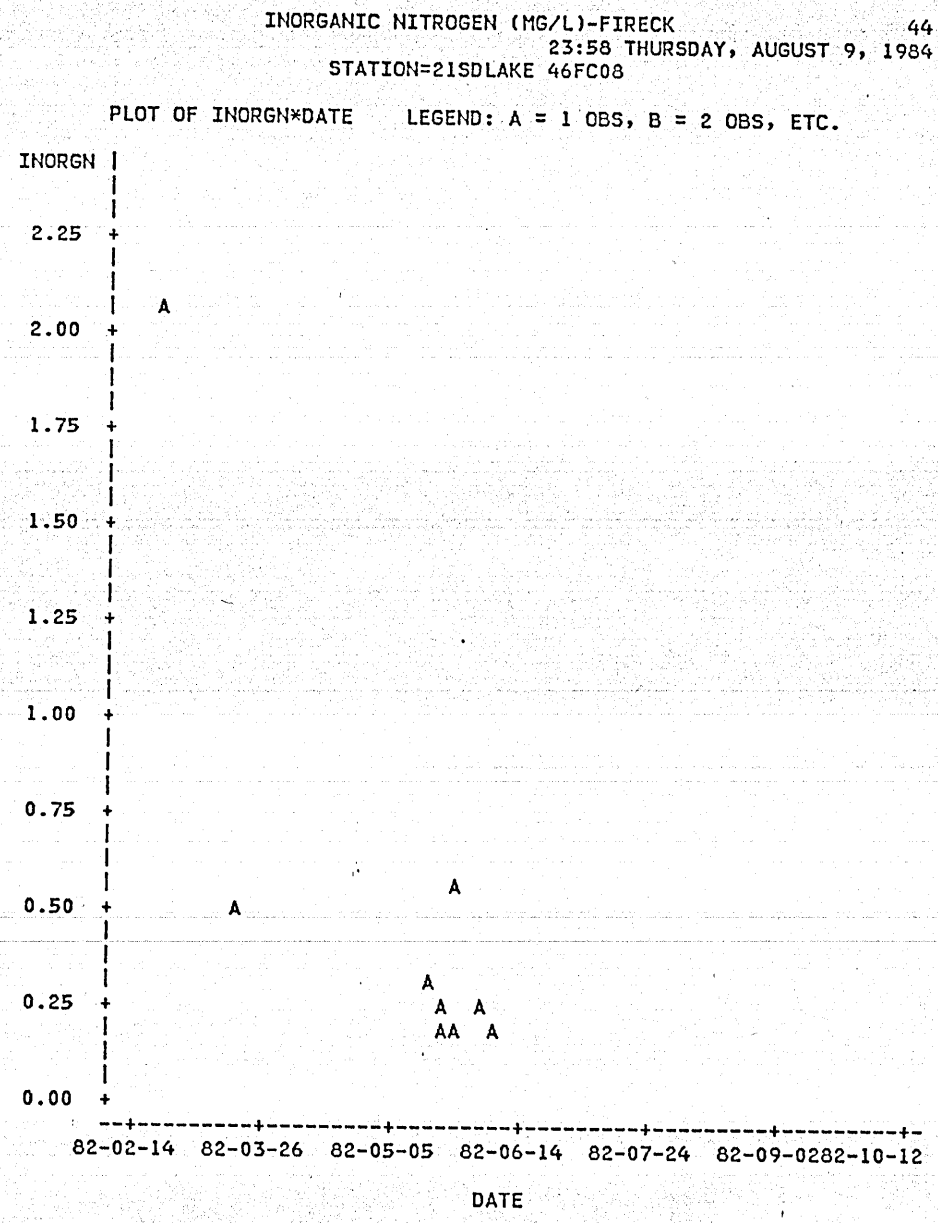


Figure IV-138.

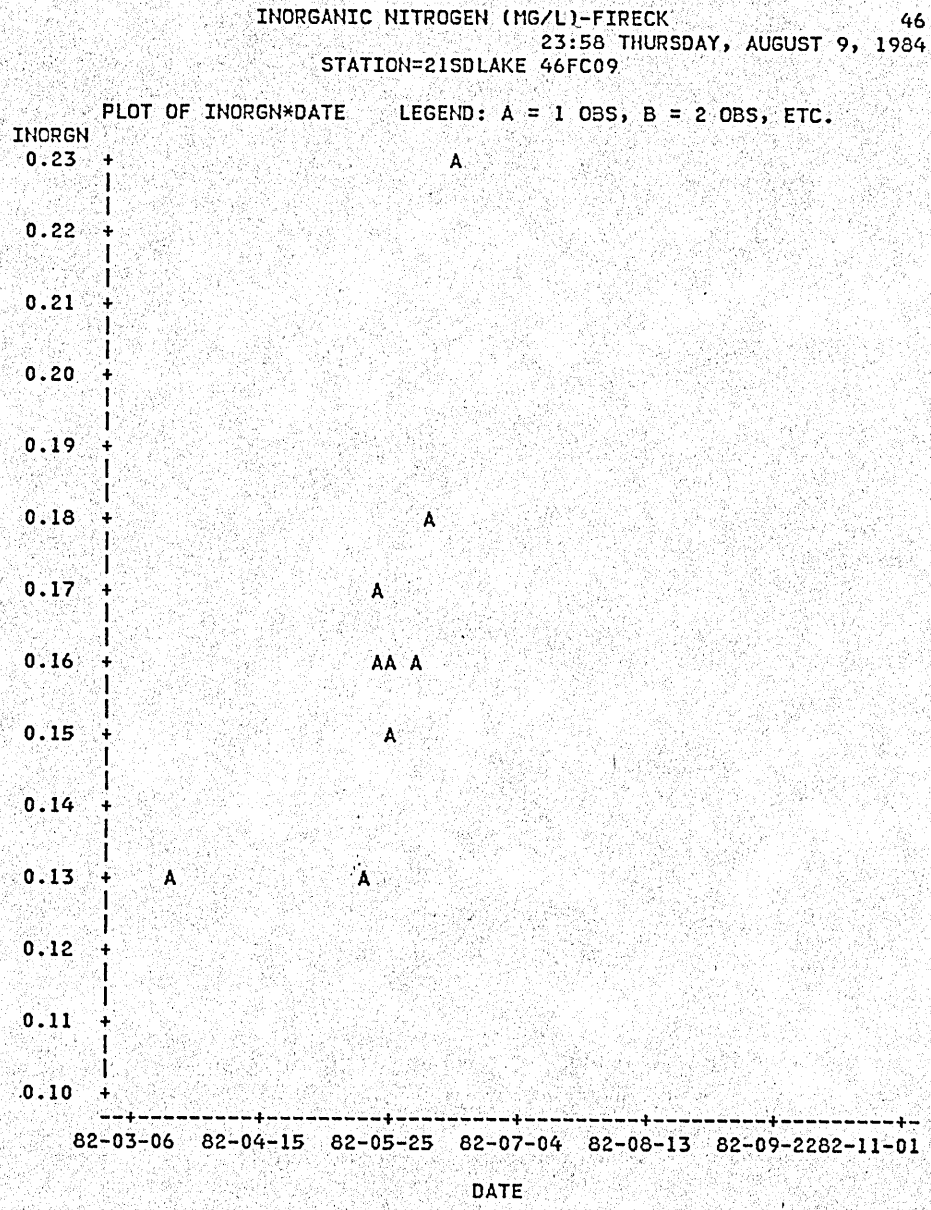


Figure IV-139.

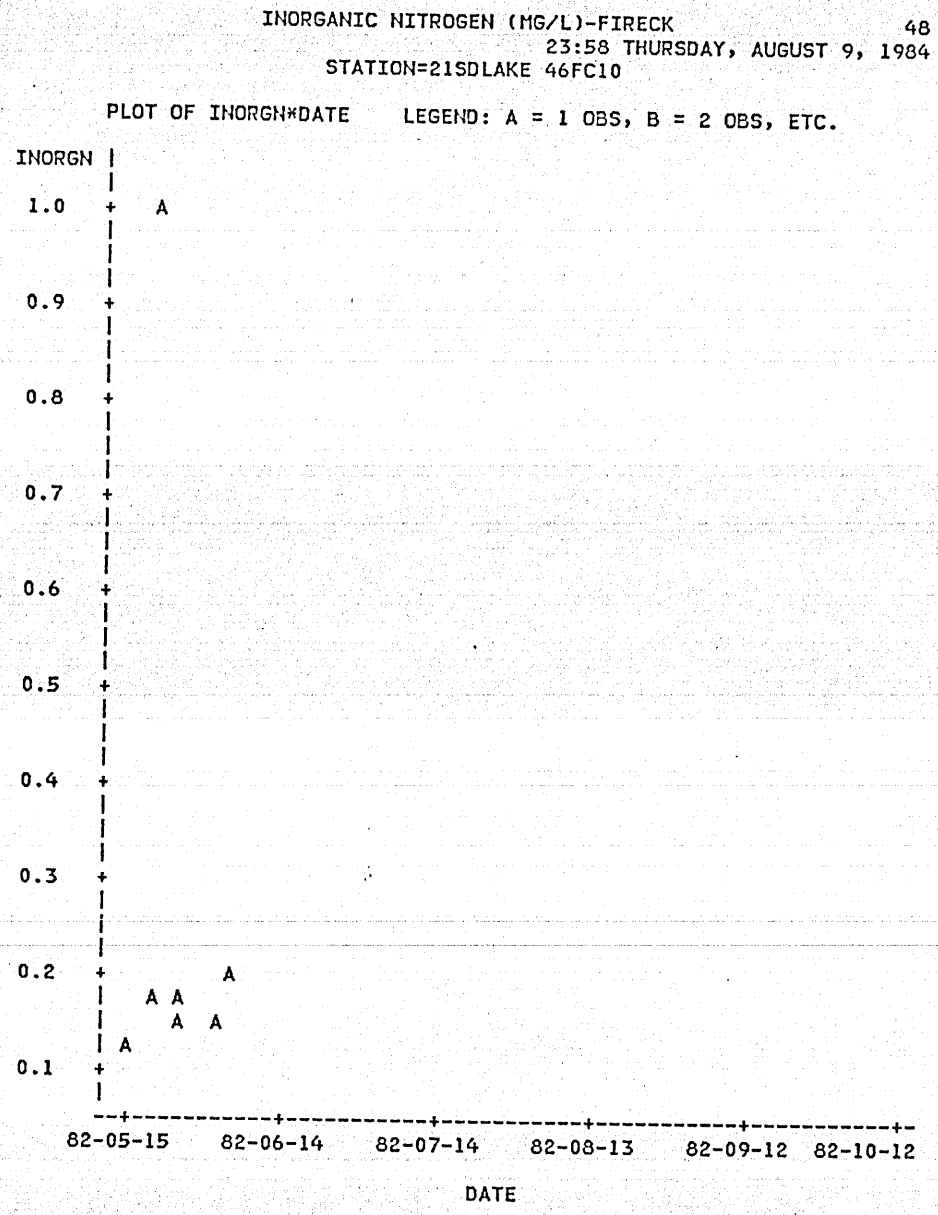


Figure IV-140.

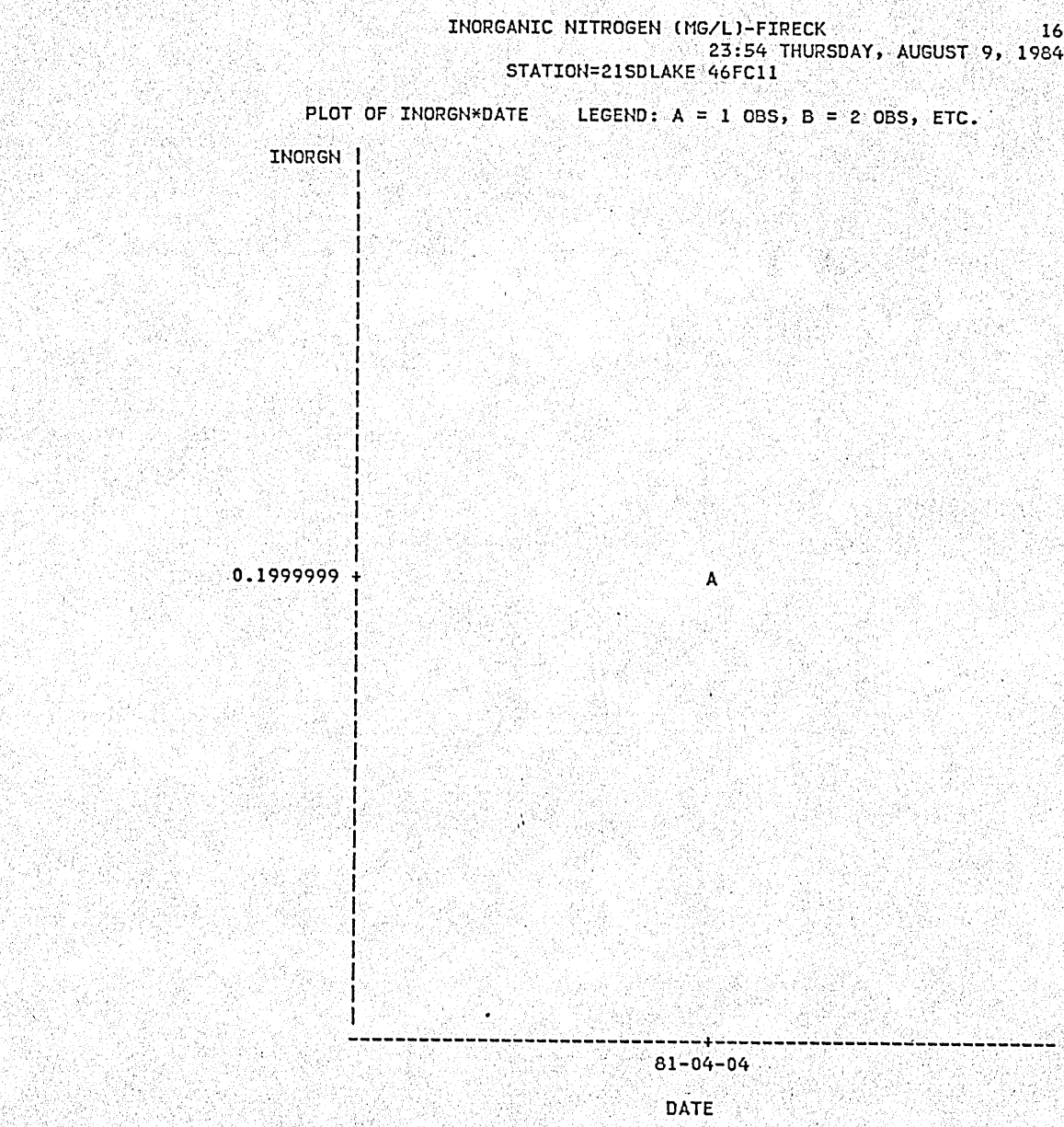


Figure IV-141.

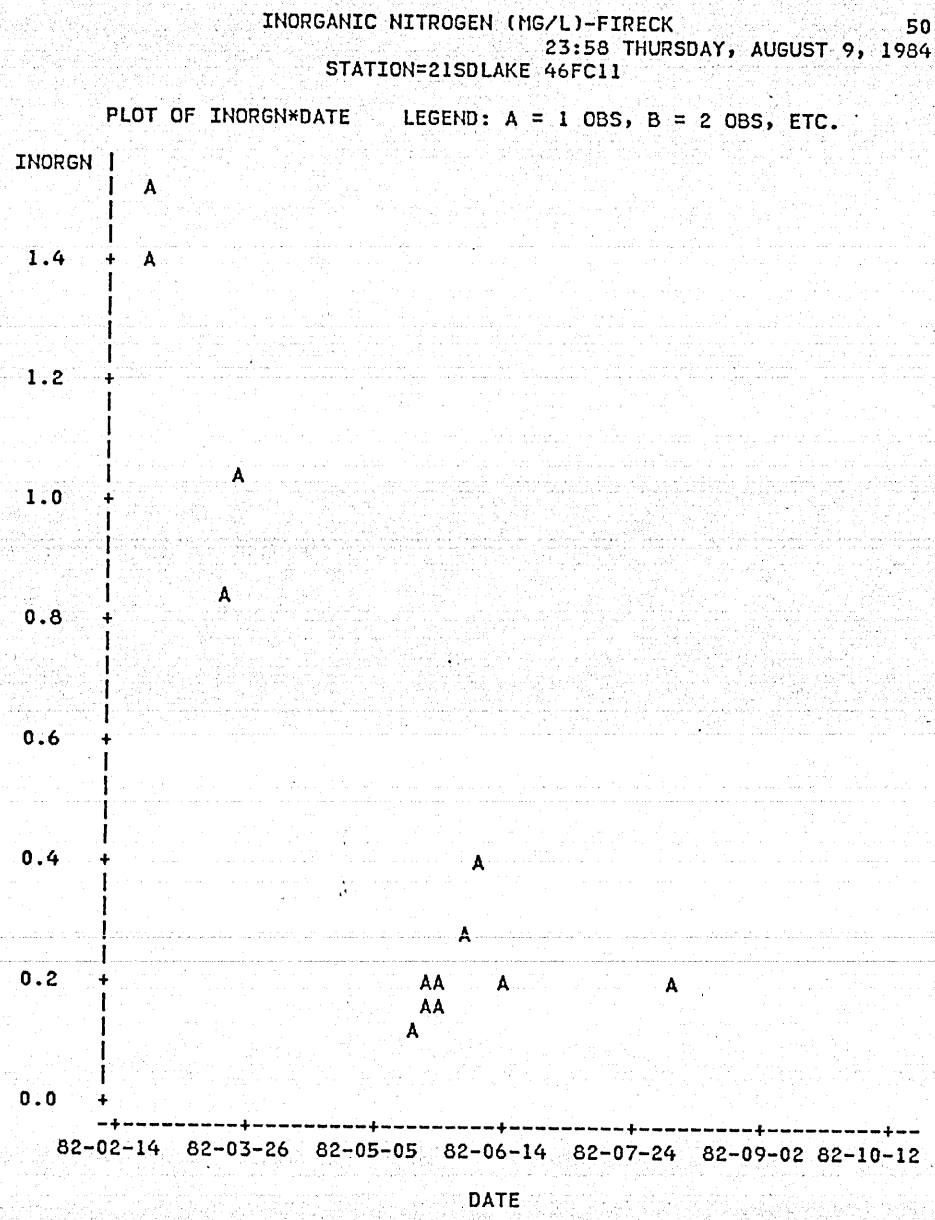


Figure IV-142.

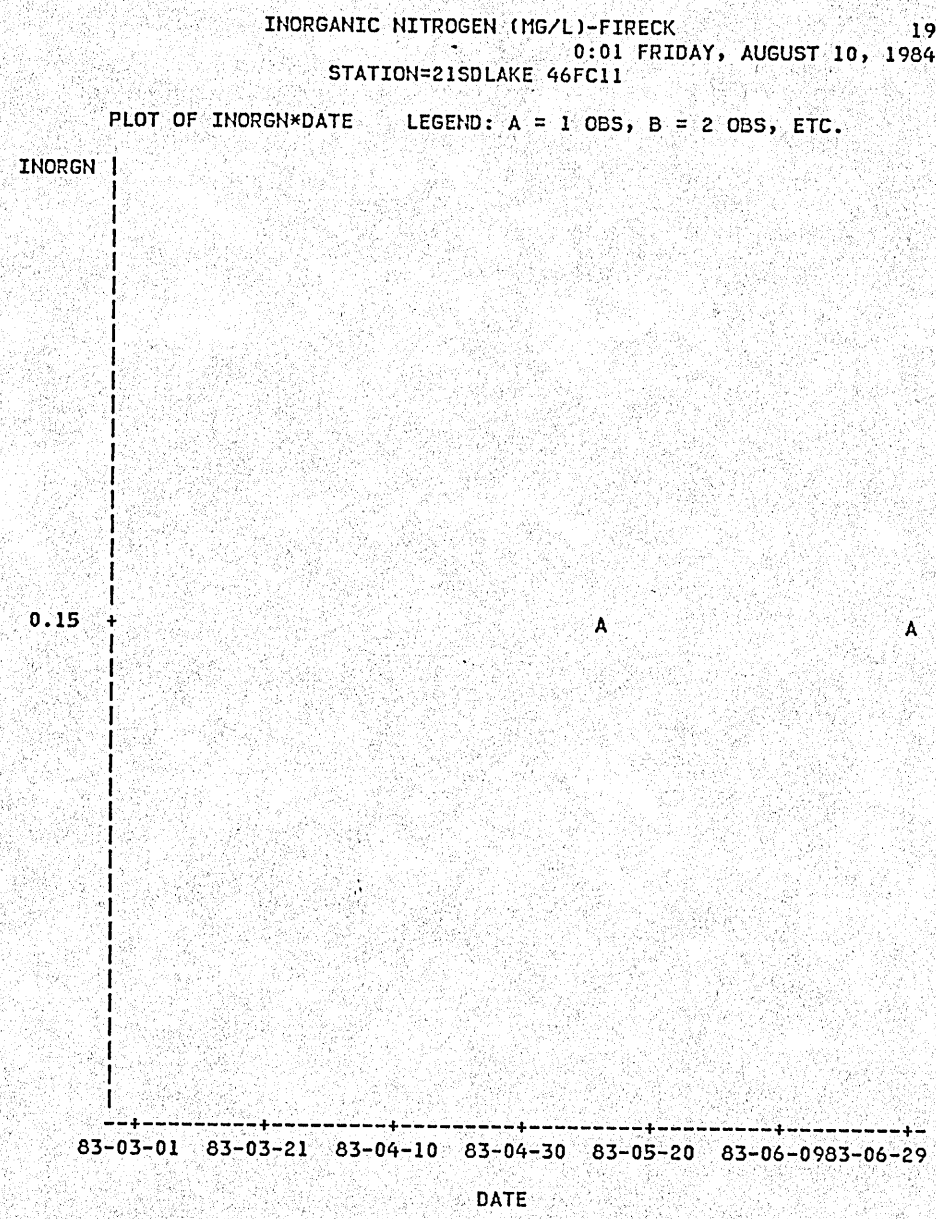


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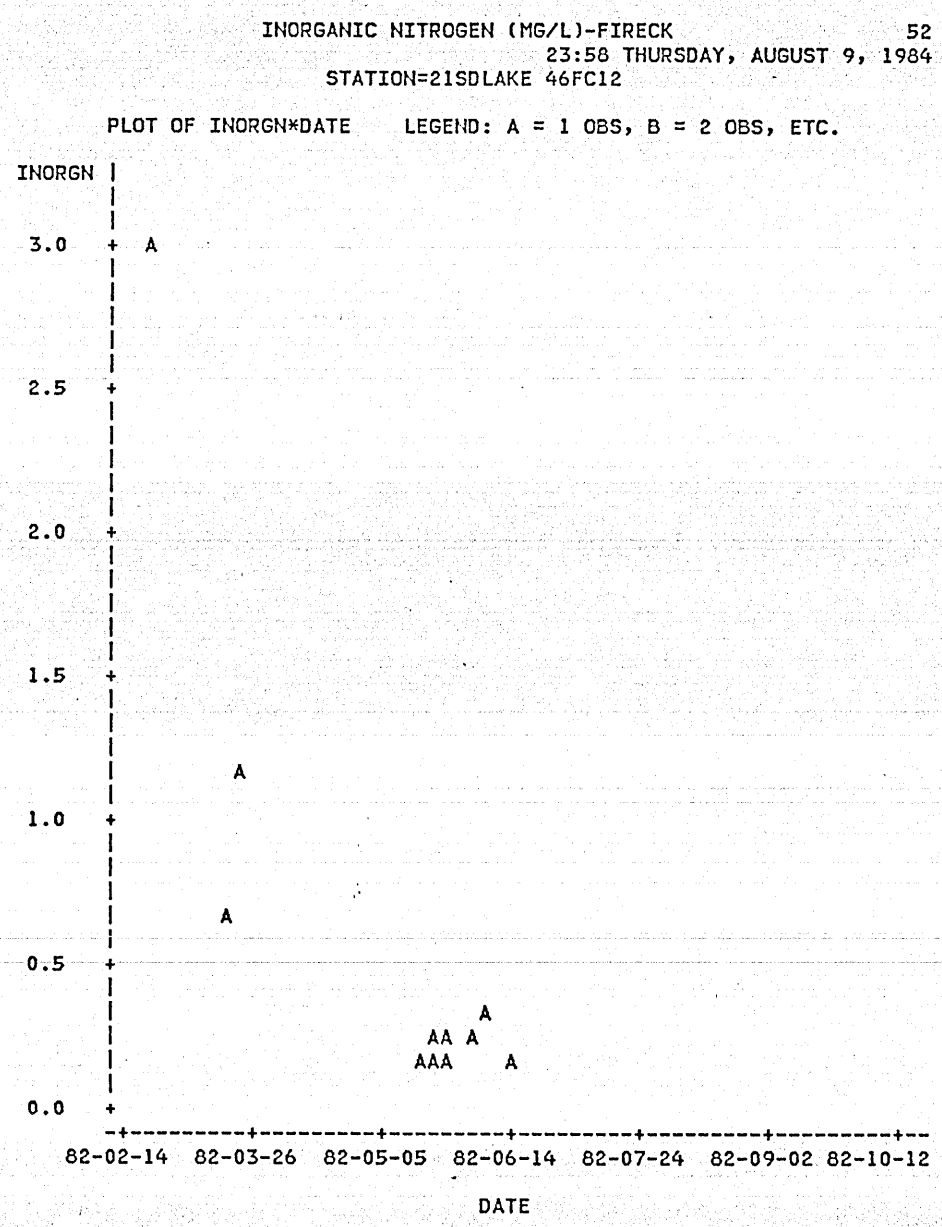


Figure IV-144.

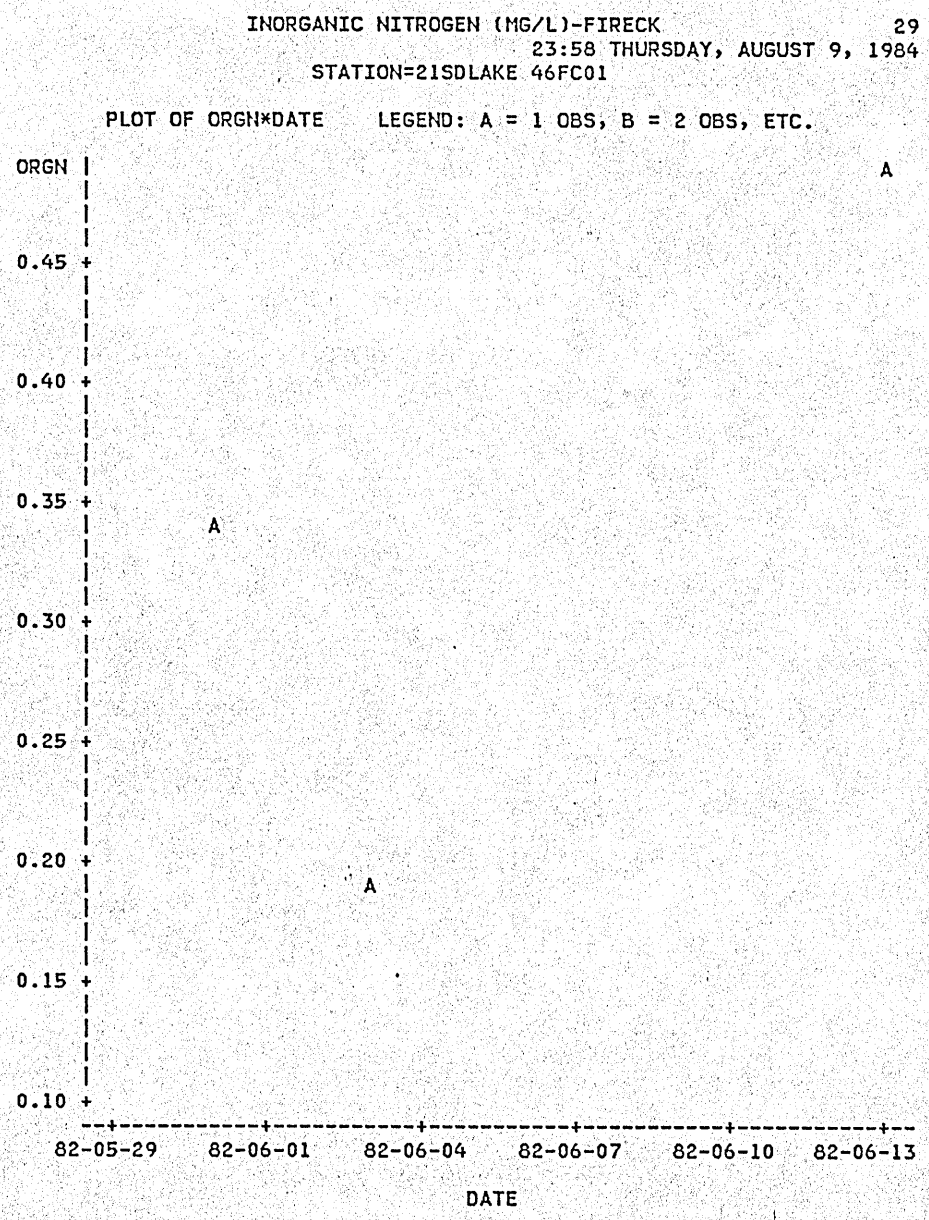


Figure IV-145.

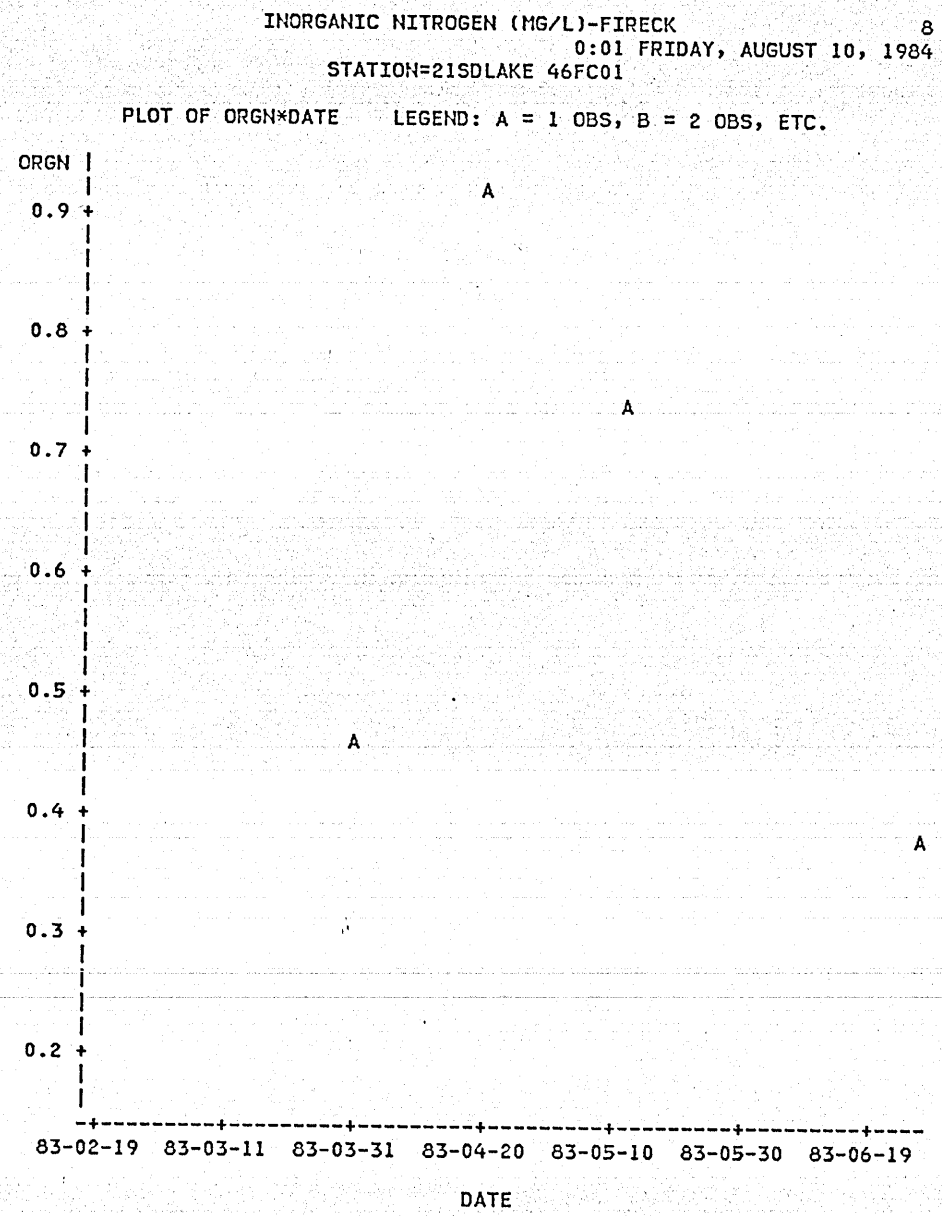


Figure IV-146.

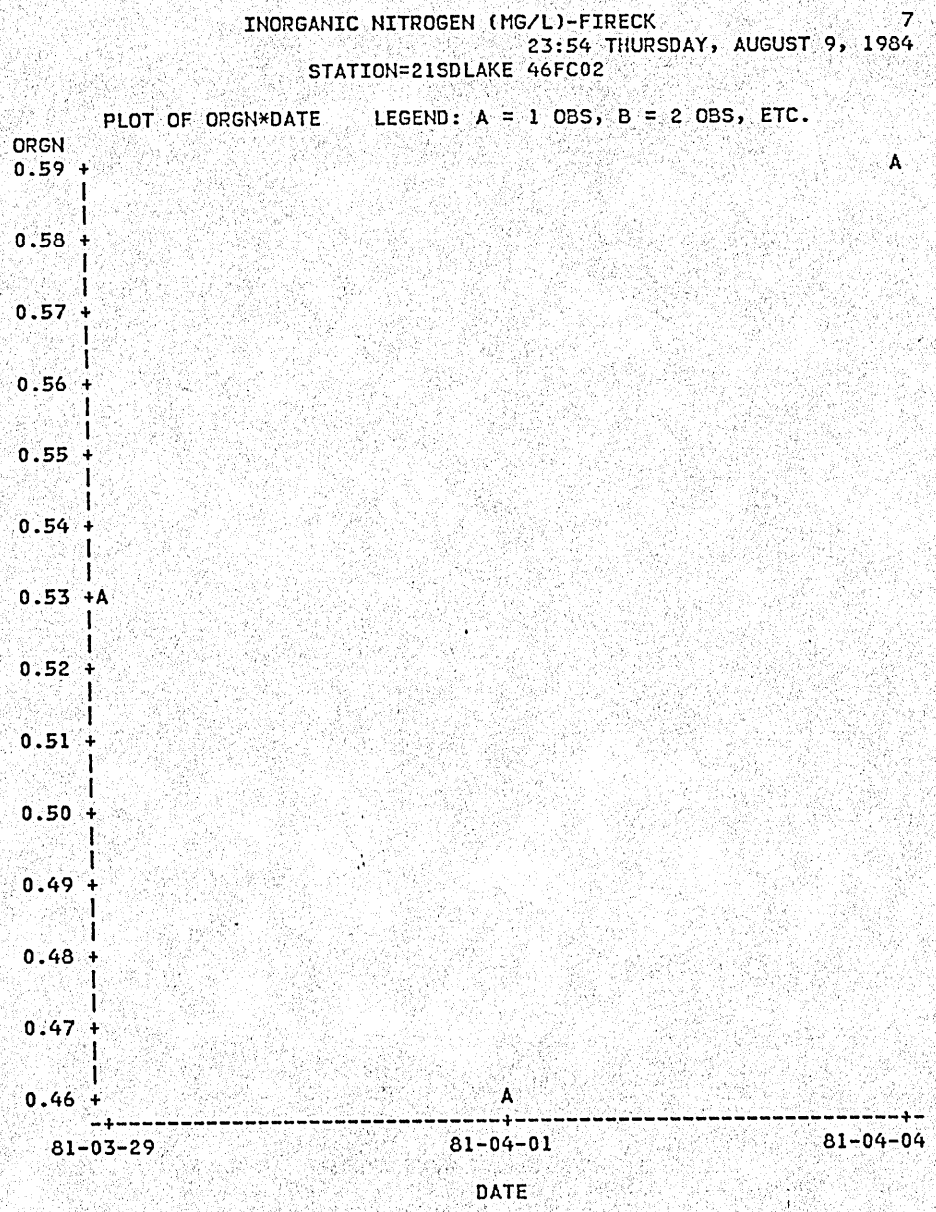


Figure IV-147.

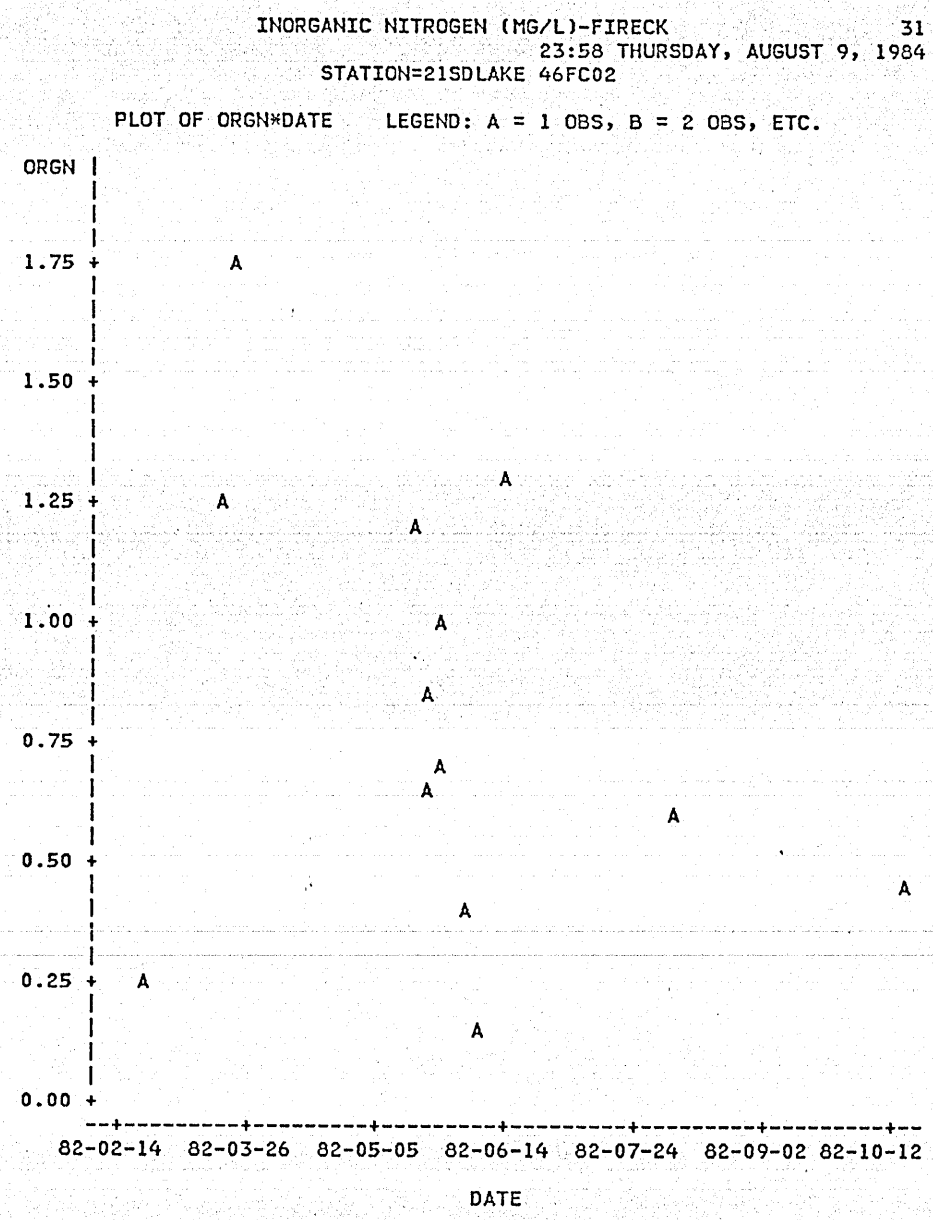


Figure IV-148.

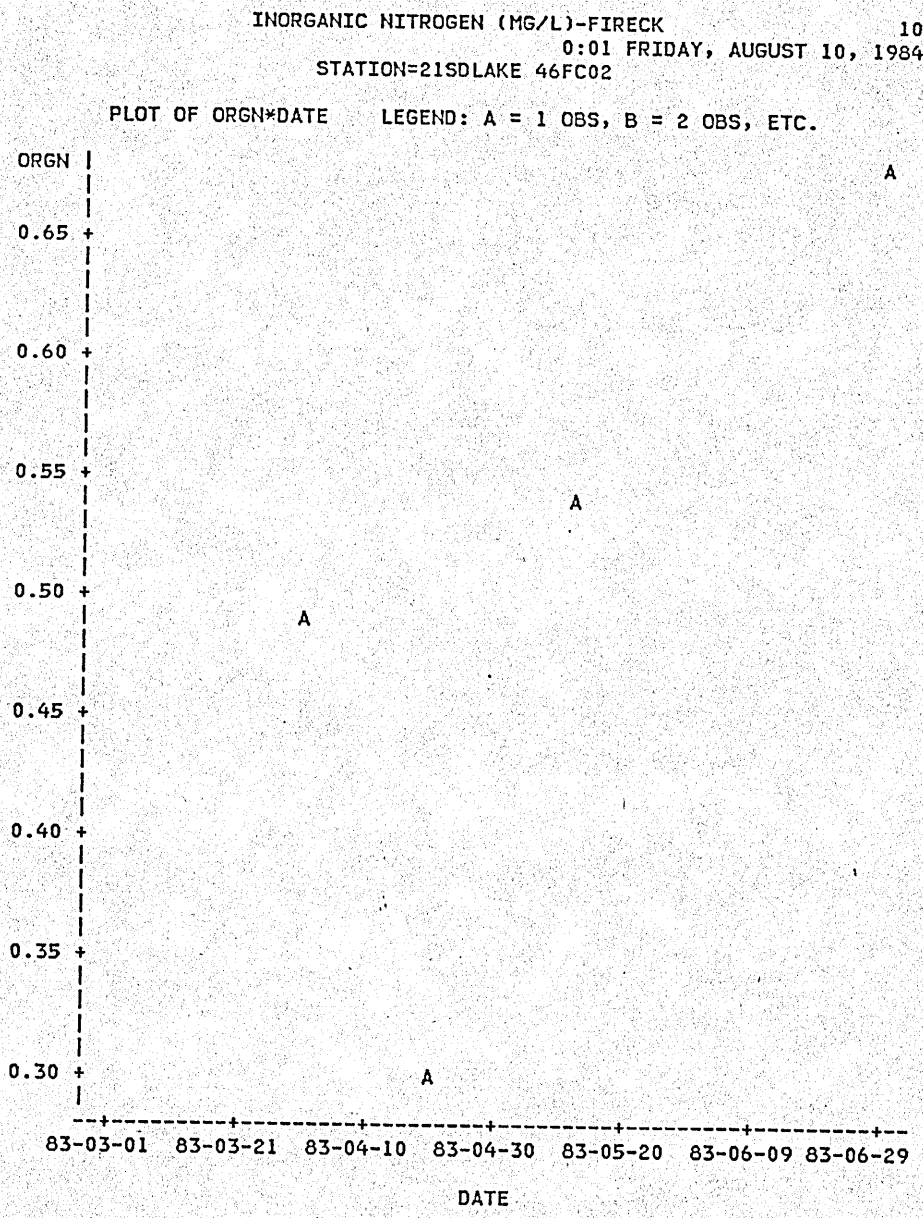


Figure IV-149.

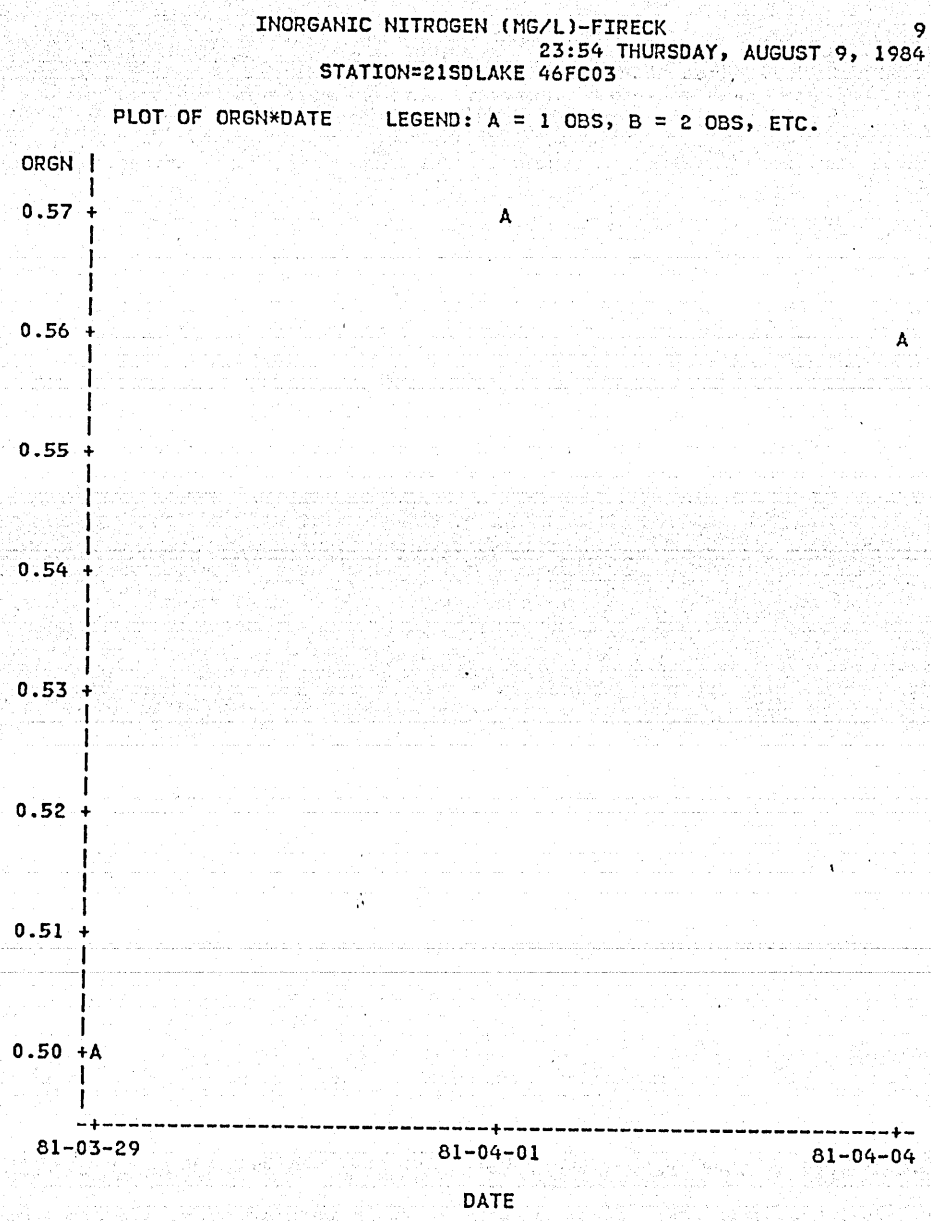


Figure IV-150.

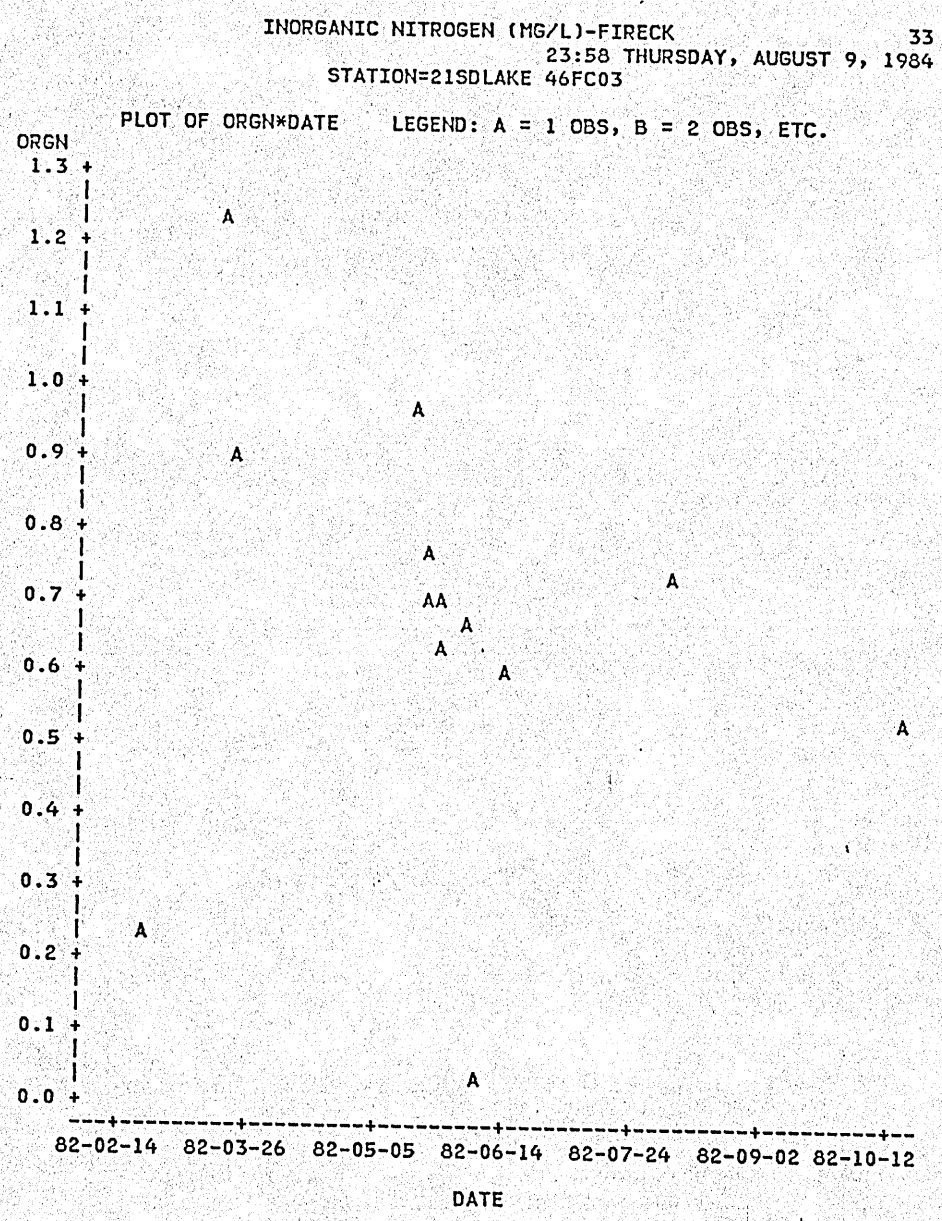


Figure IV-151.

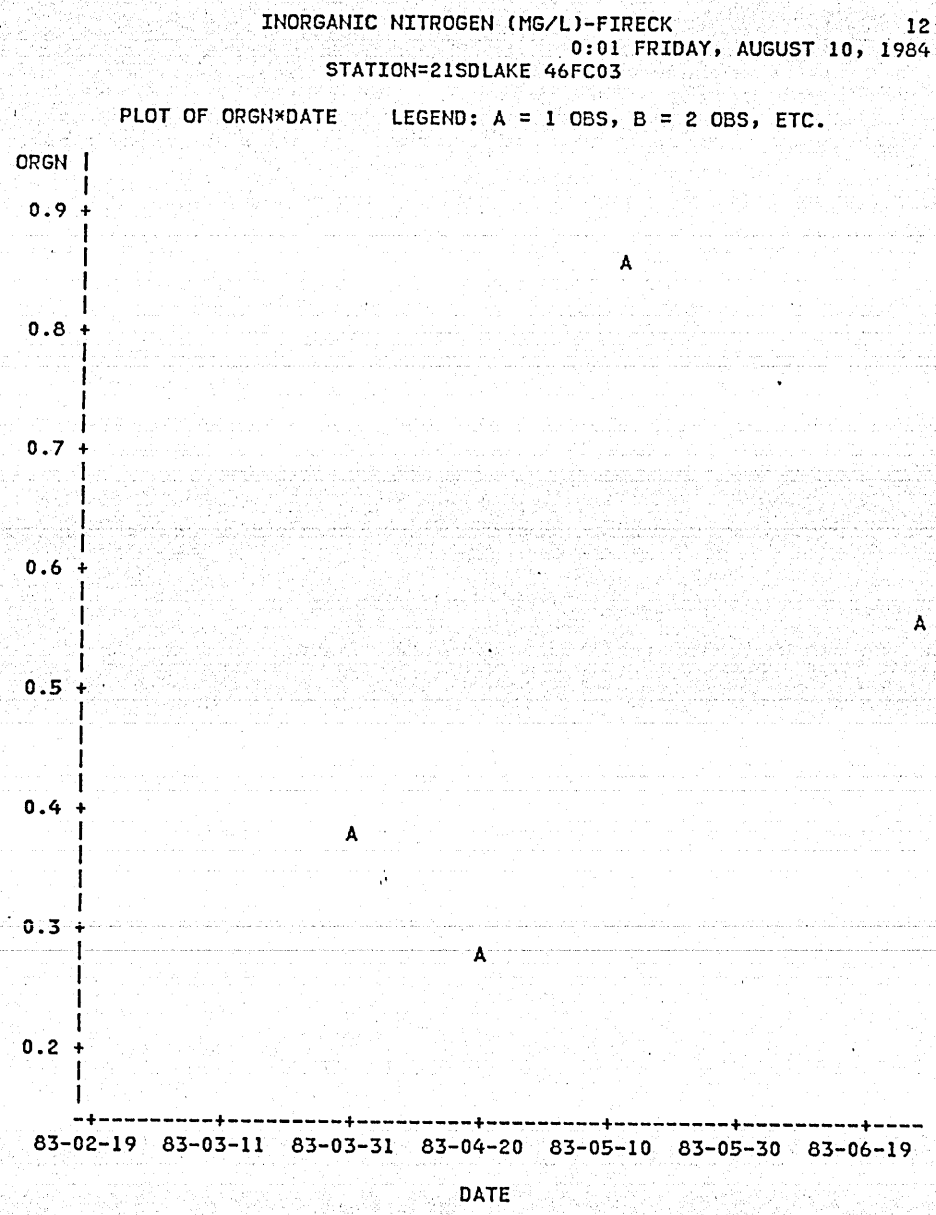


Figure IV-152.

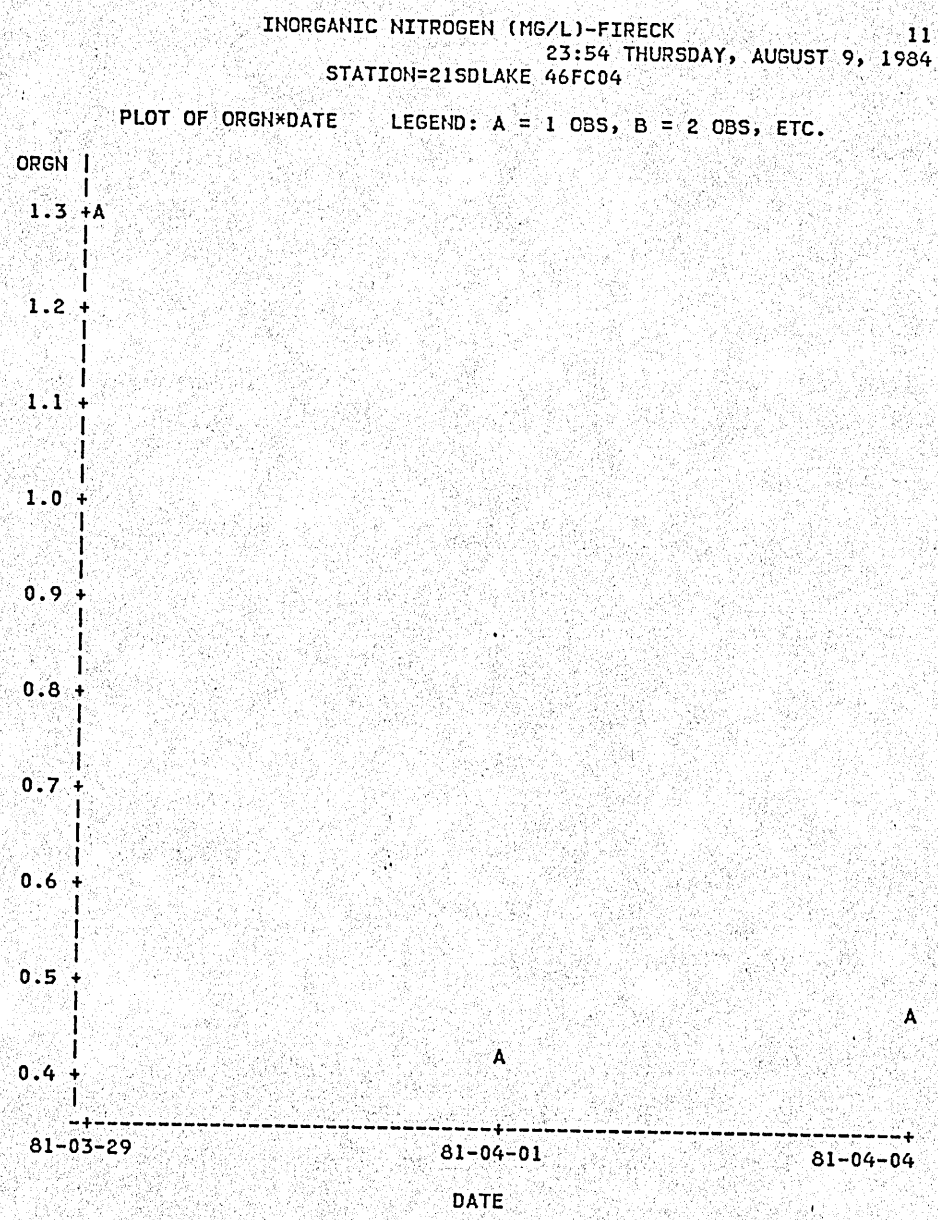


Figure IV-153.

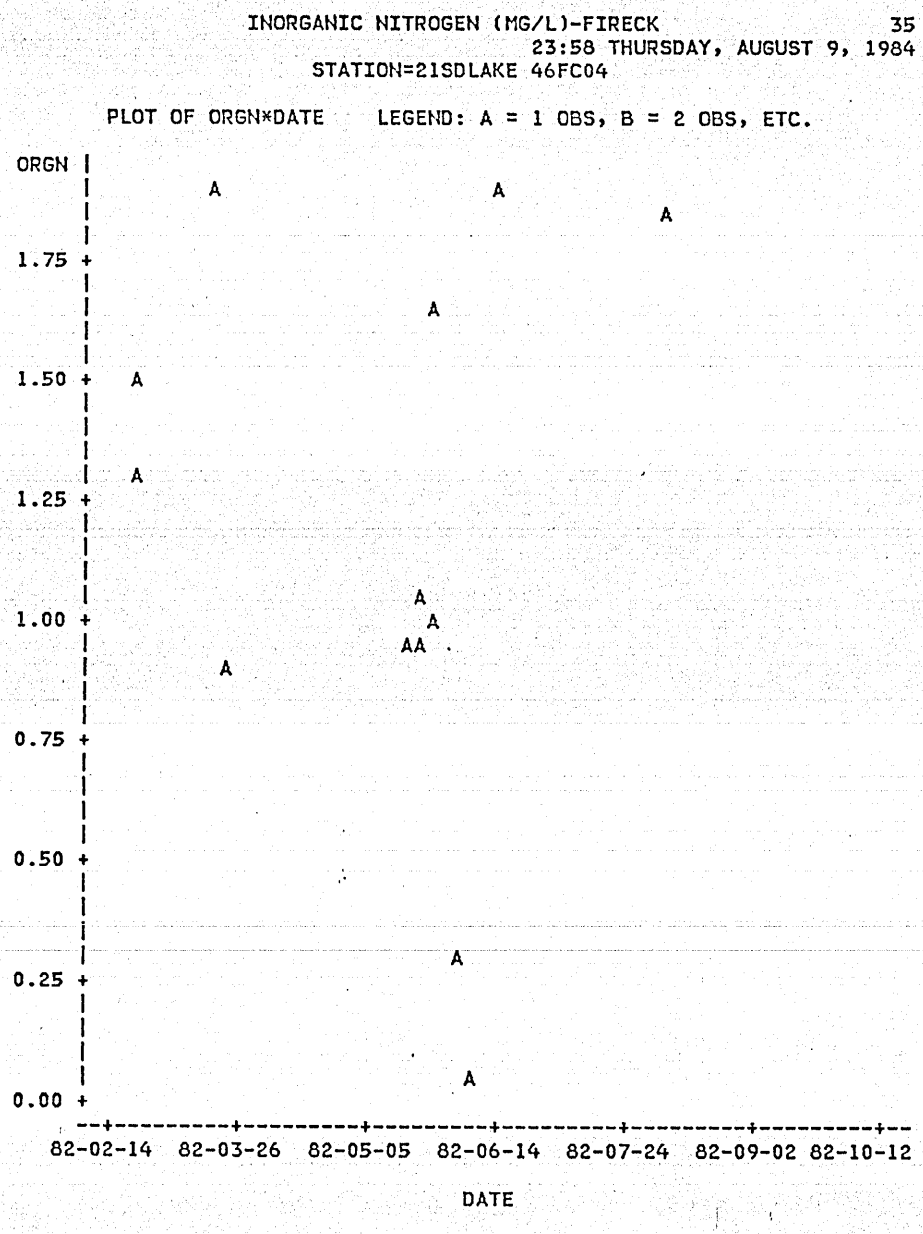


Figure IV-154.

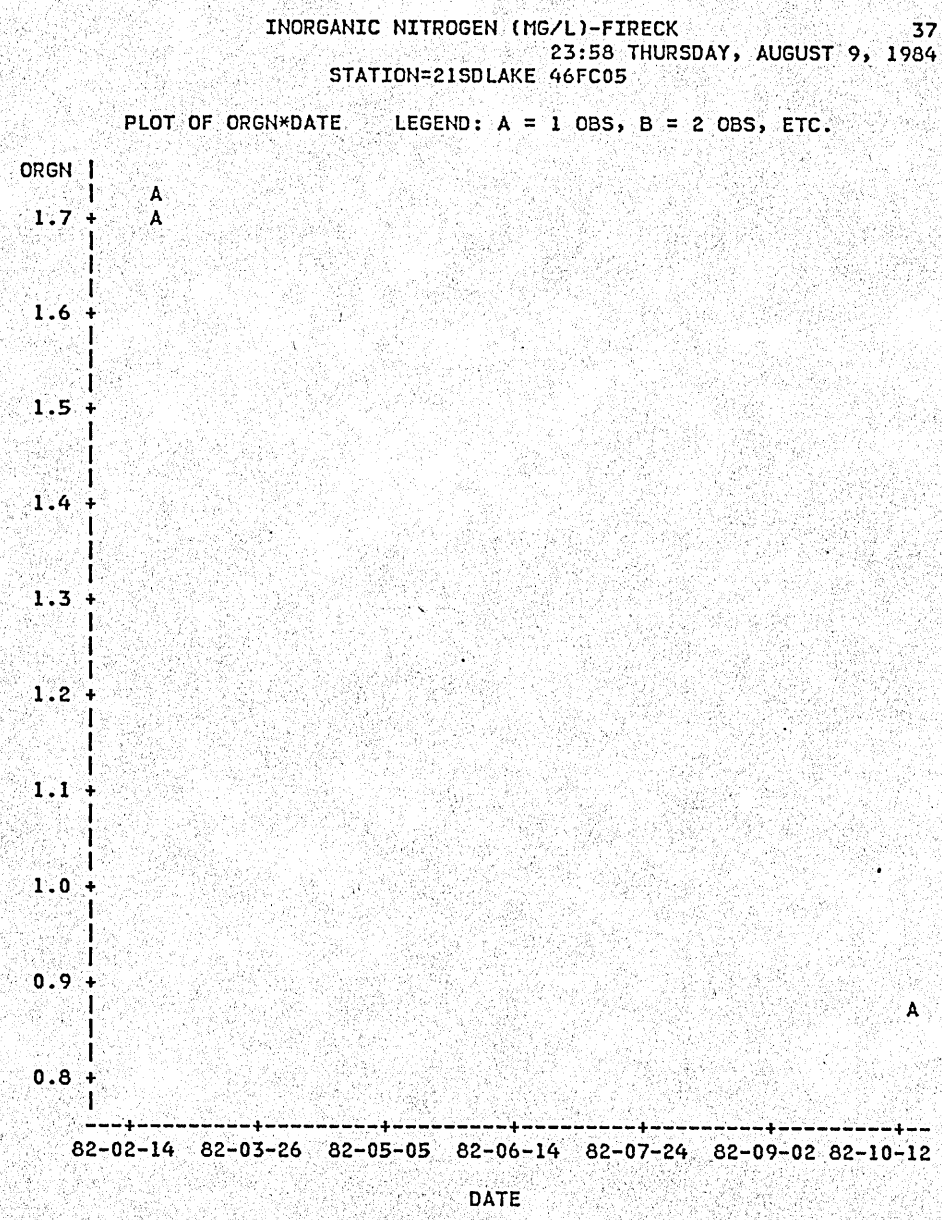


Figure IV-155.

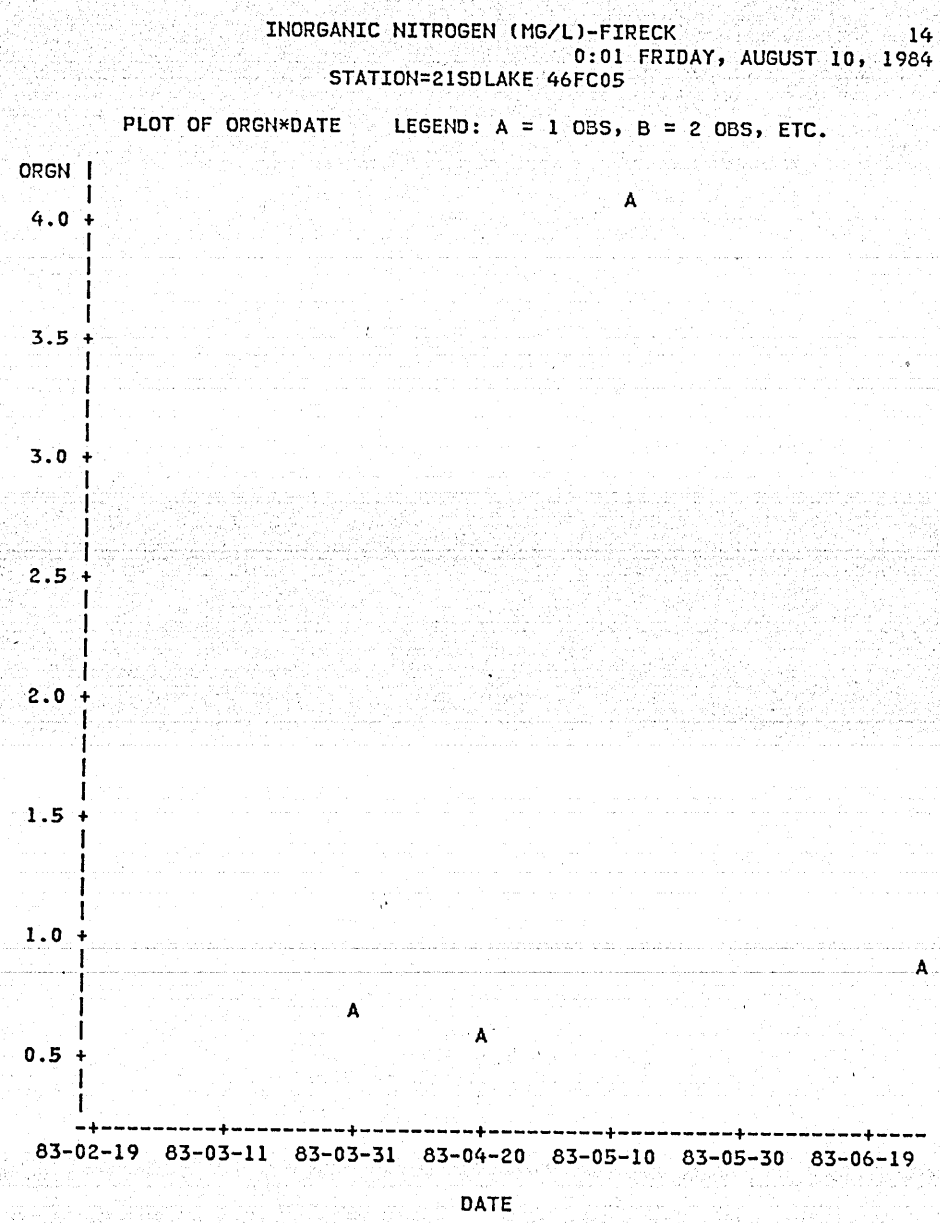


Figure IV-156.

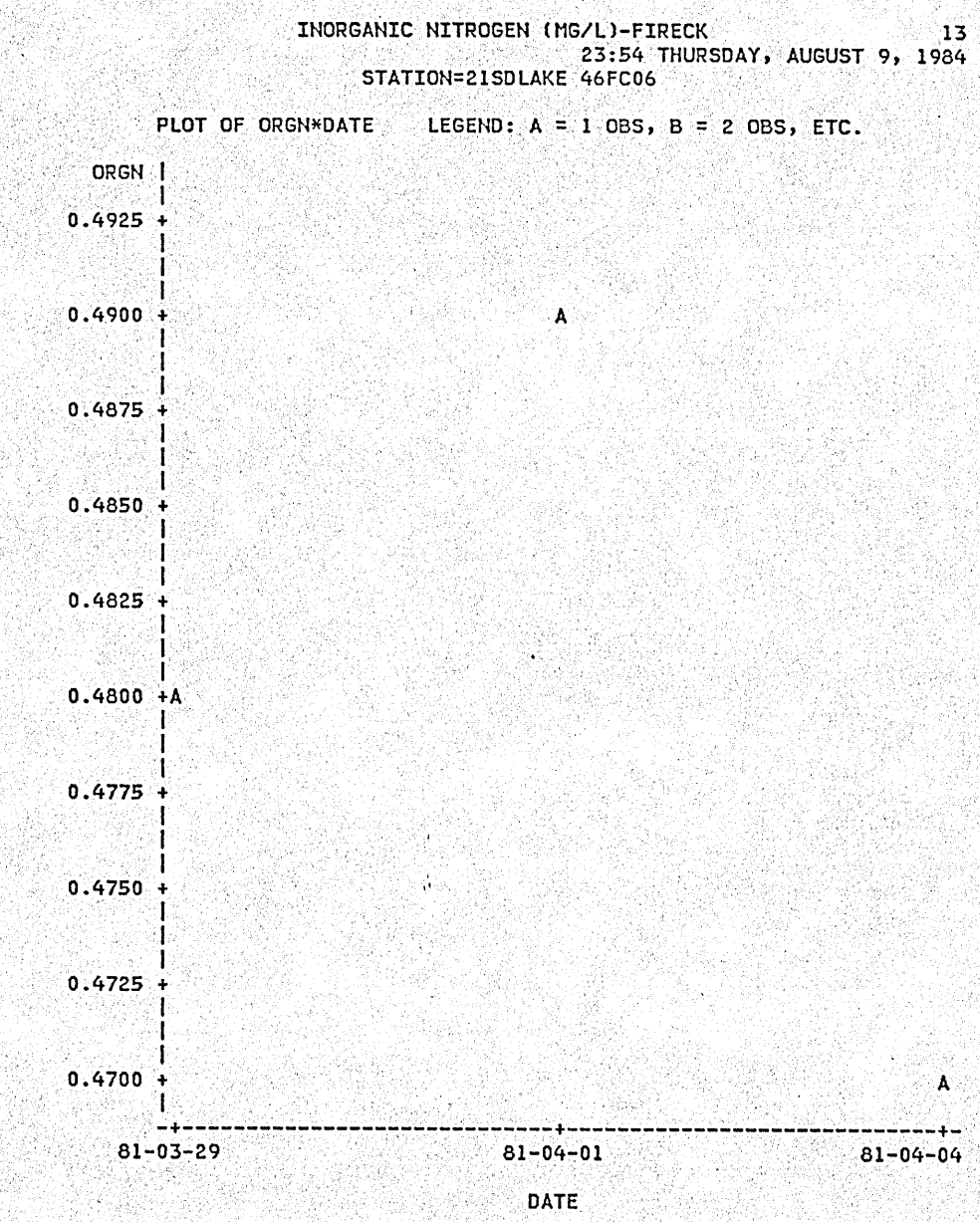


Figure IV-157.

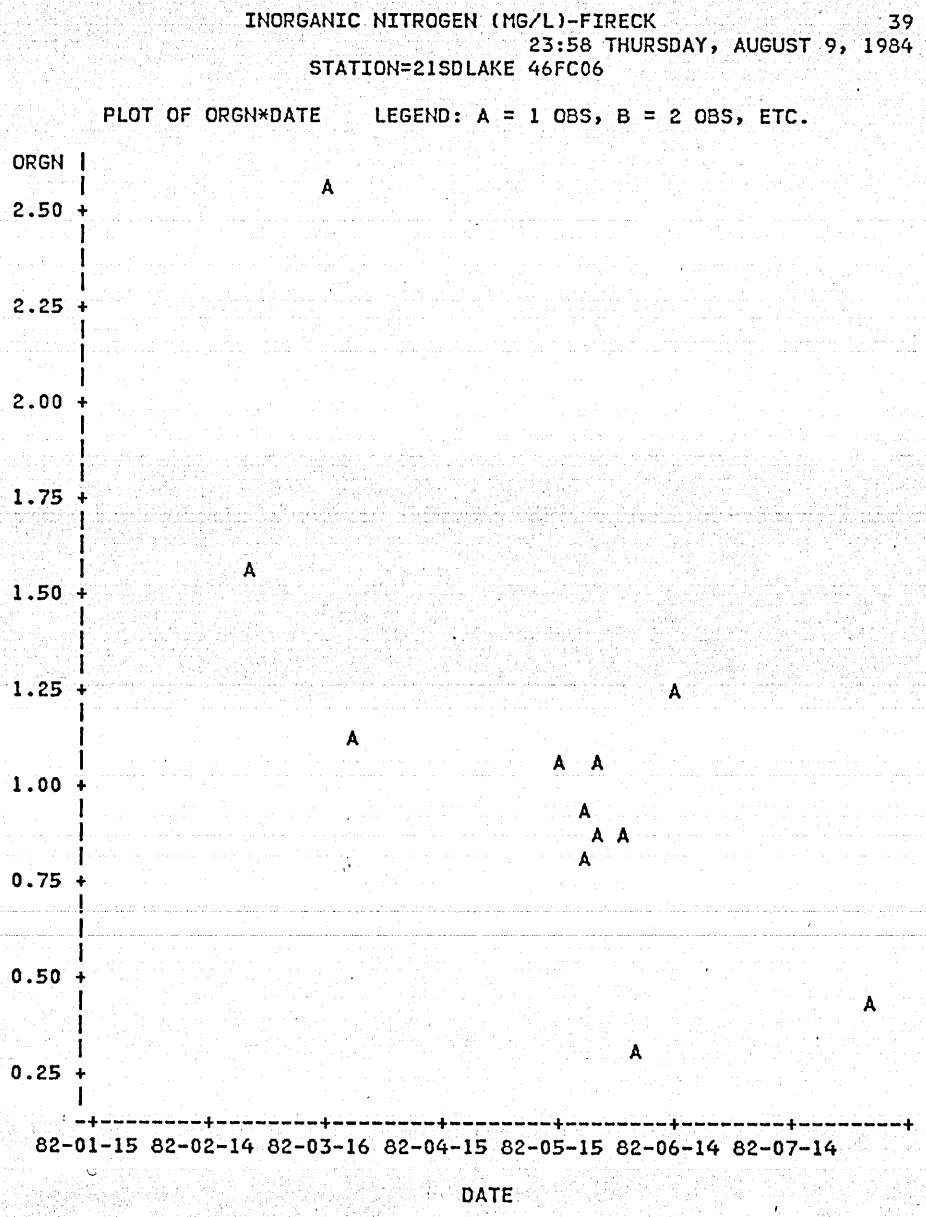


Figure IV-158.

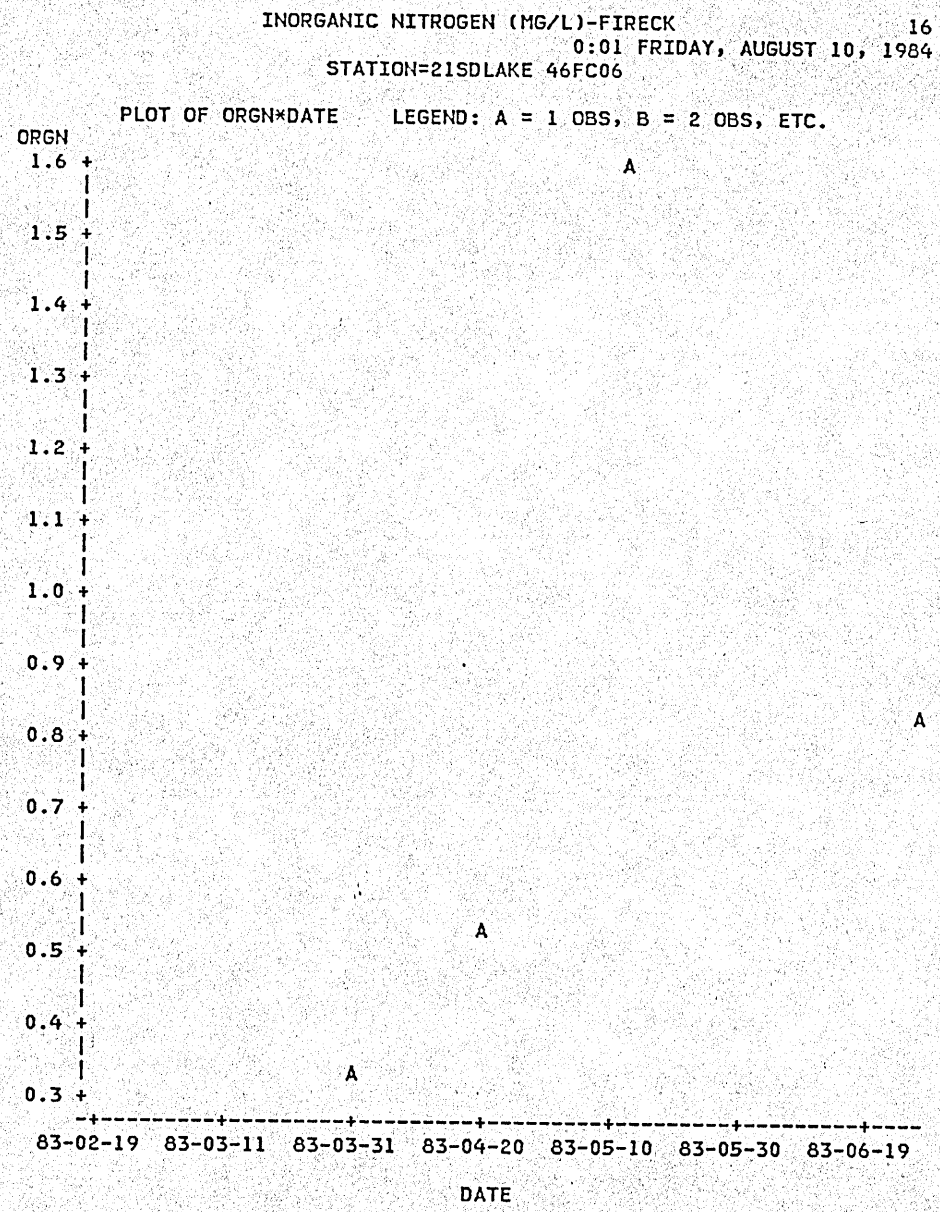


Figure IV-159.

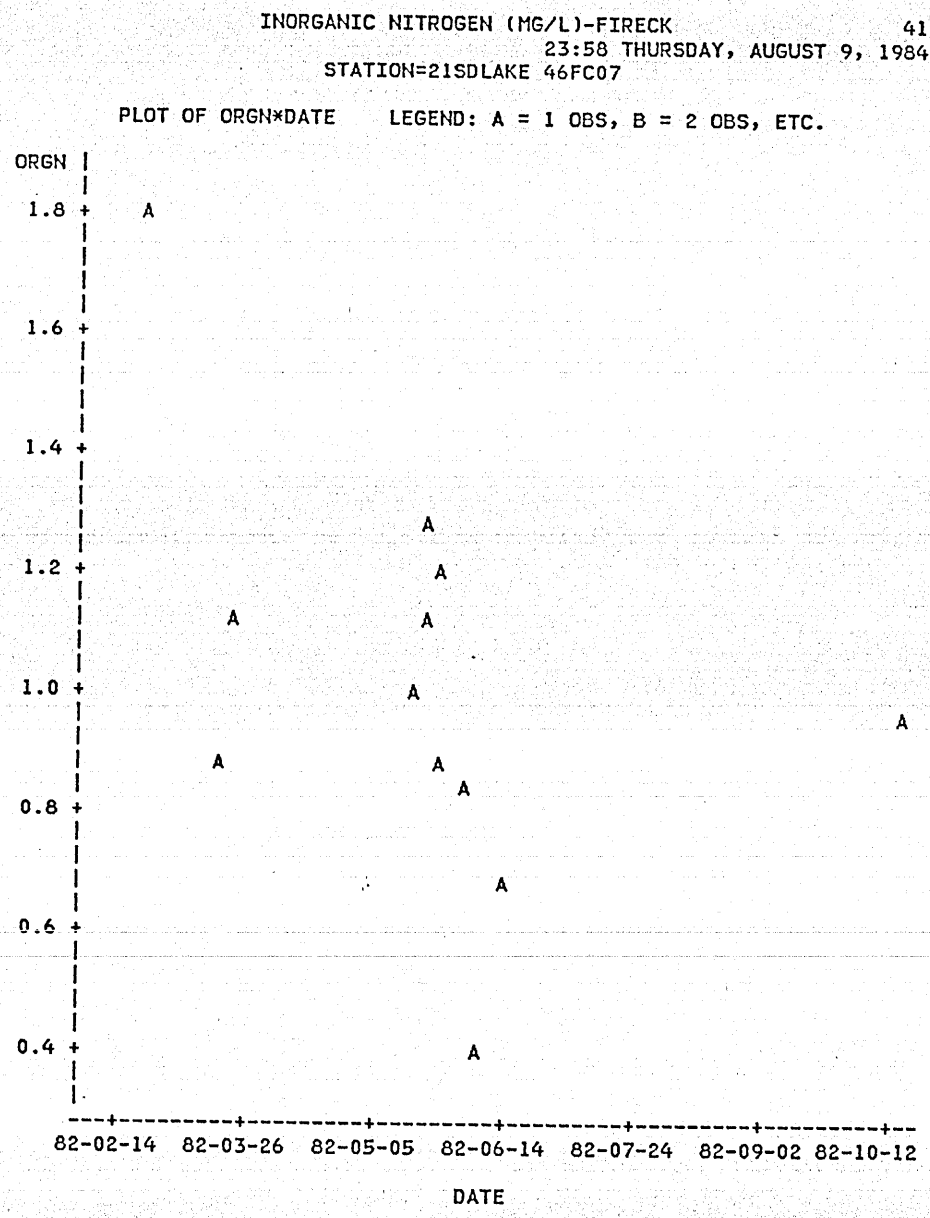


Figure IV-160.

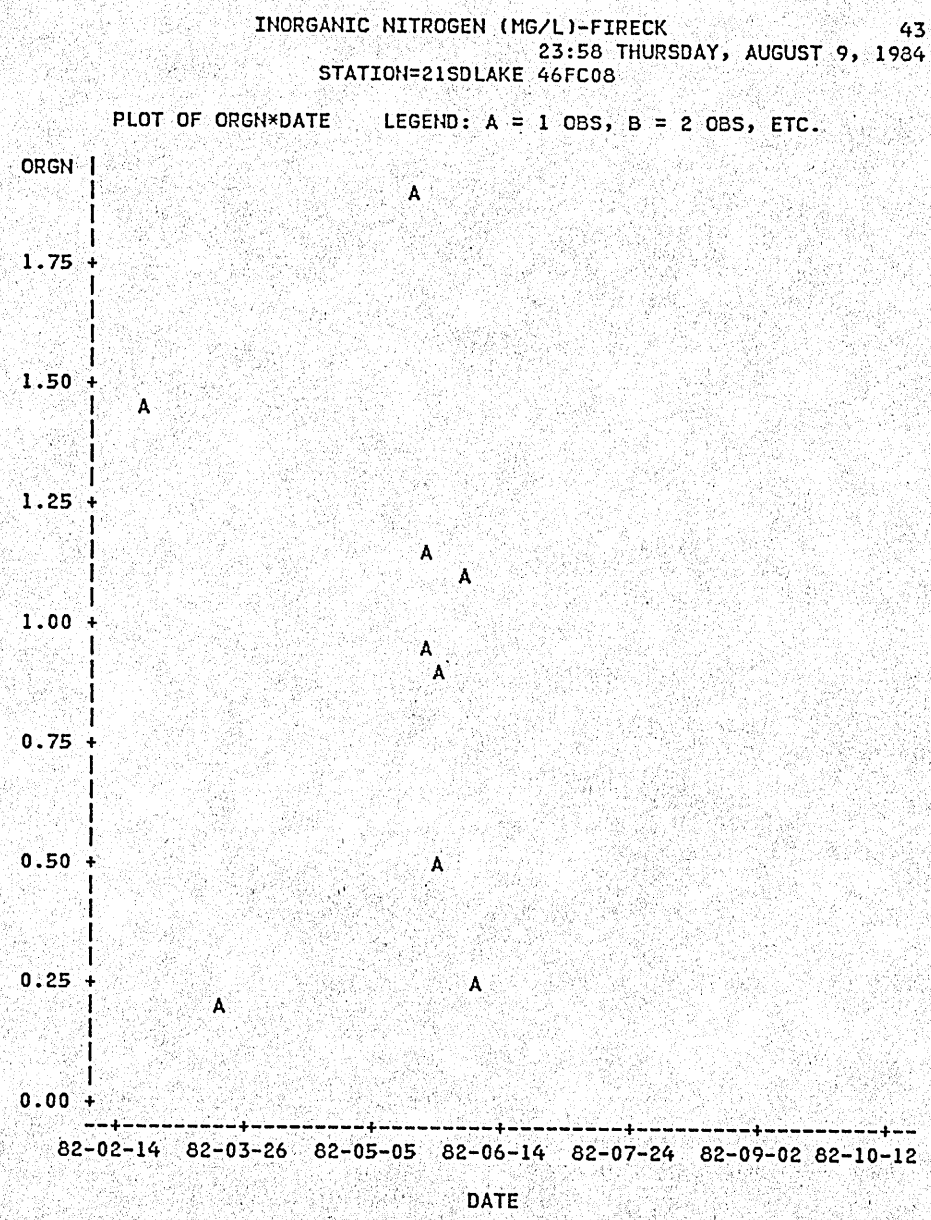


Figure IV-161.

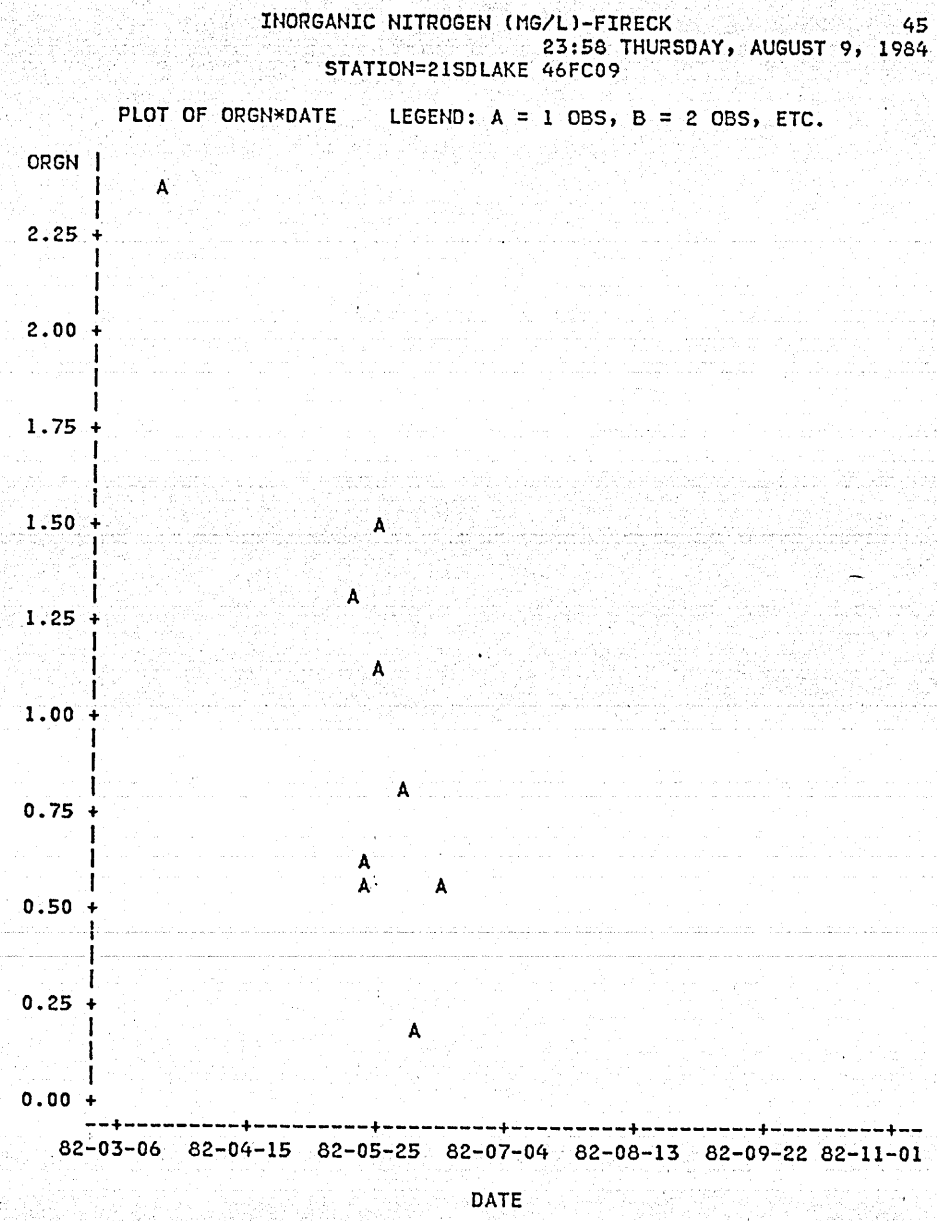


Figure IV-162.

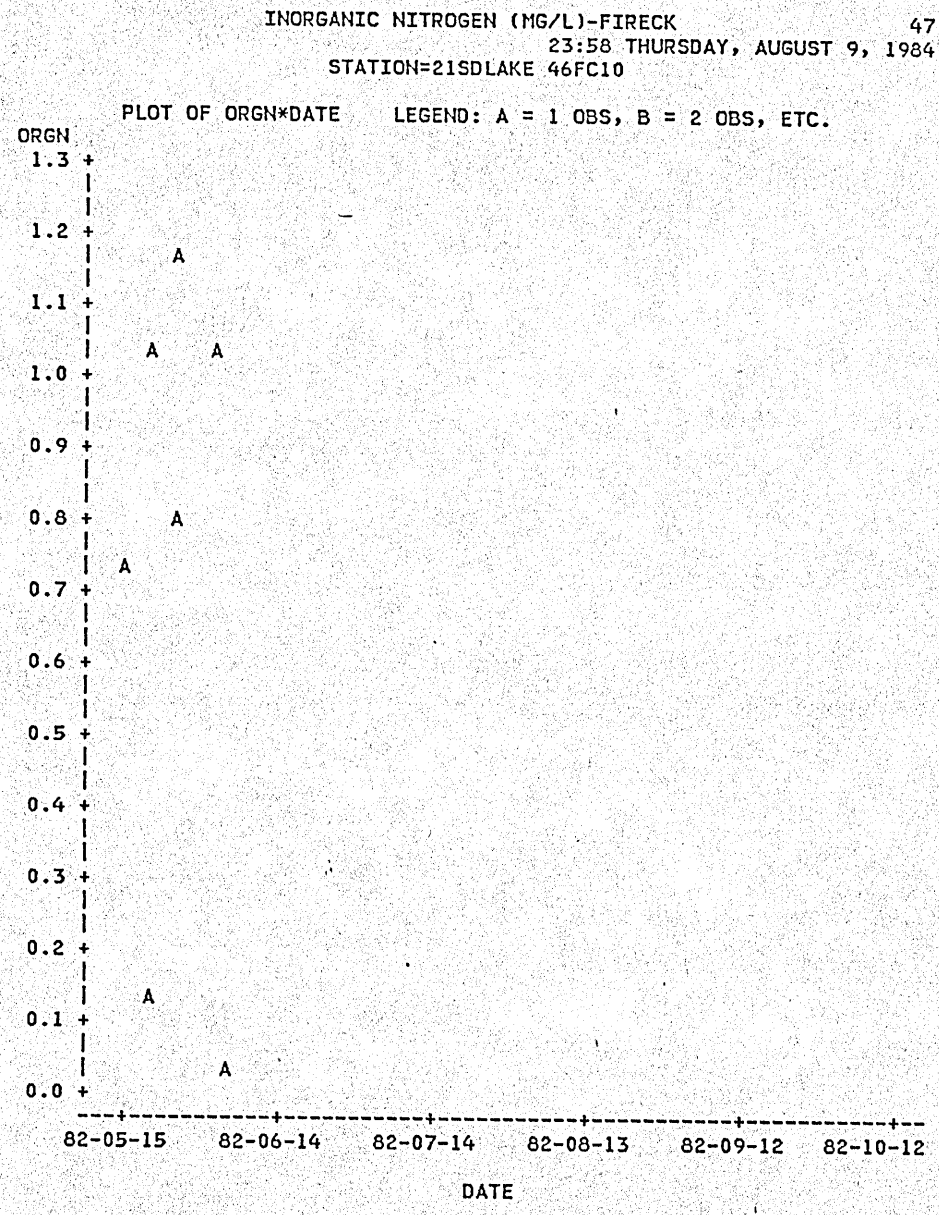


Figure IV-163.

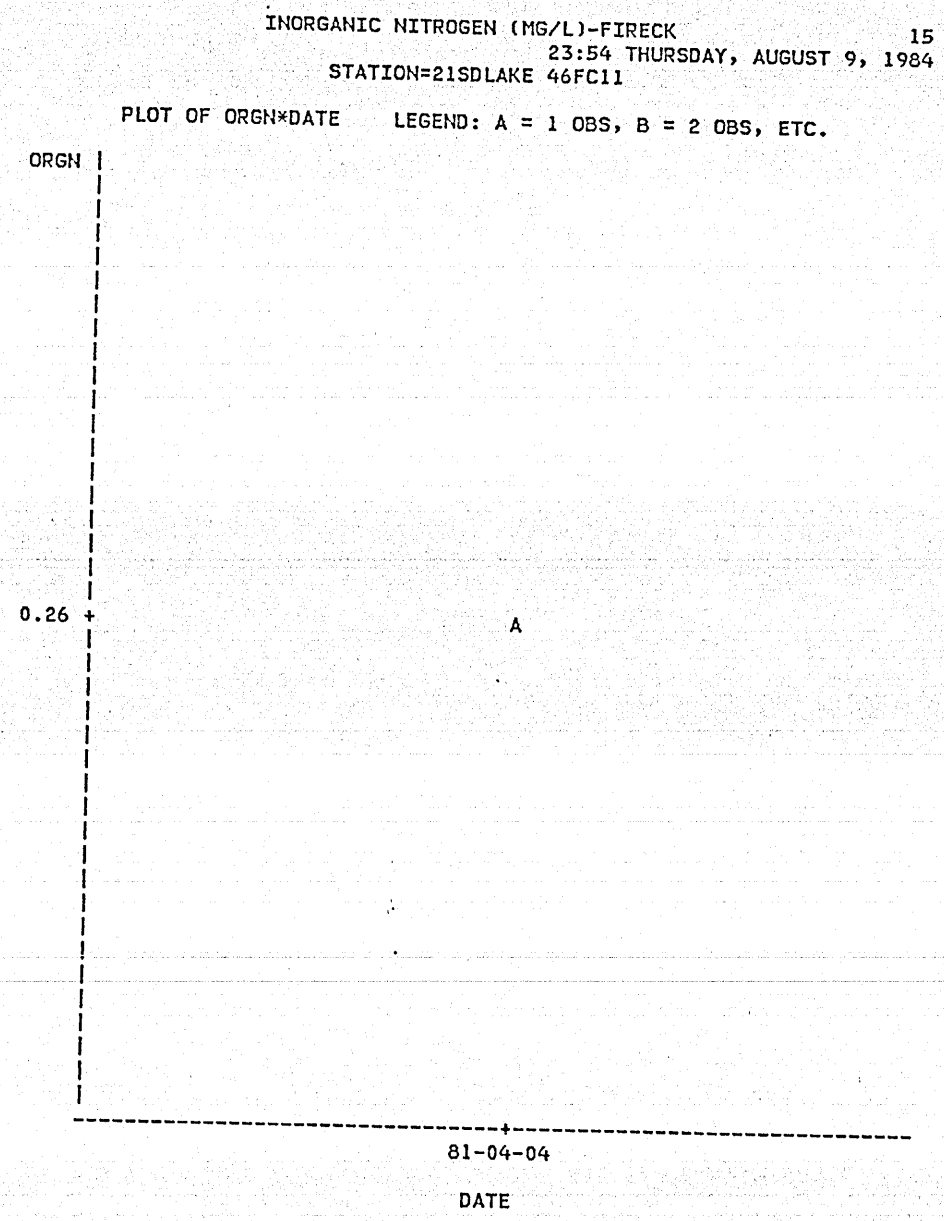


Figure IV-164.

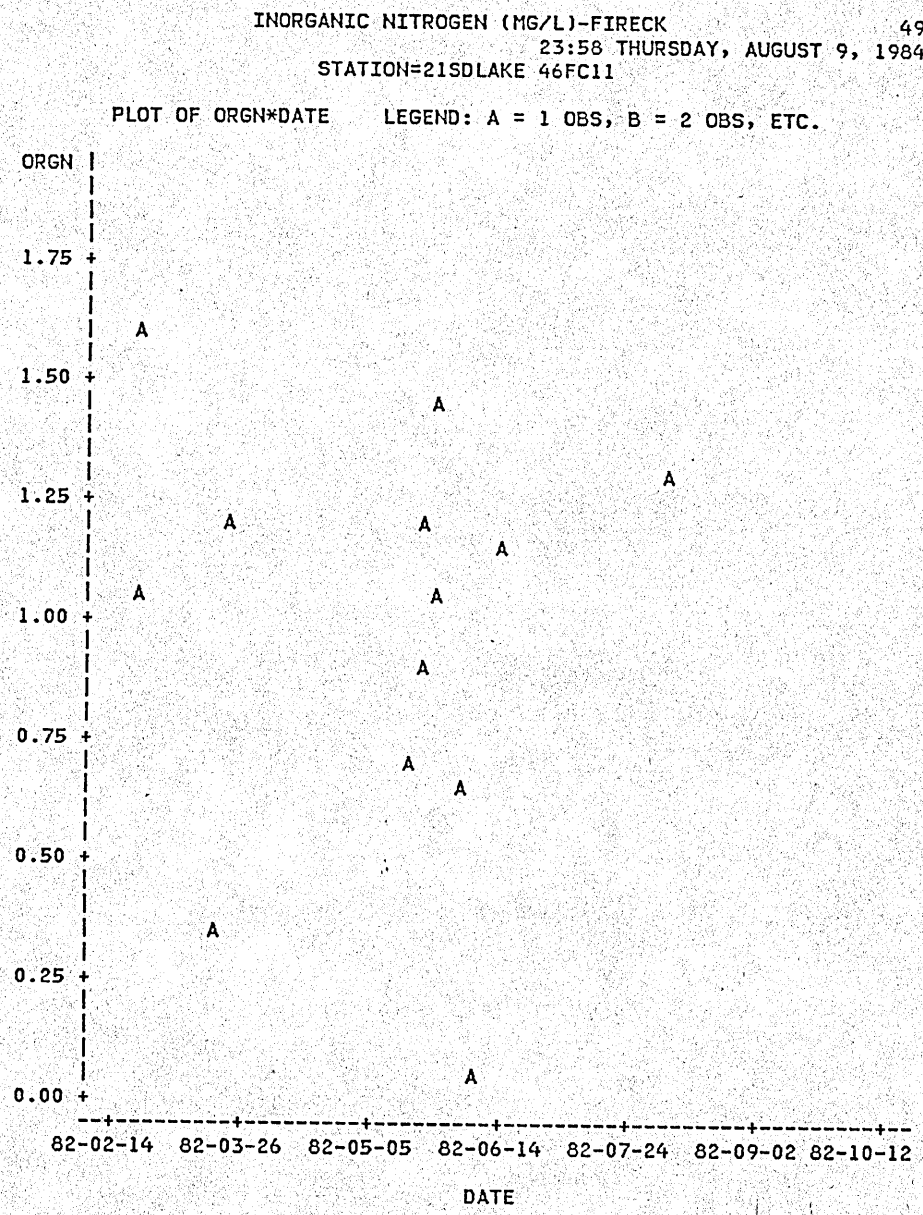


Figure IV-165.

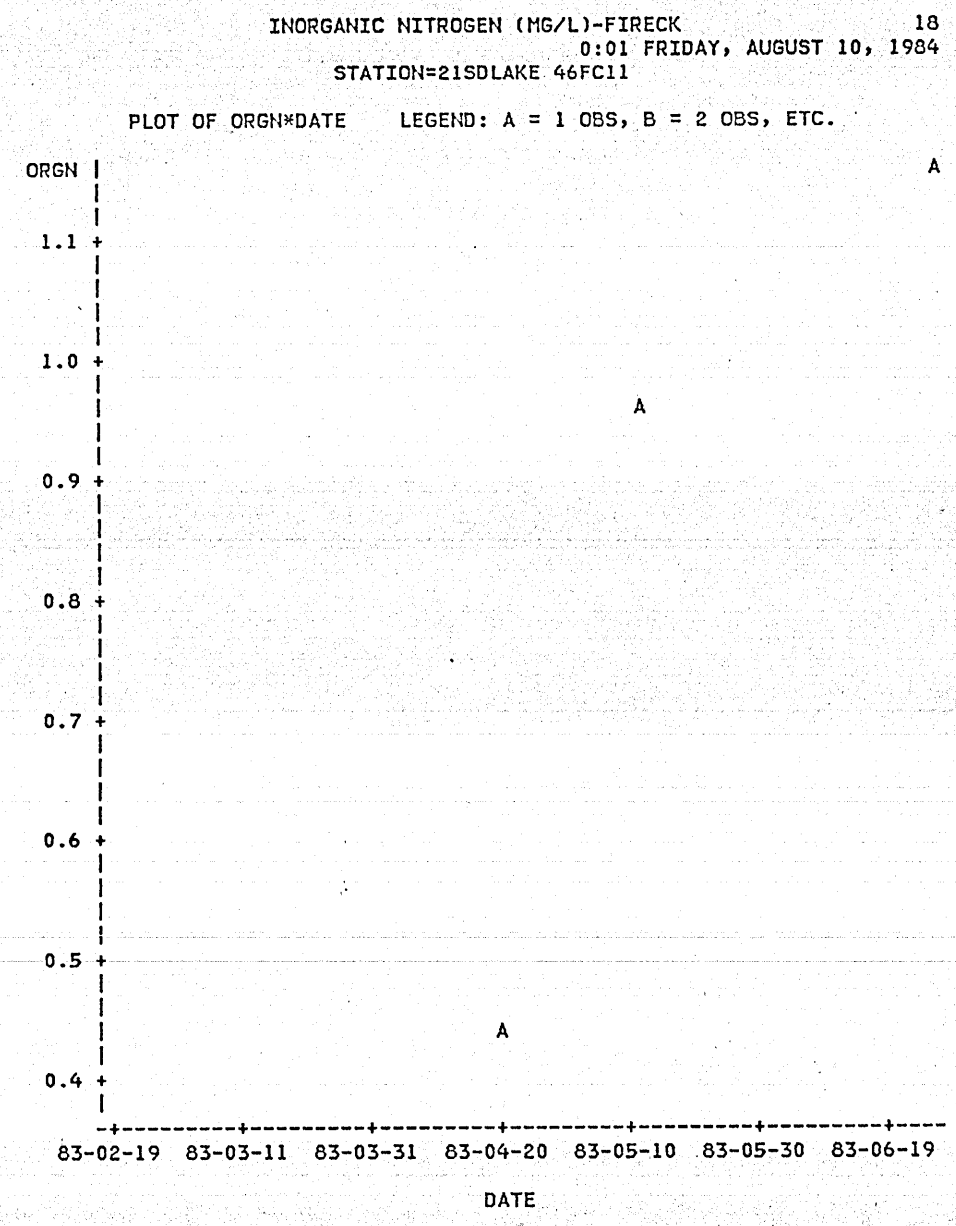
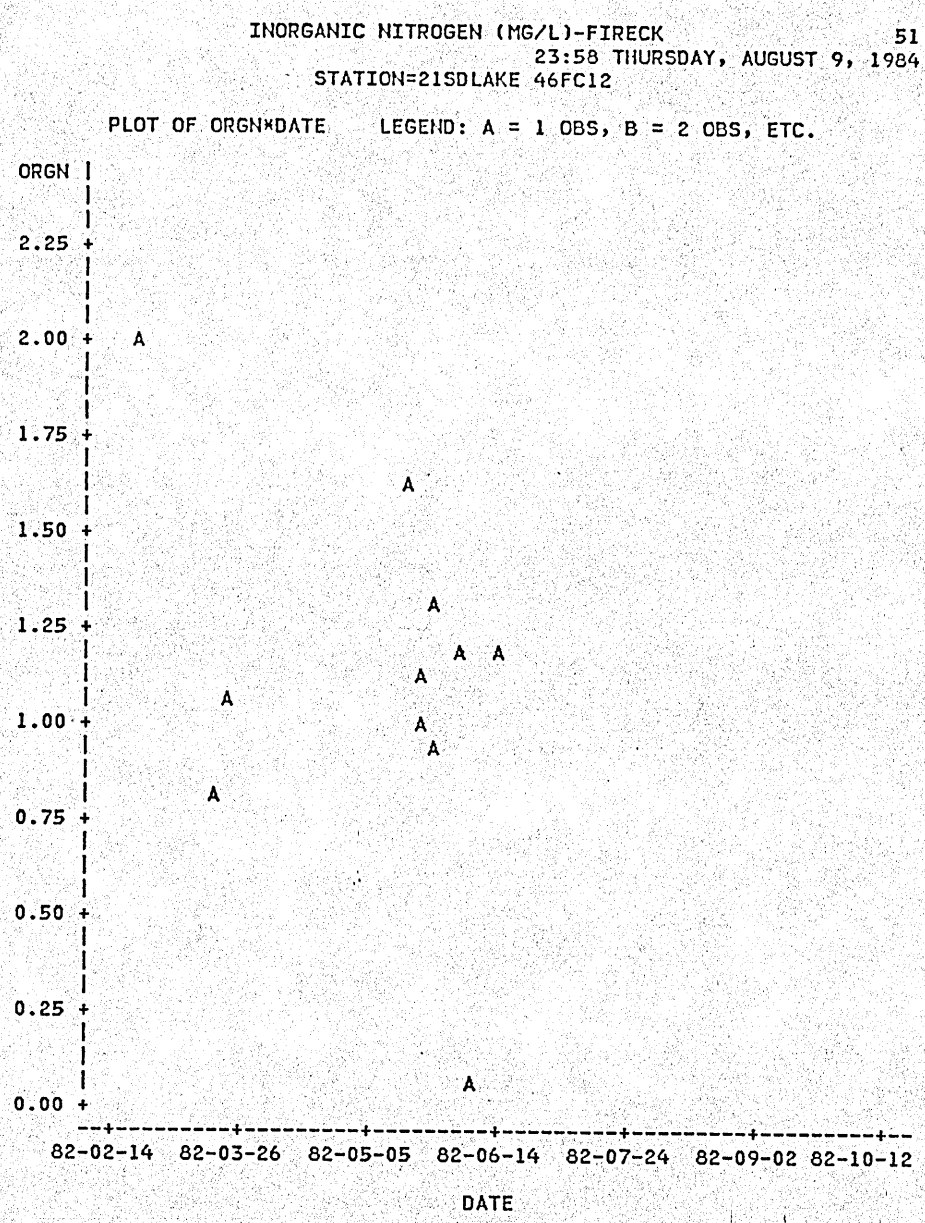
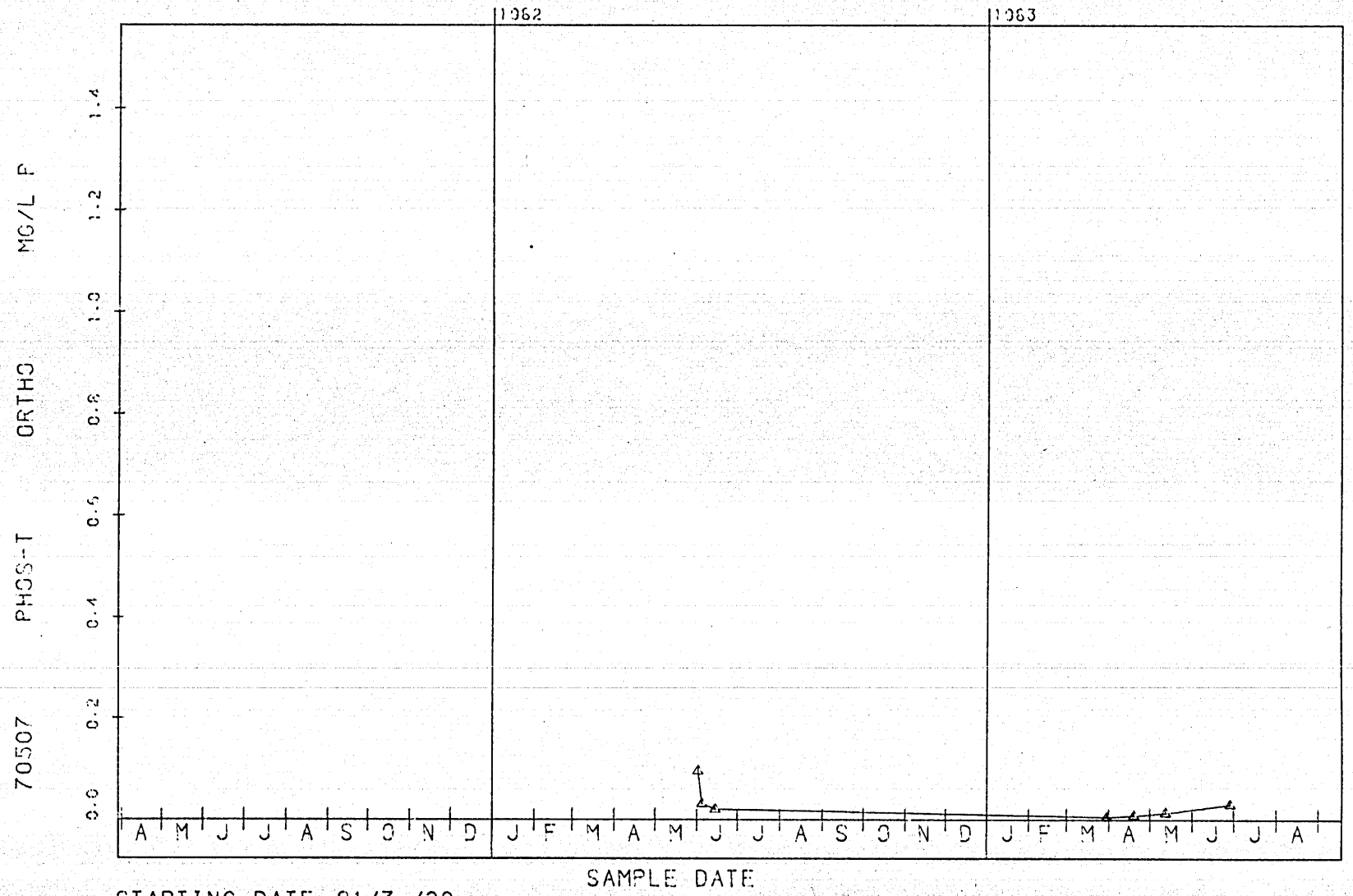


Figure IV-166.



STORET
46FC01
43 44 25.0 098 01 31.0 2
LK MITCHELL OUTLET SD HWY 37 N 103N-60W-S10 BCCA
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663787-0693805

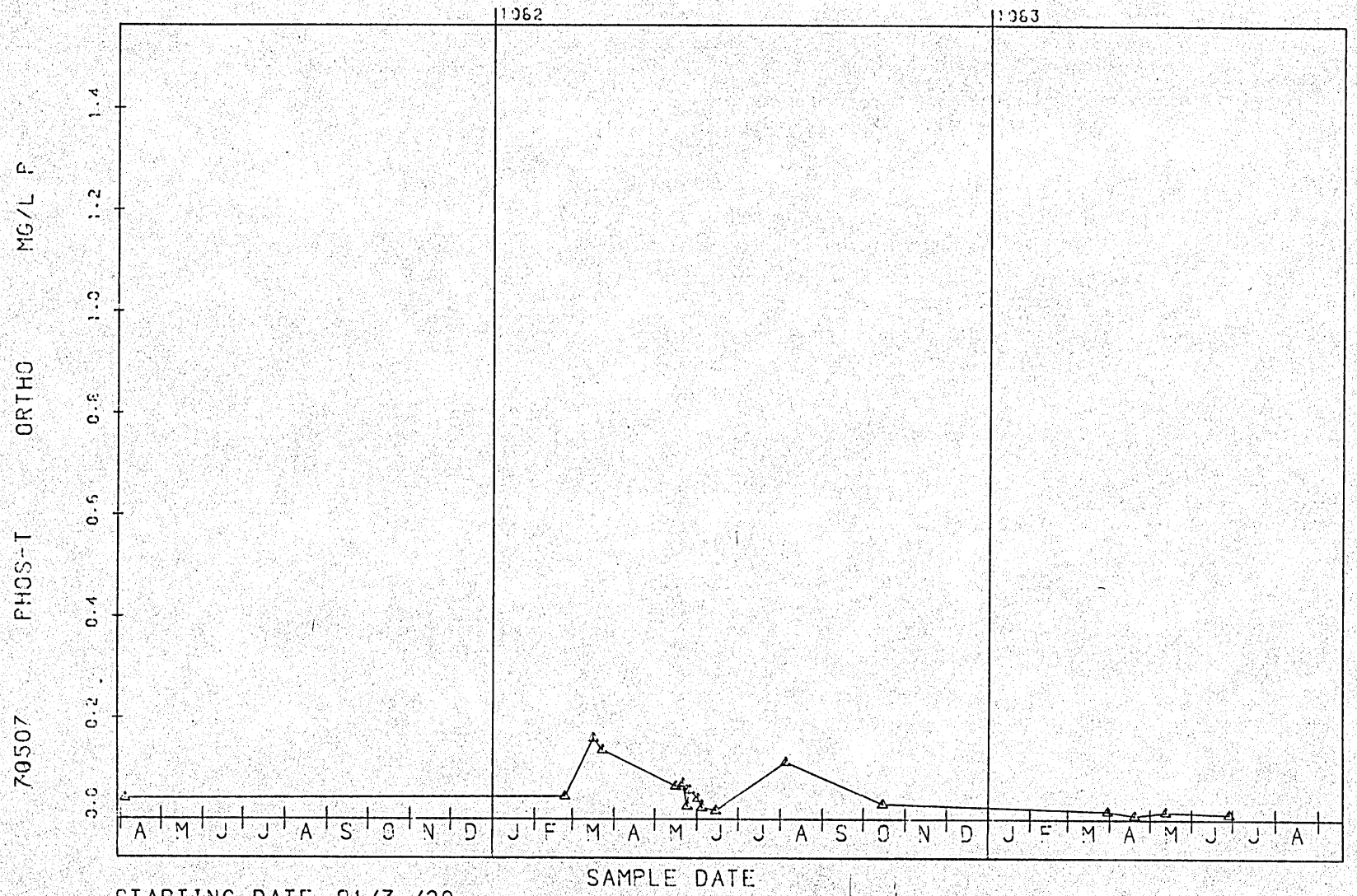
Figure IV-167.



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STORET
46FC02
43 44 39.0 098 01 34.0 2
NE LK MITCHLL .5 MI N OF OUTLET 103N 60W S10 BBBC
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663788-0693806

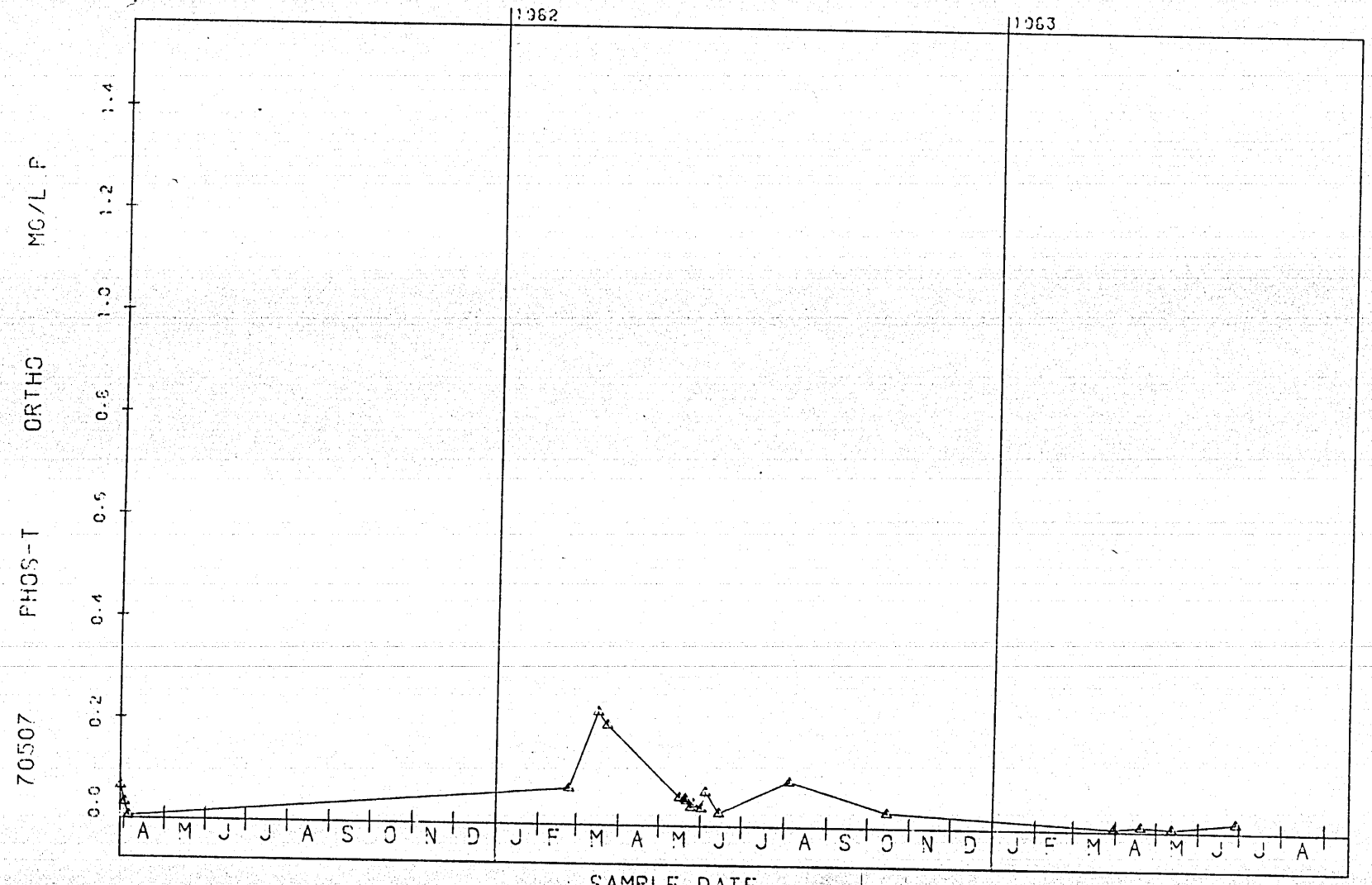
Figure IV-168.



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Figure IV-169.

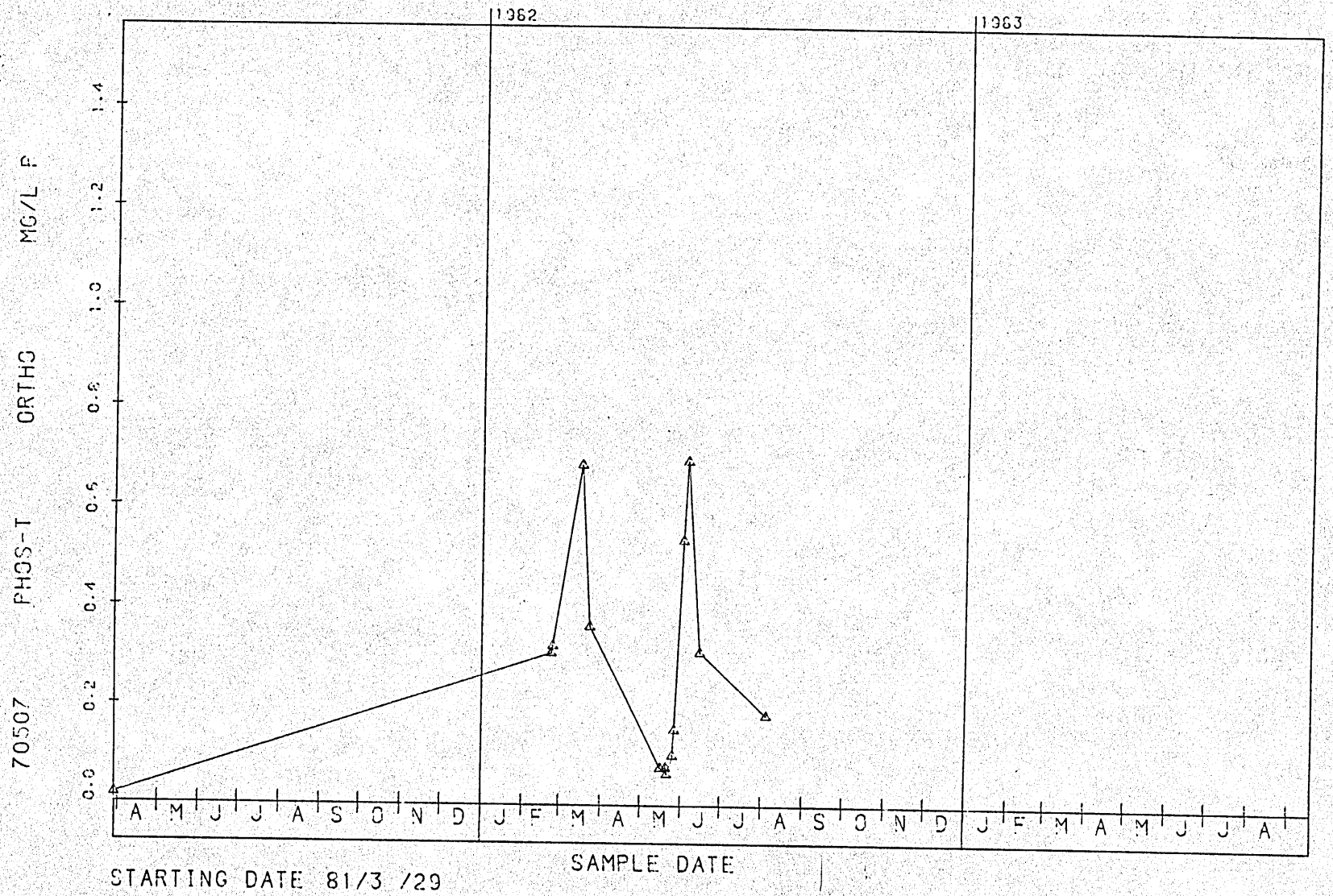
STORET
46FC03
43 45 22.0 098 03 26.0 2
NW LK MITCHLL .75 MI SE FC INLET 103N 60W S5 ACBB
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663789-0693807



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Figure IV-170.

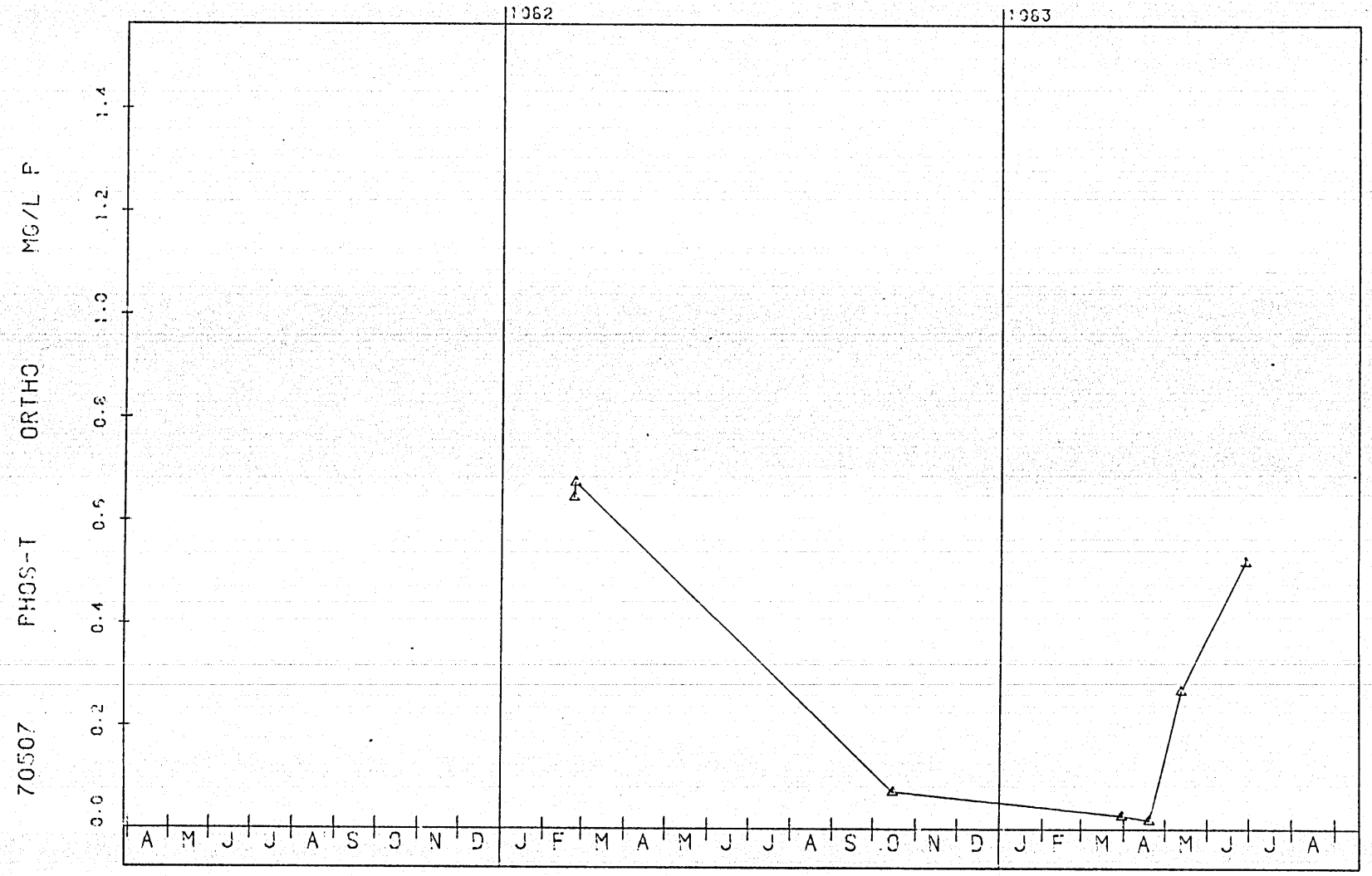
STORET
46FC04
43 46 43.0 098 09 58.0 2
4.5 MI W .75 MI N OF FC INLET 104N 61W S28 CCB5
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663790-0693808



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STORET
46FC05
43 44 41.0 098 02 51.0 2
1.5 MI S 100 FT W OF FC INLET 103N 60W S8 AAAD
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663791-0693809

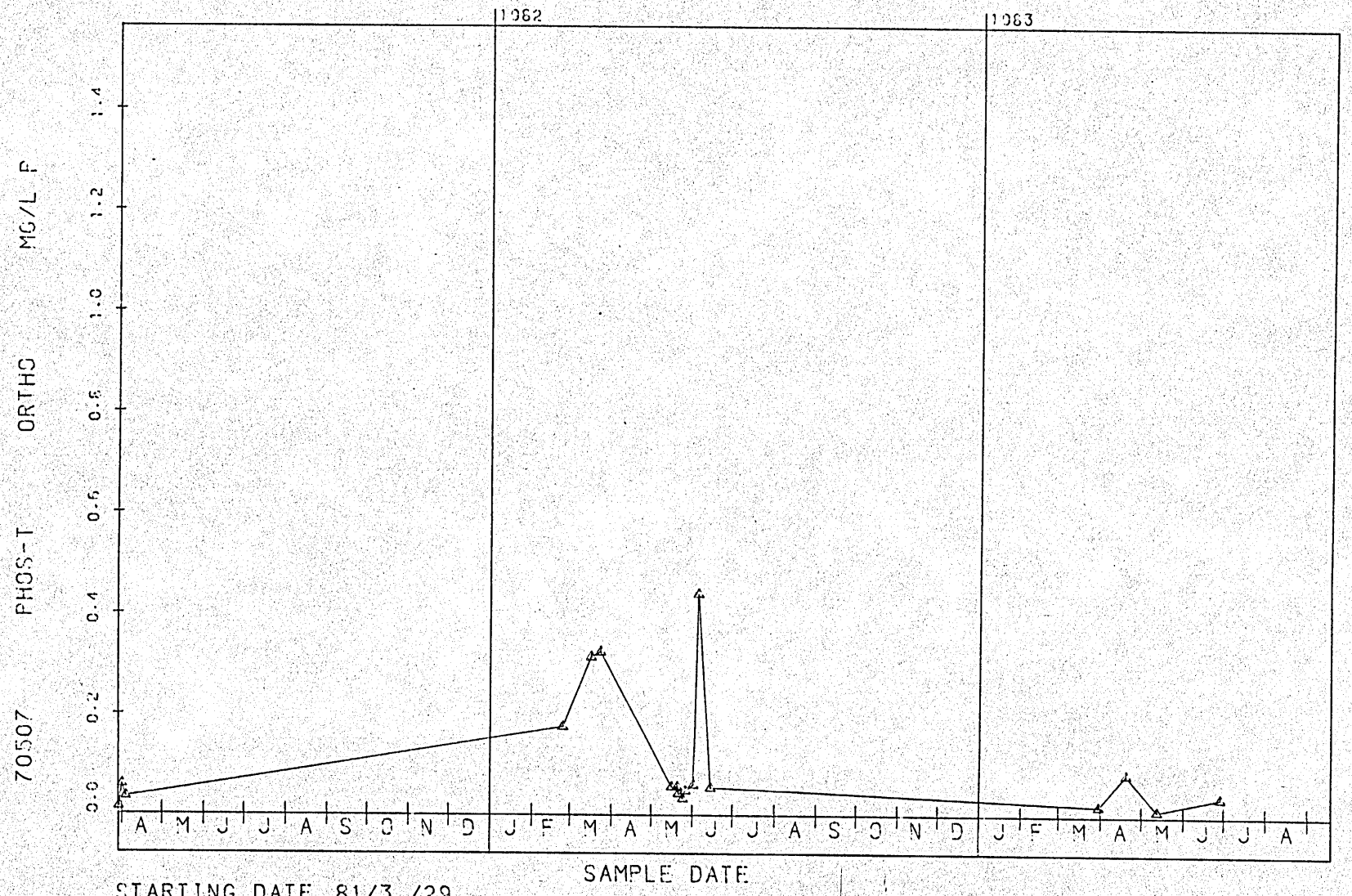
Figure IV-171.



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Figure IV-172.

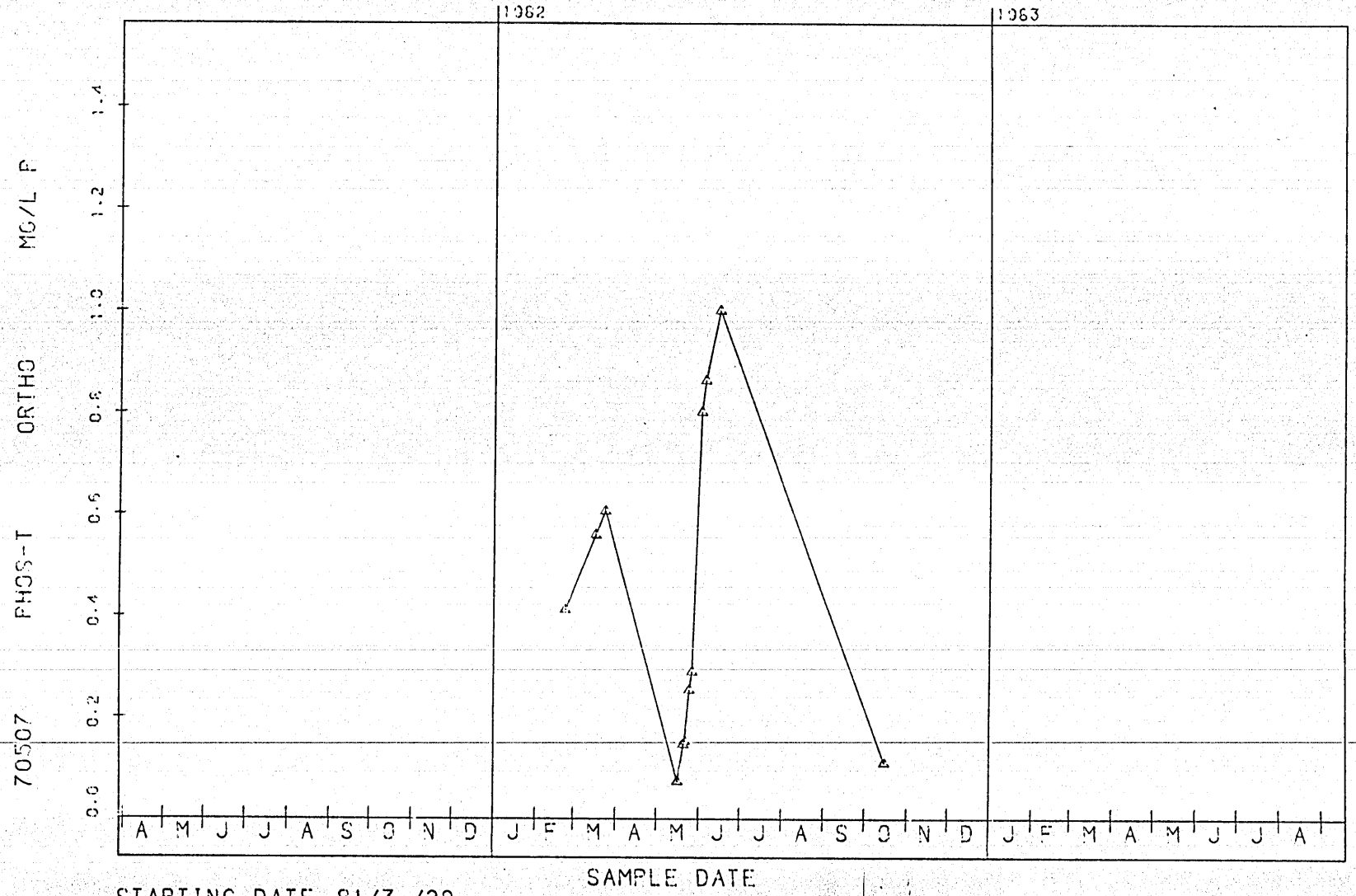
STORET
46FC06
43 45 34.0 098 04 14.0 2
FC INLET TO LK MITCHELL 103N 60W 56 AABB
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663792-0693810



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STORET
46FC07
43 47 22.0 098 19 31.0 2
12.5 MI W 2 MI N OF FC INLET 104N 62W S30 BBBB
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
.0000 FEET DEPTH CLASS 00 CSN-RSP 0663793-0693811

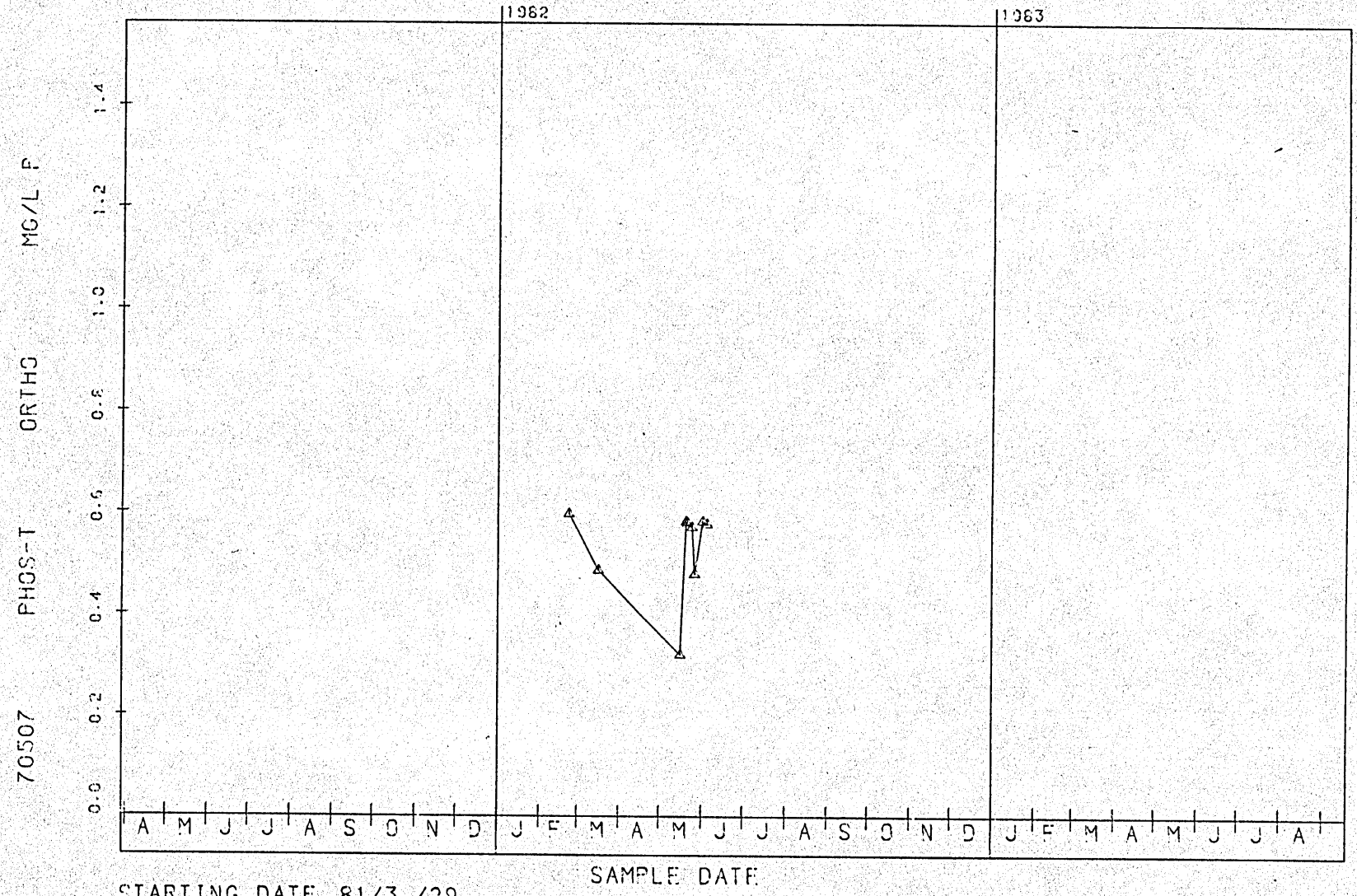
Figure IV-173.



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STORET
46FC08
43 55 09.0 098 27 04.0 2
18.5 MI W 11 MI N OF FC INLET 105N 63W S7 BBCC
46003 SOUTH DAKOTA AURORA
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663794-0693812

Figure IV-174.



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Figure IV-175.

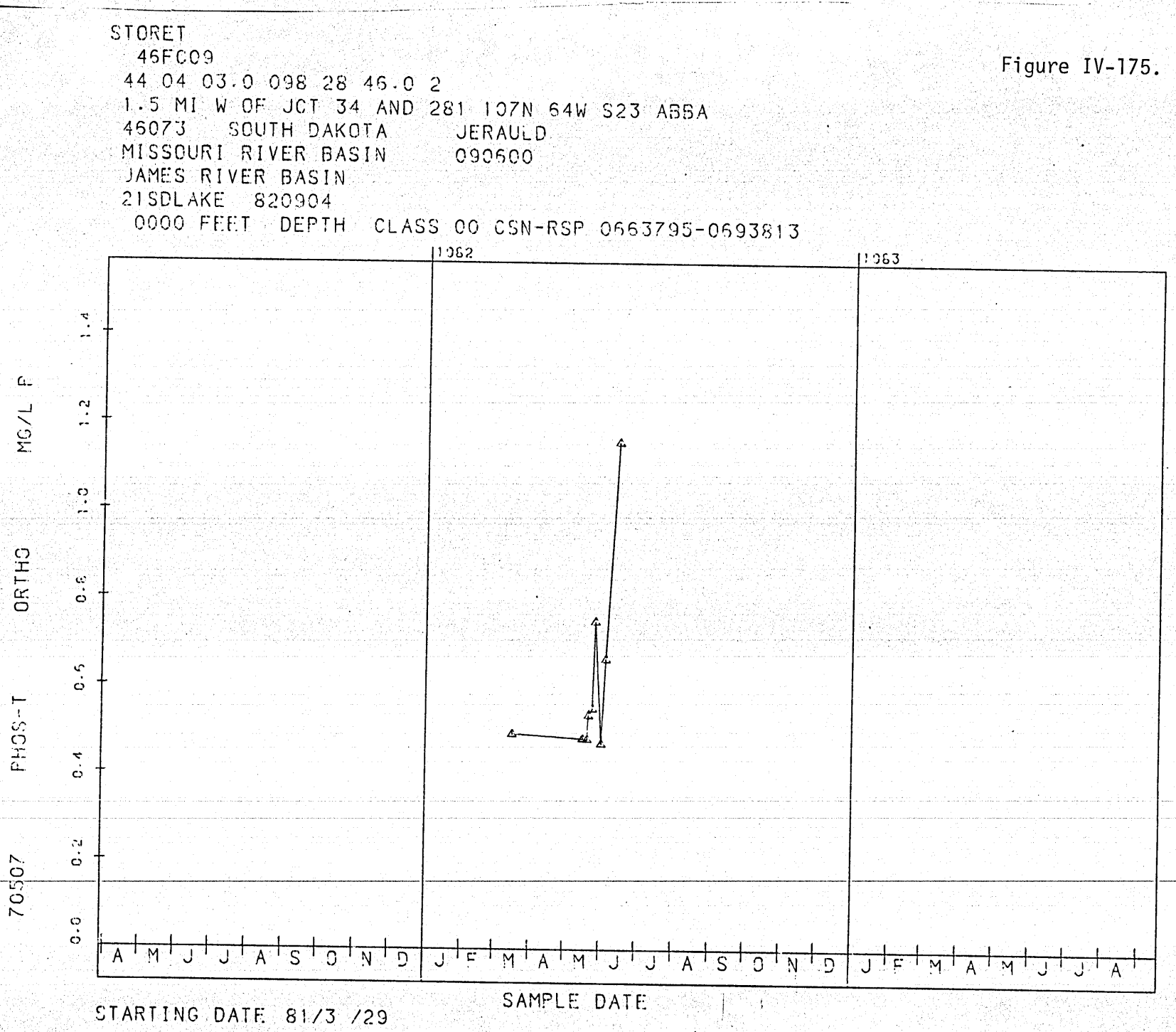
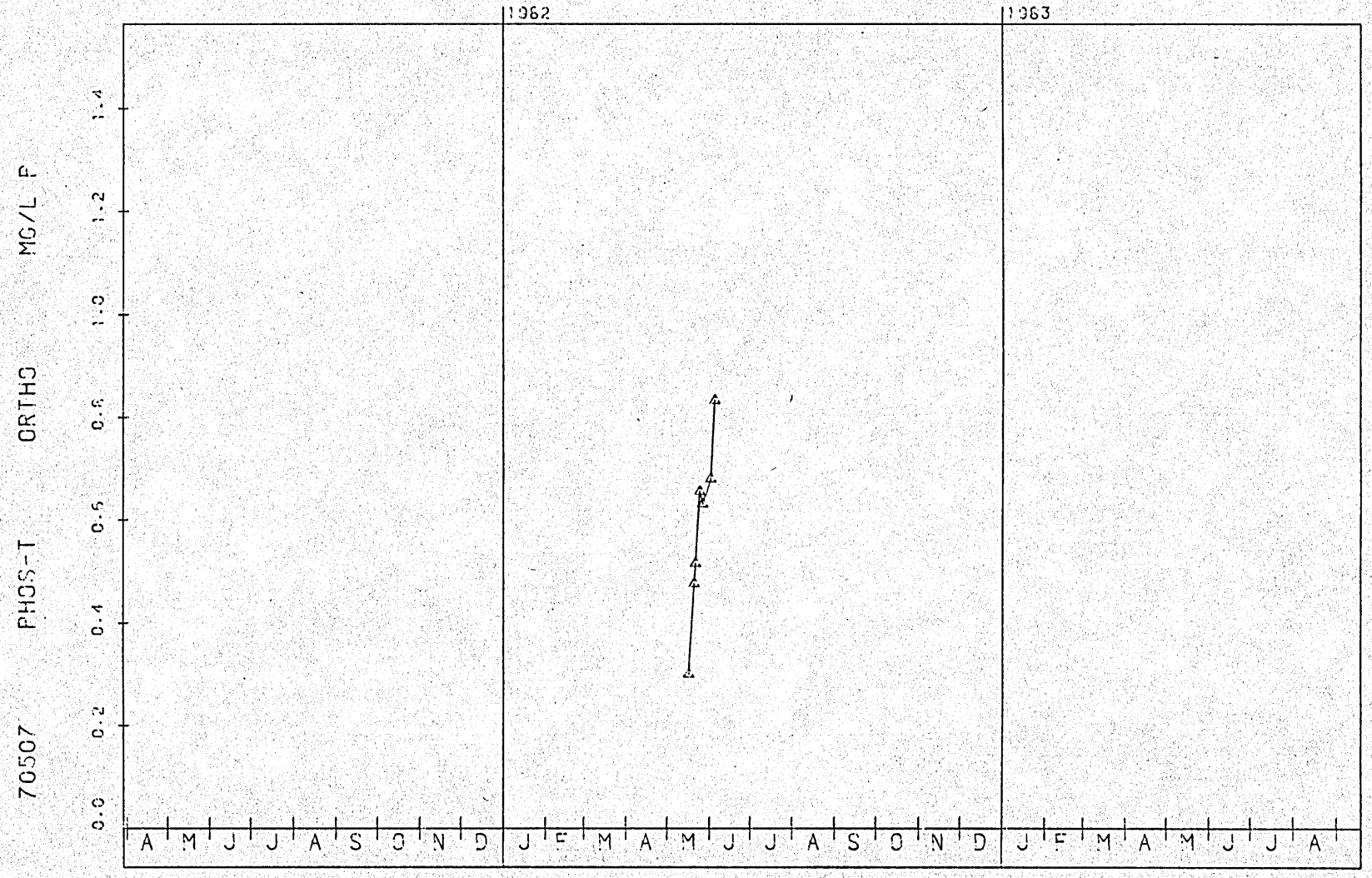


Figure IV-176.

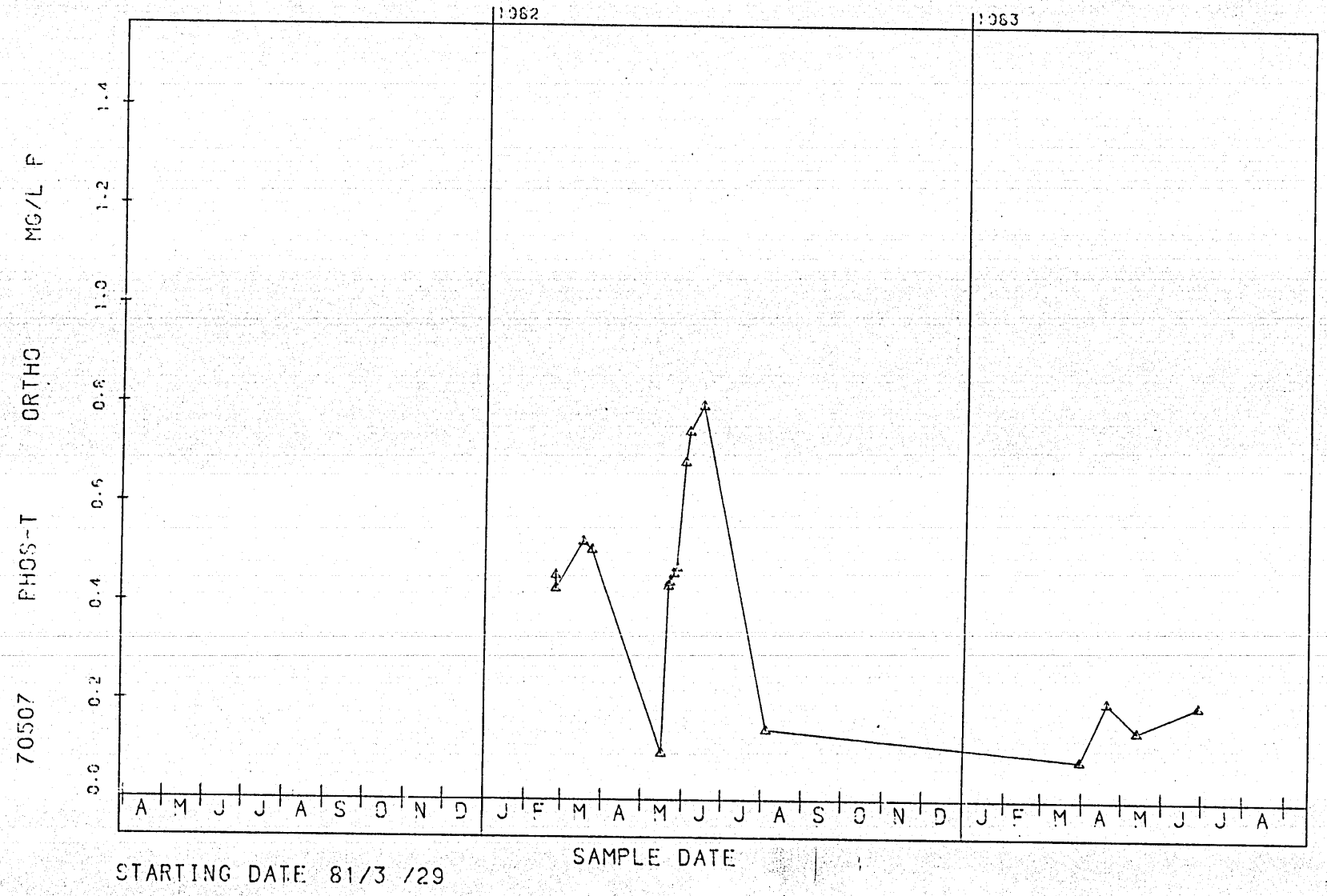
STORET
46FC10
44 06 40.0 098 28 58.0 2
3 MI W 1.5 MI W JCT 34 AND 281 107N 64W S2 BAAA
46073 SOUTH DAKOTA JERAULD
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663796-0693814



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Figure IV-177.

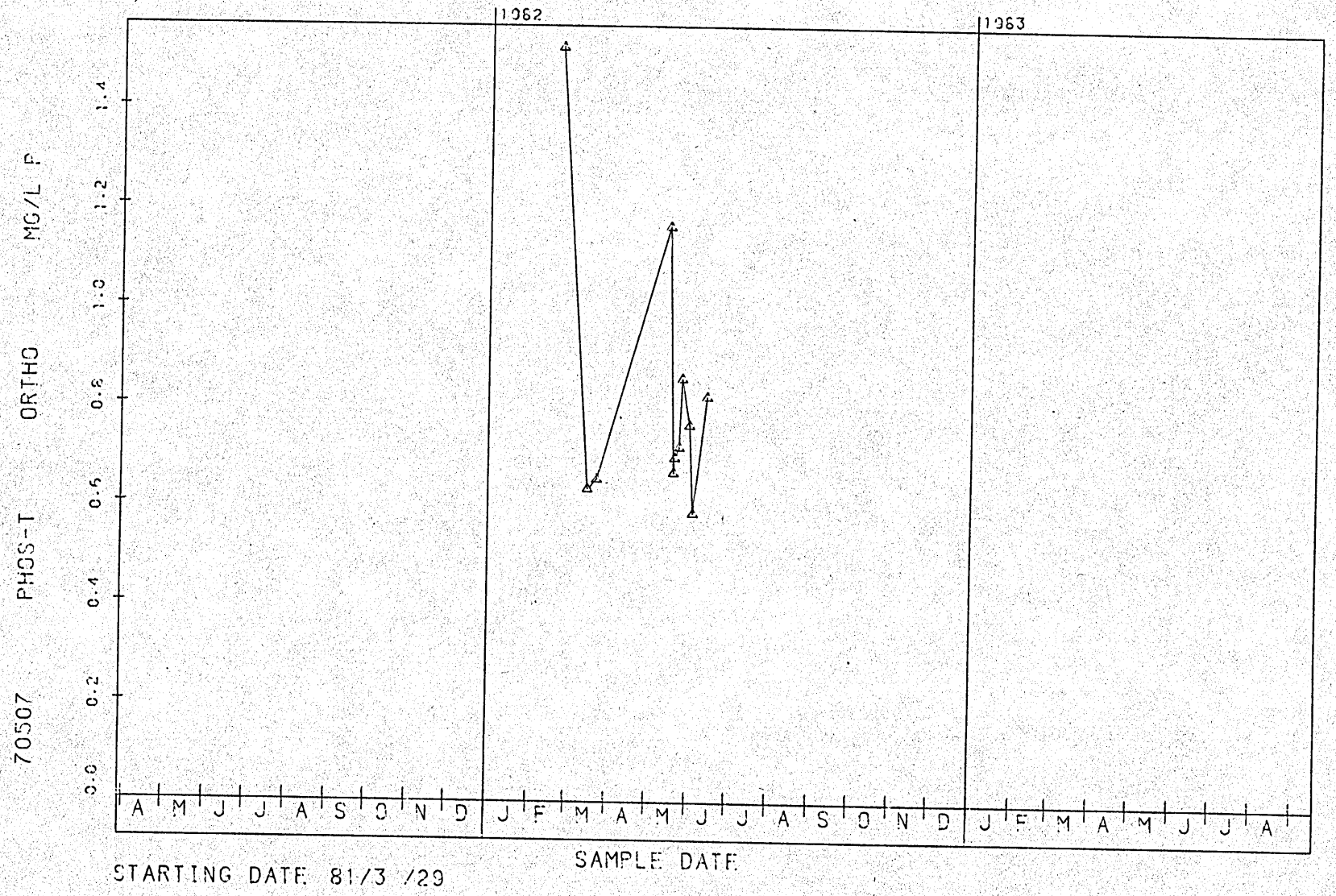
STORET
46FC11
43 46 36.0 098 14 44.0 2
8.5 MI W 1 MI N OF FC INLET 104N 62W S26 CCCB
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663797-0693815



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STORET
46FC12
43 48 16.0 098 18 32.0 2
3 MI N 12 MI W OF FC INLET 104N 62W S19 AABA
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663798-0693816

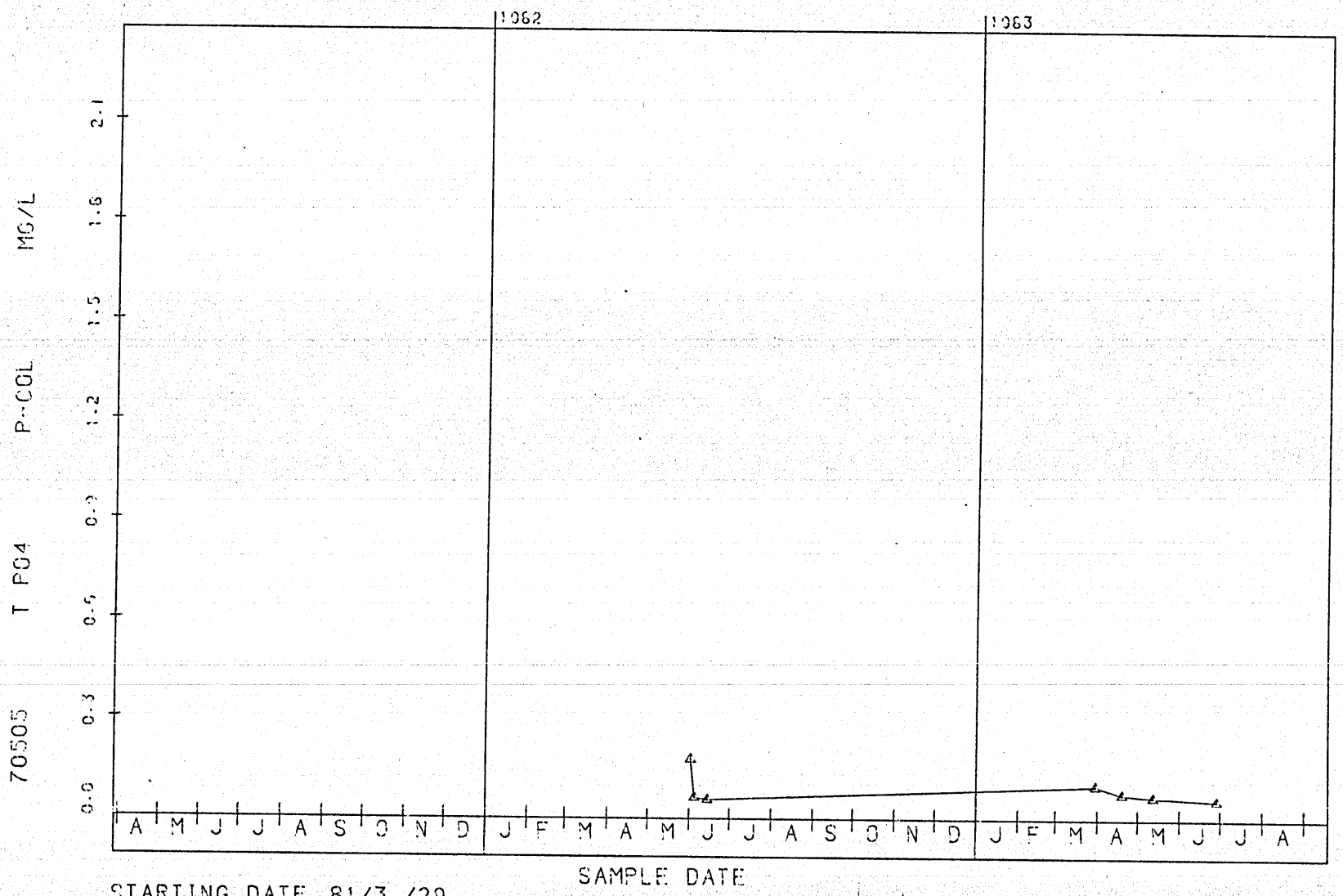
Figure IV-178.



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STORET
46FC01
43 44 25.0 098 01 31.0 2
LK MITCHELL OUTLET SD HWY 37 N 103N-60W-S10 BCCA
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663787-0693805

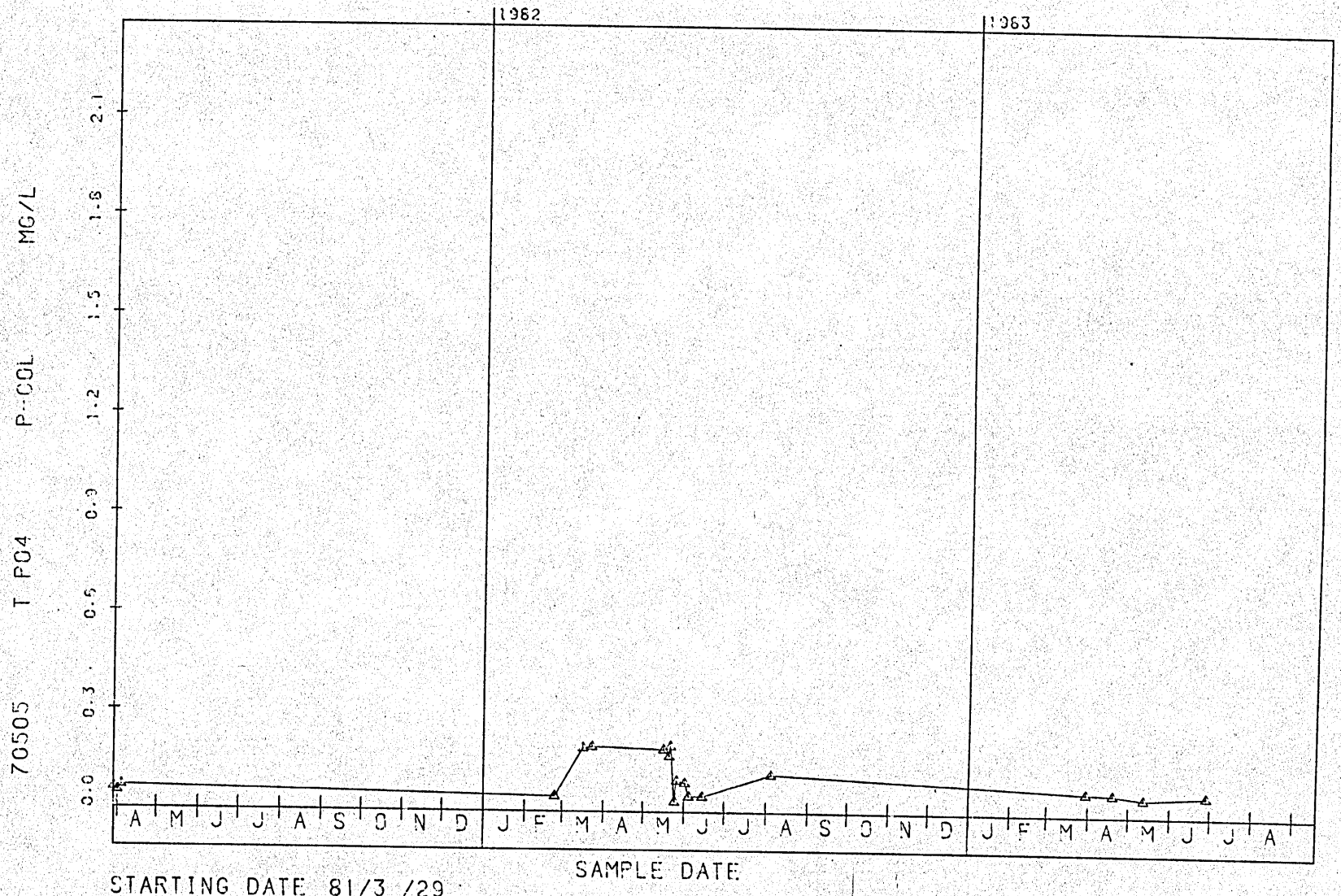
Figure IV-179.



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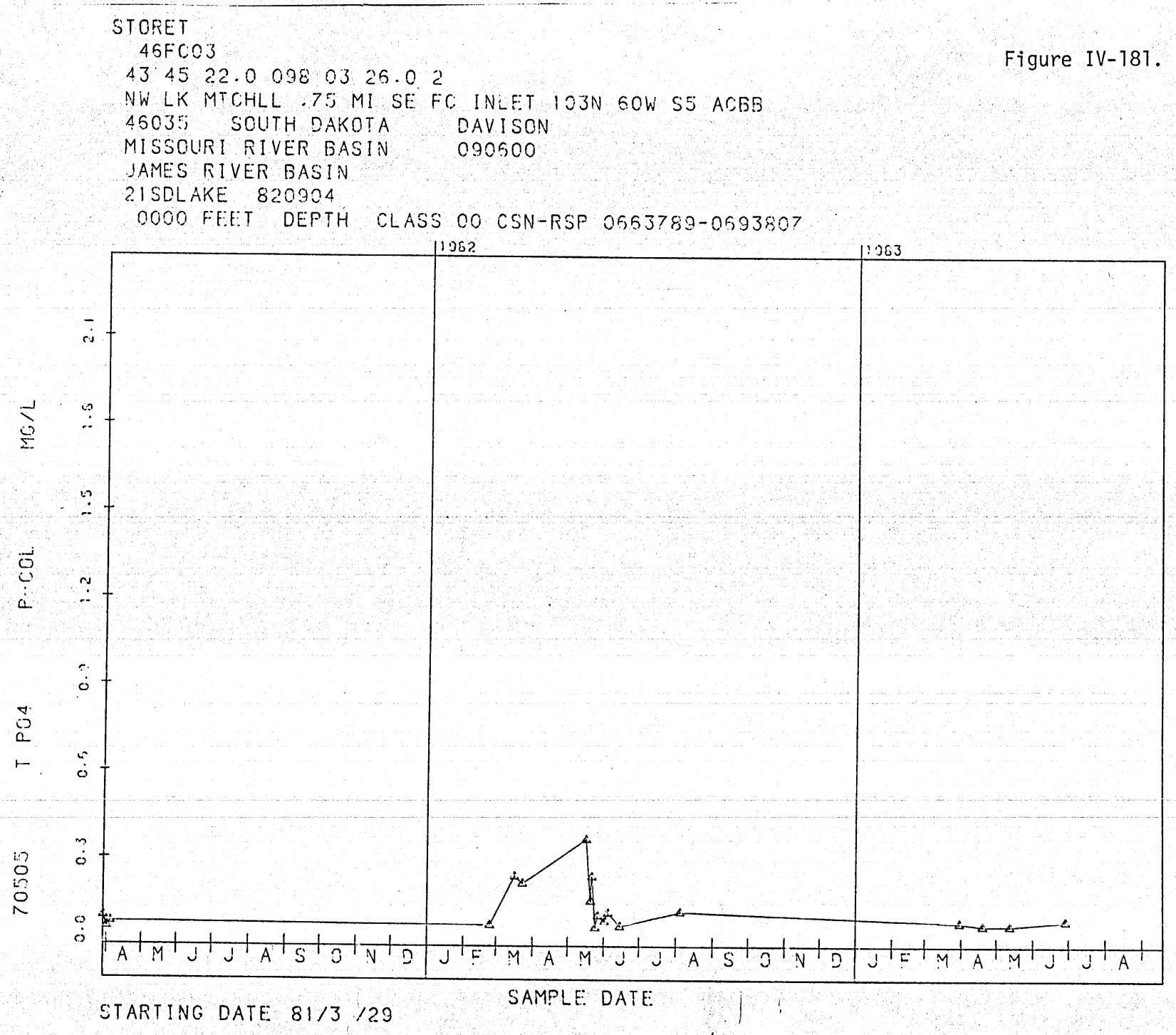
STORET
46FC02
43 44 39.0 098 01 34.0 2
NE LK MITCHLL .5 MI N OF OUTLET 103N 60W S10 BBBC
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663788-0693806

Figure IV-180.



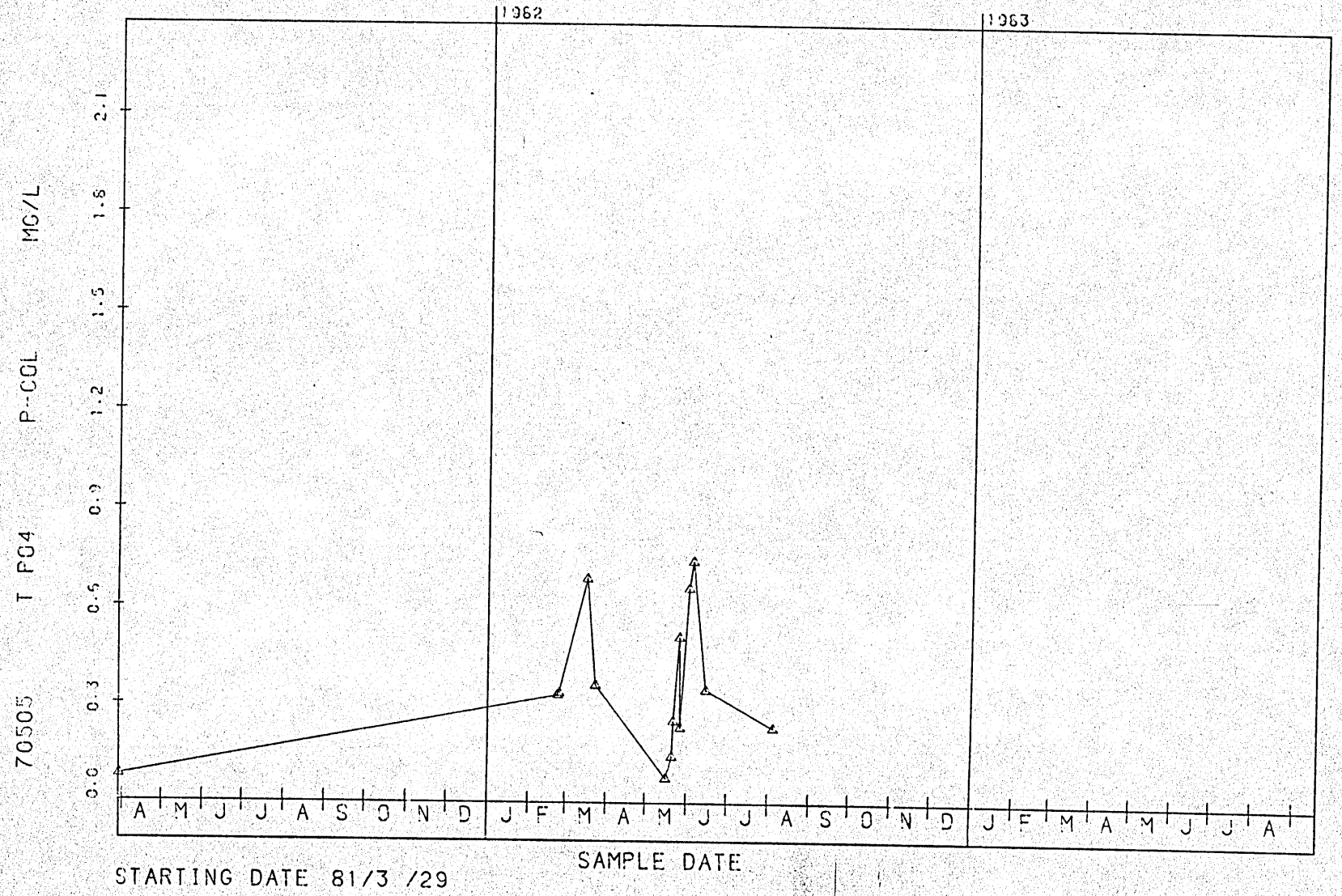
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Figure IV-181.



STORET
46FC04
43 46 43.0 098 09 58.0 2
4.5 MI W .75 MI N OF FC INLET 104N 61W S28 CCBB
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663790-0693808

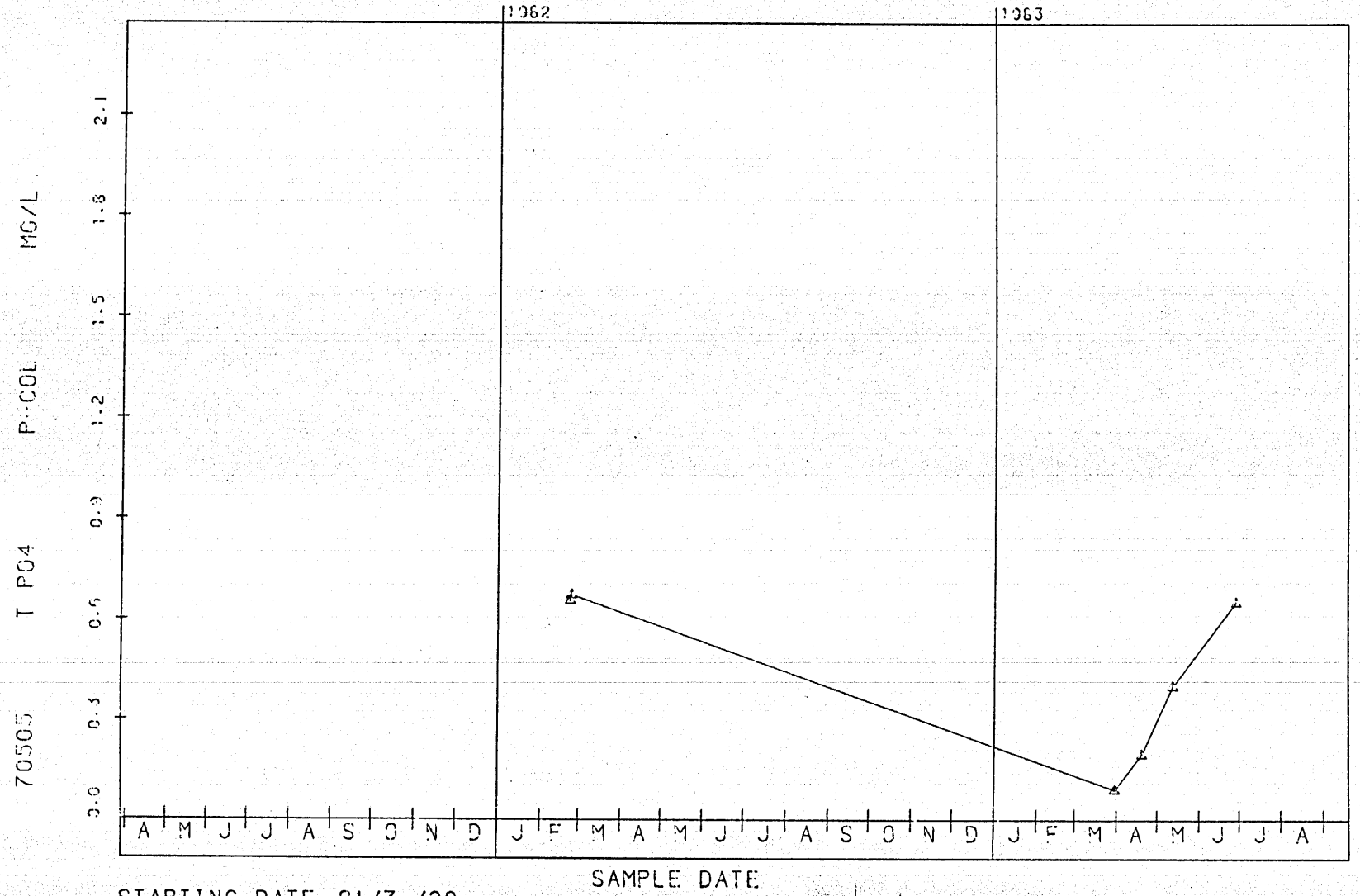
Figure IV-182.



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STORET
46FC05
43 44 41.0 098 02 51.0 2
1.5 MI S 100 FT W OF FC INLET 103N 60W S8 AAAD
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663791-0693809

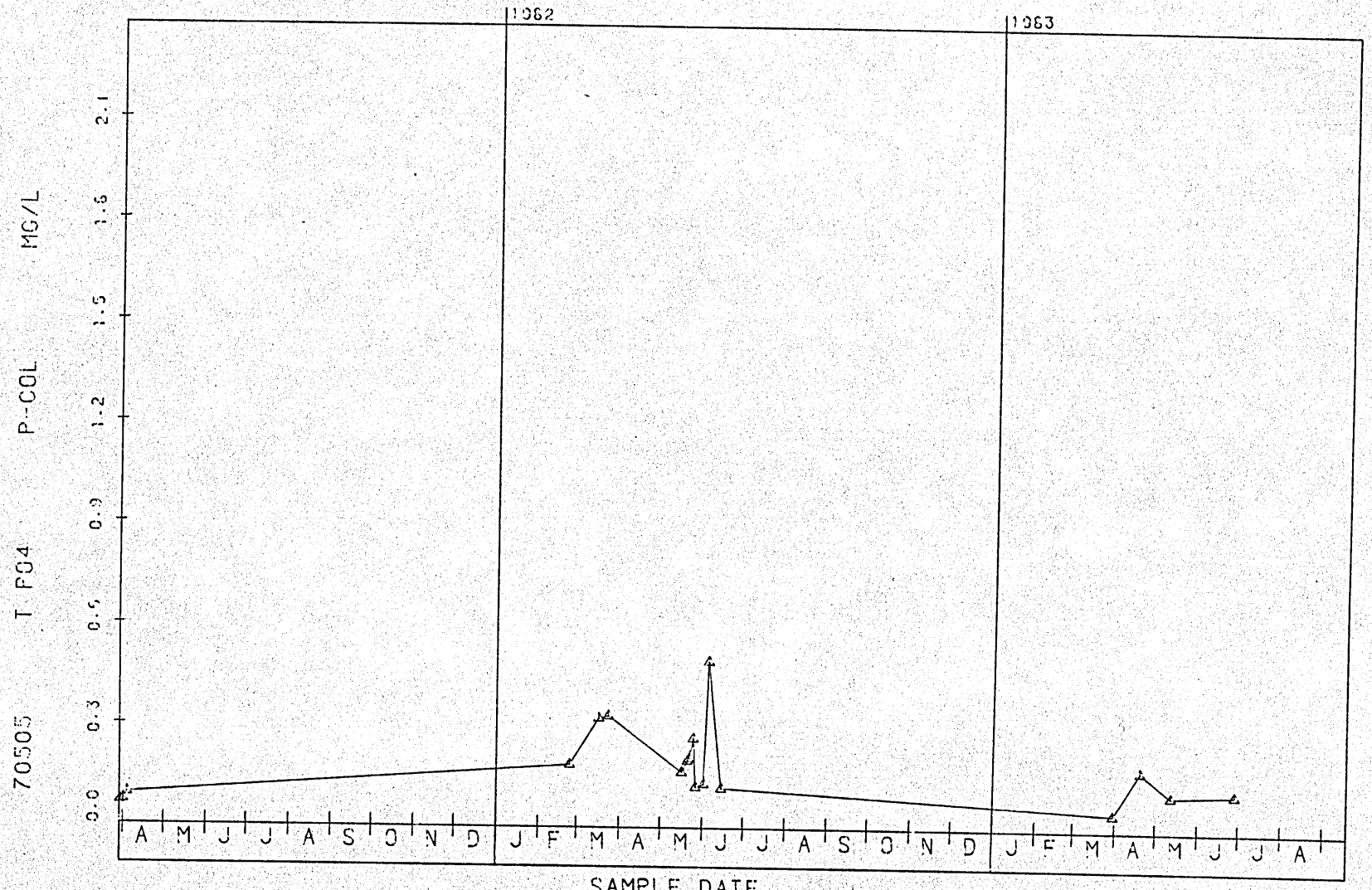
Figure IV-183.



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STORET
46FC06
43 45 34.0 098 04 14.0 2
FC INLET TO LK MITCHELL 103N 60W 56 AABB
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663792-0693810

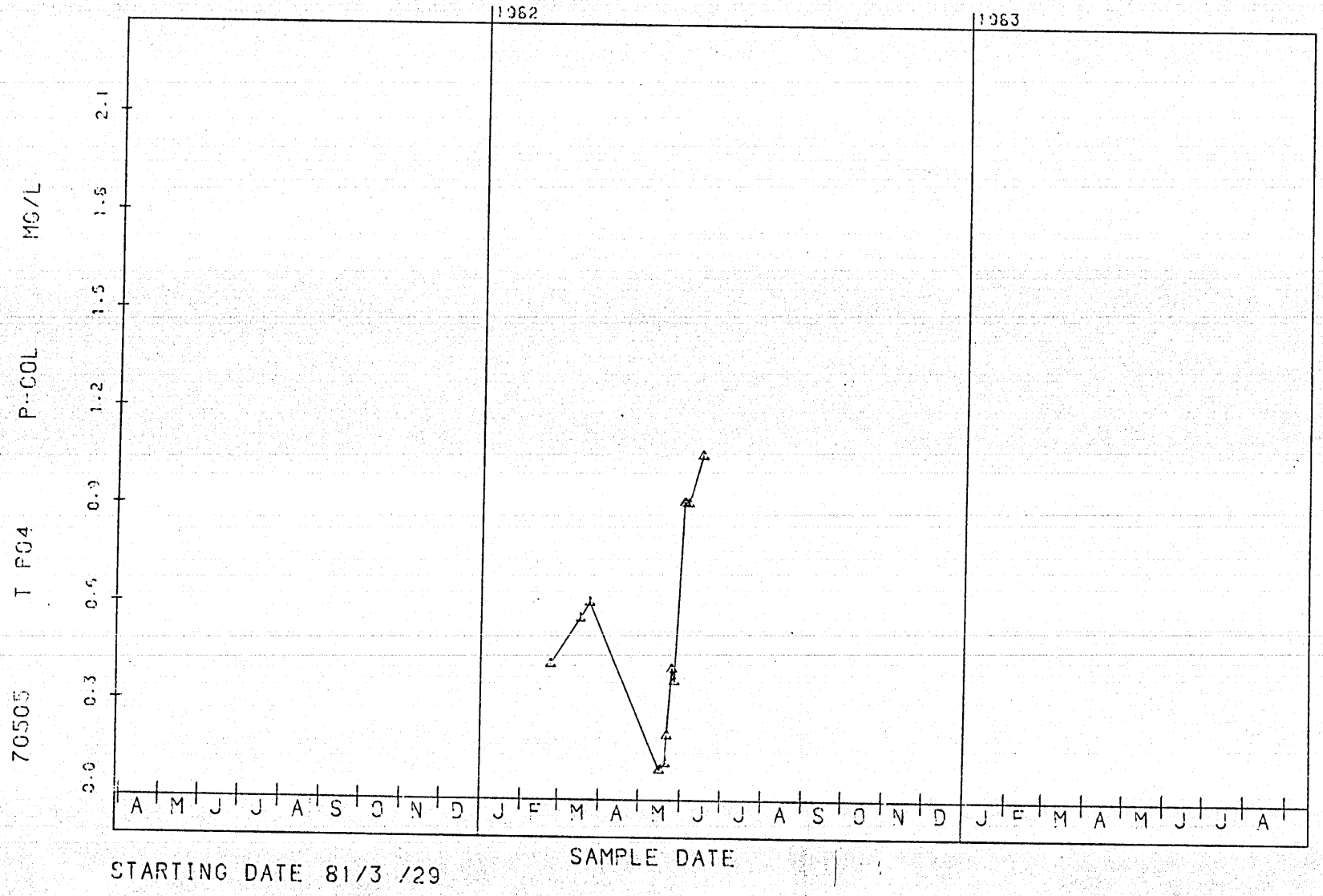
Figure IV-184.



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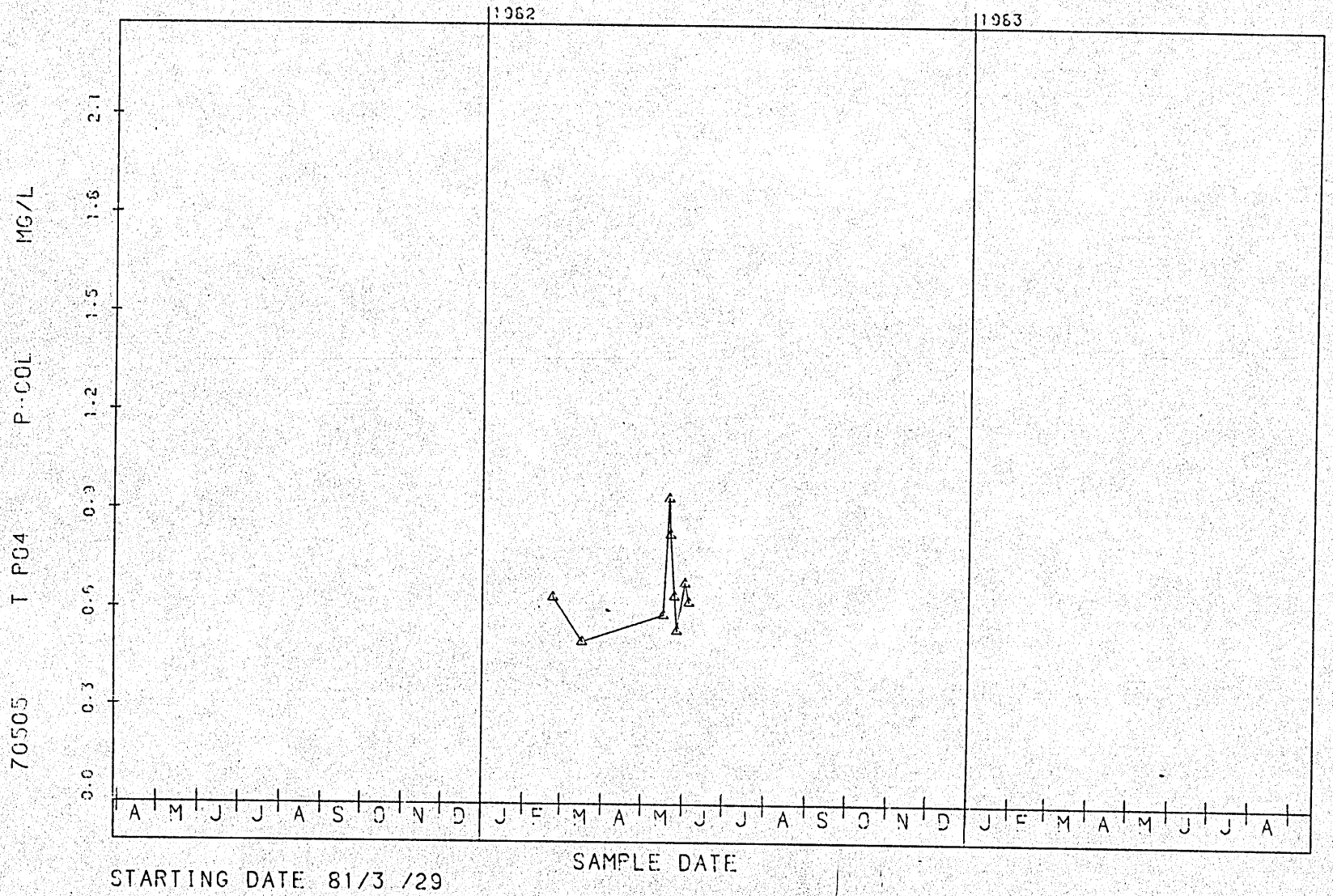
STORET
46FC07
43 47 22.0 098 19 31.0 2
12.5 MI W 2 MI N OF FC INLET 104N 62W S30 BBBB
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663793-0693811

Figure IV-185.



STORET
46FC08
43 55 09.0 098 27 04.0 2
18.5 MI W 11 MI N OF FC INLET 105N 63W S7 BBCC
46003 SOUTH DAKOTA AURORA
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE. 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663794-0693812

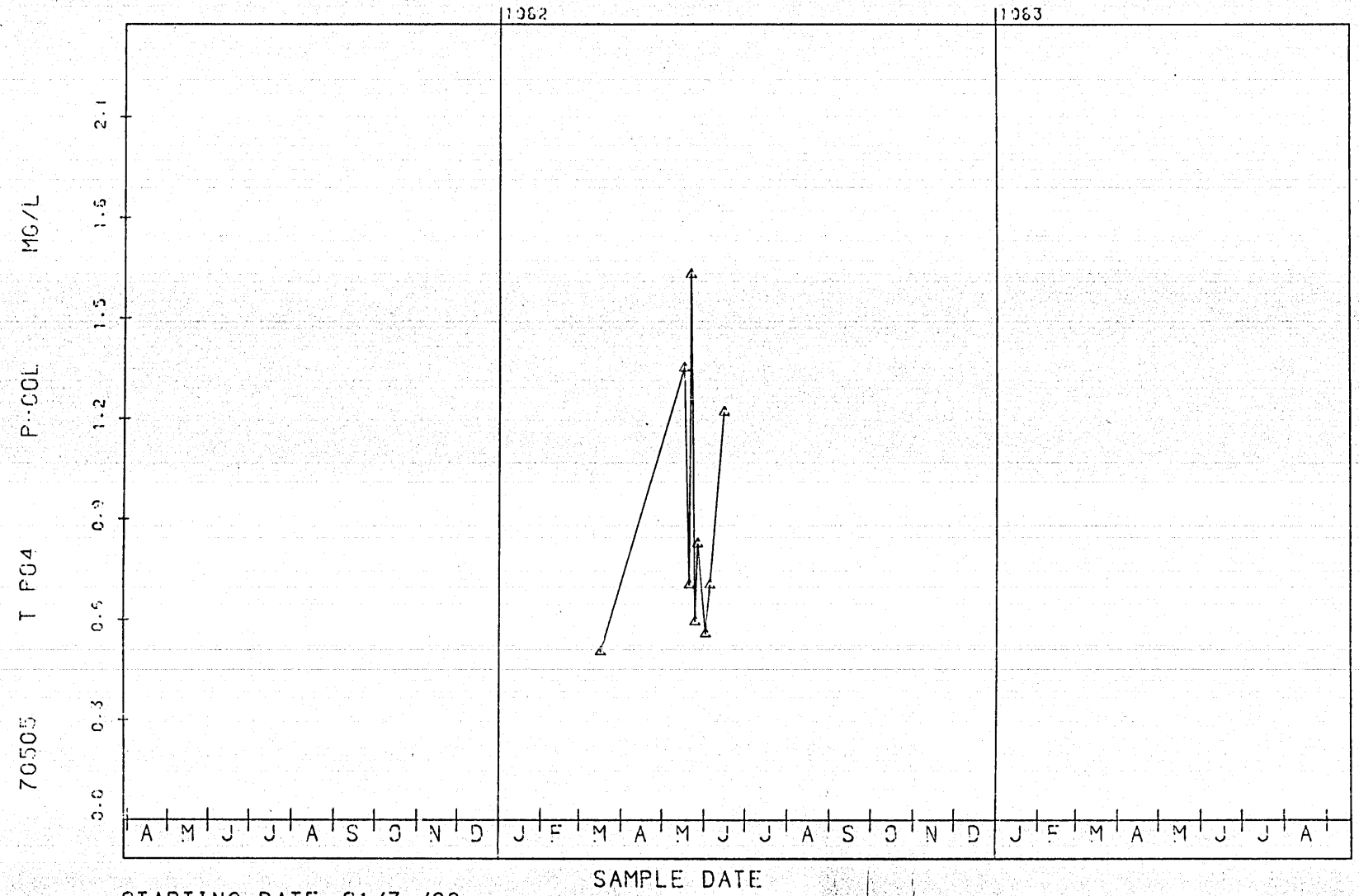
Figure IV-186.



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STORET
46FC09
44 04 03.0 098 28 46.0 2
1.5 MI W OF JCT 34 AND 281 107N 64W S23 ABBA
46073 SOUTH DAKOTA JERAULD
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663795-0693813

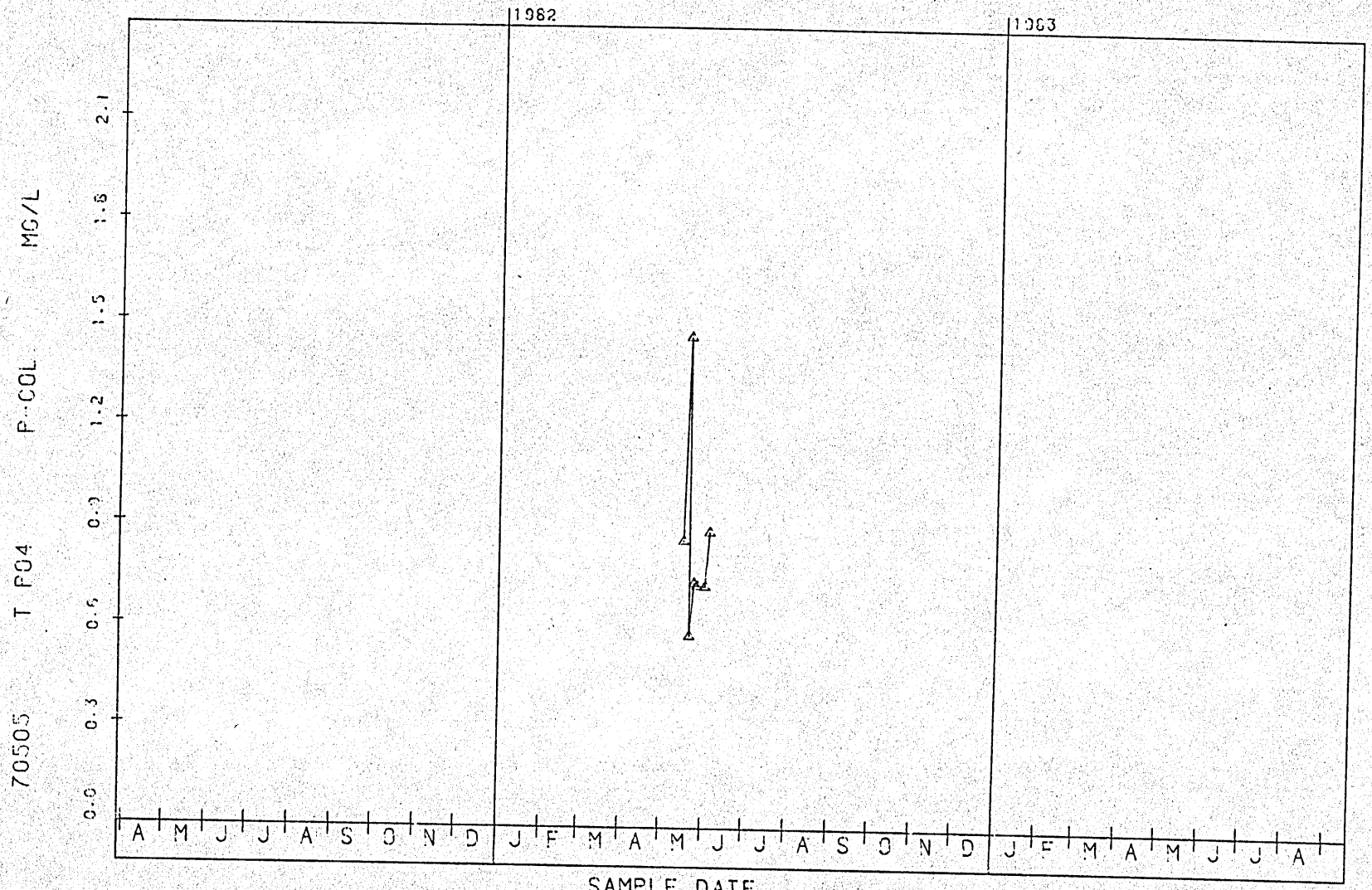
Figure IV-187.



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STORET
46FC10
44 06 40.0 098 28 58.0 2
3 MI W 1.5 MI W JCT 34 AND 281 107N 64W S2 BAAA
46073 SOUTH DAKOTA JERAULD
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663796-0693814

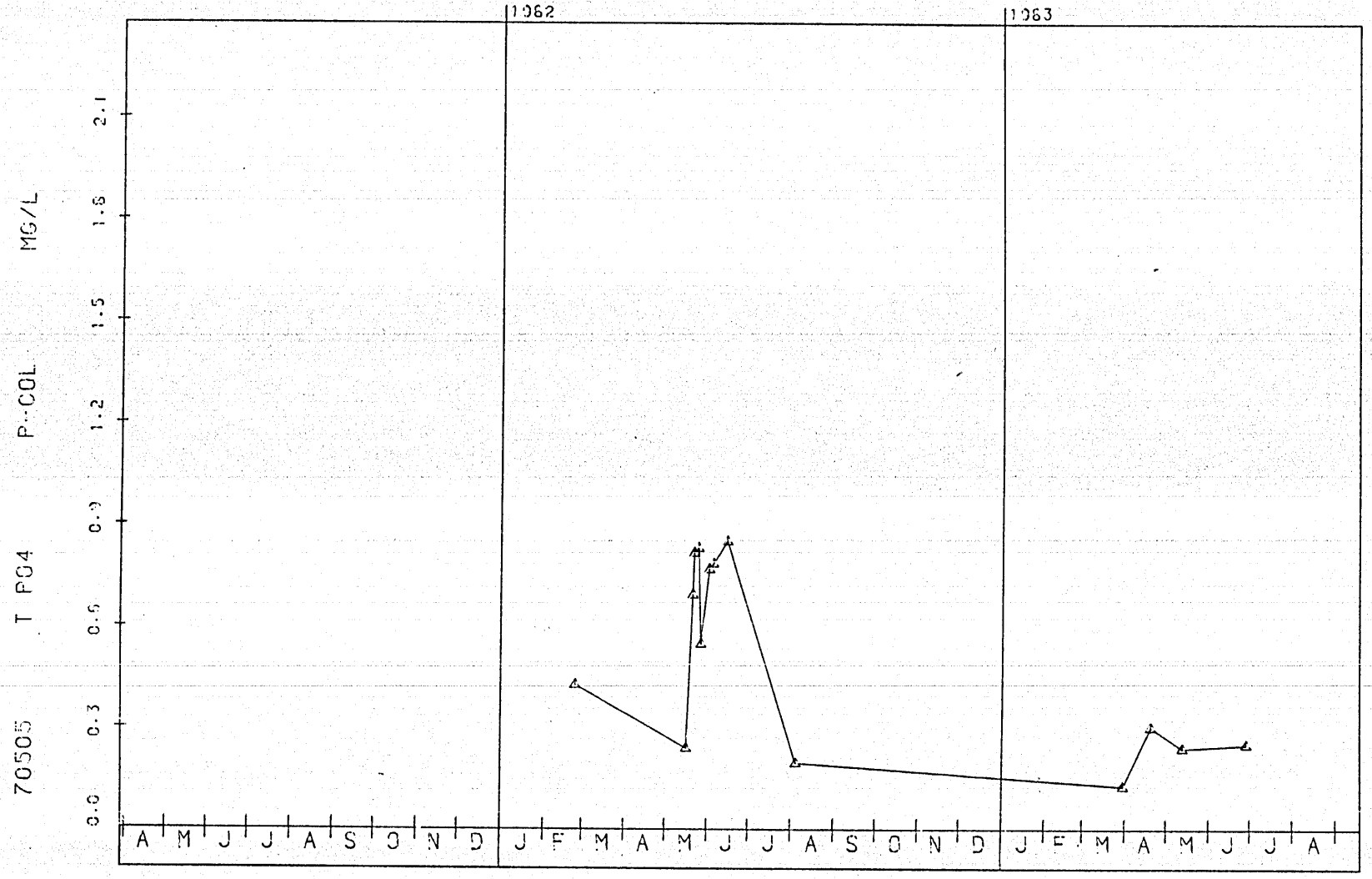
Figure IV-188.



STARTING DATE 81/3 /29

STORET
46FC11
43 46 36.0 098 14 44.0 2
8.5 MI W 1 MI N OF FC INLET 104N 62W S26 CCCB
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663797-0693815

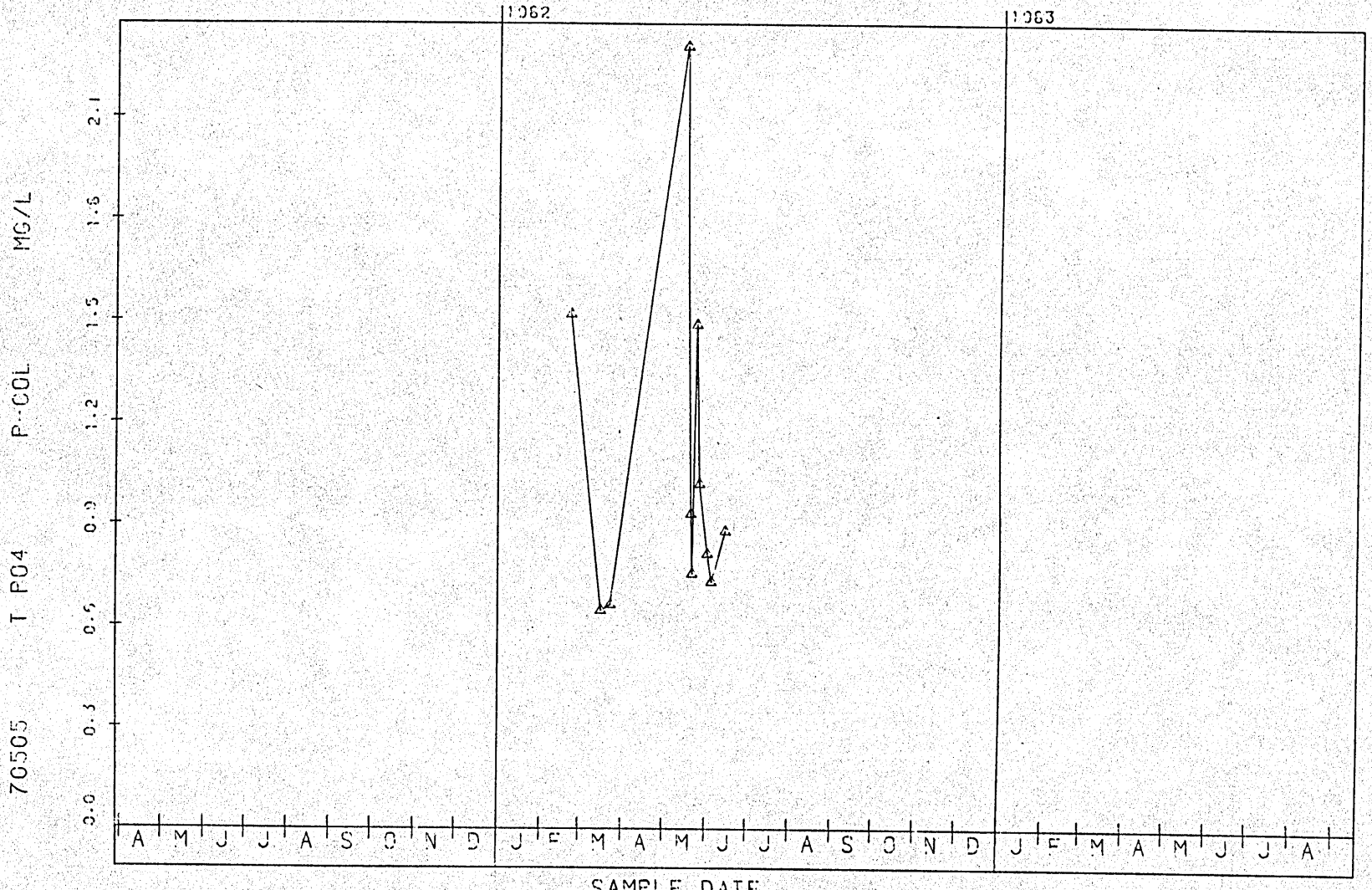
Figure IV-189.



STARTING DATE 81/3 /29

STORET
46FC12
43 48 16.0 098 18 32.0 2
3 MI N 12 MI W OF FC INLET 104N 62W S19 AABA
46035 SOUTH DAKOTA DAVISON
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663798-0693816

Figure IV-190.



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