Lake ~~Bryon~~ Byron 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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CONTENTS

Lake Byron WQSA Summary

The Lake Byron Water Quality Study Area encompasses 110,770 acres or about 173 square miles in Beadle, Spink, and Clark Counties. Lake Byron covers 1,749 acres and has a maximum depth of 10 feet and a mean depth of 8 feet. The lake is classified under the South Dakota State Water Quality Standards for the beneficial uses of warmwater marginal fish life propagation, immersion recreation, limited contact recreation, irrigation, wildlife propagation and stock watering.

Symptoms of eutrophication such as blue-green algal blooms and aquatic weeds are present annually. About 10% of the shoreline is covered with cattail and bullrush. The South Dakota Department of Game, Fish, and Parks (GF&P) manages Lake Byron for walleye, northern pike, and panfish. Due to the shallow depth and advanced eutrophy of Lake Byron, fish kills of varying severity occur frequently.

About 49% of the Lake Byron watershed is estimated to be cropland, 46% grassland, 3% farm and town sites, and 2% water and wetland areas. The Soil Conservation Service (SCS) estimated that 61% of the watershed was adequately treated in 1980.

Lakeshore development includes one State fish hatchery, about 100 residences, and two public access areas administered by GF&P. About 45% of the Lake Byron shoreline was estimated to be developed in 1979.

To determine water quality characteristics and identify water quality problems within the Lake Byron watershed, samples were taken at 8 sites. Five sites were on major intermittent tributaries entering the lake (Foster Creek and two unnamed tributaries) and 3 were in-lake sites.

In-lake sampling from 1980 through 1982 indicated Lake Byron to be hypereutrophic as evidenced by extremely high concentrations of total phosphorus and elevated nitrogen levels. Annual mean concentrations of organic nitrogen ranged from 1.52 to 6.38 mg/l and total phosphorus from .379 to 1.10 mg/l during the study period.

Evaporation during a prolonged drought period in the late 1970's and early 1980's lowered mean lake depth to several feet and increased total dissolved solid concentrations to levels in excess of 2,500 mg/l.

The principal problem at Lake Byron is extensive nutrient loading from the watershed. Data collected from tributary sites suggest that the lake has been receiving high loads of total phosphorus and nitrogen. Annual mean organic nitrogen concentrations from 1980 through 1982 at all tributary sites ranged from .980 to 2.08 mg/l. Corresponding total phosphorus concentrations exceeded .05 mg/l for all samples collected.

Watershed erosion, primarily from cropland, provided 11,783 tons and shoreline erosion contributed 2,046 tons of sediment to Lake Byron. Total sediment yield amounted to about 10.6 acre-feet per year or .09% of lake water capacity.

Fecal coliform concentrations in Lake Byron and its tributaries ranged from 3 to 3,900/100 ml. Annual means for 1980, 1981, and 1982 were 170, 35, and 584/100 ml, respectively. About 15% of 74 samples had counts greater than 400/100 ml and all but one of these occurred during 1982 sampling which was conducted mostly during the spring runoff period. Generally, sampling indicated that fecal coliforms do not appear to be a serious problem in Lake Byron.

Non-point sources of pollution from the watershed as indicated by high nutrient and sediment loading are primarily inadequate crop cover on agricultural land, lack of fertilizer management practices, over-grazing, and gully and streambank erosion. SCS estimated that at least 39% of the watershed is in need of treatment to minimize soil erosion. Secondary sources of nutrients as well as primary sources of bacterial contamination to the lake are feedlots without pollution control and failing individual septic tanks.

Recommendations

Nutrient and sediment loading to Lake Byron from the watershed may be reduced by applying 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 lake. A septic tank survey should be conducted around Lake Byron to identify any problem areas and technical assistance should be provided to control existing problems. Lake bank and stream bank stabilization is recommended in areas that are rapidly eroding.

After the above measures are implemented, a selective dredging program and/or chemical phosphorus flocculation may help to improve water quality and the overall recreational potential of the lake.

I. Lake Byron Water Quality Study Area

A. General Description

Lake Byron is a medium-sized natural lake located in northeastern Beadle County about 15 miles north of the city of Huron (Figure 1). The lake covers 1,749 acres and has a maximum depth of 10 feet and a mean depth of 8 feet. The bottom consists of silt and muck in the lake basin with a few areas of sand and gravel close to the shoreline. About 10 percent of the shoreline is covered with cattail and bullrush. Symptoms of eutrophication are present annually in the form of extensive growths of aquatic weeds and blue green algal blooms. Carp and bullhead are common fish species. Water is supplied to Lake Byron by the diverted Foster Creek and two unnamed intermittent tributaries. The lake's outflow empties into the James River about 2 miles below the lake.

B. Beneficial Uses and Impairments

Lake Byron is a popular recreational lake providing swimming, fishing, picnicking, waterskiing, and boating. It is the only sizeable lake in the vicinity of Huron, the fourth largest city in South Dakota, with a population of 14,300.

According to the South Dakota Board of Water and Natural Resources Regulation, Chapter 74:03:02; "Surface Water Quality Standards" Lake Byron is classified as having the beneficial use designations of warmwater marginal fish life propagation, immersion recreation, limited contact recreation, irrigation, wildlife propagation and stock watering. Foster Creek from the James River to S6, T114N, R60W is

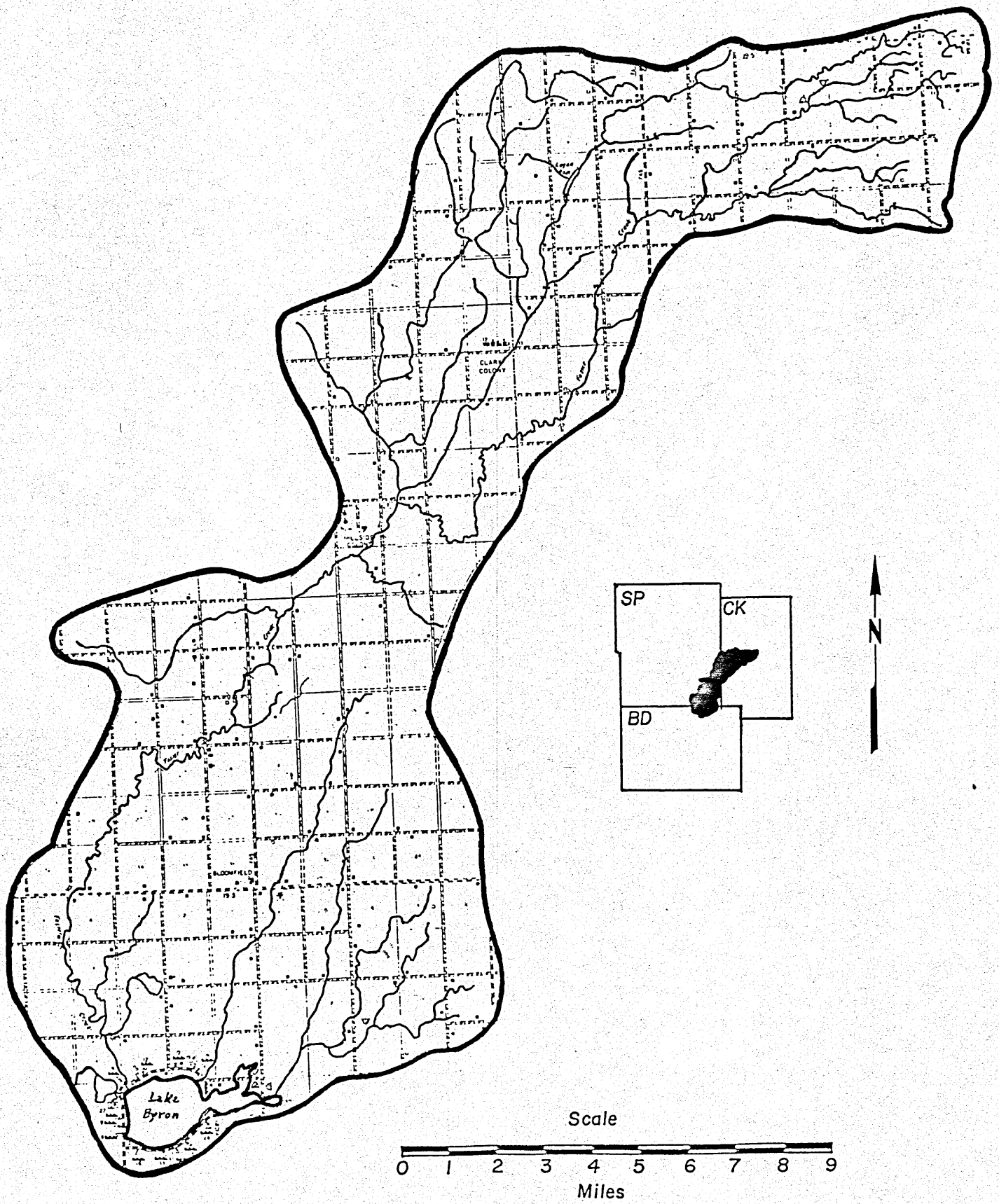


Figure 1. Lake Byron Watershed

classified for warm water marginal fish life propagation, limited contact recreation, irrigation, wildlife propagation and stockwatering. Table 1 presents the water quality standards for these beneficial uses.

Lake Byron supports a warmwater fishery for walleye, northern pike, panfish, black bullhead, carp, and bigmouth buffalo. Black bullhead is probably the most abundant fish species. The South Dakota Department of Game, Fish, and Parks (GF&P) manages the lake for walleye, northern pike, and panfish. Due to the shallow depth and advanced eutrophy of Lake Byron, fish kills of varying severity occur frequently.

A prolonged period of drought from the middle to the late 1970's reduced the lake to a depth of several feet which created severe conditions for fish and other indigneous aquatic life and greatly impaired immersion recreation and limited contact recreation uses of Lake Byron.

Other impairments to lake water quality included nutrient and sediment loading from eroding watershed croplands, feedlots without pollution controls, as well as lakeshore erosion and seepage from failing individual septic tank systems around the perimeter of Lake Byron.

C. Land Use

The Soil Conservation Service (SCS) estimated the Lake Byron watershed to contain 110,770 acres or about 173 square miles in Beadle, Spink, and Clark counties (Figure 1). Land use in the watershed is predominantly agricultural. About 49 percent is estimated to be

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.

cropland, 46 percent grassland, 3 percent farm and townsites, and 2 percent water and wetland areas.

Lakeshore development includes one state fish hatchery, about 100 residences, and two public access areas administered by GF&P. About 45 percent of the Lake Byron shoreline was estimated to be developed in 1979.

D. Climate, Geology, and Major Soils

Climate

The climate of east-central South Dakota is continental with cold, dry winters and short springs typified by rapid weather changes. Precipitation increases markedly during spring with 31 percent of annual moisture normally being recorded from March through May. Summer and autumn are characterized by hot to mild days with an abundance of sunshine. Mean annual temperature is about 45°F. Average yearly precipitation and lake evaporation amount to 19 and 35 inches, respectively.

Geology

Surface deposits in the Lake Byron area are composed of glacial drift. The drift consists of till and glacial outwash deposits. The former is comprised of a heterogeneous mixture of boulders, gravel, and sand in a clay matrix (delivered from preglacial formations of granite, gneiss, limestone, sandstone, and shale) directly deposited by the glacier. Glacial deposits of the Lake Wisconsin age, averaging

35 feet in thickness over older glacial deposits, are on the surface throughout most of Beadle County.

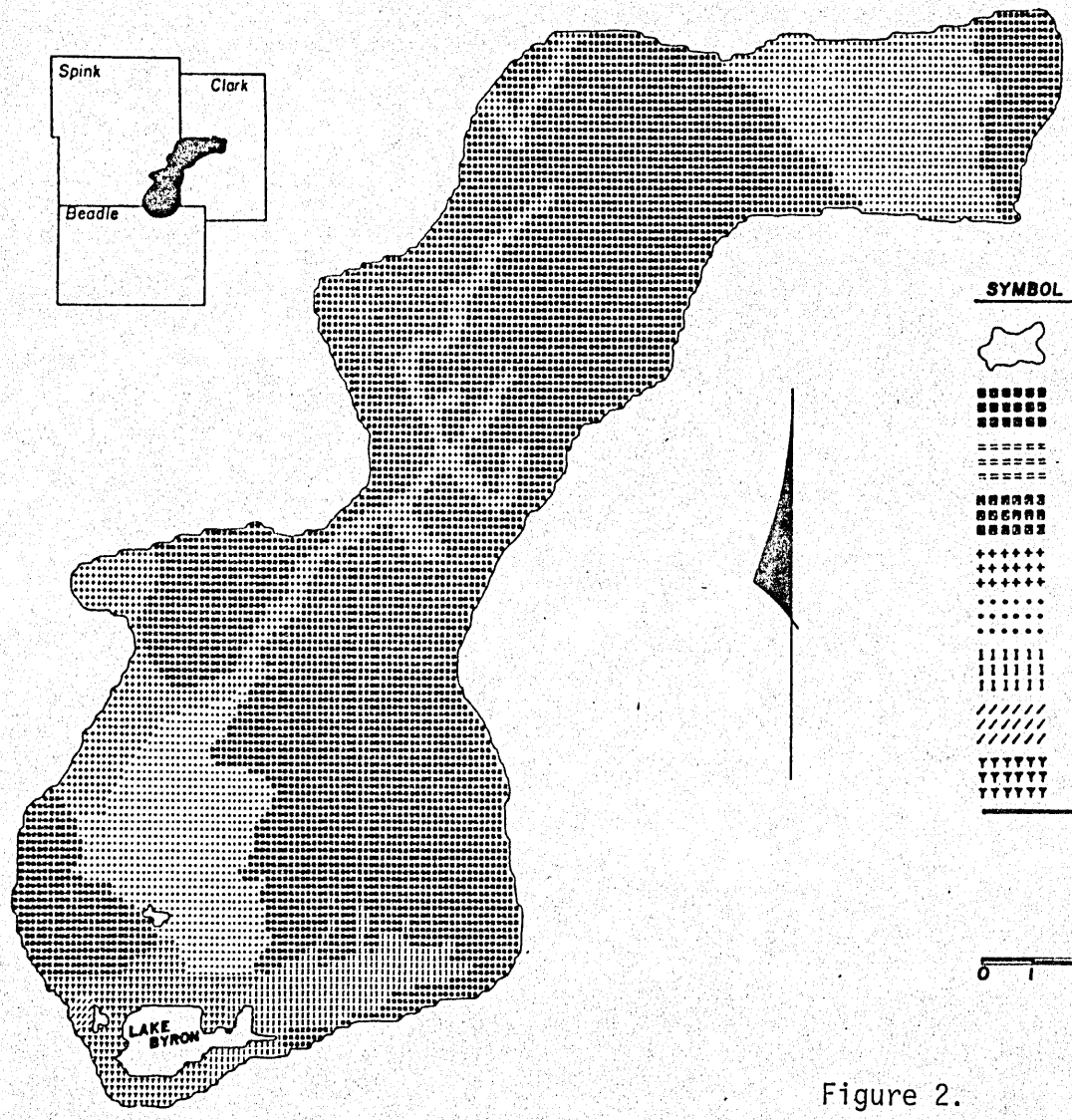
The glacial till in northeastern Beadle County weathers to olive gray clay loam or clay, is firm, and contains fragments of shale. In the Lake Byron vicinity the till is yellowish, is loam to clay loam, is friable to firm, and contains fewer fragments of shale. This is the parent material of lakeshore soils such as Betts, Ethan, Houdek, and Prosper. However, Egas soils were formed in alluvium deposited by glacial outwash streams. (SCS soil surveys in Beadle, Spink, and Clark Counties)

Major Soils

According to soil surveys conducted by the SCS in Beadle, Spink, and Clark counties. The following major soil associations are found in the drainage area (Figure 2):

PF-CJ - Peever-Cavour	:	Well drained nearly level to gently sloping loamy soils and soils with claypan subsoils, both formed in firm clay loam and glacial till.
FU-BY - Forman-Buse	:	Well-drained, undulating to hilly loamy soils formed in glacial till.
LD-Lamour	:	Poorly drained, nearly level silty soils.

Lake Byron Watershed



SOIL ASSOCIATIONS

SYMBOL	CATEGORY	PERCENT	ACRES
	Water/ Wetland	1.88	2,183
	Forman	7.09	8,234
	Forman - Buse	8.61	10,000
	Peever - Cavour	58.79	68,303
	Lamoure	8.42	9,779
	Carthage - Enet	8.18	9,500
	Betts - Ethan	3.67	4,262
	Betts - Lamo	.15	174
	Houdek - Prosper	3.19	3,705
	TOTALS	100.00%	116,140

Scale

0 1 2 3 4 5 6 7 8 9 10 11 12

Miles

Figure 2.

CZ-EN - Carthage-Enet :	Deep moderately well drained and well-drained, nearly level to undulating loamy soils formed in glacial outwash; on uplands and upland terraces.
FU - Forman :	well-drained, nearly level to undulating loamy soils.
B3-EU - Belts-Ethan :	Deep excessively drained and well-drained, gently rolling to steep loamy soils formed in glacial till; on uplands.
HR-PR - Houdek-Prosper:	Deep well-drained and moderately well drained, nearly level to gently rolling, loamy soils formed in glacial till, on uplands.
B3-LC - Betts-Lamo :	Deep, excessively drained, gently rolling to steep, loamy soils formed in glacial till, on uplands; and deep somewhat poorly drained, nearly level, silty soils formed in alluvium; on bottom land.

II. Lake Byron Water Quality Study Area Selection

Nominations for designation as a Water Quality Study Area (WQSA) within the Fourth Planning and Development District were solicited by DWNR from the Fourth District Commission. In February 1980, nominations were open to all commissioners and the following five lakes were suggested: Lake Byron (Beadle County), Amsden (Day County), Lake Eureka (McPherson County), Lake Faulkton (Falk County), and Cottonwood Lake (Spink County).

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

The Lake Byron watershed according to the criteria ranking, received designation as the WQSA in the Fourth Planning and Development District for 1980. Public interest and ranking criteria such as the availability of adequate soil and/or land use data for the watershed, strongly supported this designation.

III. Soil Erosion and Sediment Yield Summary

SCS conducted soil erosion and sediment yield studies of the Lake Byron watershed. 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 soil erosion in the Lake Byron watershed to be 146, 222 tons per year with total sediment deposited in Lake Byron at 13,829 tons or 10.58 acre-feet per year. About 69 percent of this sediment is derived from water erosion primarily from cropland, 16 percent from gully and streambank erosion, and 15 percent from lakeshore erosion.

SCS selected Best Management Practices (BMP's) for the watershed to reduce sediment yield and nutrients to Lake Byron. Examples of needed conservation practices are crop residue management, conservation tillage, proper grazing use, agricultural waste management, and establishing grass on critical erosion areas. The SCS estimated that 67,520 acres or about 61 percent of the Lake Byron watershed was adequately treated in 1980. (Appendix A)

IV. Water Quality Status Report for Lake Byron

Lake Byron is located in Beadle County, South Dakota (latitude 44 Deg., 33 Min., 54 Sec. north, longitude 98 Deg., 08 Min., 24 Sec. west, T113N, R61W, Sections 22, 23, 25, 26, 28, 34, and 35). The major inflow is Foster Creek and two additional unnamed creeks flow into Lake Byron. The major outflow is on Connors Lake, a small lake adjacent to Lake Byron. Lake Byron discharges into Connors Lake which discharges water back into Foster Creek. The major morphological characteristics of Lake Byron are given below:

Area	1,749 acres (707.7 ha)
Shoreline Length	65,472 feet (19,954 m)
Maximum Depth	10 feet (3.0 m)
Mean Depth	8 feet (2.4 m)
Volume	11,710 acre-feet ($1.445 \times 10^7 m^3$)

Watershed/Lake Surface Area Ratio	66
Origin of Lake Basin	Natural
Thermal Stratification	No

The State of South Dakota has assigned the following beneficial uses to Lake Byron:

° Warm water marginal fish life propagation;

° Immersion recreation;

° Limited contact recreation;

° Irrigation; and

° Wildlife propagation and stock watering.

The following parameters were monitored from 1980 to 1982: dissolved oxygen; pH; total alkalinity; fecal coliforms; total solids; total suspended solids; total dissolved solids; nitrate-nitrogen; nitrite-nitrogen; ammonia nitrogen; total Kjeldahl nitrogen; total phosphorus; and orthophosphate. In addition, inorganic nitrogen concentrations, organic nitrogen concentrations, total phosphorus trophic state index values, total nitrogen:total phosphorus ratios, and total nitrogen and total phosphorus loadings were calculated.

Table IV-1 and Figure 3 describe the sampling site locations. Tables IV-2 to IV-18 contain parameter summary statistics for the sampling sites. Tables IV-19 to IV-34 show parameter violations. Tables IV-35 to IV-37 are summaries of inorganic and organic nitrogen data. Table IV-38 lists Carlson's (1977) total phosphorus based trophic state index values. Table IV-39 contains in-lake total nitrogen:total phosphorus weight ratios. Finally, all of the figures contain

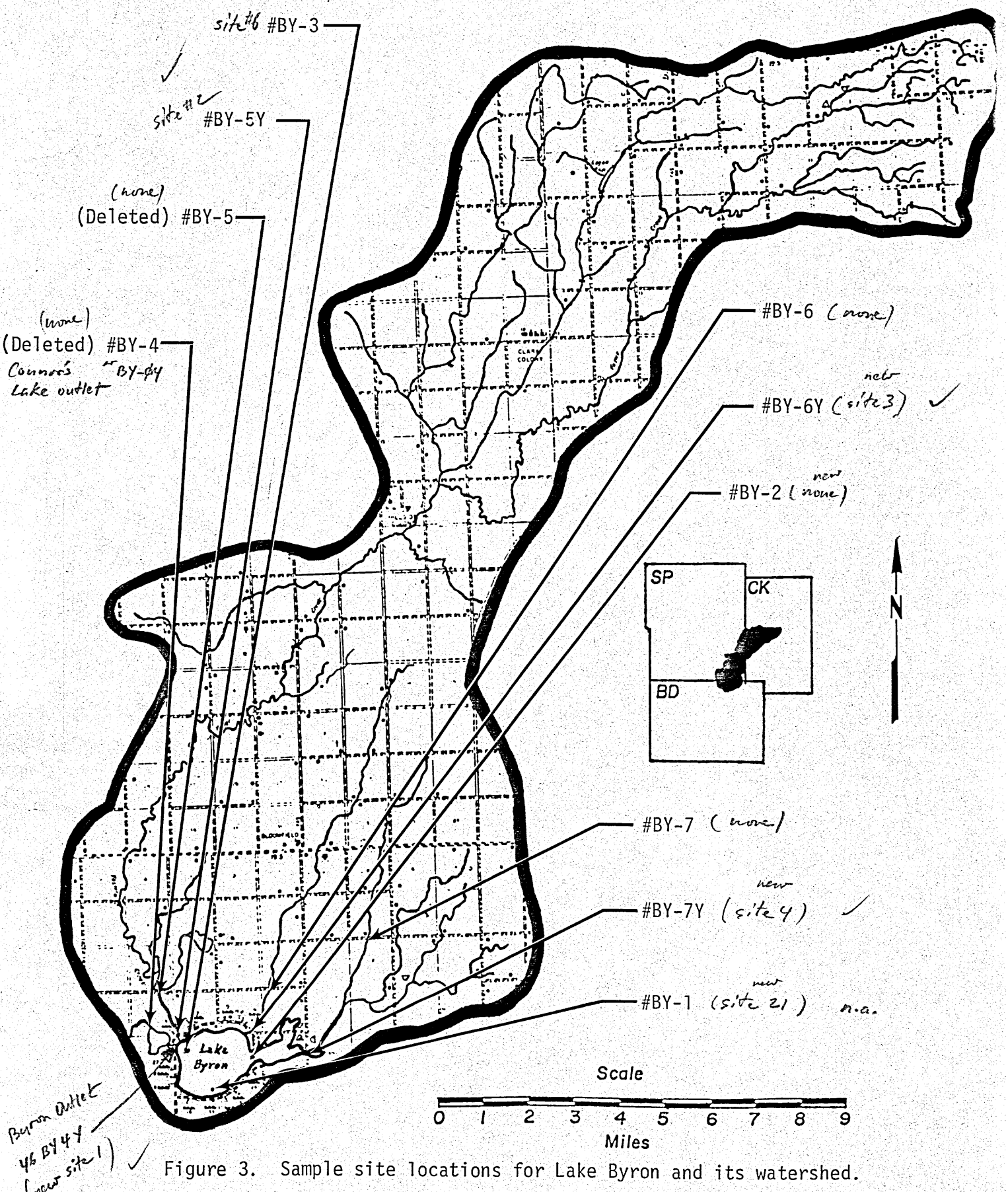


Figure 3. Sample site locations for Lake Byron and its watershed.

Site	Description
46BY01 (BY-1)	Latitute 44 Deg., 33 Min., 22 Sec., longitude 98 Deg., 08 Min., 16 Sec., Township 113N, Range 61W, Section 35. NW1/4, NW1/4, SW1/4, NW1/4. This in-lake site is located on the south side of the lake 35 feet east of the boat ramp.
46BY02 (BY-2)	Latitude 44 Deg., 34 Min., 00 Sec., longitude 98 Deg., 07 Min., 21 Sec., Township 113N, Range 61W, Section 26. NW1/4, NW1/4, NE1/4, SE1/4. This in-lake site is located on the north side of the lake at the narrows. It is at the end of the road 0.5 miles south of the Kozy Kamp bait shop and 27.0 feet from a red "X" marked on a rock located 117.5 feet from a spot painted on a tree. The tree is WSW of the parking area and the rock is north of the tree.
46BY03 (BY-3)	Latitude 44 Deg., 34 Min., 30 Sec., longitude 98 Deg., 09 Min., 11 Sec., Township 113N, Range 61W, Section 22, NE1/4, SW1/4, SE1/4, SW1/4. This in-lake site is located on the northwest corner of the lake near the public access area. It is 33.5 feet SE of the red "X" marked on a rock located 32.5 feet SE of the second white stump toward the lake from the south entrance.
46BY5Y (BY-5y)	Latitude 44 Deg., 34 Min., 31 Sec., longitude 98 Deg., 09 Min., 18 Sec., Township 113N, Range 61W, Section 22. NE1/4, SE1/4, SW1/4, SW1/4. This site is located on the Foster Creek inlet to NW Lake Byron on the north side of the road.
46BY06 (BY-6)	Latitude 44 Deg., 35 Min., 18 Sec., longitude 98 Deg., 06 Min., 04 Sec., Township 113N, Range 61W, Section 13. NE1/4, NE1/4, NW1/4, NW1/4. This site is located 1.5 miles north, 0.25 miles east of Site 2. It is about 60 feet from the bridge on the south side of the road.
46BY6Y (BY-6y)	Latitude 44 Deg., 34 Min., 29 Sec., longitude 98 Deg., 07 Min., 24 Sec., Township 113N, Range 61W, Section 23. SW1/4, SW1/4, SE1/4, SE1/4. This site is located on the inlet of an unnamed creek which flows into Lake Byron 1 mile south and .5 mile west of Site 6, on the north side of the road.
46BY07 (BY-7)	Latitude 44 Deg., 36 Min., 10 Sec., longitude 98 Deg., 04 Min., 11 Sec., Township 113N, Range 60W, Section 17. NW1/4, NE1/4, NE1/4, NW1/4. This site is located 2.5 miles east and 1 mile north of Site 6 on the south side of the road.
46BY7Y (BY-7y)	Latitude 44 Deg., 34 Min., 05 Sec., longitude 98 Deg., 05 Min., 54 Sec., Township 113N, Range 60, Section 30. NW1/4, SW1/4, SW1/4, NW1/4. This site is located on the east inlet of an unnamed creek which flows into Lake Byron 1.2 miles east and .5 mile south of Site 6y, on the east side of the road.

Figure 3 (cont.). Sample site locations for Lake Byron and its watershed.

graphical presentations of the data. Figures and Tables IV-1 to IV-91 are contained in Appendix B.

Dissolved Oxygen (DO)

The dissolved oxygen concentrations during the study ranged from 1.4 to 16.6 mg/l. The annual mean DO concentration (of all sites combined) were relatively high and were 9.2, 10.2, and 10.2 mg/l for 1980, 1981, and 1982, respectively (Tables IV-2 to IV-4). These values indicate a well oxygenated system.

Only four water samples out of 69 (about 6%) had DO concentrations below the 4.0 mg/l criteria applied to Lake Byron for warm water marginal fish life propagation.

pH

For immersion recreation in South Dakota surface waters, pH should be between 6.5 and 8.3 units. The pH values ranged from 6.2 to 9.2 units and the mean pH values for 1980, 1981, and 1982 were 8.4, 7.9, and 8.0, respectively (Tables IV-2 to IV-4). A large number of water samples had pH values outside of the 6.5-8.3 range, and all of these were from in-lake samples. About 58% of the in-lake samples exceeded the criteria and most of these exceedences were between 8.4 and 9.2 units (Tables IV-19 to IV-34).

Total Alkalinity

Total alkalinity concentrations were only determined in 1982. The total alkalinity concentrations ranged from 28 to 298 mg $CaCO_3$/l and the annual mean was 140 mg $CaCO_3$/l (Table IV-4). These values are typical of those found in lakes (Lind, 1974).

Fecal Coliforms

For immersion recreation, fecal coliform counts must not exceed 400/100 ml in any one sample collected from May 1 to September 30.

The fecal coliform counts ranged from 3 to 3,900/100 ml and the annual means for 1980, 1981, and 1982 were 170, 35, and 584/100 ml, respectively (Tables IV-2 to IV-4). Eleven (11) water samples out of 74 (about 15%) had counts greater than 400/100 ml and all but one of these occurred during 1982. In addition, most of the water sampling during 1982 occurred during the spring runoff season and this fact may be reflected in the fecal coliform counts.

Total Solids, Suspended Solids, and Dissolved Solids

No criterion for total solids concentration exists for South Dakota surface waters. The total solids concentrations during the study ranged from 88 to 5,916 mg/l and the annual mean concentrations for 1980, 1981, and 1982 were 2,802, 2,776, and 1,539 mg/l, respectively (Tables IV-2 and IV-4).

For the beneficial use of warm water marginal fish life propagation, total suspended solids concentrations should not be greater than 150 mg/l. About 13% of the total suspended solids concentrations exceeded 150 mg/l and these exceedences were not limited to any particular time of the year (Tables IV-19 to IV-34). The annual mean concentrations for 1980, 1981, and 1982 were 101, 99, and 89 mg/l, respectively (Tables IV-2 to IV-4).

For the beneficial use of wildlife propagation and stock watering, total dissolved solids concentrations should not exceed 2,500 mg/l. The annual mean total dissolved solids concentrations ranged from 1,212 to 2,702 mg/l (Tables IV-2 to IV-4). Only about 5% of the stream site samples were greater than 2,500 mg/l whereas about 40% of the in-lake samples exceeded 2,500 mg/l. It appears that some kind of in-lake process could be responsible for the relatively higher numbers of in-lake exceedences.

Nitrate-Nitrogen

For the beneficial use of wildlife propagation and stock watering, nitrate-nitrogen concentrations should not exceed 50 mg/l. In addition, Wetzel (1975) stated that nitrate-nitrogen concentrations in unpolluted fresh water are usually between 0 to 10 mg/l.

Two forms of nitrate were measured, dissolved nitrate and total nitrate. During 1980 and 1981, the former fraction was measured and during 1982 both forms were measured. Neither of these nitrate fractions approached the 50 mg/l criterion or the 10 mg/l level. The 1980 and 1981 annual mean dissolved nitrate concentrations were .100 and .150 mg/l, respectively and the highest concentration of dissolved nitrate during these years was .200 mg/l. During 1982, the annual mean dissolved and total nitrate-nitrogen concentrations were .200 and .286 mg/l, respectively. The highest total nitrate-nitrogen concentrations during the study was 2.60 mg/l. Relative to the criterion, this concentration was not considered excessive.

Nitrite-Nitrogen

Nitrite-nitrogen concentrations ranged from below the 0.01 analytical detection limit to 0.58 mg/l. The 1980, 1981, and 1982 annual mean concentrations were <0.01, .047, and 0.11 mg/l, respectively (Tables IV-2 to IV-4). The last two means are somewhat misleading because about 89% of the nitrite-nitrogen concentrations were below the 0.01 detection limit. Therefore, in general, nitrite-nitrogen does not appear to be a problem in Lake Byron.

Ammonia Nitrogen

Since Lake Byron is used for warm water marginal fish life propagation, un-ionized ammonia concentrations should not be greater than 0.05 mg/l. This criterion was exceeded once during the study, .065 mg/l at Site 2 on August 21, 1980. In general, un-ionized ammonia does not seem to be a major problem in Lake Byron.

Organic and Inorganic Nitrogen

Organic nitrogen concentrations were calculated by subtracting ammonia-nitrogen concentrations from total Kjeldahl nitrogen concentrations. Although no South Dakota criterion exists for organic nitrogen Wetzel (1975) presented a general guideline relating organic nitrogen concentrations to trophic state.

The in-lake organic nitrogen concentrations ranged from 0.51 to 12.2 mg/l and the annual mean concentration of the in-lake sites ranged from 1.52 to 6.38 (Tables IV-35 to IV-37). The annual means indicate a hypereutrophic system. The annual means of the stream sites were slightly lower and ranged from .983 to 2.08 mg/l. These data suggest eutrophy or hypereutrophy.

Inorganic nitrogen concentrations were calculated by adding together the nitrite, nitrate, and ammonia nitrogen concentrations. In these calculations, any parameter reported as being below a detection limit was assumed to be the same concentration as the detection limit. In addition, Wetzel's (1975) guideline was used to relate inorganic nitrogen concentrations to trophic state.

In-lake inorganic nitrogen concentrations ranged from 0.15 to 2.21 mg/l and these concentrations span the trophic state spectrum. The annual means, however, ranged from .381 to .825 mg/l and these data indicate meso-eutrophy to eutrophy.

Inorganic nitrogen concentrations of the stream sites were comparable and ranged from 0.13 to 5.07 mg/l. The annual mean concentrations ranged from 0.30 to .637 mg/l.

Phosphorus

Dissolved orthophosphate concentrations ranged from .005 to 1.20 mg/l and the annual means for 1980, 1981, and 1982 were .409, .061, .587 mg/l, respectively (Tables IV-2 to IV-4). Although no criteria exist for dissolved orthophosphate, the annual mean values are undoubtedly excessive. This is so because most total phosphorus based criteria use .02 mg/l phosphorus as a lower limit of eutrophy and the annual means presented above are greater than .02 mg/l.

No South Dakota criterion exists for total phosphorus concentrations. However, Reckhow, et al. (1980) proposed 0.05 mg/l total phosphorus as a lower limit for hypereutrophic lakes and this criterion is used below. The total phosphorus concentrations ranged from .075 to 5.36 mg/l and the annual mean concentrations for 1980, 1981, and 1982, were .477, 1.10, and .379 mg/l, respectively (Tables IV-2 to IV-4). According to the .05 mg/l criterion, every water sample analyzed for total phosphorus indicated hypereutrophy. Lake Byron and its tributaries clearly have excessive levels of total phosphorus.

Trophic State

Carlson's (1977) trophic state index was applied to total phosphorus data in order to obtain an estimate of the trophic status of Lake Byron. The data are presented in Table IV-38. These data indicate a eutrophic system. The trophic state values ranged from 39.5 to 128 and the mean values for Sites 1, 2, and 3 were 87.5, 85.6, and 94.1, respectively.

Nutrient Limitation

Total nitrogen:total phosphorus weight ratios were used to determine the limiting nutrient in water from in-lake Sites 1, 2, and 3. The ratios are

presented in Table IV-39 and these data strongly indicate a nitrogen limited system. The ratios ranged from 0.56 to 209 and only about 9% of the ratios indicated phosphorus limitation. The annual mean ratios for Sites 1, 2, and 3 were 8.51, 9.23, and 19.0, respectively. The latter ratio suggests phosphorus limitation but this ratio was undoubtedly weighted by a ratio of 209 which was obtained on March 16, 1982. The median ratio for Site 3 was 6.46 and this is probably more representative than the mean.

Summary

1. Dissolved oxygen concentrations ranged from 1.4 to 16.6 mg/l and only about 6% of the DO concentrations were below 4.0 mg/l. Annual mean DO concentrations were relatively high (9.2, 10.2, and 10.2 mg/l for 1980, 1981, and 1982, respectively) and indicated a well oxygenated system.

2. About 58% of the in-lake samples had pH values greater than 8.3 units. The pH values ranged from 6.2 to 9.2 units and most values were between 8.0 and 9.0 units.

3. Total alkalinity concentrations ranged from 28 to 298 mg $CaCO_3$/l. The 1982 annual mean was 140 mg $CaCO_3$/l.

4. Fecal coliform counts ranged from 3 to 3,900/100 ml. About 15% of the counts were greater than the 400/100 ml criterion and all but one of these occurred in 1982. Most of these samples were collected during the spring runoff season.

5. Total solids concentrations ranged from 88 to 5,916 mg/l and the annual mean concentrations for 1980, 1981, and 1982 were 2,802, 2,776, and 1,539 mg/l, respectively.

6. The annual mean total suspended solids concentrations for 1980, 1981, and 1982 were 101, 99, and 89 mg/l, respectively, and did not exceed the 150 mg/l criterion. However, about 13% of the samples exceeded 150 mg/l and these were not limited to any particular time of the year.

7. The annual mean total dissolved solids concentrations ranged from 1,212 to 2,702 mg/l. A number of samples exceeded the 2,500 mg/l criterion. About 5% of the stream site samples were exceedences whereas about 40% of the in-lake samples exceeded the criterion.

8. Nitrate-nitrogen concentrations were well below the 50 mg/l criterion. Soluble nitrate-nitrogen concentrations ranged from 0.10 to 0.20 mg/l and total nitrate-nitrogen concentrations ranged from 0.10 to 2.60 mg/l.

9. Nitrite-nitrogen concentrations ranged from less than 0.01 mg/l to 0.58 mg/l. Most of the concentrations (about 89%) were below the 0.01 mg/l analytical detection limit.

10. Only one un-ionized ammonia nitrogen concentration exceeded the 0.05 mg/l criterion.

11. In-lake organic nitrogen concentrations ranged from 0.15 to 2.21 mg/l. The in-lake site annual means ranged from .381 to .825 mg/l and these data indicate meso-eutrophy to eutrophy. The inorganic nitrogen concentrations of the stream sites ranged from 0.13 to 5.07 mg/l.

13. Dissolved orthophosphate concentrations ranged from .005 to 1.20 mg/l and the annual mean concentrations for 1980, 1981, 1982 were .409, .061, .587 mg/l, respectively.

14. Total phosphorus concentrations ranged from .075 to 5.36 mg/l. Every water sample analyzed for total phosphorus had concentrations indicative of hypereutrophy.

15. Eutrophy was indicated by Carlson's total phosphorus based trophic state index.

16. Total nitrogen:total phosphorus weight ratios suggested nitrogen limitation in Lake Byron.

Recommendations

Since the fecal coliform exceedences generally occurred during spring runoff, the possible fecal coliform sources along the tributaries and the lakeshore should be identified and located.

In addition, excessive amounts of nitrogen and phosphorus are present in Lake Byron and its tributaries. The sources of these nutrients should be located. Mitigative actions should then be designed to curtail excessive nutrient inputs.

V. Lake Byron Watershed Problems and Recommendations

A. Watershed Problems and Recommendations

Problem:

Nutrient and Sediment Loading

Excessive nutrient and sediment loads from Foster Creek and two other intermittent tributaries are probably responsible for the present hypereutrophic conditions in Lake Byron. The lake is characterized by very high concentrations of phosphorus and elevated nitrogen levels, annual blooms of blue green algae and extensive growths of aquatic weeds. These conditions are symptomatic of extreme nutrient enrichment. Mean annual organic nitrogen concentrations at all tributary sites ranged from .98 to 2.08 mg/l. Corresponding total phosphorus concentrations exceeded .05 mg/l for all samples collected (Chap. IV).

Watershed erosion, primarily from cropland, provided 9,501 tons and gully-streambank erosion contributed 2,282 tons of sediment per year to Lake Byron. Total sediment yield from these sources amounted to 9 acre-feet or about .08 percent of lake water capacity.

Additional sources of nutrients and fecal coliform contamination to the lake may be runoff from an undetermined number of feedlots in the watershed and failing individual septic tank systems. In May 1980, infrared photo imagery by EPA identified 4 residences around the lake periphery with surface-failing on-site waste disposal systems. Since shoreline development on Lake Byron totals over 100 residences it is probable that a number of surface and sub-surface failures may have

escaped detection. Much of the developed shoreline area consists of soils (e.g. Houdek-Ethan, Egas) that have severe limitations for septic tank absorption fields as a result of slow permeability due to high clay content and low pore space.

Recommendations:

Nutrients and sediments derived from runoff draining fertilized cropland may be reduced by utilizing BMP's on the watershed including minimum tillage and leaving crop residue to help reduce erosion. Further reductions of nutrient input into Lake Byron may be realized by the implementation of appropriate fertilizer management practices if current fertilizer application rates are found to be responsible for excessive nutrient contributions to Foster Creek and other lake tributaries. Comprehensive surveys of feedlot operations in the watershed and lakeshore septic tank systems are recommended to determine their respective impacts on Lake Byron water quality.

Siltation loads that are presently entering Lake Byron can be further reduced by: 1. bank stabilization (riprap) of rapidly eroding stream areas, particularly on Foster Creek; 2. Seeding of vegetative sediment barrier strips to protect overgrazed streamside land and to reduce the amount of sediment entering the tributaries; and 3. construction of small sediment retention dams on intermittent tributaries.

VI. In-lake Problems and Recommendations

Problems:

A. Eutrophication

The major problem in Lake Byron is eutrophication as evidenced by high concentrations of phosphorus and nitrogen, annual blooms of blue green algae, extensive growth of aquatic weeds in nearshore areas, and reduced water clarity. Annual mean concentrations of organic nitrogen ranged from 1.52 to 6.38 mg/l from 1980 through 1982. Corresponding values for total phosphorus ranged from .379 to 1.10 mg/l. These nutrient levels are clearly indicative of hypereutrophic conditions.

Recommendations:

The watershed treatments recommended in the previous section will help alleviate the nutrient and sediment problems in Lake Byron. Following watershed stabilization, in-lake treatments such as selective dredging (east end of Lake Byron) and chemical phosphorus precipitation may be considered. The latter involves the application of a chemical such as aluminum sulfate (alum) to: 1. change the form of phosphorus to make it unavailable to plants; 2. remove phosphorus from the water column; and 3. prevent release or recycling of potentially available phosphorus from the lake sediments. Treatment may have to be repeated every 1-3 years depending on lake conditions. Cost effectiveness of both in-lake treatments should be determined before any action is taken.

B. Shoreline erosion

Shoreline erosion contributes about 15 percent of the total sediment deposited in Lake Byron or about 2,046 tons (1.6 acre-feet) per year. SCS determined the most severe lakeshore erosion occurs on the east end of the lake in segments 20, 25, and 32 with a combined length of 3,410 feet (Table 4, Appendix A).

Recommendation:

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

VII. Summary and Conclusions

Lake Byron is a shallow prairie lake within a large contributing watershed comprised mainly of cropland and pasture land. Consequently, the lake is subject to proportionately large sediment and nutrient loads during periods of rainfall and snowmelt runoff. Moreover, in-lake conditions are exacerbated during periods of relatively moderate drought when water levels decline sharply and conditions favorable for the proliferation of aquatic vegetation and dense algal blooms are produced.

Difficulties attending attempts to improve Lake Byron water quality involve the shallow nature of the lake and its exposure to strong winds which produce wave generated mixing of nutrients from shallow bottom sediments. This in-lake nutrient regeneration is probably sufficient to sustain algal blooms and extensive growth of aquatic weeds even with the absence of

incoming nutrients from the watershed. Sediment retention structures will reduce the rate of sedimentation to the lake; but maintenance of these structures may be costly due to the rapid accumulation of sediments from the large watershed. Funds must be made available to implement watershed improvement and sediment retention projects as well as in-lake removal of bottom sediments before substantial improvement in Lake Byron water quality can be realized.

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IX. Appendices

Appendix A: SCS Soil Erosion and Sediment Yield Study

SECTION 208 - WATER QUALITY STUDY AREAS

SOIL EROSION AND SEDIMENT YIELD STUDY

IN

LAKE BYRON WATERSHED

BEADLE, SPINK AND CLARK 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

LAKE BYRON WATER QUALITY STUDY AREA

IN

BEADLE, SPINK AND CLARK 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. The 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 of these practices. This information was developed by the 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 Lake Byron Water Quality Study Area (WQSA). The source of those sediments is from sheet and rill erosion from cropland, grassland, woodland and from gully, streambank and lakeshore 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 soil association 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 Looses, 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 movement 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 developed by the South Dakota State Planning Bureau and local SCS personnel. SCS provided soil association maps, the Planning Bureau provided Landsat data maps. These two maps were consolidated by the Planning Bureau to obtain land uses by soil associations. Using this information as a base, local SCS personnel provided the needed factors to use in the Universal Soil Loss Equation. The actual soil loss calculations were made by computer furnished by the Planning Bureau. SCS Personnel summarized the land use and soil loss data by subwatershed areas.

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 in each WQSA 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 then multiplied by an estimated sediment delivery ratio to obtain sediment yield delivered to Lake Byron. 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.

Many factors affect sediment yield - 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 Byron).

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. 1/ 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 Lake Byron Watershed. The purpose of this study was to identify the water erosion and sedimentation problems relative in Lake Byron and its drainage area. (See Watershed Map)

1/ "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.

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

Table 1 shows the present "Land Uses and Estimated Acres Needing Treatment" in Lake Byron Watershed. The data was developed and is shown by subwatershed areas. The watershed contains 110,770 acres or about 173 square miles in Beadle, Spink and Clark counties. Local SCS personnel estimate that 67,520 acres or about 61 percent of the watershed is now adequately treated. The remaining 43,250 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 the erosion estimates by subwatershed areas. Estimates were made for sheet and rill erosion as well as erosion from channels (gullies and streambanks) and the lake shore. The table also shows estimates of the amount of sediment by sources actually entering Lake Byron annually. This is estimated to be 13,829 tons. It is estimated that this sediment will displace about 10.58 acre feet of water or about .09 percent of the total lakes capacity.

Wind erosion may be a problem in the Byron Lake Watershed. No estimates were made of the acres affected or the volume of soil moved since wind erosion has little effect on water quality.

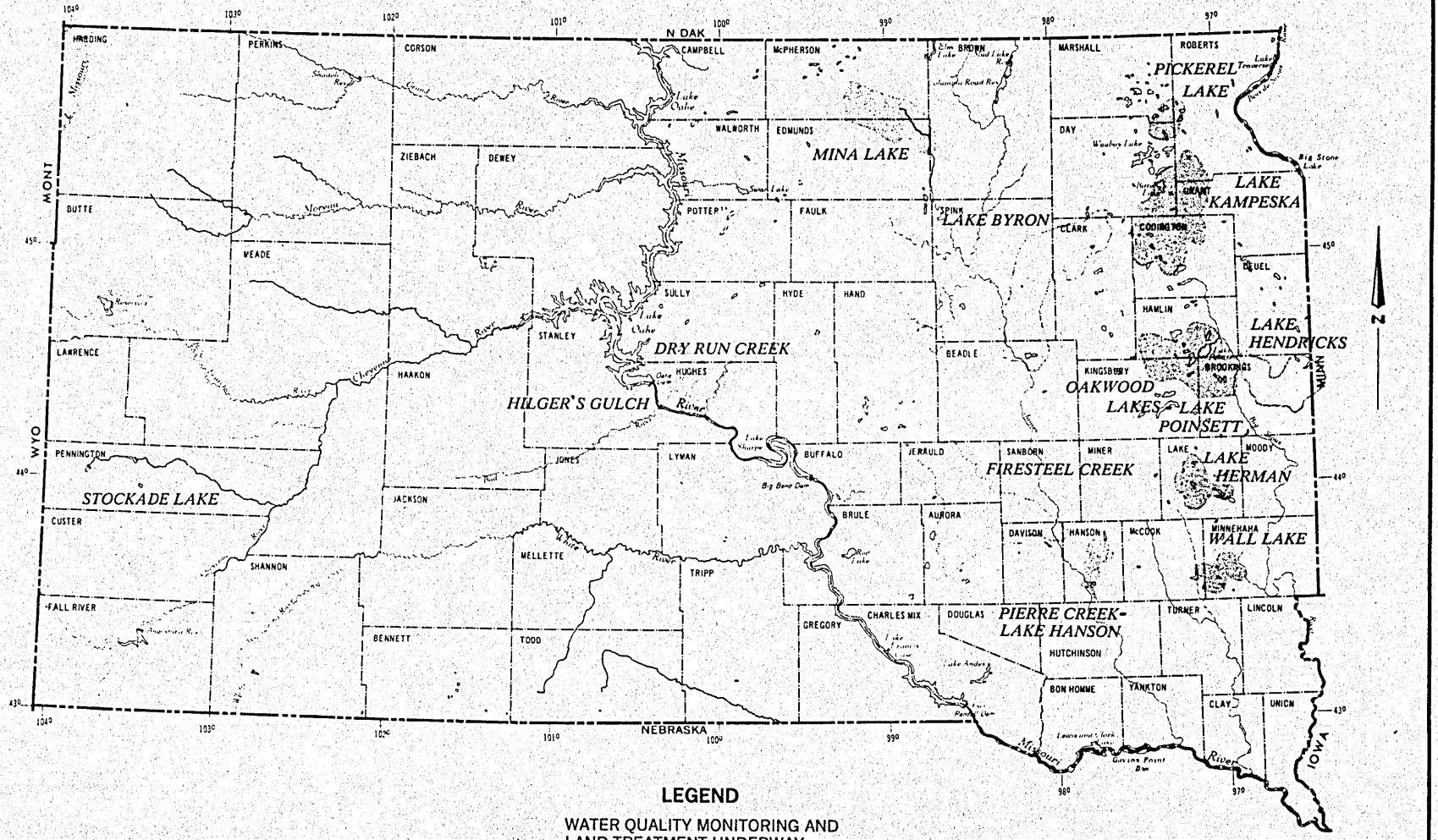
Table 3 - "Best Management Practices (Conservation Practices and Measures) shows the major land treatment needed in this watershed area. The table also shows estimated amounts and probable costs to get the land in this watershed "adequately treated". It must be kept in mind, that these are "Estimates" 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.

Figure 3 is a map of Lake Byron showing the shoreline divided into 34 segments. These segments were studied separately to determine shoreline erosion. The amount of erosion, the length of the segments and the intensity of the erosion are indicated in Table 4. It is noted that this most severe lake shore erosion occurs on the east end of the lake in segments 20, 25 and 32.

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

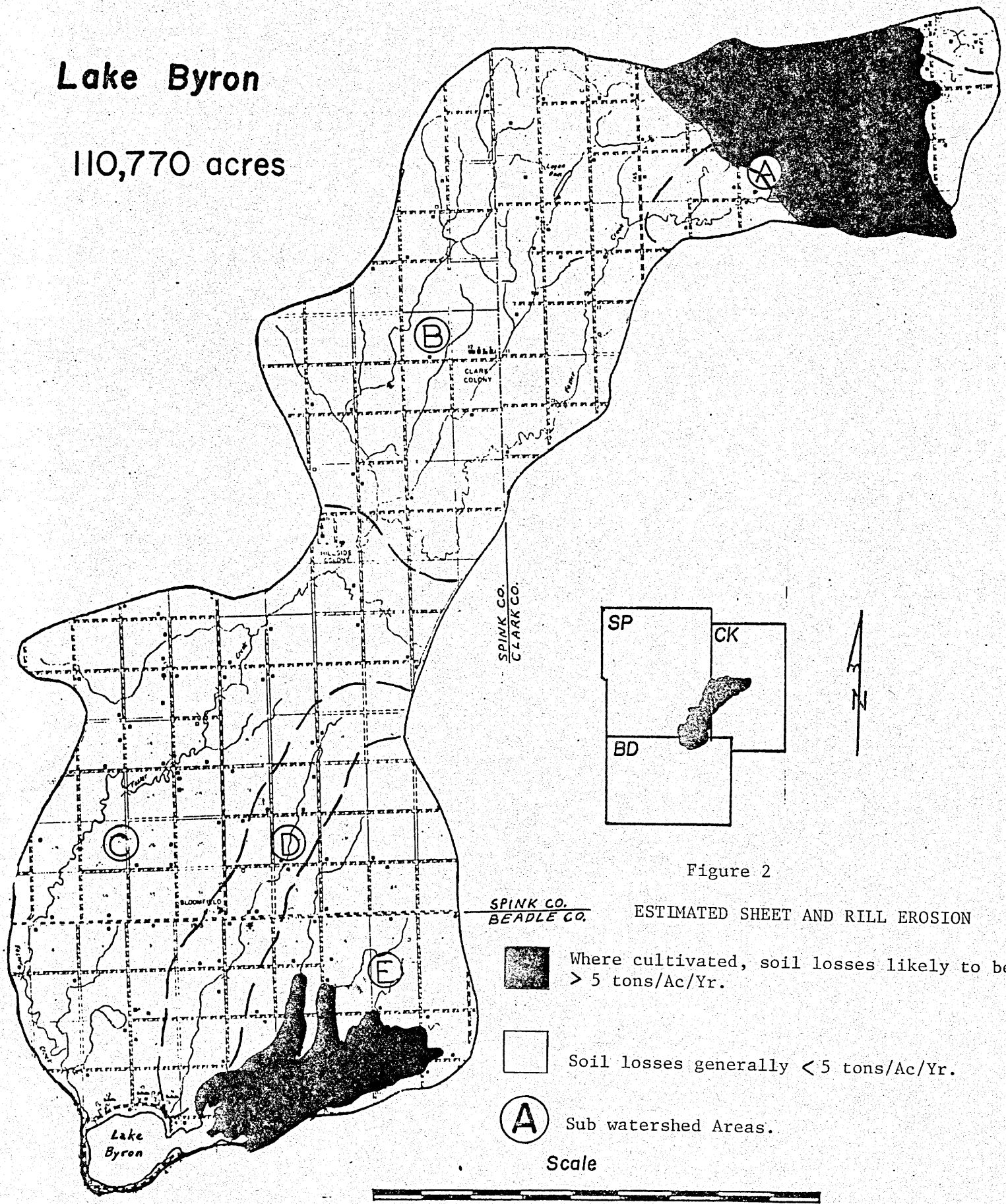


Figure 2

ESTIMATED SHEET AND RILL EROSION

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

Soil losses generally < 5 tons/Ac/Yr.

A Sub watershed Areas.

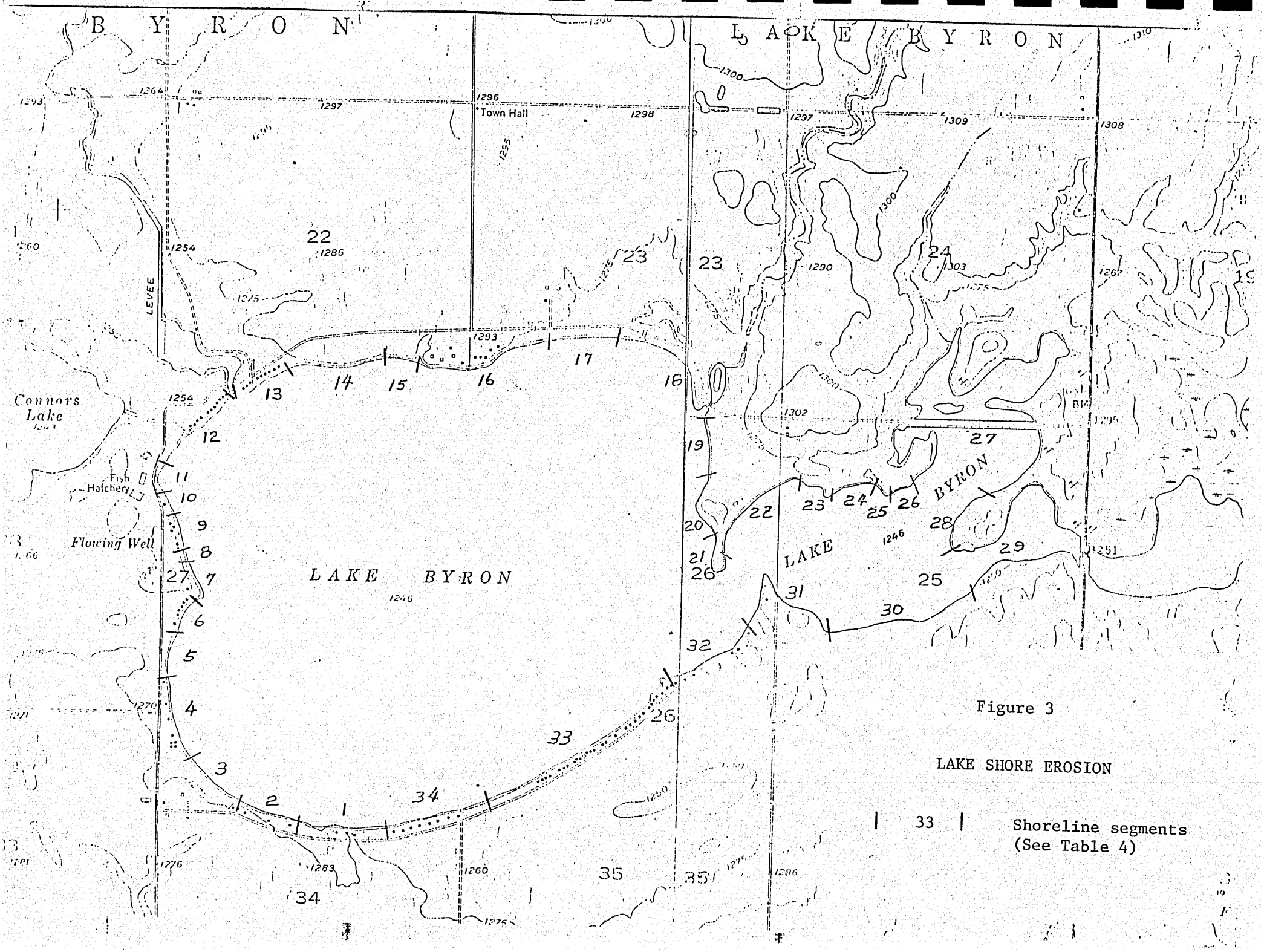


Figure 3

LAKE SHORE EROSION

| 33 | Shoreline segments (See Table 4)

TABLE 1

LAND USE AND ESTIMATED ACRES NEEDING TREATMENT
LAKE BYRON 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"	4,724	100	6,009	100	-	-	308	100	-	-	11,041	100
Adequately Treated	3,307	70	3,005	50	-	-	190	62	-	-	6,502	59
Needs Treatment	1,417	30	3,004	50	-	-	118	38	-	-	4,539	41
Subwatershed "B"	19,118	100	19,152	100	-	-	1,169	100	-	-	39,439	100
Adequately Treated	13,383	70	9,576	50	-	-	720	62	-	-	23,679	60
Needs Treatment	5,735	30	9,576	50	-	-	449	38	-	-	15,760	40
Subwatershed "C"	12,941	100	14,025	100	-	-	935	100	1,940	100	29,841	100
Adequately Treated	9,040	70	7,012	50	-	-	577	62	1,940	100	18,569	62
Needs Treatment	3,901	30	7,013	50	-	-	358	38	0		11,272	38
Subwatershed "D"	5,213	100	3,380	100	-	-	351	100	-	-	8,944	106
Adequately Treated	3,649	70	1,690	50	-	-	216	62	-	-	5,555	62
Needs Treatment	1,564	30	1,690	50	-	-	135	38	-	-	3,389	38
Subwatershed "E"	12,031	100	8,992	100	-	-	482	100	-	-	21,505	100
Adequately Treated	8,422	70	4,496	50	-	-	297	62	-	-	13,215	61
Needs Treatment	3,609	30	4,496	50	-	-	185	38	-	-	8,290	39
TOTAL FOR WATERSHED	54,027	100	51,558	100	-	-	3,245	100	1,940	100	110,770	100
Adequately Treated	37,801	70	25,779	50	-	-	2,000	62	1,940	100	67,520	61
Needs Treatment	16,226	30	25,779	50	-	-	1,245	38	-	-	43,250	39

1/ Water surface area of Lake Byron (1940 Acres)

TABLE 2

SOIL EROSION AND SEDIMENT YIELD
LAKE BYRON 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.	23,258	1,371	24,629					24,629		
	Sed. Yield [4/] Tons/Yr.	51		51					51	0.04	-
Subwatershed "B"	Erosion Tons/Yr.	49,068	1,733	50,801					50,801		
	Sed. Yield [4/] Tons/Yr.			671					671	0.51	-
Subwatershed "C"	Erosion Tons/Yr.	26,992	1,028	28,020	2,282	1,220		3,502	31,522		
	Sed. Yield [4/] Tons/Yr.			3,362	2,282	1,220		3,502	6,864	5.26	.05
Subwatershed "D"	Erosion Tons/Yr.	10,034	265	10,299					10,299		
	Sed. Yield [4/] Tons/Yr.			1,730					1,730	1.32	.01
Subwatershed "E"	Erosion Tons/Yr.	26,311	1,834	28,145		826		826	28,971		
	Sed. Yield [4/] Tons/Yr.			3,687		826		826	4,513	3.45	.03
Total	Erosion Tons/Yr.	135,663	6,231	141,894	2,282	2,046		4,328	146,222		
	Sed. Yield [4/] Tons/Yr.			9,501	2,282	2,046		4,328	13,829	10.58	.09

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 60 pounds per cubic foot due to submerged sediment.

3/ Annual sediment yield expressed as a percent of total lake volume. Lake volume of Lake Byron is 11,710 acre feet.

4/ Sediment deposited in Lake Byron.

TABLE 3

BEST MANAGEMENT PRACTICES (Conservation Practices and Measures) 1/ 2/ 3/
LAKE BYRON WATERSHED AREA

Conservation Practices	Unit	Unit Cost 4/	Sbwtshd "A"		Sbwtshd "B"		Sbwtshd "C"		Sbwtshd "D"		Sbwtshd "E"		Total Watershed	
			Amount Needed	Cost	Amount Needed	Cost	Amount Needed	Cost	Amount Needed	Cost	Amount Needed	Cost	Amount Needed	Cost
		(Dollars)		(Dollars)		(Dollars)		(Dollars)		(Dollars)		(Dollars)		(Dollars)
Cropland-54,027 Acres														
Conservation Cropping System	acre	-	4,724	-	19,118	-	12,941	-	5,213	-	12,031	-	54,027	-
Conservation Tillage System	acre	5	4,724	23,620	19,118	95,590	12,941	64,705	5,213	26,065	12,031	60,155	54,027	270,135
Grass & Legumes in Rotation	acre	18	612	11,016	2,477	44,586	1,677	30,186	675	12,150	1,559	28,062	7,000	126,000
Grass Waterways	acre	500	4	2,000	2	1,000	5	2,500	2	1,000	7	3,500	20	10,000
Waste Utilization	acre	3	525	1,575	2,123	6,369	1,437	4,311	579	1,737	1,336	4,008	6,000	18,000
Minimize Fall Tillage	acre	-	1,486	-	6,016	-	4,072	-	1,640	-	3,786	-	17,000	-
Hayland Planting	acre	20	437	8,740	1,770	35,400	1,198	23,960	482	9,640	1,113	22,260	5,000	100,000
Minimize Pesticide Use	acre	-	350	-	1,414	-	958	-	386	-	891	-	4,000	-
Windstrip Cropping	acre	6	1,749	10,494	7,077	42,462	4,790	28,740	1,930	11,580	4,454	26,724	20,000	120,000
Terraces	mile	2,112	1	2,112	-	-	1	2,112	1	2,112	3	6,336	6	12,672
Field Windbreaks	mile	320	4	1,280	18	5,760	12	3,840	5	1,600	11	3,520	50	16,000
Grassland -51,558 Acres														
Proper Grazing Use	acre	-	3,678	-	11,722	-	8,584	-	2,069	-	5,504	-	31,557	-
Pasture and Hayland Planting	acre	20	233	4,660	743	14,860	544	10,880	131	2,620	349	6,980	2,000	40,000
Deferred Grazing	acre	-	1,165	-	3,715	-	2,720	-	656	-	1,744	-	10,000	-
Planned Grazing Systems	acre	-	5,944	-	18,945	-	13,873	-	3,343	-	8,895	-	51,000	-
Livestock Water Stations	No.	1,000	1	1,000	1	1,000	2	2,000	1	1,000	1	1,000	6	6,000
Critical Area Planting	acre	1,000					3	3,000	-	-	1	1,000	4	4,000
Pasture & Hayland Management	acre	-	2,331	-	7,429	-	5,440	-	1,310	-	3,488	-	20,000	-
Waste Management Systems	acre	20,000	-	-	-	-	2	40,000	-	-	-	-	2	40,000
Wildlife Upland Habitat Mgmt.	acre	5	9	45	30	150	22	110	5	25	14	70	80	400
Wildlife Wetland Habitat Mtnce.	acre	4	6	24	19	76	14	56	3	12	8	32	50	200
Farmsteads, Urban & Other, 3,245 acres														
Sediment Control Measures 5/	acre	2,000	-	-	-	-	60	120,000	-	-	40	80,000	100	200,000
TOTALS - Total acres - 110,770 acres			-	66,566	-	247,253	-	336,400	-	69,541	-	243,647	-	963,407 or 8.69 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.

Table 4

LAKE BYRON SHORELINE EROSION [1/]

Segment [2/] (No.)	Sed/Yr. (Tons)	Shoreline Length (Ft.)	Sediment Produced/Ft. of Shoreline (Tons/Lineal Ft.)
1	54.00	1,500	0.036
2	37.80	1,050	0.036
3	50.85	1,130	0.045
4	29.25	1,300	0.023
5	36.45	810	0.045
6	11.70	650	0.018
7	36.45	810	0.045
8	18.90	210	0.090
9	13.50	600	0.023
10	17.28	480	0.036
11	14.85	550	0.027
12	14.40	1,600	0.009
13	18.54	1,030	0.018
14	98.83	1,690	0.056
15	15.66	580	0.027
16	106.20	2,360	0.045
17	21.42	1,190	0.018
18	0	2,400	0
19	68.40	950	0.072
20	393.75	1,250	0.315
21	80.64	1,120	0.072
22	0	1,920	0
23	12.60	700	0.018
24	0	750	0
25	44.55	330	0.135
26	9.00	500	0.018
27	0	6,500	0
28	31.59	1,170	0.027
29	0	6,000	0
30	142.02	2,630	0.054
31	43.20	2,400	0.018
32	247.05	1,830	0.135
33	342.00	3,800	0.090
34	40.50	1,800	0.023
TOTAL	2,051.38	53,590	0.038

1/ Direct volume method used to compute sediment produced.
2/ Segment locations shown on the map of Lake Byron.

Appendix B: Water Quality Summary Tables and Figures

Site	Description
46BY01 (BY-1)	Latitute 44 Deg., 33 Min., 22 Sec., longitude 98 Deg., 08 Min., 16 Sec., Township 113N, Range 61W, Section 35. NW1/4, NW1/4, SW1/4, NW1/4. This in-lake site is located on the south side of the lake 35 feet east of the boat ramp.
46BY02 (BY-2)	Latitude 44 Deg., 34 Min., 00 Sec., longitude 98 Deg., 07 Min., 21 Sec., Township 113N, Range 61W, Section 26. NW1/4, NW1/4, NE1/4, SE1/4. This in-lake site is located on the north side of the lake at the narrows. It is at the end of the road 0.5 miles south of the Kozy Kamp bait shop and 27.0 feet from a red "X" marked on a rock located 117.5 feet from a spot painted on a tree. The tree is WSW of the parking area and the rock is north of the tree.
46BY03 (BY-3)	Latitude 44 Deg., 34 Min., 30 Sec., longitude 98 Deg., 09 Min., 11 Sec., Township 113N, Range 61W, Section 22, NE1/4, SW1/4, SE1/4, SW1/4. This in-lake site is located on the northwest corner of the lake near the public access area. It is 33.5 feet SE of the red "X" marked on a rock located 32.5 feet SE of the second white stump toward the lake from the south entrance.
46BY5Y (BY-5y)	Latitude 44 Deg., 34 Min., 31 Sec., longitude 98 Deg., 09 Min., 18 Sec., Township 113N, Range 61W, Section 22. NE1/4, SE1/4, SW1/4, SW1/4. This site is located on the Foster Creek inlet to NW Lake Byron on the north side of the road.
46BY06 (BY-6)	Latitude 44 Deg., 35 Min., 18 Sec., longitude 98 Deg., 06 Min., 04 Sec., Township 113N, Range 61W, Section 13. NE1/4, NE1/4, NW1/4, NW1/4. This site is located 1.5 miles north, 0.25 miles east of Site 2. It is about 60 feet from the bridge on the south side of the road.
46BY6Y (BY-6y)	Latitude 44 Deg., 34 Min., 29 Sec., longitude 98 Deg., 07 Min., 24 Sec., Township 113N, Range 61W, Section 23. SW1/4, SW1/4, SE1/4, SE1/4. This site is located on the inlet of an unnamed creek which flows into Lake Byron 1 mile south and .5 mile west of Site 6, on the north side of the road.
46BY07 (BY-7)	Latitude 44 Deg., 36 Min., 10 Sec., longitude 98 Deg., 04 Min., 11 Sec., Township 113N, Range 60W, Section 17. NW1/4, NE1/4, NE1/4, NW1/4. This site is located 2.5 miles east and 1 mile north of Site 6 on the south side of the road.
46BY7Y (BY-7y)	Latitude 44 Deg., 34 Min., 05 Sec., longitude 98 Deg., 05 Min., 54 Sec., Township 113N, Range 60, Section 30. NW1/4, SW1/4, SW1/4, NW1/4. This site is located on the east inlet of an unnamed creek which flows into Lake Byron 1.2 miles east and .5 mile south of Site 6y, on the east side of the road.

Table IV-1. Sample site description for Lake Byron and its watershed.

STORET RETRIEVAL DATE 84/10/01 - INVENT - VERSION OF SEP. 1981

GROSS

3 TOTAL STATIONS PROCESSED

PARAMETER				RMK	NUMBER	MEAN	VARIANCE	STAN DEV	MAXIMUM	MINIMUM	BEG DATE	END DATE
00011	WATER	TEMP	FAHN		18	54.6667	284.825	16.8768	74.0000	32.0000	80/08/21	80/12/11
00021	AIR	TEMP	FAHN		18	55.8333	532.383	23.0734	78.0000	20.0000	80/08/21	80/12/11
00300	DO		MG/L		18	10.2111	7.17755	2.67909	15.6000	4.70000	80/08/21	80/12/11
00400	PH		SU		18	8.43333	.429458	.655330	9.20000	6.90000	80/08/21	80/12/11
00500	RESIDUE	TOTAL	MG/L		18	2801.67	870411	932.958	5916.00	2090.00	80/08/21	80/12/11
00515	RESIDUE	DISS-105	C MG/L		18	2701.50	943298	971.235	5881.00	1675.00	80/08/21	80/12/11
00530	RESIDUE	TOT NFLT	MG/L		18	100.722	12053.6	109.789	415.000	14.0000	80/09/21	80/12/11
00608	NH3+NH4-	N DISS	MG/L		2	.335000	.000050	.007067	.340000	.330000	80/12/11	80/12/11
00610	NH3+NH4-	N TOTAL	MG/L		16	.275625	.193066	.439393	1.74000	.030000	80/08/21	80/12/11
00613	NO2-N	DISS	MG/L		3	.010000	.000000	.000000	.010000	.010000	80/11/25	80/11/25
				K	15	.010000	.332E-10	.000006	.010000	.010000	80/08/21	80/12/11
00618	NO3-N	DISS	MG/L	TOT	18	.010000	.821E-10	.000009	.010000	.010000	80/08/21	80/12/11
					1	.100000			.100000	.100000	80/12/11	80/12/11
				K	2	.100000	-.372E-08	.000000	.100000	.100000	80/12/11	80/12/11
00621	NO3 MUD	DRY WGT	MG/KG-N	TOT	3	.100000	-.186E-08	.000000	.100000	.100000	80/12/11	80/12/11
					5	.480000	.072000	.268329	.800000	.200000	80/09/17	80/11/25
				K	10	.100000	.000000	.000000	.100000	.100000	80/08/21	80/10/08
00625	TOT KJEL	N	MG/L	TOT	15	.226666	.054952	.234419	.800000	.100000	80/08/21	80/11/25
00671	PHOS-DIS	ORTHO	MG/L P		18	3.28389	1.68319	1.29738	7.02000	1.68000	80/08/21	80/12/11
31616	FEC COLI	MFM-FCBR	/100ML		3	.409000	.071953	.268241	.705000	.182000	80/12/11	80/12/11
					15	203.933	123582	351.543	1400.00	10.0000	80/08/21	80/11/25
				K	3	3.00000	.000000	.000000	3.00000	3.00000	80/12/11	80/12/11
70505	T PO4	P-COL	MG/L	TOT	18	170.444	107711	328.194	1400.00	3.00000	80/08/21	80/12/11
70507	PHOS-T	ORTHO	MG/L P		18	.476833	.042639	.206493	1.10400	.210000	80/08/21	80/12/11
					15	.349933	.030941	.175900	.736000	.075000	80/08/21	80/11/25

Table IV-2.

STORET RETRIEVAL DATE 84/10/01 - INVENT - VERSION OF SEP. 1981
GROSS

3 TOTAL STATIONS PROCESSED

PARAMETER				RMK	NUMBER	MEAN	VARIANCE	STAN DEV	MAXIMUM	MINIMUM	BEG DATE	END DATE
00010	WATER	TEMP	CENT		12	9.24916	19.8956	4.46045	13.3000	.560000	81/02/25	81/05/13
00011	WATER	TEMP	FAHN		20	42.4000	99.5166	9.97580	56.0000	33.0000	81/01/27	81/05/13
00020	AIR	TEMP	CENT		12	13.0550	22.1758	4.70912	17.8000	3.89000	81/02/25	81/05/13
00021	AIR	TEMP	FAHN		20	47.2000	188.906	13.7443	64.0000	22.0000	81/01/27	81/05/13
00300	DO		MG/L		19	10.2368	8.78692	2.96427	16.6000	3.90000	81/01/27	81/05/13
00400	PH		SU		20	7.85499	.639507	.799692	8.60000	6.20000	81/01/27	81/05/13
00500	RESIDUE	TOTAL	MG/L		20	2775.95	2320508	1523.32	5318.00	162.000	81/01/27	81/05/13
00515	RESIDUE	DISS-105	C MG/L		20	2676.55	2254101	1501.37	5113.00	142.000	81/01/27	81/05/13
00530	RESIDUE	TOT NFLT	MG/L		20	99.4000	8819.41	93.9117	425.000	12.0000	81/01/27	81/05/13
00608	NH3+NH4-	N DISS	MG/L		2	.535000	.036450	.190919	.670000	.400000	81/04/14	81/04/14
00610	NH3+NH4-	N TOTAL	MG/L		17	1.24176	4.99618	2.23521	5.94000	.030000	81/01/27	81/05/13
				K	1	.020000			.020000	.020000	81/03/11	81/03/11
				TOT	18	1.17389	4.78521	2.18751	5.94000	.020000	81/01/27	81/05/13
00613	NO2-N	DISS	MG/L		3	.223333	.095633	.309246	.580000	.030000	81/04/14	81/05/06
				K	17	.015294	.000476	.021828	.100000	.010000	81/01/27	81/05/13
				TOT	20	.046500	.016277	.127580	.580000	.010000	81/01/27	81/05/13
00618	NO3-N	DISS	MG/L		1	.200000			.200000	.200000	81/04/14	81/04/14
				K	1	.100000			.100000	.100000	81/04/14	81/04/14
				TOT	2	.150000	.005000	.070711	.200000	.100000	81/04/14	81/04/14
00621	NO3 MUD	DRY WGT	MG/KG-N		3	4.43333	51.2633	7.15984	12.7000	.200000	81/01/27	81/05/13
				K	14	.093571	.000579	.024054	.100000	.010000	81/01/27	81/05/13
				TOT	17	.859412	9.31650	3.05229	12.7000	.010000	81/01/27	81/05/13
00625	TOT KJEL	N	MG/L		20	4.10250	26.3252	5.13081	17.7500	.600000	81/01/27	81/05/13
00671	PHOS-DIS	ORTHO	MG/L P		3	.061000	.004852	.069656	.139000	.005000	81/04/14	81/05/06
00940	CHLORIDE	TOTAL	MG/L	K	1	.010000			.010000	.010000	81/02/25	81/02/25
31616	FEC COLI	MFM-FCBR	/100ML		7	92.7143	19992.6	141.395	380.000	3.00000	81/01/27	81/05/13
				K	13	4.07692	6.91026	2.62874	10.0000	3.00000	81/01/27	81/05/13
				TOT	20	35.1000	8199.25	90.5497	380.000	3.00000	81/01/27	81/05/13
70505	T PO4	P-COL	MG/L		19	1.09605	2.44405	1.56334	5.36000	.075000	81/01/27	81/05/13
70506	SOL PO4-	T P-COL	MG/L		1	.156000			.156000	.156000	81/05/06	81/05/06
70507	PHOS-T	ORTHO	MG/L P		17	.740411	1.70285	1.30493	3.63000	.026000	81/01/27	81/05/13

Table IV-3.

10 TOTAL STATIONS PROCESSED

PARAMETER				RMK	NUMBER	MEAN	VARIANCE	STAN DEV	MAXIMUM	MINIMUM	BEG DATE	END DATE
00010	WATER	TEMP	CENT		31	8.87742	79.5219	8.91750	25.6000	.000000	82/02/23	82/10/19
00011	WATER	TEMP	FAHN		36	51.2055	320.418	17.9002	82.0000	32.0000	82/02/23	82/10/19
00020	AIR	TEMP	CENT		32	8.01530	86.3385	9.29185	28.9000	-.443E+01	82/02/23	82/10/19
00021	AIR	TEMP	FAHN		36	49.5655	474.423	21.7812	92.0000	-.443E+01	82/02/23	82/10/19
00061	STREAM	FLOW,	INST-CFS		6	.000000	.000000	.000000	.000000	.000000	82/05/26	82/10/12
00300	DO		MG/L		32	9.19061	10.6720	3.26680	15.1000	1.40000	82/02/23	82/10/12
00400	PH		SU		28	7.98750	.385688	.621038	9.00000	6.70000	82/02/23	82/10/12
00403	LAB	PH	SU		15	7.92933	.274902	.524311	8.99000	7.39000	82/05/24	82/10/19
00410	T ALK	CACO3	MG/L		5	140.360	19969.7	141.314	298.000	27.6000	82/09/01	82/10/12
00415	PHEN-PH-	LFIN ALK	MG/L		6	208.633	10486.2	102.402	299.000	54.8000	82/09/01	82/09/01
00500	RESIDUE	TOTAL	MG/L		39	1539.08	1239475	1113.32	3771.00	88.0000	82/02/23	82/10/19
00515	RESIDUE	DISS-105	C MG/L		24	1211.79	1184712	1088.44	3743.00	11.0000	82/02/23	82/09/01
00530	RESIDUE	TOT NFLT	MG/L		38	89.3947	14011.6	118.371	578.000	4.00000	82/02/23	82/10/19
00608	NH3+NH4-	N DISS	MG/L		4	.082500	.009758	.098784	.230000	.020000	82/10/12	82/10/19
				K	2	.020000	-.232E-09	.000000	.020000	.020000	82/10/12	82/10/19
				TOT	6	.061667	.006897	.083046	.230000	.020000	82/10/12	82/10/19
00610	NH3+NH4-	N TOTAL	MG/L		31	.390322	.263930	.513741	2.45000	.020000	82/02/23	82/10/12
				K	2	.020000	-.232E-09	.000000	.020000	.020000	82/09/01	82/10/12
				TOT	33	.367878	.255486	.505456	2.45000	.020000	82/02/23	82/10/12
00613	NO2-N	DISS	MG/L		6	.016667	.000027	.005164	.020000	.010000	82/02/23	82/10/19
				K	33	.010000	.654E-10	.000008	.010000	.010000	82/02/23	82/10/19
				TOT	39	.011026	.000009	.003074	.020000	.010000	82/02/23	82/10/19
00618	NO3-N	DISS	MG/L		2	.400000	.180000	.424264	.700000	.100000	82/10/12	82/10/19
				K	3	.100000	-.186E-08	.000000	.100000	.100000	82/10/12	82/10/19
				TOT	5	.220000	.072000	.268328	.700000	.100000	82/10/12	82/10/19
00620	NO3-N	TOTAL	MG/L		7	1.000000	.716667	.846562	2.60000	.200000	82/02/23	82/03/16
				K	27	.100000	.137E-07	.000117	.100000	.100000	82/03/16	82/10/12
				TOT	34	.285294	.266747	.516475	2.60000	.100000	82/02/23	82/10/12
00623	KJELDL N	DISS	MG/L		5	1.16600	.475480	.689551	2.26000	.600000	82/10/12	82/10/19
00625	TOT KJEL	N	MG/L		34	2.22559	2.18151	1.47699	7.00000	.620000	82/02/23	82/10/12
00671	PHOS-DIS	ORTHO	MG/L P		7	.587143	.108603	.329549	1.20000	.225000	82/09/01	82/10/19
31615	FEC COLI	MPNECMED	/100ML		3	493.333	204633	452.364	1000.00	130.000	82/10/12	82/10/19
31616	FEC COLI	MFM-FCBR	/100ML		30	698.666	833991	913.231	3900.00	30.0000	82/02/23	82/10/19
				K	6	10.0000	.000000	.000000	10.0000	10.0000	82/02/23	82/10/12
				TOT	36	583.889	758772	871.075	3900.00	10.0000	82/02/23	82/10/19
70300	RESIDUE	DISS-180	C MG/L		15	1613.60	1079413	1038.95	2963.00	360.000	82/06/14	82/10/19
70505	T PO4	P-COL	MG/L		14	.378928	.039502	.198751	.759000	.197000	82/05/24	82/06/14
70506	SOL PO4-	T P-COL	MG/L		25	.482800	.072717	.269662	1.20000	.034000	82/02/23	82/10/19
70507	PHOS-T	ORTHO	MG/L P		32	.297843	.049051	.221475	.980000	.023000	82/02/23	82/10/12

Table IV-4.

STORET RETRIEVAL DATE 84/10/01 - INVENT - VERSION OF SEP. 1981

46BY01
44 33 22.0 098 08 16.0 2
LK BYRON OFF SOUTH SHORE 113N-61W-S35 BBCC
46005 SOUTH DAKOTA BEADLE
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 CLASS 00 CSN-RSP 0663774-0693792

/TYPA/AMBNT/LAKE

PARAMETER				RMK	NUMBER	MEAN	VARIANCE	STAN DEV	MAXIMUM	MINIMUM	BEG DATE	END DATE
00011	WATER	TEMP	FAHN		6	55.1667	316.970	17.8036	72.0000	33.0000	80/08/21	80/12/11
00021	AIR	TEMP	FAHN		6	54.8333	647.370	25.4435	76.0000	20.0000	80/08/21	80/12/11
00300	DO		MG/L		6	11.6167	5.73774	2.39536	15.6000	9.50000	80/08/21	80/12/11
00400	PH		SU		6	8.35000	.215088	.463776	8.90000	7.50000	80/08/21	80/12/11
00500	RESIDUE	TOTAL	MG/L		6	2334.50	52265.6	228.617	2720.00	2092.00	80/08/21	80/12/11
00515	RESIDUE	DISS-105	C MG/L		6	2252.50	62355.2	249.710	2666.00	2007.00	80/08/21	80/12/11
00530	RESIDUE	TOT NFLT	MG/L		6	82.0000	1521.20	39.0026	150.000	50.0000	80/08/21	80/12/11
00608	NH3+NH4-	N DISS	MG/L		1	.330000			.330000	.330000	80/12/11	80/12/11
00610	NH3+NH4-	N TOTAL	MG/L		5	.106000	.023530	.153395	.380000	.030000	80/08/21	80/11/25
00613	NO2-N	DISS	MG/L		1	.010000			.010000	.010000	80/11/25	80/11/25
				K	5	.010000	-.582E-10	.000000	.010000	.010000	80/08/21	80/12/11
				TOT	6	.010000	-.931E-10	.000000	.010000	.010000	80/08/21	80/12/11
00618	NO3-N	DISS	MG/L	K	1	.100000			.100000	.100000	80/12/11	80/12/11
00621	NO3 MUD	DRY WGT	MG/KG-N		2	.400000	.080000	.282843	.600000	.200000	80/09/17	80/11/25
				K	3	.100000	-.186E-08	.000000	.100000	.100000	80/08/21	80/10/08
				TOT	5	.220000	.047000	.216795	.600000	.100000	80/08/21	80/11/25
00625	TOT KJEL	N	MG/L		6	2.20667	.093906	.306440	2.50000	1.68000	80/08/21	80/12/11
00671	PHOS-DIS	ORTHO	MG/L P		1	.340000			.340000	.340000	80/12/11	80/12/11
31616	FEC COLI	MFM-FCBR	/100ML		5	125.200	14295.2	119.563	260.000	10.0000	80/08/21	80/11/25
				K	1	3.00000			3.00000	3.00000	80/12/11	80/12/11
				TOT	6	104.833	13925.0	118.004	260.000	3.00000	80/08/21	80/12/11
70505	T PO4	P-COL	MG/L		6	.416833	.011577	.107596	.515000	.231000	80/08/21	80/12/11
70507	PHOS-T	ORTHO	MG/L P		5	.332600	.013411	.115804	.435000	.147000	80/08/21	80/11/25

Table IV-5.

STORET RETRIEVAL DATE 84/10/01 - INVENT - VERSION OF SEP. 1981

46BY01
44 33 22.0 098 08 16.0 2
LK BYRON OFF SOUTH SHORE 113N-61W-S35 BBCC
46005 SOUTH DAKOTA BEADLE
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 CLASS 00 CSN-RSP 0663774-0693792

/TYPA/AMBNT/LAKE

PARAMETER				RMK	NUMBER	MEAN	VARIANCE	STAN DEV	MAXIMUM	MINIMUM	BEG DATE	END DATE
00010	WATER	TEMP	CENT		4	8.73999	31.6212	5.62327	13.3000	.560000	81/02/25	81/05/13
00011	WATER	TEMP	FAHN		6	42.8333	119.770	10.9439	56.0000	33.0000	81/01/27	81/05/13
00020	AIR	TEMP	CENT		4	11.7975	37.8192	6.14974	17.2000	3.89000	81/02/25	81/05/13
00021	AIR	TEMP	FAHN		6	46.5000	231.500	15.2151	63.0000	22.0000	81/01/27	81/05/13
00300	DO		MG/L		6	10.3333	5.35869	2.31488	13.8000	6.80000	81/01/27	81/05/13
00400	PH		SU		6	7.74999	.699072	.836105	8.60000	6.30000	81/01/27	81/05/13
00500	RESIDUE	TOTAL	MG/L		6	2754.33	2016572	1420.06	4916.00	443.000	81/01/27	81/05/13
00515	RESIDUE	DISS-105	C MG/L		6	2598.50	2078198	1441.60	4904.00	370.000	81/01/27	81/05/13
00530	RESIDUE	TOT NFLT	MG/L		6	155.833	20643.8	143.679	425.000	12.0000	81/01/27	81/05/13
00610	NH3+NH4-	N TOTAL	MG/L		5	.100000	.002100	.045826	.180000	.070000	81/01/27	81/05/13
				K	1	.020000			.020000	.020000	81/03/11	81/03/11
				TOT	6	.086667	.002747	.052409	.180000	.020000	81/01/27	81/05/13
00613	NO2-N	DISS	MG/L	K	6	.025000	.001350	.036742	.100000	.010000	81/01/27	81/05/13
00621	NO3 MUD	DRY WGT	MG/KG-N	K	5	.100000-	.279E-08	.000000	.100000	.100000	81/01/27	81/05/13
00625	TOT KJEL	N	MG/L		6	1.66667	.432626	.657743	2.76000	.870000	81/01/27	81/05/13
00940	CHLORIDE	TOTAL	MG/L	K	1	.010000			.010000	.010000	81/02/25	81/02/25
31616	FEC COLI	MFM-FCBR	/100ML		2	95.0000	14450.0	120.208	180.000	10.0000	81/01/27	81/05/06
				K	4	4.75000	12.2500	3.50000	10.0000	3.00000	81/02/25	81/05/13
				TOT	6	34.8333	5069.37	71.1995	180.000	3.00000	81/01/27	81/05/13
70505	T PO4	P-COL	MG/L		6	.332833	.054367	.233210	.709000	.075000	81/01/27	81/05/13
70507	PHOS-T	ORTHO	MG/L P		6	.148667	.013165	.114741	.348000	.046000	81/01/27	81/05/13

Table IV-6.

STORET RETRIEVAL DATE 84/10/01 - INVENT - VERSION OF SEP. 1981

46BY01
44 33 22.0 098 08 16.0 2
LK BYRON OFF SOUTH SHORE 113N-61W-S35 BBCC
46005 SOUTH DAKOTA BEADLE
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 CLASS 00 CSN-RSP 0663774-0693792

/TYPA/AMBNT/LAKE

PARAMETER				RMK	NUMBER	MEAN	VARIANCE	STAN DEV	MAXIMUM	MINIMUM	BEG DATE	END DATE
00010	WATER	TEMP	CENT		5	8.20000	82.2001	9.06643	18.0000	.000000	82/02/23	82/10/12
00011	WATER	TEMP	FAHN		6	51.4666	345.983	18.6006	75.0000	32.0000	82/02/23	82/10/12
00020	AIR	TEMP	CENT		5	7.31200	79.2236	8.90077	18.0000	-.332E+01	82/02/23	82/10/12
00021	AIR	TEMP	FAHN		6	50.8000	396.262	19.9063	79.0000	26.0000	82/02/23	82/10/12
00300	DO		MG/L		7	10.2286	2.41248	1.55321	12.6000	8.10000	82/02/23	82/10/12
00400	PH		SU		6	8.27499	.491846	.701317	8.80000	6.90000	82/02/23	82/10/12
00403	LAB	PH	SU		2	8.45499	.414246	.643619	8.91000	8.00000	82/05/24	82/09/01
00410	T ALK	CACO3	MG/L		2	169.000	33282.0	182.434	298.000	40.0000	82/09/01	82/10/12
00415	PHEN-PH-	LFIN ALK	MG/L		1	299.000			299.000	299.000	82/09/01	82/09/01
00500	RESIDUE	TOTAL	MG/L		7	1741.14	1474117	1214.13	3048.00	148.000	82/02/23	82/10/12
00515	RESIDUE	DISS-105	C MG/L		4	900.000	1059800	1029.47	2383.00	74.0000	82/02/23	82/05/26
00530	RESIDUE	TOT NFLT	MG/L		7	103.571	7642.62	87.4221	296.000	40.0000	82/02/23	82/10/12
00610	NH3+NH4-	N TOTAL	MG/L		7	.228571	.038748	.196844	.550000	.040000	82/02/23	82/10/12
00613	NO2-N	DISS	MG/L	K	7	.010000	.776E-10	.000009	.010000	.010000	82/02/23	82/10/12
00620	NO3-N	TOTAL	MG/L		1	.400000			.400000	.400000	82/02/23	82/02/23
				K	6	.100000	-.223E-08	.000000	.100000	.100000	82/03/16	82/10/12
00625	TOT KJEL	N	MG/L	TOT	7	.142857	.012857	.113389	.400000	.100000	82/02/23	82/10/12
31616	FEC COLI	MFM-FCBR	/100ML		7	2.64714	1.91913	1.38533	4.83000	.650000	82/02/23	82/10/12
					5	928.000	618170	786.238	1900.00	50.0000	82/02/23	82/09/01
				K	2	10.0000	.000000	.000000	10.0000	10.0000	82/03/16	82/10/12
70300	RESIDUE	DISS-180	C MG/L	TOT	7	665.714	612763	782.791	1900.00	10.0000	82/02/23	82/10/12
70505	T PO4	P-COL	MG/L		3	2554.33	130736	361.574	2963.00	2276.00	82/06/14	82/10/12
70506	SOL PO4-	T P-COL	MG/L		3	.380666	.060457	.245880	.660000	.197000	82/05/24	82/06/14
70507	PHOS-T	ORTHO	MG/L P		4	.342750	.023371	.152876	.441000	.119000	82/02/23	82/10/12
					7	.193286	.015809	.125732	.416000	.098000	82/02/23	82/10/12

Table IV-7.

STORET RETRIEVAL DATE 84/10/01 - INVENT - VERSION OF SEP. 1981

46BY02
44 34 00.0 098 07 21.0 2
LK BYRON OFF N PENINSULA 113N-61W-S26 DABB
46005 SOUTH DAKOTA BEADLE
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 CLASS 00 CSN-RSP 0663775-0693793

/TYPA/AMBNT/LAKE

PARAMETER				RMK	NUMBER	MEAN	VARIANCE	STAN DEV	MAXIMUM	MINIMUM	BEG DATE	END DATE
00011	WATER	TEMP	FAHN		6	54.6667	327.470	18.0961	74.0000	32.0000	80/08/21	80/12/11
00021	AIR	TEMP	FAHN		6	56.1667	572.170	23.9201	76.0000	20.0000	80/08/21	80/12/11
00300	DO		MG/L		6	10.6333	2.75478	1.65975	12.4000	8.80000	80/08/21	80/12/11
00400	PH		SU		6	8.61666	.577734	.760088	9.20000	7.10000	80/08/21	80/12/11
00500	RESIDUE	TOTAL	MG/L		6	2448.50	97539.1	312.313	2953.00	2090.00	80/08/21	80/12/11
00515	RESIDUE	DISS-105	C MG/L		6	2279.83	189178	434.946	2935.00	1675.00	80/08/21	80/12/11
00530	RESIDUE	TOT NFLT	MG/L		6	170.333	29787.9	172.592	415.000	14.0000	80/08/21	80/12/11
00608	NH3+NH4-	N DISS	MG/L		1	.340000			.340000	.340000	80/12/11	80/12/11
00610	NH3+NH4-	N TOTAL	MG/L		5	.168000	.015770	.125579	.390000	.090000	80/08/21	80/11/25
00613	NO2-N	DISS	MG/L		1	.010000			.010000	.010000	80/11/25	80/11/25
				K	5	.010000-.582E-10		.000000	.010000	.010000	80/08/21	80/12/11
00618	NO3-N	DISS	MG/L	TOT	6	.010000-.931E-10		.000000	.010000	.010000	80/08/21	80/12/11
00621	NO3 MUD	DRY WGT	MG/KG-N	K	1	.100000			.100000	.100000	80/12/11	80/12/11
					1	.600000			.600000	.600000	80/11/25	80/11/25
00625	TOT KJEL	N	MG/L	K	4	.100000-.248E-08		.000000	.100000	.100000	80/08/21	80/10/08
00671	PHOS-DIS	ORTHO	MG/L P	TOT	5	.200000	.050000	.223607	.600000	.100000	80/08/21	80/11/25
31616	FEC COLI	MFM-FCBR	/100ML		6	3.31500	.750250	.866170	4.20000	2.17000	80/08/21	80/12/11
					1	.182000			.182000	.182000	80/12/11	80/12/11
70505	T PO4	P-COL	MG/L		5	68.6000	8499.80	92.1944	230.000	10.0000	80/08/21	80/11/25
70507	PHOS-T	ORTHO	MG/L P	K	1	3.00000			3.00000	3.00000	80/12/11	80/12/11
				TOT	6	57.6667	7517.07	86.7010	230.000	3.00000	80/08/21	80/12/11
					6	.347000	.018753	.136940	.597000	.210000	80/08/21	80/12/11
					5	.227400	.030434	.174454	.527000	.075000	80/08/21	80/11/25

Table IV-8.

STORET RETRIEVAL DATE 84/10/01 - INVENT - VERSION OF SEP. 1981

46BY02
44 34 00.0 098 07 21.0 2
LK BYRON OFF N PENINSULA 113N-61W-S26 DABB
46005 SOUTH DAKOTA BEADLE
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 CLASS 00 CSN-RSP 0663775-0693793

/TYPA/AMBNT/LAKE

PARAMETER				RMK	NUMBER	MEAN	VARIANCE	STAN DEV	MAXIMUM	MINIMUM	BEG DATE	END DATE
00010	WATER	TEMP	CENT		4	10.2675	7.63436	2.76303	13.3000	6.67000	81/04/14	81/05/13
00011	WATER	TEMP	FAHN		7	43.0000	100.000	10.0000	56.0000	33.0000	81/01/27	81/05/13
00020	AIR	TEMP	CENT		4	14.7250	10.3691	3.22011	17.2000	10.0000	81/04/14	81/05/13
00021	AIR	TEMP	FAHN		7	48.5714	210.288	14.5013	63.0000	23.0000	81/01/27	81/05/13
00300	DO		MG/L		7	11.9571	4.77291	2.18470	16.6000	9.90000	81/01/27	81/05/13
00400	PH		SU		7	7.74285	1.10962	1.05338	8.70000	6.20000	81/01/27	81/05/13
00500	RESIDUE	TOTAL	MG/L		7	1732.71	1745248	1321.08	2969.00	162.000	81/01/27	81/05/13
00515	RESIDUE	DISS-105	C MG/L		7	1668.43	1645589	1282.81	2901.00	142.000	81/01/27	81/05/13
00530	RESIDUE	TOT NFLT	MG/L		7	64.2857	1907.57	43.6758	120.000	18.0000	81/01/27	81/05/13
00608	NH3+NH4-	N DISS	MG/L		1	.400000			.400000	.400000	81/04/14	81/04/14
00610	NH3+NH4-	N TOTAL	MG/L		6	.056667	.000907	.030111	.090000	.030000	81/01/27	81/05/13
00613	NO2-N	DISS	MG/L		1	.030000			.030000	.030000	81/04/14	81/04/14
				K	6	.010000	-.931E-10	.000000	.010000	.010000	81/01/27	81/05/13
00618	NO3-N	DISS	MG/L	TOT	7	.012857	.000057	.007559	.030000	.010000	81/01/27	81/05/13
00621	NO3 MUD	DRY WGT	MG/KG-N		1	.200000			.200000	.200000	81/04/14	81/04/14
00625	TOT KJEL	N	MG/L	K	6	.085000	.001350	.036742	.100000	.010000	81/01/27	81/05/13
00671	PHOS-DIS	ORTHO	MG/L P		7	1.52000	.524935	.724524	2.75000	.600000	81/01/27	81/05/13
31616	FEC COLI	MFM-FCBR	/100ML		2	.072000	.008978	.094752	.139000	.005000	81/04/14	81/05/06
					2	11.5000	144.500	12.0208	20.0000	3.00000	81/04/16	81/05/06
				K	5	4.40000	9.80002	3.13050	10.0000	3.00000	81/01/27	81/05/13
70505	T PO4	P-COL	MG/L	TOT	7	6.42857	42.6191	6.52833	20.0000	3.00000	81/01/27	81/05/13
70506	SOL PO4-	T P-COL	MG/L		6	.490833	.737989	.859063	2.24000	.085000	81/01/27	81/05/13
70507	PHOS-T	ORTHO	MG/L P		1	.156000			.156000	.156000	81/05/06	81/05/06
					5	.093400	.007579	.087059	.221000	.026000	81/01/27	81/05/13

Table IV-9.

STORET RETRIEVAL DATE 84/10/01 - INVENT - VERSION OF SEP. 1981

46BY02
44 34 00.0 098 07 21.0 2
LK BYRON OFF N PENINSULA 113N-61W-S26 DABB
46005 SOUTH DAKOTA BEADLE
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 CLASS 00 CSN-RSP 0663775-0693793

/TYPA/AMBNT/LAKE

PARAMETER				RMK	NUMBER	MEAN	VARIANCE	STAN DEV	MAXIMUM	MINIMUM	BEG DATE	END DATE
00010	WATER	TEMP	CENT		4	9.25000	102.250	10.1119	18.0000	.000000	82/02/23	82/05/26
00011	WATER	TEMP	FAHN		5	55.3200	470.918	21.7006	82.0000	32.0000	82/02/23	82/09/01
00020	AIR	TEMP	CENT		4	7.77750	108.725	10.4271	18.0000	-.388E+01	82/02/23	82/05/26
00021	AIR	TEMP	FAHN		5	52.3999	468.988	21.6561	78.0000	25.0000	82/02/23	82/09/01
00061	STREAM	FLOW,	INST-CFS		1	.000000			.000000	.000000	82/10/12	82/10/12
00300	DO		MG/L		6	10.8833	5.07778	2.25339	13.9000	8.60000	82/02/23	82/09/01
00400	PH		SU		5	8.21999	.112122	.334846	8.60000	7.80000	82/02/23	82/06/14
00403	LAB	PH	SU		2	8.24499	.638580	.799112	8.81000	7.68000	82/05/25	82/09/01
00410	T ALK	CACO3	MG/L		1	27.6000			27.6000	27.6000	82/09/01	82/09/01
00415	PHEN-PH-	LFIN ALK	MG/L		1	270.000			270.000	270.000	82/09/01	82/09/01
00500	RESIDUE	TOTAL	MG/L		6	1909.67	939053	969.047	2655.00	389.000	82/02/23	82/09/01
00515	RESIDUE	DISS-105	C MG/L		4	1524.75	1016793	1008.36	2417.00	384.000	82/02/23	82/05/26
00530	RESIDUE	TOT NFLT	MG/L		6	69.5000	3557.50	59.6448	150.000	5.00000	82/02/23	82/09/01
00610	NH3+NH4-	N TOTAL	MG/L		6	.256666	.088347	.297232	.660000	.060000	82/02/23	82/09/01
00613	NO2-N	DISS	MG/L	K	6	.010000	-.931E-10	.000000	.010000	.010000	82/02/23	82/09/01
00620	NO3-N	TOTAL	MG/L		1	.900000			.900000	.900000	82/02/23	82/02/23
				K	5	.100000	-.279E-08	.000000	.100000	.100000	82/03/16	82/09/01
				TOT	6	.233333	.106667	.326599	.900000	.100000	82/02/23	82/09/01
00625	TOT KJEL	N	MG/L		6	1.78500	.349393	.591094	2.31000	.960000	82/02/23	82/09/01
00671	PHOS-DIS	ORTHO	MG/L P		1	.463000			.463000	.463000	82/09/01	82/09/01
31616	FEC COLI	MFM-FCBR	/100ML		5	498.000	730670	854.792	2000.00	30.0000	82/02/23	82/09/01
				K	1	10.0000			10.0000	10.0000	82/03/16	82/03/16
				TOT	6	416.666	624227	790.080	2000.00	10.0000	82/02/23	82/09/01
70300	RESIDUE	DISS-180	C MG/L		2	2471.00	5832.00	76.3675	2525.00	2417.00	82/06/14	82/09/01
70505	T PO4	P-COL	MG/L		3	.457666	.070913	.266294	.756000	.244000	82/05/25	82/06/14
70506	SOL PO4-	T P-COL	MG/L		3	.357000	.042052	.205067	.559000	.149000	82/02/23	82/09/01
70507	PHOS-T	ORTHO	MG/L P		5	.188200	.008645	.092977	.353000	.133000	82/02/23	82/06/14

Table IV-10.

STORET RETRIEVAL DATE 84/10/01 - INVENT - VERSION OF SEP. 1981

46BY03
44 34 30.0 098 09 11.0 4
LK BYRON OFF NW SHORE 113N-61W-S22 CDCC
46005 SOUTH DAKOTA BEADLE
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 CLASS 00 CSN-RSP 0663776-0693794

/TYPA/AMBNT/LAKE

PARAMETER				RMK	NUMBER	MEAN	VARIANCE	STAN DEV	MAXIMUM	MINIMUM	BEG DATE	END DATE
00011	WATER	TEMP	FAHN		6	54.1667	323.370	17.9825	72.0000	32.0000	80/08/21	80/12/11
00021	AIR	TEMP	FAHN		6	56.5000	588.700	24.2631	78.0000	20.0000	80/08/21	80/12/11
00300	DO		MG/L		6	8.38333	9.31772	3.05249	14.0000	4.70000	80/08/21	80/12/11
00400	PH		SU		6	8.33333	.606787	.778965	9.20000	6.90000	80/08/21	80/12/11
00500	RESIDUE	TOTAL	MG/L		6	3622.00	1590489	1261.15	5916.00	2317.00	80/08/21	80/12/11
00515	RESIDUE	DISS-105	C MG/L		6	3572.17	1590732	1261.24	5881.00	2293.00	80/08/21	80/12/11
00530	RESIDUE	TOT NFLT	MG/L		6	49.8333	330.169	18.1706	70.0000	24.0000	80/08/21	80/12/11
00610	NH3+NH4-	N TOTAL	MG/L		6	.506666	.443347	.665843	1.74000	.050000	80/08/21	80/12/11
00613	NO2-N	DISS	MG/L		1	.010000			.010000	.010000	80/11/25	80/11/25
				K	5	.010000	-.582E-10	.000000	.010000	.010000	80/08/21	80/12/11
				TOT	6	.010000	-.931E-10	.000000	.010000	.010000	80/08/21	80/12/11
00618	NO3-N	DISS	MG/L		1	.100000			.100000	.100000	80/12/11	80/12/11
00621	NO3 MUD	DRY WGT	MG/KG-N		2	.500000	.180000	.424264	.800000	.200000	80/09/17	80/11/25
				K	3	.100000	-.186E-08	.000000	.100000	.100000	80/08/21	80/10/08
				TOT	5	.260000	.093000	.304959	.800000	.100000	80/08/21	80/11/25
00625	TOT KJEL	N	MG/L		6	4.33000	2.17184	1.47372	7.02000	2.78000	80/08/21	80/12/11
00671	PHOS-DIS	ORTHO	MG/L P		1	.705000			.705000	.705000	80/12/11	80/12/11
31616	FEC COLI	MFM-FCBR	/100ML		5	418.000	321820	567.292	1400.00	20.0000	80/08/21	80/11/25
				K	1	3.00000			3.00000	3.00000	80/12/11	80/12/11
				TOT	6	348.833	286160	534.939	1400.00	3.00000	80/08/21	80/12/11
70505	T PO4	P-COL	MG/L		6	.666666	.046852	.216454	1.10400	.529000	80/08/21	80/12/11
70507	PHOS-T	ORTHO	MG/L P		5	.489799	.020851	.144399	.736000	.373000	80/08/21	80/11/25

Table IV-11.

STORET RETRIEVAL DATE 84/10/01 - INVENT - VERSION OF SEP. 1981

46BY03
44 34 30.0 098 09 11.0 4
LK BYRON OFF NW SHORE 113N-61W-S22 CDCC
46005 SOUTH DAKOTA BEADLE
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
/TYPA/AMBNT/LAKE
21SDLAKE 820904
0000 CLASS 00 CSN-RSP 0663776-0693794

PARAMETER				RMK	NUMBER	MEAN	VARIANCE	STAN DEV	MAXIMUM	MINIMUM	BEG DATE	END DATE
00010	WATER	TEMP	CENT		4	8.73999	31.6212	5.62327	13.3000	.560000	81/03/11	81/05/13
00011	WATER	TEMP	FAHN		7	41.4286	113.622	10.6593	56.0000	33.0000	81/01/27	81/05/13
00020	AIR	TEMP	CENT		4	12.6425	27.0690	5.20279	17.8000	6.67000	81/03/11	81/05/13
00021	AIR	TEMP	FAHN		7	46.4286	191.622	13.8428	64.0000	23.0000	81/01/27	81/05/13
00300	DO		MG/L		6	8.13333	11.0828	3.32908	10.9000	3.90000	81/01/27	81/05/11
00400	PH		SU		7	8.05714	.259603	.509512	8.80000	7.30000	81/01/27	81/05/13
00500	RESIDUE	TOTAL	MG/L		7	3837.71	1337125	1156.34	5318.00	2016.00	81/01/27	81/05/13
00515	RESIDUE	DISS-105	C MG/L		7	3751.57	1220504	1104.76	5113.00	1971.00	81/01/27	81/05/13
00530	RESIDUE	TOT NFLT	MG/L		7	86.1428	3989.15	63.1597	205.000	40.0000	81/01/27	81/05/13
00608	NH3+NH4-	N DISS	MG/L		1	.670000			.670000	.670000	81/04/14	81/04/14
00610	NH3+NH4-	N TOTAL	MG/L		6	3.37833	7.51831	2.74195	5.94000	.070000	81/01/27	81/05/13
00613	NO2-N	DISS	MG/L		2	.320000	.135200	.367696	.580000	.060000	81/04/14	81/05/06
				K	5	.010000	-.582E-10	.000000	.010000	.010000	81/01/27	81/05/13
				TOT	7	.098571	.045414	.213106	.580000	.010000	81/01/27	81/05/13
00618	NO3-N	DISS	MG/L	K	1	.100000			.100000	.100000	81/04/14	81/04/14
00621	NO3 MUD	DRY WGT	MG/KG-N		3	4.43333	51.2633	7.15984	12.7000	.200000	81/01/27	81/05/13
				K	3	.100000	-.186E-08	.000000	.100000	.100000	81/02/25	81/05/11
				TOT	6	2.26667	26.1387	5.11260	12.7000	.100000	81/01/27	81/05/13
00625	TOT KJEL	N	MG/L		7	8.77285	43.3160	6.58149	17.7500	2.85000	81/01/27	81/05/13
00671	PHOS-DIS	ORTHO	MG/L P		1	.039000			.039000	.039000	81/04/14	81/04/14
31616	FEC COLI	MFM-FCBR	/100ML		3	145.333	41926.3	204.759	380.000	3.00000	81/04/14	81/05/13
				K	4	3.00000	.000000	.000000	3.00000	3.00000	81/01/27	81/05/11
				TOT	7	64.0000	19763.7	140.583	380.000	3.00000	81/01/27	81/05/13
70505	T PO4	P-COL	MG/L		7	2.26900	4.11793	2.02927	5.36000	.512000	81/01/27	81/05/13
70507	PHOS-T	ORTHO	MG/L P		6	1.87133	3.05630	1.74823	3.63000	.064000	81/01/27	81/05/13

Table IV-12.

STORET RETRIEVAL DATE 84/10/01 - INVENT - VERSION OF SEP. 1981

46BY03
44 34 30.0 098 09 11.0 4
LK BYRON OFF NW SHORE 113N-61W-S22 CDCC
46005 SOUTH DAKOTA BEADLE
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 CLASS 00 CSN-RSP 0663776-0693794

/TYPA/AMBNT/LAKE

PARAMETER				RMK	NUMBER	MEAN	VARIANCE	STAN DEV	MAXIMUM	MINIMUM	BEG DATE	END DATE
00010	WATER	TEMP	CENT		5	8.40000	87.3000	9.34345	19.0000	.000000	82/02/23	82/10/12
00011	WATER	TEMP	FAHN		6	51.9333	365.294	19.1127	76.0000	32.0000	82/02/23	82/10/12
00020	AIR	TEMP	CENT		5	7.11200	74.0795	8.60695	17.0000	-.332E+01	82/02/23	82/10/12
00021	AIR	TEMP	FAHN		6	52.0000	503.112	22.4301	88.0000	26.0000	82/02/23	82/10/12
00300	DO		MG/L		7	10.1000	19.6768	4.43585	15.1000	1.40000	82/02/23	82/10/12
00400	PH		SU		6	8.40833	.224414	.473724	9.00000	7.70000	82/02/23	82/10/12
00403	LAB	PH	SU		2	8.42500	.638580	.799112	8.99000	7.86000	82/05/25	82/09/01
00410	T ALK	CACO3	MG/L		2	168.100	30702.4	175.221	292.000	44.2000	82/09/01	82/10/12
00415	PHEN-PH-	LFIN ALK	MG/L		1	297.000			297.000	297.000	82/09/01	82/09/01
00500	RESIDUE	TOTAL	MG/L		7	2411.29	468205	684.255	3024.00	948.000	82/02/23	82/10/12
00515	RESIDUE	DISS-105	C MG/L		4	2147.25	745339	863.330	2888.00	899.000	82/02/23	82/05/26
00530	RESIDUE	TOT NFLT	MG/L		7	86.8571	3411.48	58.4079	160.000	16.0000	82/02/23	82/10/12
00608	NH3+NH4-	N DISS	MG/L		1	.230000			.230000	.230000	82/10/12	82/10/12
00610	NH3+NH4-	N TOTAL	MG/L		6	.464999	.285510	.534331	1.42000	.060000	82/02/23	82/09/01
00613	NO2-N	DISS	MG/L	K	7	.010000	.776E-10	.000009	.010000	.010000	82/02/23	82/10/12
00620	NO3-N	TOTAL	MG/L		1	1.60000			1.60000	1.60000	82/02/23	82/02/23
				K	6	.100000	-.223E-08	.000000	.100000	.100000	82/03/16	82/10/12
				TOT	7	.314285	.321428	.566946	1.60000	.100000	82/02/23	82/10/12
00625	TOT KJEL	N	MG/L		7	2.77285	3.94227	1.98551	7.00000	.800000	82/02/23	82/10/12
00671	PHOS-DIS	ORTHO	MG/L P		1	.225000			.225000	.225000	82/10/12	82/10/12
31616	FEC COLI	MFM-FCBR	/100ML		5	936.000	2750480	1658.46	3900.00	120.000	82/05/25	82/10/12
				K	2	10.0000	.000000	.000000	10.0000	10.0000	82/02/23	82/03/16
				TOT	7	671.428	2037814	1427.52	3900.00	10.0000	82/02/23	82/10/12
70300	RESIDUE	DISS-180	C MG/L		3	2560.67	73112.0	270.392	2864.00	2345.00	82/06/14	82/10/12
70505	T PO4	P-COL	MG/L		3	.279333	.001522	.039017	.319000	.241000	82/05/25	82/06/14
70506	SOL PO4-	T P-COL	MG/L		4	.245750	.036846	.191954	.481000	.034000	82/02/23	82/10/12
70507	PHOS-T	ORTHO	MG/L P		6	.138333	.009440	.097161	.312000	.023000	82/02/23	82/09/01

Table IV-13.

STORET RETRIEVAL DATE 84/10/01 - INVENT - VERSION OF SEP. 1981

46BY5Y
44 34 31.0 098 09 18.0 2
FOSTER CR INLET TO NW LAKE BYRON 113N-61W-S22CCD
46005 SOUTH DAKOTA BEADLE
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 CLASS 00 CSN-RSP 0663782-0693800

/TYPA/AMBNT/STREAM

PARAMETER				RMK	NUMBER	MEAN	VARIANCE	STAN DEV	MAXIMUM	MINIMUM	BEG DATE	END DATE
00010	WATER	TEMP	CENT		5	8.60000	75.8000	8.70632	18.0000	.000000	82/03/16	82/10/19
00011	WATER	TEMP	FAHN		6	52.0666	322.706	17.9640	75.0000	32.0000	82/03/16	82/10/19
00020	AIR	TEMP	CENT		5	8.00000	70.0000	8.36660	19.0000	1.00000	82/03/16	82/10/19
00021	AIR	TEMP	FAHN		6	54.0000	528.006	22.9784	92.0000	33.8000	82/03/16	82/10/19
00300	DO		MG/L		4	5.70000	2.92671	1.71076	7.50000	4.00000	82/03/16	82/10/12
00400	PH		SU		3	7.60000	.090134	.300223	7.90000	7.30000	82/03/16	82/05/26
00403	LAB	PH	SU		3	7.63000	.019356	.139125	7.79000	7.54000	82/05/24	82/10/19
00415	PHEN-PH-	LFIN ALK	MG/L		1	217.000			217.000	217.000	82/09/01	82/09/01
00500	RESIDUE	TOTAL	MG/L		6	1178.33	581865	762.801	2443.00	543.000	82/03/16	82/10/19
00515	RESIDUE	DISS-105	C MG/L		3	1362.33	565773	752.179	1986.00	527.000	82/03/16	82/05/26
00530	RESIDUE	TOT NFLT	MG/L		6	196.500	64037.5	253.056	578.000	4.00000	82/03/16	82/10/19
00608	NH3+NH4-	N DISS	MG/L	K	1	.020000			.020000	.020000	82/10/19	82/10/19
00610	NH3+NH4-	N TOTAL	MG/L		4	.320000	.202000	.449444	.990000	.030000	82/03/16	82/09/01
				K	1	.020000			.020000	.020000	82/10/12	82/10/12
				TOT	5	.260000	.169500	.411703	.990000	.020000	82/03/16	82/10/12
00613	NO2-N	DISS	MG/L		1	.010000			.010000	.010000	82/10/19	82/10/19
				K	5	.010000	-.582E-10	.000000	.010000	.010000	82/03/16	82/10/12
				TOT	6	.010000	-.931E-10	.000000	.010000	.010000	82/03/16	82/10/19
00618	NO3-N	DISS	MG/L	K	1	.100000			.100000	.100000	82/10/19	82/10/19
00620	NO3-N	TOTAL	MG/L		1	.200000			.200000	.200000	82/03/16	82/03/16
				K	4	.100000	-.248E-08	.000000	.100000	.100000	82/05/24	82/10/12
				TOT	5	.120000	.002000	.044721	.200000	.100000	82/03/16	82/10/12
00623	KJELDL N	DISS	MG/L		1	2.26000			2.26000	2.26000	82/10/19	82/10/19
00625	TOT KJEL	N	MG/L		5	1.35600	.138431	.372064	1.84000	.900000	82/03/16	82/10/12
00671	PHOS-DIS	ORTHO	MG/L P		1	.348000			.348000	.348000	82/10/19	82/10/19
31616	FEC COLI	MFM-FCBR	/100ML		5	746.000	513480	716.575	1800.00	110.000	82/05/24	82/10/19
				K	1	10.0000			10.0000	10.0000	82/03/16	82/03/16
				TOT	6	623.333	501067	707.861	1800.00	10.0000	82/03/16	82/10/19
70300	RESIDUE	DISS-180	C MG/L		3	601.333	2657.50	51.5509	648.000	546.000	82/09/01	82/10/19
70505	T PO4	P-COL	MG/L		2	.505500	.128525	.358503	.759000	.252000	82/05/24	82/05/26
70506	SOL PO4-	T P-COL	MG/L		4	.415250	.010795	.103899	.515000	.305000	82/03/16	82/10/19
70507	PHOS-T	ORTHO	MG/L P		5	.391000	.027870	.166942	.603000	.188000	82/03/16	82/10/12

Table IV-14.

STORET RETRIEVAL DATE 84/10/01 - INVENT - VERSION OF SEP. 1981

46BY06
44 35 19.0 098 06 54.0 2
NORTH TRIB TO LAKE BYRON 113N-61W-S13 CCDC
46005 SOUTH DAKOTA BEADLE
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 CLASS 00 CSN-RSP 0663779-0693797

/TYPA/AMBNT/STREAM

PARAMETER				RMK	NUMBER	MEAN	VARIANCE	STAN DEV	MAXIMUM	MINIMUM	BEG DATE	END DATE
00010	WATER	TEMP	CENT		1	2.00000			2.00000	2.00000	82/02/23	82/02/23
00011	WATER	TEMP	FAHN		1	35.6000			35.6000	35.6000	82/02/23	82/02/23
00020	AIR	TEMP	CENT		1	-.443E+01			-.443E+01	-.443E+01	82/02/23	82/02/23
00021	AIR	TEMP	FAHN		1	24.0000			24.0000	24.0000	82/02/23	82/02/23
00061	STREAM	FLOW,	INST-CFS		1	.000000			.000000	.000000	82/06/14	82/06/14
00300	DO		MG/L		1	11.1000			11.1000	11.1000	82/02/23	82/02/23
00400	PH		SU		1	6.70000			6.70000	6.70000	82/02/23	82/02/23
00500	RESIDUE	TOTAL	MG/L		1	88.0000			88.0000	88.0000	82/02/23	82/02/23
00515	RESIDUE	DISS-105	C MG/L		1	80.0000			80.0000	80.0000	82/02/23	82/02/23
00530	RESIDUE	TOT NFLT	MG/L		1	8.00000			8.00000	8.00000	82/02/23	82/02/23
00610	NH3+NH4-	N TOTAL	MG/L		1	.440000			.440000	.440000	82/02/23	82/02/23
00613	NO2-N	DISS	MG/L	K	1	.010000			.010000	.010000	82/02/23	82/02/23
00620	NO3-N	TOTAL	MG/L		1	.900000			.900000	.900000	82/02/23	82/02/23
00625	TOT KJEL	N	MG/L		1	1.06000			1.06000	1.06000	82/02/23	82/02/23
31616	FEC COLI	MFM-FCBR	/100ML		1	300.000			300.000	300.000	82/02/23	82/02/23
70506	SOL PO4-	T P-COL	MG/L		1	.519000			.519000	.519000	82/02/23	82/02/23
70507	PHOS-T	ORTHO	MG/L P		1	.504000			.504000	.504000	82/02/23	82/02/23

Table IV-15.

STORET RETRIEVAL DATE 84/10/01 - INVENT - VERSION OF SEP. 1981

46BY6Y
44 34 29.0 098 07 24.0 2
NORTH TRIB INLET TO LK BYRON 113N-61W-S23 DAC
46005 SOUTH DAKOTA BEADLE
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 CLASS 00 CSN-RSP 0663783-0693801

/TYPA/AMBNT/STREAM/RUNOFF

PARAMETER				RMK	NUMBER	MEAN	VARIANCE	STAN DEV	MAXIMUM	MINIMUM	BEG DATE	END DATE
00010	WATER	TEMP	CENT		5	8.32000	107.312	10.3591	25.6000	.000000	82/03/16	82/10/19
00011	WATER	TEMP	FAHN		5	49.8400	409.806	20.2436	78.0000	32.0000	82/03/16	82/10/19
00020	AIR	TEMP	CENT		5	9.76000	133.888	11.5710	27.8000	1.00000	82/03/16	82/10/19
00021	AIR	TEMP	FAHN		5	49.5600	433.148	20.8122	82.0000	33.8000	82/03/16	82/10/19
00061	STREAM	FLOW,	INST-CFS		1	.000000			.000000	.000000	82/05/26	82/05/26
00300	DO		MG/L		3	7.49999	13.3902	3.65926	11.3000	4.00000	82/03/16	82/10/12
00400	PH		SU		2	7.65000	.124985	.353532	7.90000	7.40000	82/03/16	82/05/24
00403	LAB	PH	SU		3	7.56333	.024277	.155810	7.69000	7.39000	82/05/24	82/10/19
00415	PHEN-PH-	LFIN ALK	MG/L		1	54.8000			54.8000	54.8000	82/09/01	82/09/01
00500	RESIDUE	TOTAL	MG/L		5	555.200	214744	463.405	1344.00	190.000	82/03/16	82/10/19
00515	RESIDUE	DISS-105	C MG/L		3	541.666	429163	655.105	1298.00	152.000	82/03/16	82/09/01
00530	RESIDUE	TOT NFLT	MG/L		5	55.6000	1503.30	38.7725	113.000	10.0000	82/03/16	82/10/19
00608	NH3+NH4-	N DISS	MG/L		2	.040000	.116E-08	.000034	.040000	.040000	82/10/12	82/10/19
00610	NH3+NH4-	N TOTAL	MG/L		2	.625000	.224450	.473762	.960000	.290000	82/03/16	82/05/24
				K	1	.020000			.020000	.020000	82/09/01	82/09/01
				TOT	3	.423333	.234234	.483977	.960000	.020000	82/03/16	82/09/01
00613	NO2-N	DISS	MG/L		3	.016667	.000033	.005773	.020000	.010000	82/09/01	82/10/19
				K	2	.010000	-.145E-10	.000000	.010000	.010000	82/03/16	82/05/24
				TOT	5	.014000	.000030	.005477	.020000	.010000	82/03/16	82/10/19
00618	NO3-N	DISS	MG/L		2	.400000	.180000	.424264	.700000	.100000	82/10/12	82/10/19
00620	NO3-N	TOTAL	MG/L		1	.400000			.400000	.400000	82/03/16	82/03/16
				K	2	.100000	-.372E-08	.000000	.100000	.100000	82/05/24	82/09/01
				TOT	3	.200000	.030000	.173205	.400000	.100000	82/03/16	82/09/01
00623	KJELDL N	DISS	MG/L		2	1.14000	.156800	.395980	1.42000	.860000	82/10/12	82/10/19
00625	TOT KJEL	N	MG/L		3	1.40667	.464134	.681274	1.80000	.620000	82/03/16	82/09/01
00671	PHOS-DIS	ORTHO	MG/L P		2	1.01200	.070690	.265876	1.20000	.824000	82/10/12	82/10/19
31615	FEC COLI	MPNECMED	/100ML		1	1000.00			1000.00	1000.00	82/10/19	82/10/19
31616	FEC COLI	MFM-FCBR	/100ML		4	802.500	1281758	1132.15	2500.00	200.000	82/03/16	82/10/12
70300	RESIDUE	DISS-180	C MG/L		2	436.500	11704.5	108.187	513.000	360.000	82/10/12	82/10/19
70505	T PO4	P-COL	MG/L		1	.197000			.197000	.197000	82/05/24	82/05/24
70506	SOL PO4-	T P-COL	MG/L		4	.846750	.066263	.257416	1.20000	.607000	82/03/16	82/10/19
70507	PHOS-T	ORTHO	MG/L P		3	.475666	.092535	.304196	.698000	.129000	82/03/16	82/09/01

Table IV-16.

STORET RETRIEVAL DATE 84/10/01 - INVENT - VERSION OF SEP. 1981

46BY07
44 36 11.0 098 03 41.0 2
NE TRIB TO LAKE BYRON 113N-60W-S17 BAAB
46005 SOUTH DAKOTA BEADLE
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 CLASS 00 CSN-RSP 0663780-0693798

/TYPA/AMBNT/STREAM/RUNOFF

PARAMETER				RMK	NUMBER	MEAN	VARIANCE	STAN DEV	MAXIMUM	MINIMUM	BEG DATE	END DATE
00011	WATER	TEMP	FAHN		1	33.8000			33.8000	33.8000	82/02/23	82/02/23
00020	AIR	TEMP	CENT		1	1.00000			1.00000	1.00000	82/02/23	82/02/23
00021	AIR	TEMP	FAHN		1	-.443E+01			-.443E+01	-.443E+01	82/02/23	82/02/23
00300	DO		MG/L		1	8.10000			8.10000	8.10000	82/02/23	82/02/23
00400	PH		SU		1	6.90000			6.90000	6.90000	82/02/23	82/02/23
00500	RESIDUE	TOTAL	MG/L		1	231.000			231.000	231.000	82/02/23	82/02/23
00515	RESIDUE	DISS-105	C MG/L		1	204.000			204.000	204.000	82/02/23	82/02/23
00530	RESIDUE	TOT NFLT	MG/L		1	24.0000			24.0000	24.0000	82/02/23	82/02/23
00610	NH3+NH4-	N TOTAL	MG/L		1	2.45000			2.45000	2.45000	82/02/23	82/02/23
00613	NO2-N	DISS	MG/L		1	.020000			.020000	.020000	82/02/23	82/02/23
00620	NO3-N	TOTAL	MG/L		1	2.60000			2.60000	2.60000	82/02/23	82/02/23
00625	TOT KJEL	N	MG/L		1	5.90000			5.90000	5.90000	82/02/23	82/02/23
31616	FEC COLI	MFM-FCBR	/100ML		1	900.000			900.000	900.000	82/02/23	82/02/23
70506	SOL PO4-	T P-COL	MG/L		1	1.02000			1.02000	1.02000	82/02/23	82/02/23
70507	PHOS-T	ORTHO	MG/L P		1	.980000			.980000	.980000	82/02/23	82/02/23

Table IV-17.

46BY7Y
44 34 05.0 098 03 25.0 2 .
E INLET TO LK BYRON 113N-60W-S30 BCDB
46005 SOUTH DAKOTA BEADLE
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 CLASS 00 CSN-RSP 0663784-0693802

/TYPA/AMBNT/LAKE

PARAMETER				RMK	NUMBER	MEAN	VARIANCE	STAN DEV	MAXIMUM	MINIMUM	BEG DATE	END DATE
00010	WATER	TEMP	CENT		6	11.4333	115.207	10.7334	25.6000	.000000	82/03/16	82/10/19
00011	WATER	TEMP	FAHN		6	52.5666	372.462	19.2993	78.0000	32.0000	82/03/16	82/10/19
00020	AIR	TEMP	CENT		6	11.3167	125.962	11.2233	28.9000	1.00000	82/03/16	82/10/19
00021	AIR	TEMP	FAHN		6	52.3666	407.869	20.1958	84.0000	33.8000	82/03/16	82/10/19
00300	DO		MG/L		3	7.33333	17.1634	4.14288	10.3000	2.60000	82/03/16	82/05/26
00400	PH		SU		4	7.68750	.124018	.352162	8.15000	7.30000	82/03/16	82/10/12
00403	LAB	PH	SU		3	7.70333	.001785	.042253	7.74000	7.66000	82/05/24	82/10/19
00415	PHEN-PH-	LFIN ALK	MG/L		1	114.000			114.000	114.000	82/09/01	82/09/01
00500	RESIDUE	TOTAL	MG/L		6	1555.67	2221665	1490.53	3771.00	516.000	82/03/16	82/10/19
00515	RESIDUE	DISS-105	C MG/L		4	1199.75	2933141	1712.64	3743.00	11.0000	82/03/16	82/09/01
00530	RESIDUE	TOT NFLT	MG/L		5	31.6000	537.301	23.1797	62.0000	4.00000	82/03/16	82/10/19
00603	NH3+NH4-	N DISS	MG/L		1	.020000			.020000	.020000	82/10/19	82/10/19
				K	1	.020000			.020000	.020000	82/10/12	82/10/12
				TOT	2	.020000	-.232E-09	.000000	.020000	.020000	82/10/12	82/10/19
00610	NH3+NH4-	N TOTAL	MG/L		4	.187500	.040892	.202217	.480000	.020000	82/03/16	82/09/01
00613	NO2-N	DISS	MG/L		1	.020000			.020000	.020000	82/09/01	82/09/01
				K	5	.010000	-.582E-10	.000000	.010000	.010000	82/03/16	82/10/19
				TOT	6	.011667	.000017	.004083	.020000	.010000	82/03/16	82/10/19
00618	NO3-N	DISS	MG/L	K	2	.100000	-.372E-08	.000000	.100000	.100000	82/10/12	82/10/19
00620	NO3-N	TOTAL	MG/L	K	4	.100000	-.248E-08	.000000	.100000	.100000	82/03/16	82/09/01
00623	KJELDL N	DISS	MG/L		2	.645000	.004050	.063640	.690000	.600000	82/10/12	82/10/19
00625	TOT KJEL	N	MG/L		4	2.26500	2.80950	1.67616	3.76000	.730000	82/03/16	82/09/01
00671	PHOS-DIS	ORTHO	MG/L P		2	.525000	.008451	.091928	.590000	.460000	82/10/12	82/10/19
31615	FEC COLI	MPNECMED	/100ML		2	240.000	24200.0	155.563	350.000	130.000	82/10/12	82/10/19
31616	FEC COLI	MFM-FCER	/100ML		4	252.500	31091.7	176.328	430.000	30.0000	82/03/16	82/09/01
70300	RESIDUE	DISS-180	C MG/L		2	620.000	45602.0	213.546	771.000	469.000	82/10/12	82/10/19
70505	T PO4	P-COL	MG/L		2	.372000	.005618	.074953	.425000	.319000	82/05/24	82/05/26
70506	SOL PO4-	T P-COL	MG/L		4	.514500	.018861	.137335	.644000	.346000	82/03/16	82/10/19
70507	PHOS-T	ORTHO	MG/L P		4	.385250	.027152	.164778	.624000	.246000	82/03/16	82/09/01

Table IV-18.

STORET RETRIEVAL DATE 84/10/02 - STAND - VERSION OF APR. 1983 STN 1.SUMMARY.1

46BY01
44 33 22.0 098 08 16.0 2
LK BYRON OFF SOUTH SHORE 113N-61W-S35 BBCC
46005 SOUTH DAKOTA BEADLE
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
/TYPA/AMBNT/LAKE 21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663774-0693792

SUMMARY OF VIOLATIONS ON SAMPLES COLLECTED FROM 80/08/21 TO 82/10/12

	00300 DO MG/L	00400 PH SU	31616 FEC COLI MFM-FCBR /100ML	00530 RESIDUE TOT NFLT MG/L	70300 RESIDUE DISS-180 C MG/L	00610 NH3+NH4- N TOTAL MG/L	00619 UN-IONZD NH3-NH3 MG/L	00620 NO3-N TOTAL MG/L	00011 WATER TEMP FAHN
NO OF VALUES	19	18	19	19	3	18	16	7	18
MEAN	10.700	8.125	289.4	113.3	2554.	0.147	0.0057	0.14	49.82
MEDIAN	10.300	8.375	16.0	85.0	2424.	0.070	0.0051	0.10	51.00
NO OF VIOLS	0	11	5	4	1	0	0	0	0
PERCENT VIOL	0.	61.	26.	21.	33.	0.	0.	0.	0.
MINIMUM VIOL	0.0	6.300	240.0	160.0	2963.	0.0	0.0	0.0	0.0
MEAN VIOL	0.0	8.368	980.0	261.5	2963.	0.0	0.0	0.0	0.0
MAXIMUM VIOL	0.0	8.900	1900.0	425.0	2963.	0.0	0.0	0.0	0.0
MIN CRITERIA	4.000	6.500	*********	*********	*********	*********	*********	*********	*********
MAX CRITERIA	*********	8.300	200.0	150.0	2500.	*********	0.0500	50.00	90.00

Table IV-19.

STORET RETRIEVAL DATE 84/10/02 - STAND - VERSION OF APR. 1983 STN 1 PAGE 1.1
VIOLATIONS ONLY

46BY01
44 33 22.0 098 08 16.0 2
LK BYRON OFF SOUTH SHORE 113N-61W-S35 BBCC
46005 SOUTH DAKOTA BEADLE
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663774-0693792

/TYPA/AMBNT/LAKE

DATE	TIME	00300 DO MG/L	00400 PH SU	31616 FEC COLI MFM-FCBR /100ML	00530 RESIDUE TOT NFLT MG/L	70300 RESIDUE DISS-180 C MG/L	00610 NH3+NH4- N TOTAL MG/L	00619 UN-IONZD NH3-NH3 MG/L	00620 NO3-N TOTAL MG/L	00011 WATER TEMP FAHN
80/08/21	1330		8.900*	260.0*						
80/09/03	1040		8.500*	240.0*						
80/10/08	1315		8.500*							
80/11/25	1140		8.400*							
81/03/11	1035		6.300*							
81/04/14	1030				160.0*					
81/05/06	1045		8.600*		425.0*					
81/05/13	1030		8.400*		165.0*					
82/02/23	1315			1200.0*						
82/05/24	1247		8.800*	1900.0*						
82/05/26	1150		8.350*	1300.0*						
82/06/14	1142		8.700*							
82/09/01	1315					2963.*				
82/10/12	1445		8.600*		296.0*					

Table IV-20.

STORET RETRIEVAL DATE 84/10/02 - STAND - VERSION OF APR. 1983 STN 2.SUMMARY.1

46BY02
44 34 00.0 098 07 21.0 2
LK BYRON OFF N PENINSULA 113N-61W-S26 DABB
46005 SOUTH DAKOTA BEADLE
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
/TYPA/AMBNT/LAKE 21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663775-0693793

SUMMARY OF VIOLATIONS ON SAMPLES COLLECTED FROM 80/08/21 TO 82/09/01

	00300 DO MG/L	00400 PH SU	31616 FEC COLI MFM-FCBR /100ML	00530 RESIDUE TOT NFLT MG/L	70300 RESIDUE DISS-180 C MG/L	00610 NH3+NH4- N TOTAL MG/L	00619 UN-IONZD NH3-NH3 MG/L	00620 NO3-N TOTAL MG/L	00011 WATER TEMP FAHN
NO OF VALUES	19	18	19	19	2	17	15	6	18
MEAN	11.200	8.167	152.2	99.4	2471.	0.160	0.0135	0.23	50.31
MEDIAN	10.900	8.400	20.0	68.0	2471.	0.090	0.0045	0.10	51.00
NO OF VIOLS	0	11	3	2	1	0	1	0	0
PERCENT VIOL	0.	61.	16.	11.	50.	0.	7.	0.	0.
MINIMUM VIOL	0.0	6.200	230.0	355.0	2525.	0.0	0.0648	0.0	0.0
MEAN VIOL	0.0	8.318	876.7	385.0	2525.	0.0	0.0648	0.0	0.0
MAXIMUM VIOL	0.0	9.200	2000.0	415.0	2525.	0.0	0.0648	0.0	0.0
MIN CRITERIA	4.000	6.500	*********	*********	*********	*********	*********	*********	*********
MAX CRITERIA	*********	8.300	200.0	150.0	2500.	*********	0.0500	50.00	90.00

Table IV-21.

STORET RETRIEVAL DATE 84/10/02 - STAND - VERSION OF APR. 1983 STN 2 PAGE 1.1
VIOLATIONS ONLY

46BY02
44 34 00.0 098 07 21.0 2
LK BYRON OFF N PENINSULA 113N-61W-S26 DABB
46005 SOUTH DAKOTA BEADLE
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663775-0693793

/TYPA/AMBNT/LAKE

DATE	TIME	00300 DO MG/L	00400 PH SU	31616 FEC COLI MFM-FCBR /100ML	00530 RESIDUE TOT NFLT MG/L	70300 RESIDUE DISS-180 C MG/L	00610 NH3+NH4- N TOTAL MG/L	00619 UN-IONZD NH3-NH3 MG/L	00620 NO3-N TOTAL MG/L	00011 WATER TEMP FAHN
80/08/21			9.200*	230.0*	415.0*			0.0648*		
80/09/03	1050		8.900*							
80/09/17	1100		8.900*		355.0*					
80/10/08	1350		8.900*							
80/11/25	1215		8.700*							
81/02/25	1140		6.300*							
81/03/11	1055		6.200*							
81/05/06	1110		8.700*							
81/05/13	1050		8.600*							
82/05/25	1338			2000.0*						
82/05/26	1230		8.600*							
82/06/14	1230		8.500*							
82/09/01	1400			400.0*		2525.*				

Table IV-22.

STORET RETRIEVAL DATE 84/10/02 - STAND - VERSION OF APR. 1983 STN 3.SUMMARY.1

46BY03
44 34 30.0 098 09 11.0 4
LK BYRON OFF NW SHORE 113N-61W-S22 CDCC
46005 SOUTH DAKOTA BEADLE
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663776-0693794

/TYPA/AMBNT/LAKE

SUMMARY OF VIOLATIONS ON SAMPLES COLLECTED FROM 80/08/21 TO 82/10/12

	00300 DO MG/L	00400 PH SU	31616 FEC COLI MFM-FCBR /100ML	00530 RESIDUE TOT NFLT MG/L	70300 RESIDUE DISS-180 C MG/L	00610 NH3+NH4- N TOTAL MG/L	00619 UN-IONZD NH3-NH3 MG/L	00620 NO3-N TOTAL MG/L	00011 WATER TEMP FAHN
NO OF VALUES	19	19	20	20	3	18	16	7	19
MEAN	8.937	8.255	362.0	75.5	2561.	1.450	0.0190	0.31	48.77
MEDIAN	9.200	8.400	71.5	54.5	2473.	0.420	0.0151	0.10	50.00
NO OF VIOLS	3	10	6	2	1	0	0	0	0
PERCENT VIOL	16.	53.	30.	10.	33.	0.	0.	0.	0.
MINIMUM VIOL	1.400	8.400	220.0	160.0	2864.	0.0	0.0	0.0	0.0
MEAN VIOL	3.067	8.685	1100.0	182.5	2864.	0.0	0.0	0.0	0.0
MAXIMUM VIOL	3.900	9.200	3900.0	205.0	2864.	0.0	0.0	0.0	0.0
MIN CRITERIA	4.000	6.500	*********	*********	*********	*********	*********	*********	*********
MAX CRITERIA	*********	8.300	200.0	150.0	2500.	*********	0.0500	50.00	90.00

Table IV-23.

STORET RETRIEVAL DATE 84/10/02 - STAND - VERSION OF APR. 1983 STN 3 PAGE 1.1
VIOLATIONS ONLY

46BY03
44 34 30.0 098 09 11.0 4
LK BYRON OFF NW SHORE 113N-61W-S22 CDCC
46005 SOUTH DAKOTA BEADLE
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663776-0693794

/TYPA/AMBNT/LAKE

DATE	TIME	00300 DO MG/L	00400 PH SU	31616 FEC COLI MFM-FCBR /100ML	00530 RESIDUE TOT NFLT MG/L	70300 RESIDUE DISS-180 C MG/L	00610 NH3+NH4- N TOTAL MG/L	00619 UN-IONZD NH3-NH3 MG/L	00620 NO3-N TOTAL MG/L	00011 WATER TEMP FAHN
80/08/21	1340		9.200*							
80/09/03	1110		8.800*	1400.0*						
80/09/17	1125		8.400*							
80/10/08	1335		8.400*	400.0*						
81/03/11	1105	3.900*								
81/05/06	1120		8.500*							
81/05/11	1105	3.900*								
81/05/13	1105		8.800*	380.0*	205.0*					
82/03/16	0700	1.400*								
82/05/25	1302		9.000*							
82/05/26	1205		8.500*	3900.0*						
82/06/14	1208		8.600*	220.0*						
82/09/01	1330			300.0*	160.0*	2864.*				
82/10/12	1505		8.650*							

Table IV-24.

STORET RETRIEVAL DATE 84/10/02 - STAND - VERSION OF APR. 1983 STN 8.SUMMARY.1

46BY5Y
44 34 31.0 098 09 18.0 2
FOSTER CR INLET TO NW LAKE BYRON 113N-61W-S22CCD
46005 SOUTH DAKOTA BEADLE
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663782-0693800

/TYPA/AMBNT/STREAM

SUMMARY OF VIOLATIONS ON SAMPLES COLLECTED FROM 82/03/16 TO 82/10/19

	00300 DO MG/L	00400 PH SU	31616 FEC COLI MFM-FCBR /100ML	00530 RESIDUE TOT NFLT MG/L	70300 RESIDUE DISS-180 C MG/L	00610 NH3+NH4- N TOTAL MG/L	00619 UN-IONZD NH3-NH3 MG/L	00620 NO3-N TOTAL MG/L	00011 WATER TEMP FAHN
NO OF VALUES	4	3	6	6	3	5	3	5	6
MEAN	5.700	7.600	623.3	196.5	601.	0.260	0.0029	0.12	52.07
MEDIAN	5.650	7.600	360.0	62.0	610.	0.110	0.0020	0.10	51.80
NO OF VIOLS	0	0	3	2	0	0	0	0	0
PERCENT VIOL	0.	0.	50.	33.	0.	0.	0.	0.	0.
MINIMUM VIOL	0.0	0.0	600.0	457.0	0.	0.0	0.0	0.0	0.0
MEAN VIOL	0.0	0.0	1166.7	517.5	0.	0.0	0.0	0.0	0.0
MAXIMUM VIOL	0.0	0.0	1800.0	578.0	0.	0.0	0.0	0.0	0.0
MIN CRITERIA	4.000	6.500 *********	*********	*********	*********	*********	*********	*********	*********
MAX CRITERIA	*********	8.300	200.0	150.0	2500.	*********	0.0500	50.00	90.00

Table IV-25.

STORET RETRIEVAL DATE 84/10/02 - STAND - VERSION OF APR. 1983 STN 8 PAGE 1.1
VIOLATIONS ONLY

46BY5Y
44 34 31.0 098 09 18.0 2 .
FOSTER CR INLET TO NW LAKE BYRON 113N-61W-S22CCD
46005 SOUTH DAKOTA BEADLE
MISSOURI RIVER BASIN .090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663782-0693800

/TYPA/AMBNT/STREAM

DATE	TIME	00300 DO MG/L	00400 PH SU	31616 FEC COLI MFM-FCBR /100ML	00530 RESIDUE TOT NFLT MG/L	70300 RESIDUE DISS-180 C MG/L	00610 NH3+NH4- N TOTAL MG/L	00619 UN-IONZD NH3-NH3 MG/L	00620 NO3-N TOTAL MG/L	00011 WATER TEMP FAHN
82/05/24	1313			600.0*						
82/05/26	1210			1800.0*	457.0*					
82/09/01	1430			1100.0*						
82/10/12	1520				578.0*					

Table IV-26.

STORET RETRIEVAL DATE 84/10/02 - STAND - VERSION OF APR. 1983 STN 6.SUMMARY.1

46BY06
44 35 19.0 098 06 54.0 2
NORTH TRIB TO LAKE BYRON 113N-61W-S13 CCDC
46005 SOUTH DAKOTA BEADLE
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
/TYPA/AMBNT/STREAM 21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663779-0693797

SUMMARY OF VIOLATIONS ON SAMPLES COLLECTED FROM 82/02/23 TO 82/02/23

	00300 DO MG/L	00400 PH SU	31616 FEC COLI MFM-FCBR /100ML	00530 RESIDUE TOT NFLT MG/L	70300 RESIDUE DISS-180 C MG/L	00610 NH3+NH4- N TOTAL MG/L	00619 UN-IONZD NH3-NH3 MG/L	00620 NO3-N TOTAL MG/L	00011 WATER TEMP FAHN
NO OF VALUES	1	1	1	1	0	1	1	1	1
MEAN	11.100	6.700	300.0	8.0	0.	0.440	0.0003	0.90	35.60
MEDIAN	11.100	6.700	300.0	8.0	*********	0.440	0.0003	0.90	35.60
NO OF VIOLS	0	0	1	0	0	0	0	0	0
PERCENT VIOL	0.	0.	100.	0.	0.	0.	0.	0.	0.
MINIMUM VIOL	0.0	0.0	300.0	0.0	0.	0.0	0.0	0.0	0.0
MEAN VIOL	0.0	0.0	300.0	0.0	0.	0.0	0.0	0.0	0.0
MAXIMUM VIOL	0.0	0.0	300.0	0.0	0.	0.0	0.0	0.0	0.0
MIN CRITERIA	4.000	6.500	*********	*********	*********	*********	*********	*********	*********
MAX CRITERIA	*********	8.300	200.0	150.0	2500.	*********	0.0500	50.00	90.00

Table IV-27.

STORET RETRIEVAL DATE 84/10/02 - STAND - VERSION OF APR. 1983 STN 6 PAGE 1.1
VIOLATIONS ONLY

46BY06
44 35 19.0 098 06 54.0 2
NORTH TRIB TO LAKE BYRON 113N-61W-S13 CCDC
46005 SOUTH DAKOTA BEADLE
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663779-0693797

/TYPA/AMBNT/STREAM

DATE	TIME	00300 DO MG/L	00400 PH SU	31616 FEC COLI MFM-FCBR /100ML	00530 RESIDUE TOT NFLT MG/L	70300 RESIDUE DISS-180 C MG/L	00610 NH3+NH4- N TOTAL MG/L	00619 UN-IONZD NH3-NH3 MG/L	00620 NO3-N TOTAL MG/L	00011 WATER TEMP FAHN
82/02/23	0955			300.0*						

Table IV-28.

STORET RETRIEVAL DATE 84/10/02 - STAND - VERSION OF APR. 1983 STN 9.SUMMARY.1

46BY6Y
44 34 29.0 098 07 24.0 2
NORTH TRIB INLET TO LK BYRON 113N-61W-S23 DAC
46005 SOUTH DAKOTA BEADLE
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
/TYPA/AMBNT/STREAM/RUNOFF 21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663783-0693801

SUMMARY OF VIOLATIONS ON SAMPLES COLLECTED FROM 82/03/16 TO 82/10/19

	00300 DO MG/L	00400 PH SU	31616 FEC COLI MFM-FCBR /100ML	00530 RESIDUE TOT NFLT MG/L	70300 RESIDUE DISS-180 C MG/L	00610 NH3+NH4- N TOTAL MG/L	00619 UN-IONZD NH3-NH3 MG/L	00620 NO3-N TOTAL MG/L	00011 WATER TEMP FAHN
NO OF VALUES	3	2	4	5	2	3	2	3	5
MEAN	7.500	7.650	802.5	55.6	437.	0.423	0.0059	0.20	49.84
MEDIAN	7.200	7.650	255.0	46.0	437.	0.290	0.0059	0.10	39.20
NO OF VIOLS	0	0	3	0	0	0	0	0	0
PERCENT VIOL	0.	0.	75.	0.	0.	0.	0.	0.	0.
MINIMUM VIOL	0.0	0.0	230.0	0.0	0.	0.0	0.0	0.0	0.0
MEAN VIOL	0.0	0.0	1003.3	0.0	0.	0.0	0.0	0.0	0.0
MAXIMUM VIOL	0.0	0.0	2500.0	0.0	0.	0.0	0.0	0.0	0.0
MIN CRITERIA	4.000	6.500	*********	*********	*********	*********	*********	*********	*********
MAX CRITERIA	*********	8.300	200.0	150.0	2500.	*********	0.0500	50.00	90.00

Table IV-29.

STORET RETRIEVAL DATE 84/10/02 - STAND - VERSION OF APR. 1983 STN 9 PAGE 1.1
VIOLATIONS ONLY

46BY6Y
44 34 29.0 098 07 24.0 2
NORTH TRIB INLET TO LK BYRON 113N-61W-S23 DAC
46005 SOUTH DAKOTA BEADLE
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663783-0693801

/TYPA/AMBNT/STREAM/RUNOFF

DATE	TIME	00300 DO MG/L	00400 PH SU	31616 FEC COLI MFM-FCBR /100ML	00530 RESIDUE TOT NFLT MG/L	70300 RESIDUE DISS-180 C MG/L	00610 NH3+NH4- N TOTAL MG/L	00619 UN-IONZD NH3-NH3 MG/L	00620 NO3-N TOTAL MG/L	00011 WATER TEMP FAHN
82/05/24	1324			230.0*						
82/09/01	1415			280.0*						
82/10/12	1530			2500.0*						

Table IV-30.

STORET RETRIEVAL DATE 84/10/02 - STAND - VERSION OF APR. 1983 STN 7.SUMMARY.1

46BY07
44 36 11.0 098 03 41.0 2
NE TRIB TO LAKE BYRON 113N-60W-S17 BAAB
46005 SOUTH DAKOTA BEADLE
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
/TYPA/AMBNT/STREAM/RUNOFF 21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663780-0693798

SUMMARY OF VIOLATIONS ON SAMPLES COLLECTED FROM 82/02/23 TO 82/02/23

	00300 DO MG/L	00400 PH SU	31616 FEC COLI MFM-FCBR /100ML	00530 RESIDUE TOT NFLT MG/L	70300 RESIDUE DISS-180 C MG/L	00610 NH3+NH4- N TOTAL MG/L	00619 UN-IONZD NH3-NH3 MG/L	00620 NO3-N TOTAL MG/L	00011 WATER TEMP FAHN
NO OF VALUES	1	1	1	1	0	1	1	1	1
MEAN	8.100	6.900	900.0	24.0	0.	2.450	0.0021	2.60	33.80
MEDIAN	8.100	6.900	900.0	24.0	*********	2.450	0.0021	2.60	33.80
NO OF VIOLS	0	0	1	0	0	0	0	0	0
PERCENT VIOL	0.	0.	100.	0.	0.	0.	0.	0.	0.
MINIMUM VIOL	0.0	0.0	900.0	0.0	0.	0.0	0.0	0.0	0.0
MEAN VIOL	0.0	0.0	900.0	0.0	0.	0.0	0.0	0.0	0.0
MAXIMUM VIOL	0.0	0.0	900.0	0.0	0.	0.0	0.0	0.0	0.0
MIN CRITERIA	4.000	6.500	*********	*********	*********	*********	*********	*********	*********
MAX CRITERIA	*********	8.300	200.0	150.0	2500.	*********	0.0500	50.00	90.00

Table IV-31.

STORET RETRIEVAL DATE 84/10/02 - STAND - VERSION OF APR. 1983 STN 7 PAGE 1.1
VIOLATIONS ONLY

46BY07
44 36 11.0 098 03 41.0 2
NE TRIB TO LAKE BYRON 113N-60W-S17 BAAB
46005 SOUTH DAKOTA BEADLE
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663780-0693798

/TYPA/AMBNT/STREAM/RUNOFF

DATE	TIME	00300 DO MG/L	00400 PH SU	31616 FEC COLI MFM-FCBR /100ML	00530 RESIDUE TOT NFLT MG/L	70300 RESIDUE DISS-180 C MG/L	00610 NH3+NH4- N TOTAL MG/L	00619 UN-IONZD NH3-NH3 MG/L	00620 NO3-N TOTAL MG/L	00011 WATER TEMP FAHN
82/02/23	1023			900.0*						

Table IV-32.

STORET RETRIEVAL DATE 84/10/02 - STAND - VERSION OF APR. 1983 STN 10.SUMMARY.1

46BY7Y
44 34 05.0 098 03 25.0 2
E INLET TO LK BYRON 113N-60W-S30 BCDB
46005 SOUTH DAKOTA BEADLE
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663784-0693802

/TYPA/AMBNT/LAKE

SUMMARY OF VIOLATIONS ON SAMPLES COLLECTED FROM 82/03/16 TO 82/10/19

	00300 DO MG/L	00400 PH SU	31616 FEC COLI MFM-FCBR /100ML	00530 RESIDUE TOT NFLT MG/L	70300 RESIDUE DISS-180 C MG/L	00610 NH3+NH4- N TOTAL MG/L	00619 UN-IONZD NH3-NH3 MG/L	00620 NO3-N TOTAL MG/L	00011 WATER TEMP FAHN
NO OF VALUES	3	4	4	5	2	4	3	4	6
MEAN	7.333	7.687	252.5	31.6	620.	0.187	0.0064	0.10	52.57
MEDIAN	9.100	7.650	275.0	28.0	620.	0.125	0.0090	0.10	51.80
NO OF VIOLS	1	0	2	0	0	0	0	0	0
PERCENT VIOL	33.	0.	50.	0.	0.	0.	0.	0.	0.
MINIMUM VIOL	2.600	0.0	350.0	0.0	0.	0.0	0.0	0.0	0.0
MEAN VIOL	2.600	0.0	390.0	0.0	0.	0.0	0.0	0.0	0.0
MAXIMUM VIOL	2.600	0.0	430.0	0.0	0.	0.0	0.0	0.0	0.0
MIN CRITERIA	4.000	6.500	*********	*********	*********	*********	*********	*********	*********
MAX CRITERIA	*********	8.300	200.0	150.0	2500.	*********	0.0500	50.00	90.00

Table IV-33.

STORET RETRIEVAL DATE 84/10/02 - STAND - VERSION OF APR. 1983 STN 10 PAGE 1.1
VIOLATIONS ONLY

46BY7Y
44 34 05.0 098 03 25.0 2
E INLET TO LK BYRON 113N-60W-S30 BCDB
46005 SOUTH DAKOTA BEADLE
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
/TYPA/AMBNT/LAKE 21SDLAKE 820904
'0000 FEET DEPTH CLASS 00 CSN-RSP 0663784-0693802

DATE	TIME	00300 DO MG/L	00400 PH SU	31616 FEC COLI MFM-FCBR /100ML	00530 RESIDUE TOT NFLT MG/L	70300 RESIDUE DISS-180 C MG/L	00610 NH3+NH4- N TOTAL MG/L	00619 UN-IONZD NH3-NH3 MG/L	00620 NO3-N TOTAL MG/L	00011 WATER TEMP FAHN
82/05/24	1400	2.600*								
82/05/26	1245			430.0*						
82/09/01	1445			350.0*						

Table IV-34.

VARIABLE	N	MEAN	STANDARD DEVIATION	MINIMUM VALUE	MAXIMUM VALUE
STATION=21SDLAKE 46BY01					
ORGN	5	2.042	0.240	1.650	2.280
INORGN	0	.	.	.	.
STATION=21SDLAKE 46BY02					
ORGN	5	3.354	0.767	2.080	4.080
INORGN	0	.	.	.	.
STATION=21SDLAKE 46BY03					
ORGN	6	3.823	1.058	2.580	5.280
INORGN	0	.	.	.	.

1980

Table IV-35.

VARIABLE	N	MEAN	STANDARD DEVIATION	MINIMUM VALUE	MAXIMUM VALUE
STATION=21SDLAKE 46BY01					
ORGN	6	1.580	0.656	0.850	2.670
INORGN	0	.	.	.	.
STATION=21SDLAKE 46BY02					
ORGN	6	1.518	0.773	0.510	2.680
INORGN	0	.	.	.	.
STATION=21SDLAKE 46BY03					
ORGN	6	6.382	4.585	1.530	12.150
INORGN	0	.	.	.	.

Table IV-36.

VARIABLE	N	MEAN	STANDARD DEVIATION	MINIMUM VALUE	MAXIMUM VALUE
STATION=21SDLAKE 46BY01					
ORGN	7	2.419	1.417	0.260	4.510
INORGN	7	0.381	0.289	0.150	0.960
STATION=21SDLAKE 46BY02					
ORGN	6	1.528	0.702	0.340	2.100
INORGN	6	0.500	0.569	0.170	1.570
STATION=21SDLAKE 46BY03					
ORGN	6	2.463	1.737	0.220	5.580
INORGN	6	0.825	0.661	0.170	2.210
STATION=21SDLAKE 46BY06					
ORGN	1	0.620	.	0.620	0.620
INORGN	1	1.350	.	1.350	1.350
STATION=21SDLAKE 46BY07					
ORGN	1	3.450	.	3.450	3.450
INORGN	1	5.070	.	5.070	5.070
STATION=21SDLAKE 46BY5Y					
ORGN	5	1.096	0.427	0.580	1.730
INORGN	5	0.390	0.456	0.130	1.200
STATION=21SDLAKE 46BY6Y					
ORGN	3	0.983	0.472	0.600	1.510
INORGN	3	0.637	0.648	0.140	1.370
STATION=21SDLAKE 46BY7Y					
ORGN	4	2.077	1.537	0.710	3.610
INORGN	4	0.300	0.199	0.140	0.590

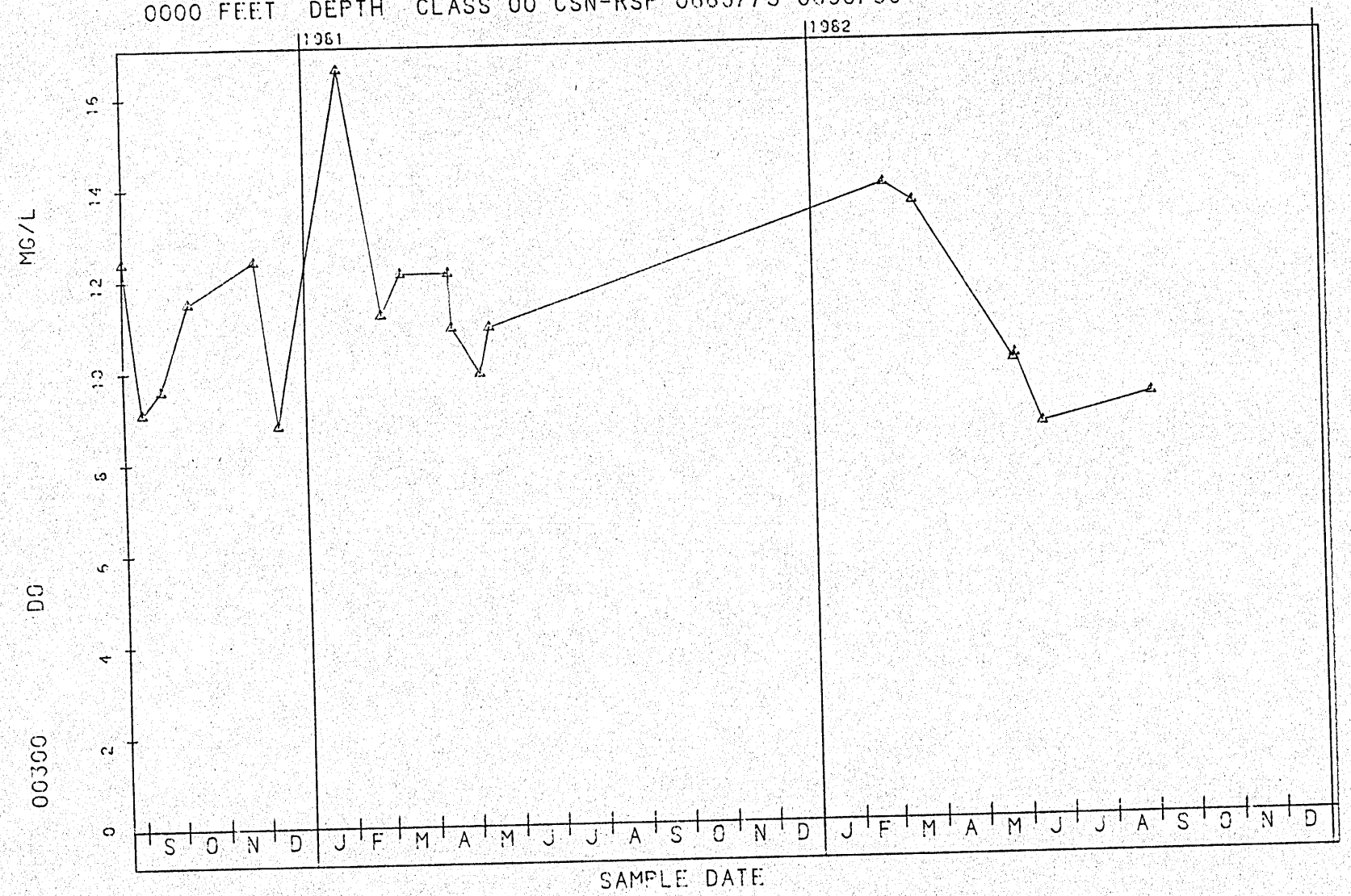
Table IV-37.

46BY01
44 33 22.0 098 08 16.0 2
LK BYRON OFF SOUTH SHORE 113N-61W-S35 BBCC
46005 SOUTH DAKOTA BEADLE
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663774-0693792

Figure IV-1.

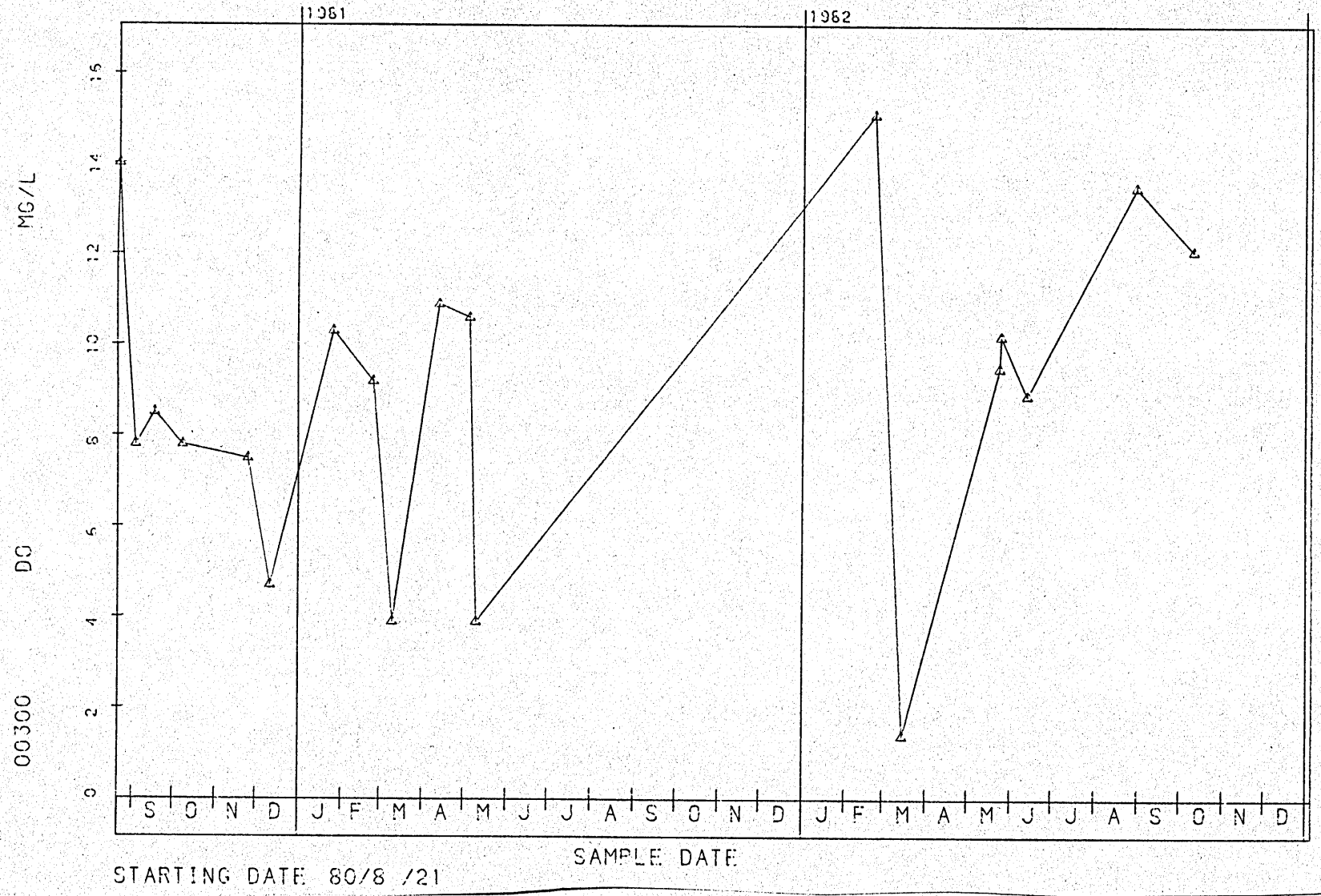
STARTING DATE 80/8 /21

Figure IV-2.


46BY02
44 34 00.0 098 07 21.0 2
LK BYRON OFF N PENINSULA 113N-61W-S26 DABB
46005 SOUTH DAKOTA BEADLE
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663775-0693793
1981
1982
MG/L
DO
00300
0
2
4
6
8
10
12
14
16
S O N D J F M A M J J A S O N D J F M A M J J A S O N D
SAMPLE DATE
STARTING DATE 80/8 /21

46BY03
44 34 30.0 098 09 11.0 4
LK BYRON OFF NW SHORE 113N-61W-S22 CDCC
46005 SOUTH DAKOTA BEADLE
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663776-0693794

Figure IV-3.



STARTING DATE 80/8 /21

Figure IV-4.

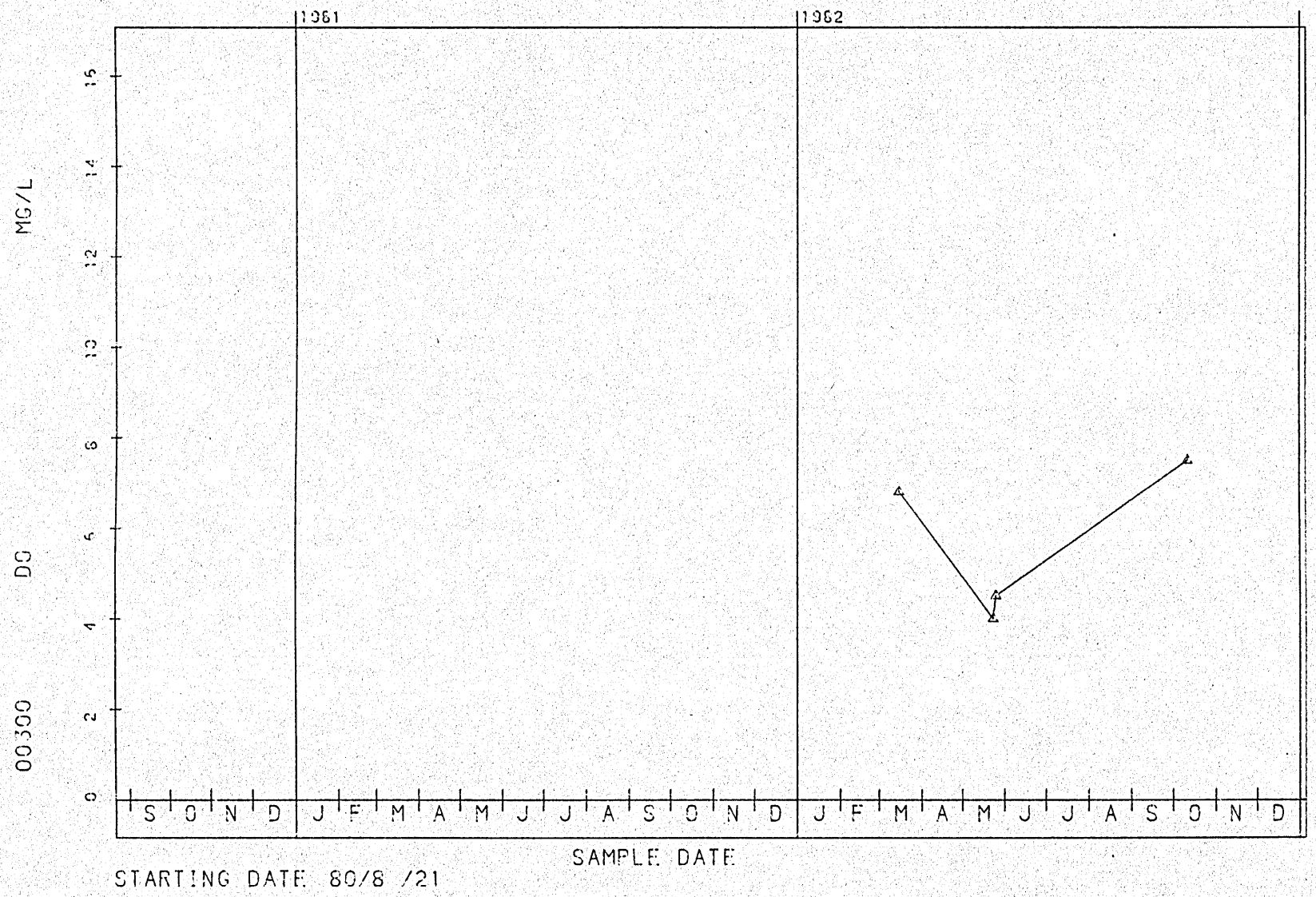
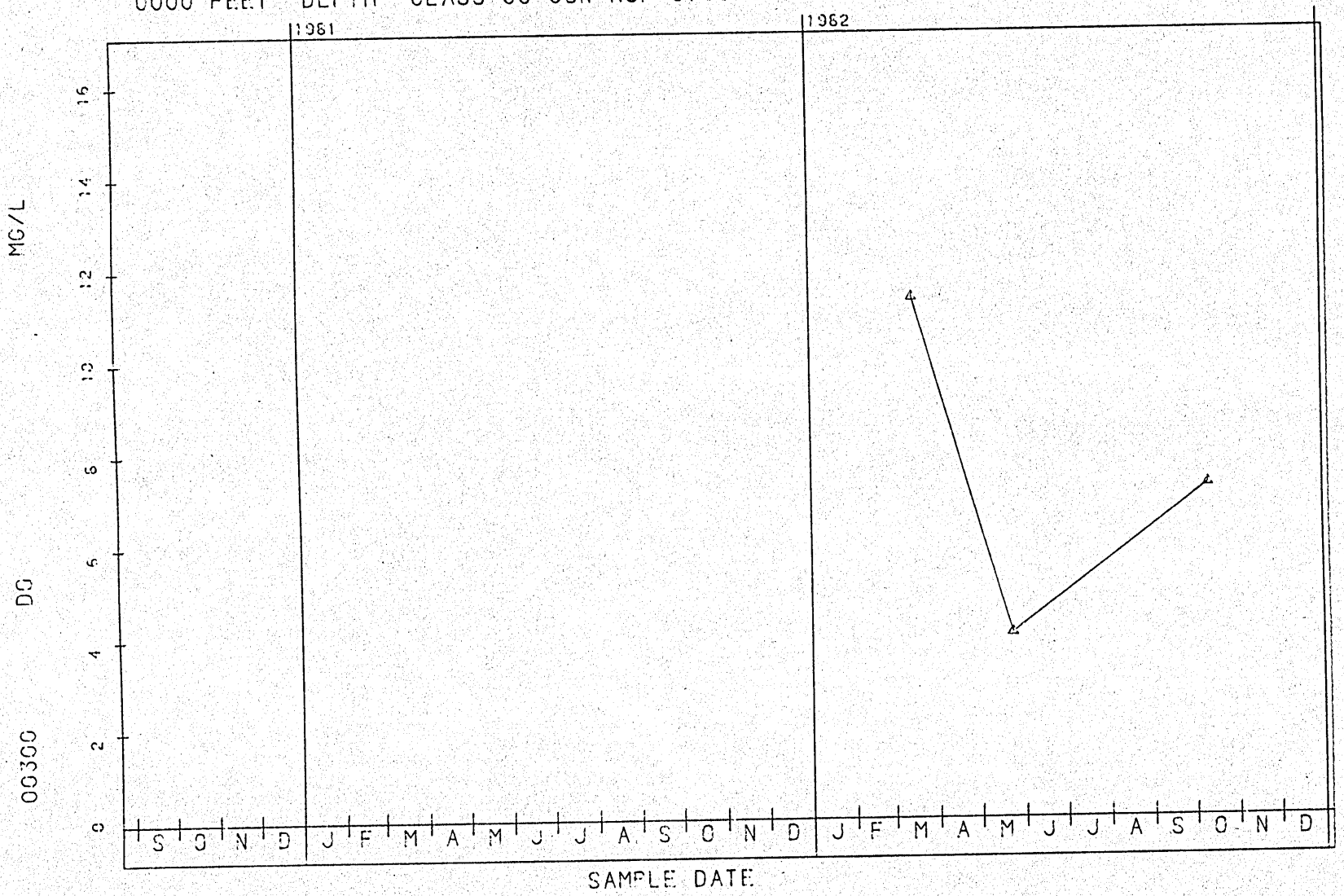
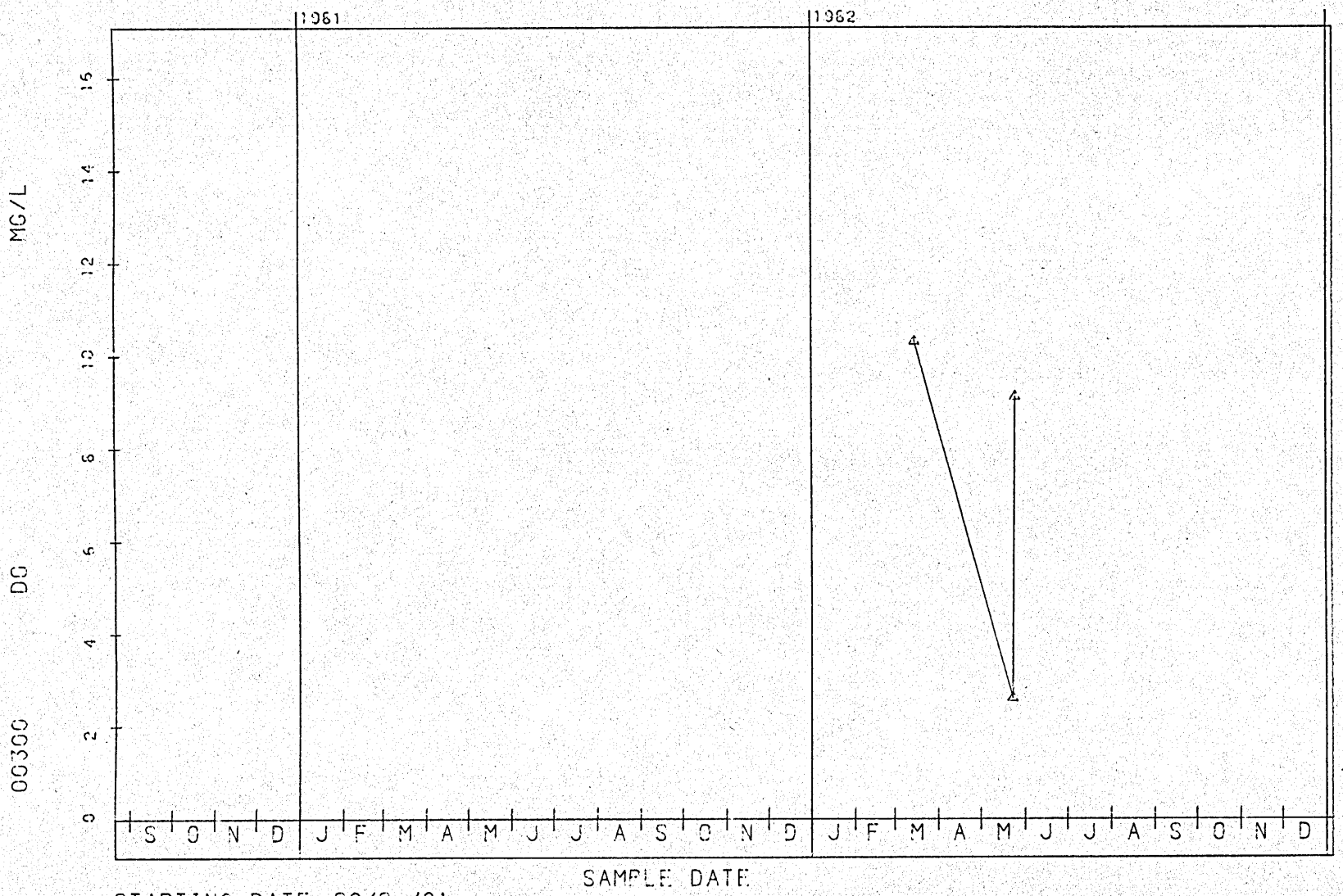

46BY5Y
44 34 31.0 098 09 18.0 2
FOSTER CR INLET TO NW LAKE BYRON 113N-61W-S22CCD
46005 SOUTH DAKOTA BEADLE
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663782-0693800
1961
1962
MG/L
DO
00300
0
2
4
6
8
10
12
14
16
S O N D J F M A M J J A S O N D J F M A M J J A S O N D
SAMPLE DATE
STARTING DATE 80/8 /21

Figure IV-5.


46BY6Y
44 34 29.0 098 07 24.0 2
NORTH TRIB INLET TO LK BYRON T13N-61W-S23 DAC
46005 SOUTH DAKOTA BEADLE
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663783-0693801
1961
1962
MG/L
DO
00300
0
2
4
6
8
10
12
14
16
S O N D J F M A M J J A S O N D J F M A M J J A S O N D
SAMPLE DATE
STARTING DATE 80/8 /21

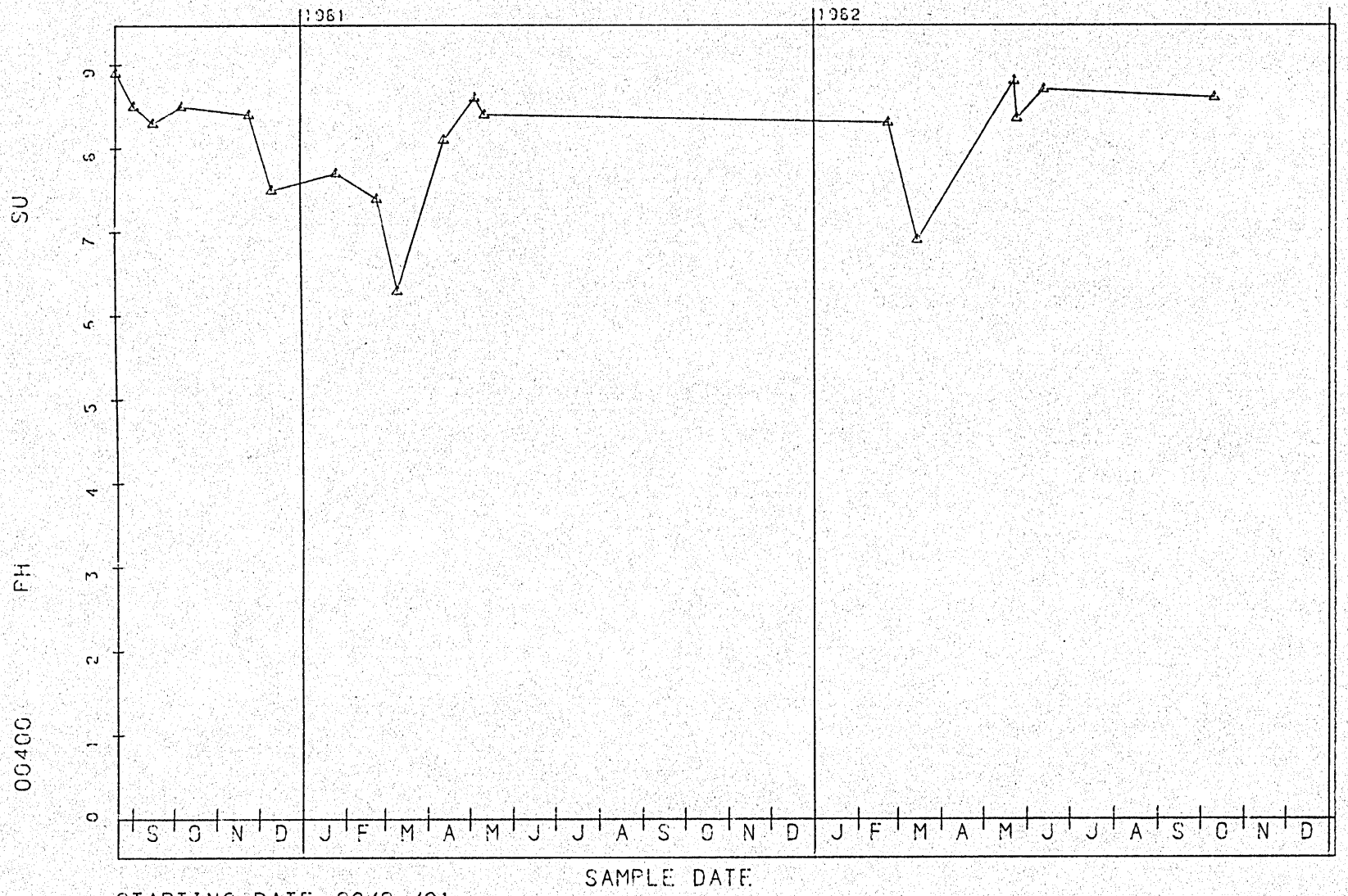
46BY7Y
44 34 05.0 098 03 25.0 2
E INLET TO LK BYRON 113N-60W-S30 BCDB
46005 SOUTH DAKOTA BEADLE
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663784-0693802

Figure IV-6.



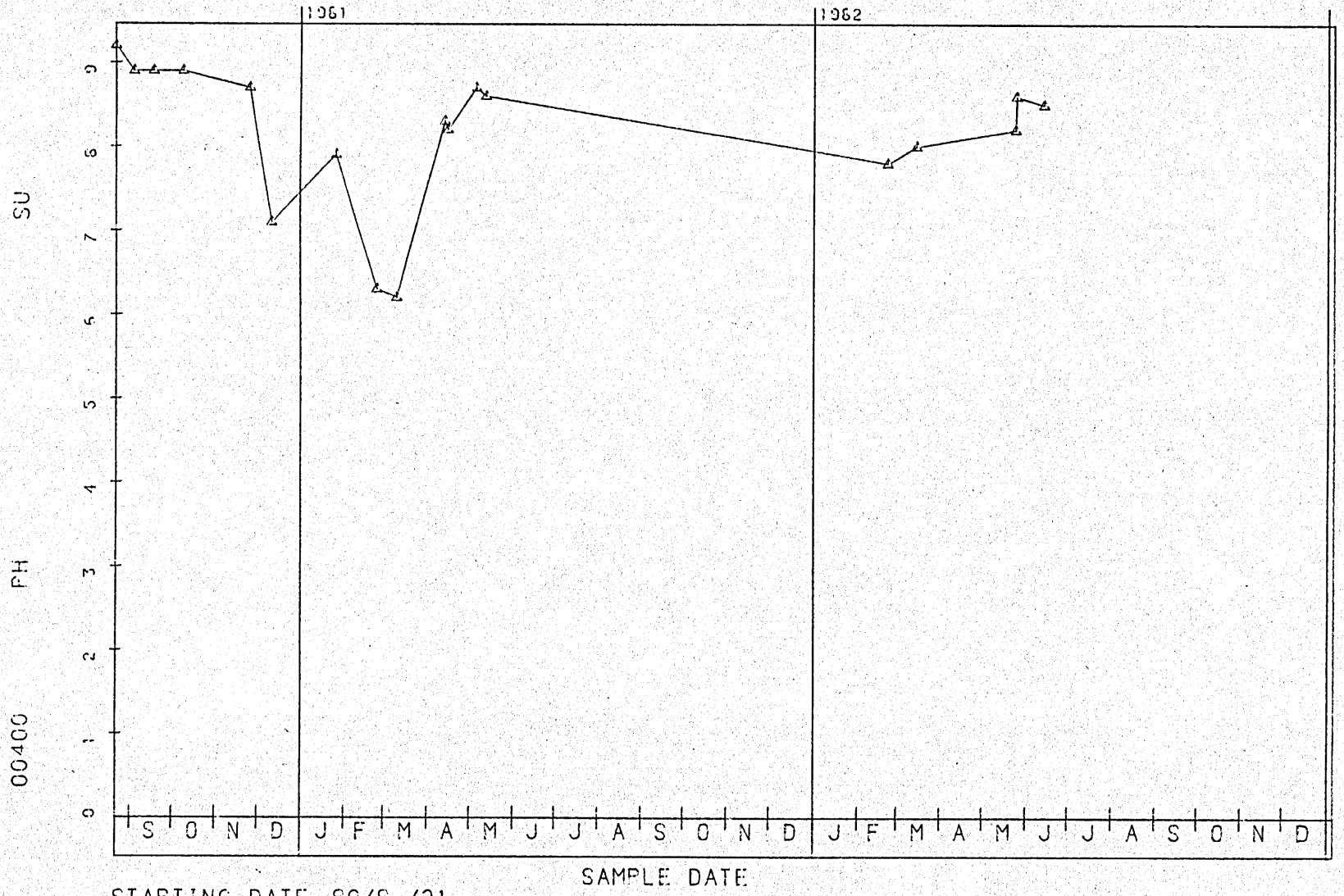
STARTING DATE 80/8 /21

Figure IV-7.


46BY01
44 33 22.0 098 08 16.0 2
LK BYRON OFF SOUTH SHORE 113N-61W-S35 BBCC
46005 SOUTH DAKOTA BEADLE
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663774-0693792
1961
1962
SU
PH
00400
0
1
2
3
4
5
6
7
8
9
S O N D J F M A M J J A S O N D J F M A M J J A S O N D
SAMPLE DATE
STARTING DATE 80/8 /21

46BY02
44 34 00.0 098 07 21.0 2
LK BYRON OFF N PENINSULA 113N-61W-S26 DABB
46005 SOUTH DAKOTA BEADLE
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663775-0693793

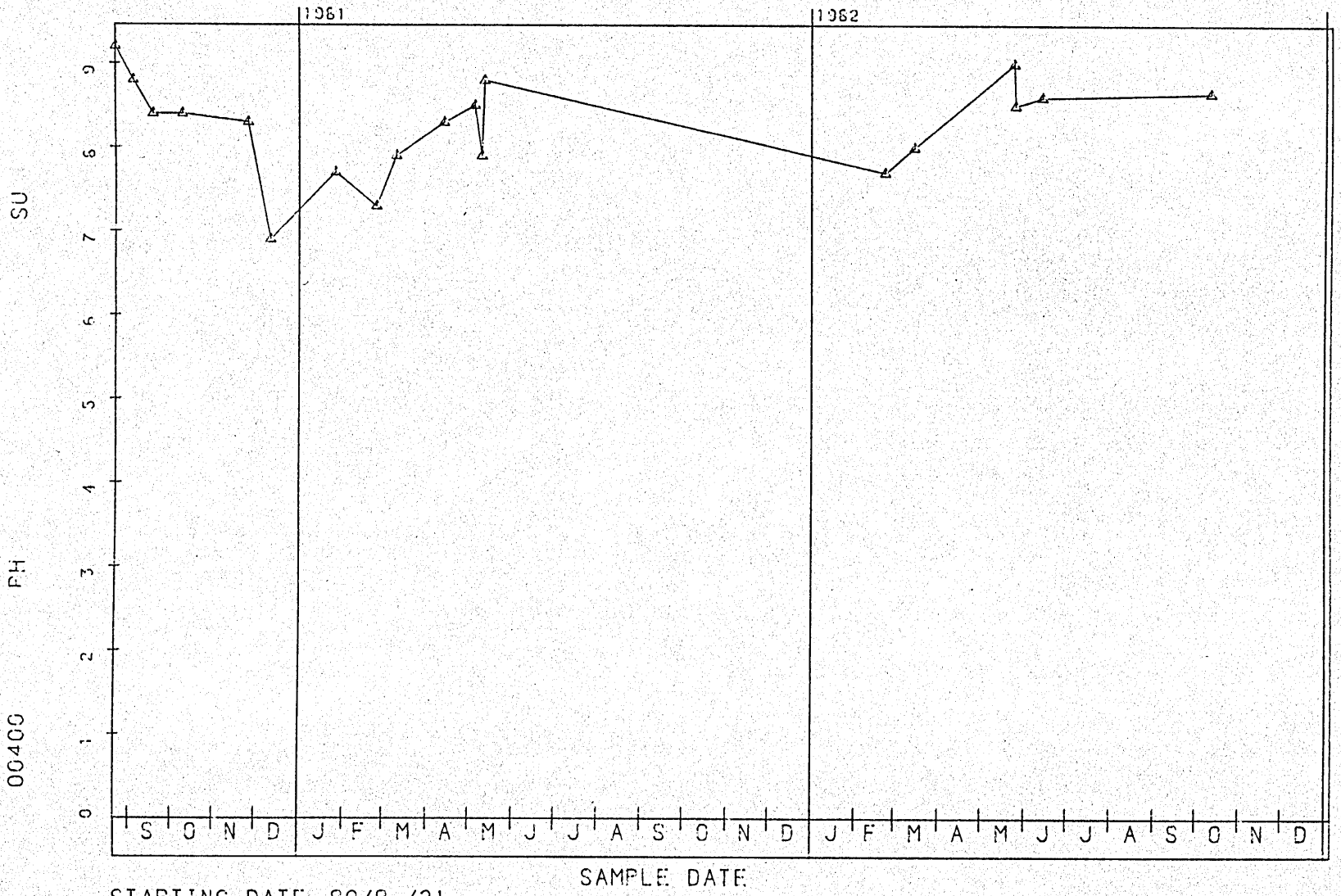
Figure IV-8.



STARTING DATE 80/8 /21

46BY03
44 34 30.0 098 09 11.0 4
LK BYRON OFF NW SHORE 113N-61W-S22 CDCC
46005 SOUTH DAKOTA BEADLE
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663776-0693794

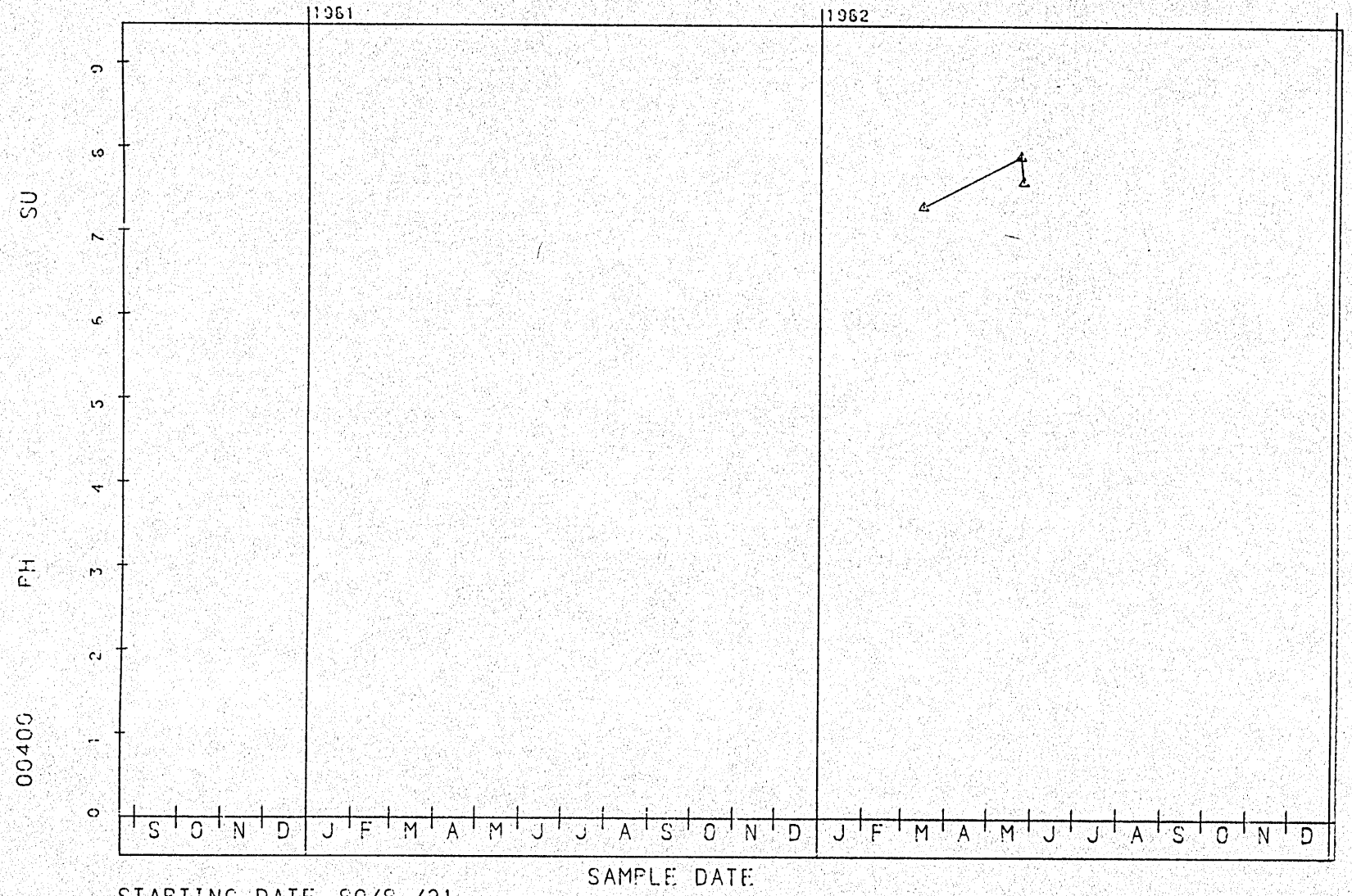
Figure IV-9.



STARTING DATE 80/8 /21

46BY5Y
44 34 31.0 098 09 18.0 2
FOSTER CR INLET TO NW LAKE BYRON 113N-61W-S22CCD
46005 SOUTH DAKOTA BEADLE
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663782-0693800

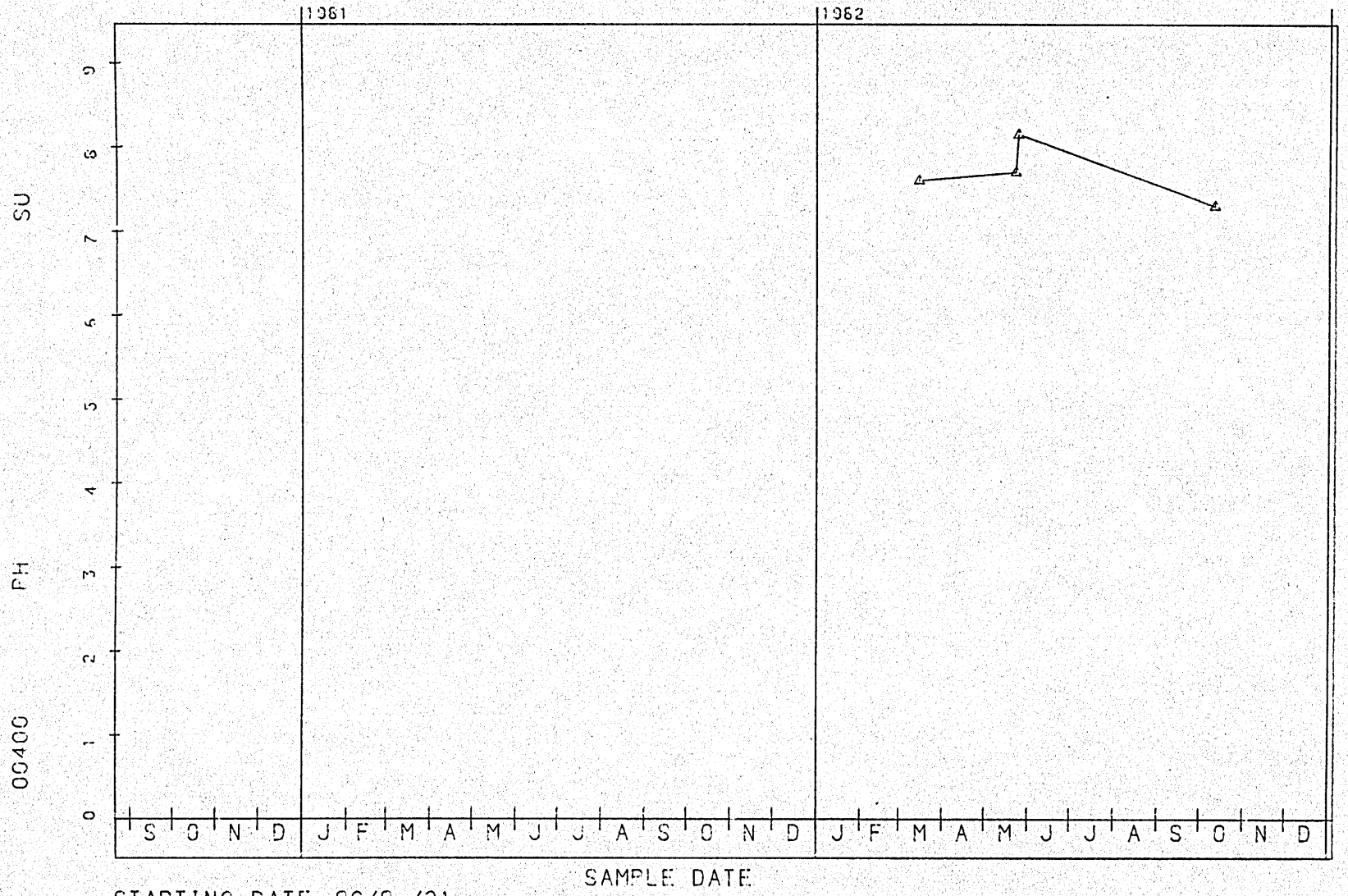
Figure IV-10.



STARTING DATE 80/8 /21

46BY7Y
44 34 05.0 098 03 25.0 2
E INLET TO LK BYRON 113N-60W-S30 BCDB
46005 SOUTH DAKOTA BEADLE
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663784-0693802

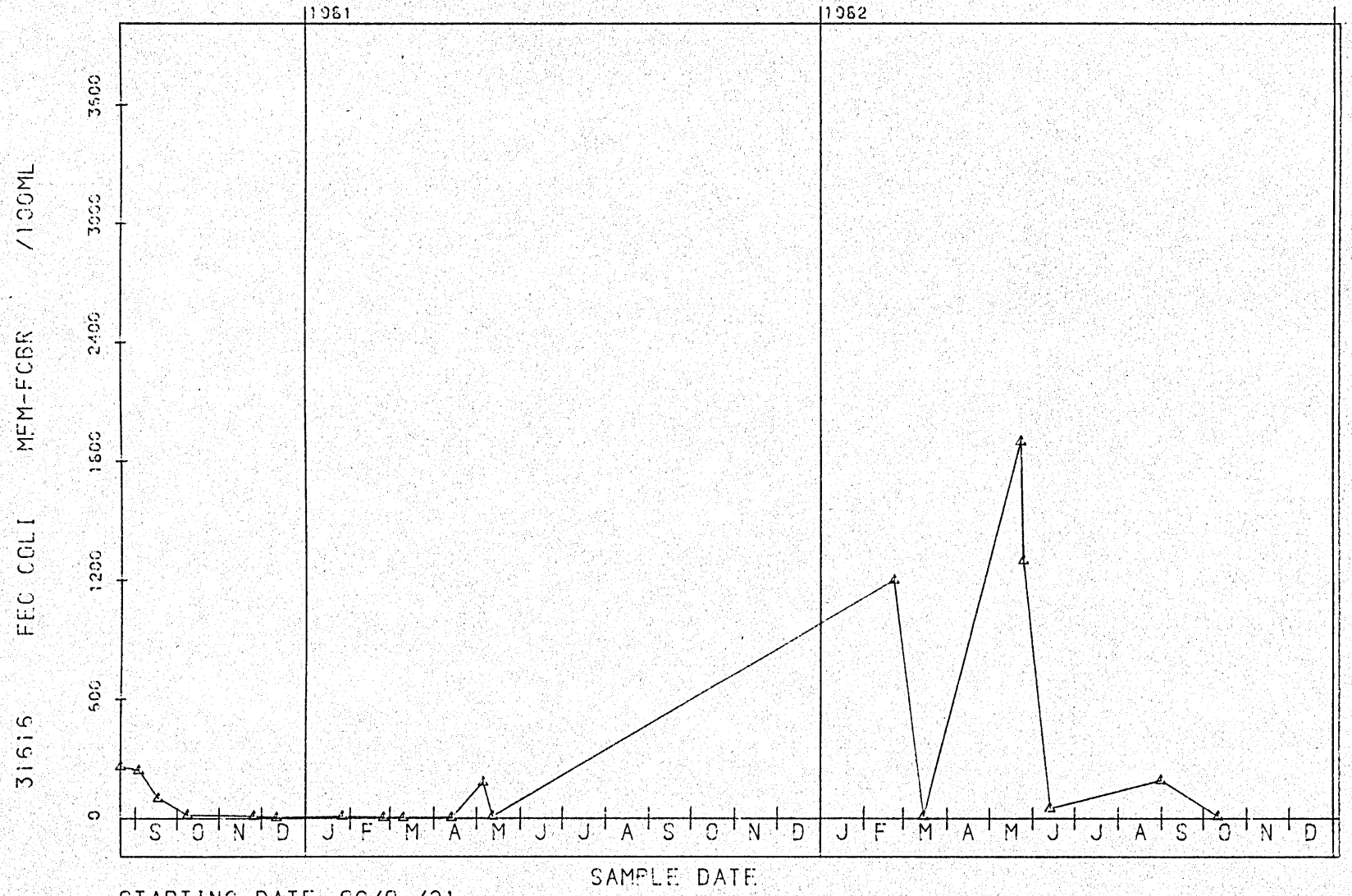
Figure IV-11.



STARTING DATE 80/8 /21

Figure IV-12.

46BY01
44 33 22.0 098 08 16.0 2
LK BYRON OFF SOUTH SHORE 113N-61W-S35 BBCC
46005 SOUTH DAKOTA BEADLE
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663774-0693792



46BY02
44 34 00.0 098 07 21.0 2
LK BYRON OFF N PENINSULA 113N-61W-S26 DABB
46005 SOUTH DAKOTA BEADLE
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663775-0693793

Figure IV-13.

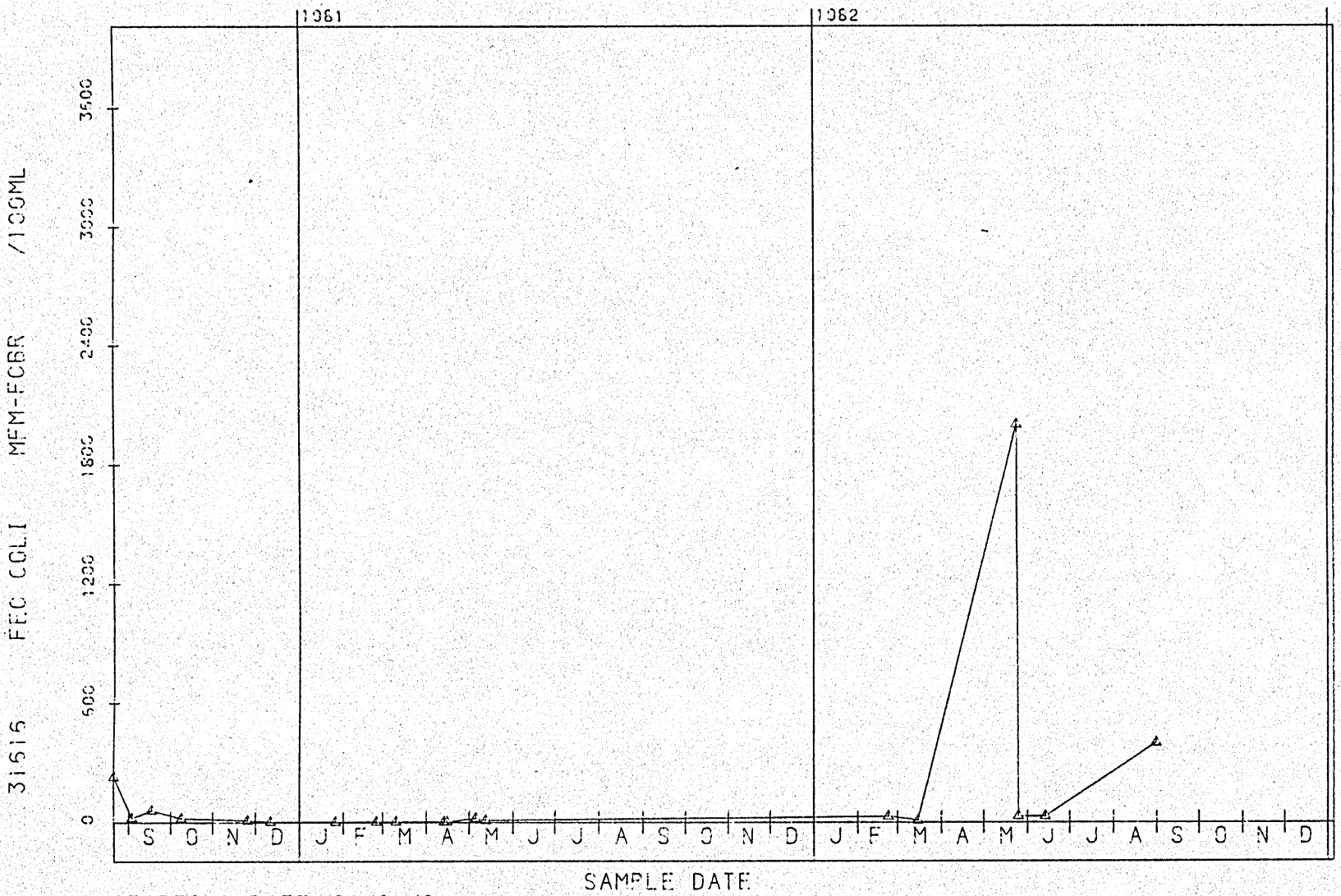
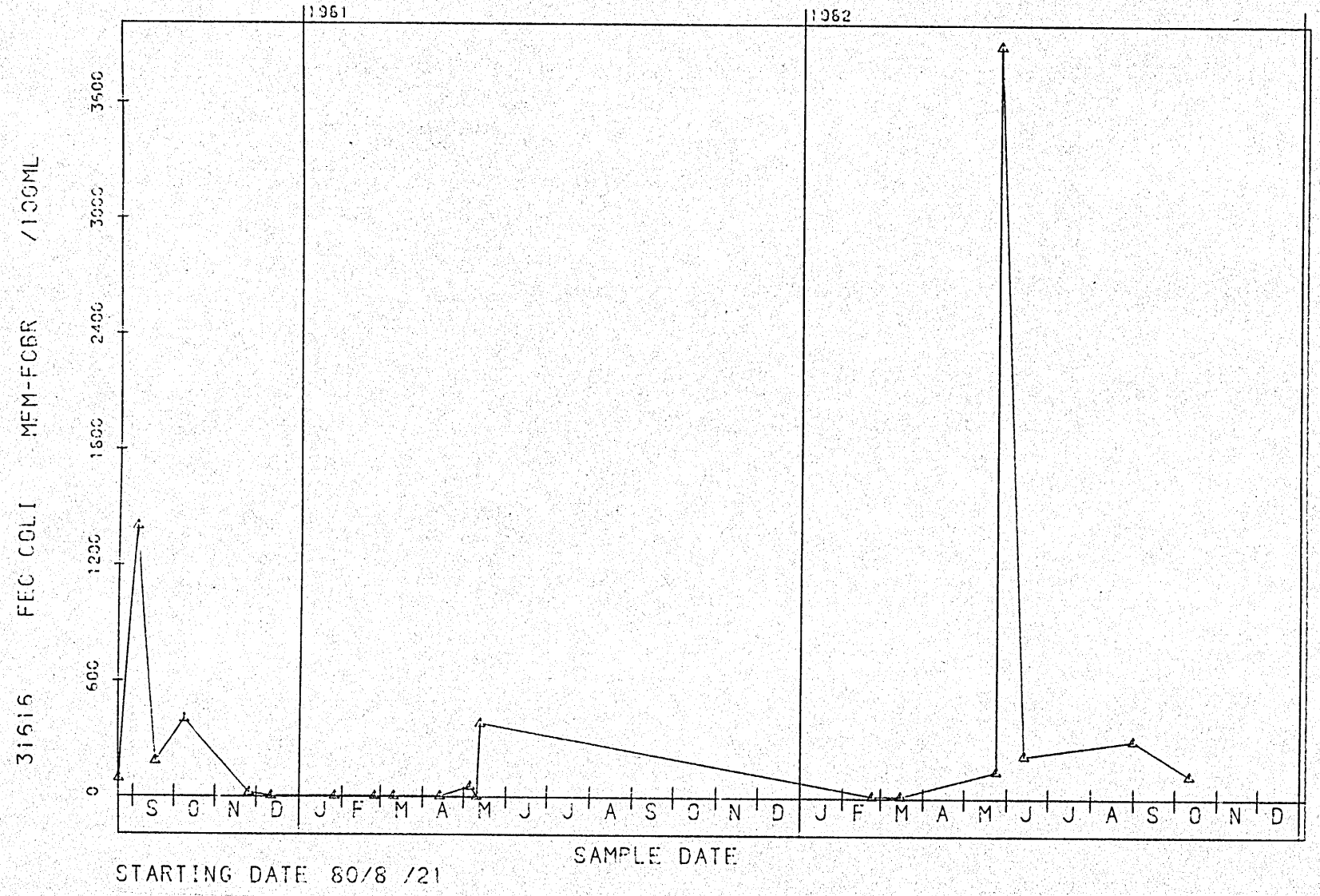
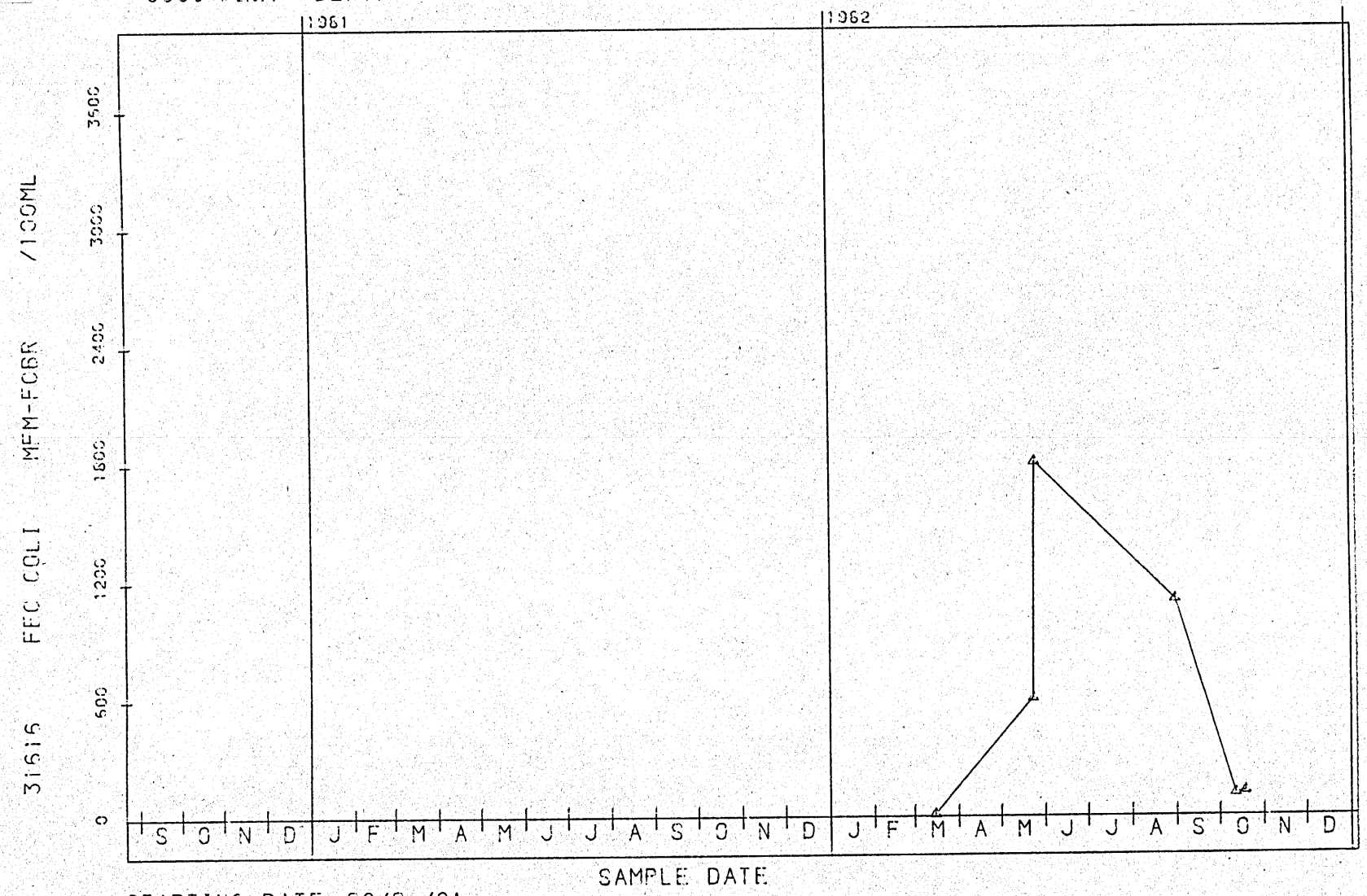


Figure IV-14.


46BY03
44 34 30.0 098 09 11.0 4
LK BYRON OFF NW SHORE 113N-61W-S22 CDCC
46005 SOUTH DAKOTA BEADLE
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663776-0693794
1961
1962
31616 FEC COLI MFM-FCBR /100ML
0
600
1200
1800
2400
3000
S O N D J F M A M J J A S O N D J F M A M J J A S O N D
SAMPLE DATE
STARTING DATE 80/8 /21

46BY5Y
44 34 31.0 098 09 18.0 2
FOSTER CR INLET TO NW LAKE BYRON 113N-61W-S22CCD
46005 SOUTH DAKOTA BEADLE
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663782-0693800

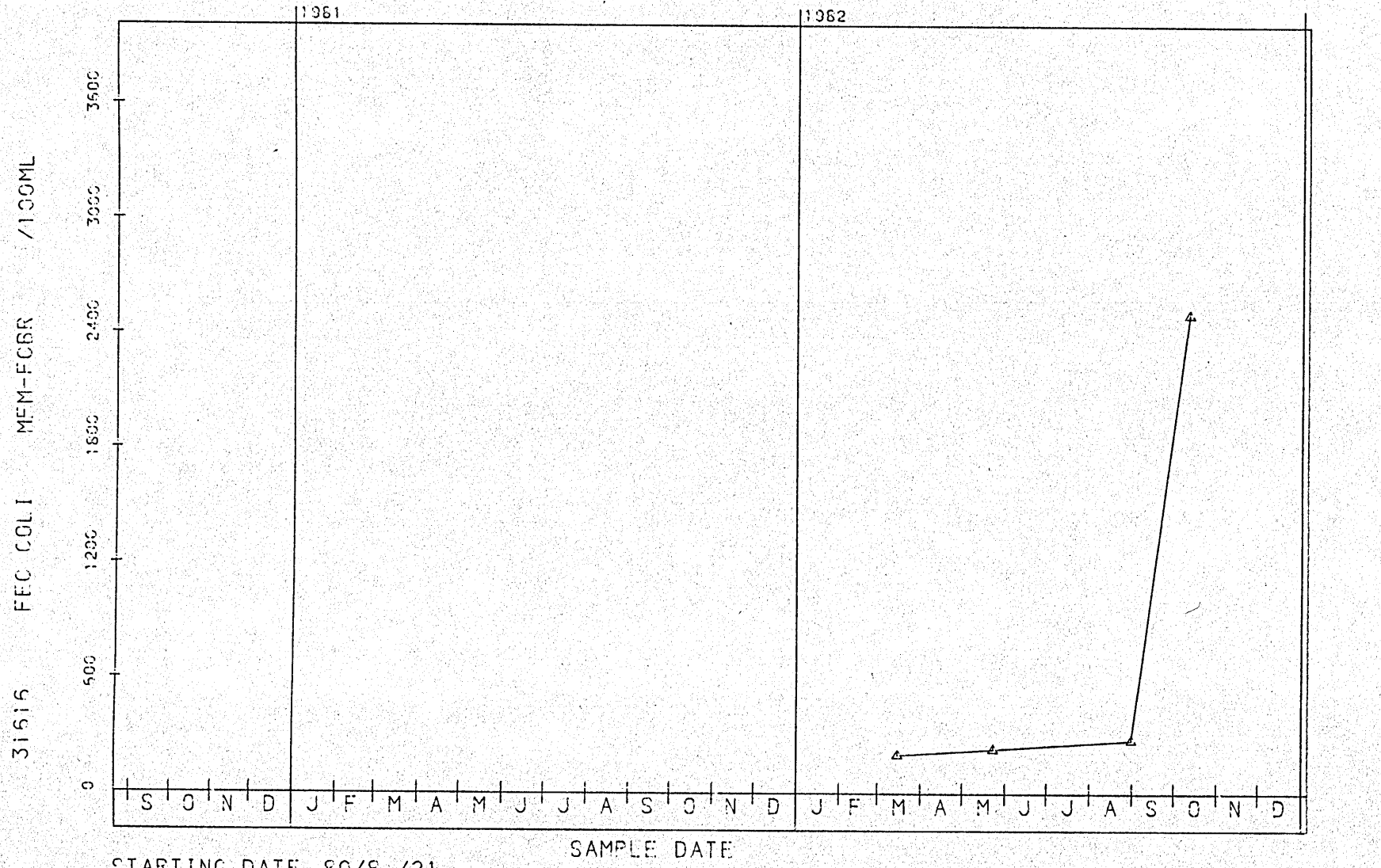
Figure IV-15.



STARTING DATE 80/8 /21

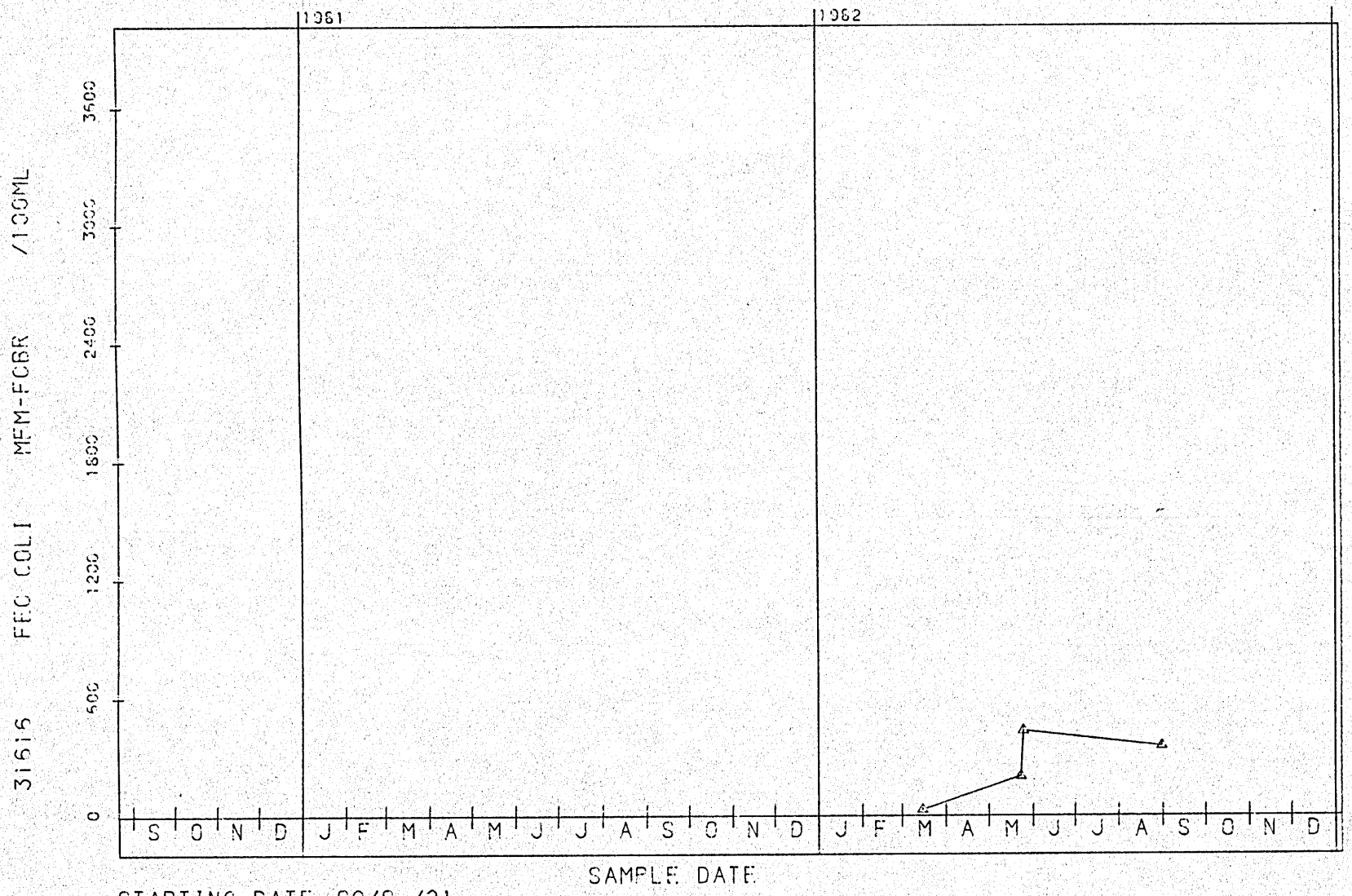
46BY6Y
44 34 29.0 098 07 24.0 2
NORTH TRIB INLET TO LK BYRON 113N-61W-S23 DAC
46005 SOUTH DAKOTA BEADLE
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663783-0693801

Figure IV-16.



46BY7Y
44 34 05.0 098 03 25.0 2
E INLET TO LK BYRON 113N-60W-S30 BCDB
46005 SOUTH DAKOTA BEADLE
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663784-0693802

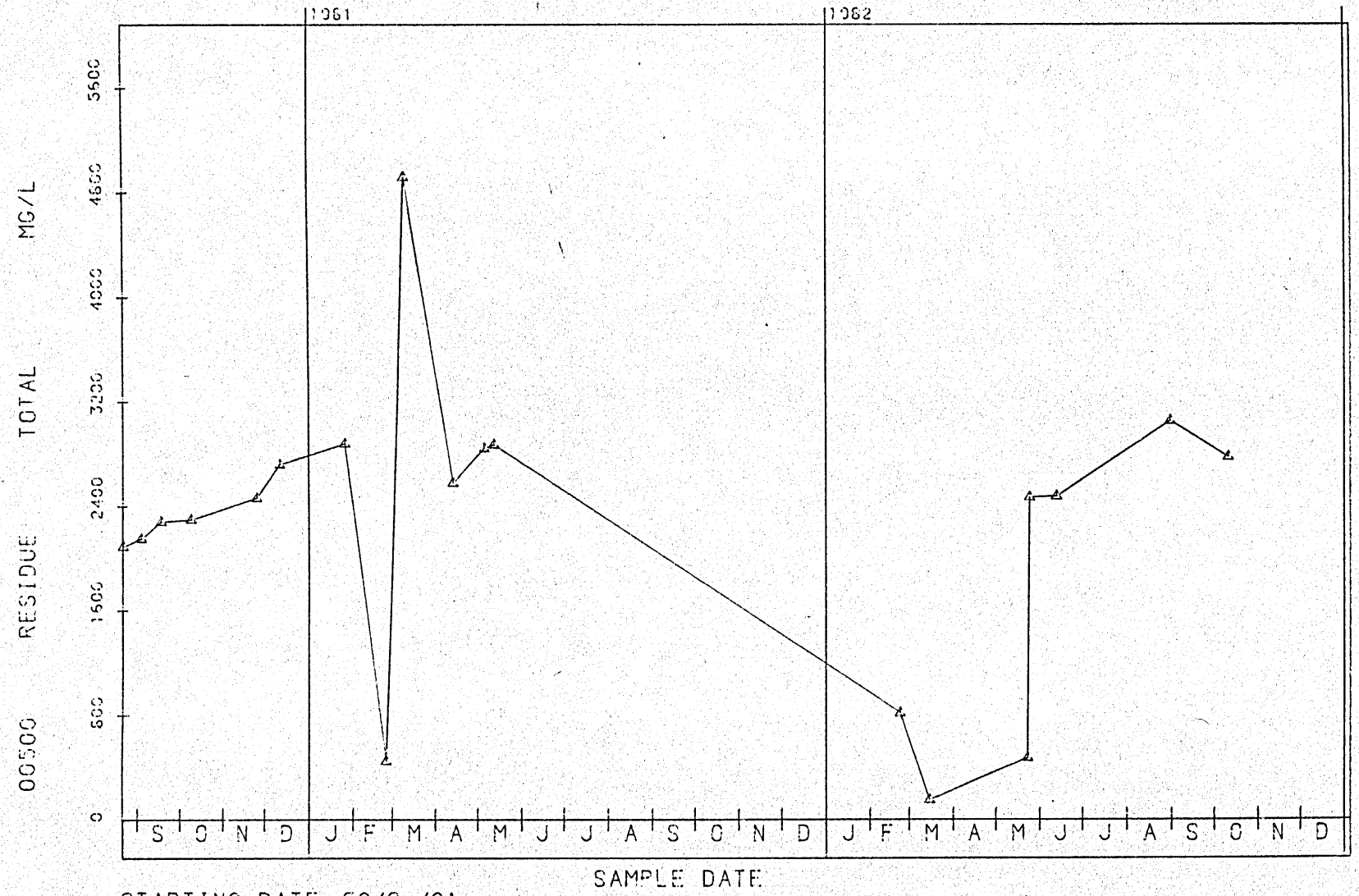
Figure IV-17.



STARTING DATE 80/8 /21

46BY01
44 33 22.0 098 08 16.0 2
LK BYRON OFF SOUTH SHORE 113N-61W-S35 BBCC
46005 SOUTH DAKOTA BEADLE
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663774-0693792

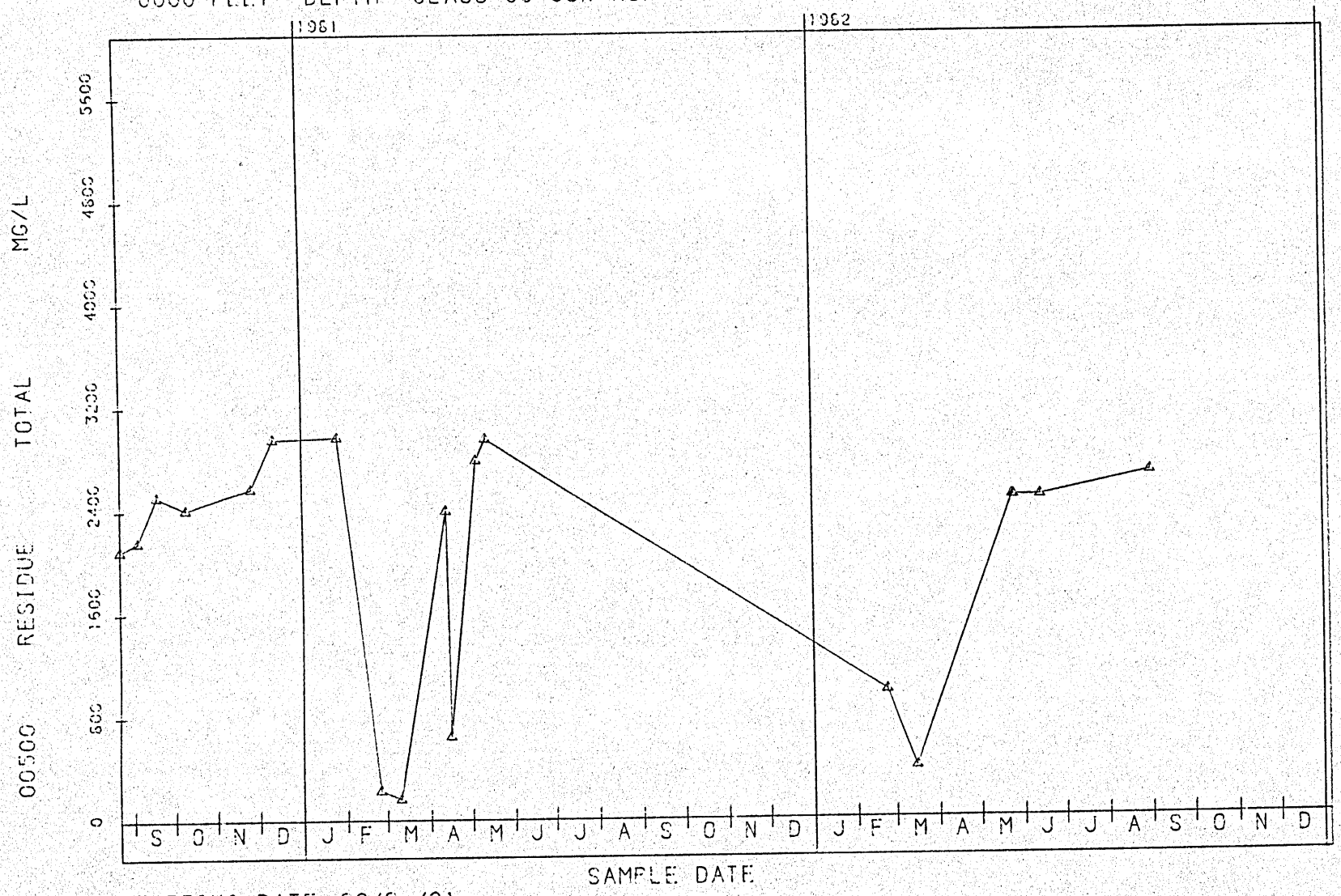
Figure IV-18.



STARTING DATE 80/8 /21

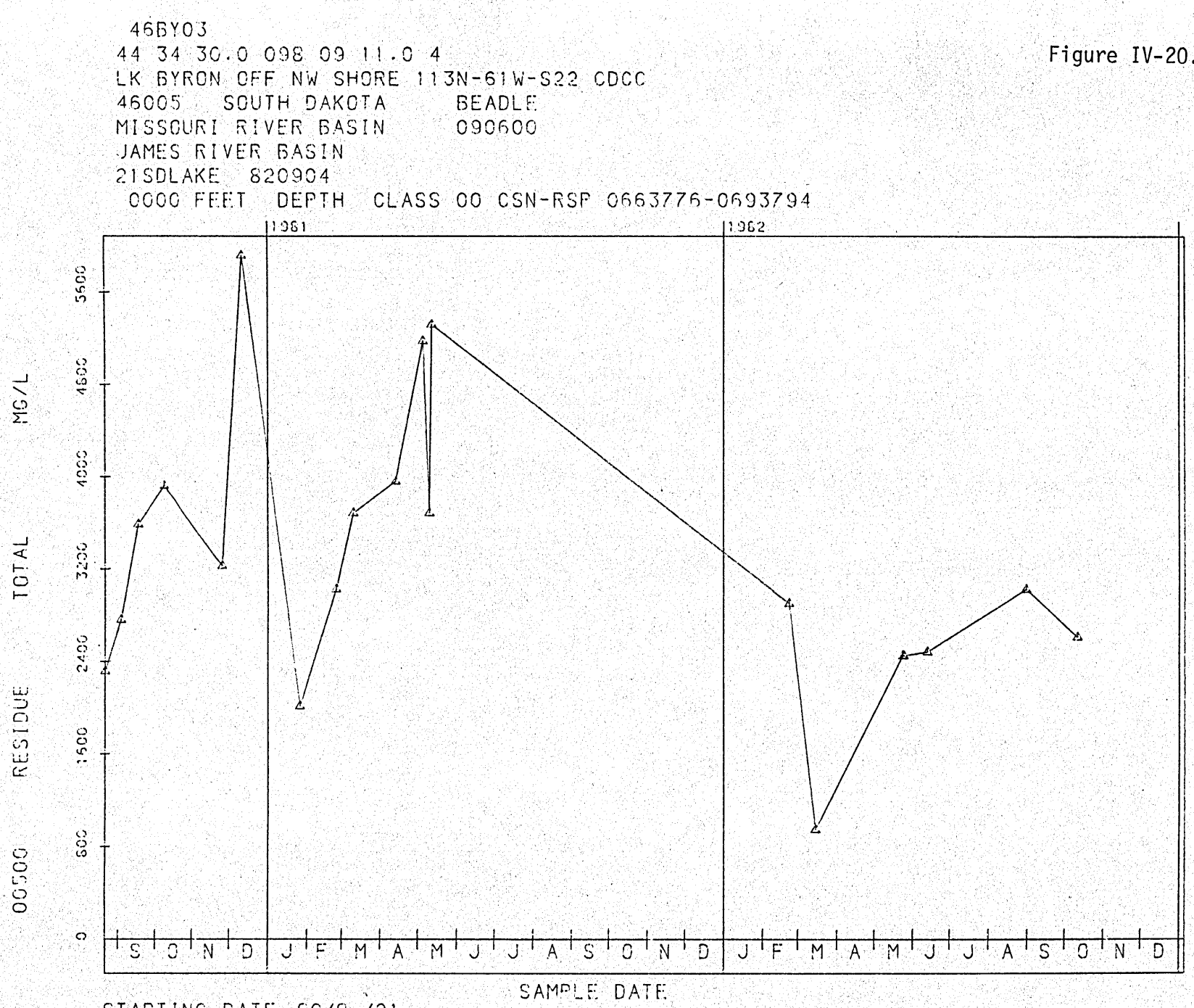
46BY02
44 34 00.0 098 07 21.0 2
LK BYRON OFF N PENINSULA 113N-61W-S26 DABB
46005 SOUTH DAKOTA BEADLE
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663775-0693793

Figure IV-19.



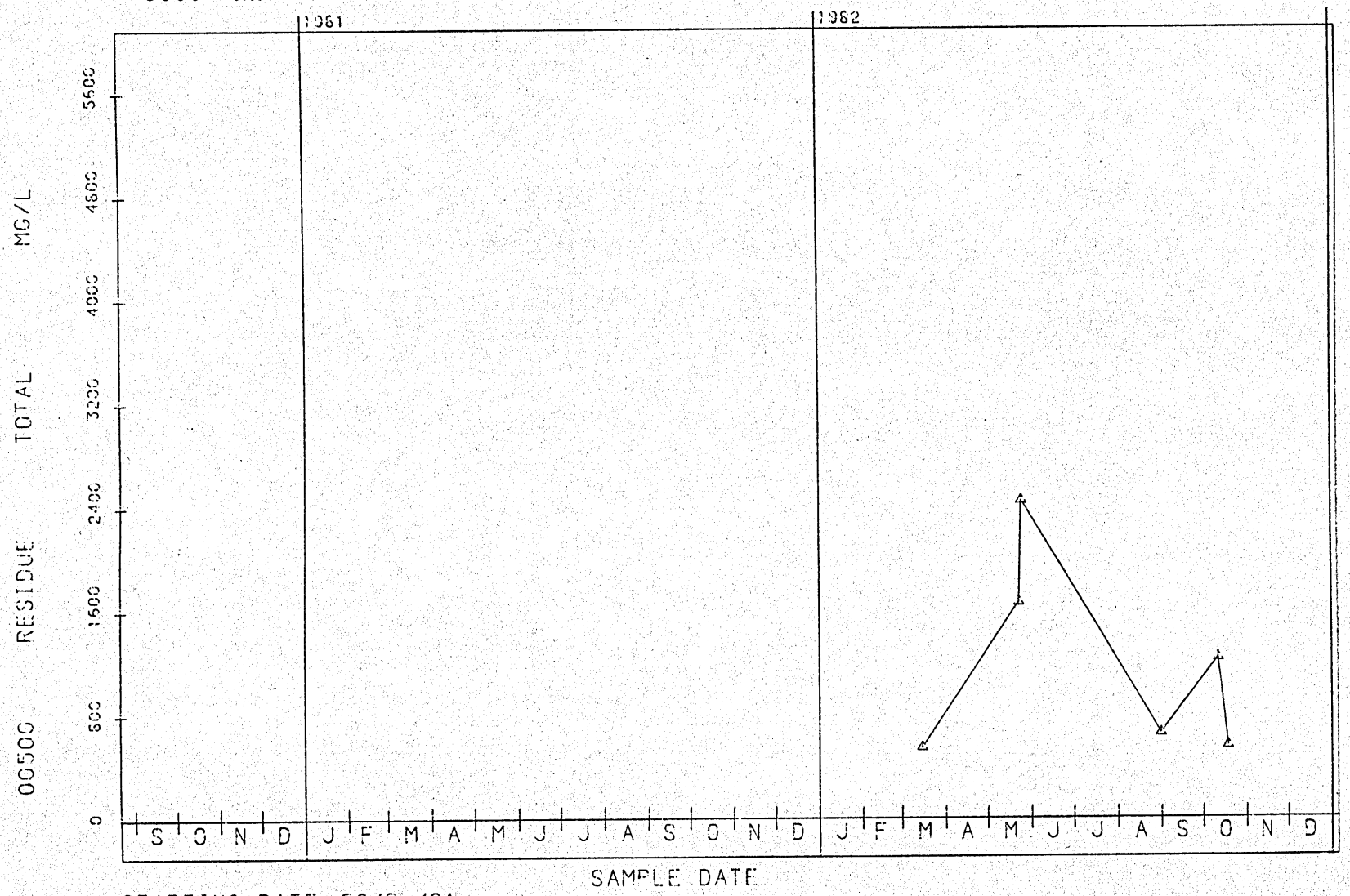
STARTING DATE 80/8 /21

Figure IV-20.


46BY03
44 34 30.0 098 09 11.0 4
LK BYRON OFF NW SHORE 113N-61W-S22 CDCC
46005 SOUTH DAKOTA BEADLE
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663776-0693794
1961
1962
00500 RESIDUE TOTAL MG/L
0
S O N D J F M A M J J A S O N D J F M A M J J A S O N D
SAMPLE DATE
STARTING DATE 80/8 /21

46BY5Y
44 34 31.0 098 09 18.0 2
FOSTER CR INLET TO NW LAKE BYRON 113N-61W-S22CCD
46005 SOUTH DAKOTA BEADLE
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663782-0693800

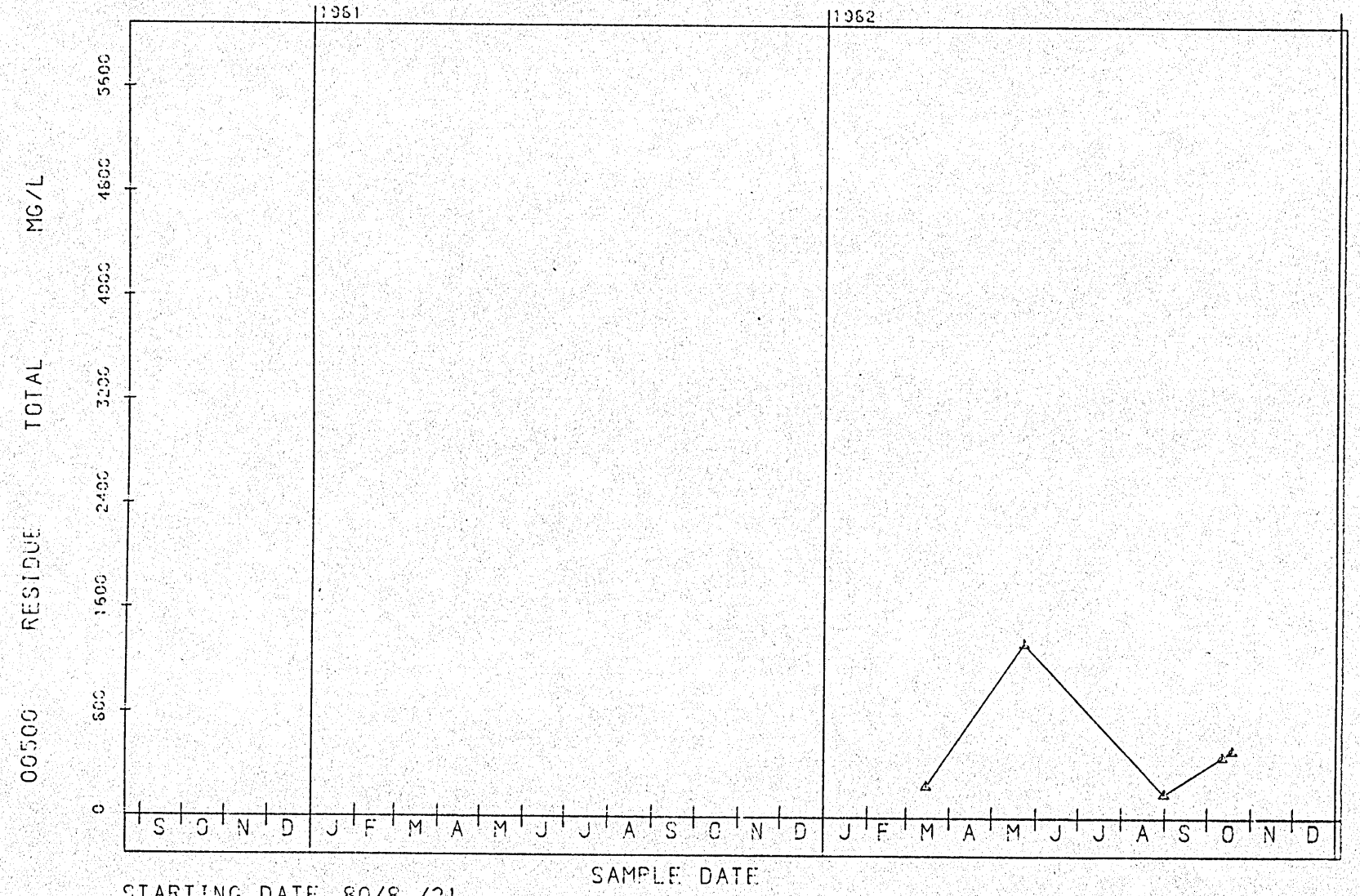
Figure IV-21.



STARTING DATE 80/8 /21

46BY6Y
44 34 29.0 098 07 24.0 2
NORTH TRIB INLET TO LK BYRON 113N-61W-S23 DAC
46005 SOUTH DAKOTA BEADLE
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSF 0663783-0693801

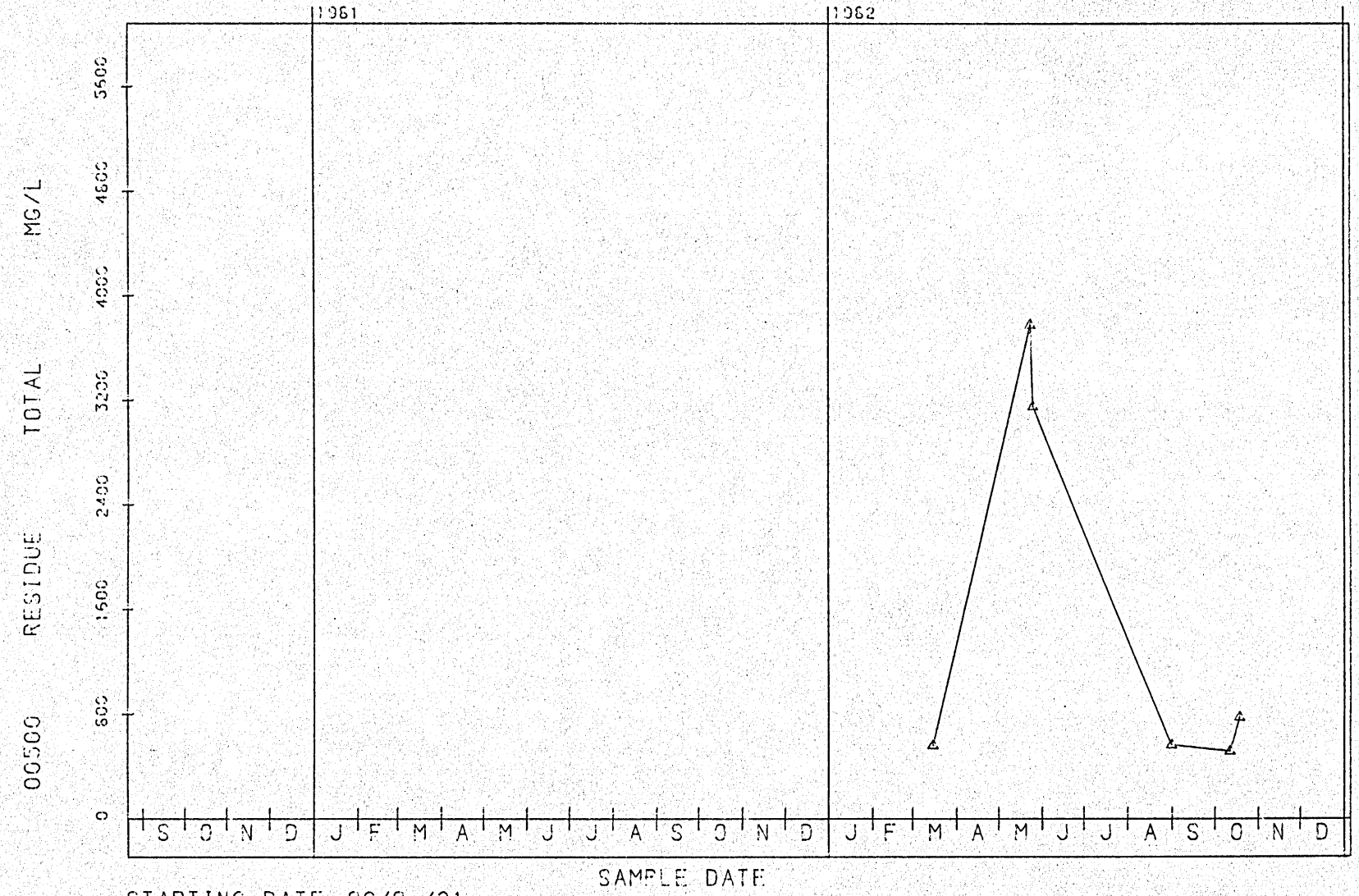
Figure IV-22.



STARTING DATE 80/8 /21

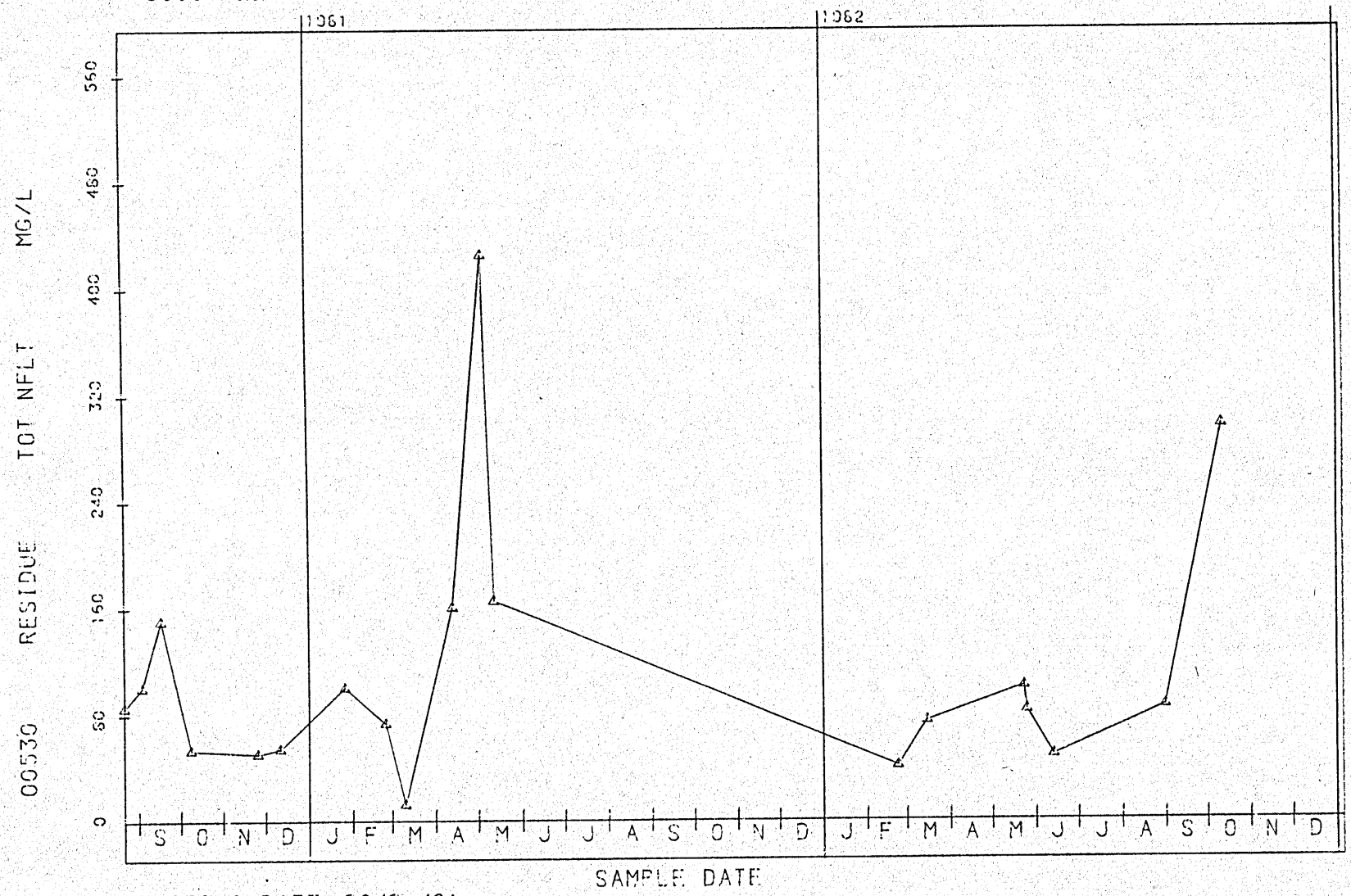
46BY7Y
44 34 05.0 098 03 25.0 2
E INLET TO LK BYRON 113N-60W-S30 BCDB
46005 SOUTH DAKOTA BEADLE
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663784-0693802

Figure IV-23.



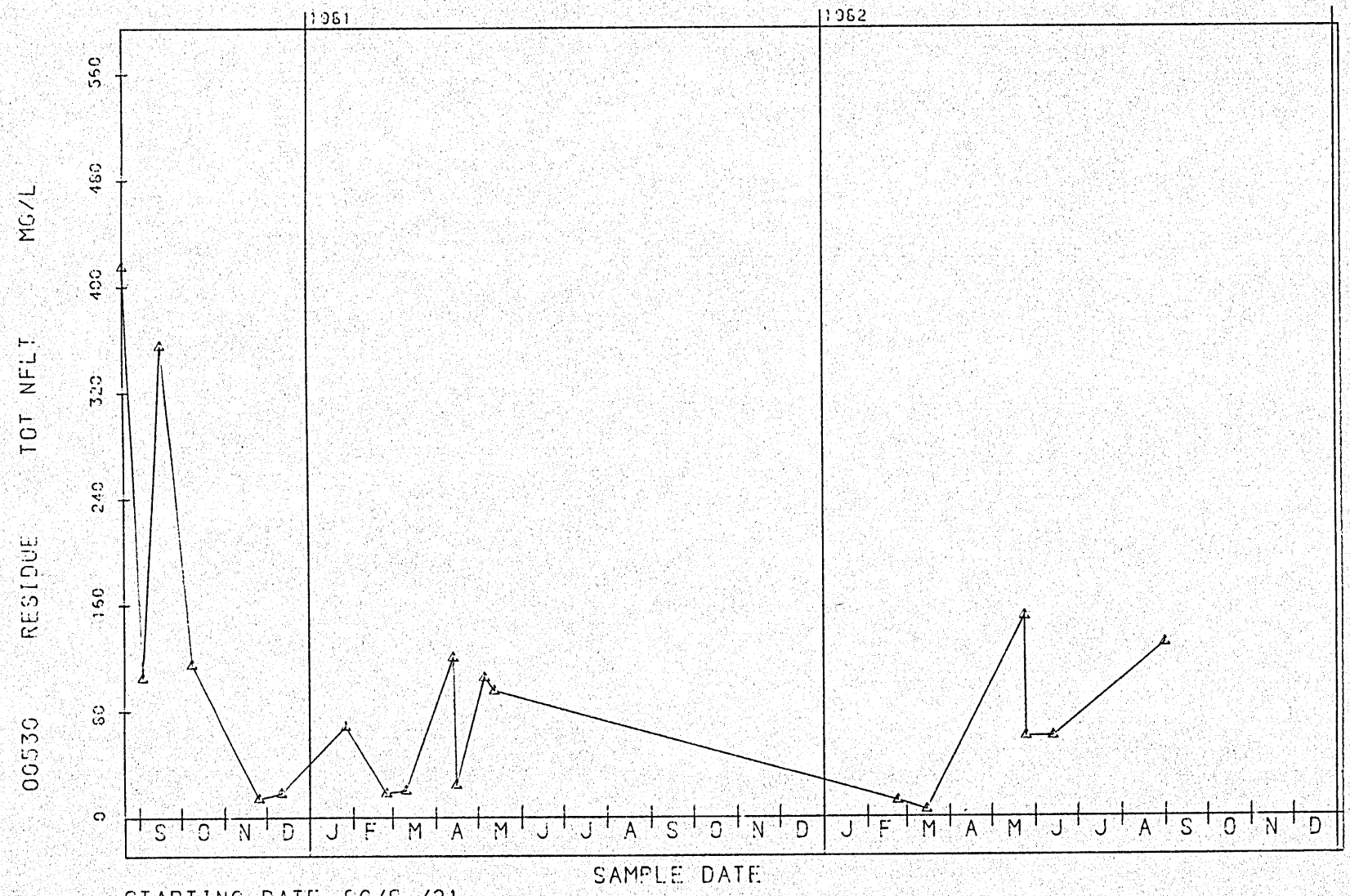
STARTING DATE 80/8 /21

Figure IV-24.


46BY01
44 33 22.0 098 08 16.0 2
LK BYRON OFF SOUTH SHORE 113N-61W-S35 BBCC
46005 SOUTH DAKOTA BEADLE
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663774-0693792
1961
1962
00530 RESIDUE TOT NFLT MG/L
0
80
160
240
320
400
480
560
S O N D J F M A M J J A S O N D J F M A M J J A S O N D
SAMPLE DATE
STARTING DATE 80/8 /21

46BY02
44 34 00.0 098 07 21.0 2
LK BYRON OFF N PENINSULA 113N-61W-S26 DABB
46005 SOUTH DAKOTA BEADLE
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663775-0693793

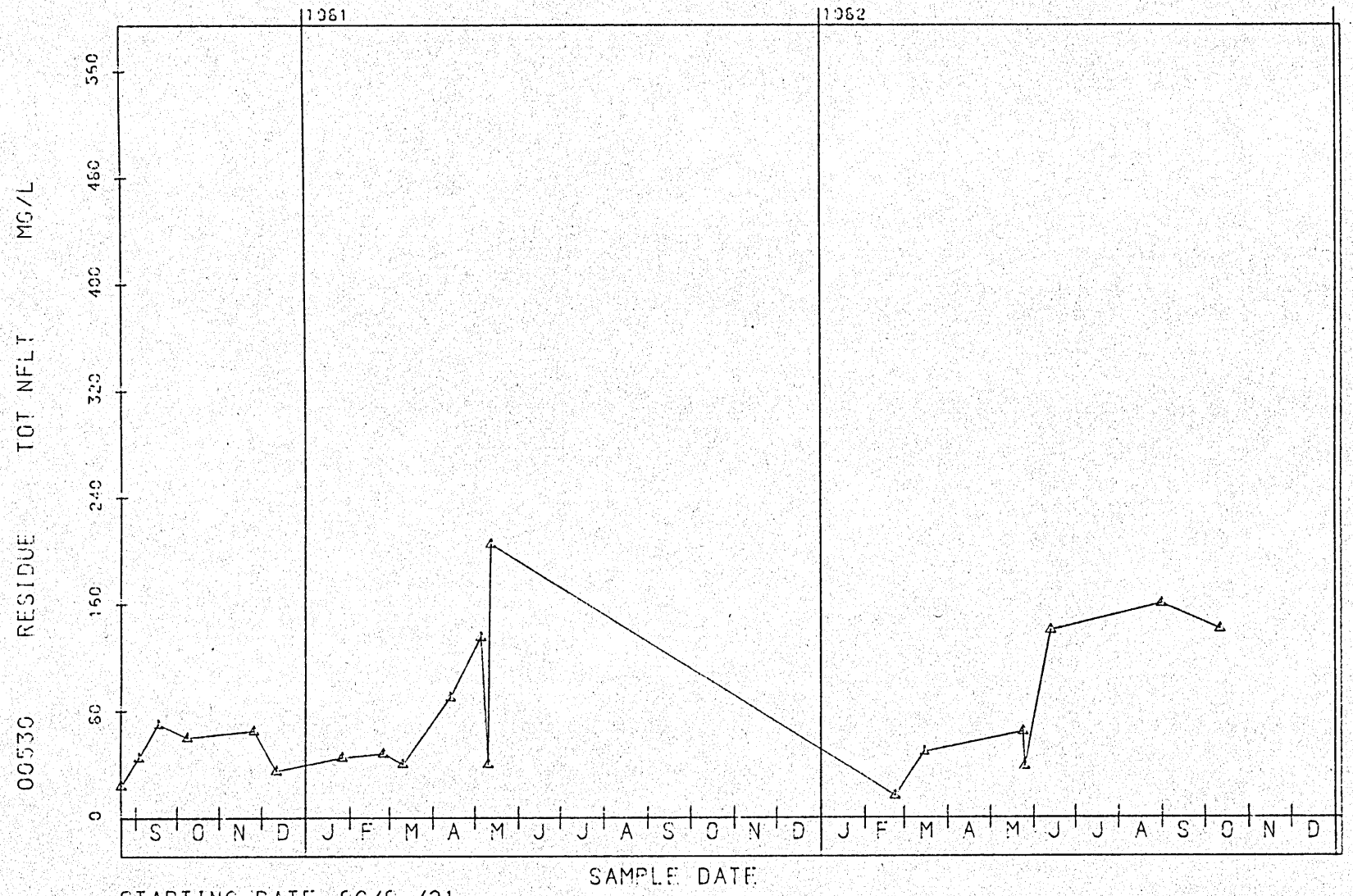
Figure IV-25.



STARTING DATE 80/8 /21

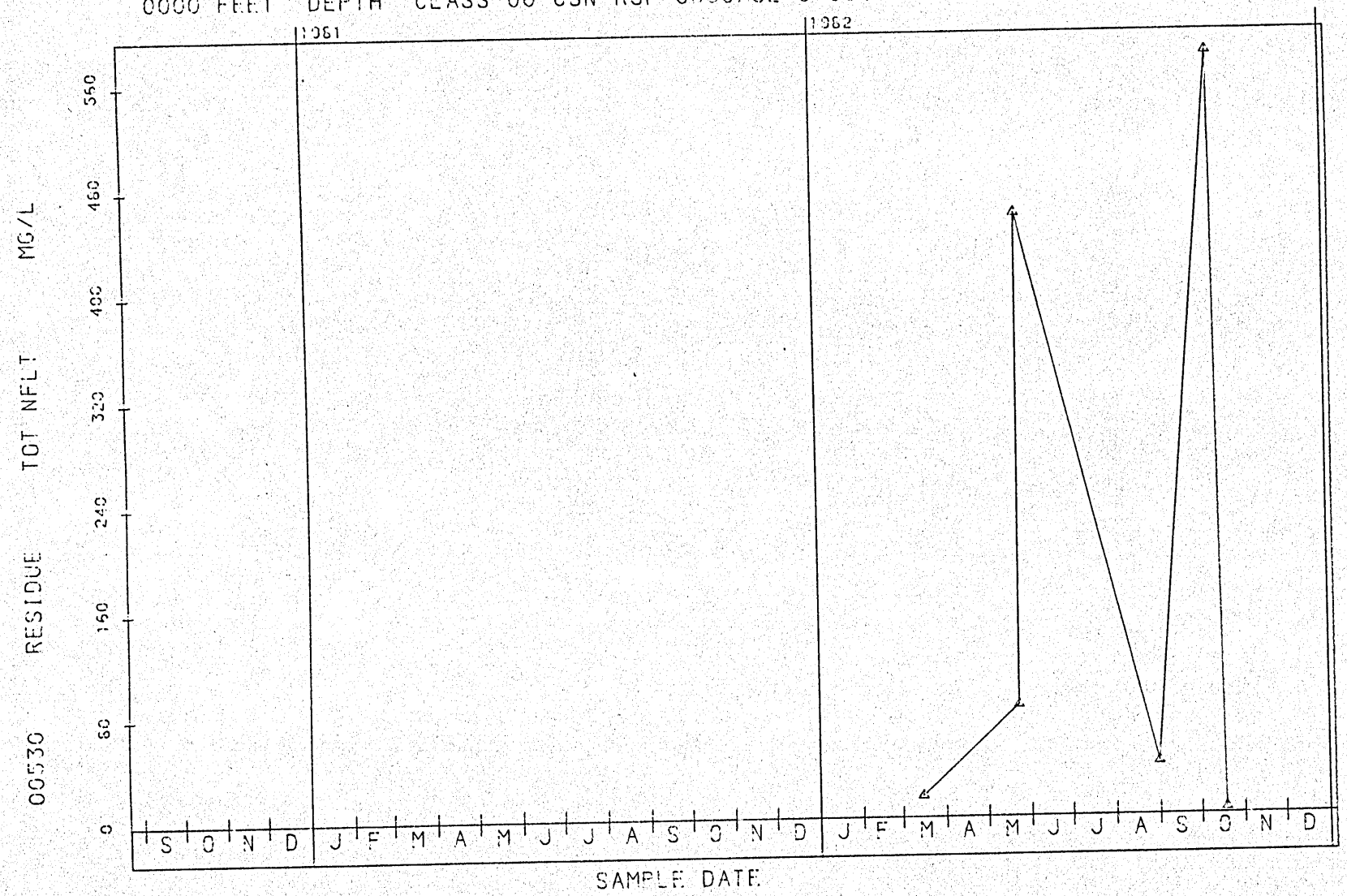
46BY03
44 34 30.0 098 09 11.0 4
LK BYRON OFF NW SHORE 113N-61W-S22 CDCC
46005 SOUTH DAKOTA BEADLE
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663776-0693794

Figure IV-26.



46BY5Y
44 34 31.0 098 09 18.0 2
FOSTER CR INLET TO NW LAKE BYRON 113N-61W-S22CCD
46005 SOUTH DAKOTA BEADLE
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663782-0693800

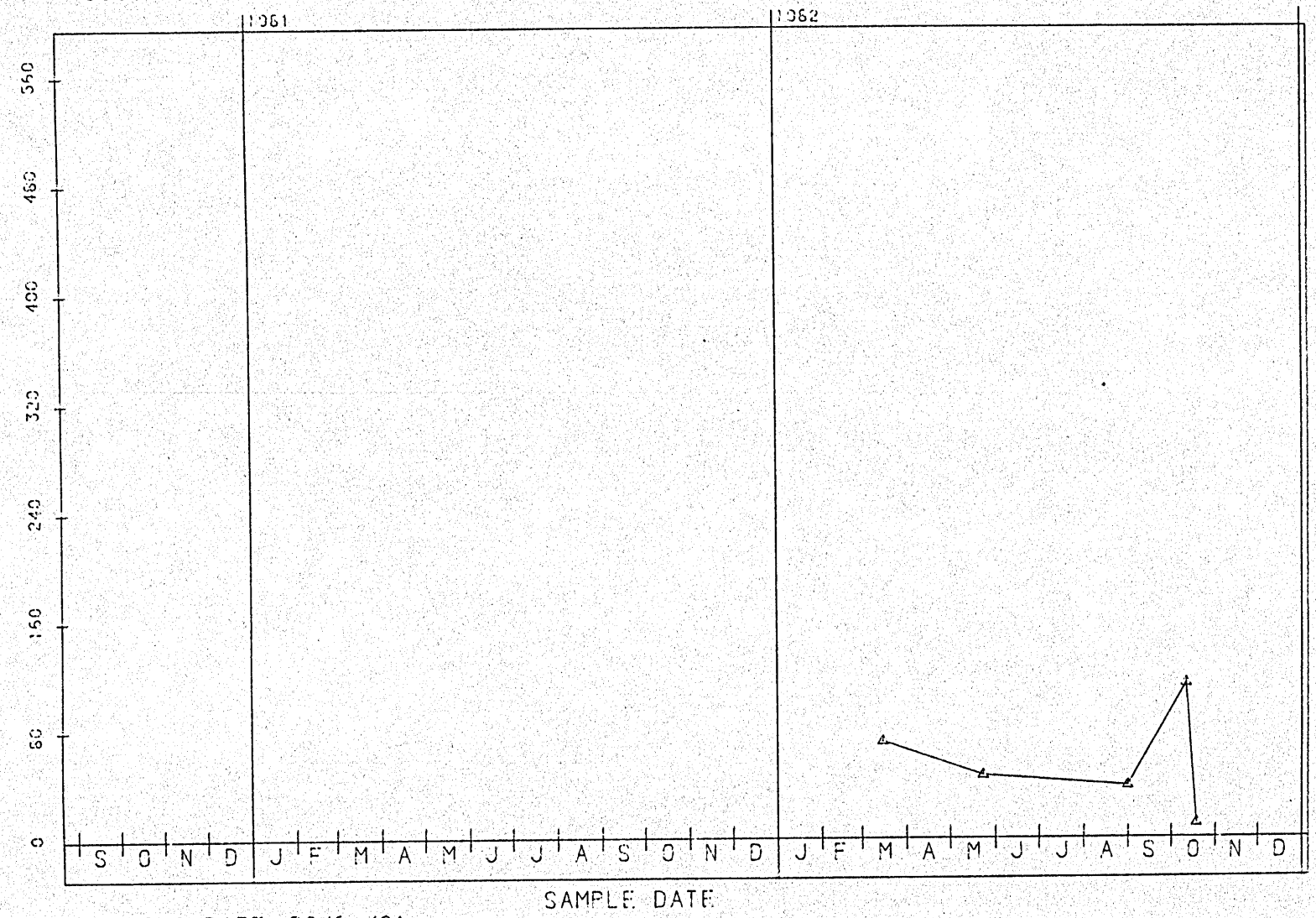
Figure IV-27.



STARTING DATE 80/8 /21

46BY6Y
44 34 29.0 098 07 24.0 2
NORTH TRIB INLET TO LK BYRON 113N-61W-S23 DAC
46005 SOUTH DAKOTA BEADLE
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663783-0693801

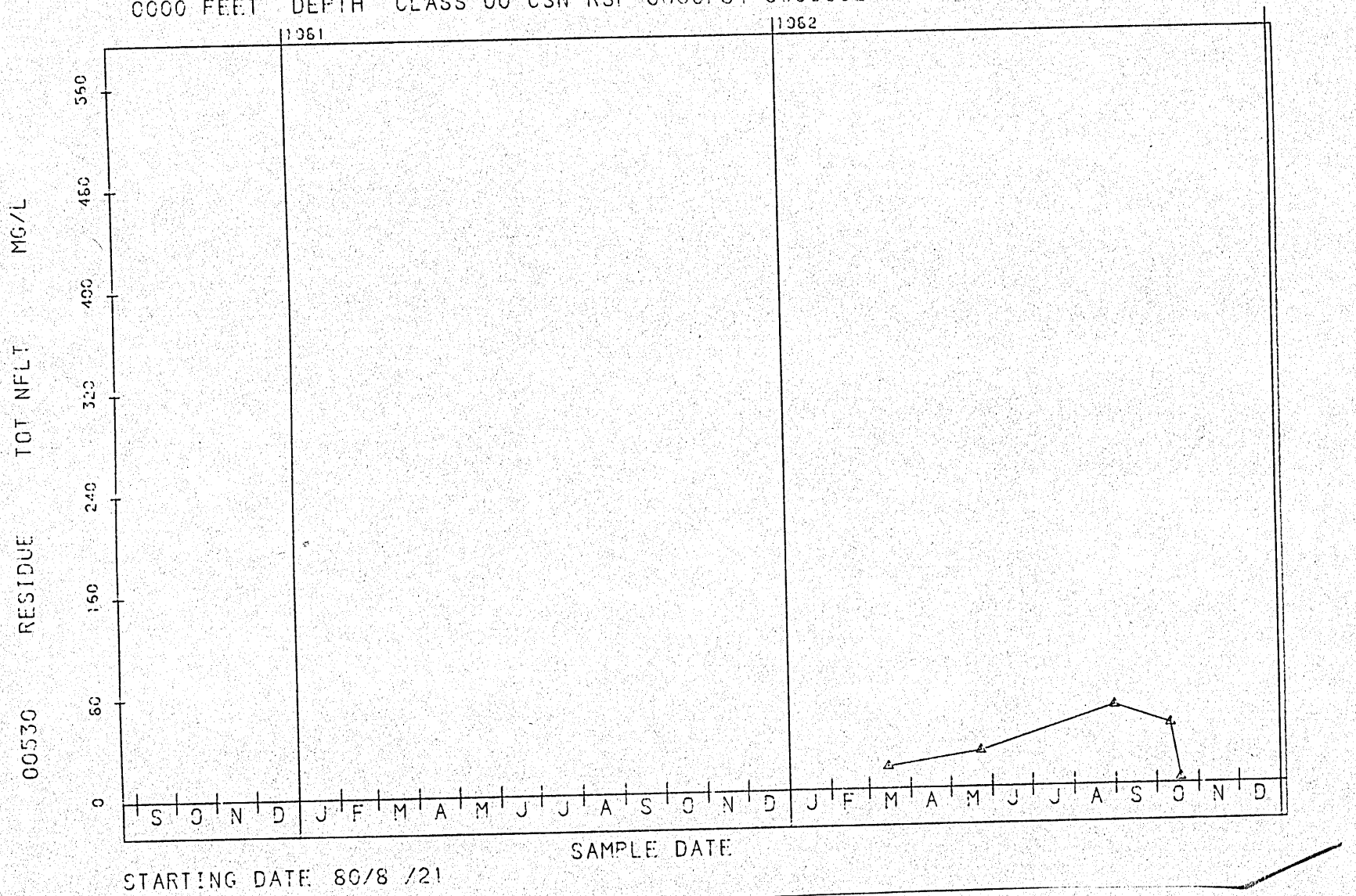
Figure IV-28.



STARTING DATE 80/8 /21

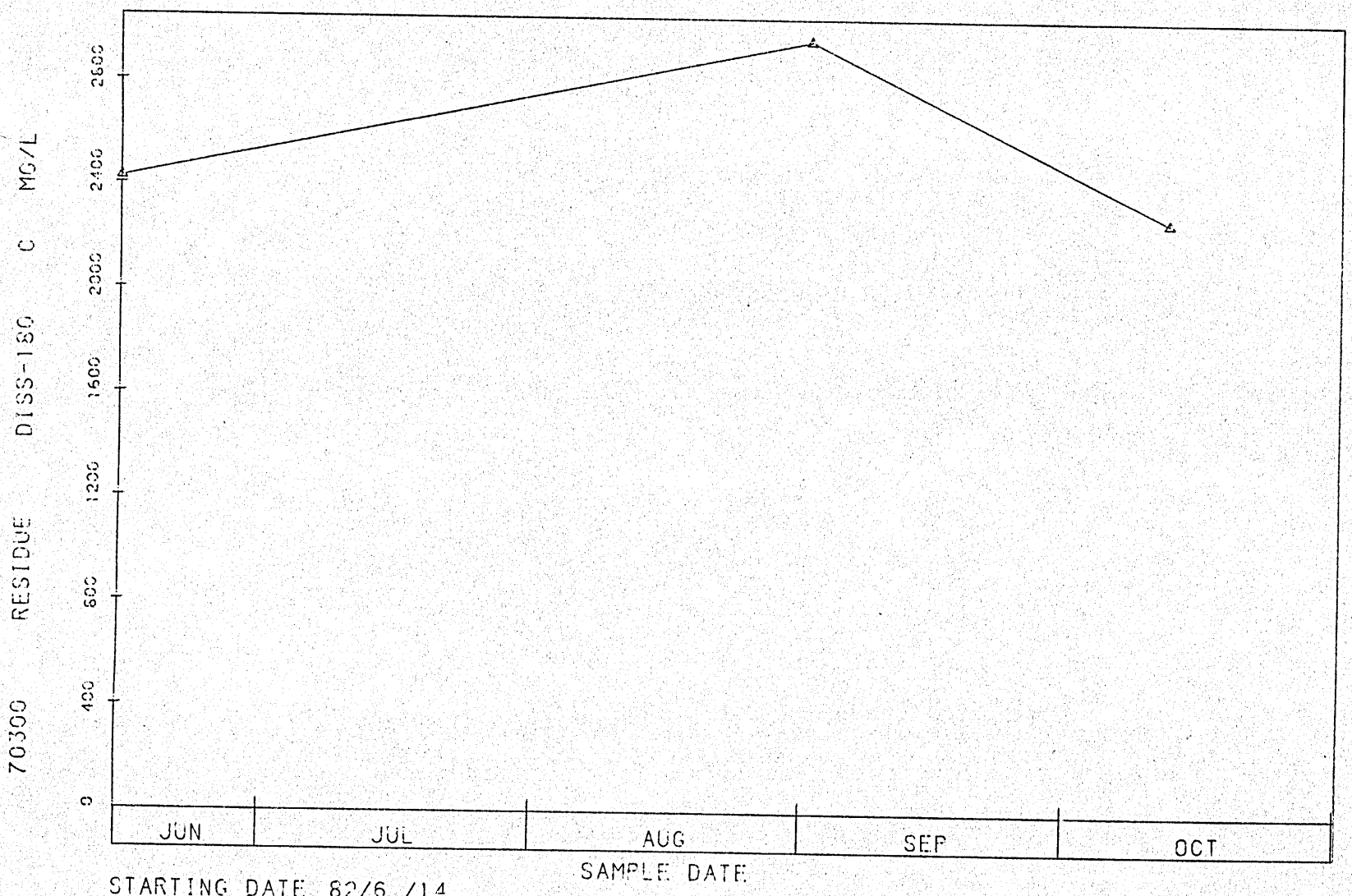
46BY7Y
44 34 05.0 098 03 25.0 2
E INLET TO LK BYRON 113N-60W-S30 BCDB
46005 SOUTH DAKOTA BEADLE
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663784-0693802

Figure IV-29.



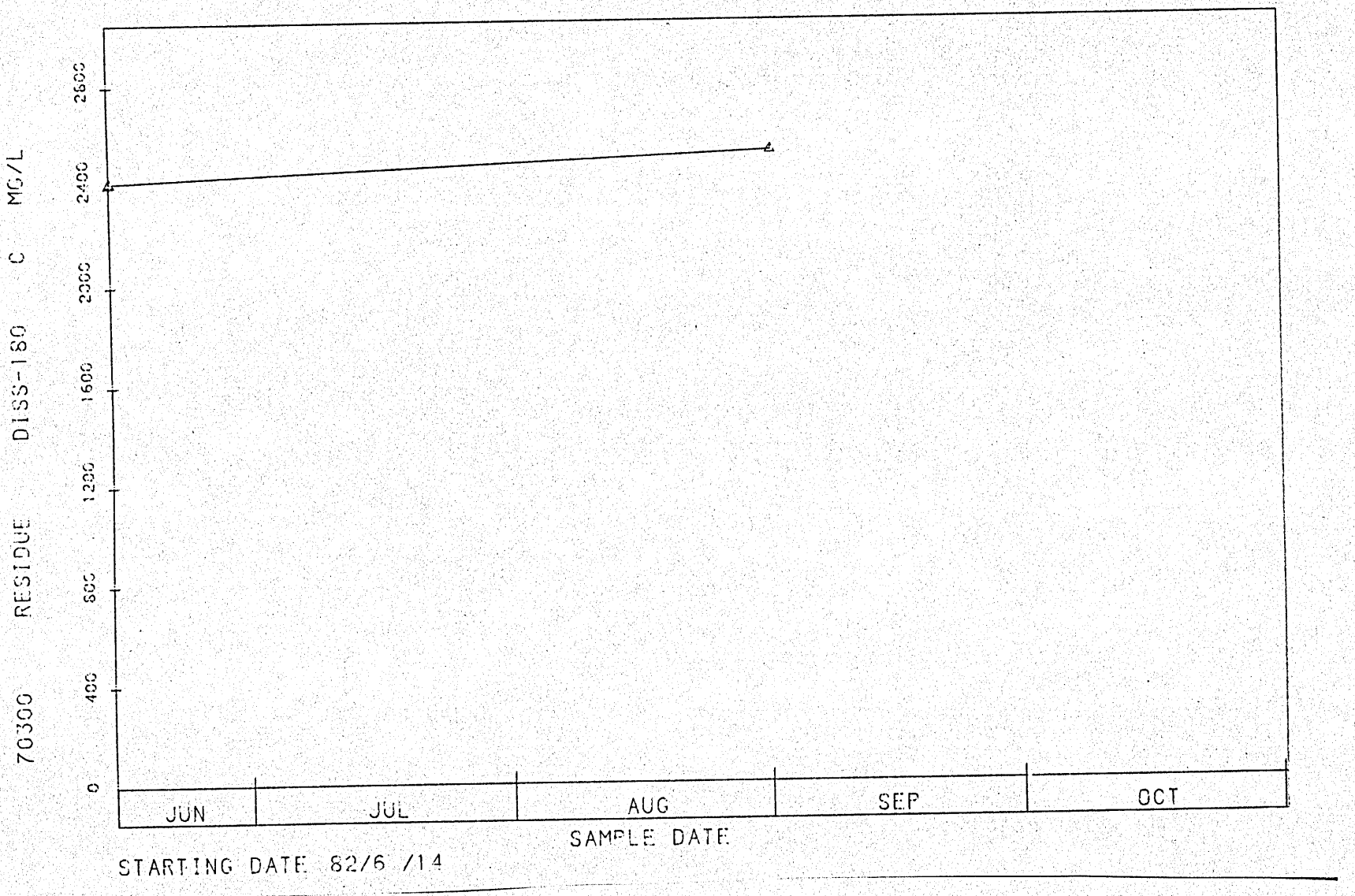
46BY01
44 33 22.0 098 08 16.0 2
LK BYRON OFF SOUTH SHORE 113N-61W-S35 BBCC
46005 SOUTH DAKOTA BEADLE
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663774-0693792

Figure IV-30.



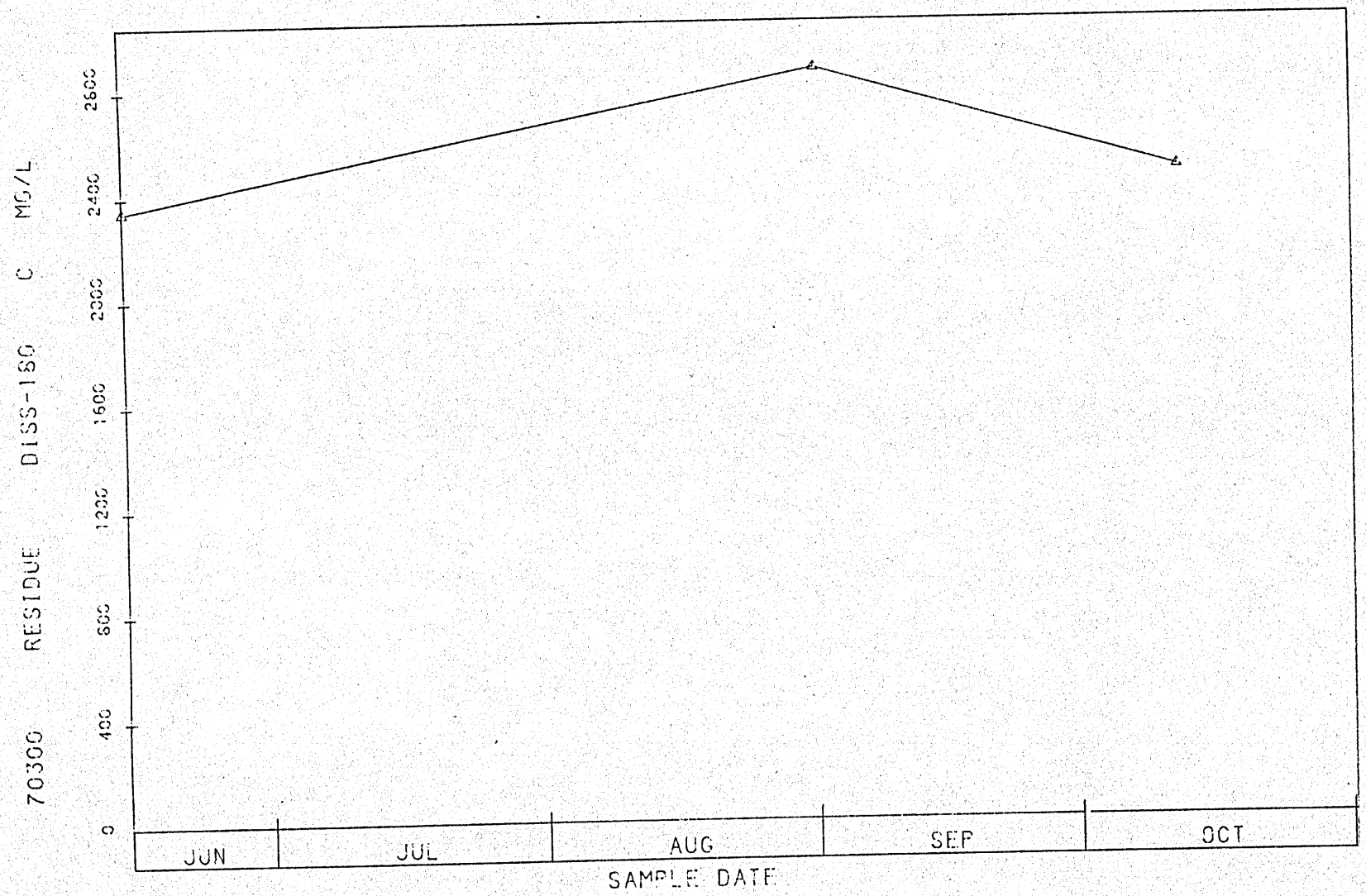
46BY02
44 34 00.0 098 07 21.0 2
LK BYRON OFF N PENINSULA 113N-61W-S26 DABB
46005 SOUTH DAKOTA BEADLE
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663775-0693793

Figure IV-31.



46BY03
44 34 30.0 098 09 11.0 4
LK BYRON OFF NW SHORE 113N-61W-S22 CDCC
46005 SOUTH DAKOTA BEADLE
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663776-0693794

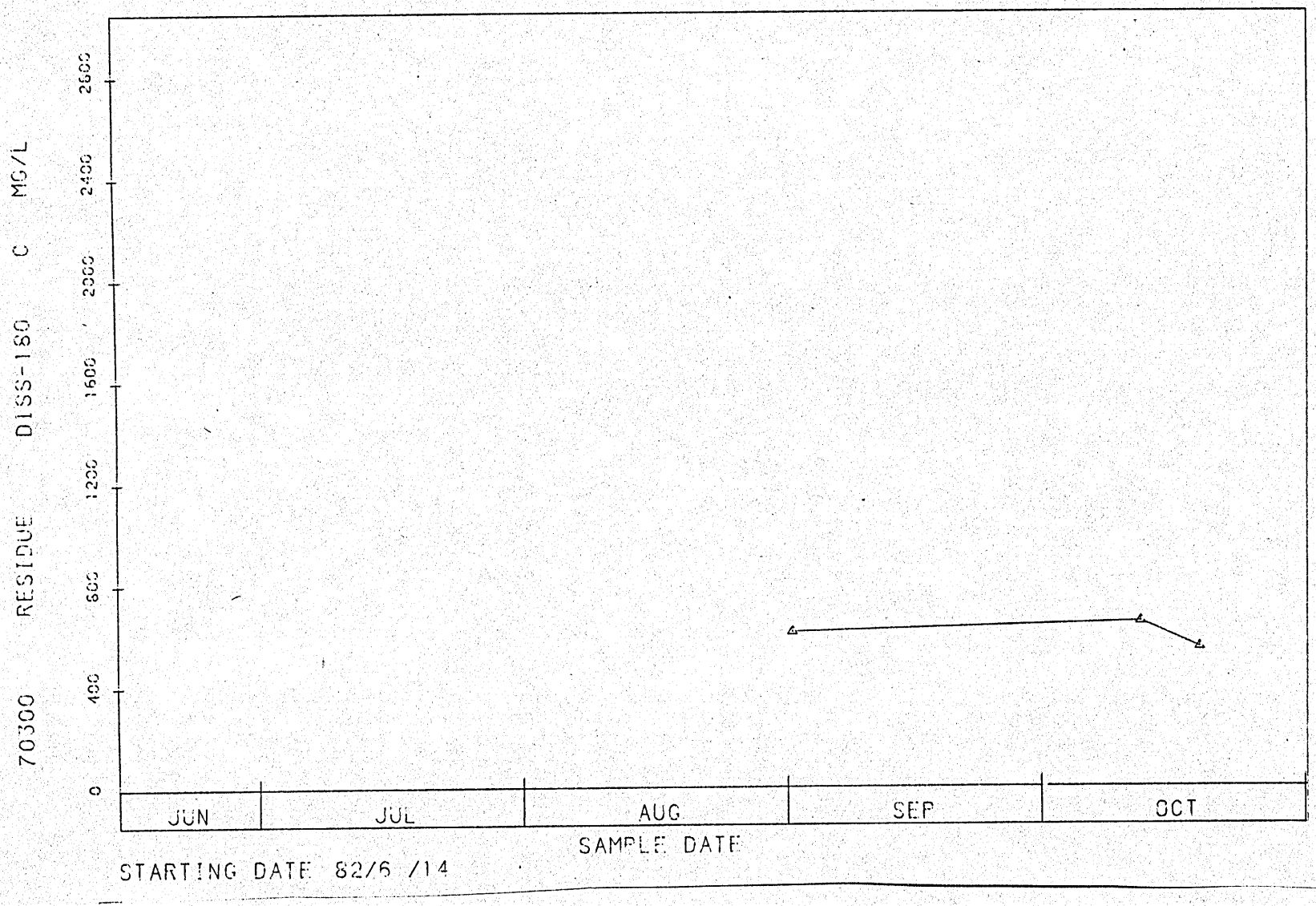
Figure IV-32.



STARTING DATE 82/6 /14

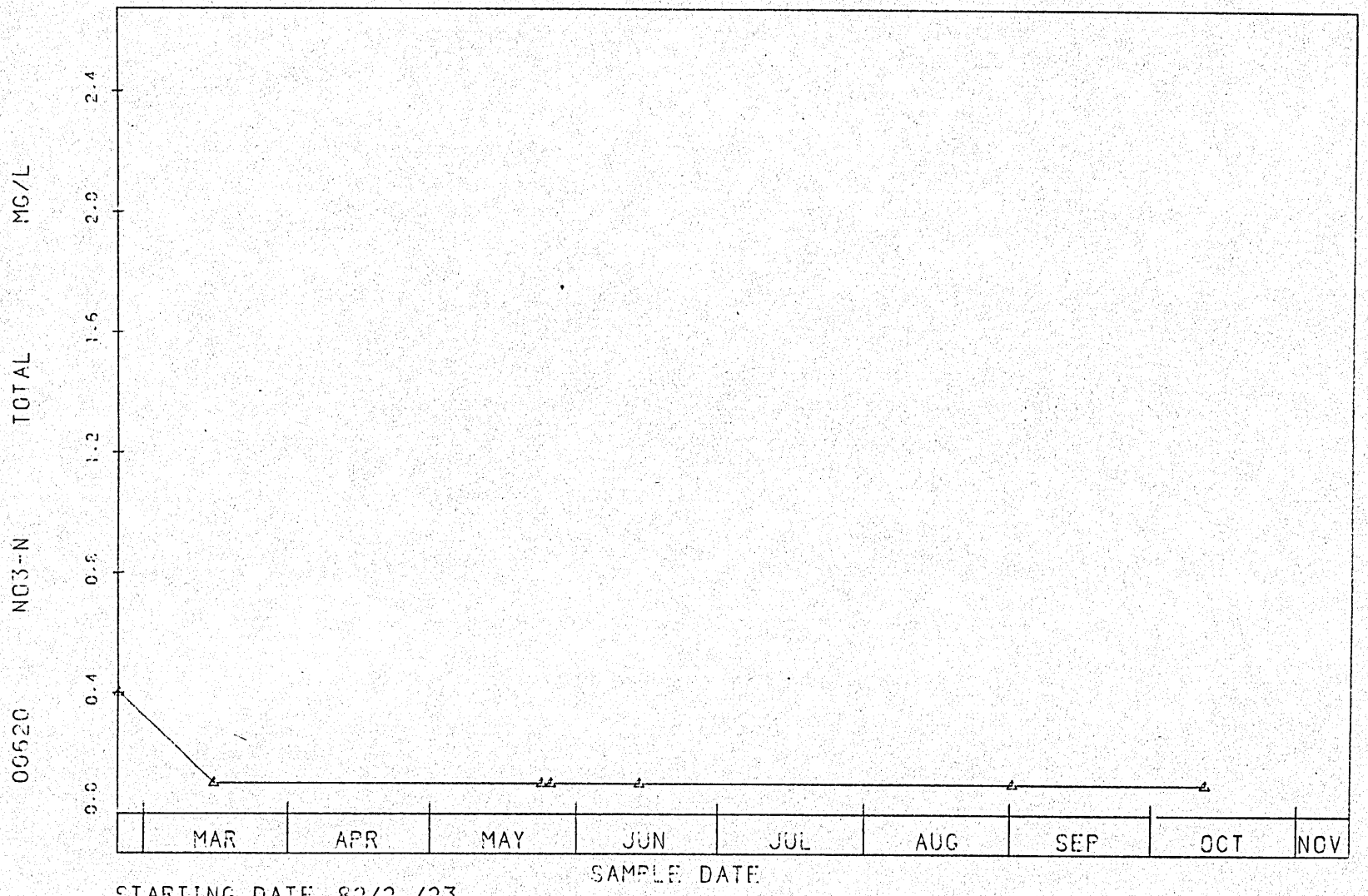
46BY5Y
44 34 31.0 098 09 18.0 2
FOSTER CR INLET TO NW LAKE BYRON 113N-61W-S22CCD
46005 SOUTH DAKOTA BEADLE
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663782-0693800

Figure IV-33.



46BY01
44 33 22.0 098 08 16.0 2
LK BYRON OFF SOUTH SHORE 113N-61W-S35 BBCC
46005 SOUTH DAKOTA BEADLE
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663774-0693792

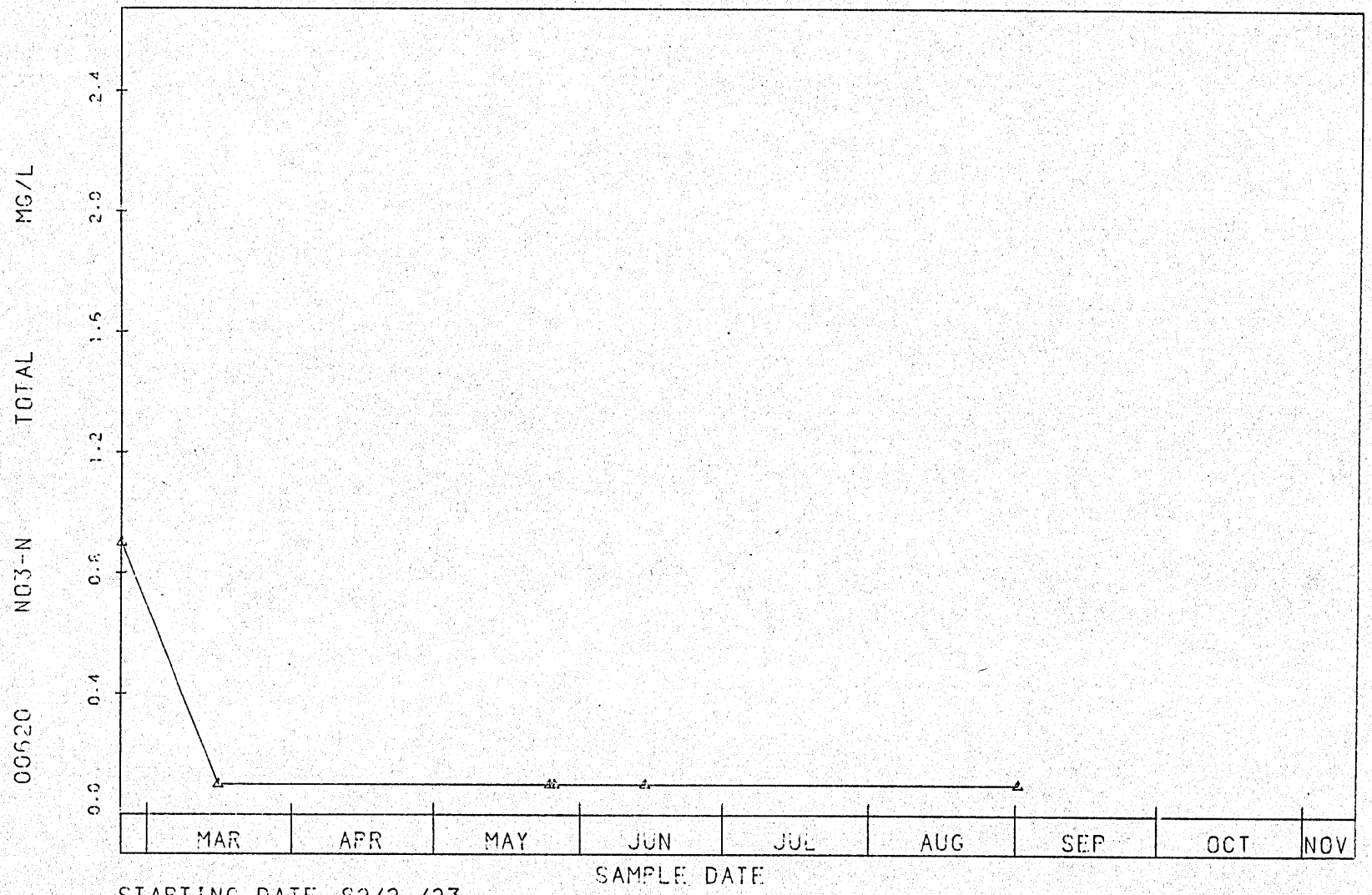
Figure IV-34.



STARTING DATE 82/2 /23

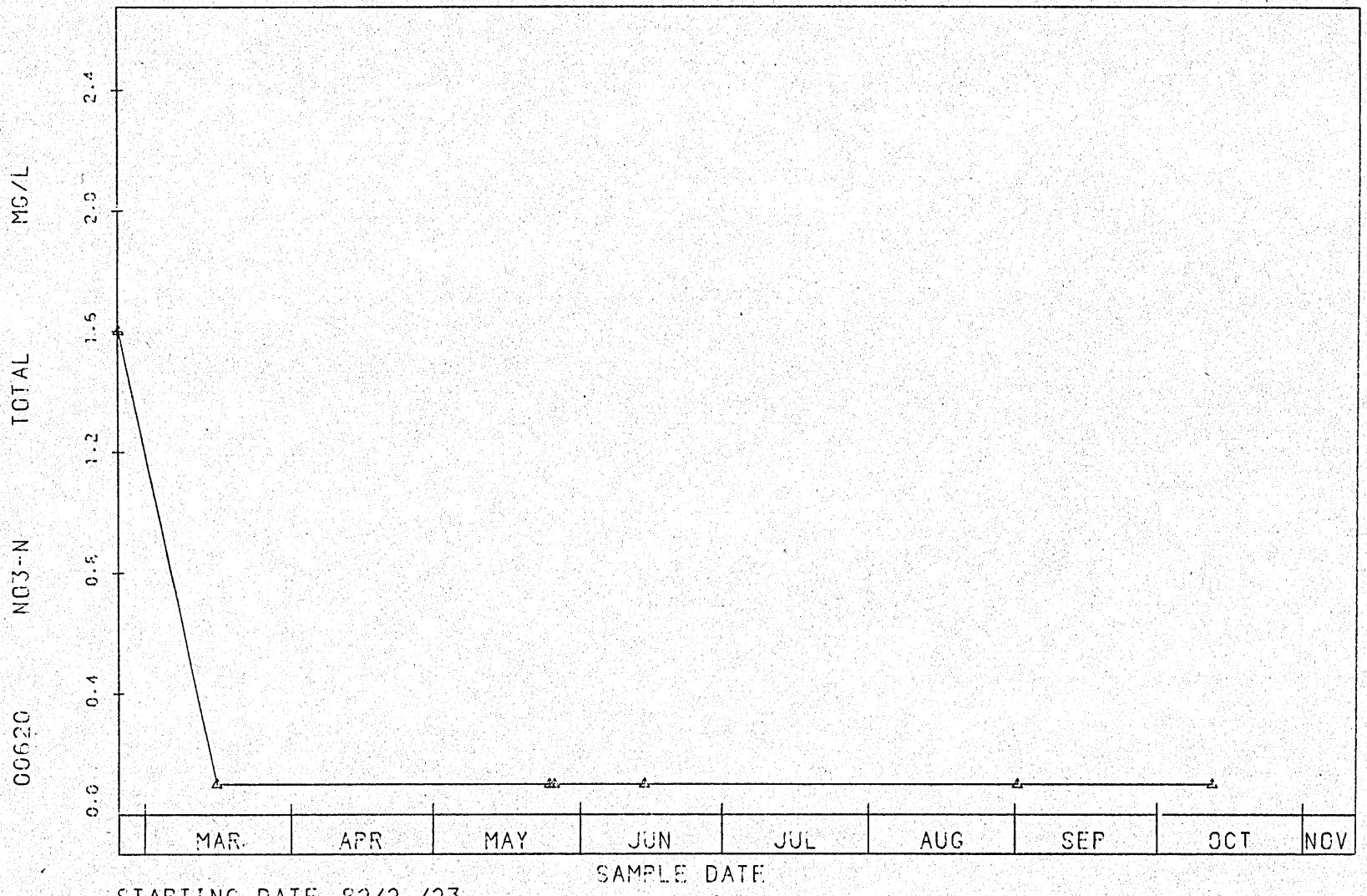
46BY02
44 34 00.0 098 07 21.0 2
LK BYRON OFF N PENINSULA 113N-61W-S26 DABB
46005 SOUTH DAKOTA BEADLE
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663775-0693793

Figure IV-35.



46BY03
44 34 30.0 098 09 11.0 4
LK BYRON OFF NW SHORE 113N-61W-S22 CDCC
46005 SOUTH DAKOTA BEADLE
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663776-0693794

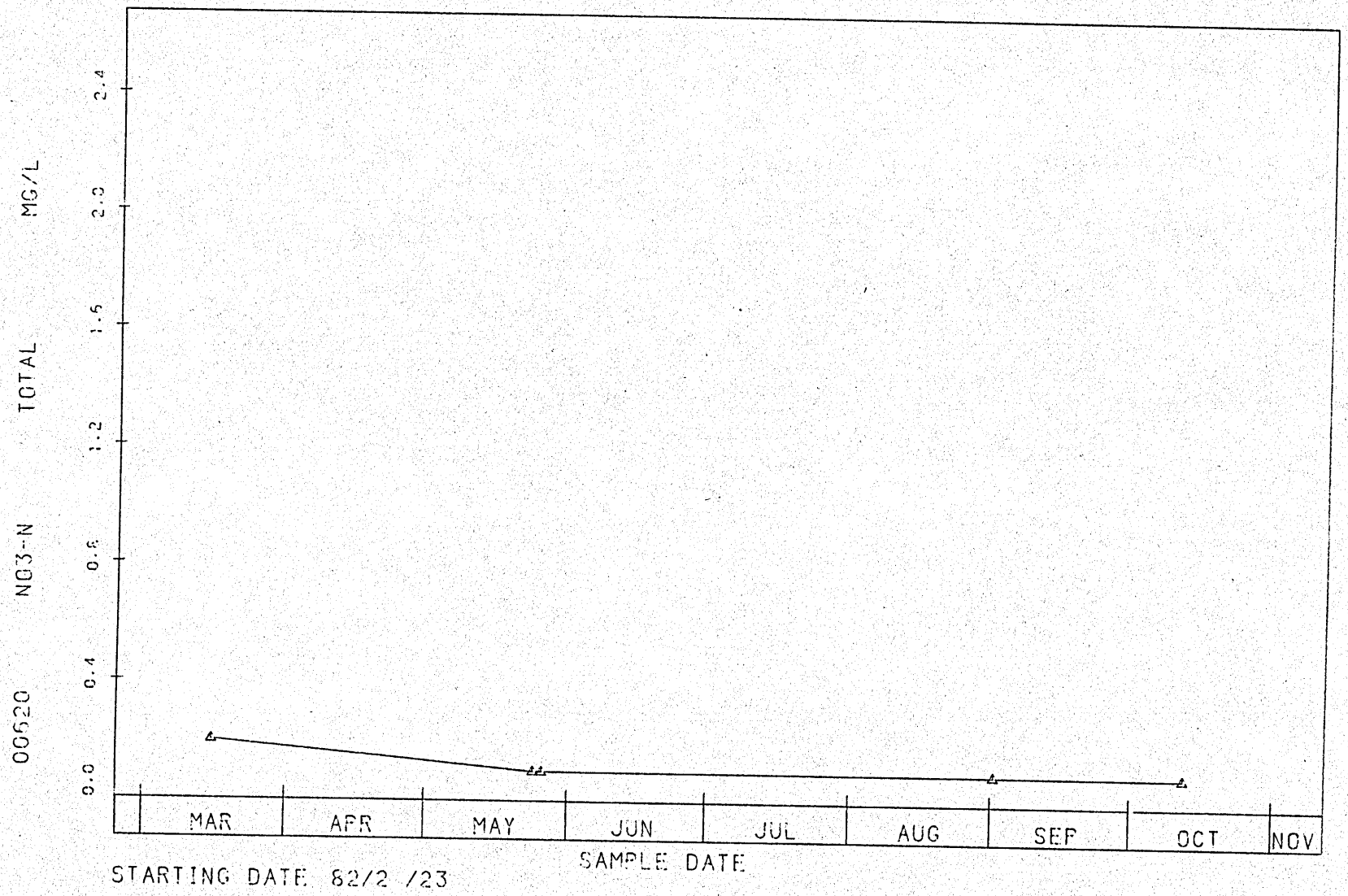
Figure IV-36.



STARTING DATE 82/2 /23

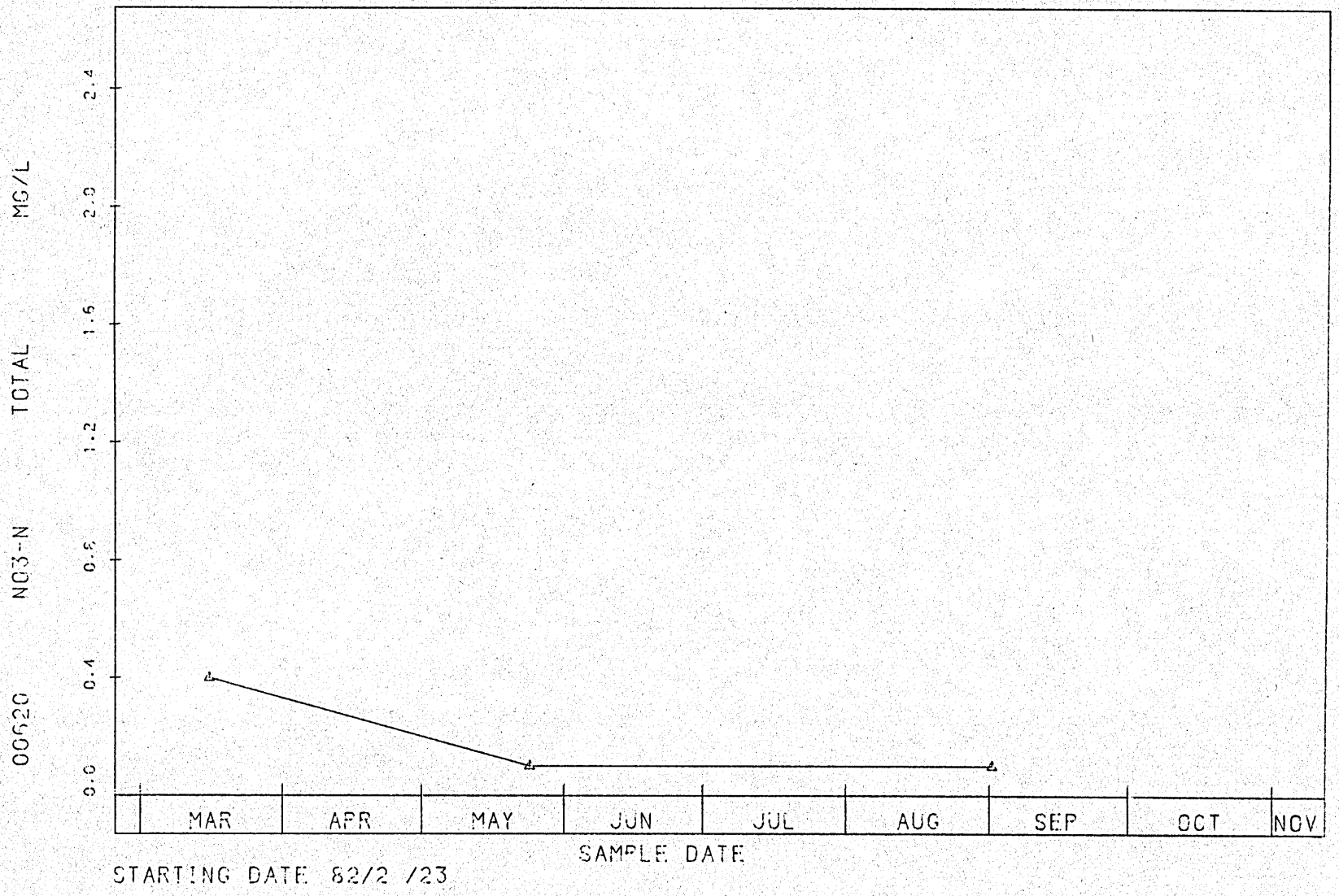
46BY5Y
44 34 31.0 098 09 18.0 2
FOSTER CR INLET TO NW LAKE BYRON 113N-61W-S22CCD
46005 SOUTH DAKOTA BEADLE
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663782-0693800

Figure IV-37.



46BY6Y
44 34 29.0 098 07 24.0 2
NORTH TRIB INLET TO LK BYRON 113N-61W-S23 DAC
46005 SOUTH DAKOTA BEADLE
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663783-0693801

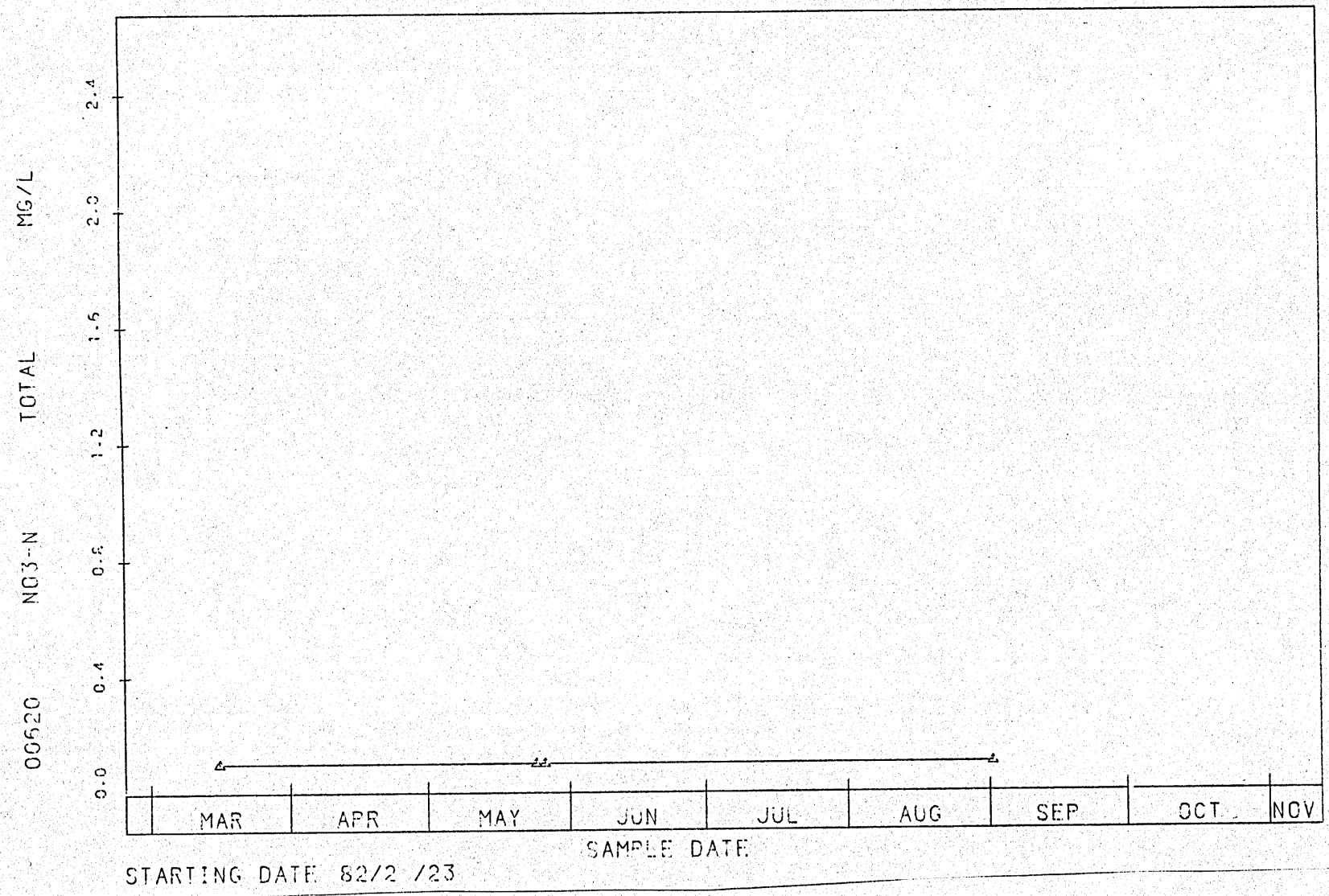
Figure IV-38.



STARTING DATE 82/2 /23

46BY7Y
44 34 05.0 098 03 25.0 2
E INLET TO LK BYRON 113N-60W-S30 BCDB
46005 SOUTH DAKOTA BEADLE
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663784-0693802

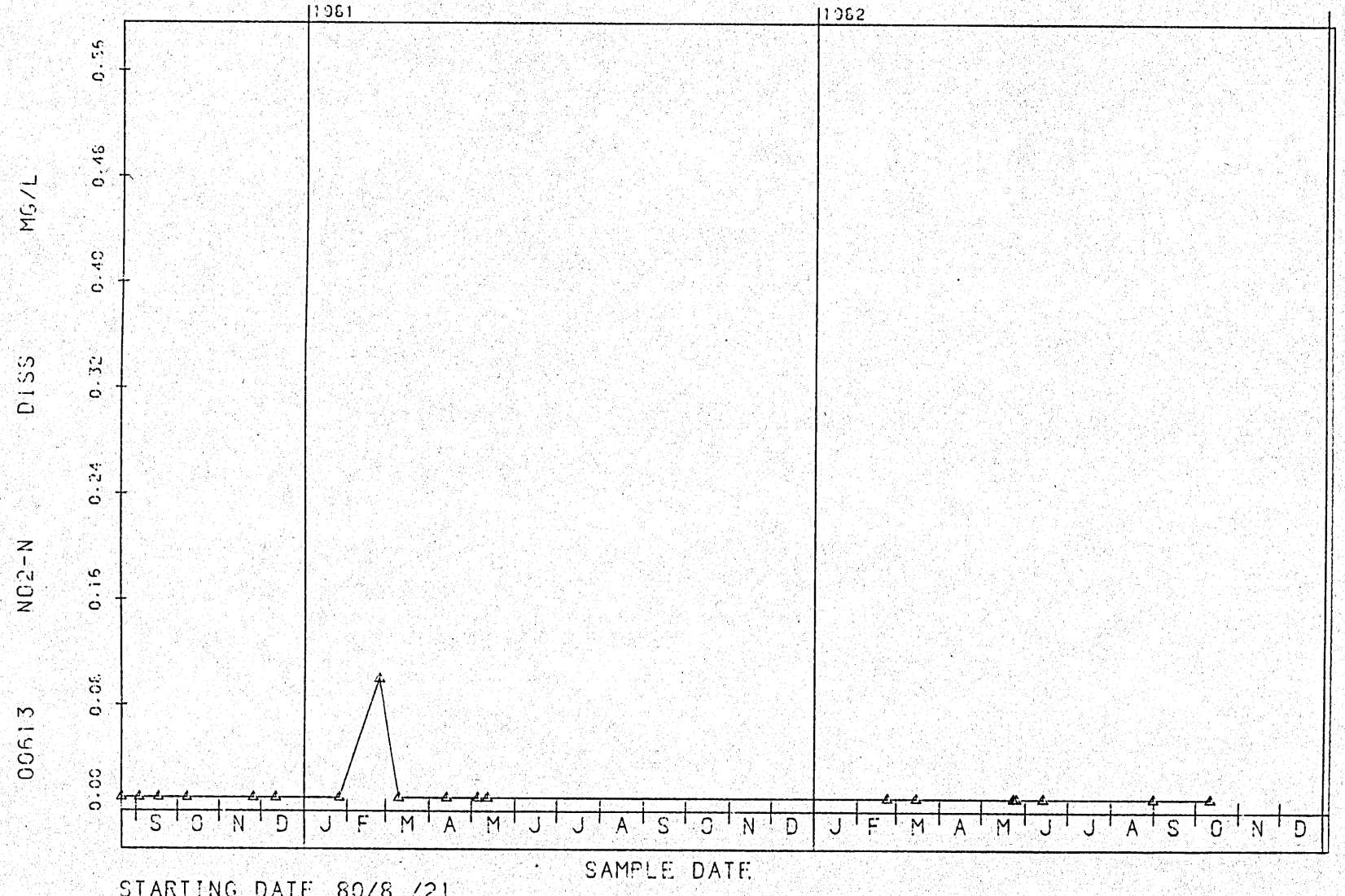
Figure IV-39.



STARTING DATE 82/2 /23

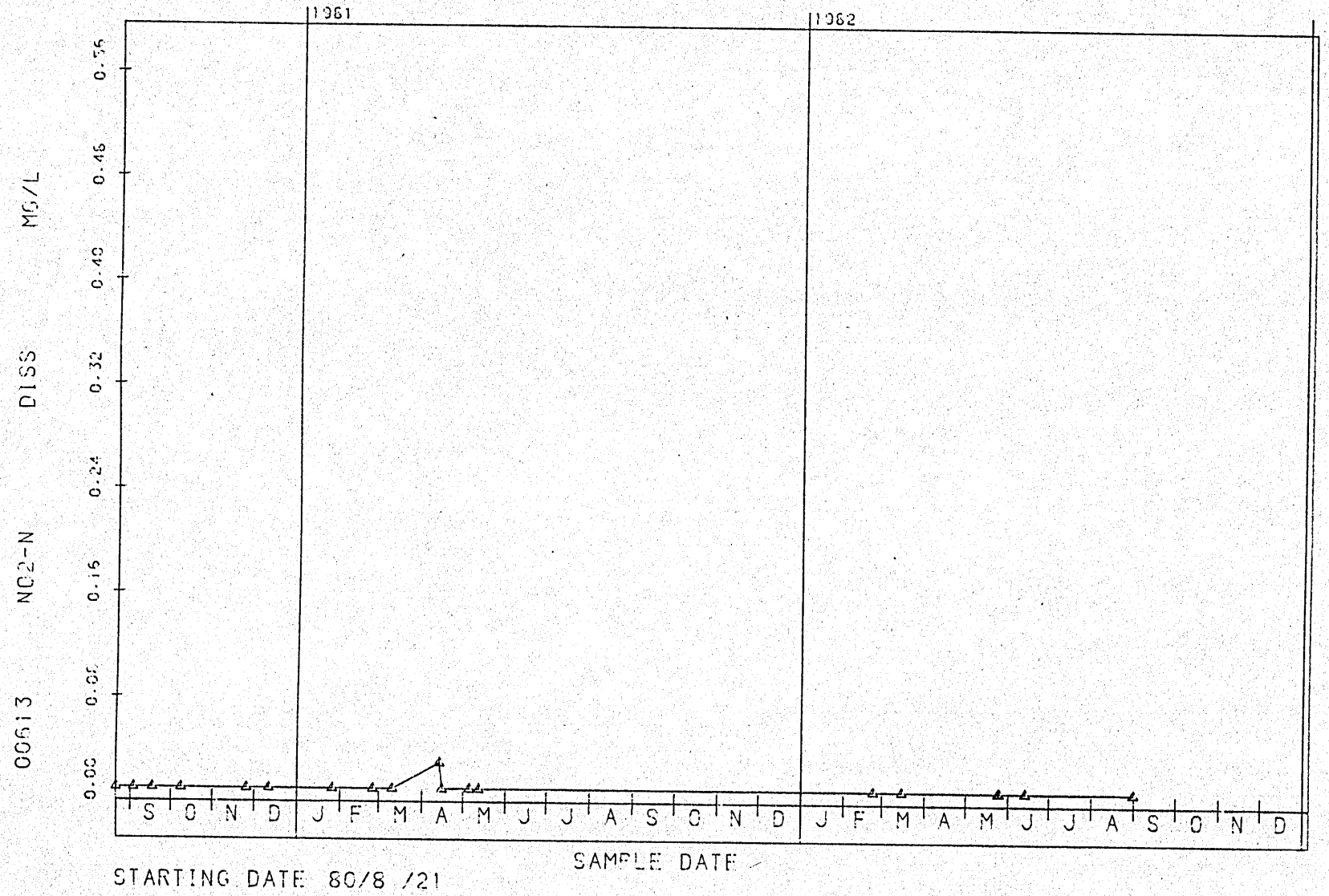
46BY01
44 33 22.0 098 08 16.0 2
LK BYRON OFF SOUTH SHORE 113N-61W-S35 BBCC
46005 SOUTH DAKOTA BEADLE
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663774-0693792

Figure IV-40.



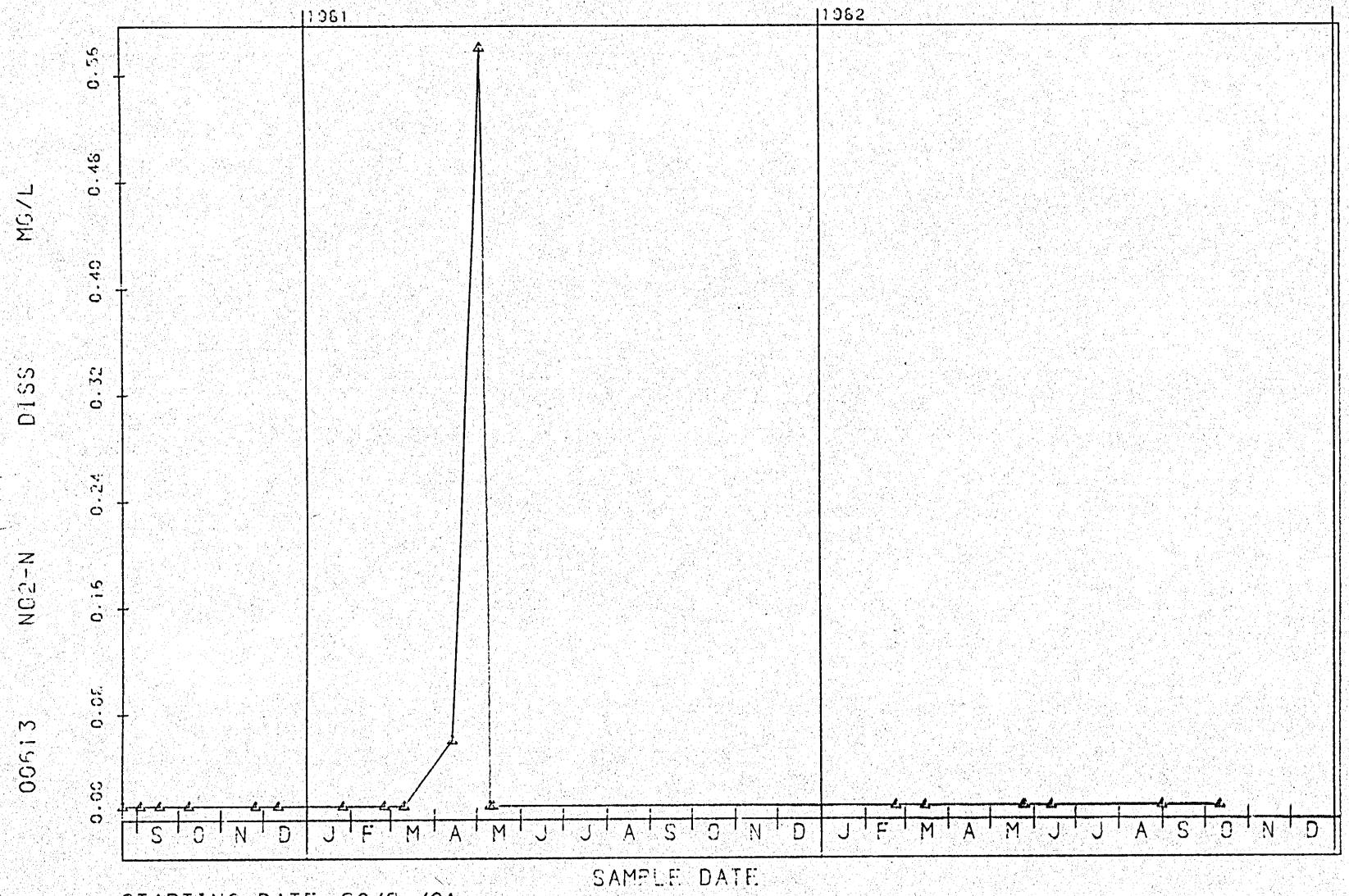
46BY02
44 34 00.0 098 07 21.0 2
LK BYRON OFF N PENINSULA 113N-61W-S26 DABB
46005 SOUTH DAKOTA BEADLE
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663775-0693793

Figure IV-41.



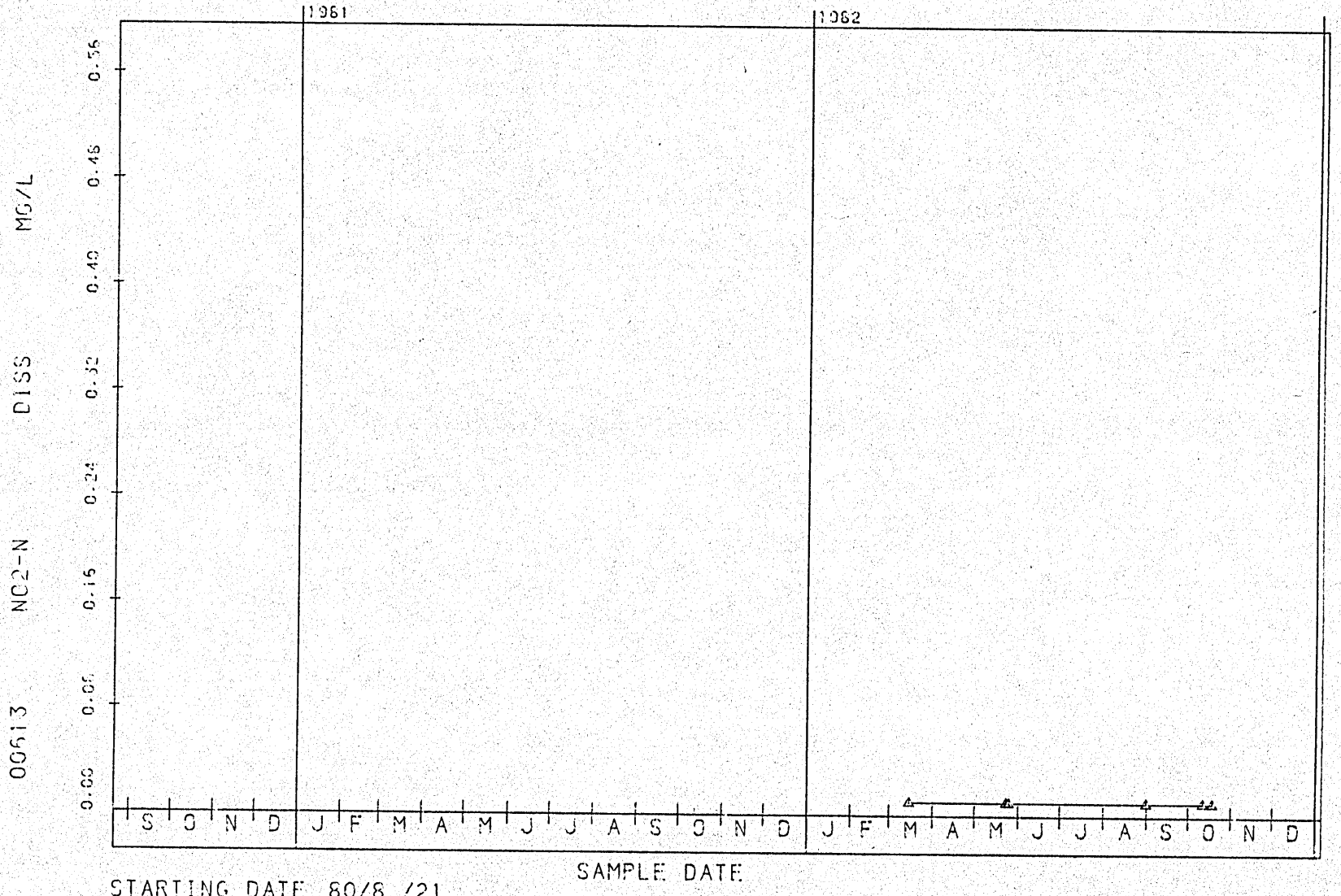
STARTING DATE 80/8 /21

Figure IV-42.


46BY03
44 34 30.0 098 09 11.0 4
LK BYRON OFF NW SHORE 113N-61W-S22 CDCC
46005 SOUTH DAKOTA BEADLE
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663776-0693794
1961
1962
0.56
0.48
0.40
0.32
0.24
0.16
0.08
00613 NO2-N DISS MG/L
S O N D J F M A M J J A S O N D J F M A M J J A S O N D
SAMPLE DATE
STARTING DATE 80/8 /21

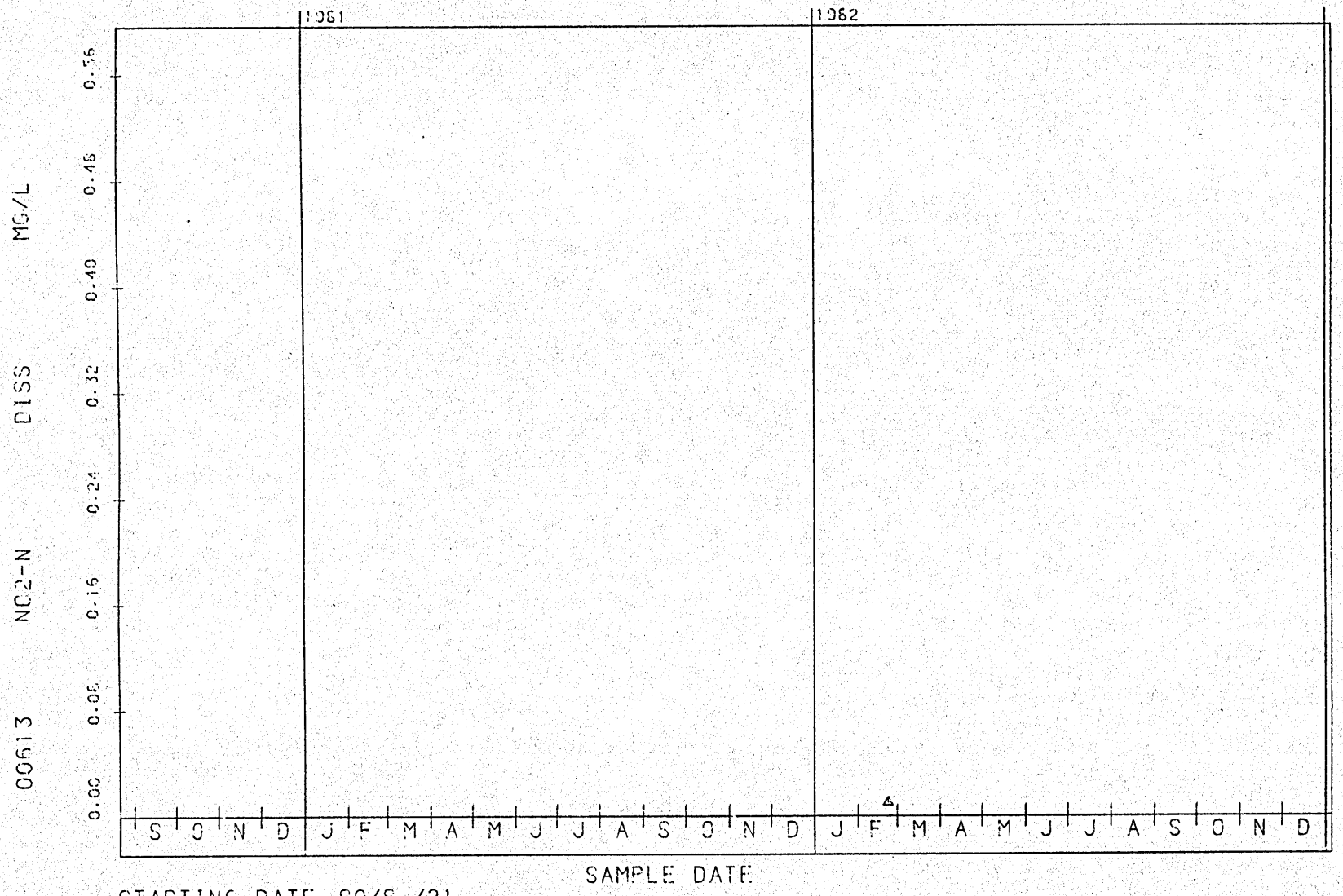
46BY5Y
44 34 31.0 098 09 18.0 2
FOSTER CR INLET TO NW LAKE BYRON 113N-61W-S22CCD
46005 SOUTH DAKOTA BEADLE
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663782-0693800

Figure IV-43.



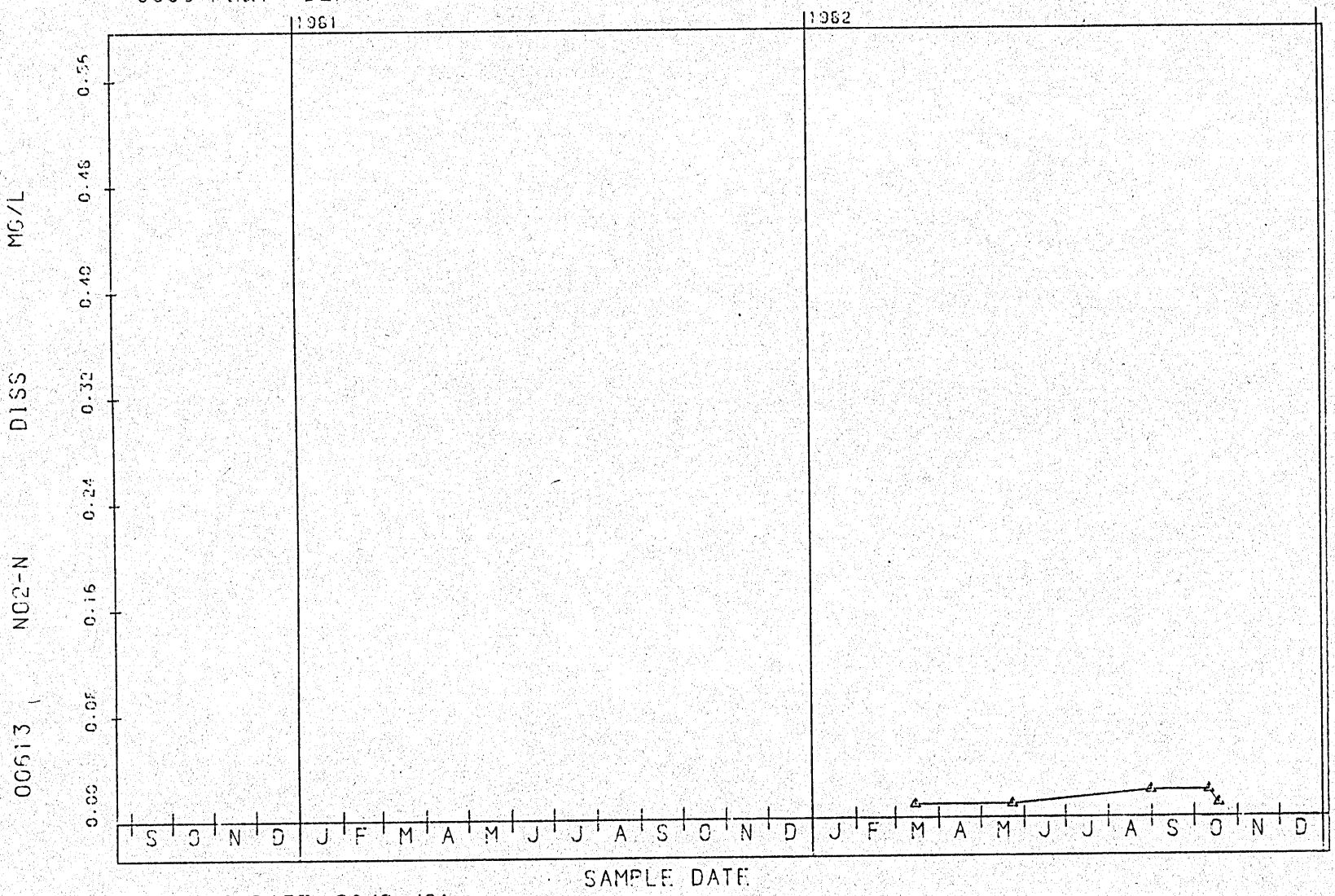
46BY06
44 35 19.0 098 06 54.0 2
NORTH TRIB TO LAKE BYRON 113N-61W-S13 CCDC
46005 SOUTH DAKOTA BEADLE
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663779-0693797

Figure IV-44.



46BY6Y
44 34 29.0 098 07 24.0 2
NORTH TRIB INLET TO LK BYRON 113N-61W-S23 DAC
46005 SOUTH DAKOTA BEADLE
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663783-0693801

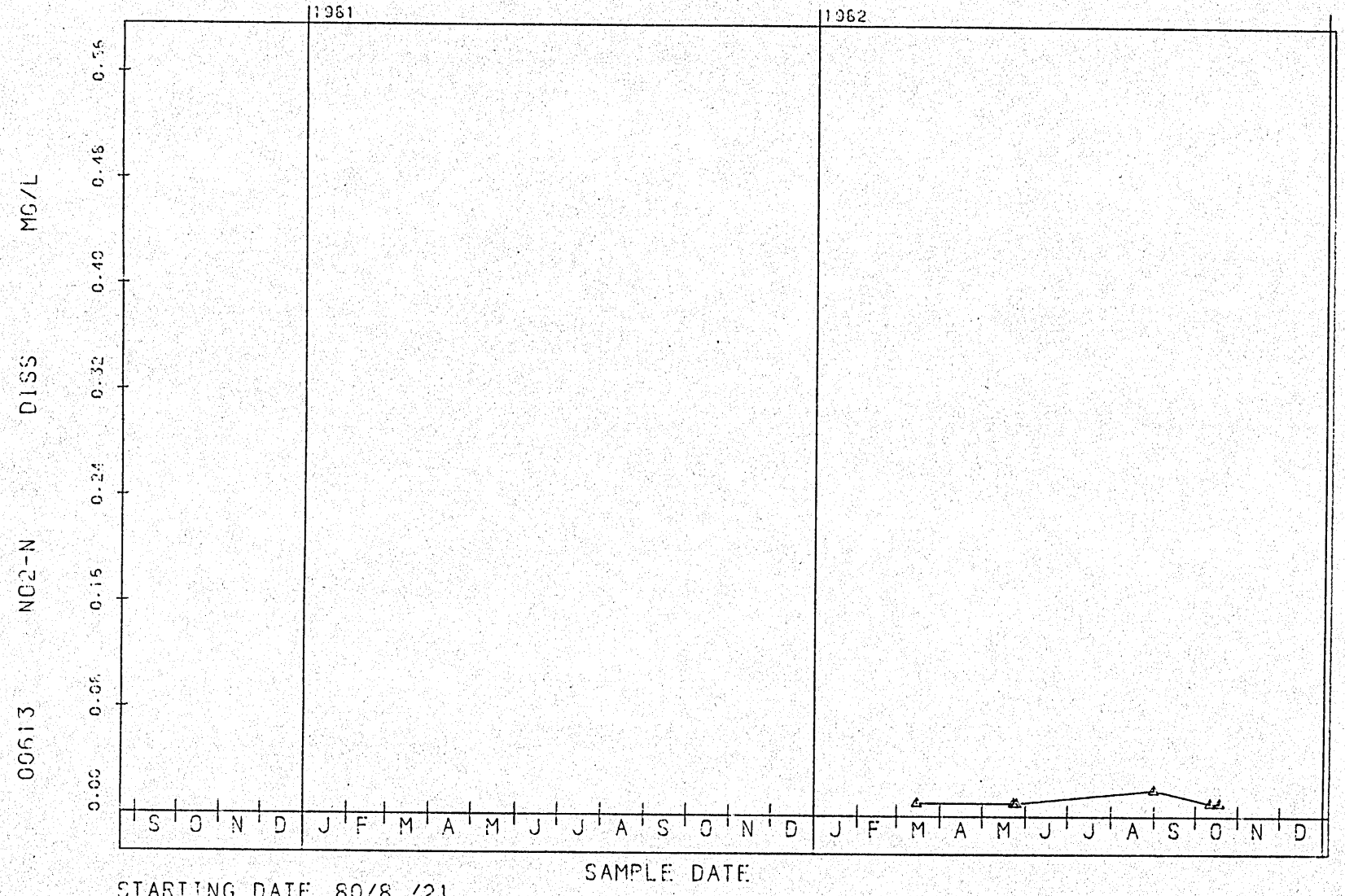
Figure IV-45.



STARTING DATE 80/8 /21

46BY7Y
44 34 05.0 098 03 25.0 2
E INLET TO LK BYRON 113N-60W-S30 BCDB
46005 SOUTH DAKOTA BEADLE
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663784-0693802

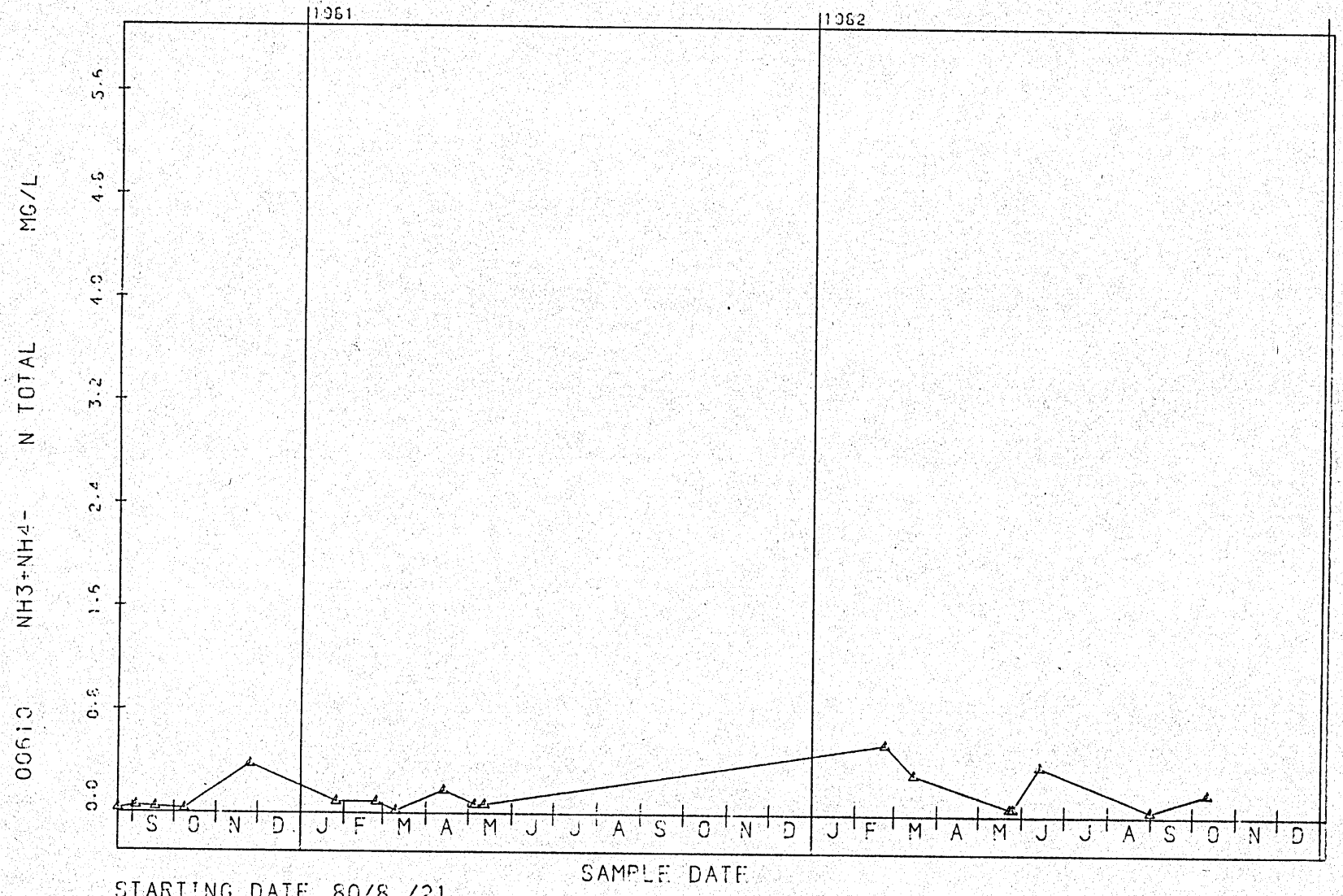
Figure IV-46.



STARTING DATE 80/8 /21

46BY01
44 33 22.0 098 08 16.0 2
LK BYRON OFF SOUTH SHORE 113N-61W-S35 BBCC
46005 SOUTH DAKOTA BEADLE
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSN 0663774-0693792

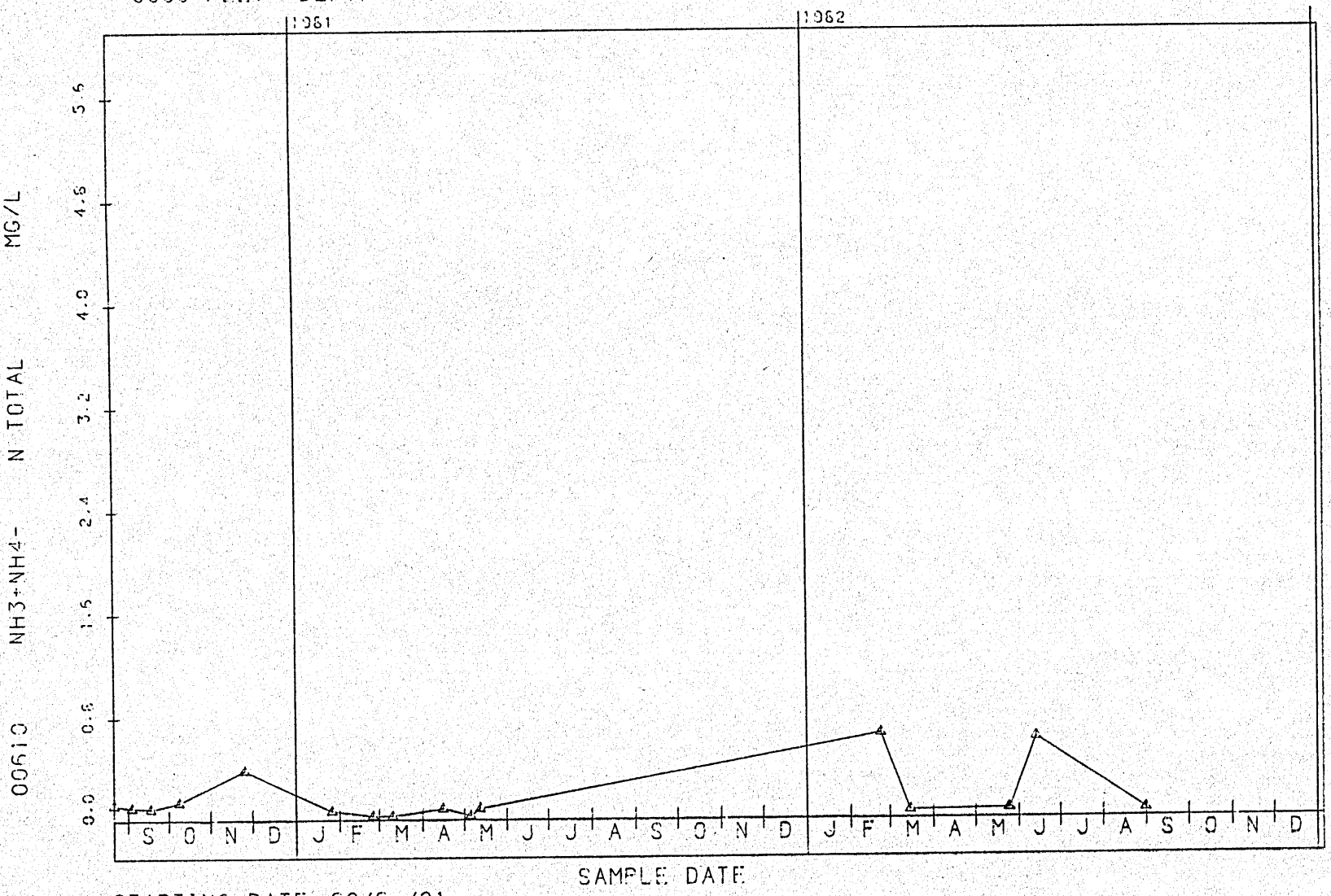
Figure IV-47.



STARTING DATE 80/8 /21

46BY02
44 34 00.0 098 07 21.0 2
LK BYRON OFF N PENINSULA 113N-61W-S26 DABB
46005 SOUTH DAKOTA BEADLE
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663775-0693793

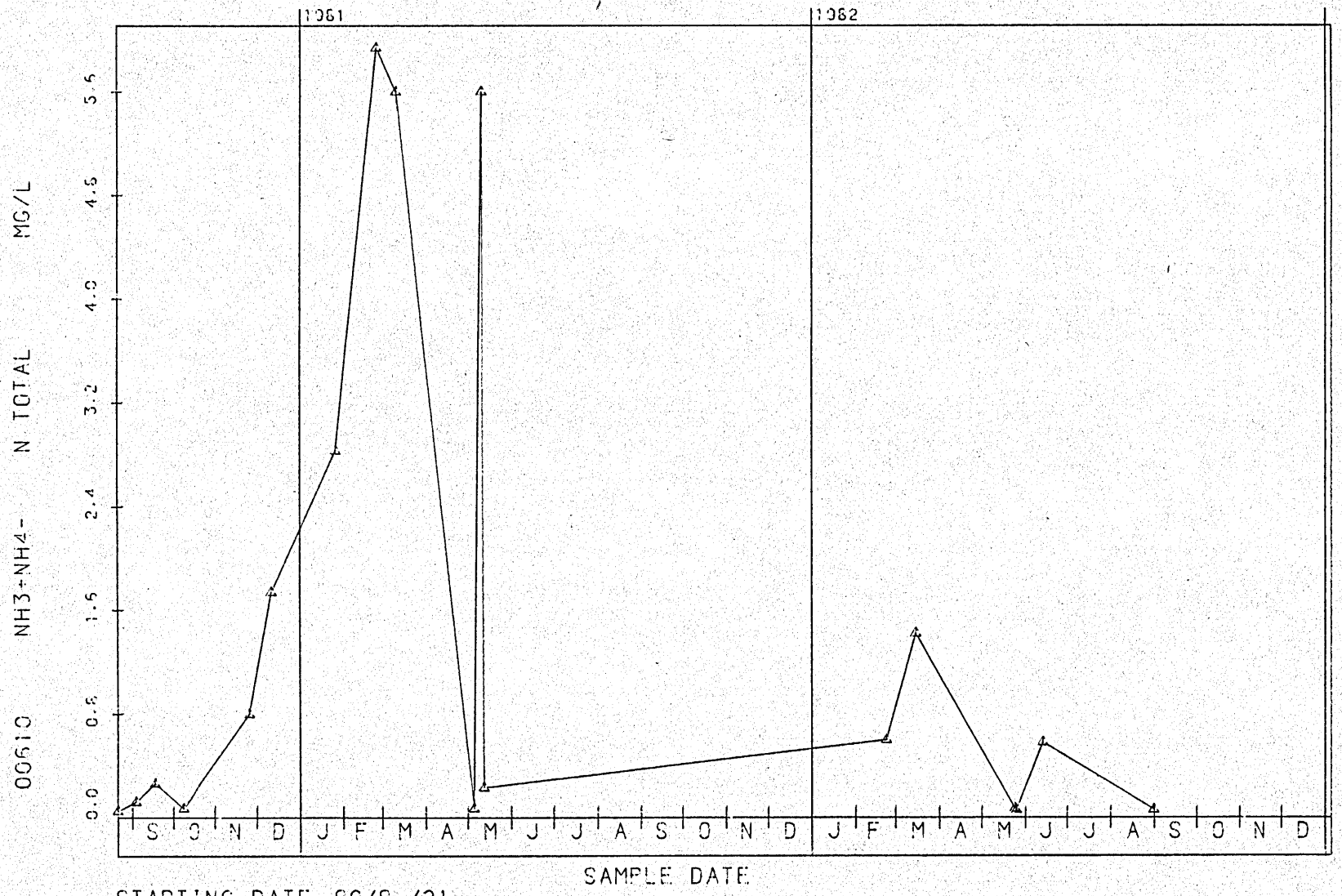
Figure IV-48.



STARTING DATE 80/8 /21

46BY03
44 34 30.0 098 09 11.0 4
LK BYRON OFF NW SHORE 113N-61W-S22 CDCC
46005 SOUTH DAKOTA BEADLE
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663776-0693794

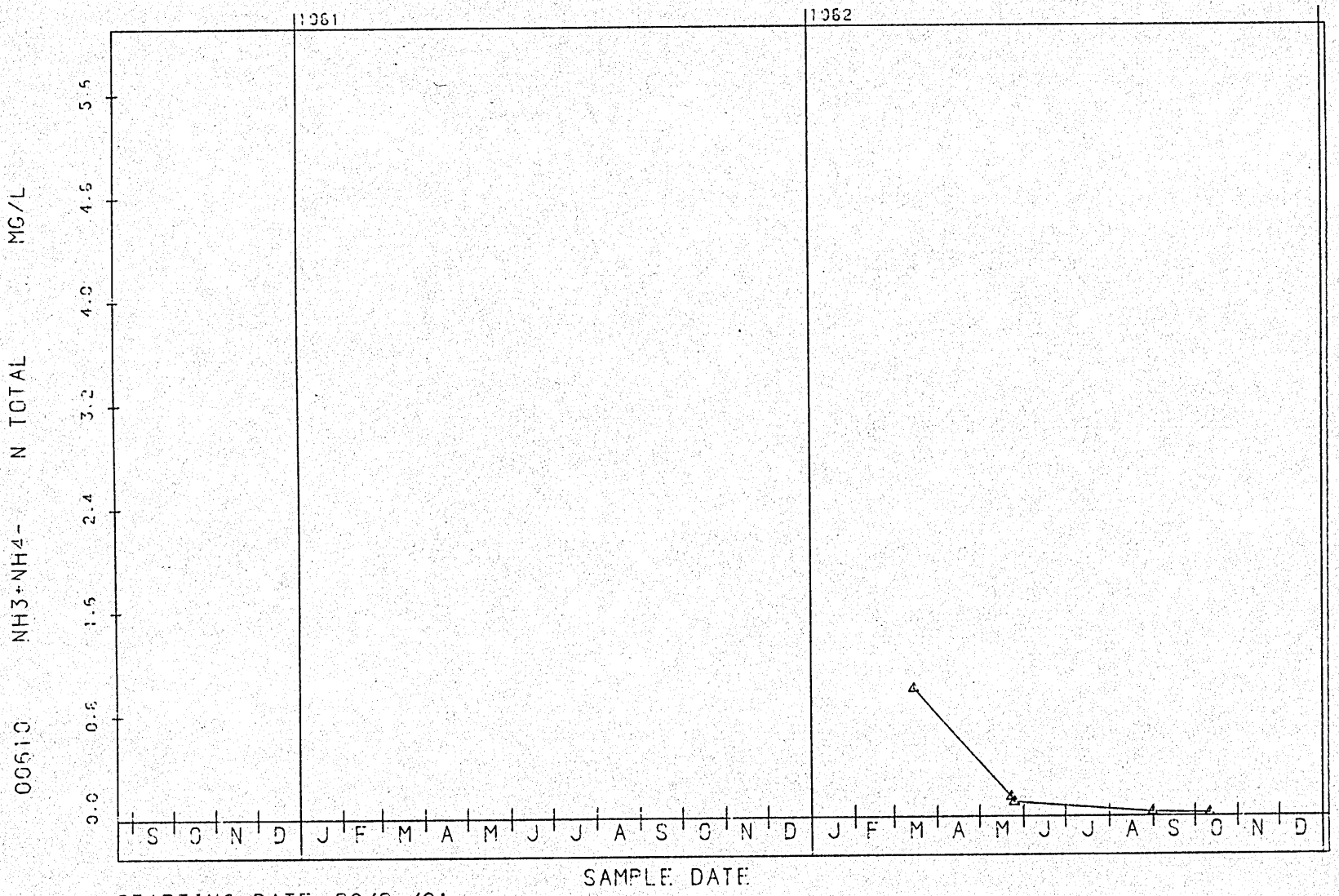
Figure IV-49.



STARTING DATE 80/8 /21

46BY5Y
44 34 31.0 098 09 18.0 2
FOSTER CR INLET TO NW LAKE BYRON 113N-61W-S22CCD
46005 SOUTH DAKOTA BEADLE
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663782-0693800

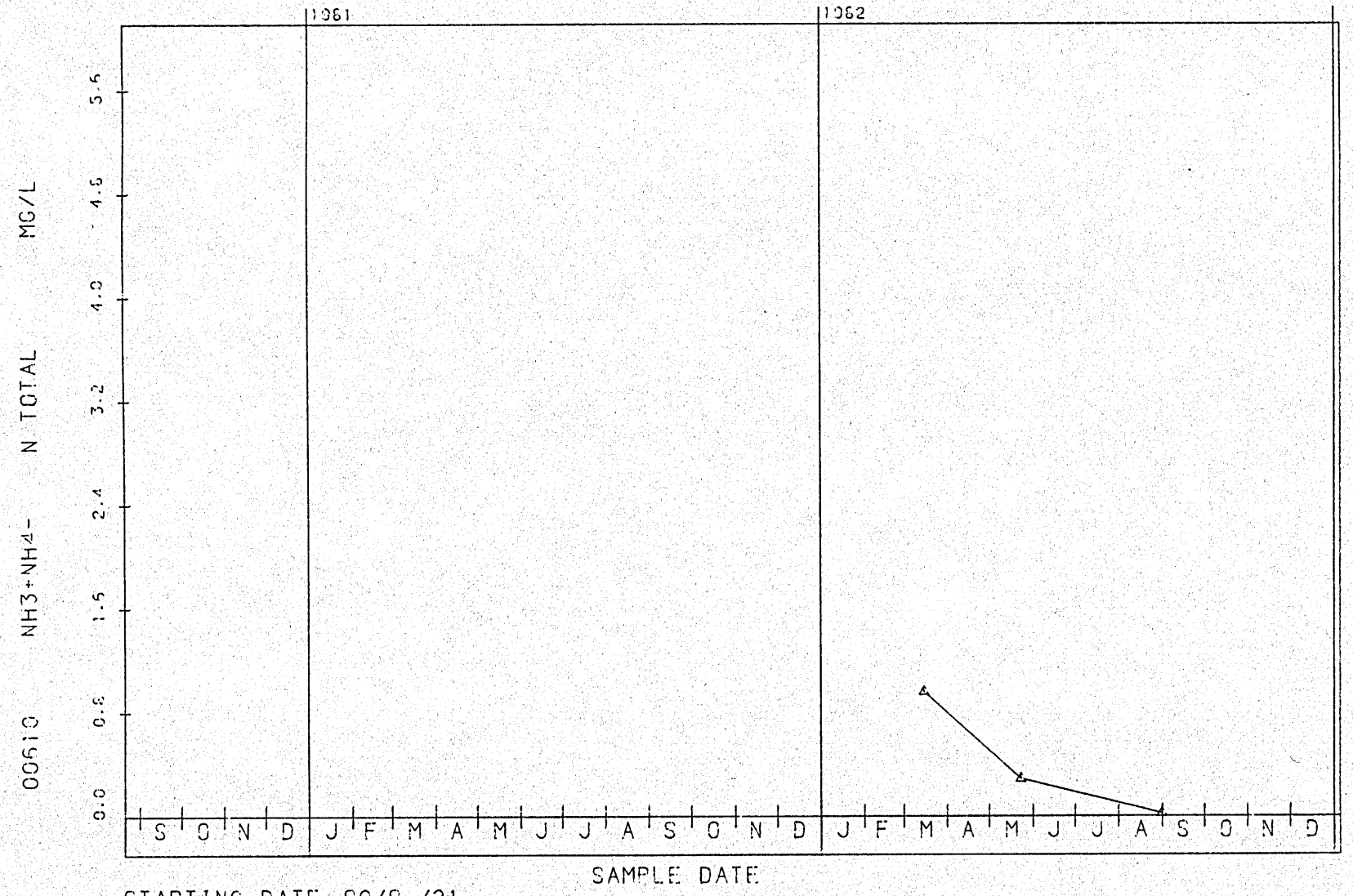
Figure IV-50.



STARTING DATE 80/8 /21

46BY6Y
44 34 29.0 098 07 24.0 2
NORTH TRIB INLET TO LK BYRON 113N-61W-S23 DAC
46005 SOUTH DAKOTA BEADLE
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663783-0693801

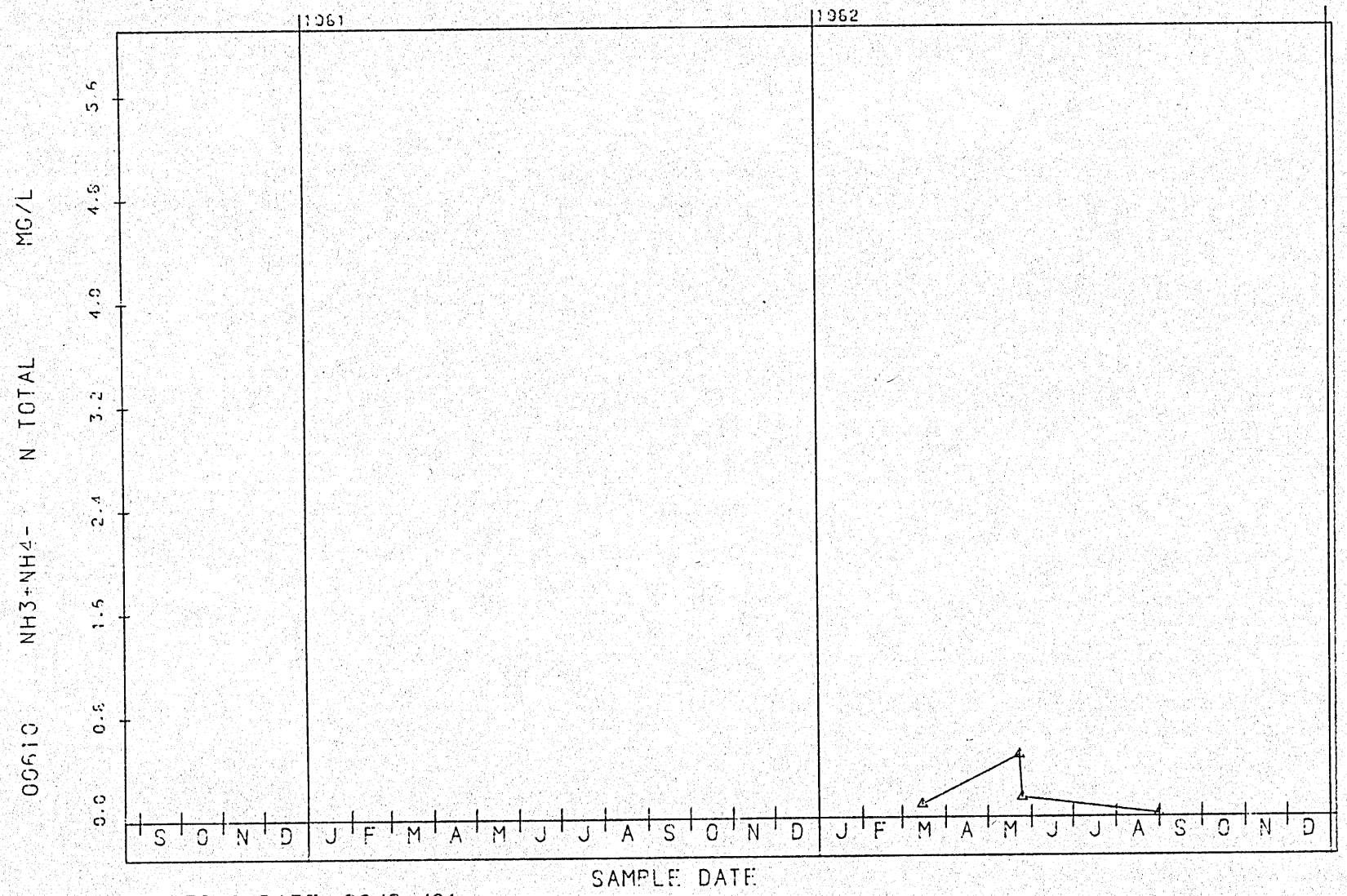
Figure IV-51.



STARTING DATE 80/8 /21

46BY7Y
44 34 05.0 098 03 25.0 2
E INLET TO LK BYRON 113N-60W-S30 BCDB
46005 SOUTH DAKOTA BEADLE
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663784-0693802

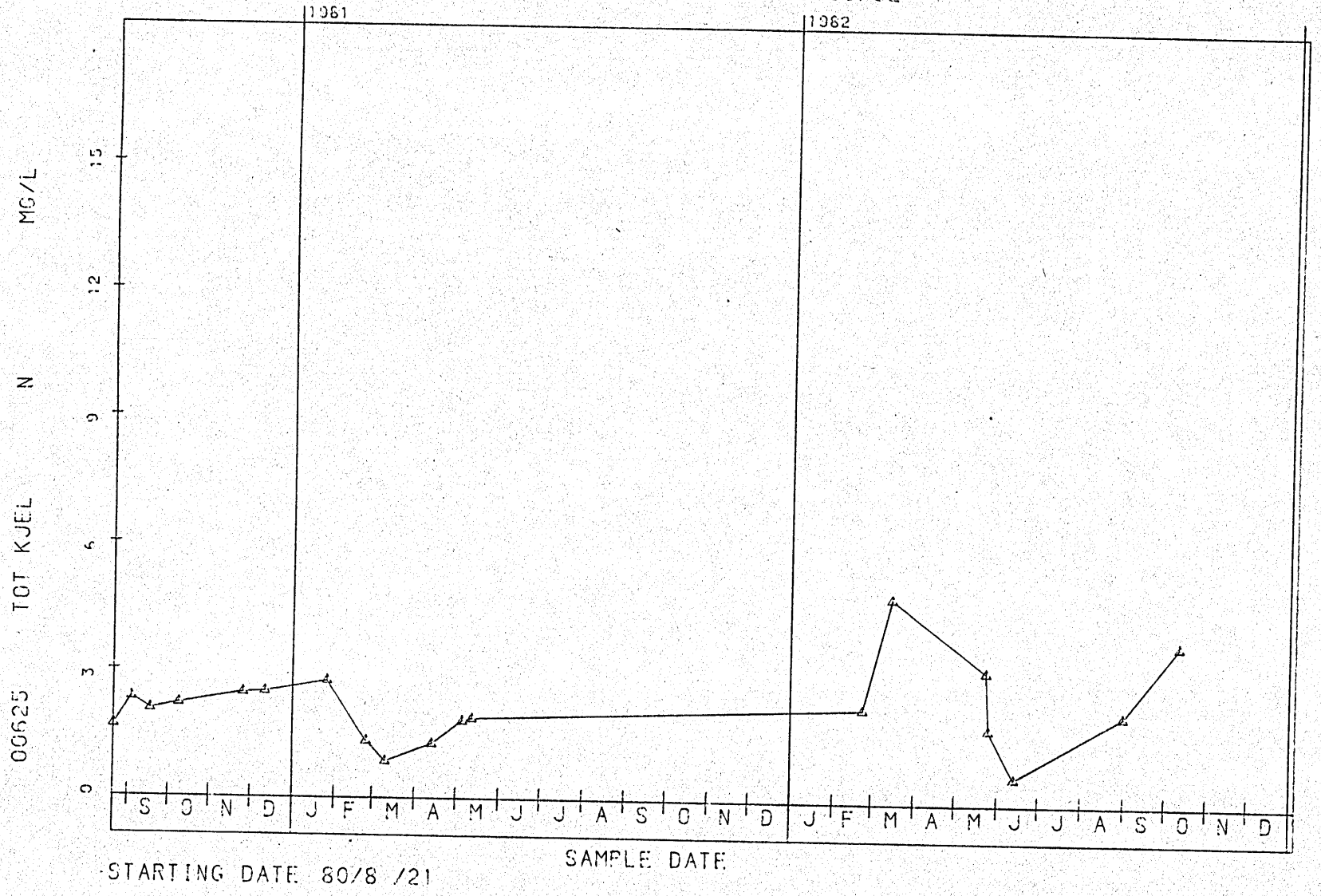
Figure IV-52.



STARTING DATE 80/8 /21

Figure IV-53.

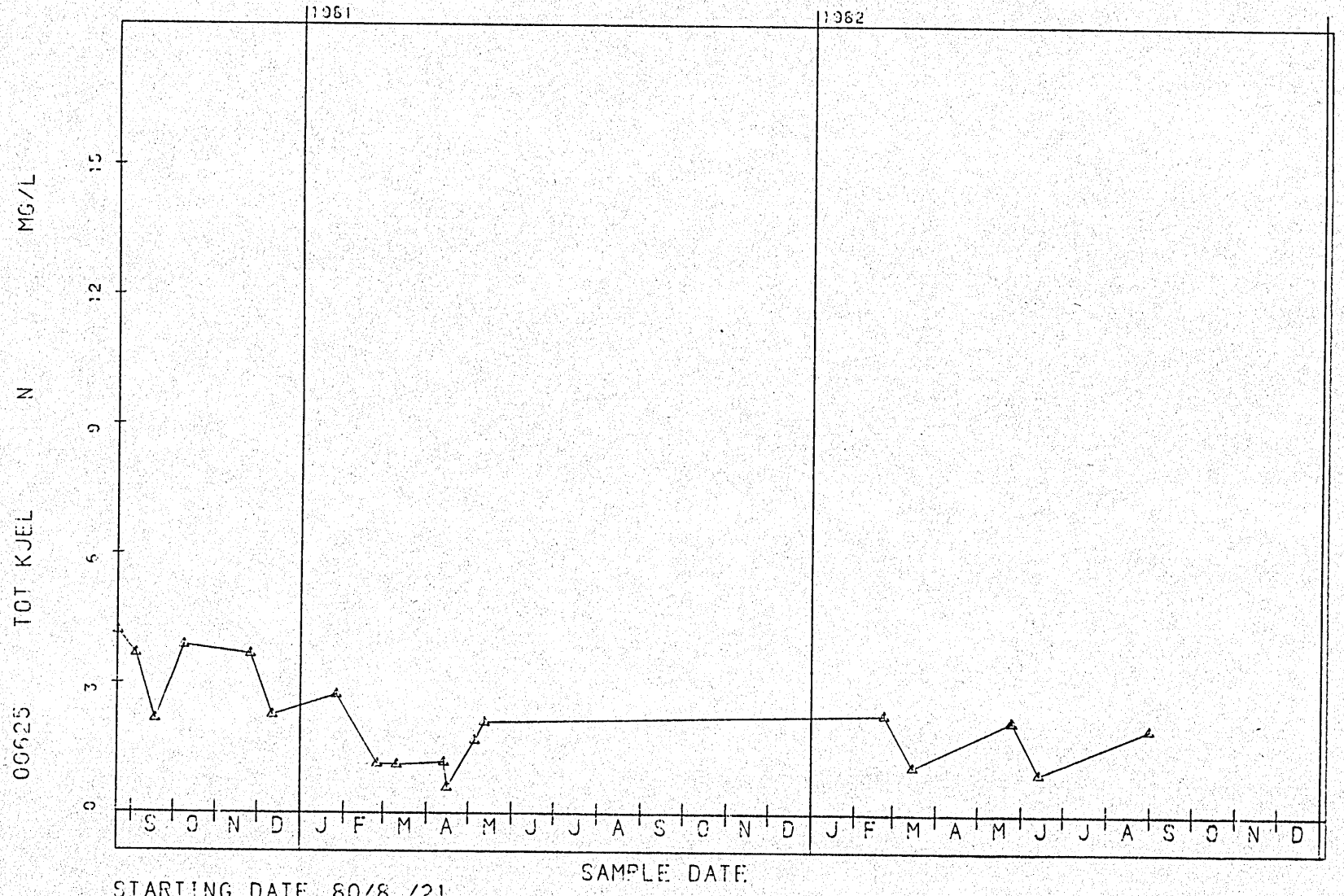
46BY01
44 33 22.0 098 08 16.0 2
LK BYRON OFF SOUTH SHORE 113N-61W-S35 BBCC
46005 SOUTH DAKOTA BEADLE
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663774-0693792



STARTING DATE 80/8 /21

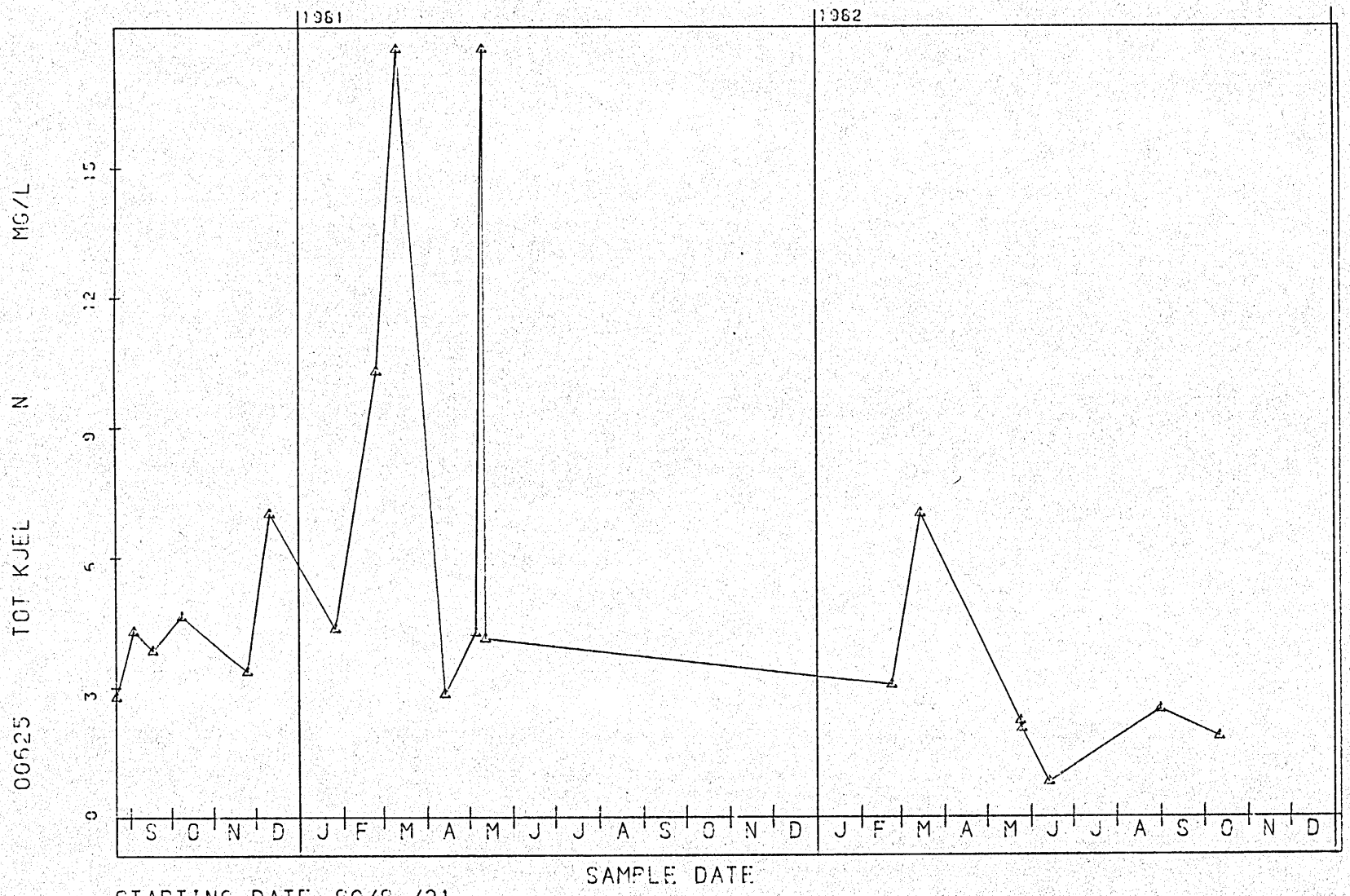
46BY02
44 34 00.0 098 07 21.0 2
LK BYRON OFF N PENINSULA 113N-61W-S26 DABB
46005 SOUTH DAKOTA BEADLE
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663775-0693793

Figure IV-54.



46BY03
44 34 30.0 098 09 11.0 4
LK BYRON OFF NW SHORE 113N-61W-S22 CDCC
46005 SOUTH DAKOTA BEADLE
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663776-0693794

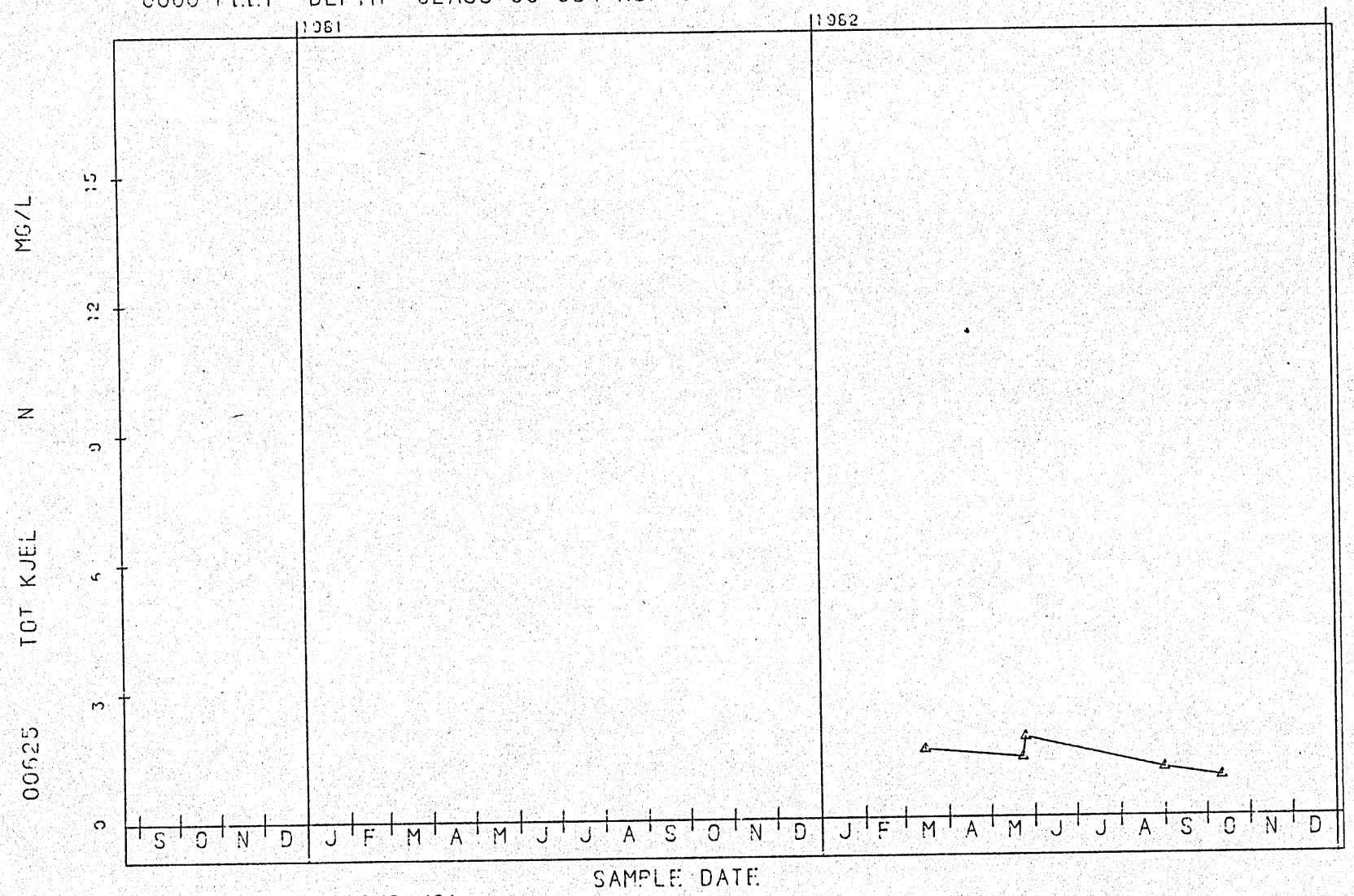
Figure IV-55.



STARTING DATE 80/8 /21

Figure IV-56.

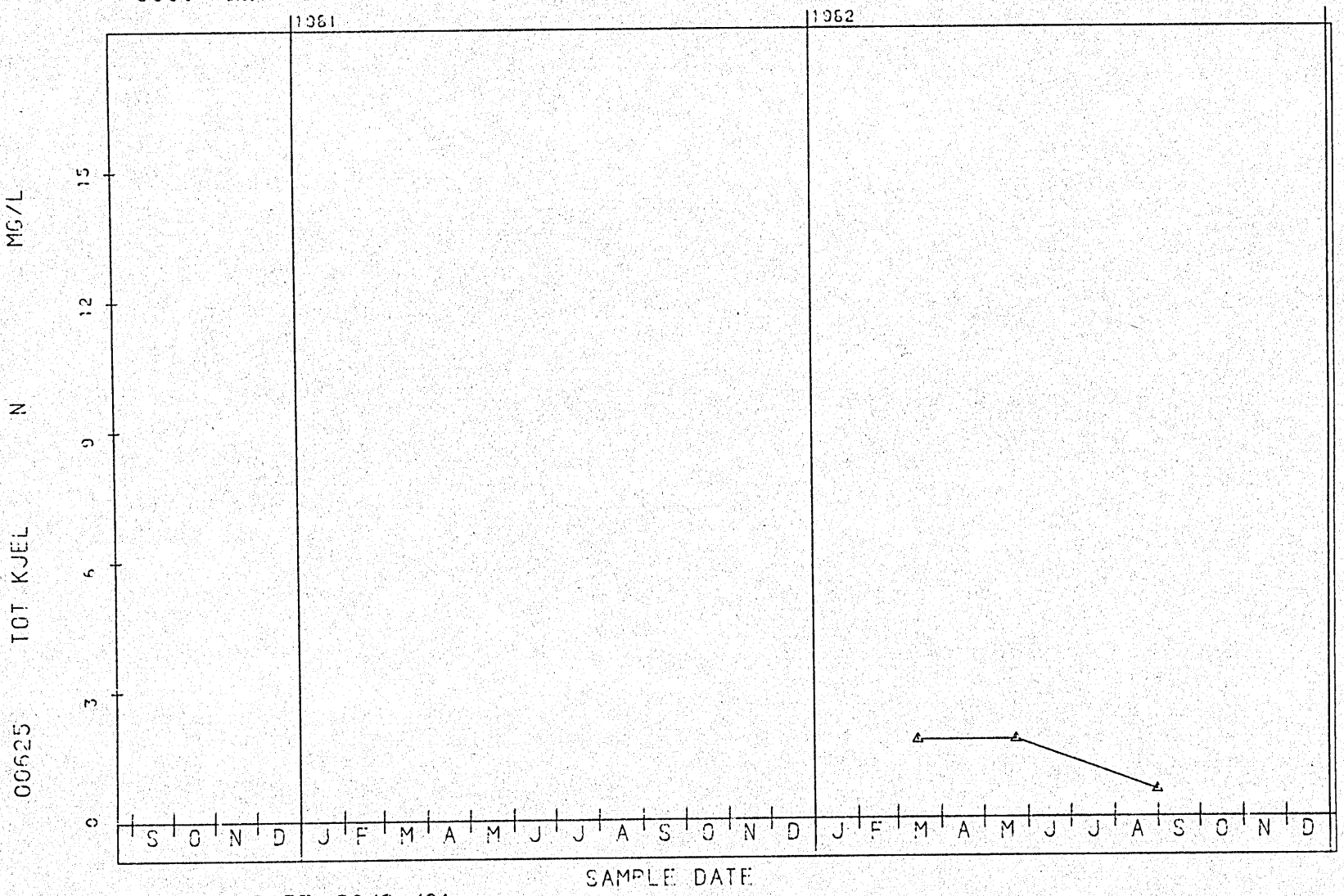
46BY5Y
44 34 31.0 098 09 18.0 2
FOSTER CR INLET TO NW LAKE BYRON 113N-61W-S22CCD
46005 SOUTH DAKOTA BEADLE
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSF 0663782-0693800



STARTING DATE 80/8 /21

Figure IV-57.

46BY6Y
44 34 29.0 098 07 24.0 2
NORTH TRIB INLET TO LK BYRON 113N-61W-S23 DAC
46005 SOUTH DAKOTA BEADLE
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663783-0693801



STARTING DATE 80/8 /21

46BY7Y
44 34 05.0 098 03 25.0 2
E INLET TO LK BYRON 113N-60W-S30 BCDB
46005 SOUTH DAKOTA BEADLE
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663784-0693802

Figure IV-58.

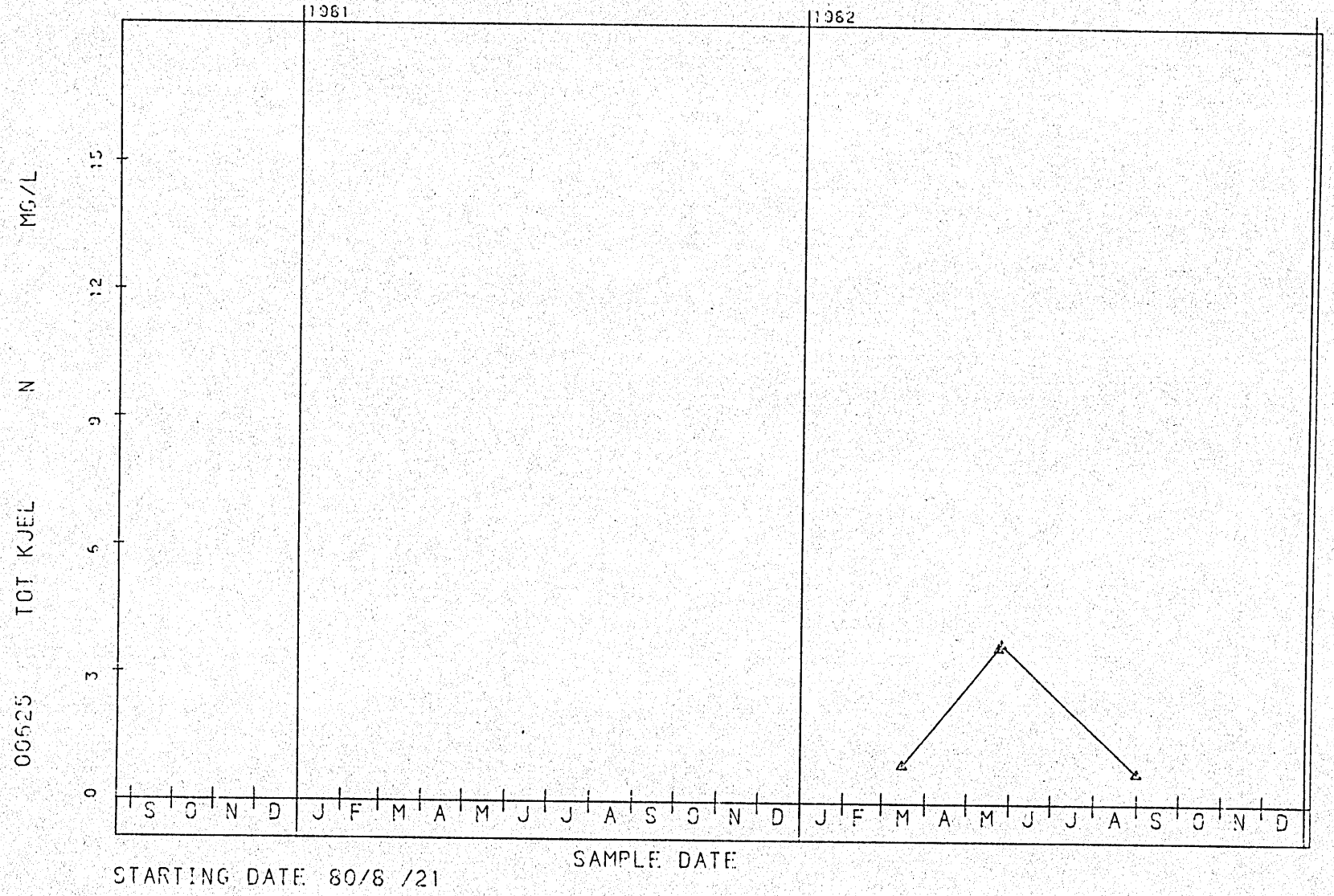


Figure IV-59.

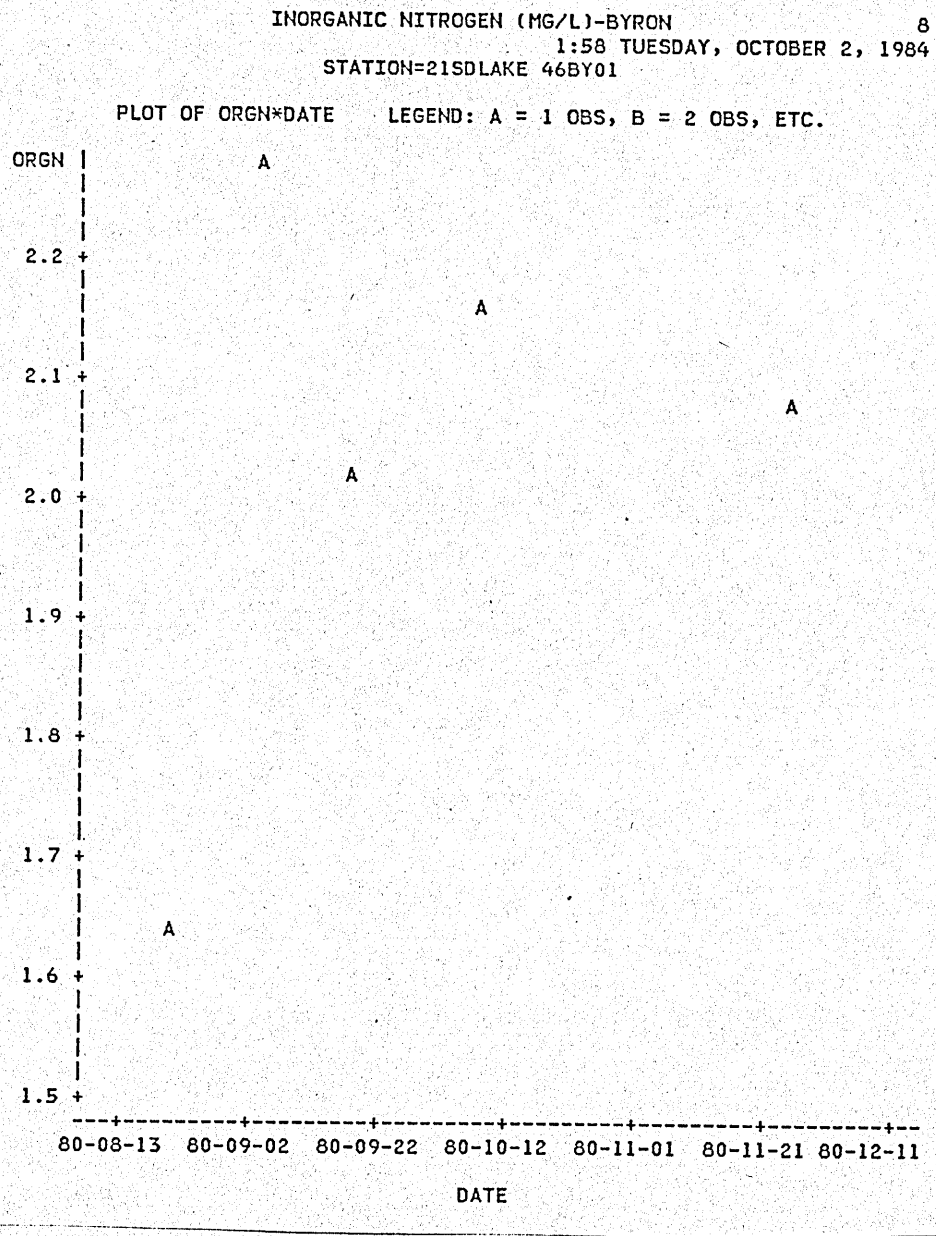

INORGANIC NITROGEN (MG/L)-BYRON 8
1:58 TUESDAY, OCTOBER 2, 1984
STATION=21SDLAKE 46BY01
PLOT OF ORGN*DATE LEGEND: A = 1 OBS, B = 2 OBS, ETC.
ORGN
2.2
2.1
2.0
1.9
1.8
1.7
1.6
1.5
80-08-13 80-09-02 80-09-22 80-10-12 80-11-01 80-11-21 80-12-11
DATE

Figure IV-60.

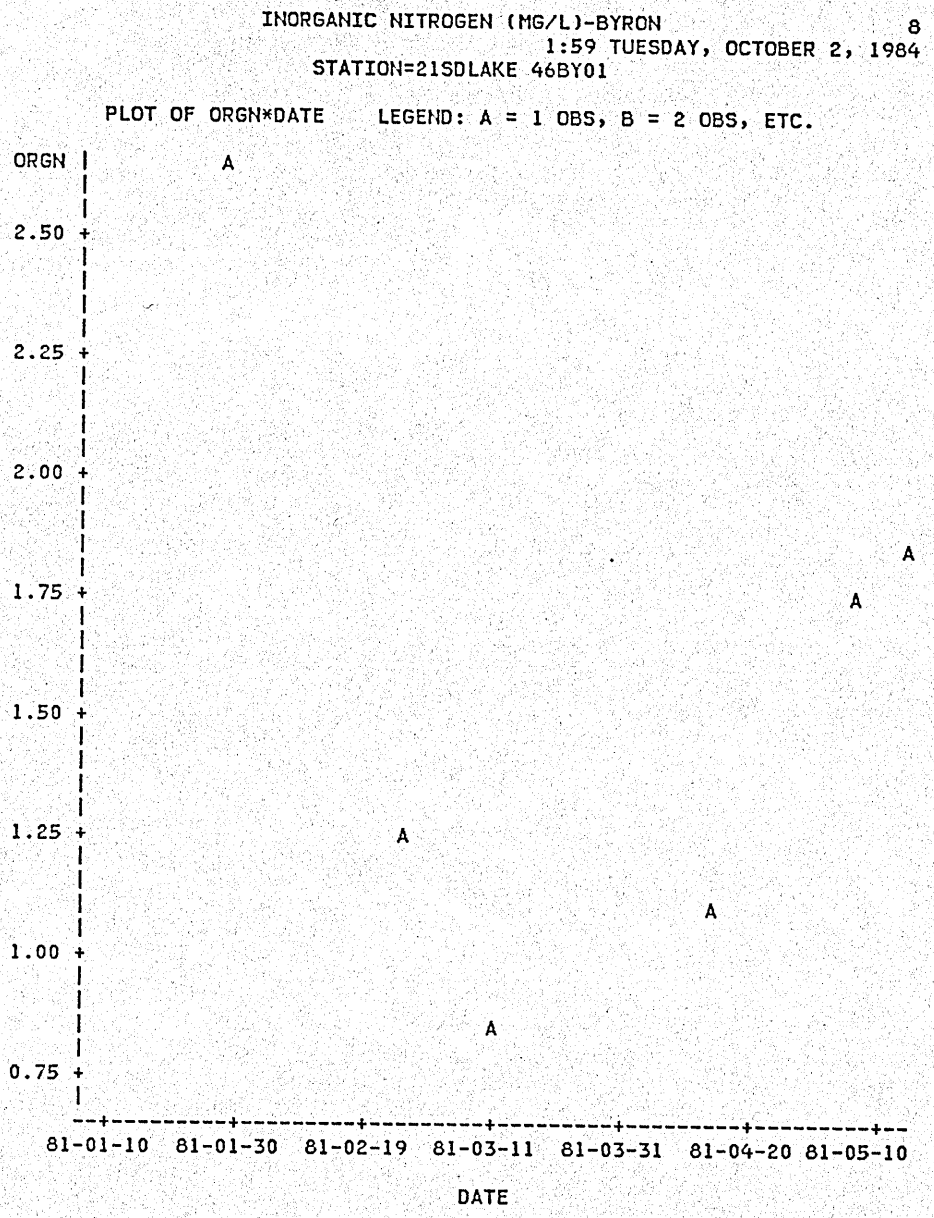

INORGANIC NITROGEN (MG/L)-BYRON 8
1:59 TUESDAY, OCTOBER 2, 1984
STATION=21SDLAKE 46BY01
PLOT OF ORGN*DATE LEGEND: A = 1 OBS, B = 2 OBS, ETC.
ORGN
2.50
2.25
2.00
1.75
1.50
1.25
1.00
0.75
81-01-10 81-01-30 81-02-19 81-03-11 81-03-31 81-04-20 81-05-10
DATE

Figure IV-61.

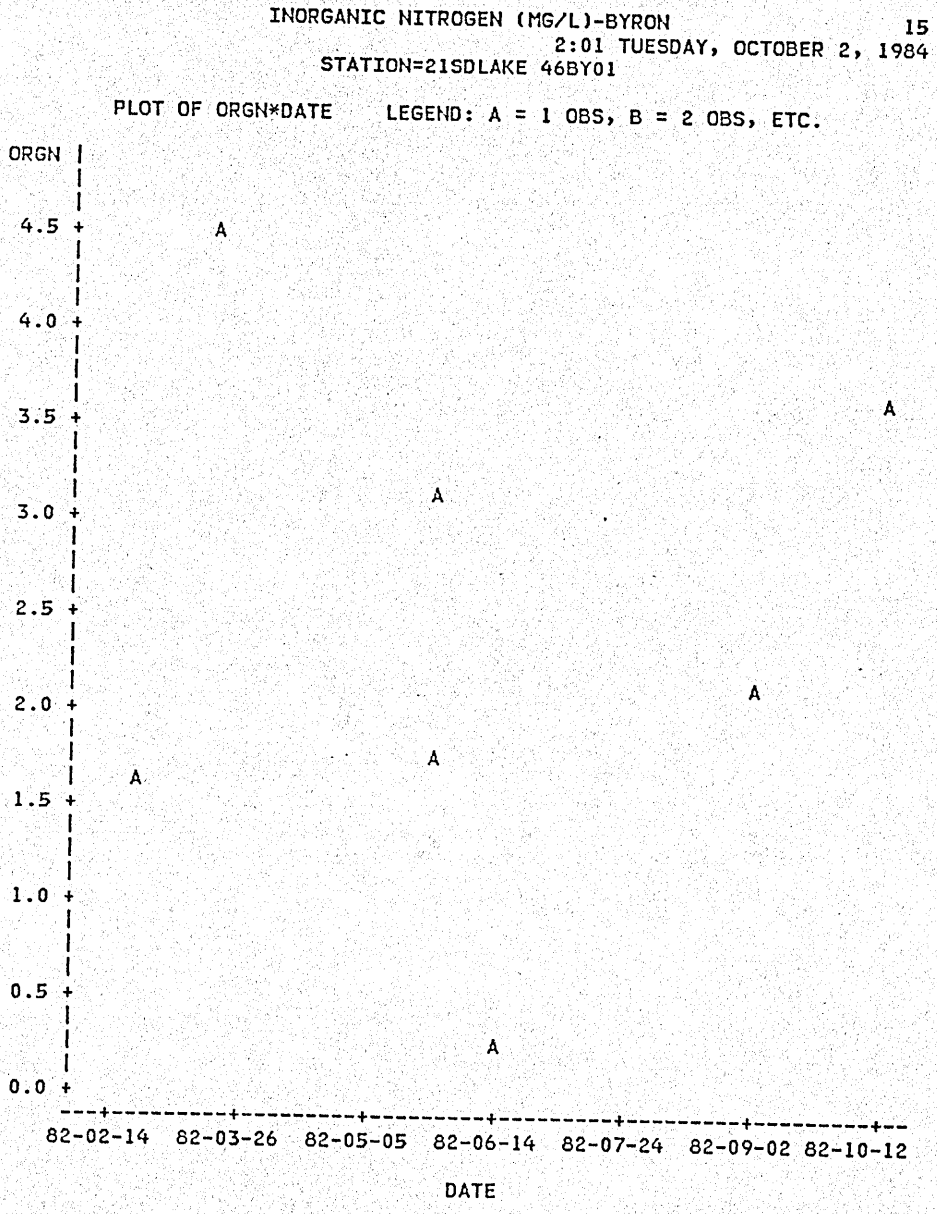

INORGANIC NITROGEN (MG/L)-BYRON 15
2:01 TUESDAY, OCTOBER 2, 1984
STATION=21SDLAKE 46BY01
PLOT OF ORGN*DATE LEGEND: A = 1 OBS, B = 2 OBS, ETC.
ORGN
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
82-02-14
82-03-26
82-05-05
82-06-14
82-07-24
82-09-02
82-10-12
DATE

Figure IV-62.

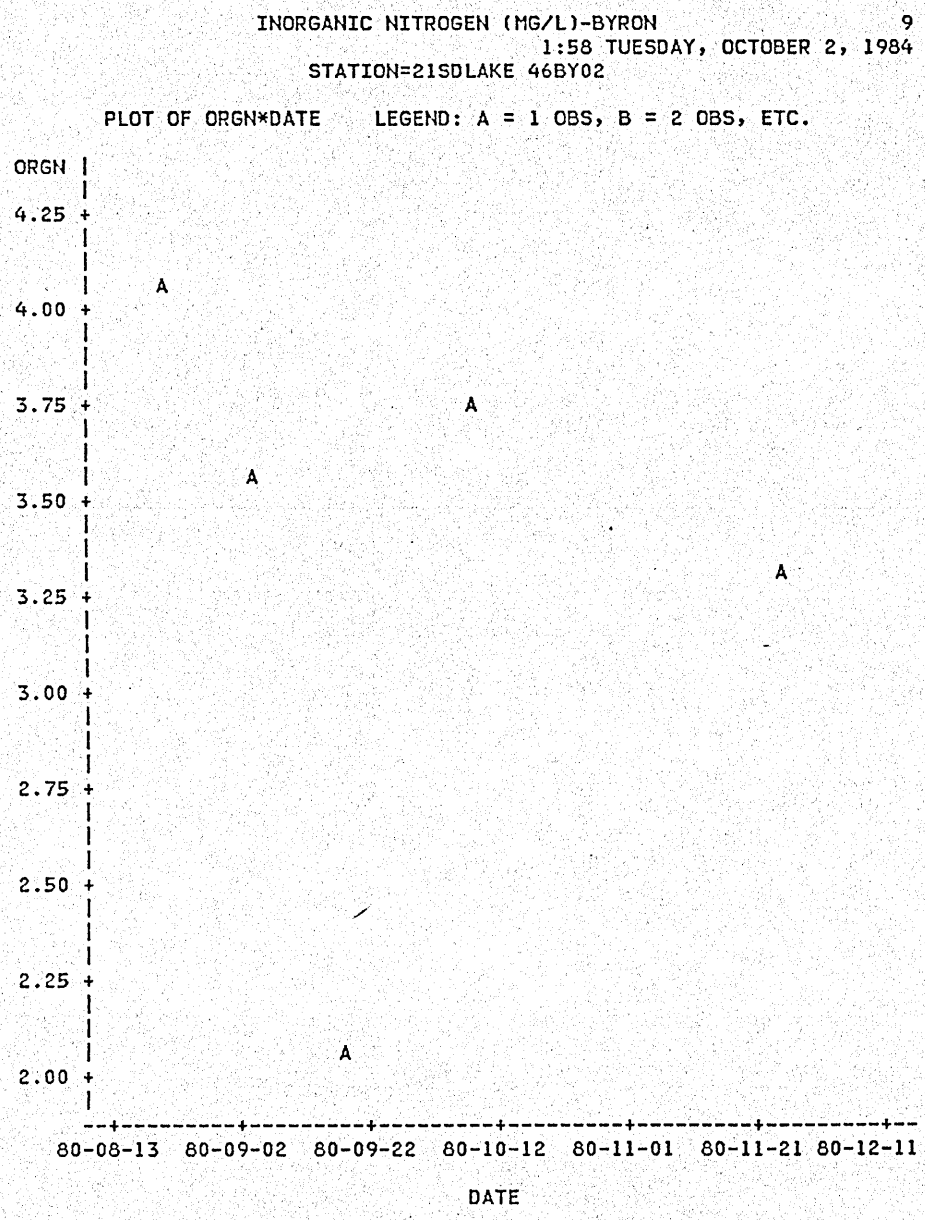

INORGANIC NITROGEN (MG/L)-BYRON 9
1:58 TUESDAY, OCTOBER 2, 1984
STATION=21SDLAKE 46BY02
PLOT OF ORGN*DATE LEGEND: A = 1 OBS, B = 2 OBS, ETC.
ORGN
4.25
4.00
3.75
3.50
3.25
3.00
2.75
2.50
2.25
2.00
80-08-13 80-09-02 80-09-22 80-10-12 80-11-01 80-11-21 80-12-11
DATE

Figure IV-63.

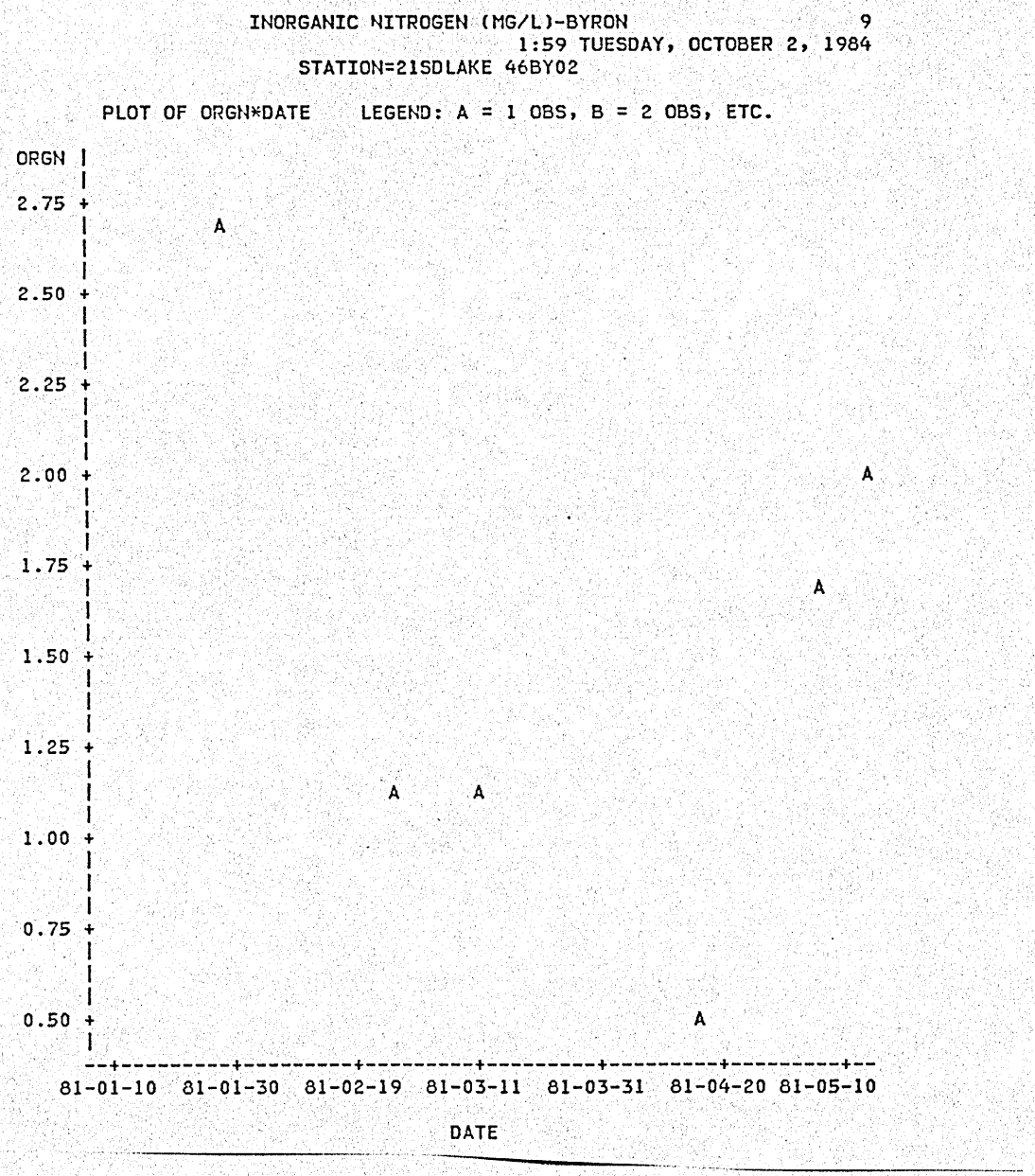

INORGANIC NITROGEN (MG/L)-BYRON 9
1:59 TUESDAY, OCTOBER 2, 1984
STATION=21SDLAKE 46BY02
PLOT OF ORGN*DATE LEGEND: A = 1 OBS, B = 2 OBS, ETC.
ORGN
2.75
2.50
2.25
2.00
1.75
1.50
1.25
1.00
0.75
0.50
81-01-10 81-01-30 81-02-19 81-03-11 81-03-31 81-04-20 81-05-10
DATE

Figure IV-64.

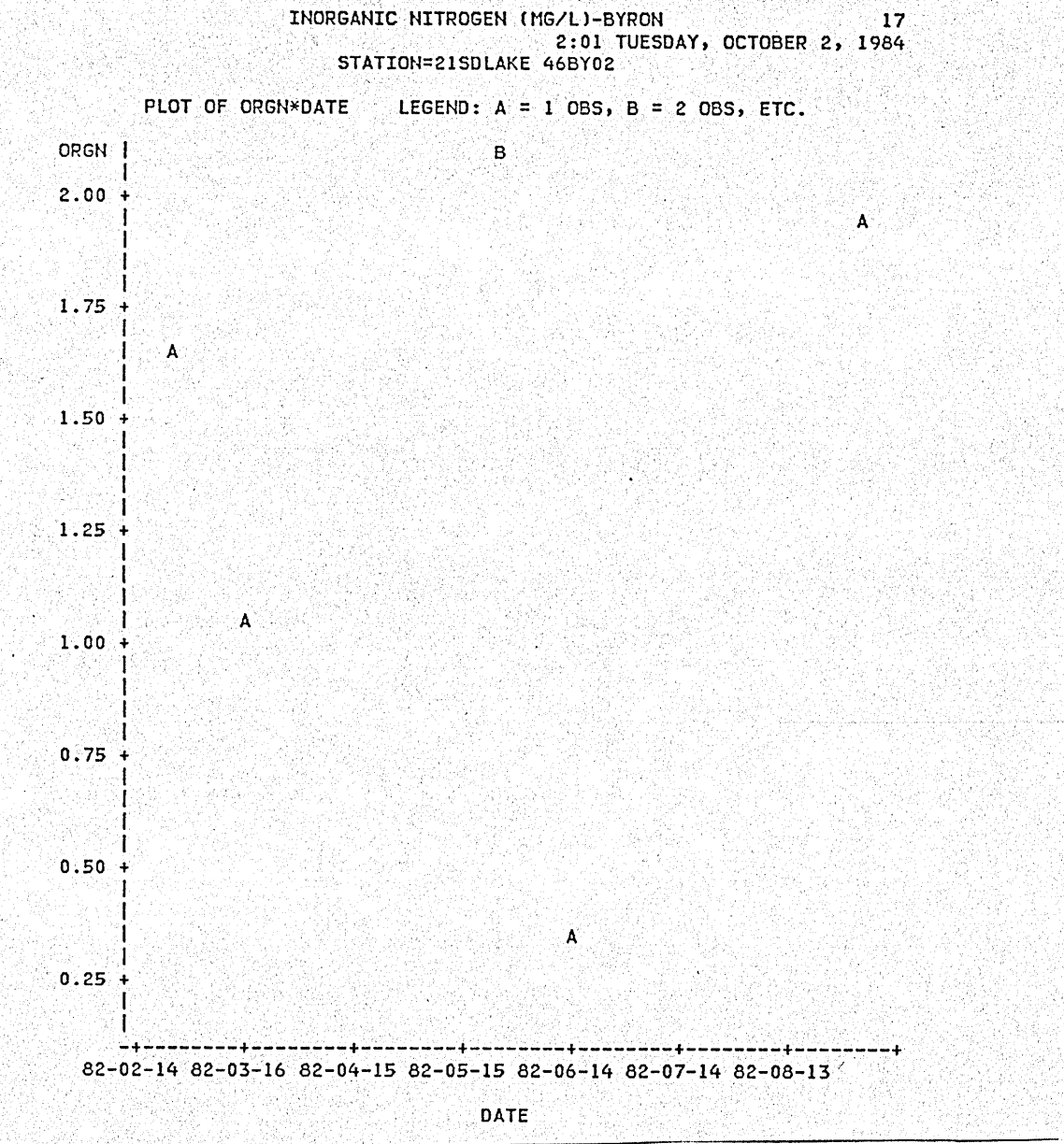

INORGANIC NITROGEN (MG/L)-BYRON 17
2:01 TUESDAY, OCTOBER 2, 1984
STATION=21SDLAKE 46BY02
PLOT OF ORGN*DATE LEGEND: A = 1 OBS, B = 2 OBS, ETC.
ORGN
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
82-02-14 82-03-16 82-04-15 82-05-15 82-06-14 82-07-14 82-08-13
DATE

Figure IV-65.

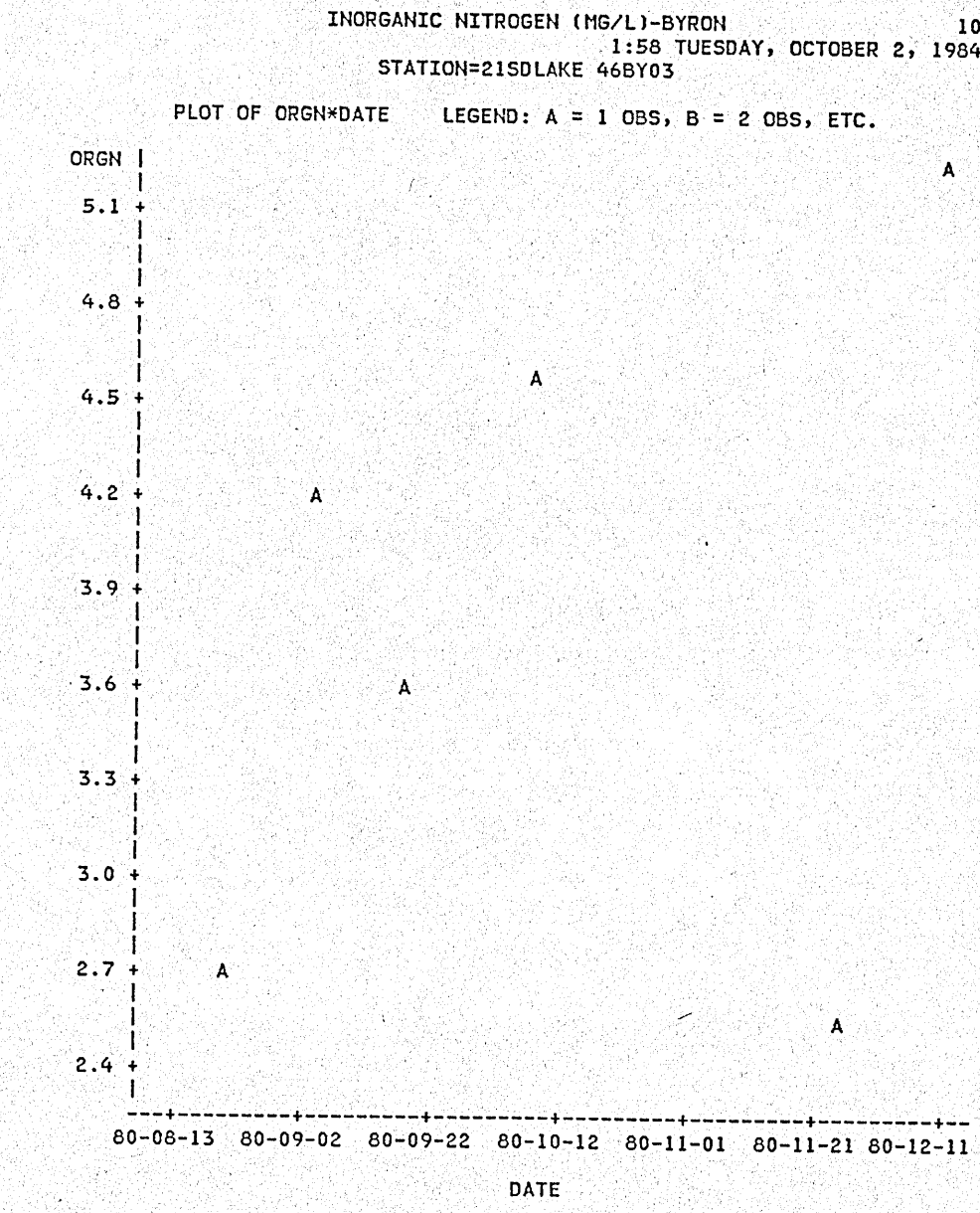

INORGANIC NITROGEN (MG/L)-BYRON 10
1:58 TUESDAY, OCTOBER 2, 1984
STATION=21SDLAKE 46BY03
PLOT OF ORGN*DATE LEGEND: A = 1 OBS, B = 2 OBS, ETC.
ORGN
5.1
4.8
4.5
4.2
3.9
3.6
3.3
3.0
2.7
2.4
80-08-13 80-09-02 80-09-22 80-10-12 80-11-01 80-11-21 80-12-11
DATE

Figure IV-66.

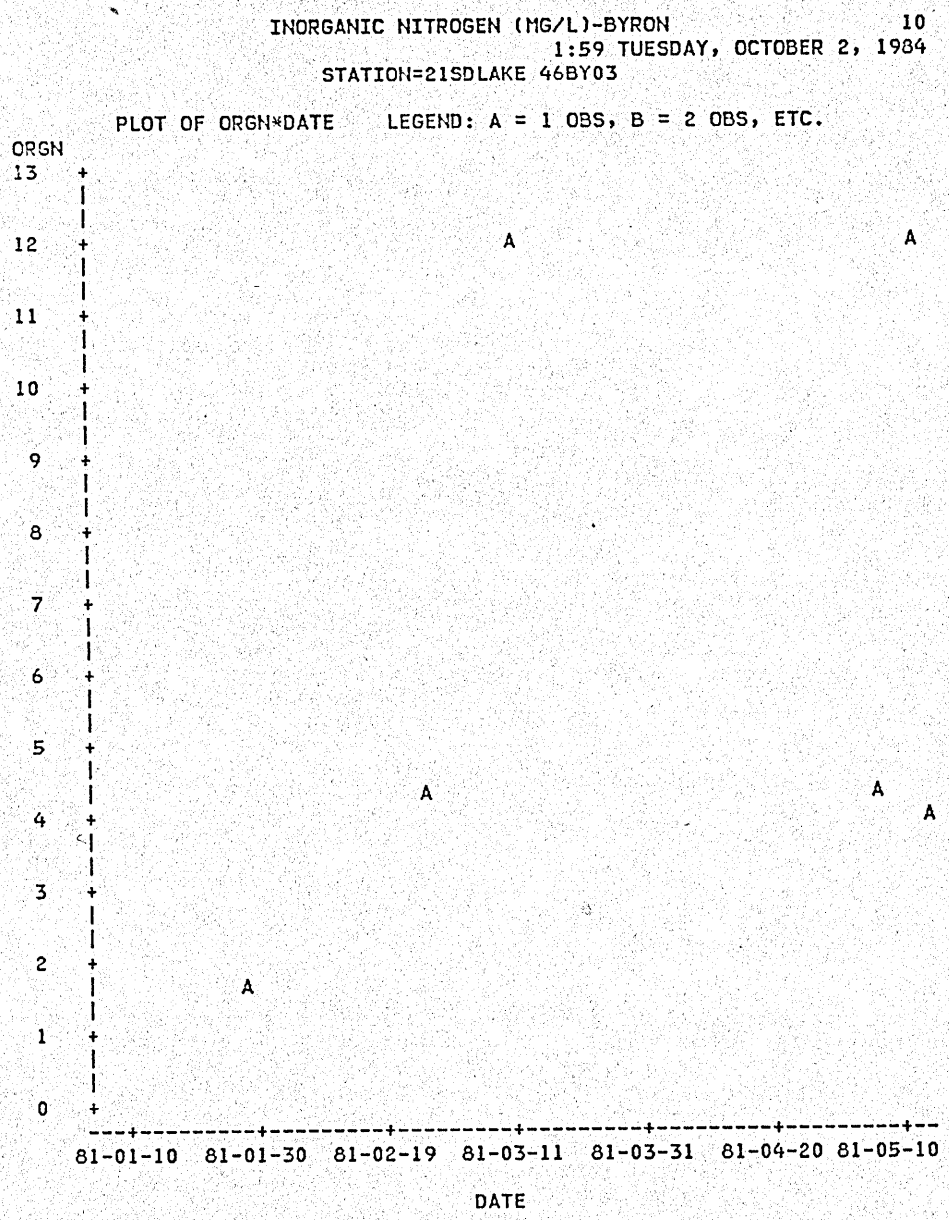

INORGANIC NITROGEN (MG/L)-BYRON 10
1:59 TUESDAY, OCTOBER 2, 1984
STATION=21SDLAKE 46BY03
PLOT OF ORGN*DATE LEGEND: A = 1 OBS, B = 2 OBS, ETC.
ORGN
13
12
11
10
9
8
7
6
5
4
3
2
1
0
81-01-10
81-01-30
81-02-19
81-03-11
81-03-31
81-04-20
81-05-10
DATE

Figure IV-67.

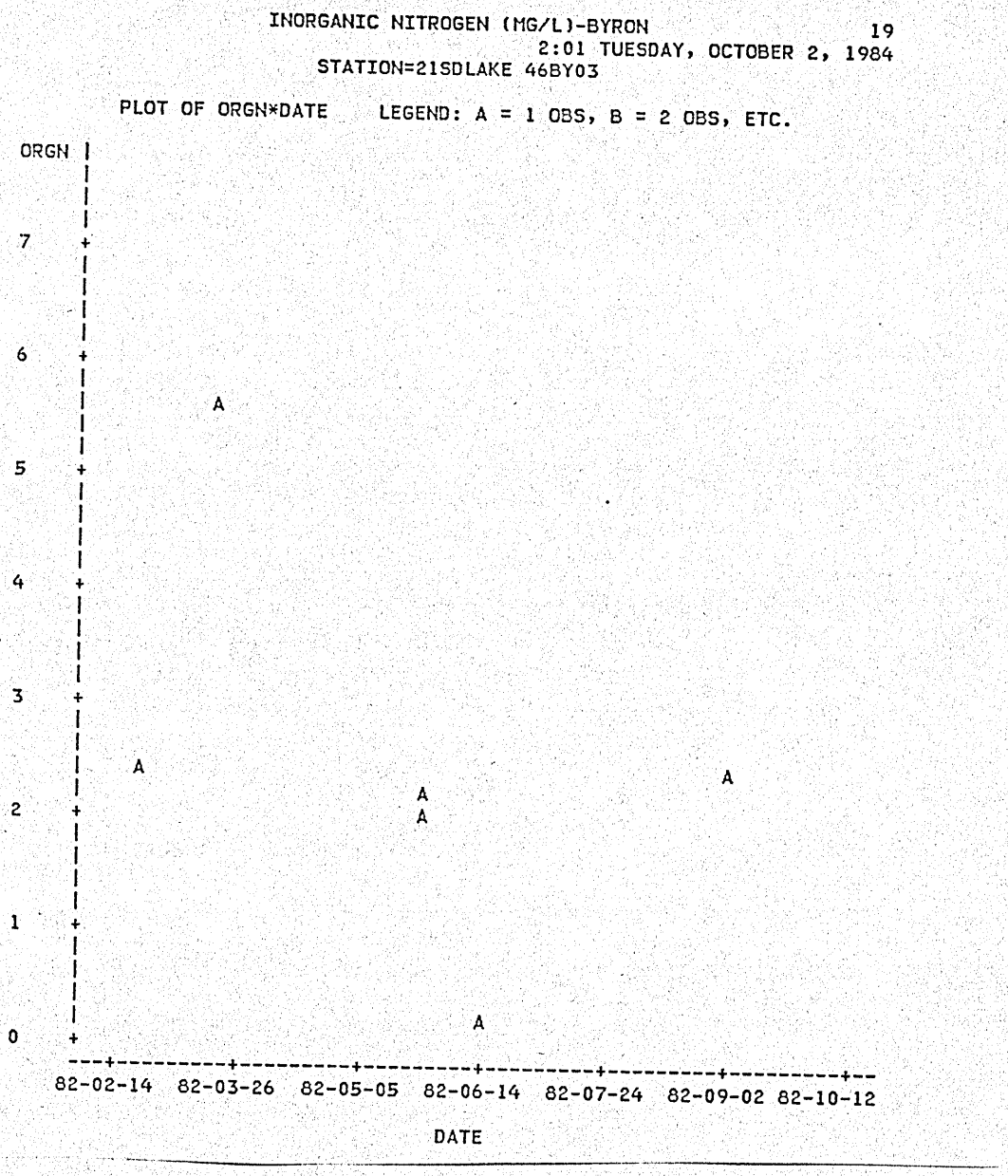

INORGANIC NITROGEN (MG/L)-BYRON 19
2:01 TUESDAY, OCTOBER 2, 1984
STATION=21SDLAKE 46BY03
PLOT OF ORGN*DATE LEGEND: A = 1 OBS, B = 2 OBS, ETC.
ORGN
7
6
5
4
3
2
1
0
82-02-14
82-03-26
82-05-05
82-06-14
82-07-24
82-09-02
82-10-12
DATE

Figure IV-68.

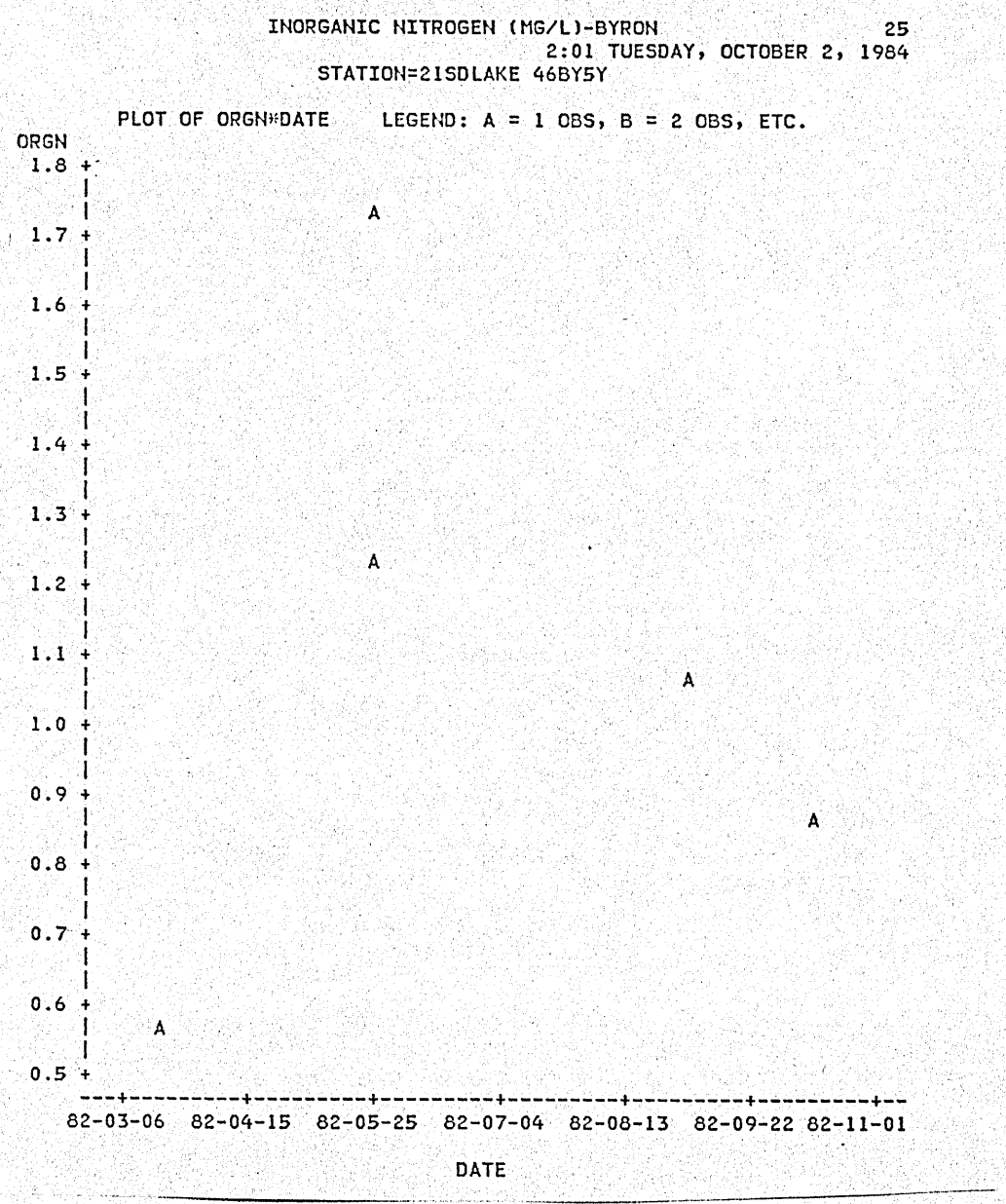

INORGANIC NITROGEN (MG/L)-BYRON 25
2:01 TUESDAY, OCTOBER 2, 1984
STATION=21SDLAKE 46BY5Y
PLOT OF ORGN*DATE LEGEND: A = 1 OBS, B = 2 OBS, ETC.
ORGN
1.8
1.7
1.6
1.5
1.4
1.3
1.2
1.1
1.0
0.9
0.8
0.7
0.6
0.5
82-03-06 82-04-15 82-05-25 82-07-04 82-08-13 82-09-22 82-11-01
DATE

Figure IV-69.

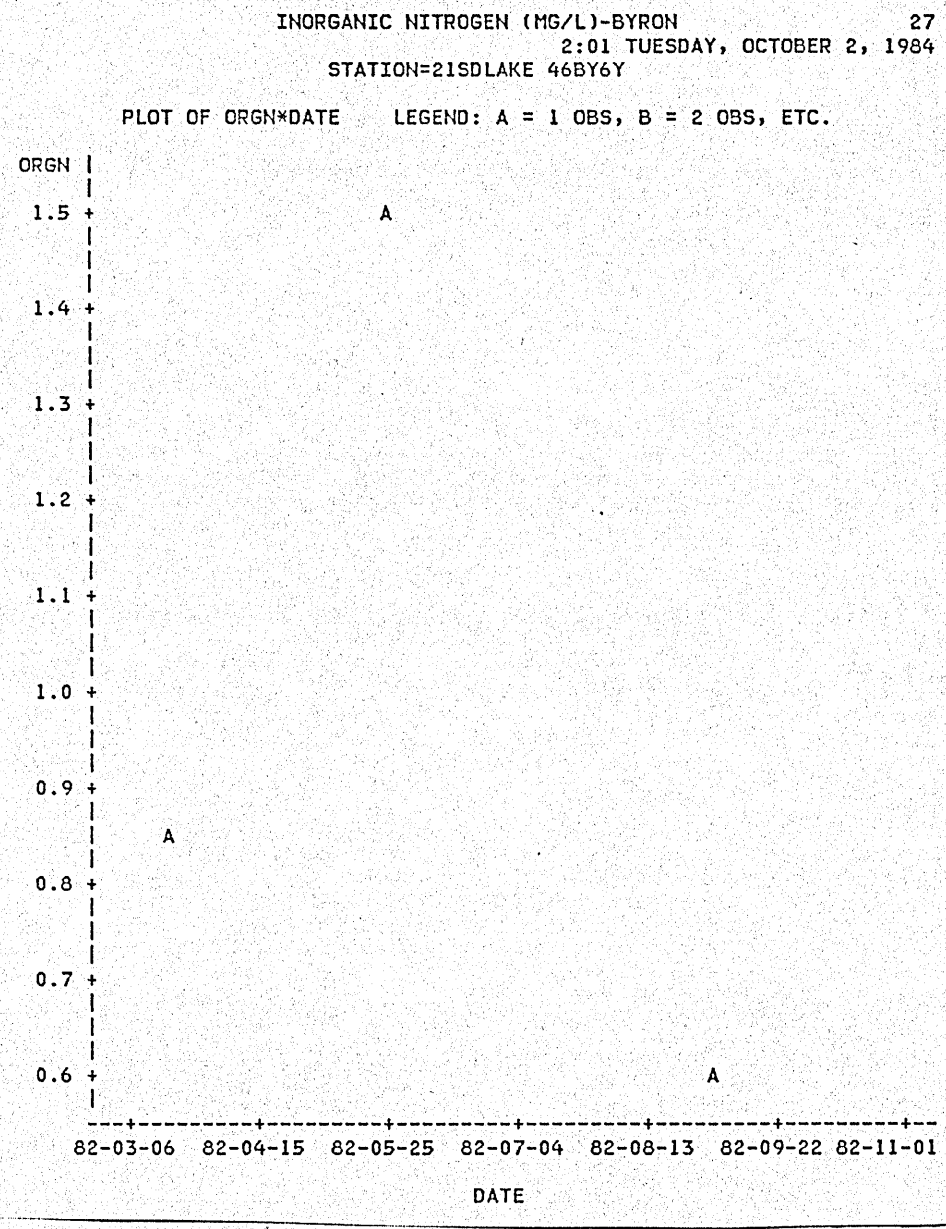

INORGANIC NITROGEN (MG/L)-BYRON 27
2:01 TUESDAY, OCTOBER 2, 1984
STATION=21SDLAKE 46BY6Y
PLOT OF ORGN*DATE LEGEND: A = 1 OBS, B = 2 OBS, ETC.
ORGN
1.5
1.4
1.3
1.2
1.1
1.0
0.9
0.8
0.7
0.6
A
A
A
82-03-06 82-04-15 82-05-25 82-07-04 82-08-13 82-09-22 82-11-01
DATE

Figure IV-70.

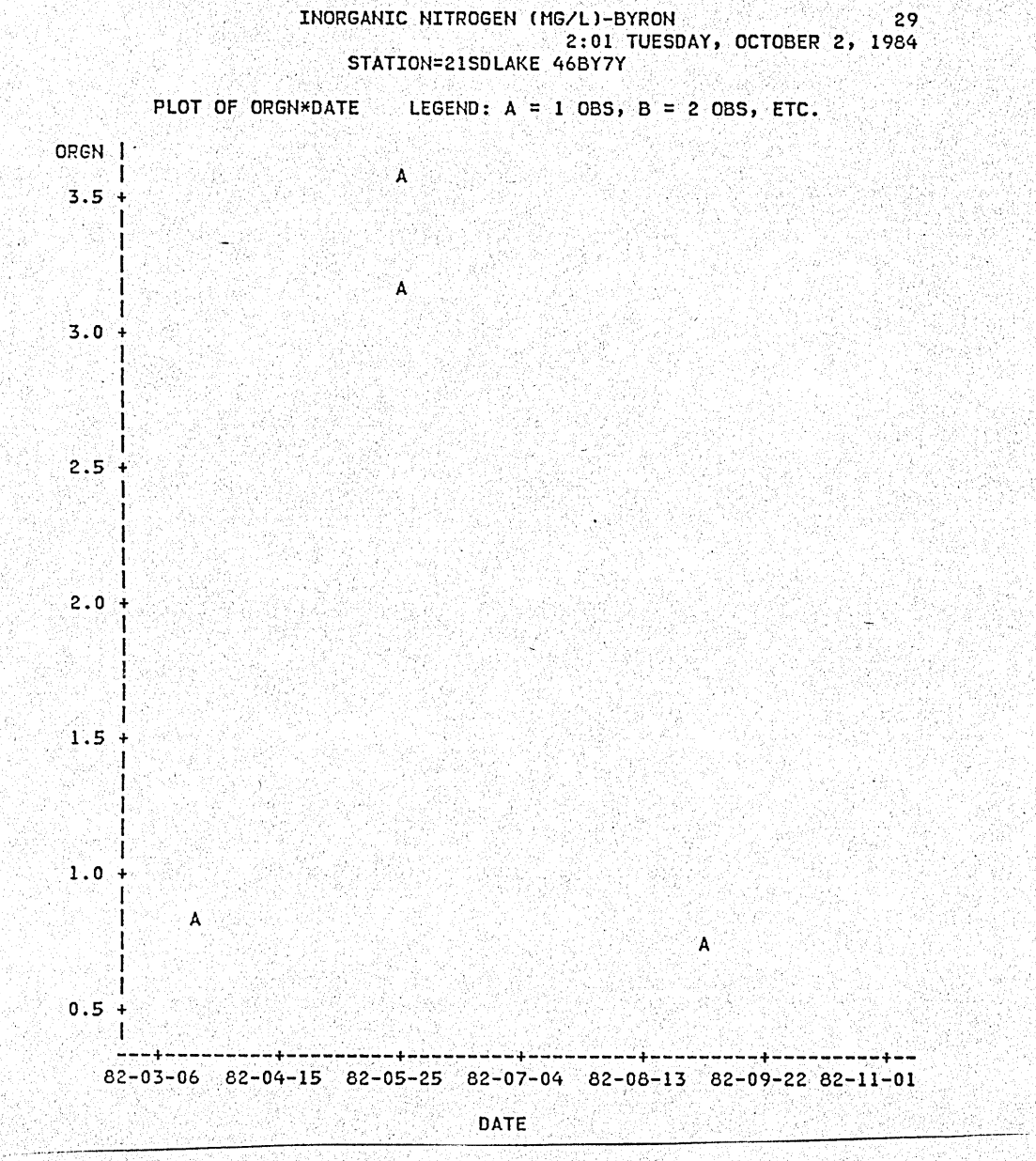

INORGANIC NITROGEN (MG/L)-BYRON 29
2:01 TUESDAY, OCTOBER 2, 1984
STATION=21SDLAKE 46BY7Y
PLOT OF ORGN*DATE LEGEND: A = 1 OBS, B = 2 OBS, ETC.
ORGN
3.5
3.0
2.5
2.0
1.5
1.0
0.5
82-03-06 82-04-15 82-05-25 82-07-04 82-08-13 82-09-22 82-11-01
DATE

Figure IV-71.

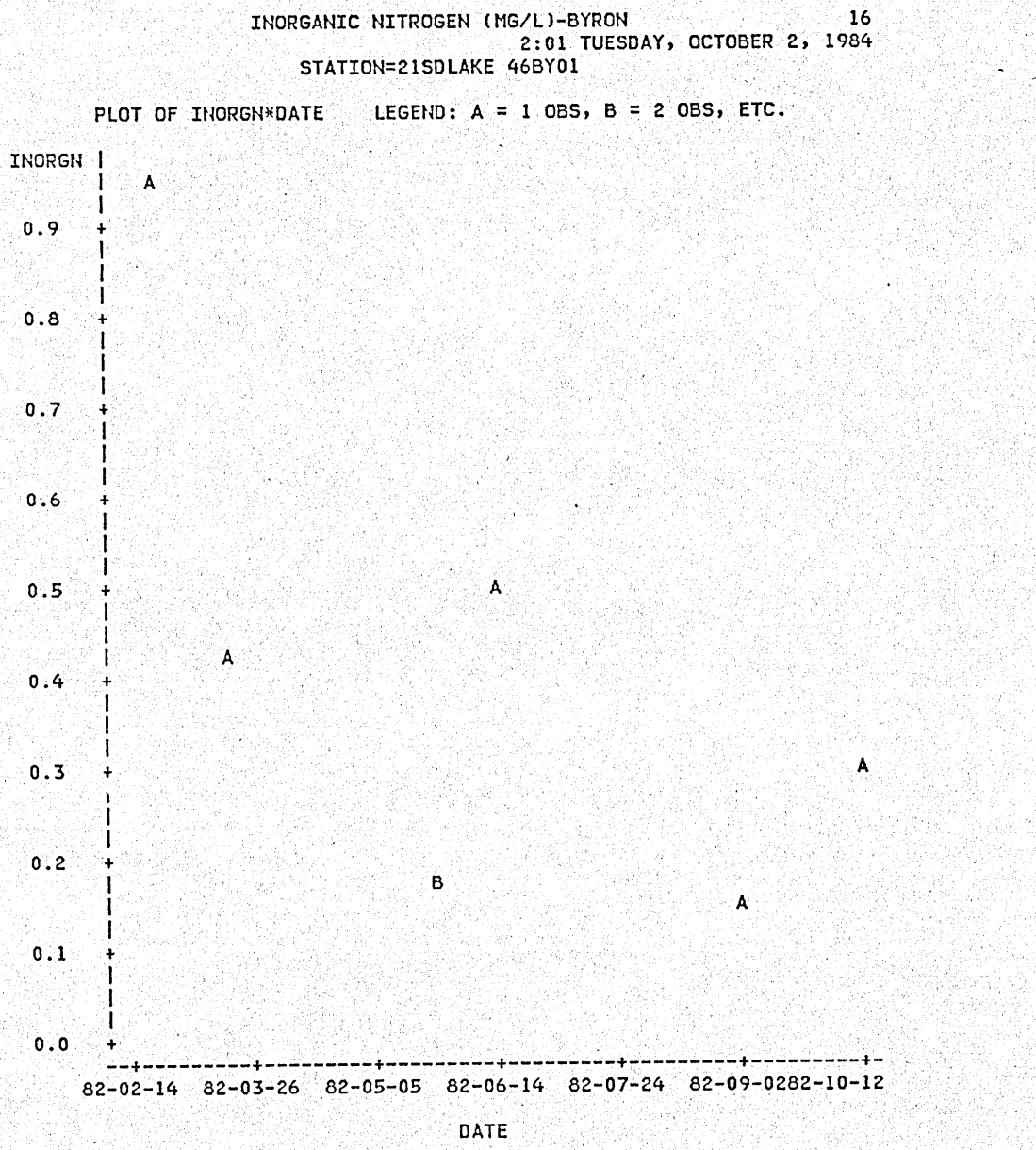

INORGANIC NITROGEN (MG/L)-BYRON 16
2:01 TUESDAY, OCTOBER 2, 1984
STATION=21SDLAKE 46BY01
PLOT OF INORGN*DATE LEGEND: A = 1 OBS, B = 2 OBS, ETC.
INORGN
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
82-02-14 82-03-26 82-05-05 82-06-14 82-07-24 82-09-0282-10-12
DATE

Figure IV-72.

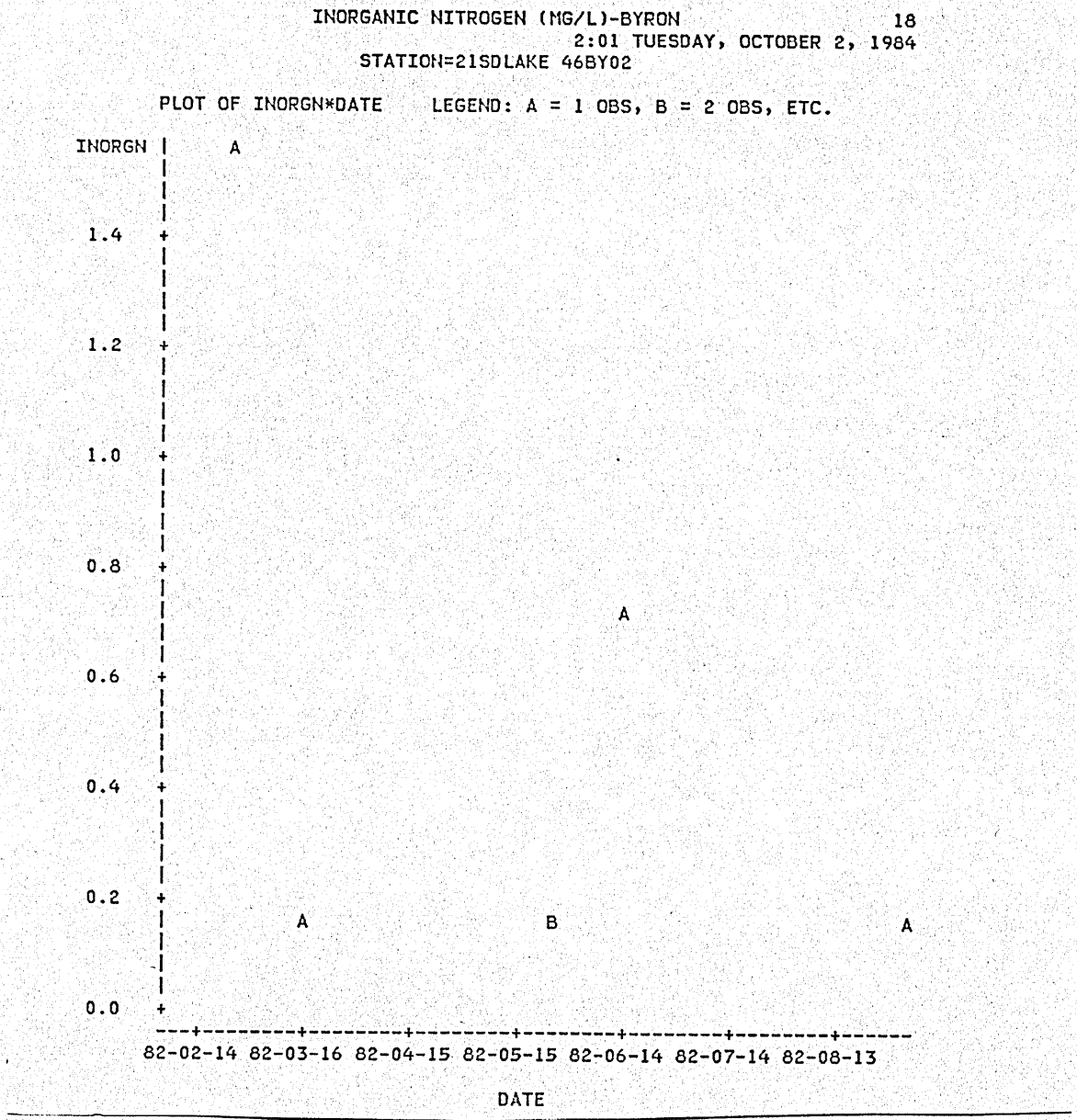

INORGANIC NITROGEN (MG/L)-BYRON 18
2:01 TUESDAY, OCTOBER 2, 1984
STATION=21SDLAKE 46BY02
PLOT OF INORGN*DATE LEGEND: A = 1 OBS, B = 2 OBS, ETC.
INORGN
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
82-02-14 82-03-16 82-04-15 82-05-15 82-06-14 82-07-14 82-08-13
DATE

Figure IV-73.

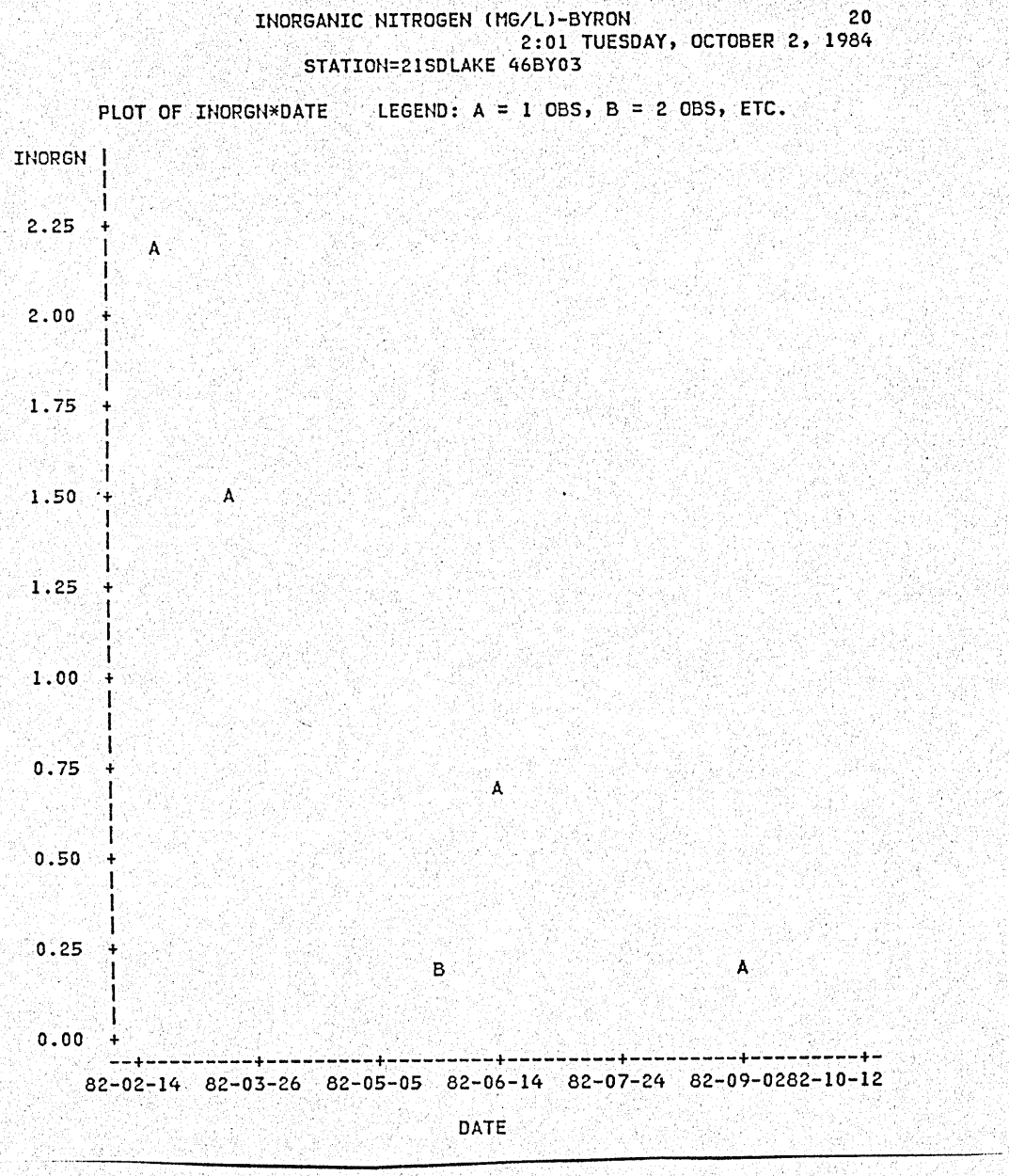

INORGANIC NITROGEN (MG/L)-BYRON 20
2:01 TUESDAY, OCTOBER 2, 1984
STATION=21SDLAKE 46BY03
PLOT OF INORGN*DATE LEGEND: A = 1 OBS, B = 2 OBS, ETC.
INORGN
2.25
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
82-02-14 82-03-26 82-05-05 82-06-14 82-07-24 82-09-02 82-10-12
DATE

Figure IV-74.

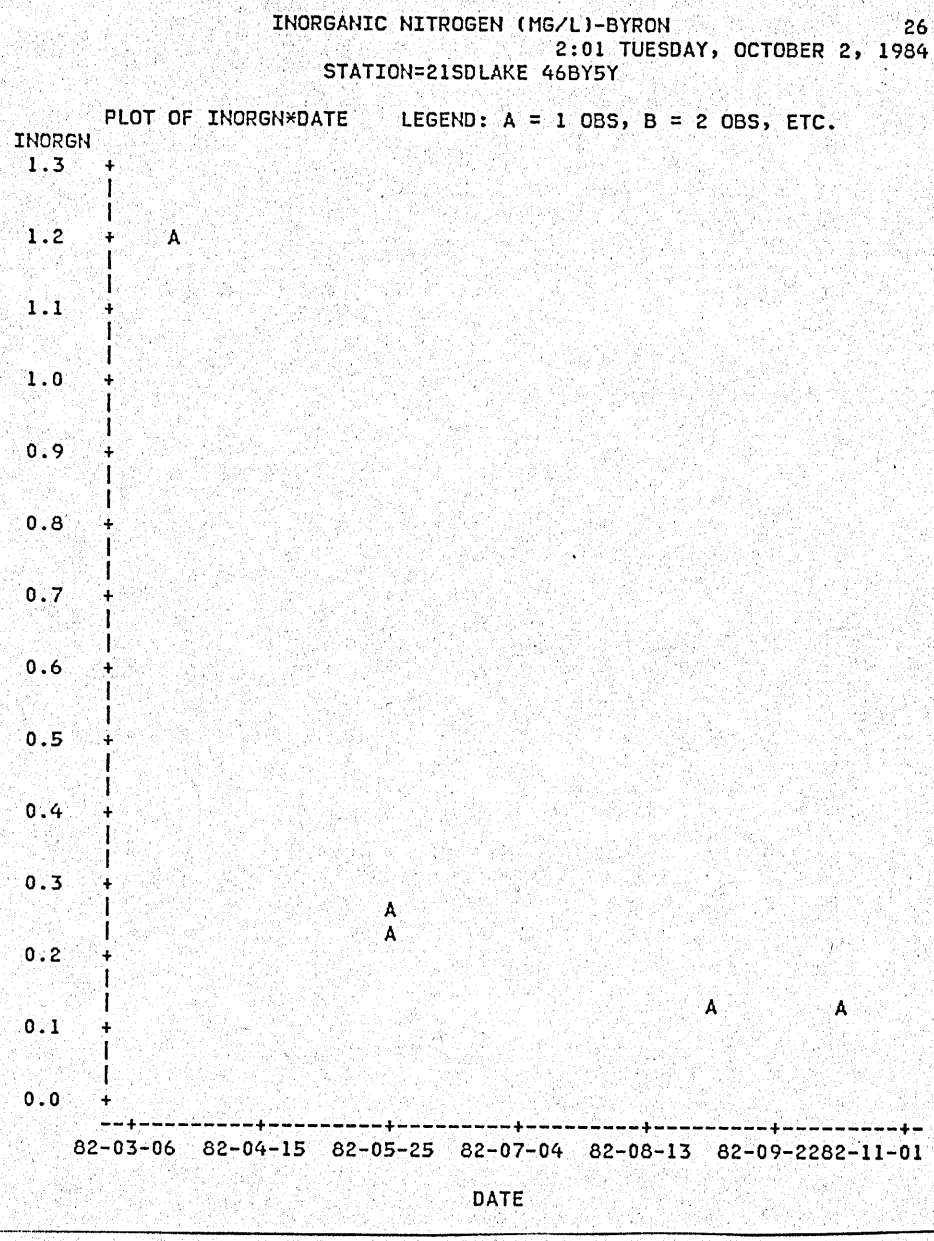

INORGANIC NITROGEN (MG/L)-BYRON 26
2:01 TUESDAY, OCTOBER 2, 1984
STATION=21SDLAKE 46BY5Y
PLOT OF INORGN*DATE LEGEND: A = 1 OBS, B = 2 OBS, ETC.
INORGN
1.3
1.2
1.1
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
82-03-06 82-04-15 82-05-25 82-07-04 82-08-13 82-09-2282-11-01
DATE

Figure IV-75.

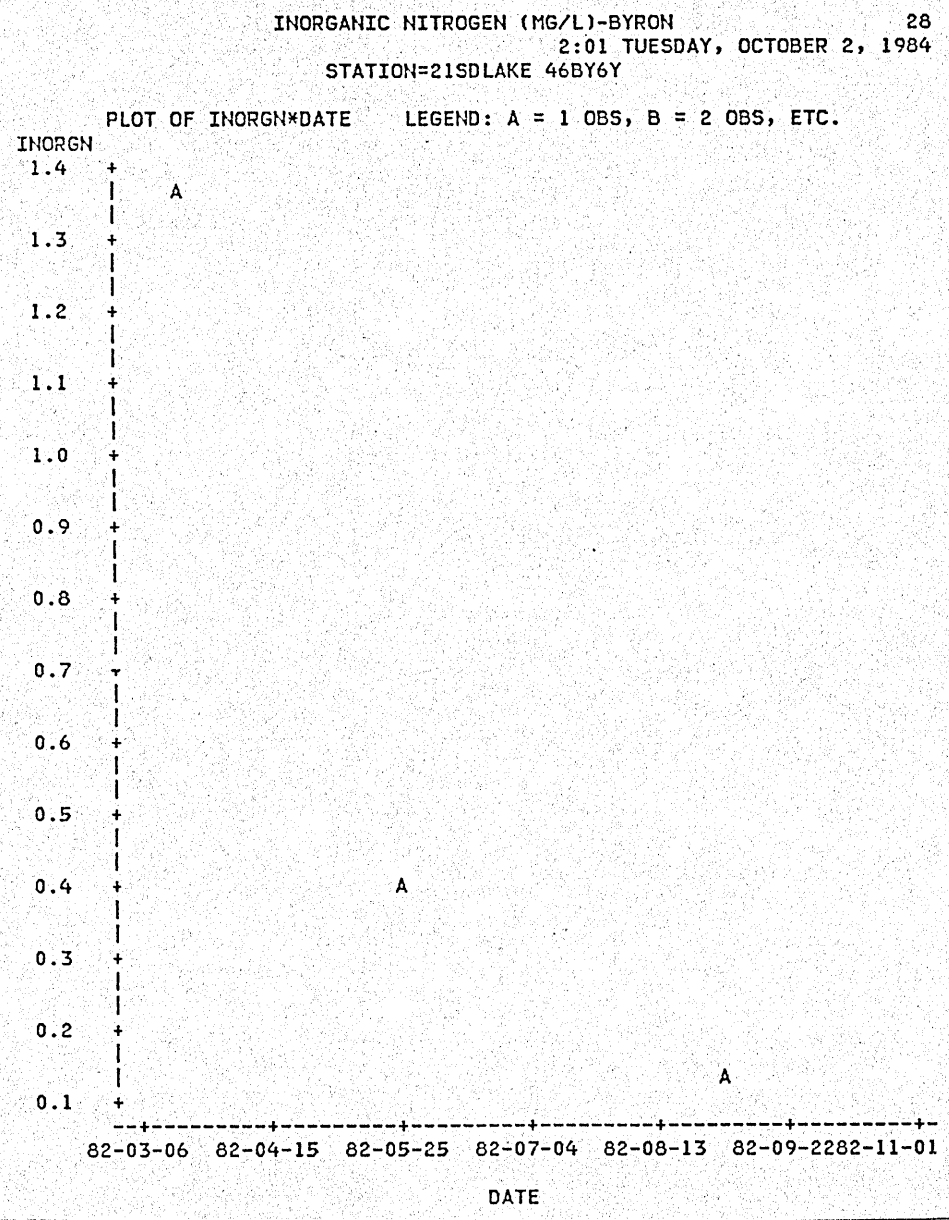
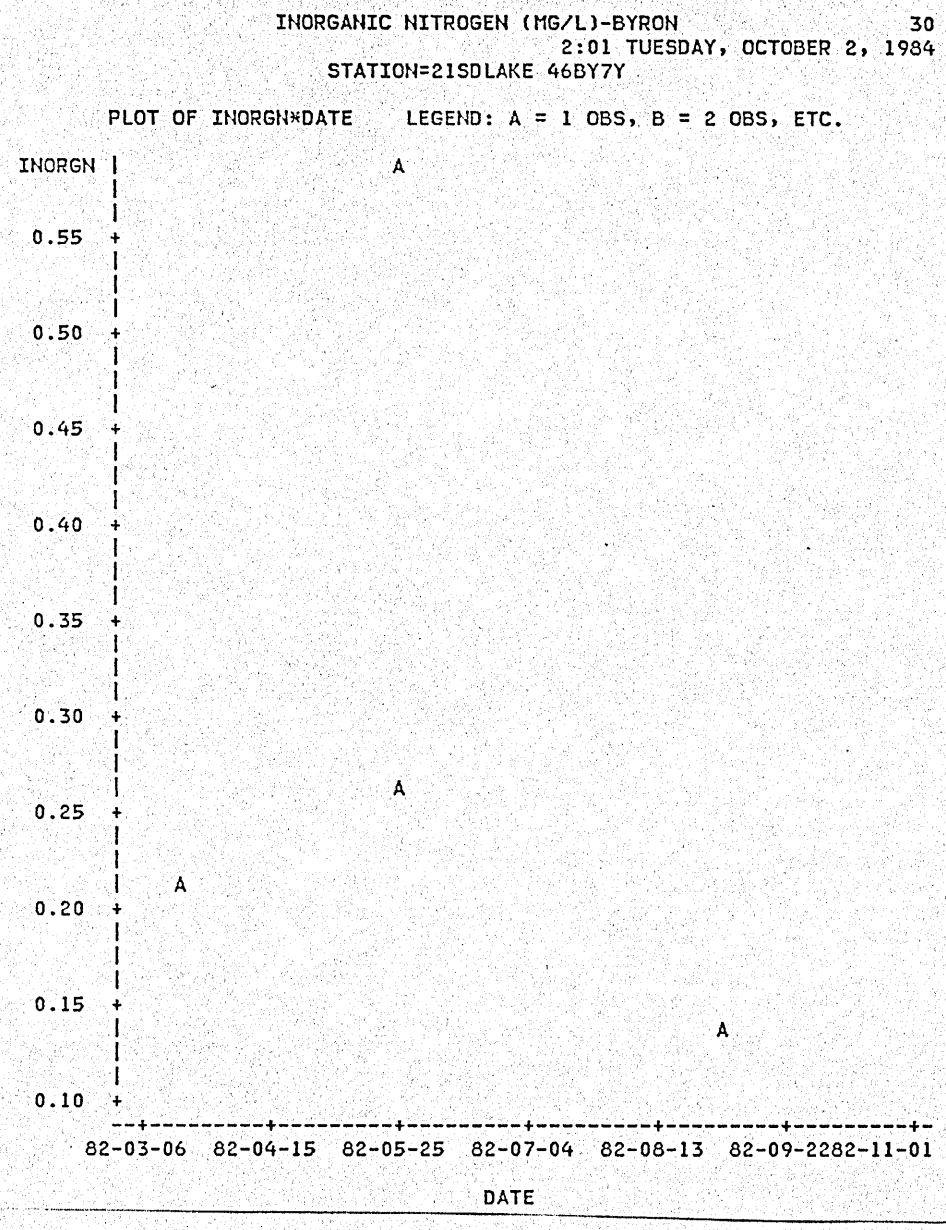
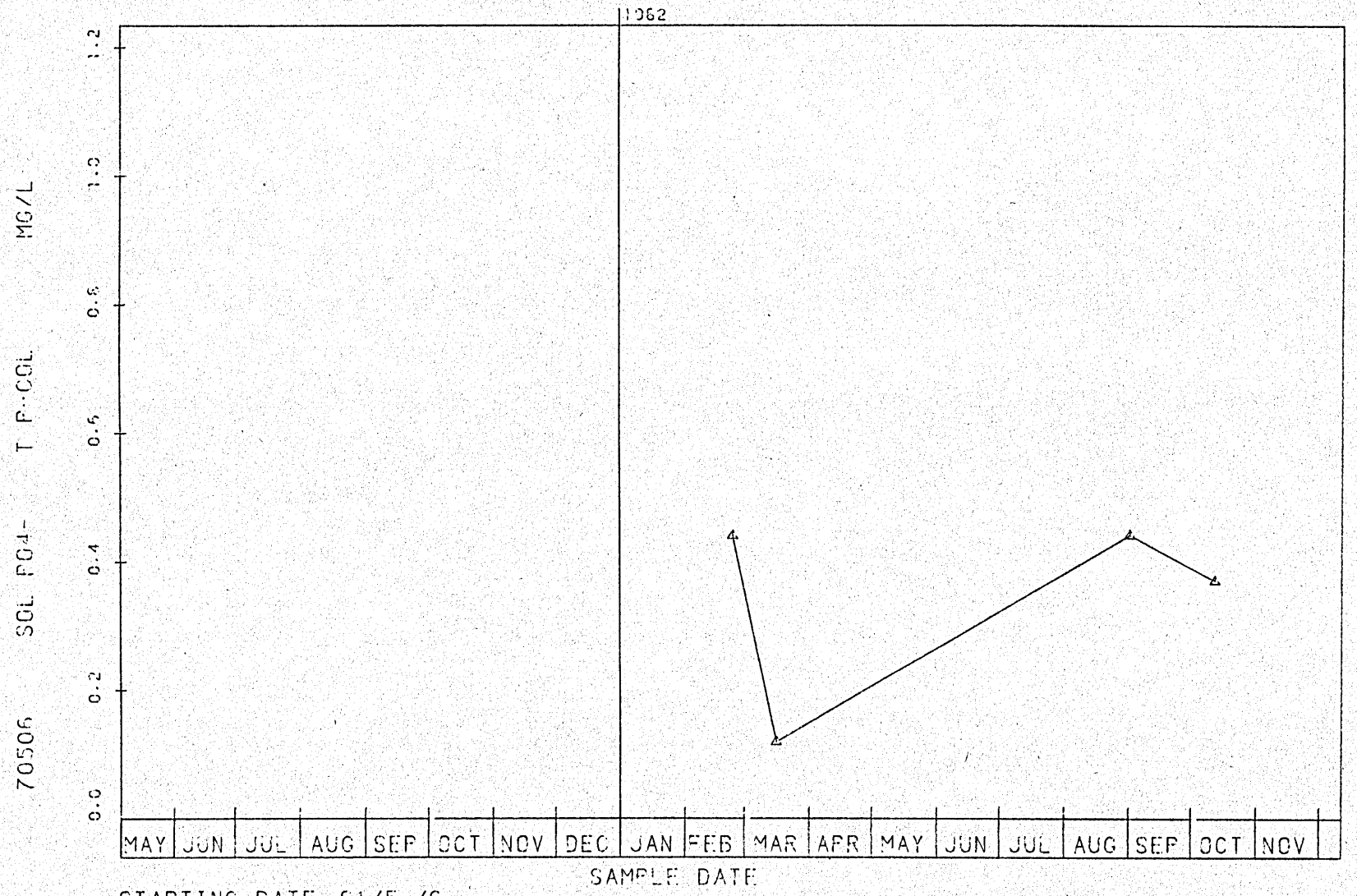

INORGANIC NITROGEN (MG/L)-BYRON 28
2:01 TUESDAY, OCTOBER 2, 1984
STATION=21SDLAKE 46BY6Y
PLOT OF INORGN*DATE LEGEND: A = 1 OBS, B = 2 OBS, ETC.
INORGN
1.4
1.3
1.2
1.1
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
A
A
A
82-03-06 82-04-15 82-05-25 82-07-04 82-08-13 82-09-2282-11-01
DATE

Figure IV-76.


INORGANIC NITROGEN (MG/L)-BYRON 30
2:01 TUESDAY, OCTOBER 2, 1984
STATION=21SDLAKE 46BY7Y
PLOT OF INORGN*DATE LEGEND: A = 1 OBS, B = 2 OBS, ETC.
INORGN
0.55
0.50
0.45
0.40
0.35
0.30
0.25
0.20
0.15
0.10
82-03-06 82-04-15 82-05-25 82-07-04 82-08-13 82-09-2282-11-01
DATE

46BY01
44 33 22.0 098 08 16.0 2
LK BYRON OFF SOUTH SHORE 113N-61W-S35 BBCC
46005 SOUTH DAKOTA BEADLE
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663774-0693792

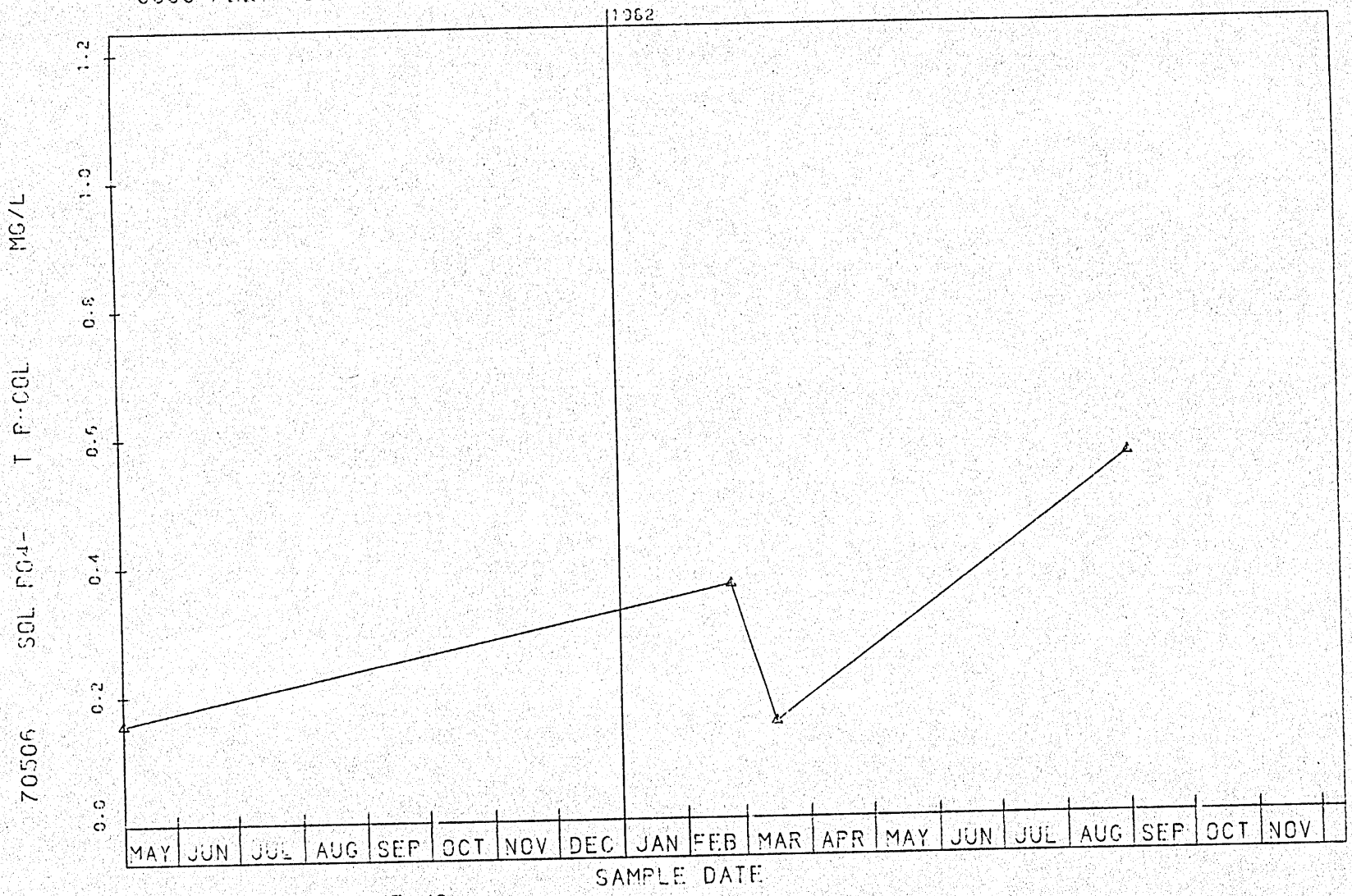
Figure IV-77.



STARTING DATE 61/5 /6

46BY02
44 34 00.0 098 07 21.0 2
LK BYRON OFF N PENINSULA 113N-61W-S26 DABB
46005 SOUTH DAKOTA BEADLE
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSF 0663775-0693793

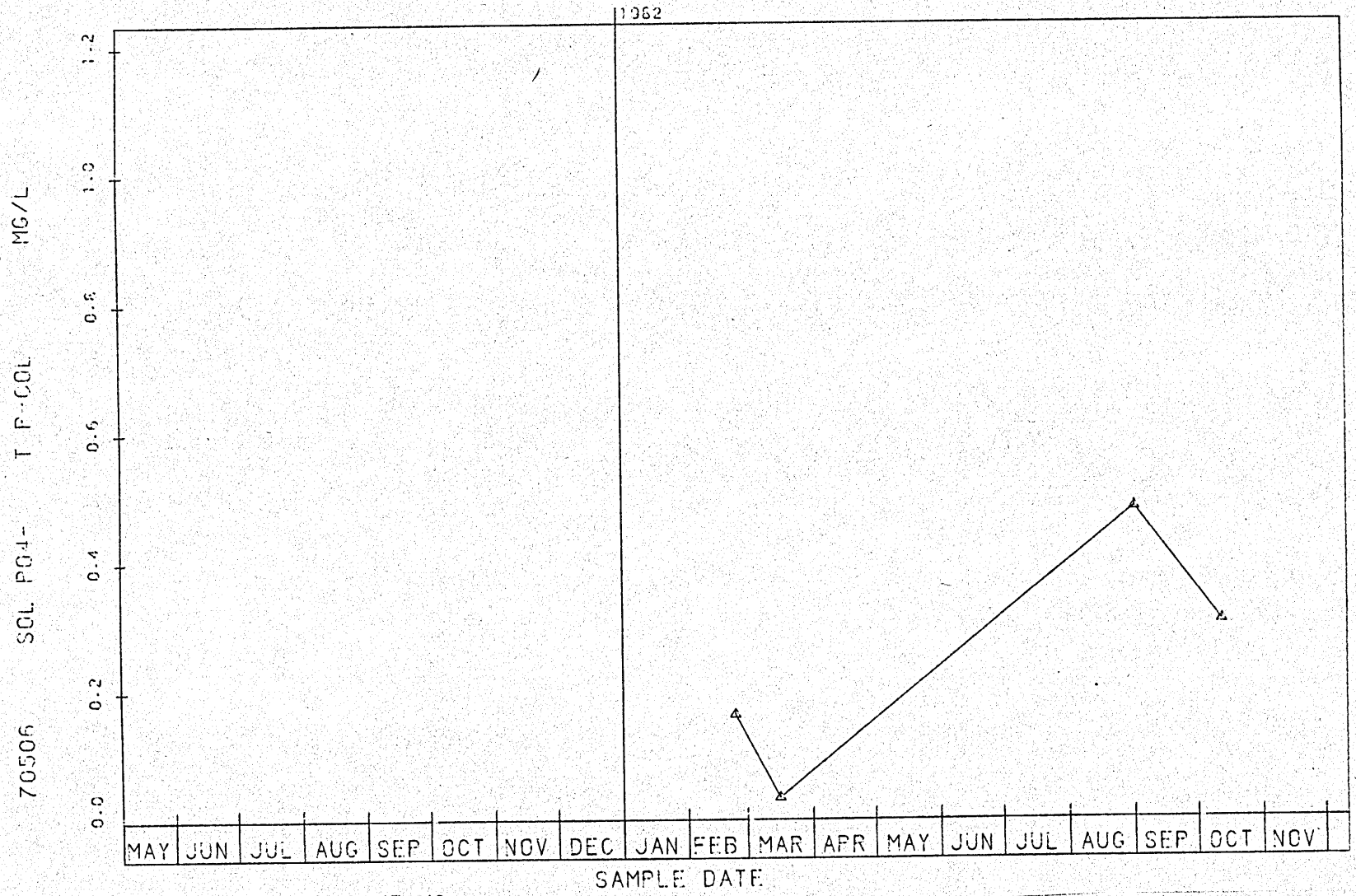
Figure IV-78.



STARTING DATE 81/5 /6

46BY03
44 34 30.0 098 09 11.0 4
LK BYRON OFF NW SHORE 113N-61W-S22 CDCC
46005 SOUTH DAKOTA BEADLE
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663776-0693794

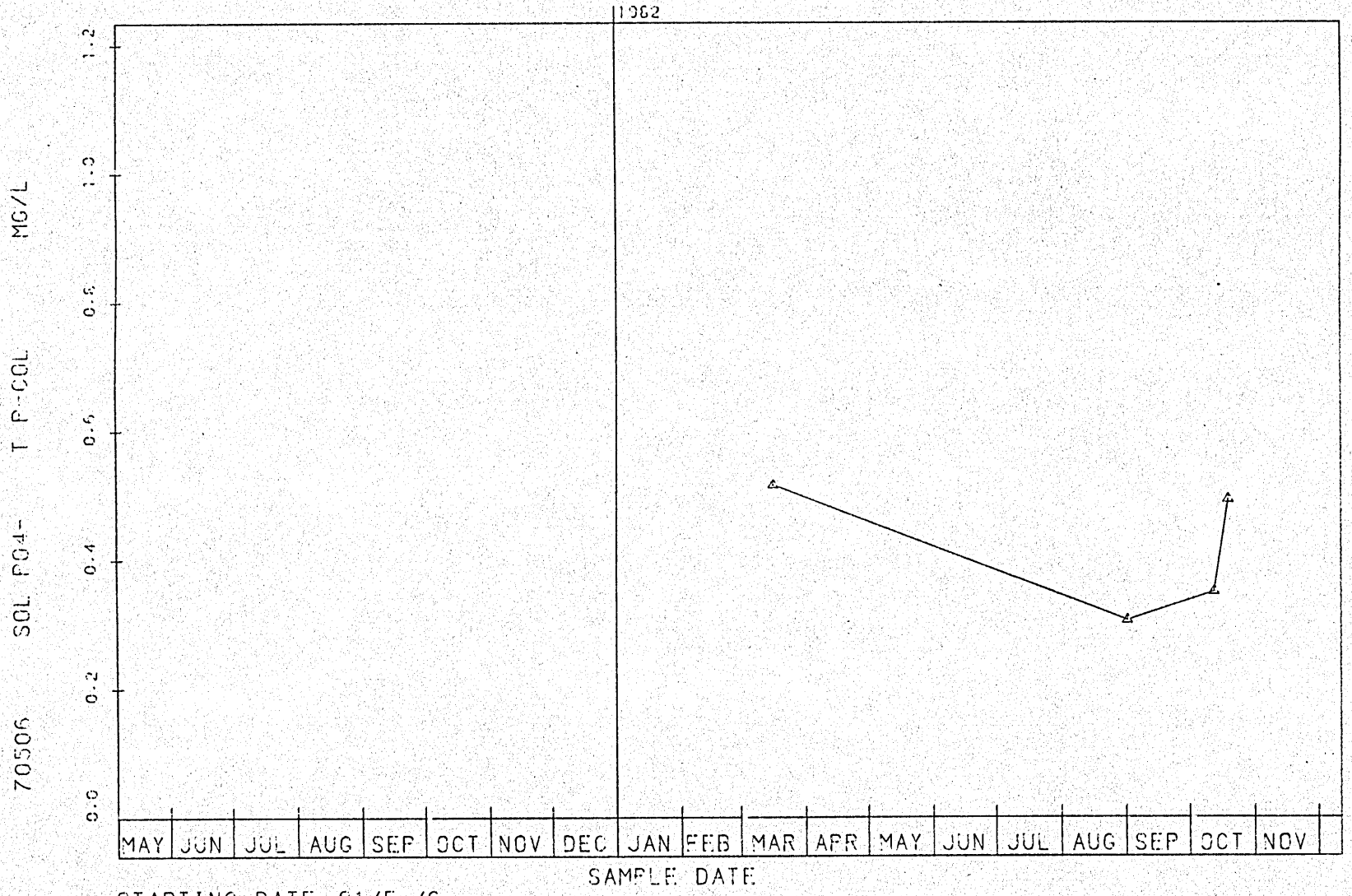
Figure IV-79.



STARTING DATE 81/5 /6

46BY5Y
44 34 31.0 098 09 18.0 2
FOSTER CR INLET TO NW LAKE BYRON 113N-61W-S22CCD
46005 SOUTH DAKOTA BEADLE
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663782-0693800

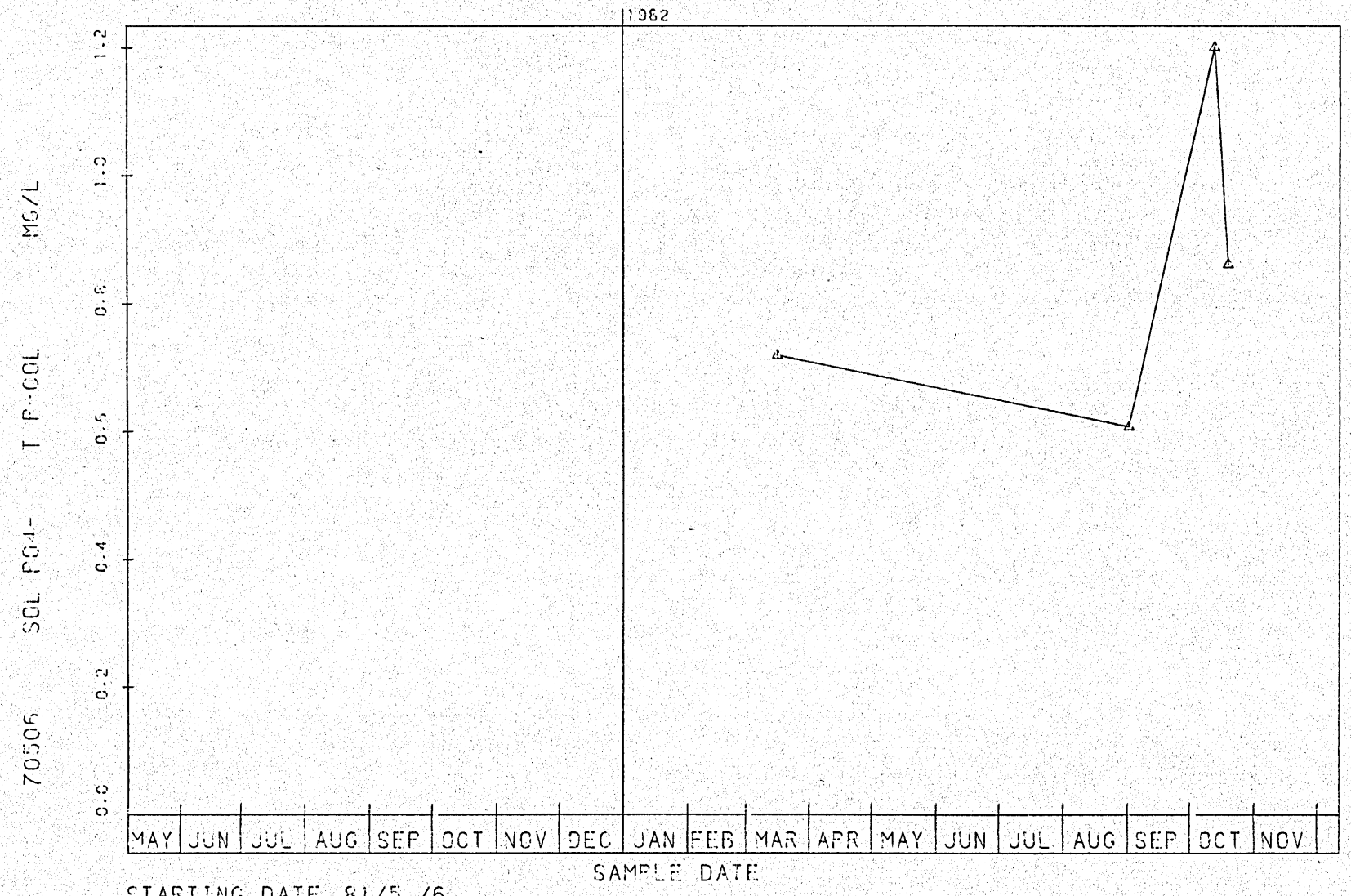
Figure IV-80.



STARTING DATE 81/5 /6

46BY6Y
44 34 29.0 098 07 24.0 2
NORTH TRIB INLET TO LK BYRON 113N-61W-S23 DAC
46005 SOUTH DAKOTA BEADLE
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663783-0693801

Figure IV-81.



46BY7Y
44 34 05.0 098 03 25.0 2
E INLET TO LK BYRON 113N-60W-S30 BCDB
46005 SOUTH DAKOTA BEADLE
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663784-0693802

Figure IV-82.

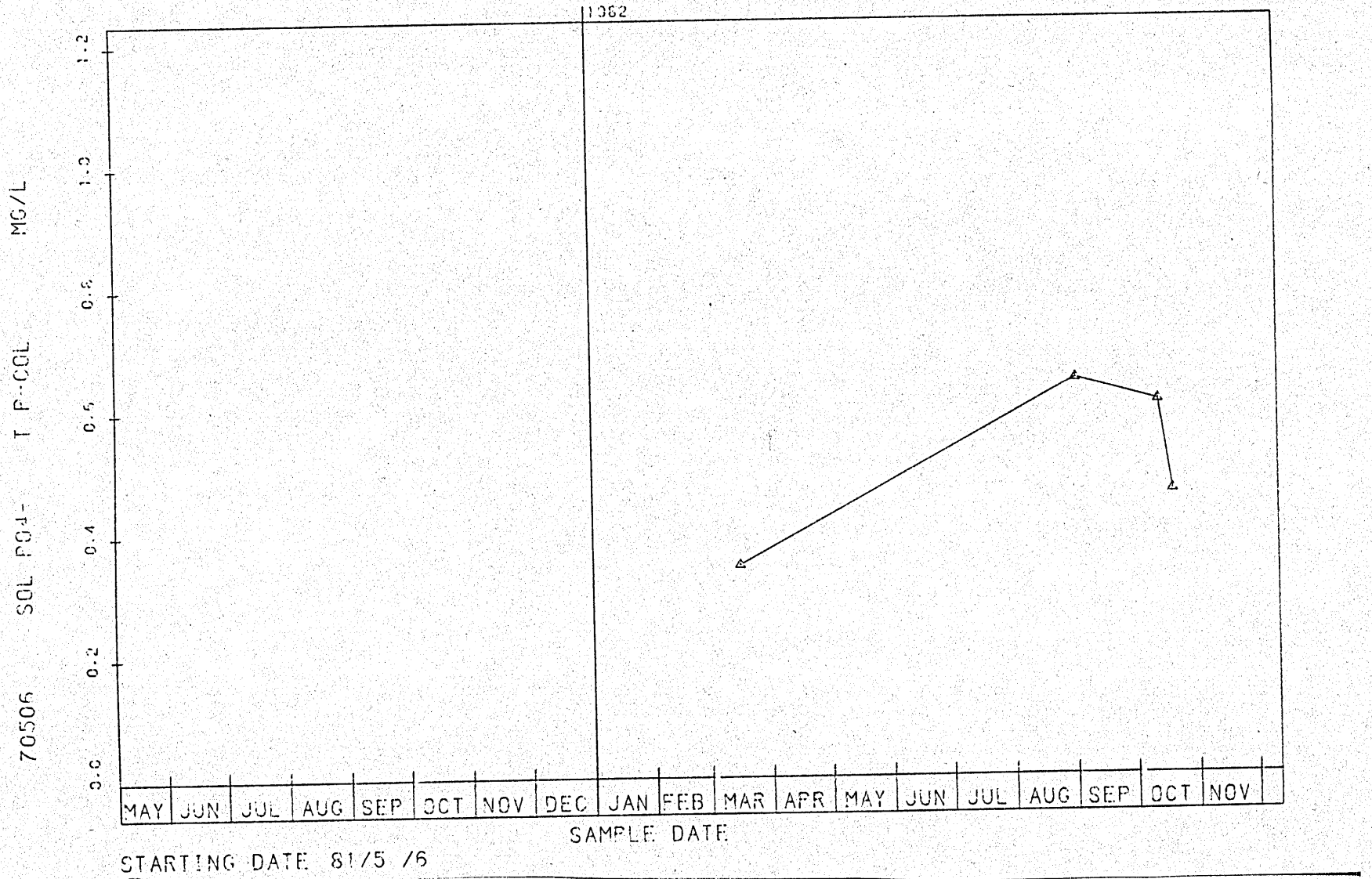


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Figure IV-83.

46BY01
44 33 22.0 098 08 16.0 2
LK BYRON OFF SOUTH SHORE 113N-61W-S35 BBCC
46005 SOUTH DAKOTA BEADLE
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663774-0693792

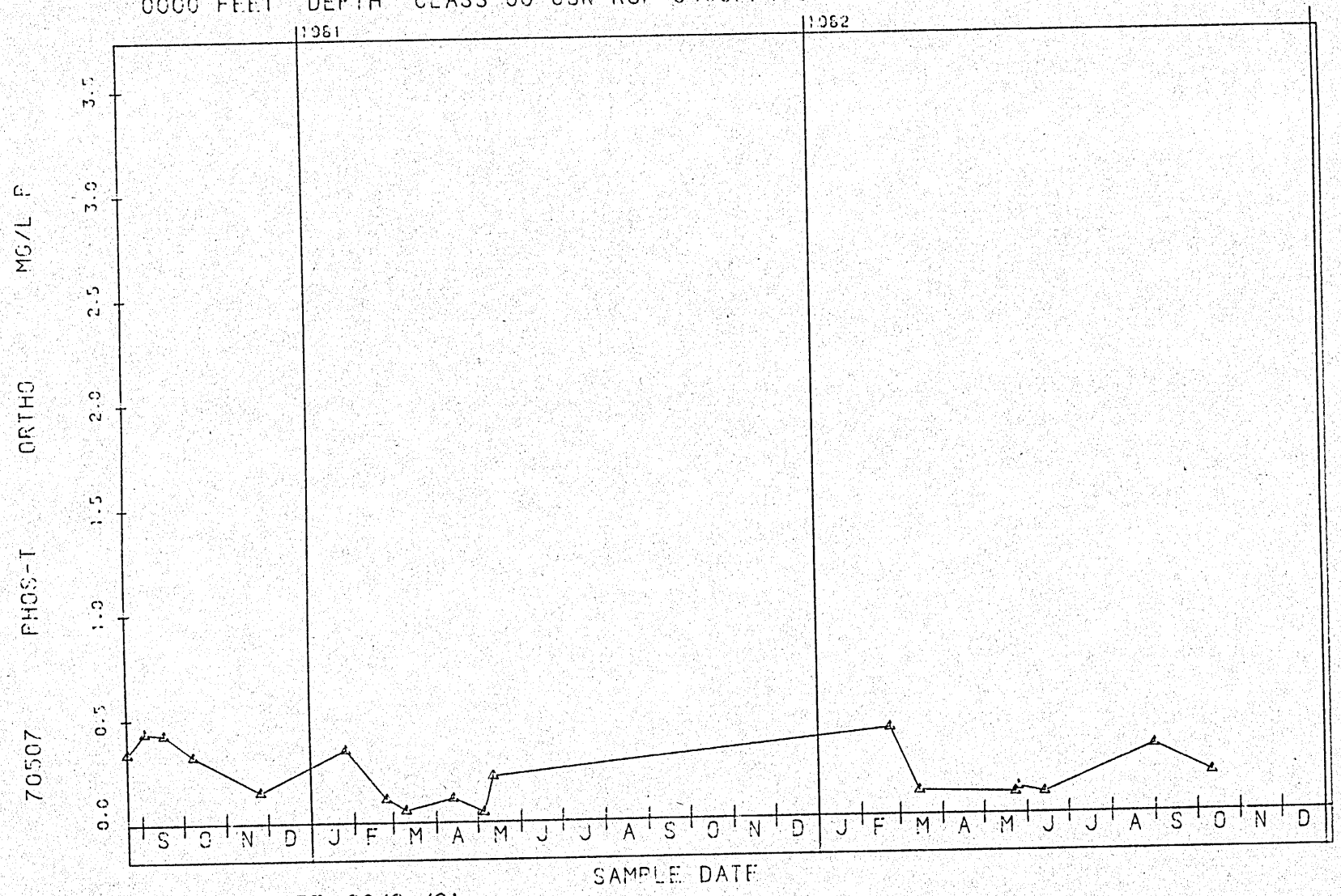

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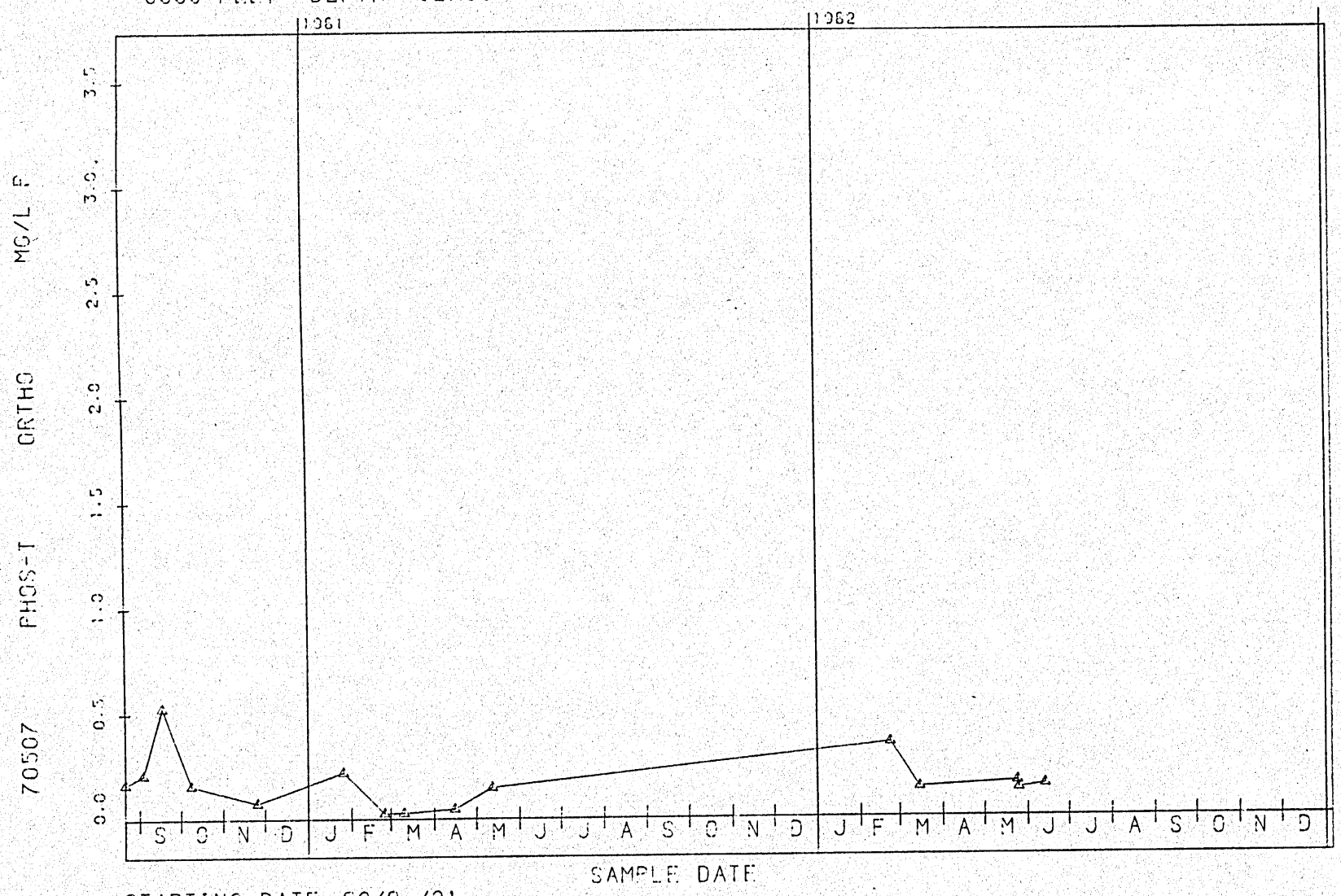
Figure IV-84.


46BY02
44 34 00.0 098 07 21.0 2
LK BYRON OFF N PENINSULA 113N-61W-S26 DABB
46005 SOUTH DAKOTA BEADLE
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSF 0663775-0693793
1961
1962
70507 PHOS-T ORTHO MG/L P
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
S O N D J F M A M J J A S O N D J F M A M J J A S O N D
SAMPLE DATE
STARTING DATE 80/8 /21

46BY03
44 34 30.0 098 09 11.0 4
LK BYRON OFF NW SHORE 113N-61W-S22 CDCC
46005 SOUTH DAKOTA BEADLE
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663776-0693794

Figure IV-85.

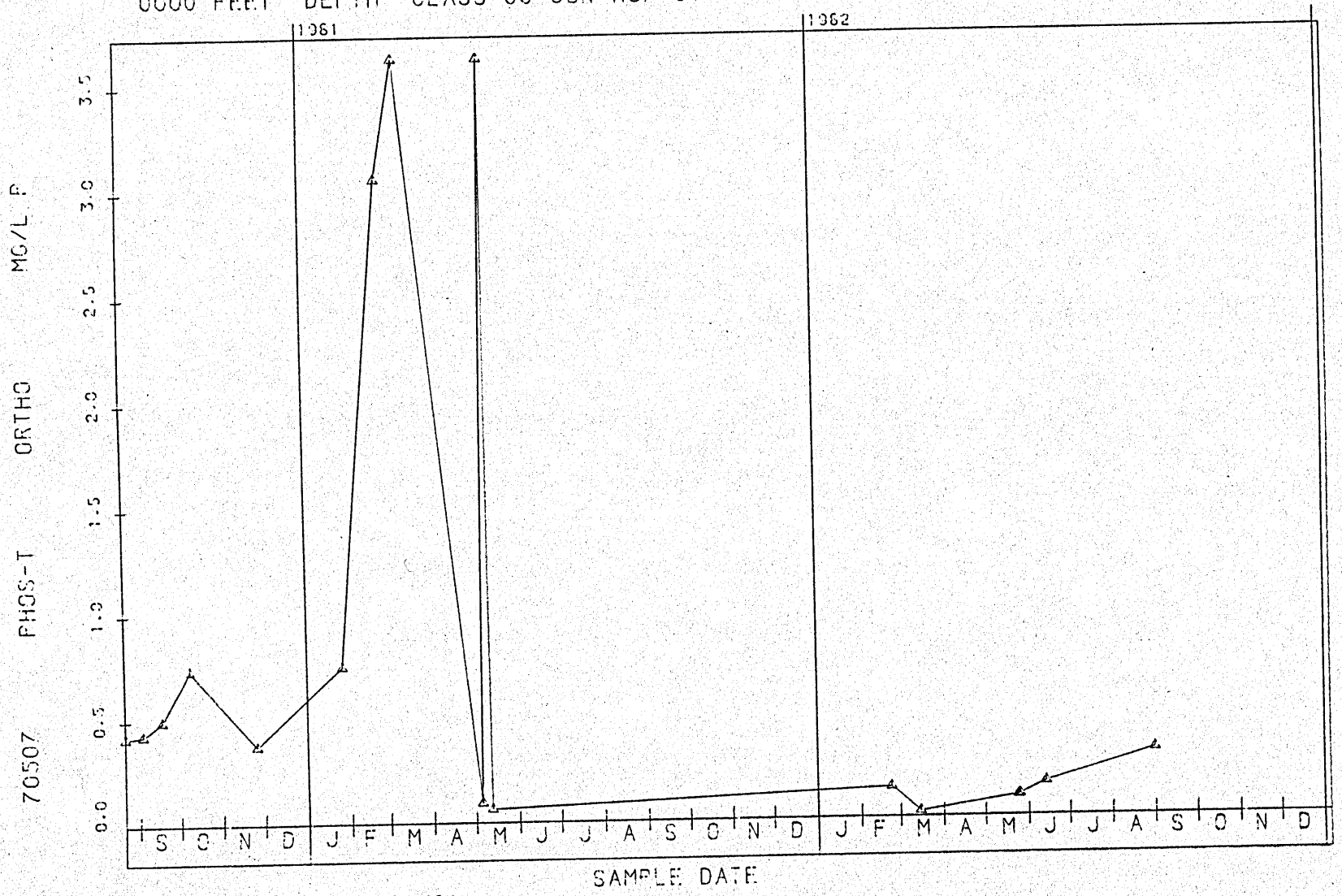


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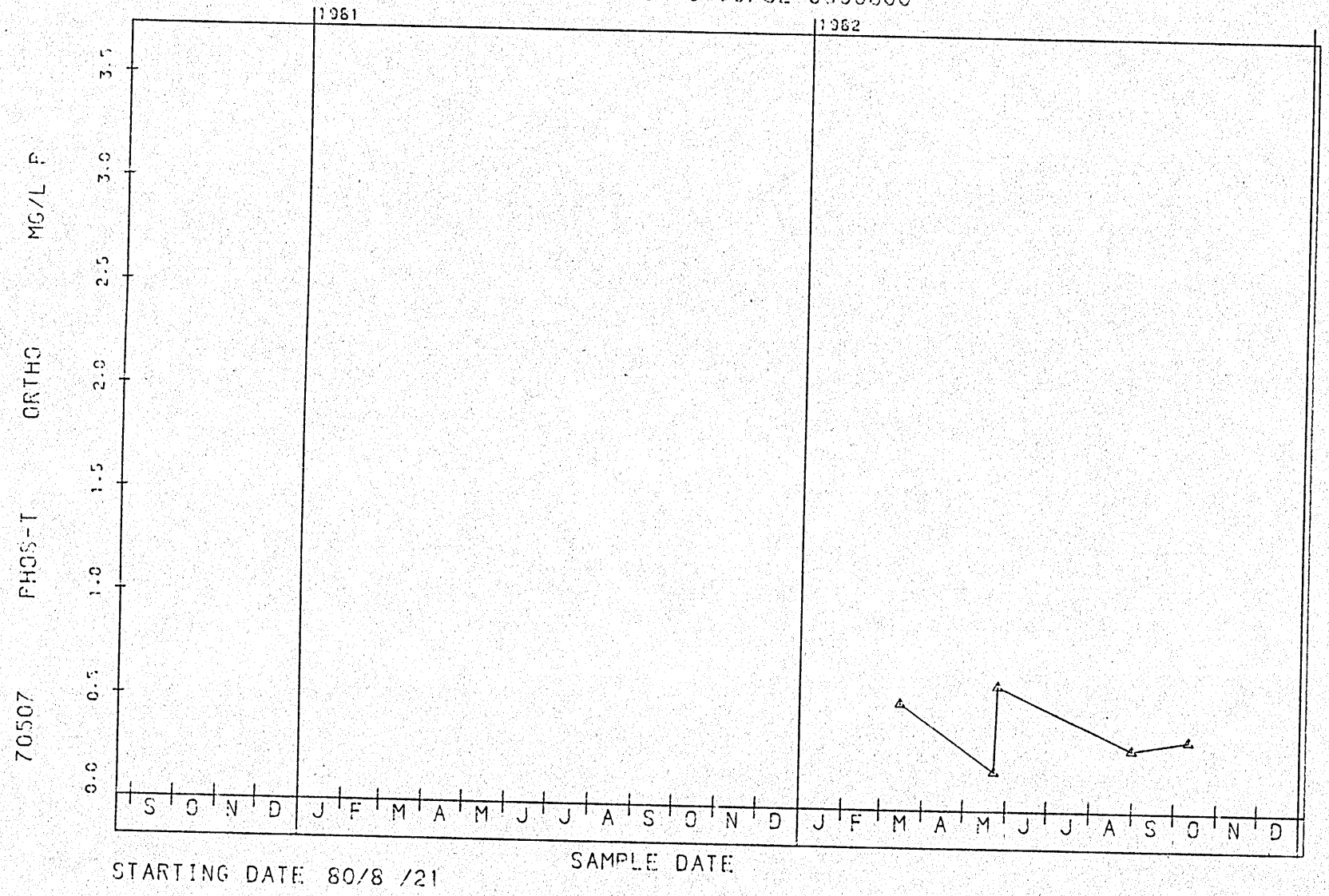
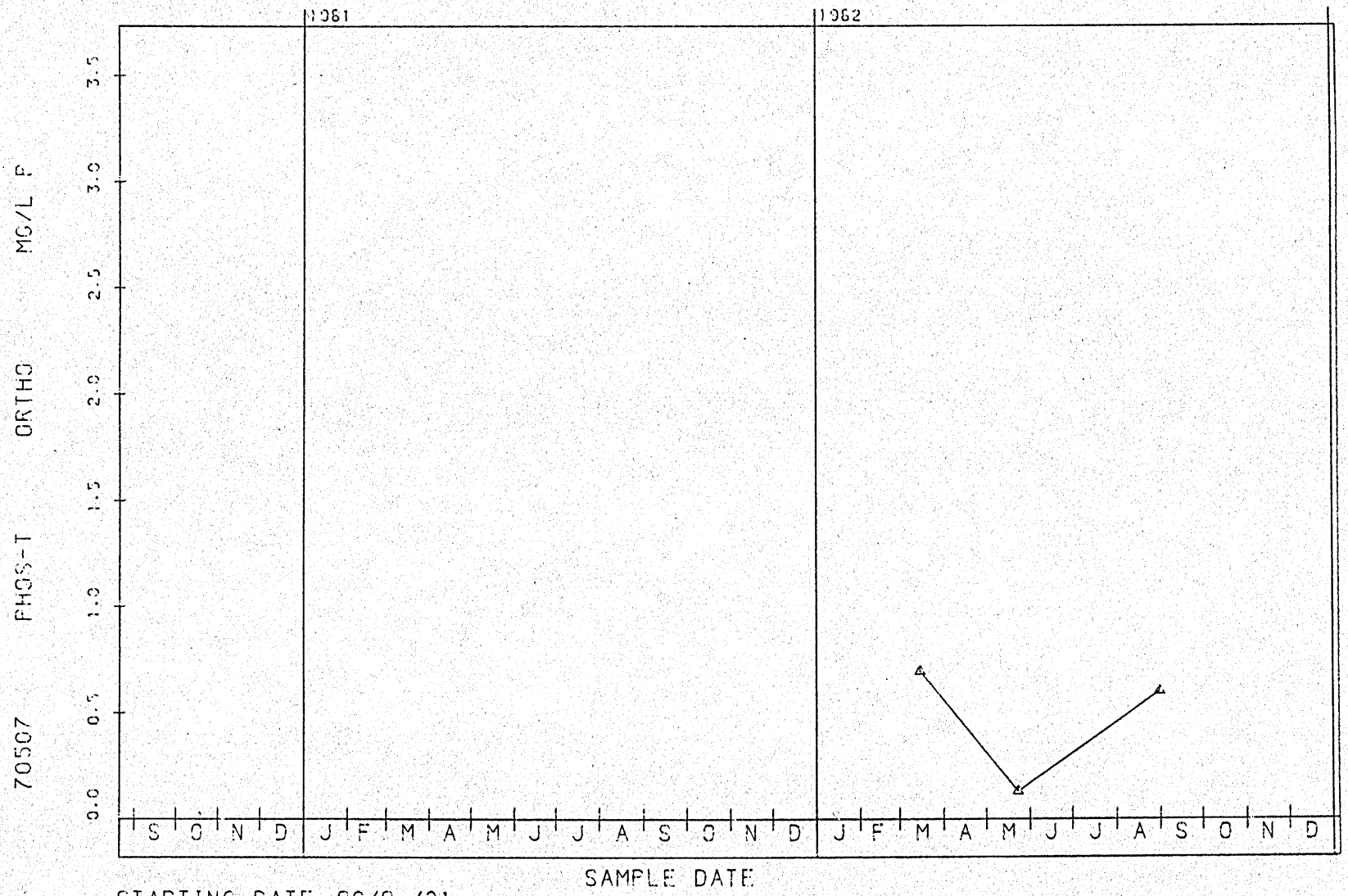
Figure IV-86.

46BY5Y
44 34 31.0 098 09 18.0 2
FOSTER CR INLET TO NW LAKE BYRON 113N-61W-S22CCD
46005 SOUTH DAKOTA BEADLE
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663782-0693800



46BY6Y
44 34 29.0 098 07 24.0 2
NORTH TRIB INLET TO LK BYRON 113N-61W-S23 DAC
46005 SOUTH DAKOTA BEADLE
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663783-0693801

Figure IV-87.



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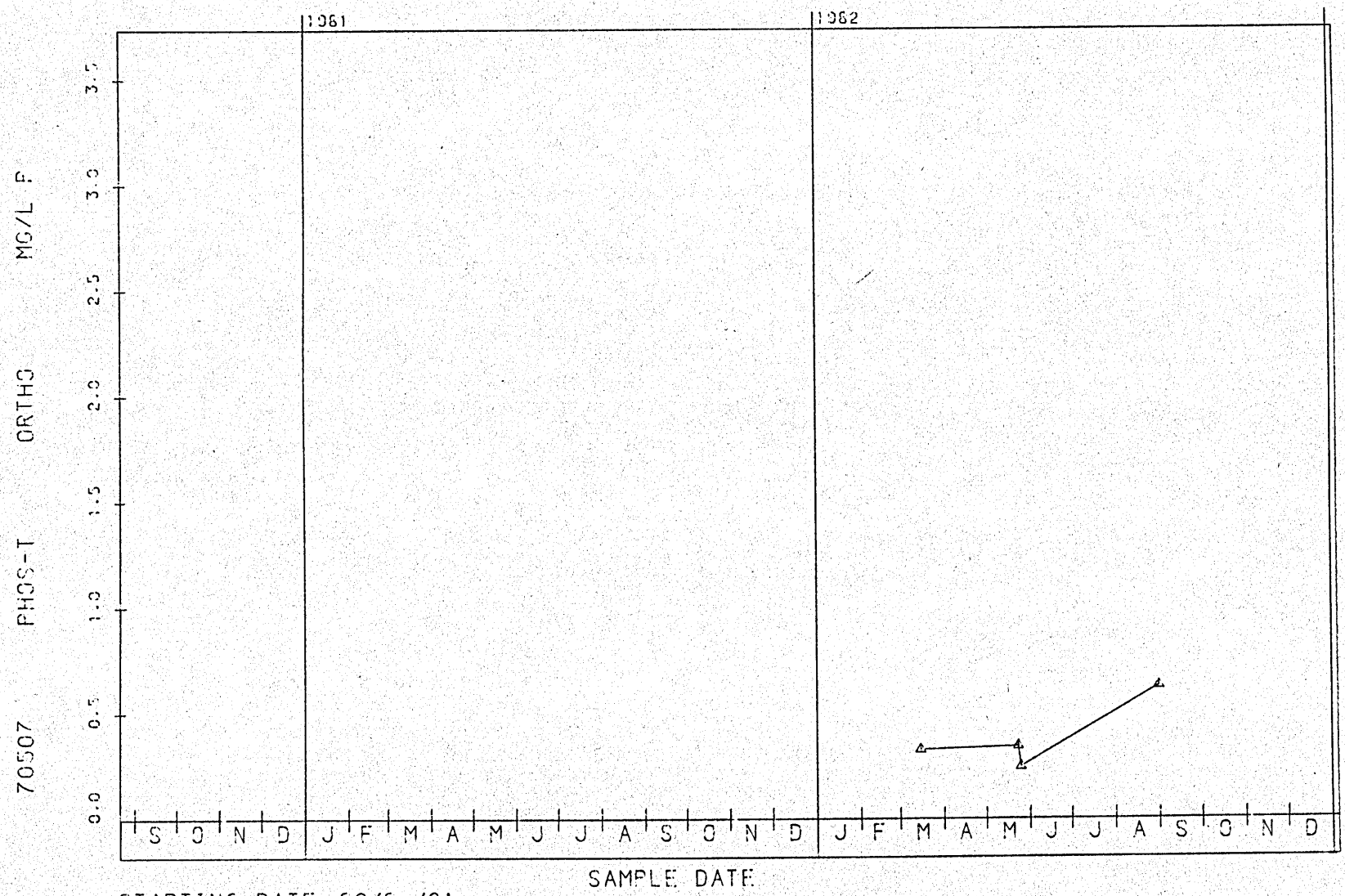
46BY7Y
44 34 05.0 098 03 25.0 2
E INLET TO LK BYRON 113N-60W-S30 BCDB
46005 SOUTH DAKOTA BEADLE
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663784-0693802

Figure IV-88.



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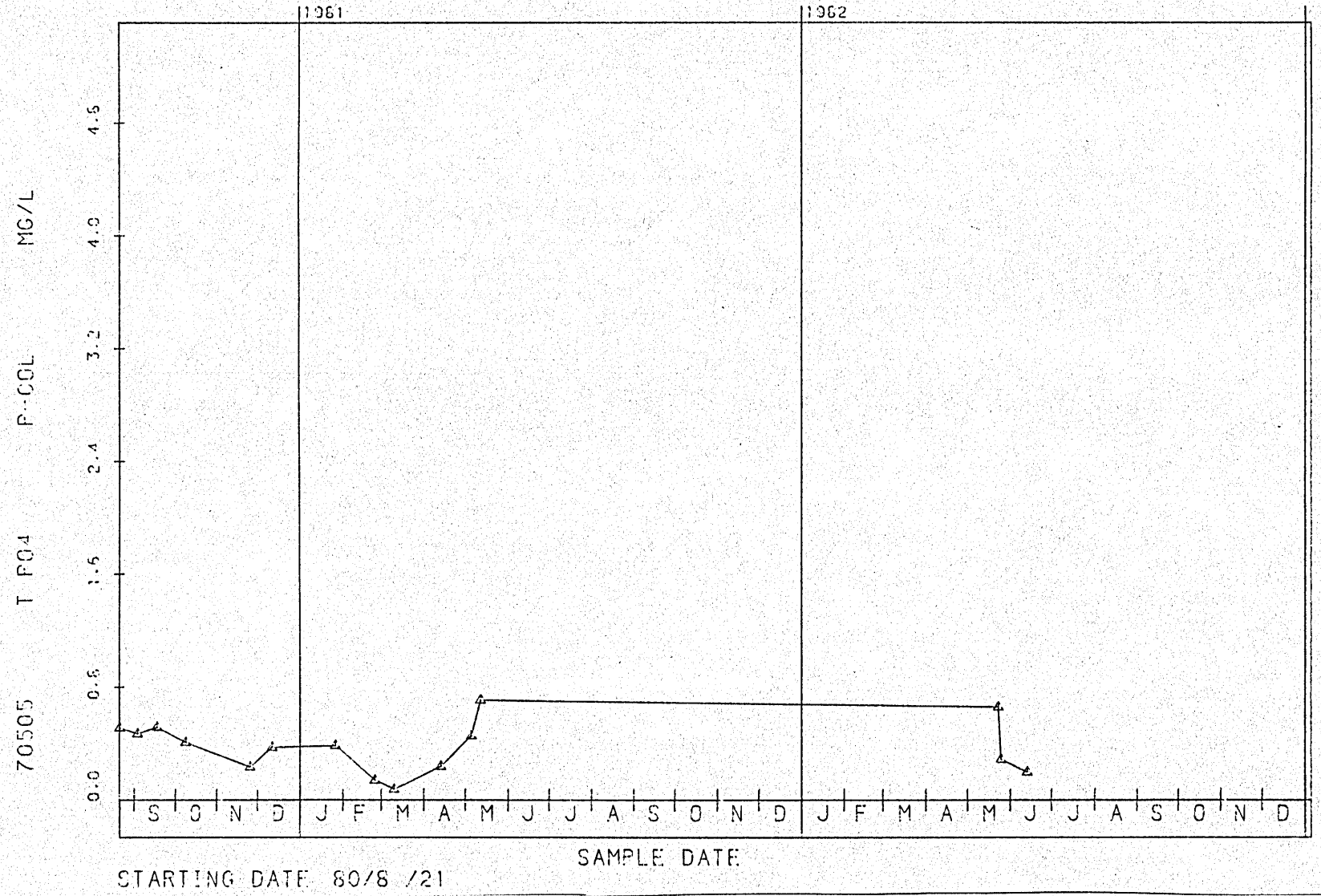
46BY01
44 33 22.0 098 08 16.0 2
LK BYRON OFF SOUTH SHORE 113N-61W-S35 BBCC
46005 SOUTH DAKOTA BEADLE
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSP 0663774-0693792

Figure IV-89.



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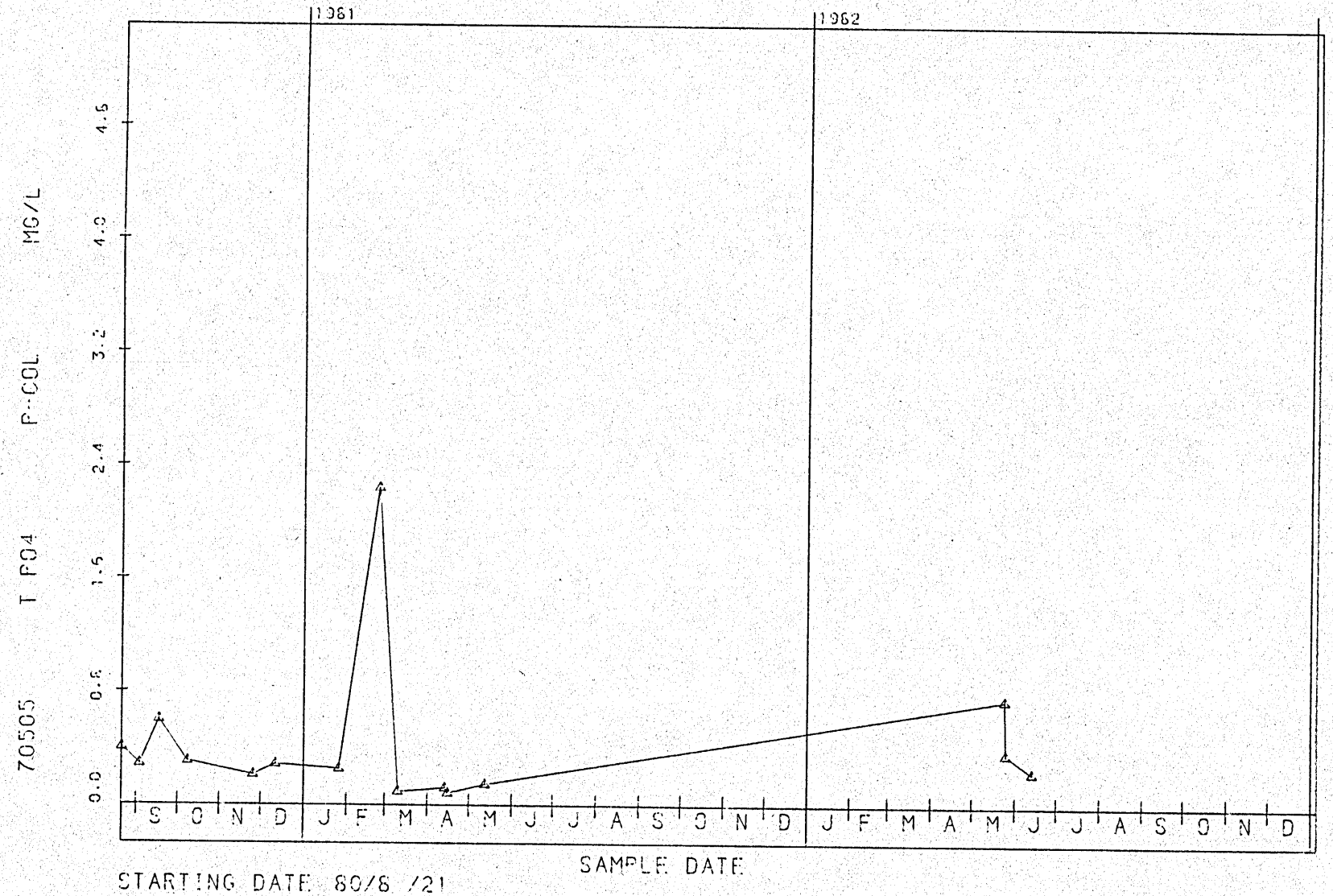
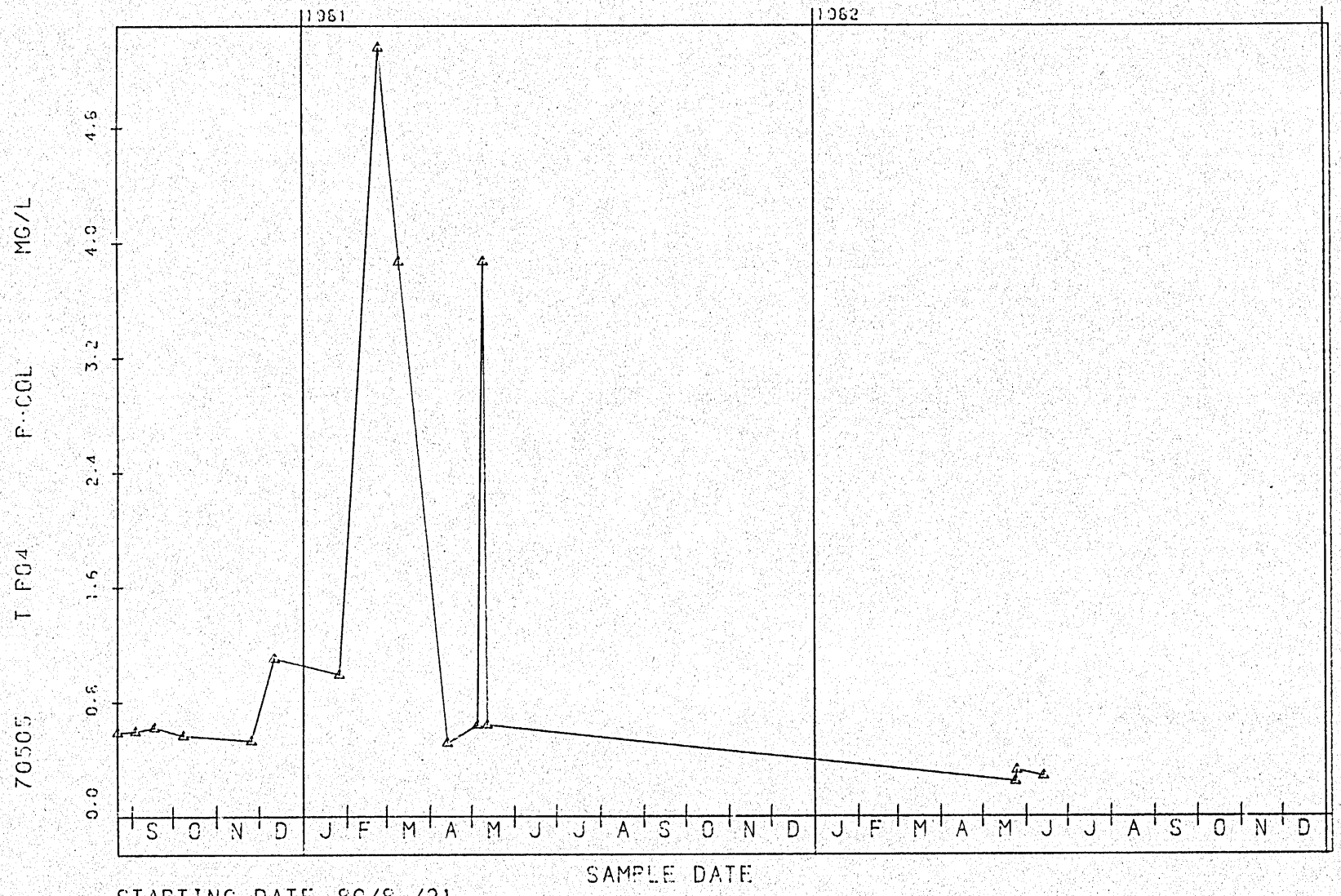
46BY02
44 34 00.0 098 07 21.0 2
LK BYRON OFF N PENINSULA 113N-61W-S26 DABB
46005 SOUTH DAKOTA BEADLE
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSF 0663775-0693793

Figure IV-90.



46BY03
44 34 30.0 098 09 11.0 4
LK BYRON OFF NW SHORE 113N-61W-S22 CDCC
46005 SOUTH DAKOTA BEADLE
MISSOURI RIVER BASIN 090600
JAMES RIVER BASIN
21SDLAKE 820904
0000 FEET DEPTH CLASS 00 CSN-RSF 0663776-0693794

Figure IV-91.



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