

CHANNEL CHANGES AT CROSS SECTIONS OF THE POWDER RIVER
BETWEEN MOORHEAD AND BROADUS, MONTANA, 1975-88

By John A. Moody and Robert H. Meade

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CONVERSION FACTORS

Metric units (International System) in this report may be converted to inch-pound units by using the following conversions factors:

<i>Multiply metric units</i>	<i>By</i>	<i>To obtain inch-pound units</i>
<i>Length</i>		
millimeter (mm)	0.03937	inch
meter (m)	3.281	foot
kilometer (km)	0.6214	mile
<i>Area</i>		
square kilometer (km ²)	0.3861	square mile
square meter (m ²)	10.76	square foot
<i>Volume</i>		
cubic meter (m ³)	35.31	cubic foot
<i>Flow</i>		
cubic meter per second (m ³ /s)	35.31	cubic foot per second
cubic meter per year (m ³ /yr)	35.31	cubic foot per year
<i>Mass Flow</i>		
metric tons per day	1.102	tons per day
metric tons per year	1.102	tons per year
<i>Mass Yield</i>		
metric tons per square kilometer per year [(metric tons/km ²)/yr]	2.854	tons per square meter per year

Sea level: In this report "sea level" refers to the National Geodetic Vertical Datum of 1929 (NGVD of 1929)--a geodetic datum derived from a general adjustment of the first-order level nets of both the United States and Canada, formerly called Sea Level Datum of 1929.

CHANNEL CHANGES AT CROSS SECTIONS OF THE POWDER RIVER BETWEEN MOORHEAD AND BROADUS, MONTANA, 1975-88

By John A. Moody and Robert H. Meade

ABSTRACT

Bed elevations were measured at 23 cross sections along a 95-kilometer reach of Powder River between Moorhead and Broadus, Montana. The measurements were repeated each year (except 1976, 1981, and 1983) after the peak runoff and include measurements made before and after the flood of May 1978. As a result of the flood, the average of the changes in the minimum riverbed elevation at 17 cross sections indicated a decrease in elevation of 0.15 meter, but this change was followed by a 0.17-meter increase in the minimum riverbed elevation during the years after the flood (1978-88). There was essentially no net change in the minimum riverbed elevation for the study reach during 1977-88. The areas of erosion and deposition calculated for successive years at each cross section as a measure of channel change indicated that, during the 1978 flood, the average net channel change (deposition minus erosion) for the study reach was the erosion of 16 cubic meters of sediment per meter of channel length. After the 1978 flood, the channel changes were characterized by multiple areas of erosion, which became areas of deposition during the following year and areas of deposition which became areas of erosion. The average net channel change for the entire study reach during the years since the 1978 flood was the average deposition of about 1 cubic meter of sediment per meter of channel length. Thus, during 1977-88 there was a net erosion of about 15 cubic meters of sediment per meter of channel length within the study reach.

INTRODUCTION

Powder River flows east and northeast from the Bighorn Mountains in north-central Wyoming through northeastern Wyoming and southeastern Montana (fig. 1). At its confluence with the Yellowstone River, Powder River drains an area of 34,706 km² and has an average discharge of about 500 million m³/yr. Near the Wyoming-Montana State line (at the gaging station at Moorhead, Mont.), Powder River discharges an average of 2 to 3 million metric tons of suspended sediment per year, which equals a sediment yield of about 400 metric tons/km²/yr. The Powder River drainage basin includes areas of intensive production of oil and coal (Teapot Dome oil fields and part of the Gillette coal fields); but, at the present time, the primary use of river water in the basin is for irrigation. No dams or other large engineering structures obstruct the flow of Powder River or its principal tributaries.

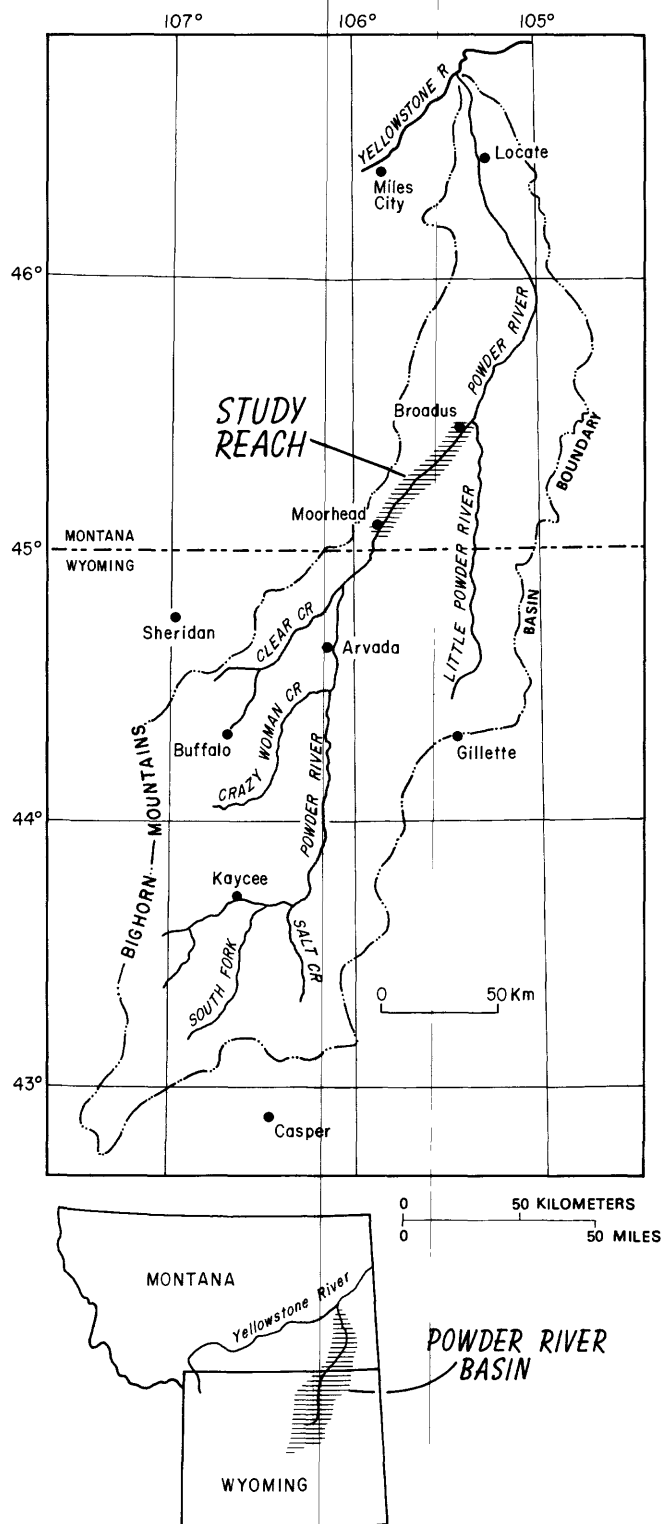


Figure 1.--Location of Powder River drainage basin and the study reach.

In 1975, a program of measurements was begun to define long-term sediment budgets and channel changes in a reach of Powder River. This river was selected for several reasons. First, Powder River carries a large load of suspended sediment (Hembree and others, 1952), which is an indication of active sedimentary processes in the river and in its drainage basin. Second, Powder River is one of the few remaining rivers of its size in the region that is not controlled by a dam (in contrast with the Bighorn, Tongue, and Belle Fourche Rivers). Third, at the time the study began, energy-related developments were expected to have substantial effects on Powder River--including a new dam on the main stem. If a dam were built on the main stem, this study would provide before-and-after information that could define the effects of the dam. If a dam were not built (and no dam has been built as of 1988), this study would then provide a long-term record of channel changes under natural conditions.

Purpose and Scope

The purpose of this report is to present annual or biennial measurements of channel cross section and channel changes occurring under natural conditions in a river that carries a large sediment load. The reach selected for detailed study was the 95-km reach of Powder River between Moorhead and Broadus, Mont. (fig. 1). Daily measurements of suspended sediment were made at the gaging stations at Moorhead and at Broadus, from which the annual loads of suspended sediment entering and leaving the study reach were computed (U.S. Geological Survey, 1976-89). The selected cross sections of the river were resurveyed annually or biennially, and channel changes were computed from the distances and elevations listed in this report.

Acknowledgments

We thank our friends and colleagues who helped us establish and relevel the cross sections: Ned Andrews in 1975; Eric Meade in 1977; Holly Martinson in 1979; Mike Fitzgerald and Carl Nordin in 1980; Mike Karlinger and Shirley Stewart (now Hamamoto) in 1982. James Fisher and Melvin White made an extra effort to provide needed data from the Montana District office. We thank the ranchers and landowners along Powder River for their hospitality and their continuing courtesy in allowing us repeated access to the river: Howard Best; Jim Bowers; John Daily; Slim Frandsen; Cliff Franklin; George and Hugh Fulton; Hubert, Mary, Bill, and Glenn Gay; Jean Hough; Bunk and Phil Huckins; Ray Moore; Randall Perry; Doug, Lucille, and Craig Randall; Frank and Frances Rice; Charles Russell; John, Diane, and Shirley Stuver; Roy Swope; Charles Whiton; and J.L. Wilson.

CROSS SECTIONS

Ten cross sections (identified as PR113 to PR151) were established during 1975 to monitor channel changes and sediment storage (fig. 2). The section number, for example 113 or 151 (tables 1, 2, and 3), is the river distance in kilometers downstream from the mouth of Crazy Woman Creek near Arvada, Wyo., as shown in the U.S. Geological Survey river-survey maps of 1946 (Martinson

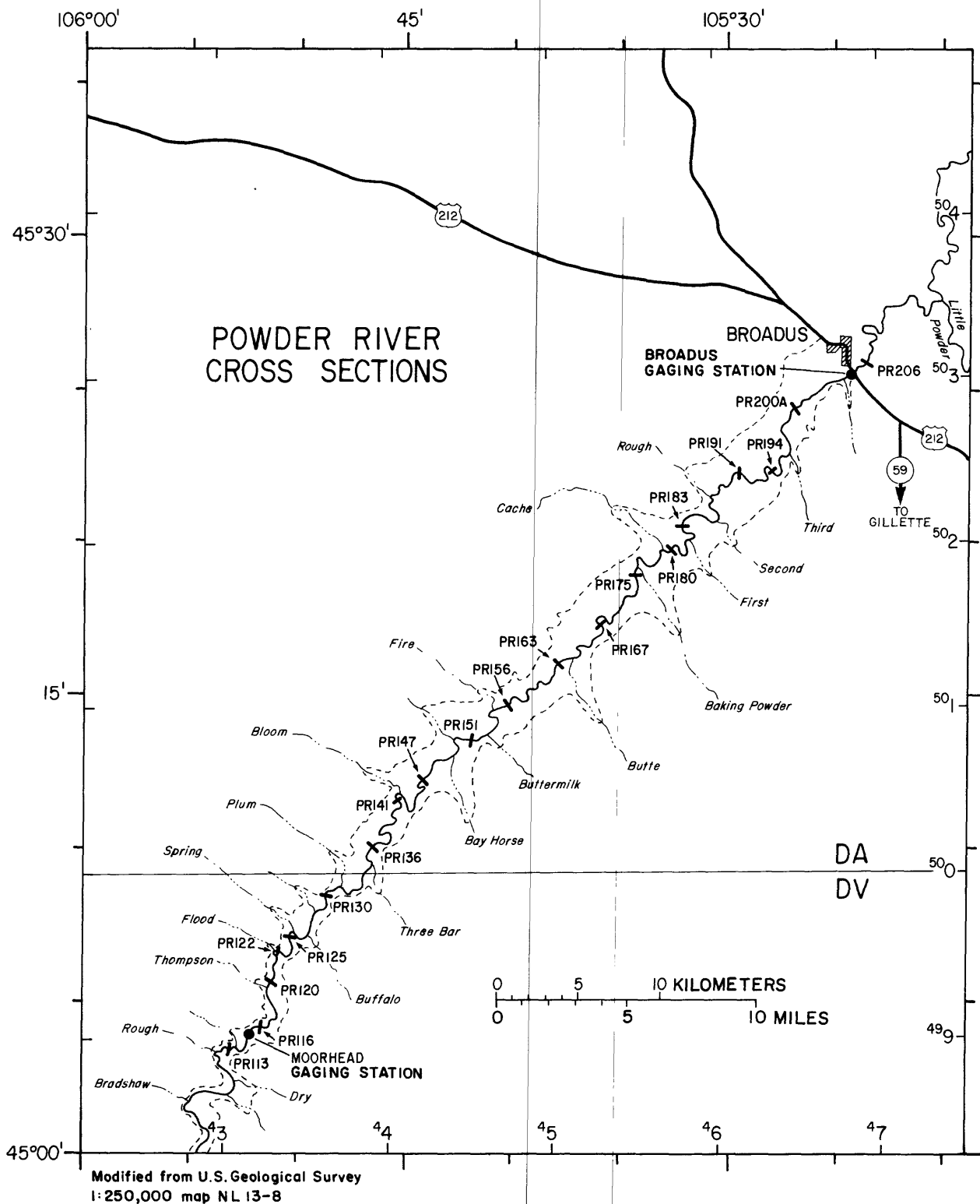


Figure 2.--Location of 20 channel cross sections and the tributaries of Powder River in the study reach. The dashed line indicates the approximate boundary of the valley. Longitude and latitude tick marks are on the outside of the border, and tick marks for the universal transverse mercator (UTM) grid are on the inside of the border. DA and DV are the identification letters for the 100,000-meter-square grid (table 3). PRI13 is the cross section identification.

Table 1.--Types of reaches represented by cross sections of Powder River
between Moorhead and Broadus, 1975-88

Cross section	Water years											
	1975	1977	1978	1979	1980	1982	1984	1985	1986	1987	1988	
PR113	Straight	—	—	—	—	—	→ Bend	—	—	—	—	
PR116	Straight	—	—	—	—	—	—	—	—	—	—	
PR120	Straight	—	—	—	—	—	—	—	—	—	—	
PR122	Bend	—	—	→ Abandoned channel	—	—	—	—	—	—	—	
PR122A	Flood plain	—	→ Cutoff bend	—	—	—	—	—	—	—	—	
PR125	Cross over	—	—	—	—	—	—	—	—	—	—	
PR130	Bend (upstream)	—	—	—	—	—	—	—	—	—	—	
PR136	Straight	—	—	→ Straight and braided	—	—	—	—	—	—	—	
PR141	Bend	—	→ Abandoned channel	—	—	—	—	—	—	—	—	
PR141A	Flood plain	→ Cutoff bend	—	—	—	—	—	—	—	—	—	
PR147	Straight	—	—	—	—	—	—	—	—	—	—	
PR151	Straight	—	—	—	—	—	—	—	—	—	—	
PR156A	—	→ Straight	—	—	—	—	—	—	—	—	—	
PR156	Straight	—	—	—	—	→ Straight braided	—	—	—	—	—	
PR163	Bend	—	—	—	—	—	—	—	—	—	—	
PR167	Bend	—	—	—	—	—	—	—	—	—	—	
PR175	Bend	—	—	—	—	—	—	—	—	—	—	
PR180	Bend	—	—	—	—	—	—	—	—	—	—	
PR183	Bend (Downstream bedrock control)	—	—	—	—	—	—	—	—	—	—	
PR191	Bend	—	—	—	—	—	—	—	—	—	—	
PR194	Cross over	—	—	—	—	—	—	—	—	—	—	
PR200A	Bend	—	—	—	—	—	—	—	—	—	—	
PR206	Straight	—	—	—	—	—	—	—	—	—	—	

Table 2.--Vertical and geographical locations of cross sections of Powder River between Moorhead and Broadus

Cross section	Distance ¹ (kilo- meters)	Elevation (meters above sea level)	Azimuth (degrees mag- netic)	Bench mark location		Left band reference pin		Right bank reference pin	
				Latitude north	Longitude west	Station (meters)	Latitude north	Longitude west	Station (meters)
PR113	-2.23	1023.338	171.0°	45° 03.35'	105° 53.02'	-32.0	45° 03.46'	105° 53.03'	100.0
PR116	0.65	1019.953	187.0°	45° 04.12'	105° 51.73'	-1.1	45° 03.46'	105° 51.73'	105.0
PR120	4.68	1014.704	117.0°	45° 05.55'	105° 51.21'	-30.0	45° 05.55'	105° 51.21'	104.0
PR122	7.07	1014.45	136.5°	45° 06.65'	105° 50.96'	0.0	45° 06.64'	105° 50.95'	141.0
PR122A	6.60	1014.45	133.0°	45° 06.65'	105° 50.96'	-20.0	45° 06.49'	105° 50.75'	145.0
PR125	8.61	1008.45	085.0°	45° 07.10'	105° 50.23'	0.0	45° 07.10'	105° 50.22'	117.1
PR130	13.92	1002.673	074.0°	45° 08.39'	105° 48.59'	0.0	45° 08.39'	105° 48.56'	101.9
PR136	20.19	994.300	127.0°	45° 10.10'	105° 46.40'	0.0	45° 10.09'	105° 46.39'	115.0
PR141	26.10	988.926	199.0°	45° 11.60'	105° 45.12'	0.0	45° 11.59'	105° 45.17'	100.0
PR141A	26.22	988.926	180.0°	45° 11.60'	105° 45.12'	-20.0	45° 11.67'	105° 44.77'	190.0
PR147	30.24	983.916	130.0°	45° 12.34'	105° 44.06'	0.0	45° 12.34'	105° 44.06'	100.0
PR151	36.27	977.464	176.5°	45° 13.63'	105° 41.78'	0.0	45° 13.63'	105° 41.78'	101.2
PR156A	40.24	972.167	125.0°	45° 14.74'	105° 39.92'	0.0	45° 14.81'	105° 39.99'	130.0
PR156	40.28	972.167	110.0°	45° 14.74'	105° 39.92'	-4.6	45° 14.82'	105° 39.96'	127.0
PR163	48.30	954.530	151.0°	45° 16.21'	105° 37.84'	-73.0	45° 16.18'	105° 37.82'	75.0
PR167	51.77	959.79	006.0°	45° 17.38'	105° 35.83'	-1.6	45° 17.29'	105° 35.85'	150.6
PR175	58.32	953.585	059.0°	45° 18.99'	105° 34.62'	124.0	45° 19.00'	105° 34.49'	250.0
PR180	63.10	950.018	102.0°	45° 19.82'	105° 32.60'	-40.0	45° 19.83'	105° 32.60'	111.3
PR183	67.85	945.894	059.0°	45° 20.57'	105° 32.16'	0.0	45° 20.55'	105° 32.25'	100.0
PR191	76.53	937.999	178.0°	45° 22.32'	105° 29.42'	0.0	45° 22.32'	105° 29.44'	150.3
PR194	80.08	934.406	225.0°	45° 22.33'	105° 27.83'	0.0	45° 22.32'	105° 27.84'	96.0
PR200A	86.28	927.702	140.0°	45° 24.50'	105° 26.98'	2.0	45° 24.50'	105° 26.98'	250.0
PR206	92.19	921.325	090.0°	45° 26.04'	105° 23.40'	-30.0	45° 26.06'	105° 23.50'	101.9

¹Measured from the Moorhead gaging station and based on aerial photographs taken after 1978 (from Martinson, 1983) except for cross sections PR122 and PR141, which are based on pre-1978 conditions.

Table 3.--Vertical and geographical locations of cross sections of Powder River between Moorhead and Broadus using the universal transverse mercator (UTM) grid

Cross section	Distance ¹ (kilo- meters)	Elevation (meters above sea level)	Azimuth (degrees mag- netic)	Bench mark location			Left bank reference pin			Right bank reference pin		
				UTM grid square	Coordinates east north	Station (meters)	UTM grid square	Coordinates east north	Station (meters)	UTM grid square	Coordinates east north	Station (meters)
PR113	-2.23	1023.338	171.0°	13TDV	3041 8932	-32.0	13TDV	3041 8952	100.0	13TDV	3042 8936	100.0
PR116	0.65	1019.953	187.0°	13TDV	3212 9072	-1.1	13TDV	3212 9072	105.0	13TDV	3208 9062	105.0
PR120	4.68	1014.704	117.0°	13TDV	3283 9336	-30.0	13TDV	3283 9336	104.0	13TDV	3295 9324	104.0
PR122	7.07	1014.45	136.5°	13TDV	3318 9541	0.0	13TDV	3319 9538	141.0	13TDV	3324 9526	141.0
PR122A	6.60	1014.45	133.0°	13TDV	3318 9541	-20.0	13TDV	3347 9508	145.0	13TDV	3356 9493	145.0
PR125	8.61	1008.45	085.0°	13TDV	3410 9621	0.0	13TDV	3412 9623	117.1	13TDV	3422 9618	117.1
PR130	13.92	1002.673	074.0°	13TDV	3632 9859	0.0	13TDV	3636 9859	101.9	13TDV	3646 9860	101.9
PR136	20.19	994.300	127.0°	13TDA	3922 0173	0.0	13TDA	3924 0170	115.0	13TDA	3931 0161	115.0
PR141	26.10	988.926	199.0°	13TDA	4093 0449	0.0	13TDA	4092 0448	100.0	13TDA	4086 0439	100.0
PR141A	26.22	988.926	180.0°	13TDA	4093 0449	-20.0	13TDA	4137 0460	190.0	13TDA	4131 0437	190.0
PR147	30.24	983.916	130.0°	13TDA	4233 0583	0.0	13TDA	4233 0583	100.0	13TDA	4238 0574	100.0
PR151	36.27	977.464	176.5°	13TDA	4533 0819	0.0	13TDA	4533 0819	101.2	13TDA	4530 0807	101.2
PR156A	40.24	972.167	125.0°	13TDA	4778 1025	0.0	13TDA	4769 1038	130.0	13TDA	4777 1027	130.0
PR156	40.28	972.167	110.0°	13TDA	4778 1025	-4.6	13TDA	4773 1089	127.0	13TDA	4783 1033	127.0
PR163	48.30	954.530	151.0°	13TDA	5053 1294	-73.0	13TDA	5055 1288	75.0	13TDA	5059 1272	75.0
PR167	51.77	959.79	006.0°	13TDA	5315 1506	-1.6	13TDA	5312 1491	150.6	13TDA	5318 1505	150.6
PR175	58.32	953.585	059.0°	13TDA	5478 1806	124.0	13TDA	5494 1804	250.0	13TDA	5505 1810	250.0
PR180	63.10	950.018	102.1°	13TDA	5743 1958	-40.0	13TDA	5743 1960	111.3	13TDA	5757 1954	111.3
PR183	67.85	945.894	059.0°	13TDA	5802 2095	0.0	13TDA	5800 2092	100.0	13TDA	5790 2094	100.0
PR191	76.53	937.999	178.0°	13TDA	6160 2417	0.0	13TDA	6168 2416	150.3	13TDA	6155 2402	150.3
PR194	80.08	934.406	225.0°	13TDA	6367 2418	0.0	13TDA	6366 2415	96.0	13TDA	6356 2409	96.0
PR200A	86.28	927.702	140.0°	13TDA	6480 2820	2.0	13TDA	6480 2820	250.0	13TDA	6492 2797	250.0
PR206	92.19	921.325	090.0°	13TDA	6948 3102	-30.0	13TDA	6935 3104	101.9	13TDA	6948 3102	101.9

¹Measured from the Moorhead gaging station and based on aerial photographs after 1978 (from Martinson, 1983) except for cross sections PR122 and PR141, which are based on pre-1978 conditions.

and Meade, 1983). The first cross section was located about 3 km upstream from the Moorhead gaging station, and the remaining sections were located 2 to 6 km apart for 39 km (river distance) downstream from the Moorhead gaging station (tables 1, 2, and 3). Ten additional cross sections (PR156 to PR206) were established during 1977 from 43 km to about 95 km (river distance) downstream from the Moorhead gaging station. These sections were spaced farther apart (3 to 8 km), and the last section was about 1 km downstream from the U.S. Highway 212 bridge, where the Broadus gaging station is located.

After an intense rainfall, a major flood occurred between May 17 and 23, 1978 (fig. 3), producing peak discharges of water and suspended sediment at Moorhead of 800 m³/s and 2 million metric tons per day. Two cross sections (PR122 and PR141) located on bends were cut off during the flood, and new sections (PR122A and PR141A) were established in 1979 on the new cutoffs. These cutoffs shortened the total river distance of the study reach by about 2.7 km. All reference marks for section PR200 were completely destroyed in the flood, and a new section (PR200A) was established in approximately the same location in fall 1978. One section (PR156) was believed destroyed during the flood, and a new section (PR156A) was established about 40 m upstream from the location of the original section. Later, however, the metal reference pins were found using a metal detector, and both sections have been resurveyed regularly since 1978.

There now are 23 cross sections along Powder River spanning a total river distance of 92.4 km. Eight cross sections represent straight reaches, eleven sections represent bends, two sections are at thalweg crossovers, and two sections represent abandoned channels. Some cross sections have evolved with time, and these changes also are listed in table 1. Twenty-one cross sections are located on an active part of the river, and two cross sections are located along meander cutoffs.

In the "Cross-section data" section at the back of this report, the township location, U.S. Geological Survey quadrangle map, access, landowners, and from whom to obtain permission for access are listed for each cross section. The horizontal location and average elevation (above sea level) for the horizontal reference pins also are listed. The location of the section is shown on part of a U.S. Geological Survey 7½-minute topographical map (1:24,000), and the bench mark location is shown on a large-scale map (1:20, 1:500, or 1:1000), which includes surrounding local landmarks. All azimuths are reported in degrees magnetic. Profiles of each cross section have been plotted in the "Cross-section data" section in pairs of successive surveys to indicate the areas of erosion and deposition. Following the section profiles is a listing of the stations and elevations for each profile.

SURVEY METHOD

At each cross section a steel reference pin (about 1.2 m long and 12 mm in diameter) was driven almost flush with the ground to mark the horizontal zero point (station 0.0) on the left bank, and a second pin was driven on the right bank to mark a convenient horizontal reference distance such as 100, 120, or 150 m (see tables 2 and 3 for the geographical location of each reference pin). Two additional steel tieback pins were driven into the ground on the line of section but behind the reference pins; about 100 to 150 mm remained above ground to hold the cable clamps used to stretch a steel cable

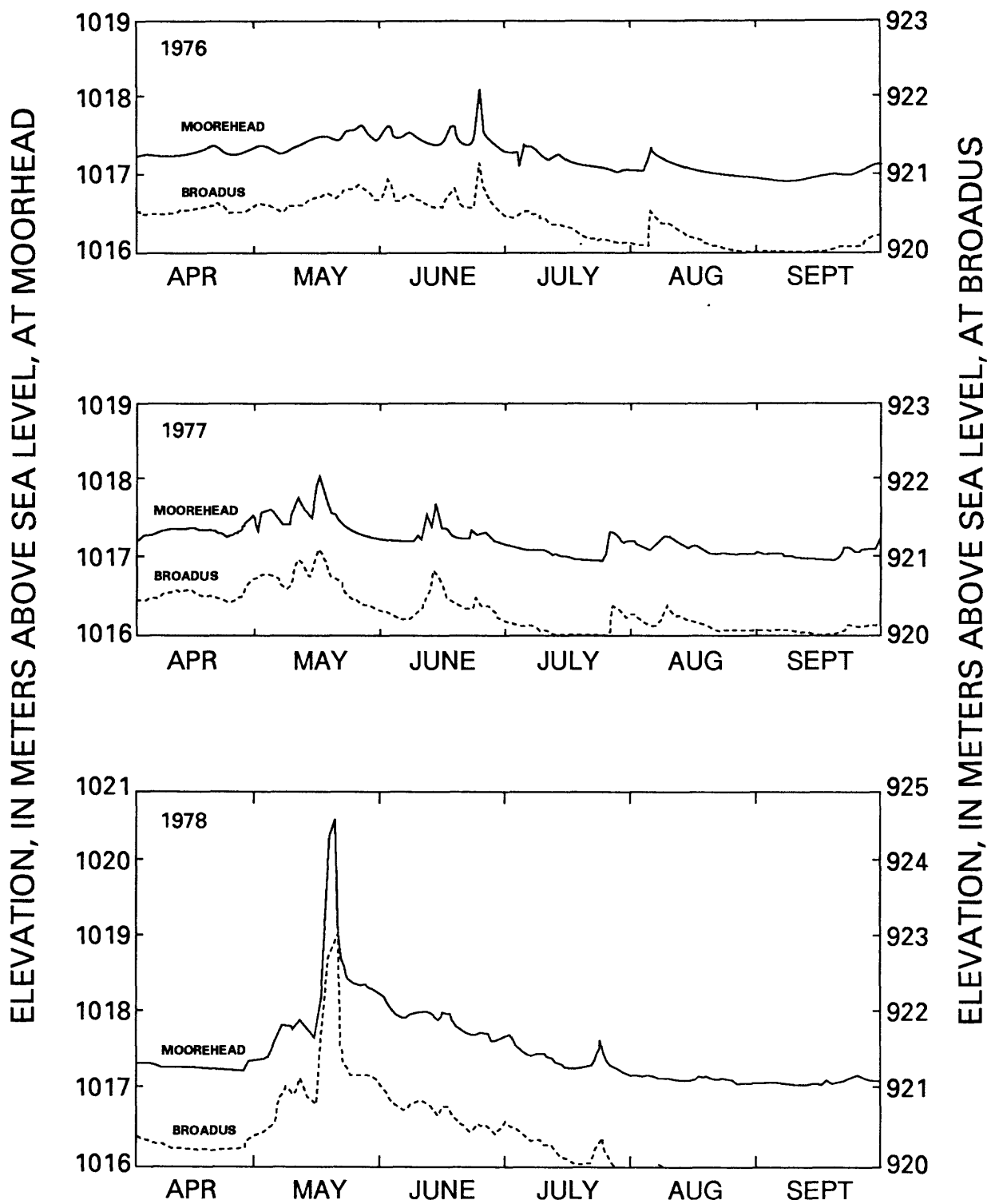


Figure 3.--Water-level elevation between April 1 and October 1 at Moorhead and at Broadus 1976-78.

(150 m long and 3 mm in diameter) across the river. The cable was marked every meter by a brass bead, and horizontal distances were measured to 0.1 m by estimating between beads.

A local vertical bench mark was installed at each cross section, and the elevation above sea level (tables 2 and 3) was determined by leveling from U.S. Coast and Geodetic Survey bench marks shown on the U.S. Geological Survey topographical maps. The local bench mark consisted of a brass circular plate set in reinforced concrete flush with the ground. The cross-section identification number (for example, PR113) is stamped into the plate, and an arrow in the center of the brass plate points to station 0.0. The elevations of the horizontal reference and tieback pins also were determined as secondary vertical references. Vertical elevations were determined by using a tripod and level (Wild NA2¹) that had an automatic leveling compensator and a metric rod with markings at every 0.01 m. Cross-section elevations were not always measured at the same horizontal locations or stations each time, nor at regularly spaced distances, but rather at high, low, and inflection points with maximum spacings of 3.0 to 5.0 m.

The error in the elevation measurements (table 4) was estimated by repeating the measurements at three cross sections (PR141A, PR163, and PR206) a second time. The second measurement was made on a different day and in the opposite direction from the first measurement to decrease the possibility of the rodman recognizing the location where the rod was placed the first time.

Table 4.--Errors in measurements of elevation and cross-section area.
Duplicate leveling surveys were made several days apart
at each cross section

Cross section	Length (meters)	Elevation error--absolute difference	
		Average (millimeters)	Extreme (millimeters)
PR141A	150	14	60
PR163	148	15	100
PR206	130	19	120

Cross-section area error per 100 horizontal meters			
Cross section	Erosion (square meters)	Deposition (square meters)	Net (square meters)
PR141A	0.62	0.81	0.20
PR163	0.59	1.11	0.51
PR206	1.18	0.99	0.18

¹The use of brand, trade, or firm names in this report is for identification purposes only and does not constitute endorsement by the U.S. Geological Survey.

One source of error in elevation results from errors in estimating the horizontal distance; this error is largest where slopes are greatest, such as at bank edges. A second source of error is caused by not repeating the measurements at the same horizontal station each time the cross section is resurveyed and by assuming a linear interpolation between stations. The duplicate surveys for the three sections were plotted on graph paper, and 1 mm equaled 20 mm of real elevation. The absolute differences in elevation were read from the graph every 2.5 m to the nearest 10 mm, and an average value was computed (table 4). The average absolute difference, or error, in elevation for all three sections weighted by the length of the section was 16 mm. The extreme values of the absolute difference ranged from 60 to 120 mm and usually occurred where the ground slope was large--riverbanks and sandbars.

CHANNEL CHANGES

Two measurements of channel change have been used for this report: (1) Changes in minimum riverbed elevation, and (2) changes in cross-section area of erosion and deposition. Changes in channel dimensions, island area, meander wavelength, and amplitude have been described for Powder River by Martinson (1983).

Minimum Riverbed Elevation

The minimum riverbed elevations for each cross section are listed in table 5. The largest decrease was 70 cm at section PR180 after the 1978 flood. The largest increase (excluding abandoned channels) was 33 cm at section PR183 in 1979, the year after the flood. The changes between any two surveys or for the entire survey period seem to depend more on the type of cross section (table 1) than on the nature of the river stage (figs. 3, 4, 5, 6, and 7) between surveys. The exception was the 1978 flood year which resulted in erosion of the riverbed at 14 of 19 cross sections.

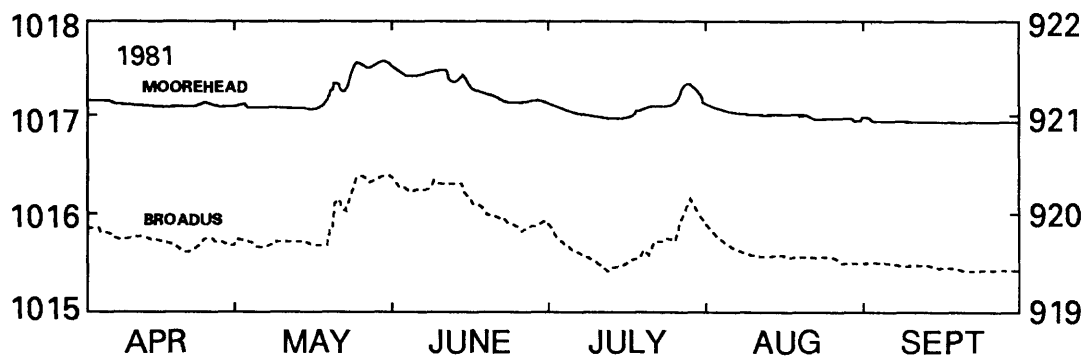
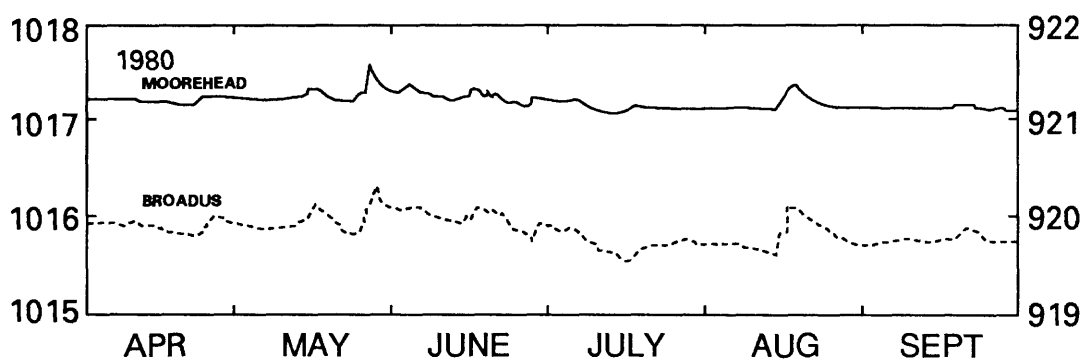
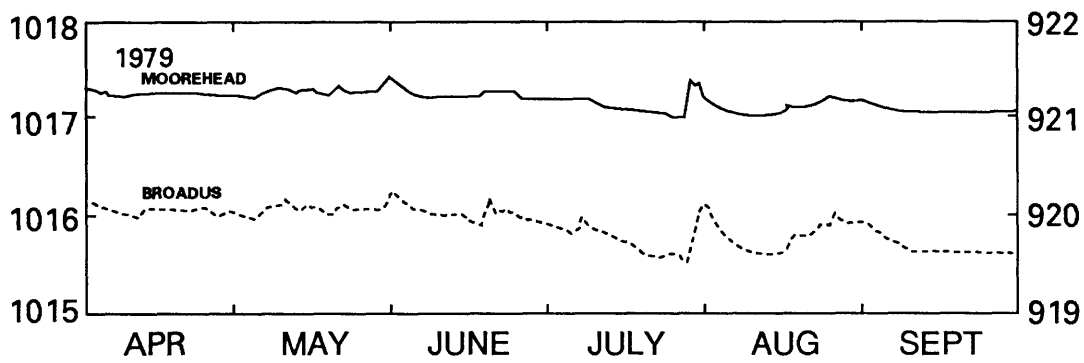
Most cross sections (PR113, PR116, PR125, PR151, PR156A, PR156, PR163, PR167, PR180, PR183, PR191, PR194, and PR200A) did not have a significant (at the 95-percent confidence level) relation between time and minimum riverbed elevation. One cross section (PR120) had a slight but significant (p-value = 0.0 percent) decrease in the minimum riverbed elevation of approximately 0.06 m during 13 years, and at PR206 the minimum riverbed elevation decreased 1.30 m from 1977-84 and then increased 0.56 m from 1984-88. Six cross sections (PR122, PR122A, PR130, PR136, PR147, and PR175) have had a significant increase in the minimum riverbed elevation since the May 1978 flood.

The average of the changes in the minimum riverbed elevation for 17 cross sections (PR113, PR116, PR120, PR125, PR130, PR136, PR147, PR151, PR156, PR163, PR167, PR175, PR180, PR183, PR191, PR194, and PR206) was computed as a measure of the channel change for the entire study reach. There was an average decrease of 0.2 m as a result of the May 1978 flood, but this was followed by a 0.2 m average increase in the minimum riverbed elevation during the 10 years after the flood. Therefore, the change in minimum riverbed elevation for the study reach over the period of this study was essentially zero.

Table 5.--Minimum riverbed elevation at the end of the water year for 1975-88

Cross sections	Minimum riverbed elevation (meters above sea level)											
	1975	1977	1978	1979	1980	1982	1984	1985	1986	1987	1988	
PR113	1019.44	1019.48	1019.45	1019.58	1019.54	1019.55	1019.46	1019.66	1019.53	1019.45	1019.53	
PR116	1015.61	1015.67	1015.38	1015.57	1015.61	--	1015.59	1015.61	1015.57	1015.57	1015.68	
PR120	1010.68	1010.67	1010.65	1010.66	1010.66	1010.66	1010.65	1010.64	1010.61	1010.62	1010.62	
PR122	1007.36	1007.29	1008.09	1008.11	1008.13	1008.14	1008.13	--	--	1008.24	--	
PR122A	--	--	--	1006.28	1006.21	1006.60	1006.57	1006.58	1006.68	1006.55	1006.59	
PR125	1004.45	1004.31	1004.07	1004.16	1004.16	1004.22	1004.09	1003.97	1004.06	1004.10	1004.30	
PR130	998.37	998.32	998.26	998.23	998.24	998.31	998.40	998.33	998.49	998.39	998.39	
PR136	991.27	991.28	990.94	990.94	990.93	990.92	991.10	991.06	991.07	991.17	991.19	
PR141	986.33	986.22	987.06	987.07	987.05	987.07	987.07	--	--	--	--	
PR141A	--	--	--	984.37	984.24	984.47	984.80	984.72	984.66	984.76	984.75	
PR147	980.10	979.97	979.78	980.00	979.94	--	980.04	980.01	980.06	980.04	980.07	
PR151	973.71	973.71	973.81	973.84	973.81	973.81	973.77	973.83	973.80	973.67	973.77	
PR156A	--	--	969.12	969.10	969.20	968.92	969.09	969.15	979.17	969.18	969.21	
PR156	--	968.87	969.18	969.03	969.11	969.06	969.06	969.08	969.11	969.19	969.16	
PR163	--	962.07	961.70	961.52	961.73	961.61	961.81	961.68	961.83	961.68	961.68	
PR167	--	957.06	956.89	957.14	956.96	956.65	957.11	956.77	957.04	956.79	957.13	
PR175	--	950.27	950.44	950.33	950.35	950.71	950.67	950.50	950.76	950.61	950.76	
PR180	--	946.79	946.09	946.10	945.96	946.09	946.33	946.41	946.27	946.24	946.41	
PR183	--	942.94	942.59	942.92	942.78	942.84	942.89	942.84	942.72	942.78	942.84	
PR191	--	934.41	934.34	934.51	934.48	934.33	934.73	934.56	934.56	934.41	934.53	
PR194	--	931.43	931.25	931.38	930.96	931.47	931.30	931.38	931.39	931.52	931.54	
PR200A	--	--	924.29	924.19	924.20	924.20	924.13	924.24	924.41	924.43	924.25	
PR206	--	917.98	917.35	917.10	917.11	916.86	916.68	916.95	917.27	917.24	917.41	

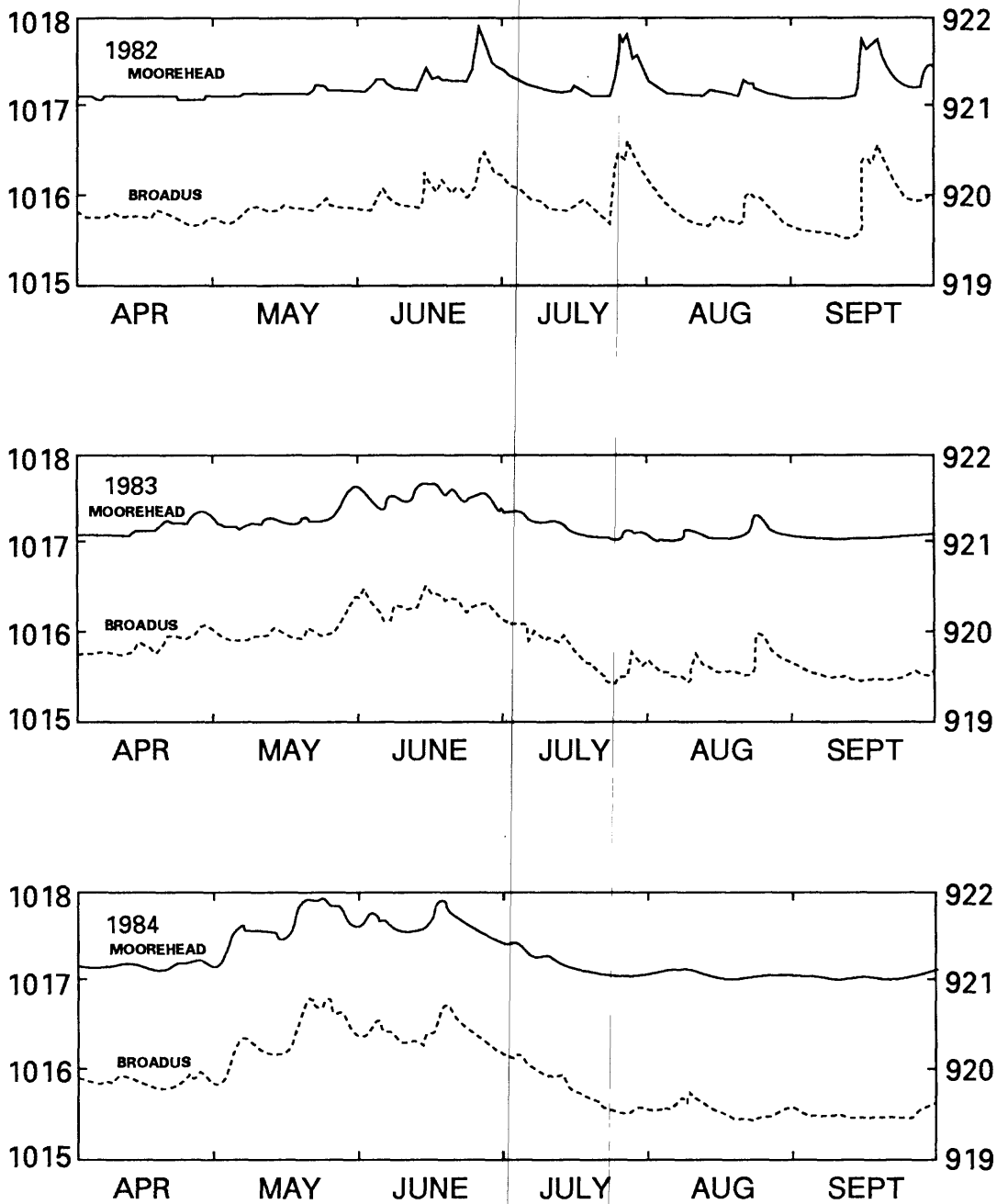
ELEVATION, IN METERS ABOVE SEA LEVEL, AT MOORHEAD



ELEVATION, IN METERS ABOVE SEA LEVEL, AT BROADUS

Figure 4.--Water-level elevation between April 1 and October 1 at Moorhead and at Broadus for 1979-81.

ELEVATION, IN METERS ABOVE SEA LEVEL, AT MOOREHEAD



ELEVATION, IN METERS ABOVE SEA LEVEL, AT BROADUS

Figure 5.--Water-level elevation between April 1 and October 1 at Moorehead and at Broadus for 1982-84.

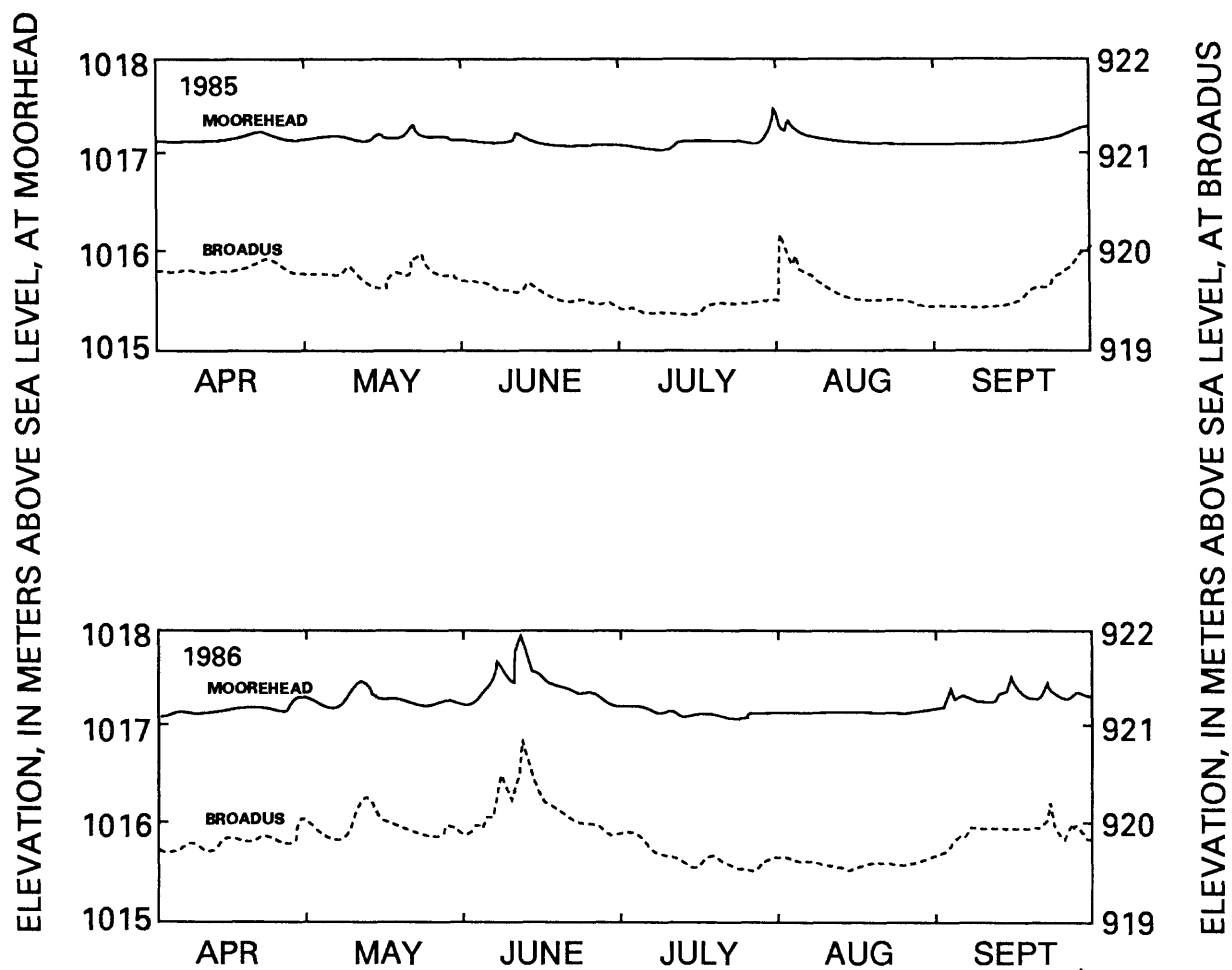


Figure 6.--Water-level elevation between April 1 and October 1 at Moorhead and at Broadus for 1985-86.

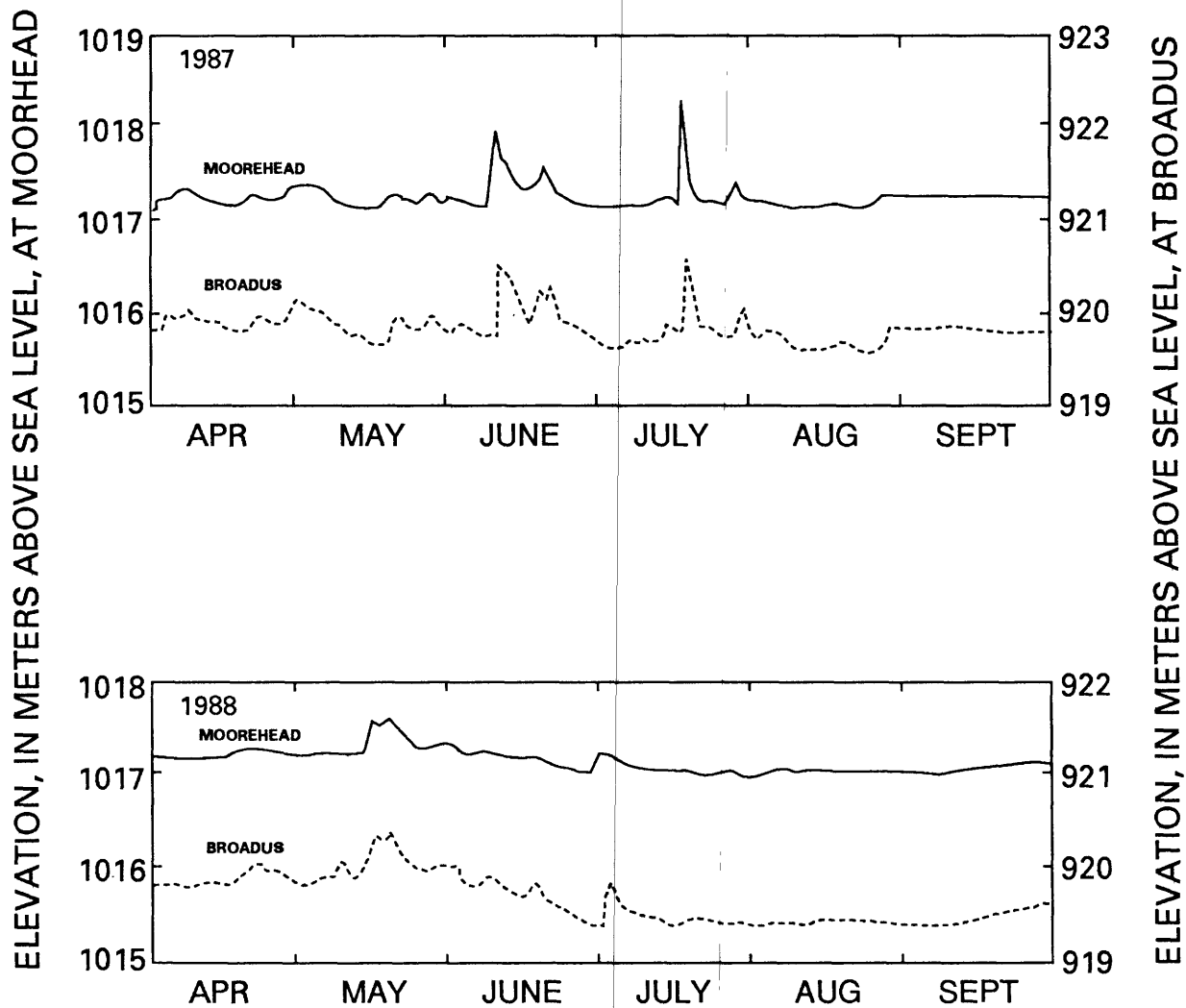


Figure 7.--Water-level elevation between April 1 and October 1 at Moorhead and at Broadus for 1987-88.

Cross-Section Area of Erosion and Deposition

The cross-section area of erosion and deposition was computed for successive surveys by linearly interpolating the elevations between horizontal locations at every 0.1 m for both surveys and then summing separately the positive (deposition) and negative (erosion) differences in elevation. This method approximated the area as a sum of narrow (0.1 m wide) rectangular strips. The error in this approximation was estimated by calculating the exact areas as sums of triangles and by subtracting the areas computed using the rectangular approximation for one cross section (PR147, 1984 to 1985). The difference was 0.01 m² for area of deposition and 0.11 m² for area of erosion. This was a 1.4-percent difference for the total area of channel change. The error due to the field leveling was determined by computing the area of erosion and deposition for the duplicate surveys of cross sections PR141A, PR163, and PR206 (table 4). The average error (for the six values of erosion and deposition) was 0.88 m² per 100 horizontal meters of section.

The changes in cross-section area of erosion and deposition for most sections were greatest during the 1978 water year (table 6). At PR163, about 141 m² of sediment was eroded from the left bank (about 65 m of bank erosion), and about 87 m² of sediment was deposited on the right bank during the 1978 flood. About 143 m² of sediment was deposited at cross section PR175 as the channel shifted approximately 170 m to the right, but the area of erosion could not be measured because the 1977 survey stopped about 30 m to the left of the future channel. Sections PR122 and PR141 had large quantities of deposition (41 m² and 72 m²) as a result of cutoffs at each section during the flood; the new sections PR122A and PR141A are active sites of erosion and deposition as the river creates a new channel.

Since 1978, the changes within the channel (excluding bank erosion) at many cross sections (PR130, PR136, PR147, PR156A, PR156, PR167, PR183, and PR194) were characterized by multiple areas of erosion that became areas of deposition during the following years, and vice versa. Therefore, the total channel change (deposition plus erosion, listed in table 6) often is much larger than the net channel change (deposition minus erosion, listed in table 6). After the 1978 flood, section PR130 had about 20 times as much total channel change as net channel change, and sections PR147 and PR194 had 11 and 45 times as much total channel change as net channel change. The total channel change for the eight sections during the years after the 1978 flood was about 14 times the net channel change.

At several cross sections (PR180, PR200A, and PR206) a steady and substantial erosion has been occurring at a rate ranging from 2 to 13 m² of riverbank as the river adjusts to changes downstream that occurred during the 1978 flood. Some sections (PR116, PR120, PR147, PR151, and PR183) have been very stable since the 1978 flood and have areas of erosion and deposition not substantially different from the estimated error in cross-section area.

Table 6.--Changes in channel cross-section areas between surveys
[Time interval between surveys was either 1 or 2 years.]

Cross section	Type of change	Change in area for water year (in square meters)										
		1976, 77	1978	1979	1980	1981, 82	1983, 84	1985	1986	1987	1988	
PR113	Deposition	3.81	140.84	6.03	2.50	13.12	3.00	5.67	7.05	13.39	8.42	
	Erosion	1.48	161.34	3.70	1.51	5.47	11.86	6.23	3.51	31.78	3.82	
	Net	2.33	1-20.50	2.33	0.99	7.65	-8.86	-0.56	3.54	-18.39	4.60	
	Total	4.29	1102.18	9.73	4.01	18.59	14.86	11.90	10.56	45.17	12.24	
PR116	Deposition	12.92	8.95	7.35	3.61	--	23.78	--	9.54	8.45	4.21	
	Erosion	4.56	17.96	1.24	2.18	--	24.78	--	2.16	6.65	5.37	
	Net	8.36	-9.01	6.11	1.43	--	2-1.00	--	1.98	7.38	1.80	
	Total	17.48	26.91	8.59	5.79	--	28.56	--	8.40	11.70	15.10	
PR120	Deposition	4.40	19.91	2.96	1.65	9.10	2.97	3.15	1.86	0.65	2.57	
	Erosion	0.37	149.02	0.79	1.40	1.93	4.88	1.69	2.03	6.45	0.89	
	Net	4.03	1-39.11	2.17	0.25	7.17	-1.91	1.46	-0.17	-5.80	1.68	
	Total	4.77	158.93	3.75	3.05	11.03	7.85	4.84	3.89	7.10	3.46	
PR122	Deposition	1.46	41.13	5.10	2.43	1.51	2.56	--	--	1.17	--	
	Erosion	3.55	63.73	1.46	1.66	1.50	1.86	--	--	6.44	--	
	Net	-2.09	-22.60	3.64	0.77	0.01	0.70	--	--	-5.27	--	
	Total	5.01	104.86	6.56	4.09	3.01	4.42	--	--	7.61	--	
PR122A	Deposition	--	--	--	1.76	3.79	3.33	8.55	4.75	8.46	4.30	
	Erosion	--	--	--	1.79	20.29	14.23	5.67	3.53	11.58	1.48	
	Net	--	--	--	-0.03	-16.50	-10.91	2.88	1.22	-3.12	2.82	
	Total	--	--	--	3.55	24.08	17.56	14.22	8.28	20.04	5.78	
PR125	Deposition	1.70	28.66	3.48	3.96	15.56	7.66	2.64	3.41	5.33	3.28	
	Erosion	2.33	39.19	2.73	2.01	1.34	3.41	6.08	4.07	8.03	4.17	
	Net	-0.63	-10.53	0.75	1.95	14.22	4.25	-3.44	-0.66	-2.70	-0.89	
	Total	4.03	67.85	6.21	5.97	16.90	11.07	8.72	7.48	13.36	7.45	

Table 6.--Changes in channel cross-section areas between surveys--Continued

Cross section	Type of change	Change in area for water year (in square meters)										
		1976, 77	1978	1979	1980	1981, 82	1983, 84	1985	1986	1987	1988	
PR130	Deposition	2.49	8.39	6.48	2.53	--	211.56	--	2.51	5.15	3.46	1.97
	Erosion	3.51	18.83	1.06	5.27	--	23.58	--	5.98	1.98	6.07	2.00
	Net	-1.02	-10.44	5.42	-2.74	--	27.98	--	-3.47	3.17	-2.61	-0.03
	Total	6.00	27.22	7.54	7.80	--	215.14	--	8.49	7.13	9.53	3.97
PR136	Deposition	6.54	5.04	2.22	2.18	17.72	9.45	3.97	7.90	3.47	2.68	2.68
	Erosion	11.04	19.42	7.96	3.03	1.74	5.65	5.77	5.03	11.89	6.20	6.20
	Net	-4.50	-14.38	-5.74	-0.85	15.98	3.80	-1.80	2.87	-8.42	-3.52	-3.52
	Total	17.58	24.46	10.18	5.21	19.46	15.10	9.74	12.93	15.36	8.88	8.88
PR141	Deposition	7.48	72.47	1.86	1.09	1.85	0.83	--	--	--	--	--
	Erosion	6.98	2.40	0.75	1.70	0.50	0.95	--	--	--	--	--
	Net	0.50	70.07	1.11	-0.61	1.35	-0.12	--	--	--	--	--
	Total	14.46	74.87	2.61	2.79	2.35	1.78	--	--	--	--	--
PR141A	Deposition	--	--	--	3.29	8.89	8.51	10.92	3.44	2.91	3.28	3.28
	Erosion	--	--	--	3.97	6.72	42.48	8.45	17.81	12.73	4.31	4.31
	Net	--	--	--	-0.68	2.17	-33.97	2.47	-14.37	-9.82	-1.03	-1.03
	Total	--	--	--	7.26	15.61	50.99	19.37	21.25	15.64	7.59	7.59
PR147	Deposition	2.21	3.45	5.00	4.38	--	25.60	4.37	4.53	1.18	2.09	2.09
	Erosion	3.32	27.58	0.49	2.68	--	23.36	4.22	3.81	5.78	1.46	1.46
	Net	-1.11	-24.13	4.51	1.70	--	22.24	0.15	0.72	-4.60	0.63	0.63
	Total	5.53	31.03	5.49	7.06	--	28.96	8.59	8.34	6.96	3.55	3.55
PR151	Deposition	2.27	8.87	3.76	3.17	4.10	7.15	1.70	1.88	2.05	0.83	0.83
	Erosion	1.23	13.78	1.08	0.93	2.55	2.29	0.97	1.20	2.87	2.32	2.32
	Net	1.04	-4.91	2.68	2.24	1.55	4.86	0.73	0.68	-0.82	-1.49	-1.49
	Total	3.50	22.65	4.84	4.10	6.65	9.44	2.67	3.08	4.92	3.15	3.15

Table 6.--Changes in channel cross-section areas between surveys--Continued

Cross section	Type of change	Change in area for water year (in square meters)									
		1976, 77	1978	1979	1980	1981, 82	1983, 84	1985	1986	1987	1988
PR156A	Deposition	--	--	4.51	7.56	6.93	10.04	3.61	3.87	1.89	2.41
	Erosion	--	--	2.72	3.56	8.41	1.03	3.30	3.89	7.77	1.60
	Net	--	--	1.79	4.00	-1.48	9.01	0.31	-0.02	-5.88	0.80
	Total	--	--	7.23	11.12	15.34	11.07	6.91	7.76	9.66	4.01
PR156	Deposition	--	21.13	2.86	5.76	7.30	14.74	2.30	5.30	1.95	4.29
	Erosion	--	169.43	8.95	2.95	8.07	2.50	6.60	4.01	6.82	2.05
	Net	--	-48.30	-6.09	2.81	-0.77	12.24	-4.30	1.29	-4.87	2.24
	Total	--	90.56	11.81	8.71	15.37	17.24	8.90	9.31	8.77	6.34
PR163	Deposition	--	187.25	9.18	4.45	9.73	8.45	14.74	2.46	3.74	5.75
	Erosion	--	1141.20	7.22	7.20	6.78	11.87	6.13	6.73	8.41	3.16
	Net	--	1-53.95	1.96	-2.75	2.95	-3.42	8.61	-4.27	-4.67	2.59
	Total	--	1228.45	16.40	11.65	16.51	20.32	20.87	9.19	12.15	8.91
PR167	Deposition	--	27.10	9.47	4.20	20.64	14.50	6.69	8.24	11.56	20.64
	Erosion	--	65.92	15.84	7.60	12.42	10.95	8.52	5.01	20.12	7.52
	Net	--	-38.82	-6.37	-3.40	8.22	3.55	-1.83	3.23	-8.56	13.12
	Total	--	93.02	25.31	11.80	33.06	25.45	15.21	13.25	31.68	28.16
PR175	Deposition	--	142.82	14.98	3.14	14.74	14.07	8.83	14.29	5.30	10.29
	Erosion	--	5.78	6.91	4.18	42.32	30.49	9.75	11.84	26.79	5.88
	Net	--	3137.04	8.07	-1.04	-27.58	-16.42	-0.92	2.45	-21.49	4.41
	Total	--	148.60	21.89	7.32	57.06	44.56	18.58	26.13	32.09	16.17
PR180	Deposition	--	15.81	5.06	1.91	7.35	15.00	4.38	7.87	18.87	7.72
	Erosion	--	19.95	7.24	6.97	7.38	18.44	8.01	25.92	15.68	3.96
	Net	--	-4.14	-2.18	-5.06	-0.03	-3.44	-3.63	-18.05	3.19	3.76
	Total	--	35.76	12.30	8.88	14.73	33.44	12.39	33.79	34.55	11.68

Table 6.---Changes in channel cross-section areas between surveys--Continued

Cross section	Type of change	Change in area for water year (in square meters)									
		1976, 77	1978	1979	1980	1981, 82	1983, 84	1985	1986	1987	1988
PR183	Deposition	--	18.78	7.50	2.07	5.70	7.32	2.76	3.26	3.66	2.90
	Erosion	--	31.23	7.02	5.87	4.19	1.61	5.20	4.23	5.09	3.60
	Net	--	-12.45	0.48	-3.80	1.51	5.71	-2.44	-0.97	-1.42	-0.70
	Total	--	50.01	14.52	7.94	9.89	8.93	7.96	7.49	8.75	6.50
PR191	Deposition	--	39.80	12.55	4.10	9.80	14.91	4.83	3.33	4.71	2.07
	Erosion	--	17.60	2.24	3.31	6.51	3.19	3.02	2.25	5.77	3.88
	Net	--	22.20	10.31	0.79	3.29	11.72	1.81	1.08	-1.06	-1.81
	Total	--	57.40	14.79	7.41	16.31	18.10	7.85	5.58	10.48	5.95
PR194	Deposition	--	11.15	3.23	8.16	7.62	6.33	3.13	9.18	4.12	5.98
	Erosion	--	18.62	5.37	4.41	4.51	5.55	6.19	3.22	10.17	3.11
	Net	--	-7.47	-2.14	3.75	3.11	0.78	-3.06	5.96	-6.05	2.87
	Total	--	29.77	8.60	12.57	12.13	11.88	9.32	12.40	14.29	9.09
PR200A	Deposition	--	--	4.05	2.53	18.43	20.50	4.59	7.49	20.01	3.12
	Erosion	--	--	6.30	12.06	23.00	37.42	6.30	10.90	22.28	5.84
	Net	--	--	-2.25	-9.53	-4.57	-16.92	-1.71	-3.41	-2.27	-2.72
	Total	--	--	10.35	14.59	41.43	57.92	10.89	18.39	42.29	8.96
PR206	Deposition	--	6.90	7.70	2.84	13.72	40.67	6.24	8.67	22.75	6.33
	Erosion	--	57.72	8.91	4.20	38.30	66.74	11.35	19.74	13.50	2.19
	Net	--	-50.82	-1.21	-1.36	-24.58	-26.07	-5.11	-11.07	9.25	4.14
	Total	--	64.62	16.61	7.04	52.02	107.41	17.59	28.41	36.25	8.52

¹Linear extrapolation of elevations was necessary to fill locations that were not surveyed the previous year.²Change from the end of the 1980 water year to the end of the 1984 water year.³This net change does not include erosion of a new channel outside the 1977 survey area.

The average total channel change (deposition plus erosion, listed in table 6) during the 1978 flood was about three times the average net channel change (deposition minus erosion, listed in table 6). The average net channel change during the flood was about 16 m³ of erosion per meter of channel for 16 sections listed in table 6 for 1978 (PR122, PR141, and PR175 were not included), characterizing 95 km of the river. During the 10 years after the 1978 flood (1978-88), 15 of 21 sections had an average net deposition of about 15 m³ of sediment per meter of channel, and six sections had an average net erosion of about 35 m³ of sediment per meter of channel. The overall average net channel change (deposition minus erosion, PR122 and PR141 were not included) for the entire study reach since the 1978 flood has been essentially zero (-0.8 m³ of deposition per meter of channel length).

SUMMARY

During the period of this study (1975-88), the average minimum riverbed elevation for the study reach decreased about 0.2 m as a result of the May 1978 flood which eroded about 16 m³ of sediment per meter of channel length. The average minimum riverbed elevation increased about 0.2 m since the May 1978 flood (1978-88), and there was a negligible net deposition of about 1 m³ of sediment per meter of channel length. The overall result was that there was no significant change in the riverbed elevation but there was a net erosion of about 15 m³ of sediment per meter of channel length (equivalent to a decrease in depth of about 0.1 m for a 150-meter-wide channel) within the study reach from Moorhead to Broadus.

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- Martinson, H.A., 1983, Channel changes of Powder River between Moorhead and Broadus, Montana, 1939 to 1978: U.S. Geological Survey Water-Resources Investigations Report 83-4128, 62 p.
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- U.S. Geological Survey, 1976-89, Water resources data for Montana, water years 1975-88--volume 1: U.S. Geological Survey Water-Data Reports, MT-75-1 to MT-88-1 (published annually).

CROSS-SECTION DATA

Description of Cross Section PR113

Location: Township 9 South/Range 48 East--section 18
U.S. Geological Survey quadrangle (1:24,000): Bradshaw Creek

Landowners--left bank: Lloyd Sams
right bank: U.S. Government

Access: right bank

Permission from: none necessary

Reference pins

Station (meters)	Elevation (meters above sea level)	Comments
-32.0	1,022.824	0.17 meter above 1987 ground level. Usually was farthest from the leveling instrument.
100.0	1,023.012	0.48 meter below 1987 ground level.
100.4	1,023.172	0.10 meter above 1987 ground level.

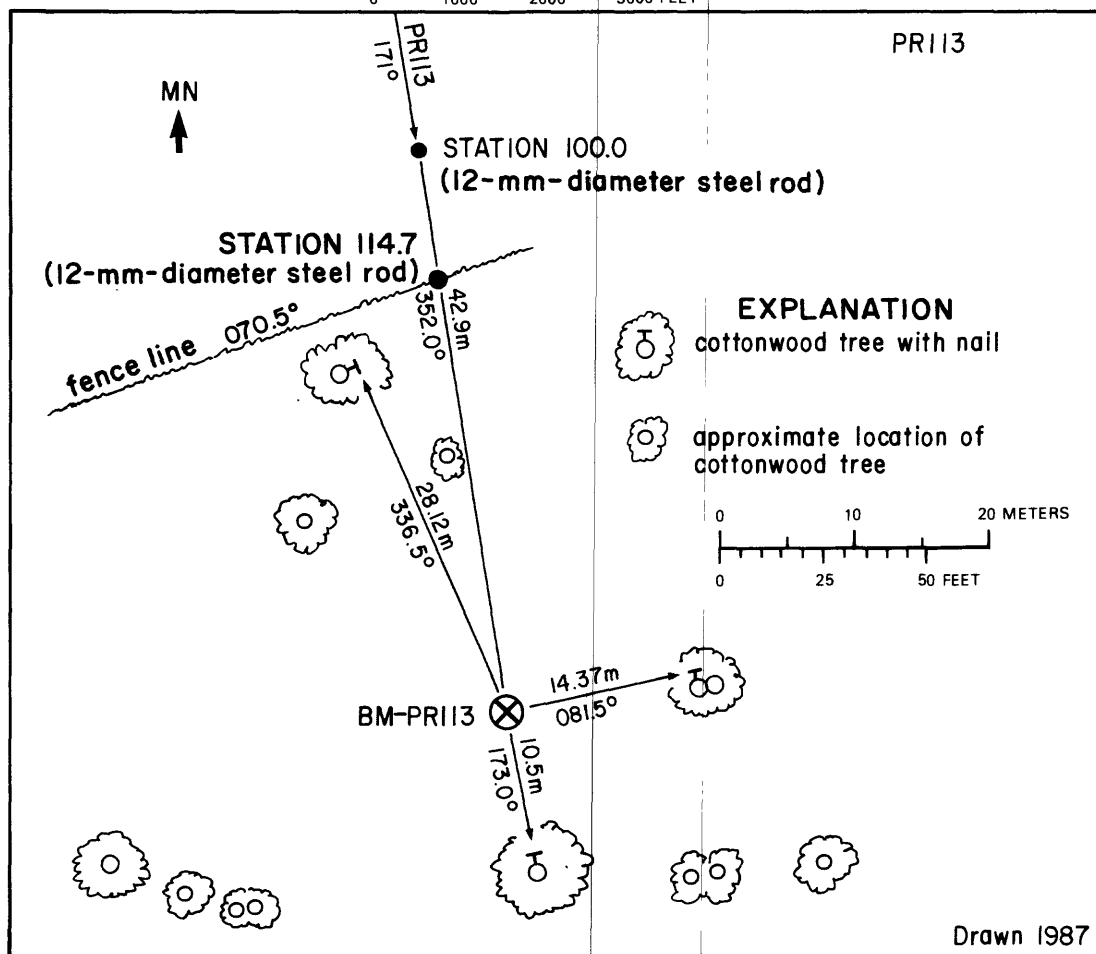
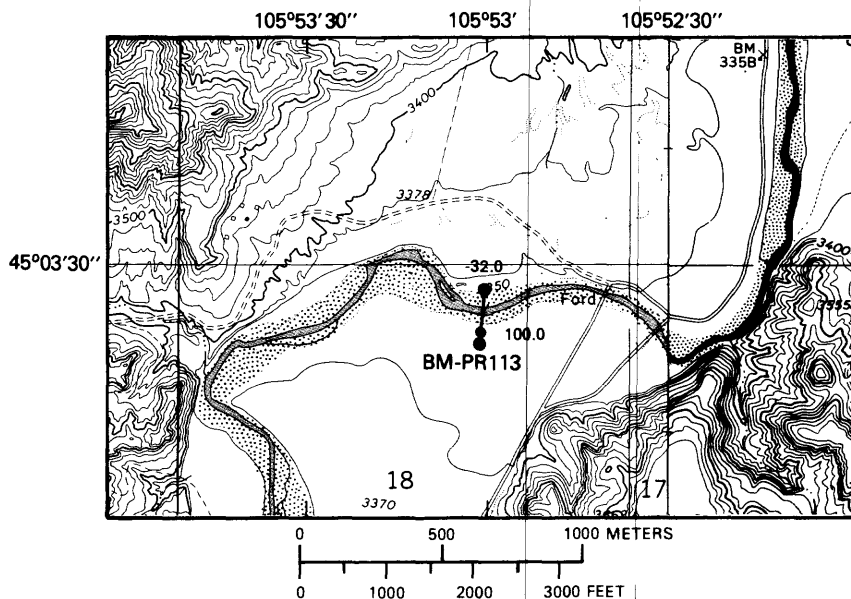


Figure 8.--Upper: Location of cross section PR113, bench mark BM-PR113, and left and right bank reference pins (tables 2 and 3) in the Bradshaw Creek quadrangle. Lower: Location of bench mark on the right bank. MN is magnetic north.

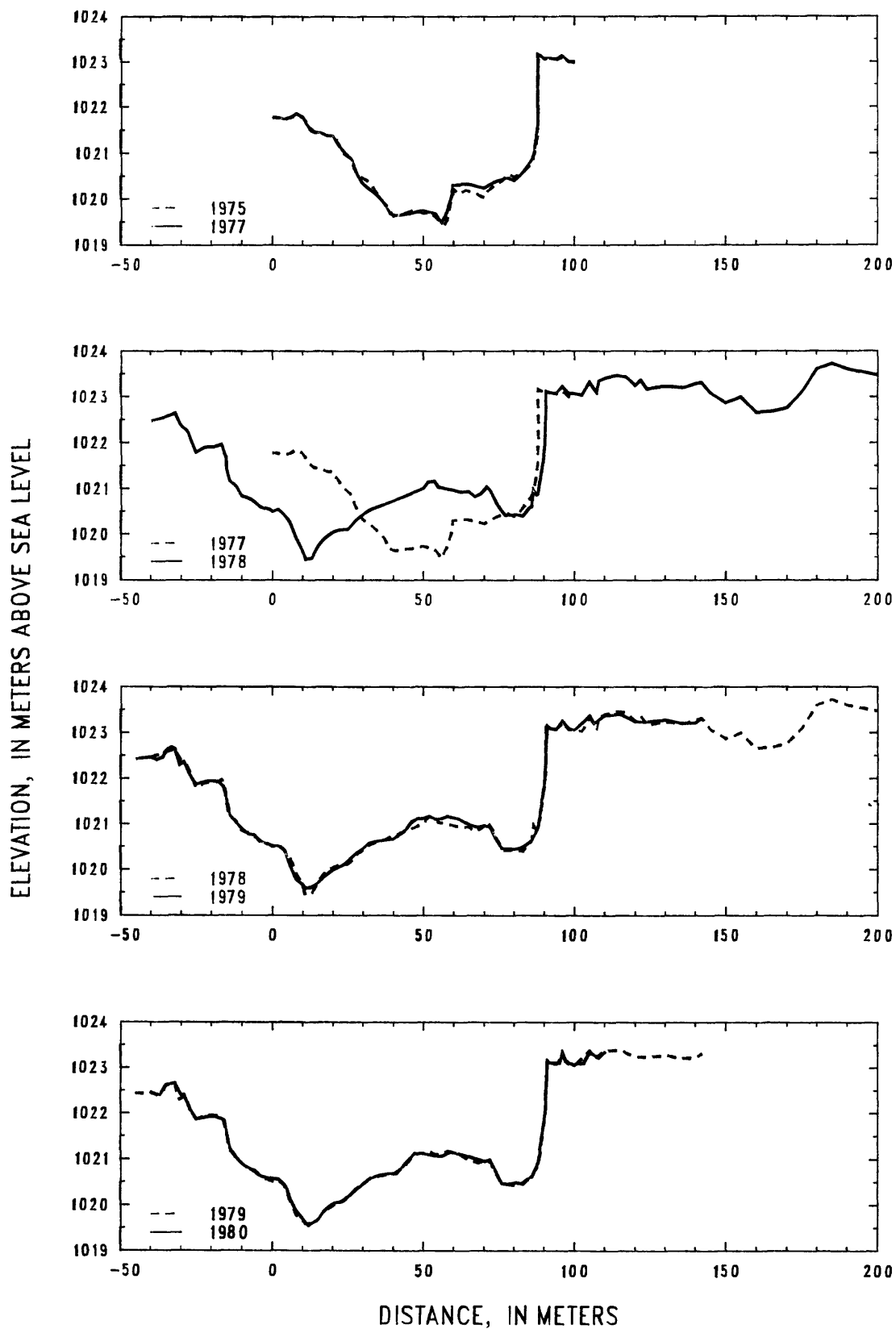


Figure 9.--Profiles of cross section PR113 from 1975 to 1980.

ELEVATION, IN METERS ABOVE SEA LEVEL

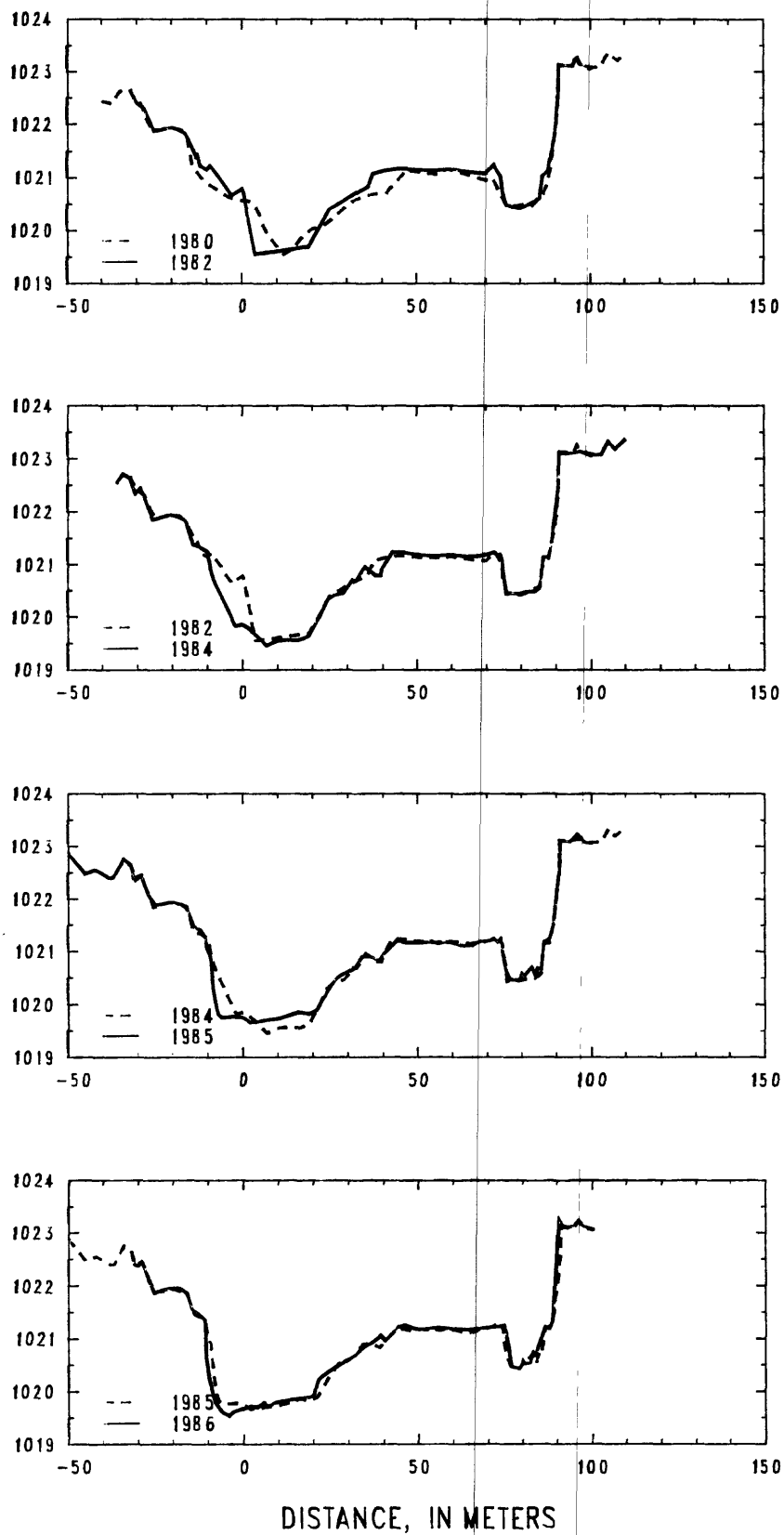


Figure 10.--Profiles of cross section PR113 from 1980 to 1986.

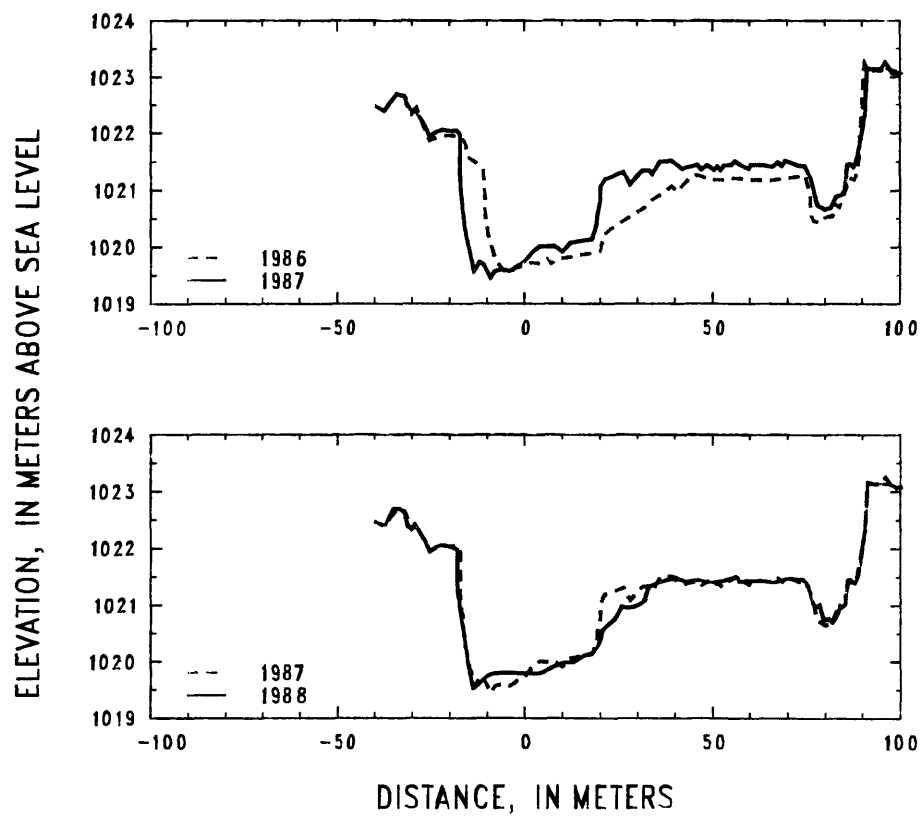


Figure 11.--Profiles of cross section PR113 from 1986 to 1988

Table 7.--Listing of horizontal stations and elevations for cross section PR113
[Sta., station, distance in meters from a reference point on
the left bank; Elev., elevation, in meters above sea level].

1975		1975		1977		1977		1978	
Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
0.0	1021.77	69.0	1020.05	0.0	1021.78	84.0	1020.66	-40.0	1022.48
2.0	1021.76	70.0	1020.03	2.0	1021.77	86.0	1020.85	-35.0	1022.57
3.0	1021.78	70.5	1020.13	4.0	1021.74	86.8	1020.99	-32.0	1022.65
4.0	1021.72	72.0	1020.21	6.0	1021.77	87.9	1021.61	-30.0	1022.37
6.0	1021.78	74.0	1020.34	8.0	1021.85	88.0	1023.17	-28.0	1022.27
8.0	1021.81	76.0	1020.39	10.0	1021.78	90.0	1023.08	-25.0	1021.79
10.0	1021.77	78.0	1020.55	12.0	1021.57	92.0	1023.08	-22.0	1021.91
11.0	1021.71	80.0	1020.48	14.0	1021.45	94.0	1023.06	-19.0	1021.91
12.0	1021.56	82.0	1020.54	16.0	1021.44	96.0	1023.12	-16.6	1021.97
13.0	1021.47	84.0	1020.64	18.0	1021.37	98.0	1023.00	-15.2	1021.70
14.0	1021.45	86.0	1020.78	20.0	1021.37	100.0	1023.00	-15.1	1021.43
16.0	1021.45	87.0	1021.01	22.0	1021.17			-14.0	1021.17
18.0	1021.38	88.0	1021.40	24.0	1021.00			-12.0	1021.06
20.0	1021.38	88.1	1023.17	26.0	1020.88			-10.0	1020.84
21.0	1021.33	89.0	1023.14	28.0	1020.54			-8.0	1020.80
22.0	1021.17	90.0	1023.07	30.0	1020.33			-6.0	1020.73
24.0	1020.97	92.0	1023.08	32.0	1020.22			-4.0	1020.60
26.0	1020.88	94.0	1023.05	34.0	1020.12			-2.0	1020.56
27.0	1020.67	96.0	1023.10	35.5	1020.03			-1.0	1020.55
28.0	1020.56	98.0	1023.00	37.0	1019.92			0.0	1020.50
30.0	1020.45	100.0	1022.98	39.0	1019.68			2.0	1020.55
32.0	1020.37			40.0	1019.65			4.0	1020.43
34.0	1020.20			42.0	1019.64			6.0	1020.25
35.0	1020.10			44.0	1019.68			8.0	1019.91
36.0	1019.98			46.0	1019.69			10.0	1019.66
38.0	1019.84			48.0	1019.73			11.0	1019.45
40.0	1019.63			50.0	1019.74			13.0	1019.48
42.0	1019.65			52.0	1019.70			15.0	1019.73
44.0	1019.70			54.0	1019.67			17.0	1019.90
46.0	1019.73			56.0	1019.48			20.0	1020.05
48.0	1019.72			58.0	1019.73			22.0	1020.10
50.0	1019.68			59.2	1020.02			25.0	1020.12
52.0	1019.71			59.5	1020.07			28.0	1020.34
54.0	1019.61			59.7	1020.30			30.0	1020.44
56.0	1019.48			62.0	1020.31			32.4	1020.55
57.0	1019.44			64.0	1020.32			35.0	1020.61
58.0	1019.55			66.0	1020.30			40.0	1020.74
59.0	1019.88			68.0	1020.26			45.0	1020.88
59.8	1020.10			70.0	1020.23			50.0	1021.01
60.2	1020.20			72.0	1020.31			51.5	1021.15
62.0	1020.10			74.0	1020.38			53.7	1021.17
64.0	1020.18			76.0	1020.43			55.0	1021.04
66.0	1020.14			78.0	1020.46			57.0	1021.01
67.3	1020.13			80.0	1020.39			59.0	1020.99
68.0	1020.09			82.0	1020.50			61.0	1020.95

Table 7.--Listings of horizontal stations and elevations for cross section PR113 --Continued.

1978		1978		1979		1979		1980	
Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
63.0	1020.92	175.0	1023.09	-45.0	1022.42	44.0	1020.86	-40.0	1022.44
65.0	1020.94	180.0	1023.61	-40.0	1022.46	46.0	1021.04	-37.0	1022.40
67.0	1020.83	185.0	1023.73	-38.0	1022.40	48.0	1021.12	-35.0	1022.62
69.0	1020.89	190.0	1023.60	-36.0	1022.46	50.0	1021.12	-32.0	1022.66
71.0	1021.05	200.0	1023.47	-35.0	1022.60	52.0	1021.17	-30.0	1022.40
72.0	1020.98			-33.0	1022.68	54.0	1021.09	-29.0	1022.41
75.0	1020.58			-32.0	1022.64	56.0	1021.11	-27.0	1022.07
77.0	1020.42			-30.5	1022.29	58.0	1021.17	-25.0	1021.86
79.0	1020.44			-29.0	1022.36	60.0	1021.13	-22.0	1021.92
81.0	1020.43			-27.0	1022.06	62.0	1021.10	-19.0	1021.93
83.0	1020.40			-25.0	1021.86	64.0	1021.02	-17.0	1021.88
85.0	1020.58			-22.0	1021.93	66.0	1020.96	-15.8	1021.83
86.0	1020.61			-20.0	1021.95	68.0	1020.92	-14.0	1021.23
86.5	1020.98			-18.0	1021.93	70.0	1020.96	-12.0	1021.03
87.5	1020.86			-16.0	1021.81	72.0	1020.94	-10.0	1020.89
88.0	1020.89			-15.0	1021.56	74.0	1020.67	-7.0	1020.77
90.0	1021.74			-14.0	1021.18	76.0	1020.46	-4.0	1020.63
90.4	1021.99			-12.0	1021.03	78.0	1020.45	-2.0	1020.59
90.7	1023.13			-10.0	1020.89	80.0	1020.44	0.0	1020.56
92.0	1023.09			-8.0	1020.77	82.0	1020.45	2.0	1020.55
94.0	1023.08			-6.0	1020.75	84.0	1020.53	4.0	1020.44
96.0	1023.23			-4.0	1020.62	86.0	1020.63	5.0	1020.33
98.0	1023.07			-2.0	1020.56	88.0	1020.91	6.0	1020.11
100.0	1023.07			0.0	1020.51	90.0	1021.80	8.0	1019.87
102.5	1023.03			2.0	1020.51	90.3	1021.93	10.0	1019.70
105.0	1023.33			4.0	1020.42	91.0	1023.16	12.0	1019.54
107.4	1023.09			6.0	1020.08	92.0	1023.09	13.0	1019.60
108.1	1023.35			8.0	1019.78	94.0	1023.07	15.0	1019.68
110.0	1023.41			10.0	1019.67	96.0	1023.26	17.0	1019.86
114.0	1023.47			11.0	1019.58	98.0	1023.08	20.0	1020.03
117.0	1023.44			13.0	1019.60	100.0	1023.05	23.0	1020.08
120.0	1023.25			15.0	1019.69	105.0	1023.37	26.0	1020.23
122.0	1023.37			17.0	1019.83	106.4	1023.19	29.0	1020.41
124.0	1023.17			20.0	1019.99	110.0	1023.38	32.0	1020.56
128.0	1023.23			22.0	1020.05	115.0	1023.40	35.0	1020.65
132.0	1023.23			24.0	1020.12	120.0	1023.23	38.0	1020.69
136.0	1023.20			26.0	1020.25	125.0	1023.24	41.0	1020.69
140.0	1023.29			28.0	1020.37	130.0	1023.28	44.0	1020.91
142.0	1023.32			30.0	1020.45	135.0	1023.20	47.0	1021.13
145.0	1023.07			32.0	1020.57	140.0	1023.22	50.0	1021.12
150.0	1022.87			34.0	1020.61	142.0	1023.31	53.0	1021.08
155.0	1023.00			36.0	1020.63			56.0	1021.06
160.0	1022.66			38.0	1020.66			59.0	1021.16
165.0	1022.68			40.0	1020.67			62.0	1021.11
170.0	1022.76			42.0	1020.76			65.0	1021.05

Table 7.--Listing of horizontal stations and elevations for cross section PR113 --Continued.

1980		1982		1982		1984		1984	
Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
68.0	1020.99	-32.0	1022.65	97.0	1023.14	-36.0	1022.53	74.4	1021.14
70.0	1020.95	-30.0	1022.40	100.0	1023.08	-34.0	1022.71	75.8	1020.43
72.0	1020.99	-28.0	1022.31	100.4	1023.08	-32.0	1022.63	77.0	1020.46
75.0	1020.58	-25.0	1021.87			-30.5	1022.34	79.5	1020.44
76.0	1020.47	-20.0	1021.94			-29.0	1022.44	81.0	1020.47
78.0	1020.46	-16.0	1021.83			-25.5	1021.84	84.0	1020.49
81.0	1020.49	-13.0	1021.38			-21.0	1021.94	85.4	1020.57
83.0	1020.45	-12.6	1021.42			-18.0	1021.91	85.7	1020.68
85.0	1020.60	-11.7	1021.20			-16.0	1021.81	86.4	1021.14
86.0	1020.62	-10.0	1021.14			-14.0	1021.37	88.0	1021.16
88.0	1020.92	-9.0	1021.22			-12.0	1021.33	89.0	1021.44
90.4	1022.03	-7.0	1021.05			-10.0	1021.24	90.8	1022.49
91.0	1023.13	-3.0	1020.65			-9.0	1020.90	90.9	1023.11
93.0	1023.10	0.0	1020.78			-8.0	1020.68	93.0	1023.09
95.0	1023.11	0.5	1020.70			-6.0	1020.40	97.0	1023.14
96.0	1023.35	2.0	1020.16			-4.0	1020.11	100.0	1023.06
97.0	1023.15	3.7	1019.55			-2.0	1019.82	100.4	1023.08
100.0	1023.05	19.0	1019.69			0.0	1019.85	103.0	1023.08
100.4	1023.08	20.0	1019.80			2.0	1019.77	105.0	1023.33
103.0	1023.10	25.0	1020.40			5.0	1019.58	107.0	1023.18
105.0	1023.35	31.8	1020.67			7.0	1019.45	110.0	1023.37
108.0	1023.22	36.0	1020.82			10.0	1019.55		
110.0	1023.36	37.5	1021.07			13.0	1019.57		
		40.0	1021.12			16.0	1019.55		
		45.0	1021.17			19.0	1019.65		
		50.0	1021.14			22.0	1020.01		
		55.0	1021.13			24.0	1020.30		
		60.0	1021.15			26.0	1020.41		
		65.0	1021.10			29.0	1020.46		
		70.0	1021.07			31.5	1020.70		
		72.5	1021.24			32.5	1020.68		
		73.0	1021.15			35.0	1020.96		
		74.4	1021.01			38.0	1020.79		
		75.0	1020.68			39.6	1020.79		
		76.0	1020.46			40.0	1020.93		
		80.0	1020.42			42.8	1021.24		
		85.5	1020.59			46.0	1021.23		
		86.3	1021.03			50.0	1021.18		
		88.0	1021.12			55.0	1021.16		
		90.0	1021.82			60.0	1021.19		
		90.4	1022.12			65.0	1021.14		
		90.7	1022.56			69.0	1021.17		
		91.0	1023.13			72.4	1021.23		
		95.0	1023.11			73.4	1021.15		
		96.0	1023.26			74.0	1021.19		

Table 7.--Listing of horizontal stations and elevations for cross section PR113 --Continued.

1985		1985		1986		1986		1987	
Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
-50.0	1022.87	50.0	1021.17	-32.0	1022.62	61.0	1021.17	-40.0	1022.48
-45.0	1022.47	52.0	1021.16	-31.0	1022.39	64.0	1021.16	-37.4	1022.40
-42.0	1022.55	54.0	1021.19	-30.0	1022.37	67.0	1021.18	-34.0	1022.70
-40.0	1022.47	56.0	1021.14	-29.0	1022.46	70.0	1021.21	-32.0	1022.66
-38.0	1022.39	58.0	1021.18	-27.0	1022.12	73.0	1021.23	-30.2	1022.34
-37.0	1022.40	61.0	1021.15	-25.4	1021.86	74.6	1021.26	-29.3	1022.43
-34.0	1022.75	63.0	1021.10	-24.0	1021.91	76.0	1020.87	-27.0	1022.17
-32.0	1022.64	66.0	1021.12	-21.0	1021.96	76.5	1020.53	-25.4	1021.93
-31.0	1022.39	68.0	1021.19	-18.0	1021.95	77.0	1020.45	-24.0	1022.01
-29.0	1022.45	70.0	1021.19	-16.0	1021.85	79.0	1020.42	-22.0	1022.06
-27.0	1022.08	72.0	1021.25	-14.6	1021.55	80.0	1020.52	-20.0	1022.03
-25.0	1021.88	73.0	1021.16	-13.0	1021.47	82.0	1020.54	-18.0	1022.05
-20.0	1021.94	74.0	1021.23	-11.0	1021.34	83.0	1020.74	-17.2	1021.97
-16.0	1021.85	75.3	1020.67	-10.8	1021.19	83.9	1020.68	-17.2	1021.13
-14.0	1021.45	76.5	1020.47	-10.5	1020.61	86.6	1021.22	-16.0	1020.39
-12.0	1021.40	78.0	1020.44	-9.7	1020.23	87.8	1021.18	-13.5	1019.56
-10.7	1021.28	79.5	1020.47	-8.0	1019.79	88.9	1021.37	-12.0	1019.74
-10.3	1021.06	80.0	1020.57	-6.0	1019.60	90.6	1023.24	-11.0	1019.70
-9.3	1020.91	80.5	1020.50	-4.0	1019.53	91.3	1023.13	-9.0	1019.45
-8.2	1020.20	81.5	1020.60	-3.0	1019.61	92.0	1023.11	-8.0	1019.57
-7.0	1019.81	82.8	1020.70	0.0	1019.68	93.0	1023.11	-6.0	1019.61
-6.0	1019.75	84.0	1020.52	2.0	1019.73	95.0	1023.11	-4.0	1019.57
-4.0	1019.76	84.6	1020.69	4.0	1019.70	96.0	1023.22	-2.0	1019.66
-2.0	1019.77	85.6	1020.66	6.0	1019.79	97.0	1023.14	0.0	1019.74
0.0	1019.75	86.5	1021.18	7.0	1019.70	100.0	1023.06	2.0	1019.90
2.0	1019.66	88.0	1021.23	9.0	1019.79			4.0	1020.01
4.0	1019.67	89.0	1021.41	12.0	1019.82			6.0	1020.00
7.0	1019.71	90.0	1021.99	15.0	1019.86			8.0	1020.01
10.0	1019.73	90.9	1022.56	18.0	1019.88			10.0	1019.91
14.0	1019.81	91.1	1023.10	20.0	1019.92			12.0	1020.06
16.0	1019.86	92.0	1023.10	21.3	1020.22			14.0	1020.09
19.0	1019.82	94.0	1023.08	23.0	1020.32			16.0	1020.11
21.0	1019.89	96.0	1023.23	26.0	1020.45			18.0	1020.13
23.5	1020.18	98.0	1023.07	29.0	1020.57			19.2	1020.38
25.0	1020.33	100.0	1023.05	32.0	1020.69			19.3	1020.54
27.0	1020.51	100.4	1023.07	34.0	1020.83			20.1	1020.78
29.0	1020.58			37.0	1020.94			20.1	1021.04
32.0	1020.68			39.0	1021.06			21.3	1021.19
34.0	1020.89			40.5	1020.96			26.3	1021.31
36.0	1020.91			44.0	1021.22			28.0	1021.09
39.0	1020.82			46.0	1021.26			30.0	1021.25
40.0	1020.93			49.0	1021.18			31.5	1021.34
42.0	1021.07			52.0	1021.17			33.3	1021.33
44.0	1021.20			55.0	1021.21			34.0	1021.27
47.0	1021.15			58.0	1021.19			36.0	1021.49

Table 7.--Listing of horizontal stations and elevations for cross section PR113 --Continued.

1987		1988		1988	
Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
39.0	1021.52	-40.0	1022.47	37.0	1021.44
42.0	1021.36	-37.0	1022.41	40.0	1021.49
44.0	1021.40	-35.0	1022.69	43.0	1021.41
46.0	1021.44	-34.0	1022.71	46.0	1021.44
47.0	1021.35	-33.0	1022.69	49.0	1021.39
48.5	1021.43	-32.0	1022.63	52.0	1021.42
50.5	1021.34	-31.0	1022.39	55.0	1021.48
51.3	1021.41	-30.3	1022.35	56.7	1021.48
52.2	1021.34	-29.0	1022.40	57.0	1021.42
53.0	1021.42	-27.0	1022.17	60.0	1021.43
55.0	1021.44	-25.4	1021.94	63.0	1021.43
56.0	1021.50	-24.0	1022.02	66.0	1021.41
58.0	1021.41	-22.0	1022.06	68.0	1021.43
59.8	1021.36	-20.0	1022.04	70.0	1021.48
60.2	1021.44	-18.0	1021.99	72.0	1021.46
62.0	1021.44	-17.9	1021.34	74.0	1021.45
64.0	1021.43	-17.3	1020.95	75.3	1021.36
66.0	1021.41	-15.4	1020.16	76.6	1021.06
67.4	1021.49	-14.5	1019.78	77.5	1020.96
68.5	1021.41	-13.7	1019.53	78.5	1021.02
69.4	1021.51	-13.0	1019.56	79.7	1020.74
71.0	1021.48	-11.0	1019.70	81.0	1020.77
73.0	1021.42	-9.0	1019.78	82.0	1020.69
74.6	1021.42	-6.0	1019.81	83.0	1020.78
75.9	1021.26	-3.0	1019.80	83.9	1020.99
78.0	1020.74	0.0	1019.79	84.3	1020.95
80.0	1020.65	2.0	1019.78	85.4	1021.02
81.6	1020.68	4.0	1019.79	86.3	1021.44
83.0	1020.88	7.0	1019.90	88.0	1021.40
84.5	1020.92	10.0	1019.98	88.8	1021.52
85.2	1021.00	13.0	1019.98	90.6	1022.30
86.1	1021.45	16.0	1020.12	91.0	1022.51
86.8	1021.46	18.0	1020.15	91.4	1023.16
87.7	1021.40	19.0	1020.23	93.0	1023.13
88.5	1021.52	20.0	1020.38	95.0	1023.13
90.7	1022.33	20.6	1020.56	97.0	1023.15
90.9	1022.57	22.0	1020.65	99.0	1023.07
91.3	1023.16	24.0	1020.76	100.4	1023.08
93.0	1023.13	25.7	1020.98		
95.0	1023.14	27.0	1020.95		
96.0	1023.27	29.0	1020.97		
98.0	1023.06	31.0	1021.04		
100.0	1023.06	32.0	1021.09		
100.4	1023.08	33.0	1021.33		
		35.0	1021.39		

Description of Cross Section PR116

Location: Township 9 South/Range 48 East--section 8
U.S. Geological Survey quadrangle (1:24,000): Moorhead

Landowners--left bank: county road
right bank: Amory Hubbard

Access: left bank

Permission from: none necessary

Reference pins

Station (meters)	Elevation (meters above sea level)	Comments
-1.7	1,020.367	Pins on the left bank were closest to the leveling instrument. Installed 0.22 meter above ground level in 1988 after cable car was removed.
-1.3	1,019.995	Bolt in downstream concrete footing.
-1.1	1,019.993	Bolt in upstream concrete footing.
0.0	1,019.690	Installed 0.04 meter above ground level in 1988.
110.0	1,019.406	Center of concrete deadman.
112.6	1,019.828	Ground level under fence line.

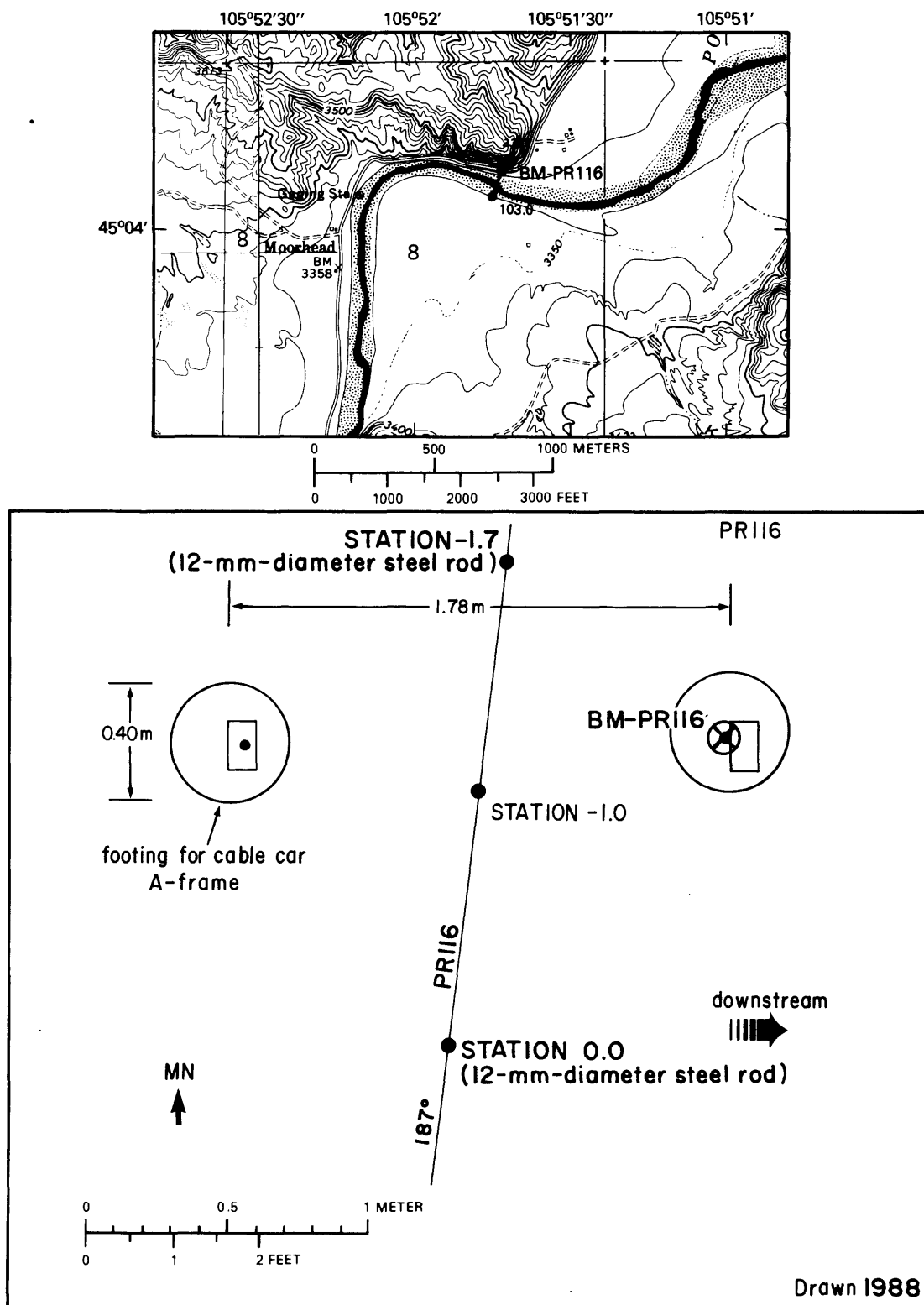


Figure 12.--Upper: Location of cross section PR116, bench mark BM-PR116, and right bank reference pins (tables 2 and 3) in the Moorhead quadrangle. Lower: Location of bench mark on the left bank. MN is magnetic north.

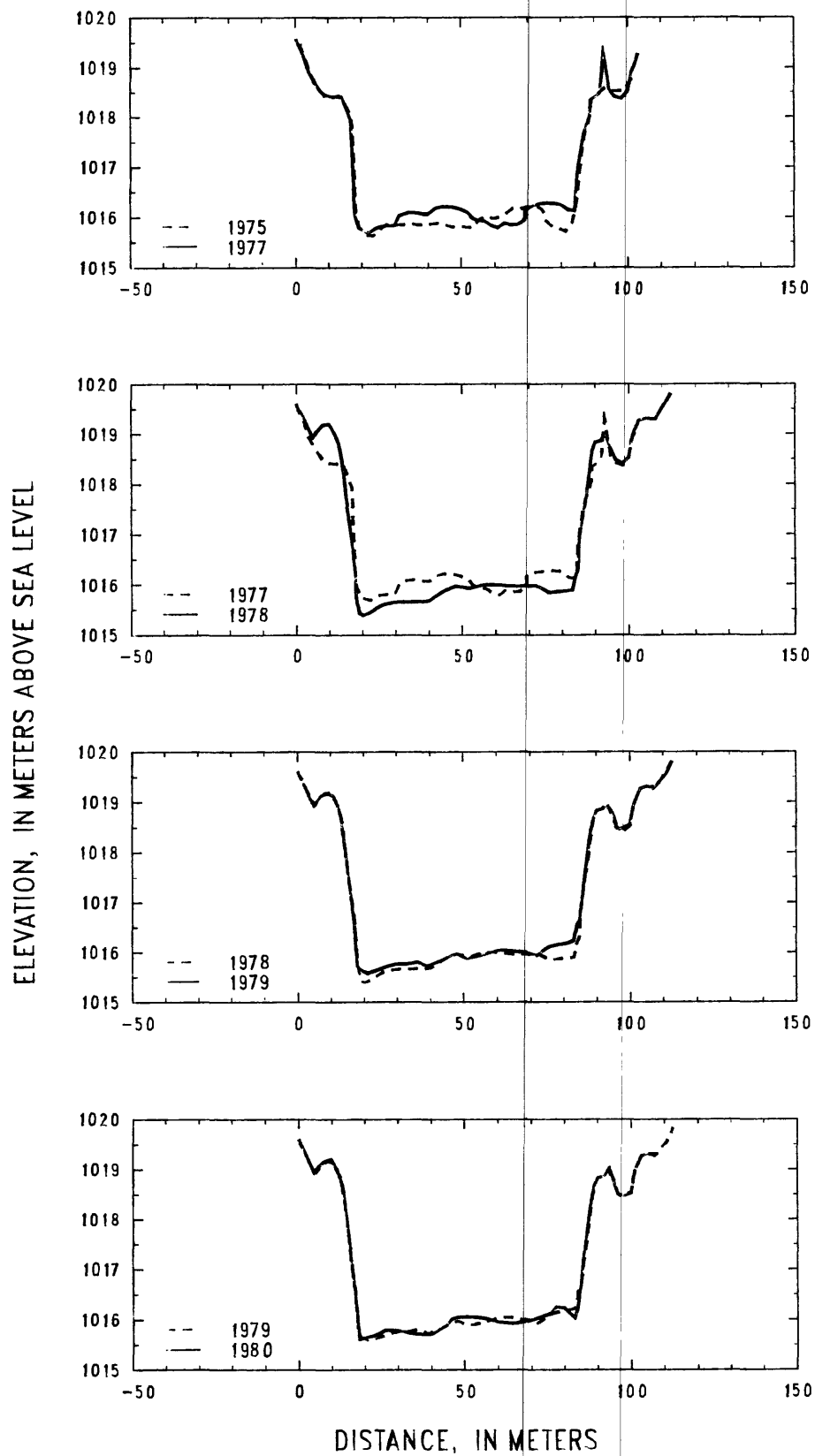


Figure 13.--Profiles of cross section PR16 from 1975 to 1980

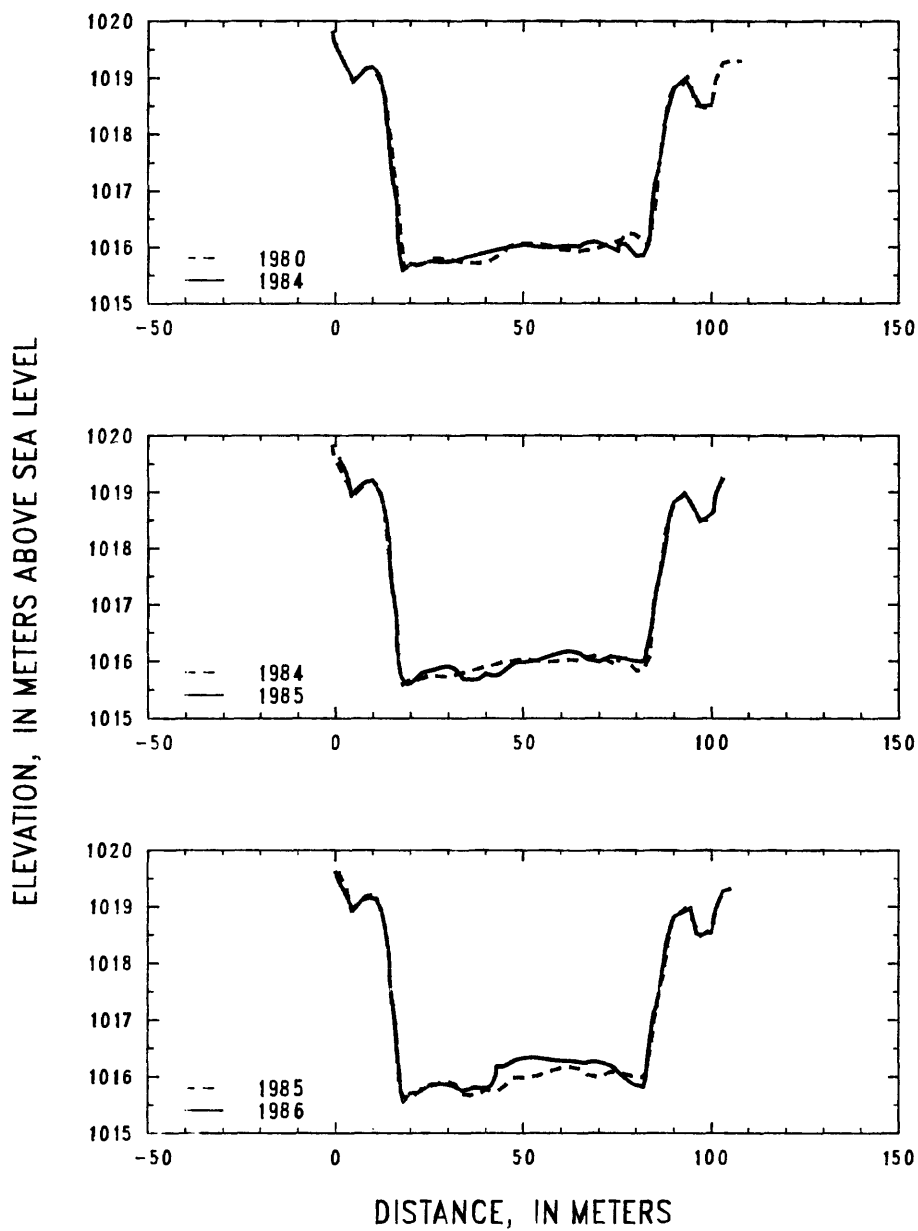


Figure 14.--Profiles of cross section PR116 from 1980 to 1986.

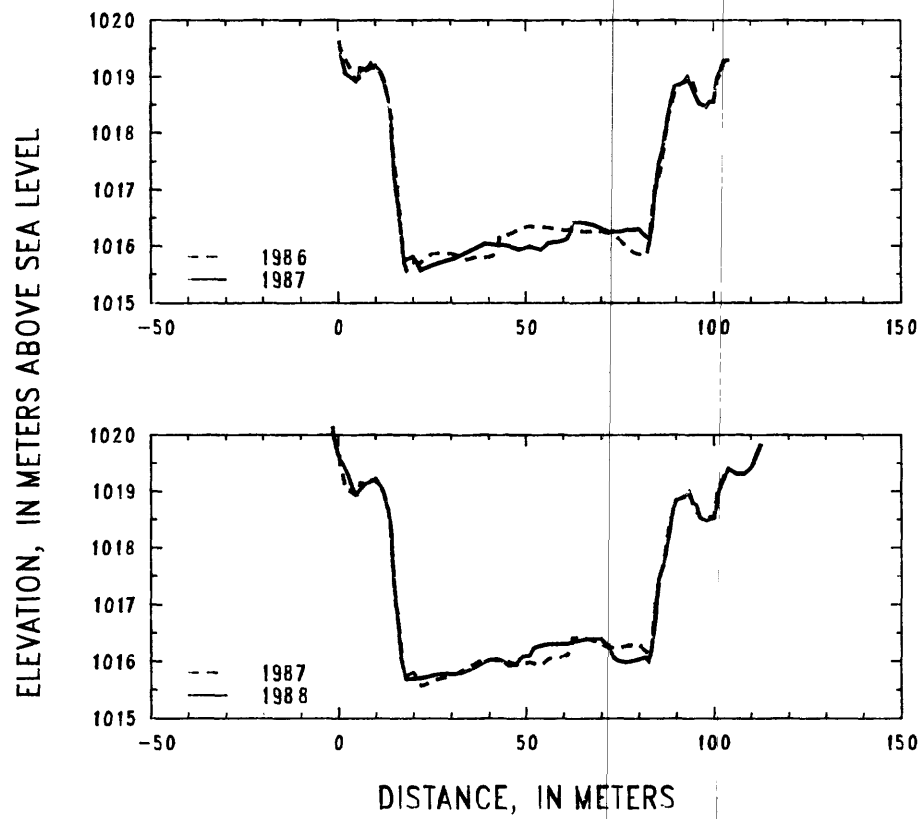


Figure 15.--Profiles of cross section PR116 from 1986 to 1988.

Table 8.--Listing of horizontal stations and elevations for cross section PR116
[Sta., station, distance in meters from a reference point on
the left bank; Elev., elevation, in meters above sea level].

1975		1975		1977		1977		1978	
Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
1.3	1019.46	77.3	1015.81	0.0	1019.56	84.1	1016.12	0.0	1019.59
3.3	1019.12	79.3	1015.76	2.0	1019.31	84.8	1016.87	2.0	1019.36
5.3	1018.73	81.3	1015.70	4.0	1018.91	86.8	1017.67	4.0	1019.05
7.3	1018.57	83.3	1015.89	6.0	1018.68	88.6	1017.99	5.0	1018.92
9.3	1018.40	83.6	1015.98	8.0	1018.50	89.0	1018.34	6.0	1019.02
11.3	1018.39	84.3	1016.17	10.0	1018.41	91.7	1018.48	8.0	1019.17
13.3	1018.43	86.3	1017.36	12.0	1018.39	92.8	1019.29	10.0	1019.20
15.3	1018.23	87.3	1017.75	14.0	1018.41	94.5	1018.56	12.0	1018.96
16.8	1018.00	88.3	1017.90	16.8	1017.93	96.0	1018.42	13.0	1018.77
17.3	1017.71	89.3	1018.37	17.9	1016.03	98.0	1018.37	14.0	1018.37
18.3	1016.01	91.3	1018.48	19.0	1015.78	100.0	1018.52	15.0	1017.71
19.3	1015.80	93.3	1018.59	20.0	1015.73	101.0	1018.90	16.0	1017.23
21.3	1015.65	95.3	1018.52	22.0	1015.68	102.0	1019.05	17.0	1016.76
23.3	1015.61	99.3	1018.54	24.0	1015.77	103.0	1019.27	17.8	1016.16
25.3	1015.71	101.3	1018.82	26.0	1015.81			18.0	1015.73
27.3	1015.84			28.0	1015.83			19.0	1015.43
29.3	1015.84			30.0	1015.84			20.0	1015.38
31.3	1015.85			31.4	1016.02			21.0	1015.41
33.3	1015.85			34.0	1016.09			22.0	1015.44
35.3	1015.86			36.0	1016.09			24.0	1015.54
37.3	1015.83			38.0	1016.06			26.0	1015.61
39.3	1015.84			40.0	1016.06			30.0	1015.66
41.3	1015.86			42.0	1016.17			34.0	1015.66
43.3	1015.87			44.0	1016.21			38.0	1015.67
45.3	1015.83			46.0	1016.21			40.0	1015.68
47.3	1015.79			48.0	1016.19			44.0	1015.87
49.3	1015.82			50.0	1016.15			48.0	1015.97
51.3	1015.78			52.0	1016.09			52.0	1015.92
53.3	1015.77			53.1	1015.99			56.0	1016.00
55.3	1015.95			55.0	1015.92			60.0	1016.00
57.3	1016.00			57.0	1015.92			64.0	1015.96
58.3	1016.01			59.0	1015.83			68.0	1015.96
59.3	1015.96			61.0	1015.78			72.0	1015.98
60.3	1015.97			63.0	1015.88			76.0	1015.84
61.3	1015.99			65.0	1015.84			80.0	1015.87
63.3	1016.06			67.0	1015.85			83.0	1015.89
65.3	1016.16			69.0	1015.94			83.9	1016.17
67.3	1016.15			69.2	1016.01			84.8	1016.31
69.3	1016.19			69.3	1016.16			85.0	1016.88
71.3	1016.19			72.0	1016.24			86.0	1017.23
73.3	1016.19			74.0	1016.27			87.4	1017.86
74.3	1016.15			76.0	1016.28			89.0	1018.66
75.0	1016.07			78.0	1016.27			90.0	1018.83
75.1	1015.99			80.0	1016.24			91.7	1018.86
75.3	1015.93			82.0	1016.14			93.0	1018.99

Table 8.--Listing of horizontal stations and elevations for cross section PR116 --Continued.

1978		1979		1979		1980		1980	
Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
94.5	1018.73	0.0	1019.58	95.0	1018.74	0.0	1019.60	100.0	1018.52
96.0	1018.48	2.0	1019.35	96.0	1018.49	2.0	1019.36	101.0	1018.95
98.0	1018.40	4.0	1019.03	97.0	1018.45	4.8	1018.93	103.0	1019.26
100.0	1018.53	5.4	1018.94	100.0	1018.54	6.0	1019.05	105.0	1019.31
101.0	1018.93	7.0	1019.11	101.0	1018.93	8.0	1019.17	108.0	1019.30
103.0	1019.27	9.0	1019.17	103.0	1019.26	10.0	1019.20		
105.0	1019.31	11.0	1019.12	105.0	1019.31	12.0	1018.95		
108.0	1019.29	12.0	1018.96	107.0	1019.25	13.4	1018.67		
112.5	1019.80	13.0	1018.76	111.0	1019.57	14.2	1018.23		
		14.0	1018.30	112.5	1019.81	16.0	1017.16		
		15.0	1017.71			17.0	1016.61		
		16.0	1017.14			18.3	1015.61		
		17.0	1016.63			20.0	1015.65		
		18.0	1015.71			23.0	1015.69		
		19.0	1015.64			26.0	1015.80		
		21.0	1015.57			30.0	1015.78		
		24.0	1015.64			35.0	1015.71		
		27.0	1015.72			40.0	1015.71		
		30.0	1015.77			45.0	1015.92		
		33.0	1015.76			46.0	1016.01		
		36.0	1015.80			48.0	1016.05		
		39.0	1015.72			52.0	1016.06		
		42.0	1015.80			56.0	1016.03		
		45.0	1015.90			60.0	1015.95		
		48.0	1015.96			65.0	1015.92		
		51.0	1015.87			70.0	1015.99		
		54.0	1015.91			73.0	1016.06		
		57.0	1015.97			76.0	1016.13		
		60.0	1016.03			77.5	1016.25		
		63.0	1016.04			79.8	1016.23		
		66.0	1016.01			81.0	1016.15		
		69.0	1015.99			82.0	1016.10		
		72.0	1015.92			83.0	1016.03		
		75.0	1016.09			84.0	1016.25		
		78.0	1016.15			84.4	1016.55		
		81.0	1016.18			84.8	1016.62		
		83.0	1016.23			86.0	1017.38		
		84.0	1016.56			88.0	1018.37		
		84.8	1016.62			89.0	1018.69		
		87.0	1017.77			90.0	1018.83		
		88.0	1018.30			92.0	1018.86		
		89.0	1018.67			93.5	1019.01		
		90.0	1018.82			95.0	1018.72		
		92.0	1018.87			96.0	1018.50		
		94.0	1018.88			98.0	1018.46		

Table 8.--Listing of horizontal stations and elevations for cross section PR116 --Continued.

1984		1985		1985		1986		1986	
Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
-1.0	1019.83	1.0	1019.61	85.0	1017.12	0.0	1019.62	94.4	1018.97
0.0	1019.62	3.0	1019.37	87.3	1017.84	3.0	1019.19	96.0	1018.52
3.0	1019.20	4.5	1018.93	89.0	1018.61	5.0	1018.93	97.0	1018.49
5.0	1018.94	6.0	1019.05	90.0	1018.82	7.0	1019.10	100.0	1018.53
8.0	1019.17	8.0	1019.18	93.0	1018.97	9.0	1019.17	101.0	1018.94
10.0	1019.21	10.0	1019.21	95.0	1018.75	11.0	1019.14	102.0	1019.07
11.8	1019.06	12.0	1018.99	97.0	1018.48	12.4	1018.92	103.0	1019.28
13.3	1018.67	13.6	1018.58	99.0	1018.55	13.6	1018.56	105.0	1019.31
15.3	1017.24	14.4	1018.15	100.5	1018.65	14.4	1018.16		
16.5	1016.71	14.7	1017.67	101.0	1018.95	14.7	1017.65		
16.7	1016.20	16.4	1016.70	103.0	1019.25	15.7	1017.09		
17.0	1015.90	16.6	1016.20			17.0	1016.08		
18.0	1015.59	17.1	1015.92			17.6	1015.71		
20.0	1015.70	17.6	1015.73			18.3	1015.57		
22.0	1015.68	19.0	1015.61			20.0	1015.71		
25.0	1015.75	20.0	1015.61			22.0	1015.70		
30.0	1015.73	21.5	1015.70			25.0	1015.86		
35.0	1015.82	23.0	1015.80			28.0	1015.87		
40.0	1015.91	25.0	1015.84			31.0	1015.85		
45.0	1015.99	27.0	1015.87			34.0	1015.75		
50.0	1016.04	28.0	1015.90			37.0	1015.81		
55.0	1015.99	30.0	1015.91			40.0	1015.79		
58.5	1016.00	32.0	1015.86			41.5	1015.84		
62.0	1016.03	34.0	1015.69			42.6	1015.99		
65.0	1016.01	36.0	1015.67			42.9	1016.18		
66.3	1016.07	38.0	1015.68			45.0	1016.19		
69.0	1016.10	40.0	1015.78			48.0	1016.30		
70.5	1016.06	42.0	1015.74			51.0	1016.34		
75.0	1015.93	43.5	1015.76			54.0	1016.33		
75.3	1016.05	46.6	1015.93			57.0	1016.30		
77.0	1016.06	48.0	1015.99			60.0	1016.27		
80.0	1015.84	51.0	1015.99			63.0	1016.27		
82.0	1015.85	54.0	1016.02			66.0	1016.24		
83.7	1016.11	57.0	1016.10			69.0	1016.27		
84.7	1017.03	60.0	1016.16			72.0	1016.22		
86.0	1017.39	62.0	1016.18			74.0	1016.16		
88.0	1018.31	65.0	1016.14			76.0	1016.03		
90.0	1018.83	67.0	1016.03			79.0	1015.87		
93.0	1018.99	70.0	1015.99			82.0	1015.82		
97.0	1018.49	73.0	1016.09			82.5	1015.93		
100.0	1018.52	76.0	1016.06			84.7	1017.12		
		80.0	1016.00			85.4	1017.23		
		82.0	1016.00			86.0	1017.41		
		82.5	1016.07			88.0	1018.31		
		84.0	1016.53			90.0	1018.82		

Table 8.--Listing of horizontal stations and elevations for cross section PR116 --Continued.

1987		1987		1988		1988	
Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
0.0	1019.63	79.0	1016.28	-1.7	1020.15	79.0	1016.01
2.0	1019.06	80.0	1016.30	0.0	1019.65	81.0	1016.07
4.6	1018.93	81.0	1016.22	2.0	1019.40	82.0	1016.07
5.7	1018.97	83.0	1016.10	4.5	1018.95	82.6	1016.00
6.0	1019.15	83.5	1016.31	5.5	1018.99	83.3	1016.17
6.5	1019.15	84.4	1016.93	7.0	1019.12	84.6	1016.84
6.6	1019.11	85.5	1017.49	9.0	1019.19	85.2	1017.39
8.1	1019.17	86.5	1017.67	10.0	1019.23	86.0	1017.58
8.7	1019.24	88.0	1018.36	12.0	1019.02	87.0	1017.80
9.0	1019.18	89.7	1018.83	13.0	1018.75	89.0	1018.63
10.0	1019.20	92.0	1018.90	13.7	1018.54	90.0	1018.85
12.0	1019.02	93.2	1018.99	14.3	1018.19	92.0	1018.90
13.5	1018.60	94.0	1018.84	14.7	1017.60	93.4	1019.00
14.2	1018.16	96.0	1018.54	15.0	1017.25	94.5	1018.78
14.8	1017.51	98.0	1018.45	16.0	1016.64	95.3	1018.75
15.0	1017.19	99.0	1018.55	16.4	1016.23	96.3	1018.52
16.0	1016.75	100.0	1018.56	17.0	1015.96	98.0	1018.47
16.5	1016.30	101.0	1018.96	18.0	1015.68	100.0	1018.52
17.6	1015.73	103.0	1019.29	20.0	1015.69	100.8	1018.76
20.0	1015.80			23.0	1015.72	101.0	1018.93
22.0	1015.56			26.0	1015.77	103.0	1019.26
25.0	1015.66			29.0	1015.78	104.0	1019.40
28.0	1015.71			32.0	1015.79	106.0	1019.31
30.0	1015.75			35.0	1015.86	108.0	1019.30
33.0	1015.84			38.0	1015.97	110.0	1019.42
36.0	1015.95			40.0	1016.02	111.0	1019.57
39.0	1016.04			42.0	1016.04	112.6	1019.83
42.0	1016.01			43.0	1016.03		
45.0	1016.00			45.0	1015.93		
48.0	1015.93			47.0	1015.93		
51.0	1015.99			49.0	1016.08		
54.0	1015.92			51.0	1016.11		
56.0	1016.05			52.0	1016.23		
59.0	1016.07			54.0	1016.29		
61.0	1016.12			57.0	1016.31		
62.1	1016.26			60.0	1016.30		
62.4	1016.41			63.0	1016.35		
64.0	1016.42			66.0	1016.39		
66.0	1016.40			68.0	1016.40		
68.0	1016.36			70.0	1016.39		
70.0	1016.31			71.0	1016.30		
72.0	1016.23			72.0	1016.26		
74.0	1016.25			73.0	1016.09		
75.0	1016.24			74.0	1016.02		
77.0	1016.28			76.0	1015.98		

Description of Cross Section PR120

Location: Township 8 South/Range 48 East--section 33
U.S. Geological Survey quadrangle (1:24,000): Moorhead

Landowners--left bank: Harold Crocker
right bank: Amory Hubbard

Access: left bank

Permission from: Hugh Fulton (T8S/R48E--32) or
George Fulton (T9S/R48E--8)

Reference pins

Station (meters)	Elevation (meters above sea level)	Comments
		Both of these pins were across the river from the leveling instrument.
100.9	1,013.927	0.16 meter above 1987 ground level.
104.0	1,014.043	0.20 meter above 1987 ground level.

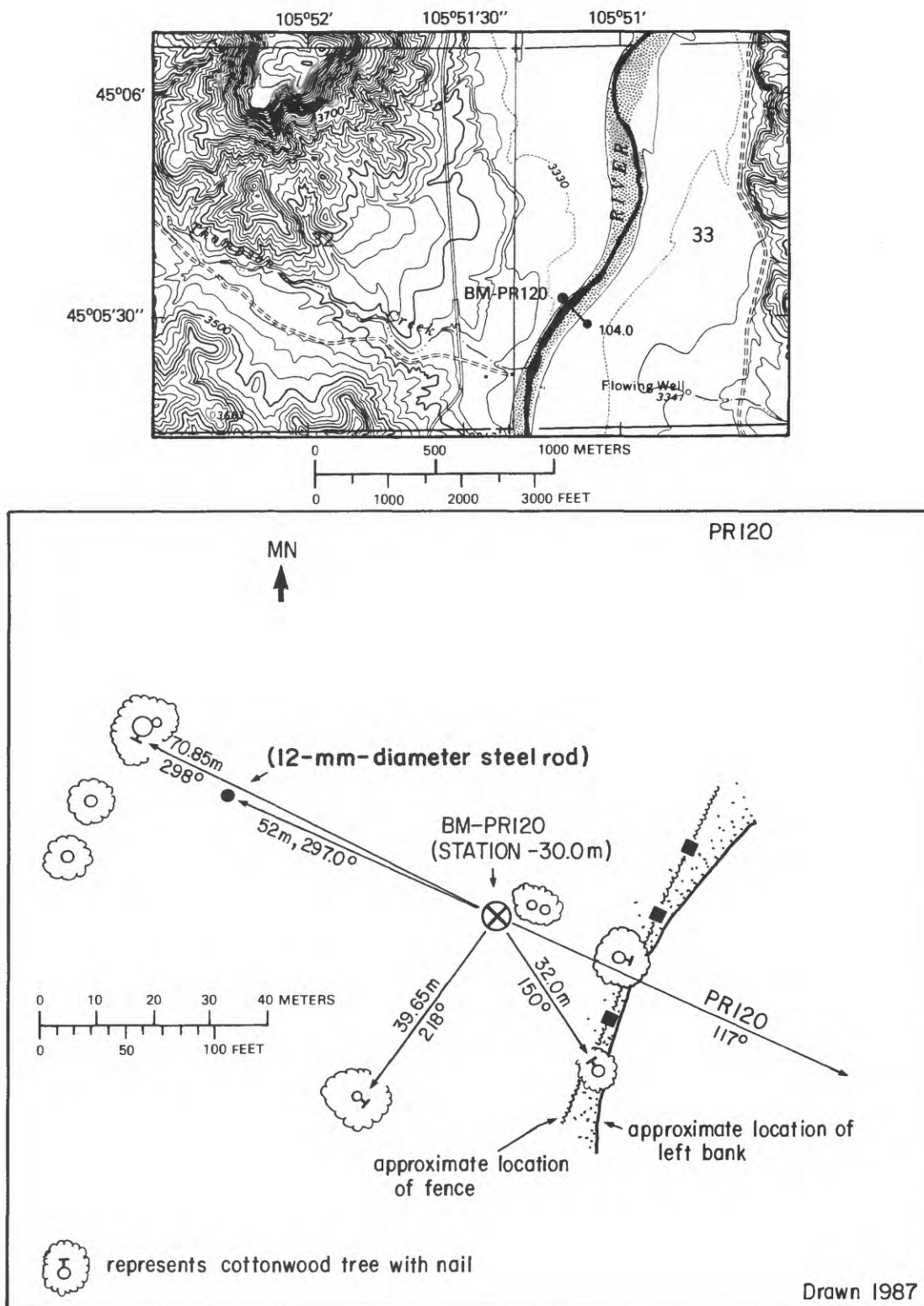


Figure 16.--Upper: Location of cross section PR120, bench mark BM-PR120, and right bank reference pins (tables 2 and 3) in Moorhead quadrangle. Lower: Location of bench mark on the left bank. MN is magnetic north.

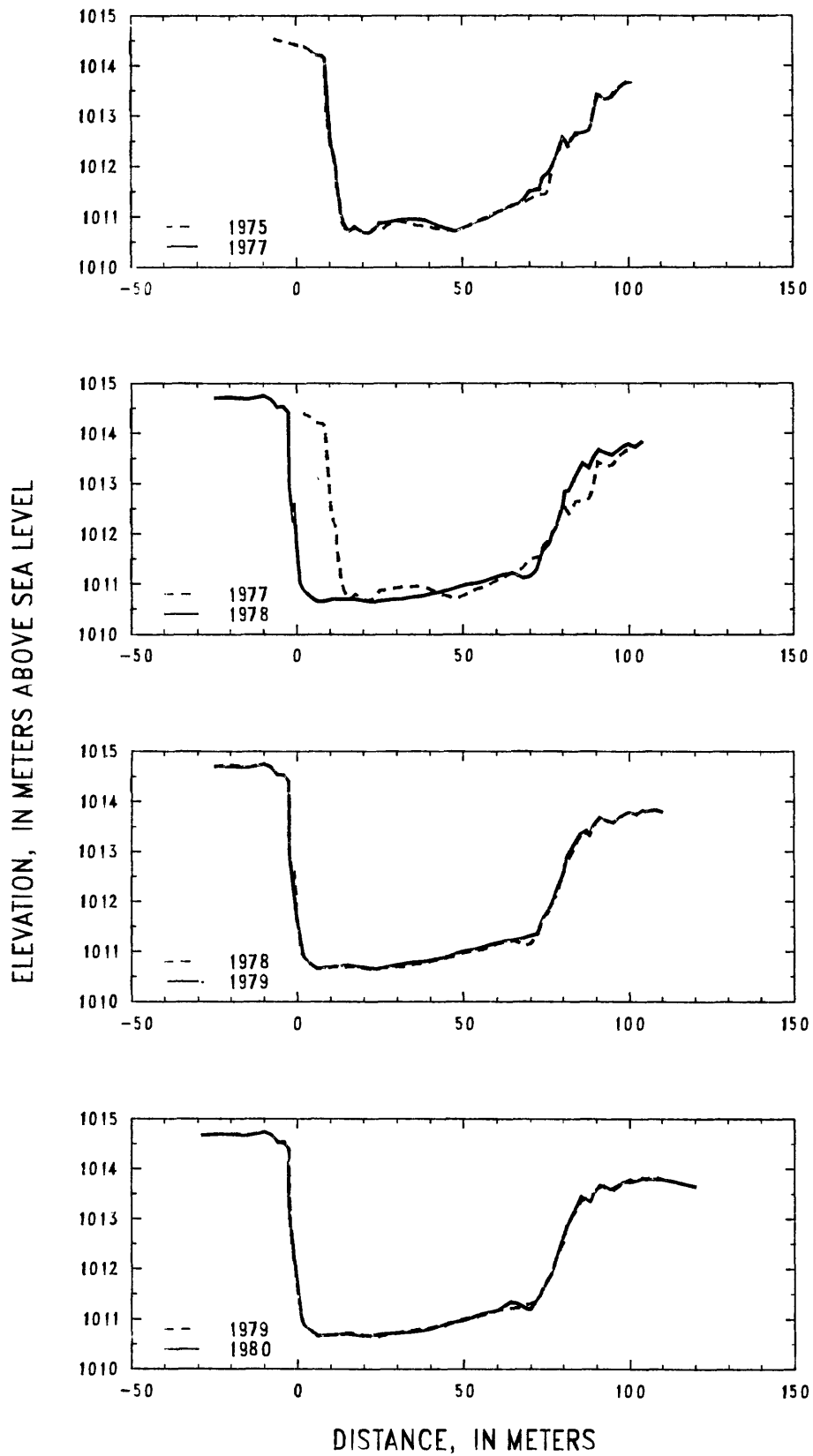


Figure 17.--Profiles of cross section PR120 from 1975 to 1980.

ELEVATION, IN METERS ABOVE SEA LEVEL

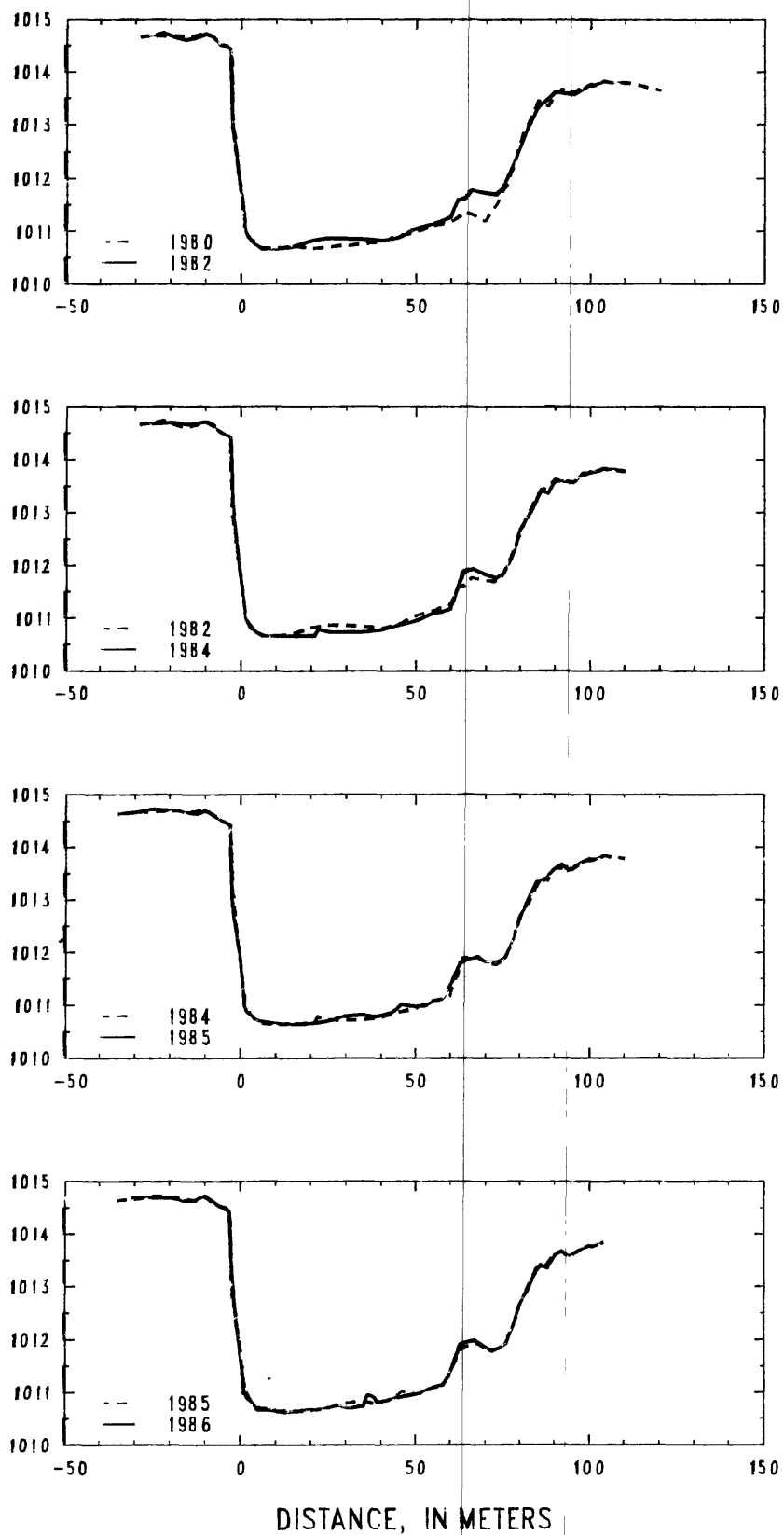


Figure 18 --Profiles of cross section PR120 from 1980 to 1986.

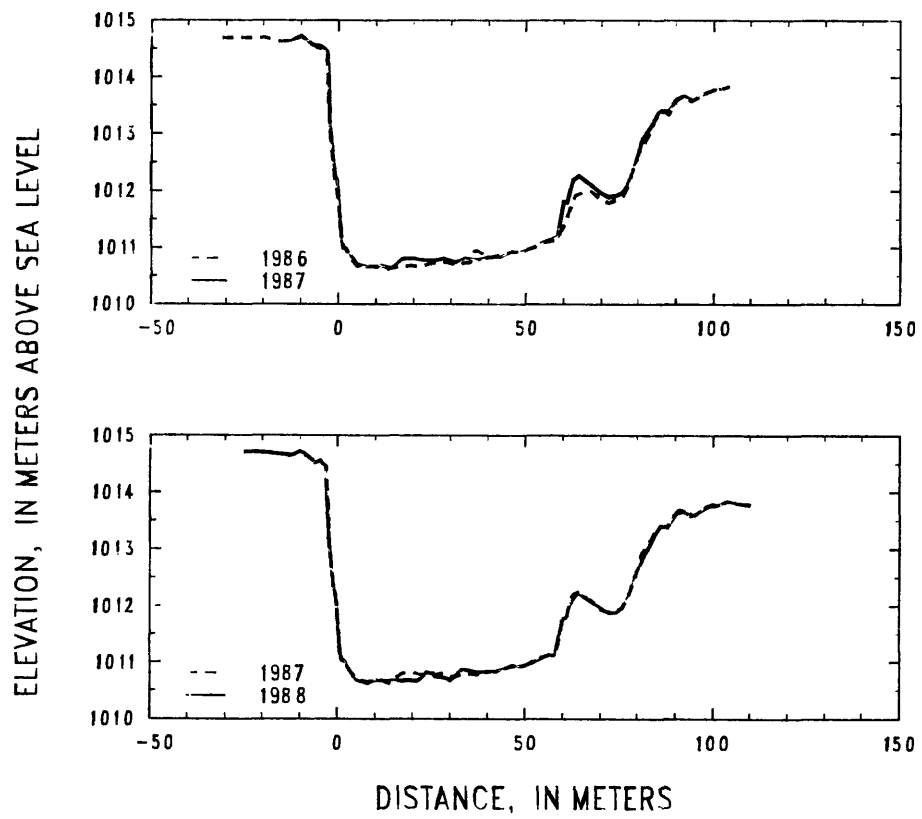


Figure 19.--Profiles of cross section PR120 from 1986 to 1988.

Table 9.--Listing of horizontal stations and elevations for cross section PR120
[Sta., station, distance in meters from a reference point on
the left bank; Elev., elevation, in meters above sea level].

1975		1975		1977		1977		1978	
Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
-6.8	1014.53	68.0	1011.27	2.0	1014.40	74.1	1011.77	-25.0	1014.71
0.0	1014.42	70.0	1011.34	4.0	1014.33	76.0	1011.88	-20.0	1014.73
2.0	1014.39	72.0	1011.42	6.0	1014.22	78.0	1012.14	-15.0	1014.68
4.0	1014.33	74.0	1011.44	8.0	1014.19	80.2	1012.57	-10.0	1014.76
6.0	1014.22	75.0	1011.45	8.7	1014.14	82.0	1012.41	-8.0	1014.69
8.0	1014.21	76.0	1011.56	10.3	1012.48	84.0	1012.65	-6.0	1014.53
8.7	1014.15	76.7	1011.86	11.8	1012.07	86.0	1012.65	-4.0	1014.54
9.0	1013.38	77.3	1012.04	12.6	1011.46	88.0	1012.71	-2.5	1014.42
9.7	1012.77	78.0	1012.14	13.1	1011.29	89.0	1012.88	-2.2	1012.89
10.4	1012.42	79.0	1012.26	13.5	1011.08	90.6	1013.43	-1.1	1012.34
11.0	1012.27	79.9	1012.52	14.2	1010.91	93.0	1013.33	-0.7	1012.48
12.0	1011.94	80.2	1012.57	15.0	1010.77	95.0	1013.38	0.0	1011.70
12.5	1011.48	82.0	1012.36	16.0	1010.71	97.0	1013.55	1.1	1011.03
13.0	1011.27	83.0	1012.56	17.6	1010.81	99.0	1013.66	2.0	1010.89
13.3	1011.18	84.0	1012.60	20.0	1010.69	100.9	1013.68	4.0	1010.76
13.7	1010.96	86.0	1012.64	21.0	1010.68			6.0	1010.66
14.0	1010.86	88.0	1012.71	22.0	1010.68			8.0	1010.65
15.0	1010.72	89.0	1012.91	23.0	1010.71			9.0	1010.67
16.0	1010.72	90.0	1013.24	24.0	1010.78			11.0	1010.71
18.0	1010.77	91.0	1013.41	25.0	1010.88			14.0	1010.69
20.0	1010.70	92.0	1013.40	27.5	1010.89			17.0	1010.71
22.0	1010.68	94.0	1013.33	30.0	1010.93			20.0	1010.67
23.0	1010.75	96.0	1013.49	32.0	1010.95			23.0	1010.64
24.0	1010.77	98.0	1013.62	34.0	1010.95			26.0	1010.68
26.0	1010.75	100.0	1013.70	36.0	1010.96			29.0	1010.70
28.0	1010.86			38.0	1010.94			32.0	1010.71
30.0	1010.93			38.8	1010.93			35.0	1010.75
32.0	1010.90			40.0	1010.90			38.0	1010.77
34.0	1010.88			42.0	1010.84			41.0	1010.83
36.0	1010.83			44.0	1010.78			44.0	1010.86
38.0	1010.81			46.0	1010.74			47.0	1010.91
40.0	1010.79			48.0	1010.71			50.0	1010.98
42.0	1010.76			50.0	1010.77			55.4	1011.04
44.0	1010.75			52.0	1010.83			59.0	1011.13
46.0	1010.73			54.0	1010.90			62.0	1011.20
48.0	1010.70			56.0	1010.94			65.0	1011.22
50.0	1010.76			58.0	1011.00			68.0	1011.13
52.0	1010.82			60.0	1011.08			70.0	1011.16
54.0	1010.90			62.0	1011.14			72.0	1011.29
56.3	1010.96			64.0	1011.21			73.5	1011.58
58.0	1011.00			66.0	1011.25			74.0	1011.68
60.0	1011.08			68.0	1011.33			75.0	1011.75
62.0	1011.13			70.0	1011.50			76.0	1011.84
64.0	1011.19			72.0	1011.54			77.0	1012.05
66.0	1011.25			73.1	1011.54			78.0	1012.12

Table 9.--Listing of horizontal stations and elevations for cross section PR120 --Continued.

1978		1979		1979		1980		1980	
Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
79.0	1012.33	-25.0	1014.70	87.0	1013.42	-29.0	1014.67	104.0	1013.82
80.0	1012.51	-20.0	1014.70	88.0	1013.32	-25.0	1014.69	106.0	1013.79
80.7	1012.85	-15.0	1014.68	89.0	1013.51	-20.0	1014.69	110.0	1013.79
82.0	1012.87	-10.0	1014.75	91.0	1013.68	-15.0	1014.66	115.0	1013.72
84.0	1013.17	-8.0	1014.67	93.0	1013.61	-10.0	1014.74	120.0	1013.64
86.0	1013.41	-6.0	1014.53	95.0	1013.57	-8.0	1014.67		
88.0	1013.32	-4.0	1014.53	97.0	1013.69	-6.0	1014.52		
89.0	1013.50	-2.5	1014.40	99.0	1013.76	-4.0	1014.50		
91.0	1013.68	-2.4	1013.04	100.0	1013.79	-2.6	1014.40		
93.0	1013.61	-2.0	1012.71	100.9	1013.76	-2.5	1013.16		
95.0	1013.57	-1.0	1012.19	102.0	1013.74	0.0	1011.66		
97.0	1013.69	0.0	1011.63	104.0	1013.83	1.3	1011.02		
99.0	1013.77	1.0	1011.21	105.0	1013.80	2.0	1010.88		
100.0	1013.79	2.0	1010.89	108.0	1013.84	4.0	1010.78		
100.9	1013.75	4.0	1010.76	110.0	1013.79	6.0	1010.67		
102.0	1013.73	6.0	1010.66			10.0	1010.68		
104.0	1013.84	9.0	1010.68			15.0	1010.71		
		12.0	1010.70			20.0	1010.66		
		15.0	1010.73			25.0	1010.70		
		18.0	1010.70			30.0	1010.73		
		21.0	1010.67			35.0	1010.75		
		24.0	1010.65			40.0	1010.80		
		27.0	1010.70			45.0	1010.91		
		30.0	1010.73			50.0	1010.97		
		33.0	1010.77			55.0	1011.10		
		36.0	1010.79			60.0	1011.17		
		39.0	1010.81			64.0	1011.35		
		42.0	1010.86			66.0	1011.31		
		45.0	1010.88			69.0	1011.19		
		48.0	1010.97			70.0	1011.20		
		51.0	1011.02			72.0	1011.41		
		54.0	1011.05			73.0	1011.49		
		57.0	1011.12			75.0	1011.77		
		60.0	1011.17			76.0	1011.86		
		63.0	1011.22			78.0	1012.22		
		66.0	1011.23			81.0	1012.84		
		69.0	1011.30			83.0	1013.11		
		72.0	1011.35			85.3	1013.45		
		74.0	1011.66			88.0	1013.34		
		76.0	1011.87			90.0	1013.60		
		78.0	1012.22			92.0	1013.67		
		80.0	1012.54			94.0	1013.58		
		81.0	1012.87			96.0	1013.64		
		83.0	1013.09			98.0	1013.73		
		85.0	1013.34			100.9	1013.74		

Table 9.--Listing of horizontal stations and elevations for cross section PR120 --Continued.

1982		1984		1985		1985		1986	
Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
-29.0	1014.67	-29.0	1014.68	-35.0	1014.64	87.0	1013.36	-31.0	1014.69
-25.0	1014.70	-25.0	1014.68	-29.0	1014.67	90.0	1013.59	-25.0	1014.69
-22.0	1014.75	-20.0	1014.71	-25.0	1014.73	92.0	1013.67	-20.0	1014.69
-19.0	1014.66	-15.0	1014.66	-20.0	1014.70	94.0	1013.56	-16.0	1014.62
-16.0	1014.61	-10.0	1014.72	-15.0	1014.66	97.0	1013.69	-13.0	1014.64
-13.0	1014.65	-5.0	1014.49	-12.0	1014.63	100.0	1013.78	-10.0	1014.73
-10.0	1014.73	-2.8	1014.41	-10.0	1014.71	101.0	1013.76	-6.0	1014.52
-8.0	1014.67	-2.2	1013.13	-7.0	1014.56	104.0	1013.83	-4.0	1014.49
-6.0	1014.52	-0.8	1012.26	-5.0	1014.50			-3.0	1014.42
-2.9	1014.44	1.5	1010.99	-2.9	1014.42			-2.4	1013.16
-2.5	1013.07	4.0	1010.74	-2.4	1012.98			-0.9	1012.14
0.0	1011.74	7.0	1010.65	0.0	1011.84			-0.3	1011.96
0.5	1011.54	10.0	1010.66	1.3	1011.00			1.2	1010.98
1.5	1010.98	16.0	1010.66	2.0	1010.88			2.0	1010.99
3.0	1010.81	21.0	1010.66	5.0	1010.72			3.0	1010.82
6.0	1010.66	22.0	1010.79	10.0	1010.65			5.0	1010.67
10.0	1010.66	25.0	1010.73	15.0	1010.64			7.0	1010.67
15.0	1010.71	30.0	1010.73	20.0	1010.66			10.0	1010.65
20.0	1010.82	35.0	1010.73	25.0	1010.71			13.0	1010.61
25.0	1010.87	40.0	1010.78	28.0	1010.77			16.0	1010.66
30.0	1010.86	45.0	1010.87	30.0	1010.80			19.0	1010.67
34.0	1010.85	50.0	1010.95	35.0	1010.83			22.0	1010.67
40.0	1010.81	55.0	1011.09	38.0	1010.78			25.0	1010.72
45.0	1010.88	57.0	1011.11	40.0	1010.81			28.0	1010.74
50.0	1011.05	60.0	1011.18	43.5	1010.87			31.0	1010.70
55.0	1011.14	63.7	1011.89	45.0	1010.95			34.0	1010.73
60.0	1011.27	66.5	1011.93	46.0	1011.02			35.2	1010.74
62.0	1011.59	70.0	1011.82	50.0	1010.97			36.2	1010.93
64.0	1011.62	73.0	1011.76	53.0	1010.99			36.7	1010.95
66.0	1011.77	75.5	1011.87	55.0	1011.08			38.4	1010.89
70.0	1011.71	78.0	1012.22	58.0	1011.13			39.0	1010.81
73.0	1011.69	80.0	1012.66	60.0	1011.37			40.0	1010.82
75.0	1011.83	83.0	1013.00	63.0	1011.81			43.0	1010.86
77.0	1012.12	86.0	1013.43	65.0	1011.87			46.0	1010.92
79.0	1012.41	88.0	1013.36	68.0	1011.93			49.0	1010.95
82.0	1012.92	90.0	1013.60	70.0	1011.82			52.0	1011.00
85.0	1013.33	93.0	1013.59	73.0	1011.81			55.0	1011.09
90.0	1013.62	95.0	1013.57	75.0	1011.86			58.0	1011.14
95.0	1013.57	98.0	1013.74	76.0	1011.92			60.0	1011.37
100.0	1013.77	101.0	1013.76	77.0	1012.11			63.0	1011.91
100.9	1013.75	104.0	1013.84	78.0	1012.24			64.0	1011.93
104.0	1013.82	110.0	1013.78	79.0	1012.41			67.0	1011.99
110.0	1013.77			80.0	1012.63			70.0	1011.85
				83.0	1013.09			72.0	1011.78
				85.0	1013.34			74.0	1011.84

Table 9.--Listing of horizontal stations and elevations for cross section PR120 --Continued.

1986		1987		1987		1988		1988	
Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
76.0	1011.92	-13.0	1014.63	81.0	1012.90	-25.0	1014.71	60.2	1011.77
78.0	1012.24	-10.0	1014.72	84.0	1013.20	-20.0	1014.71	61.0	1011.79
80.0	1012.65	-7.0	1014.57	85.0	1013.35	-15.0	1014.66	62.3	1012.08
82.0	1012.89	-4.6	1014.54	86.0	1013.41	-12.0	1014.65	64.0	1012.24
84.0	1013.20	-3.1	1014.46	88.0	1013.39	-10.0	1014.73	66.0	1012.14
86.0	1013.41	-2.9	1014.41	90.0	1013.60	-8.0	1014.64	69.0	1012.01
88.0	1013.34	-2.4	1013.75	92.0	1013.67	-6.0	1014.51	72.0	1011.87
90.0	1013.59	-2.4	1013.19	95.0	1013.59	-4.5	1014.56	74.0	1011.88
92.0	1013.68	-0.8	1012.25	98.0	1013.74	-4.0	1014.50	76.0	1011.95
94.0	1013.57	-0.3	1012.19	101.0	1013.77	-3.1	1014.46	78.0	1012.22
97.0	1013.69	1.0	1011.10	104.0	1013.84	-2.5	1013.75	79.8	1012.61
100.0	1013.78	1.5	1010.98			-2.4	1013.22	80.4	1012.64
101.0	1013.76	3.0	1010.89			-1.0	1012.32	81.5	1012.88
104.0	1013.84	5.0	1010.70			-0.4	1012.19	83.0	1013.04
		8.0	1010.64			1.0	1011.05	84.0	1013.18
		11.0	1010.69			2.0	1011.02	86.0	1013.41
		14.0	1010.62			3.0	1010.86	88.0	1013.38
		17.0	1010.80			5.0	1010.68	90.0	1013.60
		20.0	1010.81			8.0	1010.62	91.0	1013.68
		22.0	1010.78			10.0	1010.67	92.0	1013.67
		25.0	1010.75			13.0	1010.66	94.0	1013.58
		28.0	1010.80			16.0	1010.65	96.0	1013.62
		31.0	1010.73			19.0	1010.67	98.0	1013.73
		34.0	1010.81			21.0	1010.66	100.0	1013.78
		37.0	1010.77			22.0	1010.69	101.0	1013.76
		40.0	1010.83			23.6	1010.82	104.0	1013.84
		43.0	1010.83			25.5	1010.79	107.0	1013.79
		46.0	1010.93			26.0	1010.73	110.0	1013.77
		49.0	1010.92			28.0	1010.73		
		52.0	1011.00			29.5	1010.70		
		54.5	1011.09			30.0	1010.66		
		56.0	1011.13			32.0	1010.79		
		58.5	1011.20			33.3	1010.87		
		60.1	1011.81			35.0	1010.86		
		61.0	1011.79			37.0	1010.81		
		62.5	1012.19			40.0	1010.83		
		64.0	1012.25			42.0	1010.85		
		66.0	1012.16			44.0	1010.87		
		68.0	1012.06			46.0	1010.92		
		70.0	1011.94			49.0	1010.92		
		72.0	1011.88			52.0	1010.99		
		74.0	1011.90			55.0	1011.10		
		76.0	1011.97			57.0	1011.13		
		78.0	1012.25			57.7	1011.12		
		80.0	1012.63			58.3	1011.23		

Description of Cross Section PR122

Location: Township 8 South/Range 48 East--section 28
U.S. Geological Survey quadrangle (1:24,000): Moorhead

Landowners--left bank: Virginia Williams
right bank: U.S. Government

Access: left bank

Permission from: Gay Ranch (T7S/R49E--20)

Reference pins

Station (meters)	Elevation (meters above sea level)	Comments
-1.2	1,014.76	0.18 meter above 1987 ground level.
0.0	1,014.56	0.07 meter above 1987 ground level.
101.8	1,009.29	Bent, about 0.08 meter below 1978 ground level.
136.2	1,101.36	Bent over at 1978 ground level.
141.0	1,010.93	0.26 meter above 1987 ground level.

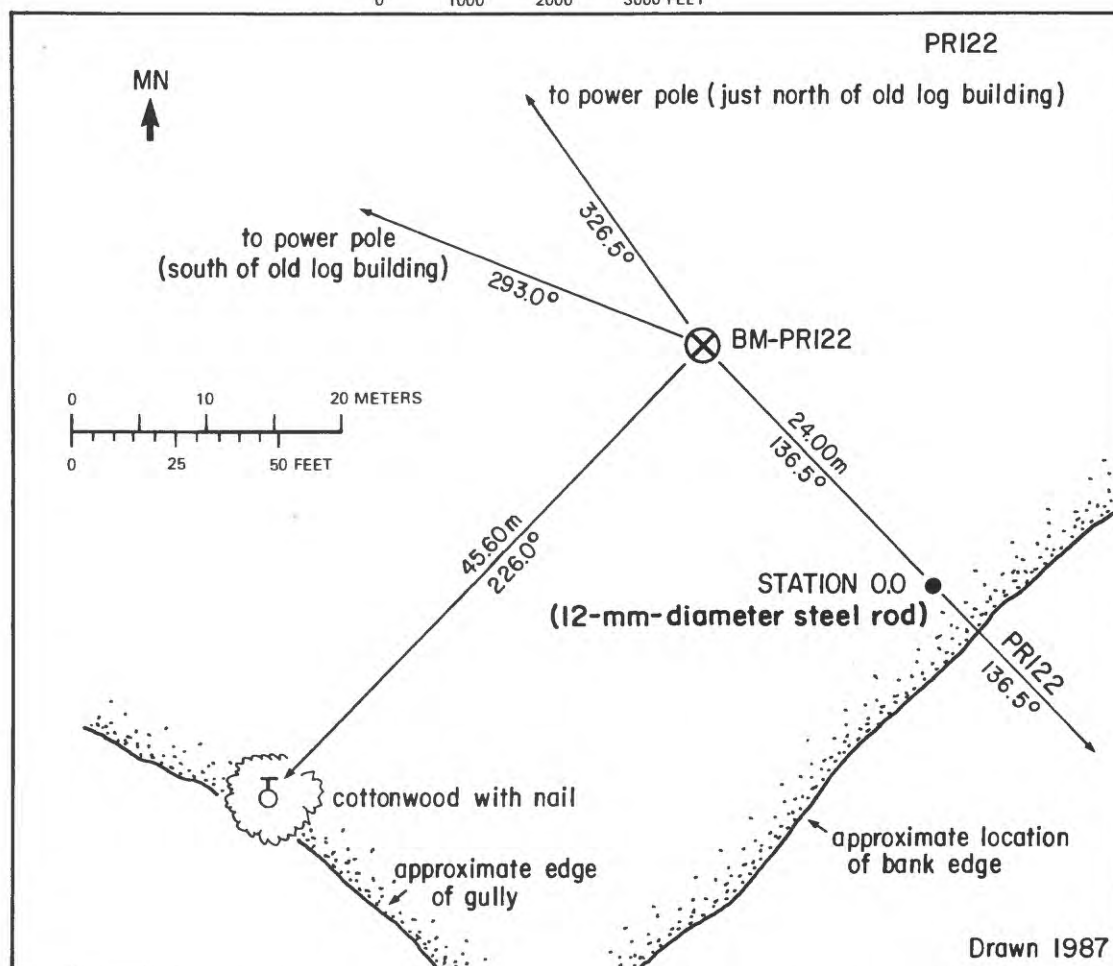
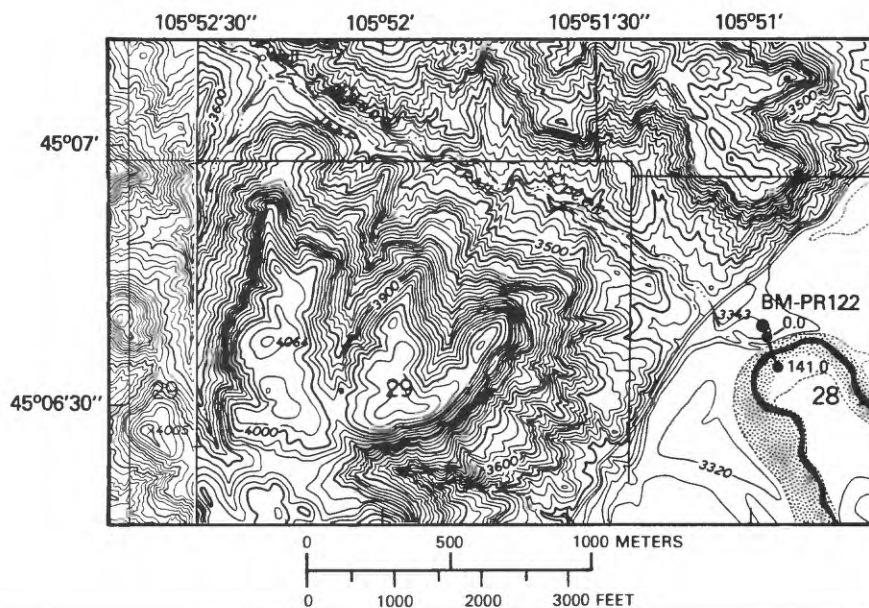


Figure 20.--Upper: Location of cross section PR122, bench mark BM-PR122, and left and right bank reference pins (tables 2 and 3) in the Moorhead quadrangle. Lower: Location of bench mark on the left bank. MN is magnetic north.

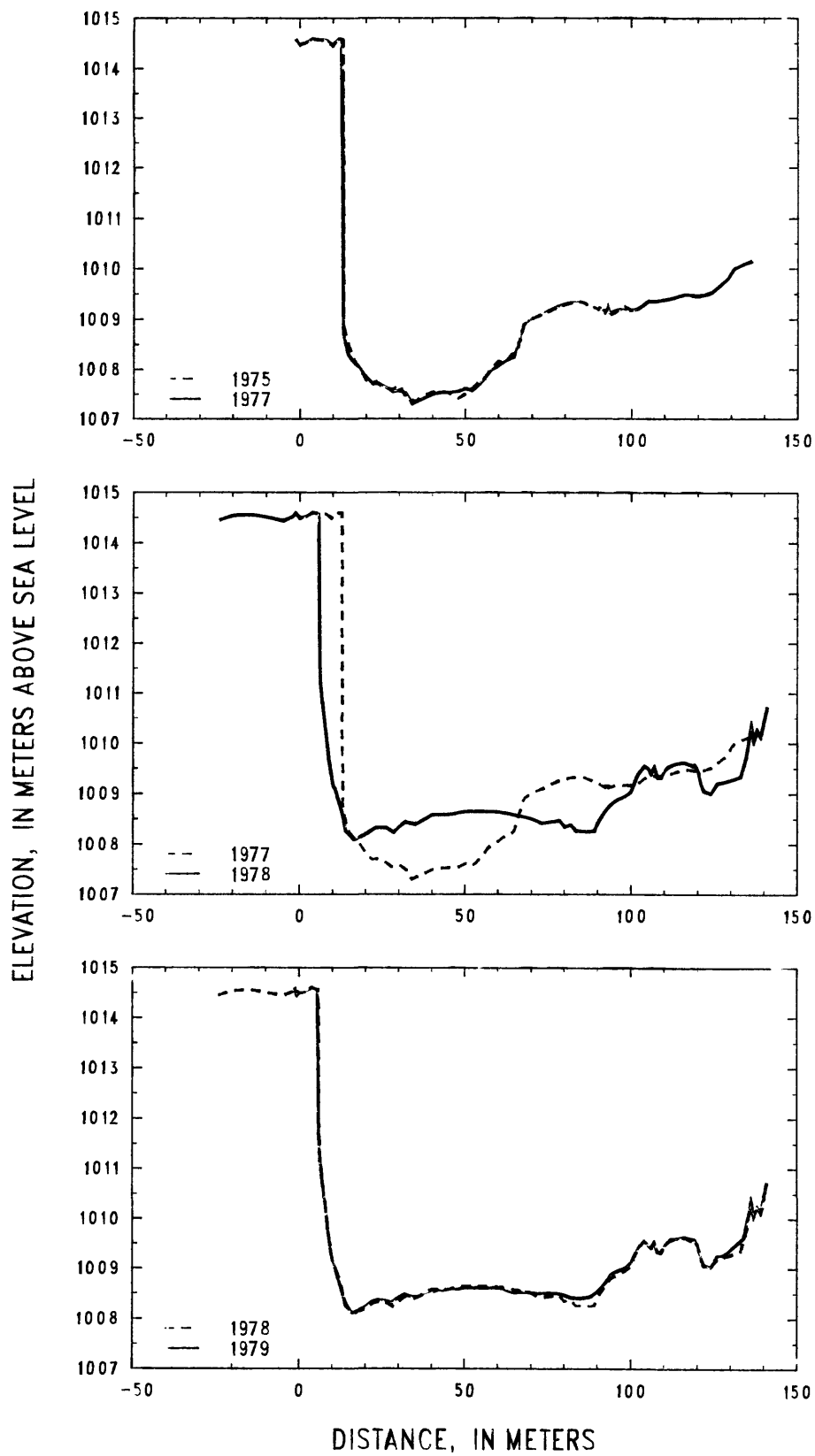


Figure 21.--Profiles of cross section PR122 from 1975 to 1979.

ELEVATION, IN METERS ABOVE SEA LEVEL

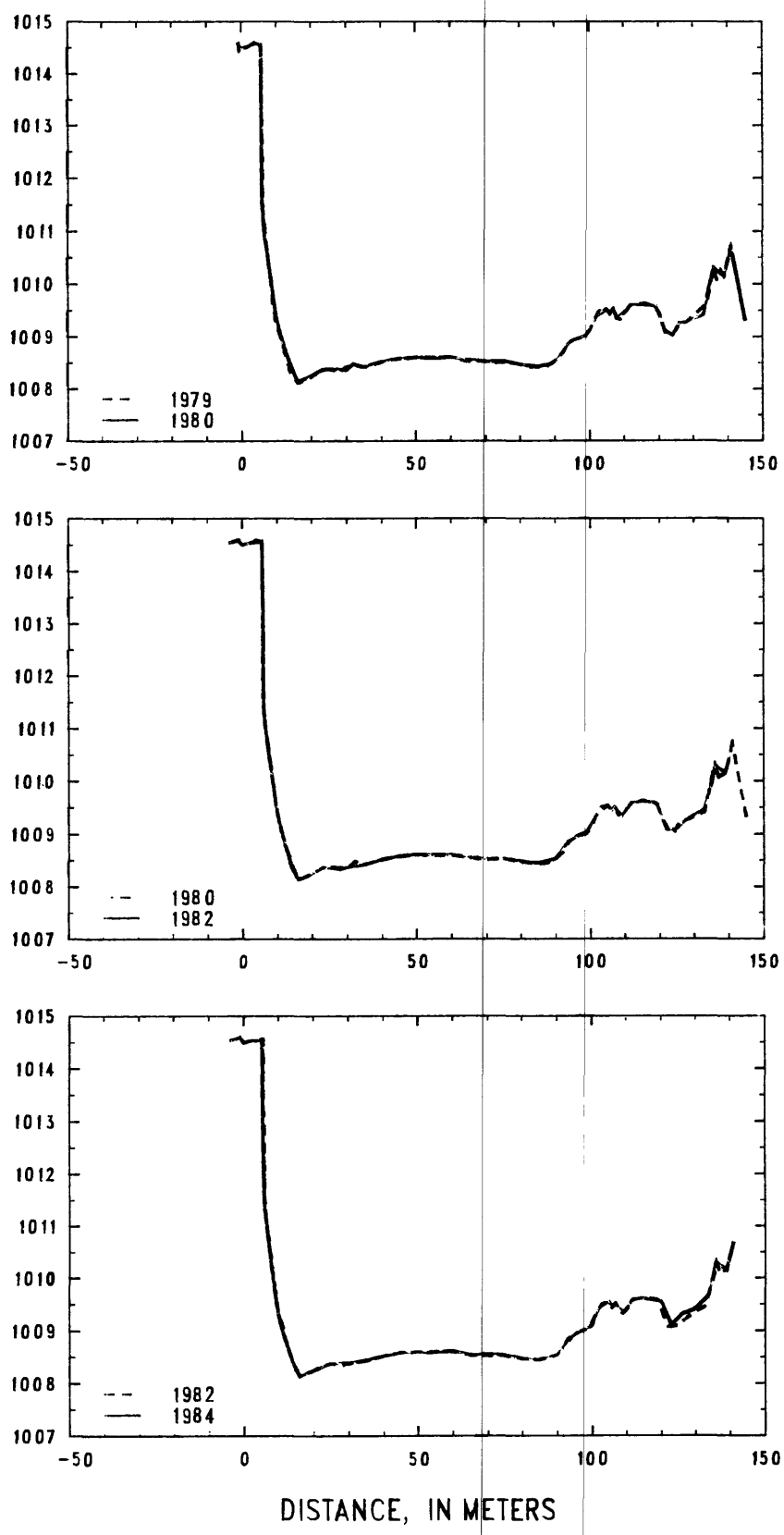


Figure 22.--Profiles of cross section PR122 from 1979 to 1984.

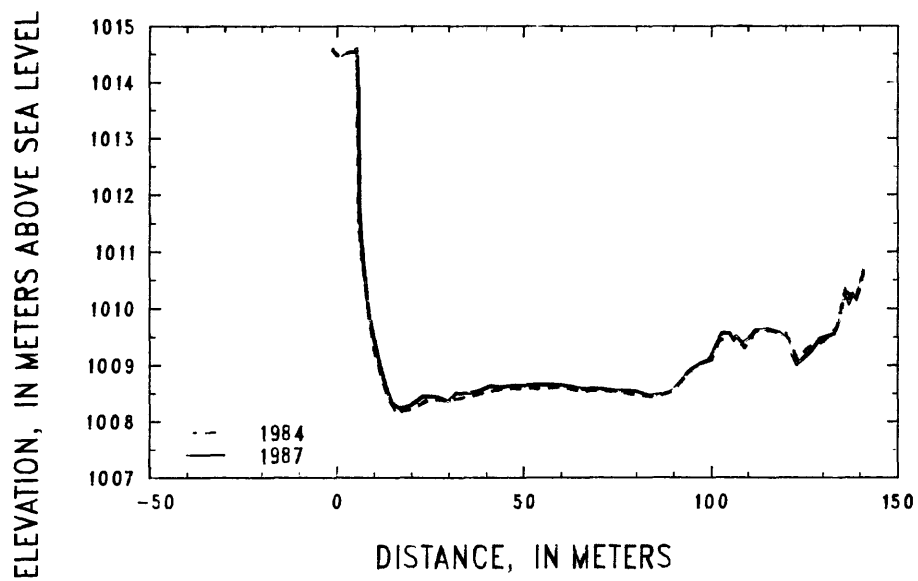


Figure 23.--Profiles of cross section PR122 from 1984 to 1987.

Table 10.--Listing of horizontal stations and elevations for cross section PR122
[Sta., station, distance in meters from a reference point on
the left bank; Elev., elevation, in meters above sea level].

1975		1975		1977		1977		1978	
Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
0.0	1014.47	78.0	1009.24	-1.2	1014.58	93.3	1009.12	-24.0	1014.45
2.0	1014.51	80.0	1009.28	0.0	1014.48	96.0	1009.18	-20.0	1014.54
4.0	1014.60	82.0	1009.32	2.0	1014.52	100.0	1009.16	-15.0	1014.56
6.0	1014.57	84.0	1009.35	4.0	1014.60	101.8	1009.19	-10.0	1014.51
8.0	1014.56	86.0	1009.31	6.0	1014.58	105.0	1009.34	-5.0	1014.43
10.0	1014.44	88.0	1009.19	8.0	1014.57	108.0	1009.35	-2.0	1014.52
12.0	1014.61	89.0	1009.23	10.0	1014.47	112.0	1009.40	-1.2	1014.59
13.1	1014.58	90.0	1009.18	12.0	1014.60	116.0	1009.48	0.0	1014.49
13.3	1008.87	91.0	1009.28	12.8	1014.59	120.0	1009.44	2.0	1014.51
14.1	1008.62	92.0	1009.13	13.1	1008.73	124.0	1009.51	4.0	1014.60
16.0	1008.23	93.0	1009.24	14.6	1008.28	128.0	1009.73	5.9	1014.56
18.0	1008.02	94.0	1009.08	16.0	1008.16	129.0	1009.79	6.2	1011.75
20.0	1007.78	96.0	1009.17	18.0	1008.02	131.0	1009.99	6.5	1011.12
21.0	1007.73	98.0	1009.25	20.0	1007.83	134.0	1010.09	8.0	1010.24
22.0	1007.71	100.0	1009.17	22.0	1007.69	136.0	1010.13	9.0	1009.62
23.0	1007.75	102.1	1009.19	24.0	1007.71	136.2	1010.14	10.2	1009.15
24.0	1007.68			26.0	1007.63			10.8	1009.10
26.0	1007.62			28.0	1007.54			13.0	1008.62
28.0	1007.59			30.0	1007.57			14.0	1008.26
30.0	1007.69			32.0	1007.52			16.5	1008.09
32.0	1007.45			34.0	1007.29			20.0	1008.20
34.0	1007.36			36.0	1007.37			23.0	1008.33
35.5	1007.36			38.0	1007.43			26.0	1008.33
36.0	1007.40			40.0	1007.49			28.5	1008.23
38.0	1007.49			42.0	1007.52			30.0	1008.33
40.0	1007.54			44.0	1007.53			32.0	1008.44
42.0	1007.54			46.0	1007.53			35.0	1008.39
44.0	1007.54			48.0	1007.55			40.0	1008.58
46.0	1007.48			50.0	1007.61			45.0	1008.58
48.0	1007.41			52.0	1007.56			50.0	1008.65
50.0	1007.50			53.2	1007.62			55.0	1008.65
52.0	1007.61			55.0	1007.74			60.0	1008.64
54.0	1007.72			57.0	1007.92			65.0	1008.57
56.0	1007.82			60.0	1008.06			70.0	1008.50
58.0	1008.02			62.0	1008.16			73.0	1008.41
60.0	1008.15			64.6	1008.24			78.5	1008.47
62.0	1008.12			67.8	1008.90			80.0	1008.34
64.0	1008.29			70.0	1009.01			82.0	1008.38
65.7	1008.33			74.0	1009.12			83.5	1008.26
67.6	1008.88			78.0	1009.25			87.0	1008.24
68.0	1008.90			82.0	1009.32			89.0	1008.26
70.0	1009.00			86.0	1009.32			90.0	1008.41
72.0	1009.06			90.0	1009.21			92.0	1008.64
74.0	1009.11			92.2	1009.13			94.0	1008.80
76.0	1009.17			92.9	1009.25			96.0	1008.88

Table 10.--Listing of horizontal stations and elevations for cross section PR122 --Continued.

1978		1979		1979		1980		1980	
Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
98.0	1008.94	-1.2	1014.59	80.0	1008.46	-1.2	1014.59	128.0	1009.26
100.0	1009.04	-0.5	1014.44	82.0	1008.41	0.0	1014.48	133.0	1009.41
101.8	1009.37	0.0	1014.49	84.0	1008.40	2.0	1014.51	136.0	1010.30
104.0	1009.55	2.0	1014.51	86.0	1008.41	4.0	1014.59	139.0	1010.13
105.0	1009.51	4.0	1014.60	88.0	1008.43	5.8	1014.56	141.0	1010.69
106.0	1009.39	5.8	1014.55	90.0	1008.53	6.0	1011.54	145.0	1009.30
107.0	1009.53	6.2	1011.46	92.0	1008.67	6.5	1011.05		
108.0	1009.32	8.0	1010.30	94.0	1008.88	10.0	1009.41		
109.0	1009.31	9.0	1009.64	96.0	1008.95	11.0	1009.09		
110.0	1009.45	10.0	1009.23	98.0	1008.99	13.0	1008.63		
111.0	1009.53	12.0	1008.80	100.0	1009.10	16.0	1008.13		
113.0	1009.59	14.0	1008.32	102.0	1009.40	20.0	1008.24		
116.0	1009.62	16.0	1008.11	104.0	1009.56	23.0	1008.36		
118.6	1009.55	16.6	1008.11	106.0	1009.42	26.0	1008.38		
119.0	1009.58	18.0	1008.17	107.0	1009.52	30.0	1008.35		
120.0	1009.47	20.0	1008.21	108.0	1009.34	32.0	1008.48		
121.0	1009.20	22.0	1008.33	109.0	1009.32	35.0	1008.42		
122.0	1009.05	24.0	1008.37	110.0	1009.45	40.0	1008.52		
124.0	1009.00	26.0	1008.36	112.0	1009.59	45.0	1008.57		
126.0	1009.21	28.0	1008.31	114.0	1009.60	50.0	1008.60		
128.0	1009.23	30.0	1008.42	116.0	1009.63	55.0	1008.58		
133.0	1009.34	32.0	1008.47	119.0	1009.58	60.0	1008.60		
134.6	1009.69	34.0	1008.42	120.0	1009.46	65.0	1008.54		
136.2	1010.36	36.0	1008.42	121.0	1009.24	70.0	1008.51		
137.0	1010.04	38.0	1008.47	122.0	1009.07	75.0	1008.53		
138.0	1010.26	40.0	1008.51	124.0	1009.01	80.0	1008.46		
139.0	1010.12	42.0	1008.57	126.0	1009.25	85.0	1008.42		
141.0	1010.72	44.0	1008.56	128.0	1009.26	89.0	1008.47		
		46.0	1008.59	134.0	1009.61	92.0	1008.64		
		48.0	1008.58	135.0	1009.91	94.0	1008.87		
		50.0	1008.61	136.0	1010.30	96.0	1008.95		
		52.0	1008.61	137.0	1010.06	99.0	1009.01		
		54.0	1008.61	138.0	1010.25	101.0	1009.22		
		56.0	1008.60	139.0	1010.14	102.0	1009.37		
		58.0	1008.61	141.0	1010.72	105.0	1009.52		
		60.0	1008.61			106.0	1009.45		
		62.0	1008.58			107.0	1009.52		
		64.0	1008.52			108.0	1009.34		
		66.0	1008.51			110.0	1009.43		
		68.0	1008.53			112.0	1009.59		
		70.0	1008.52			115.0	1009.61		
		72.0	1008.48			119.0	1009.58		
		74.0	1008.49			122.0	1009.09		
		76.0	1008.50			124.0	1009.01		
		78.0	1008.49			126.0	1009.25		

Table 10.--Listing of horizontal stations and elevations for cross section PR122 --Continued.

1982		1982		1984		1987		1987	
Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
-4.0	1014.53	135.0	1009.92	-1.3	1014.60	-1.3	1014.58	106.0	1009.44
-1.2	1014.59	136.0	1010.29	0.0	1014.49	0.0	1014.49	107.0	1009.51
0.0	1014.49	137.0	1010.07	5.4	1014.56	1.0	1014.46	108.0	1009.37
3.0	1014.55	139.0	1010.15	6.0	1011.43	3.0	1014.56	110.0	1009.46
5.7	1014.57	141.0	1010.68	8.0	1010.18	5.4	1014.60	112.0	1009.60
6.2	1011.26			10.0	1009.32	5.9	1013.89	115.0	1009.63
8.0	1010.31			12.0	1008.81	6.2	1011.48	118.0	1009.59
10.0	1009.41			14.0	1008.40	8.3	1010.08	120.0	1009.46
12.0	1008.84			16.0	1008.13	11.0	1009.15	123.0	1009.01
14.0	1008.38			18.0	1008.20	13.0	1008.66	125.0	1009.14
16.0	1008.14			20.0	1008.24	15.0	1008.31	127.0	1009.26
18.0	1008.18			25.0	1008.39	17.0	1008.24	129.0	1009.46
22.0	1008.33			30.0	1008.38	20.0	1008.30	133.0	1009.54
25.0	1008.38			35.0	1008.44	23.0	1008.44	134.5	1009.73
28.0	1008.33			40.0	1008.52	26.0	1008.45	136.0	1010.30
30.0	1008.38			45.0	1008.59	28.0	1008.41	137.0	1010.09
35.0	1008.43			50.0	1008.59	30.0	1008.35	138.0	1010.24
40.0	1008.52			55.0	1008.59	32.0	1008.52	139.0	1010.16
45.0	1008.59			60.0	1008.62	35.0	1008.51	141.0	1010.67
50.0	1008.60			65.0	1008.53	38.0	1008.54		
55.0	1008.60			70.0	1008.55	41.0	1008.64		
60.0	1008.60			75.0	1008.53	44.0	1008.60		
65.0	1008.53			80.0	1008.47	47.0	1008.64		
70.0	1008.52			85.0	1008.43	50.0	1008.63		
75.0	1008.52			90.0	1008.54	53.0	1008.66		
80.0	1008.47			95.0	1008.94	56.0	1008.66		
85.0	1008.44			100.0	1009.10	59.0	1008.65		
90.0	1008.53			102.0	1009.41	62.0	1008.62		
93.0	1008.83			105.0	1009.55	65.0	1008.57		
96.0	1008.96			106.0	1009.44	68.0	1008.57		
99.0	1009.04			107.0	1009.52	71.0	1008.57		
101.0	1009.27			109.0	1009.32	74.0	1008.54		
103.0	1009.50			112.0	1009.59	77.0	1008.54		
105.0	1009.54			115.0	1009.61	80.0	1008.53		
106.0	1009.42			120.0	1009.56	83.0	1008.45		
107.0	1009.51			123.0	1009.10	86.0	1008.47		
109.0	1009.32			126.0	1009.31	89.0	1008.51		
112.0	1009.58			130.0	1009.41	91.0	1008.63		
115.0	1009.63			134.0	1009.67	94.0	1008.89		
118.0	1009.59			136.0	1010.30	96.0	1008.99		
119.0	1009.56			139.0	1010.14	99.0	1009.07		
122.0	1009.07			141.0	1010.68	100.0	1009.17		
125.0	1009.10					102.0	1009.45		
128.0	1009.27					103.0	1009.56		
133.0	1009.46					105.0	1009.56		

Description of Cross Section PR122A

Location: Township 8 South/Range 48 East--section 28
U.S. Geological Survey quadrangle (1:24,000): Moorhead

Landowners--left bank: U.S. Government
right bank: U.S. Government

Access: left bank

Permission from: Gay Ranch (T7S/R49E--20)

Reference pins

Station (meters)	Elevation (meters above sea level)	Comments
		Pins -20.0, -1.5, and 0.0 were closest to leveling instrument.
-20.0	1,010.33	0.06 meter above 1987 ground level.
-1.5	1,009.86	0.19 meter above 1987 ground level.
0.0	1,009.79	0.06 meter above 1987 ground level.
100.0	1,010.01	0.02 meter above 1987 ground level.
101.8	1,010.16	0.16 meter above 1987 ground level.
145.0	1,009.98	0.19 meter above 1987 ground level.

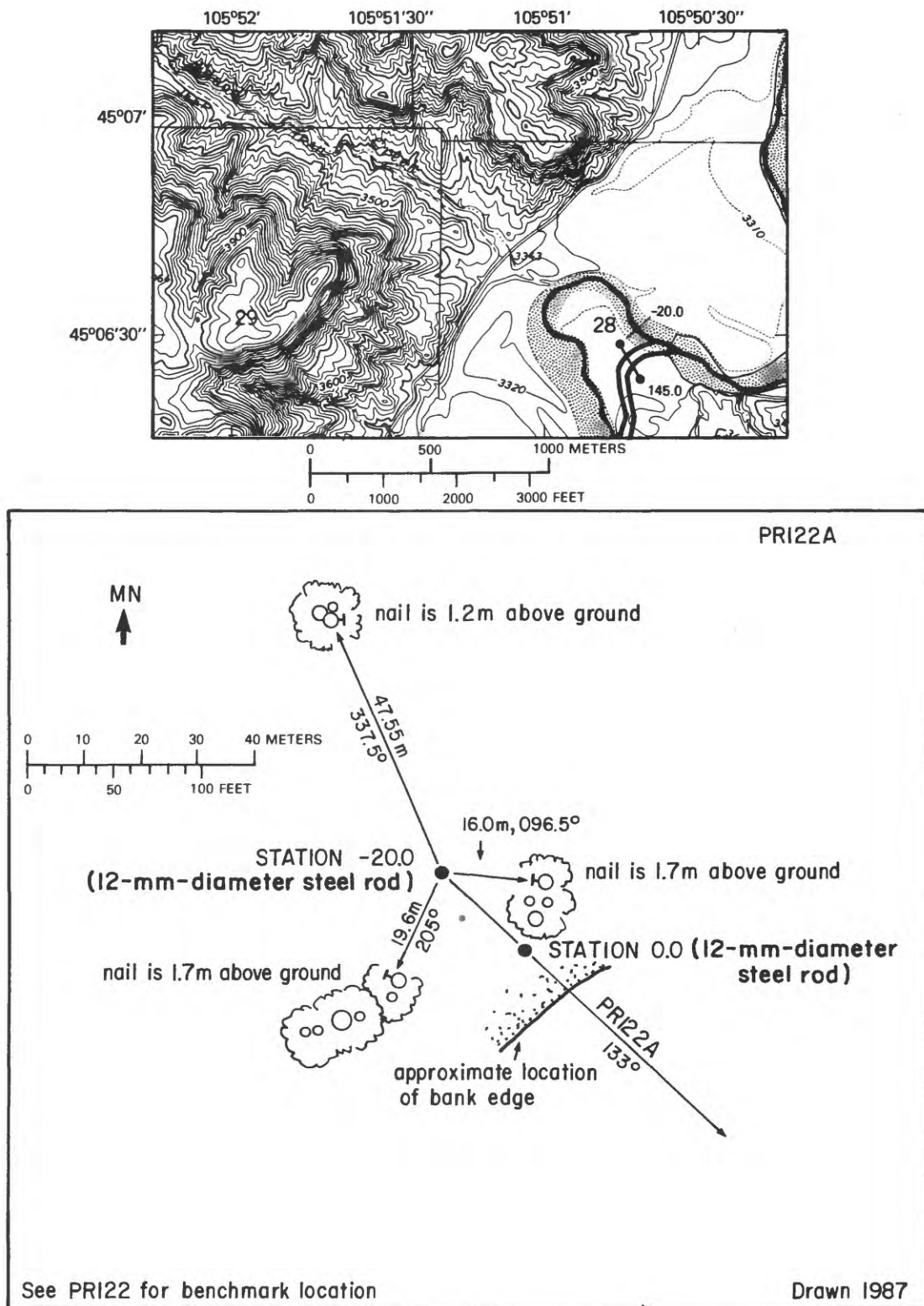


Figure 24.--Upper: Location of cross section PR122A, and left and right bank reference pins (tables 2 and 3) in the Moorhead quadrangle. New channel is shown in its approximate location upstream and downstream from the section. Lower: Location of secondary bench marks (12-mm-diameter steel rods) at stations 0.0 and -20.0 on the left bank. Primary bench mark is BM-PR122, as shown in figure 20. MN is magnetic north.

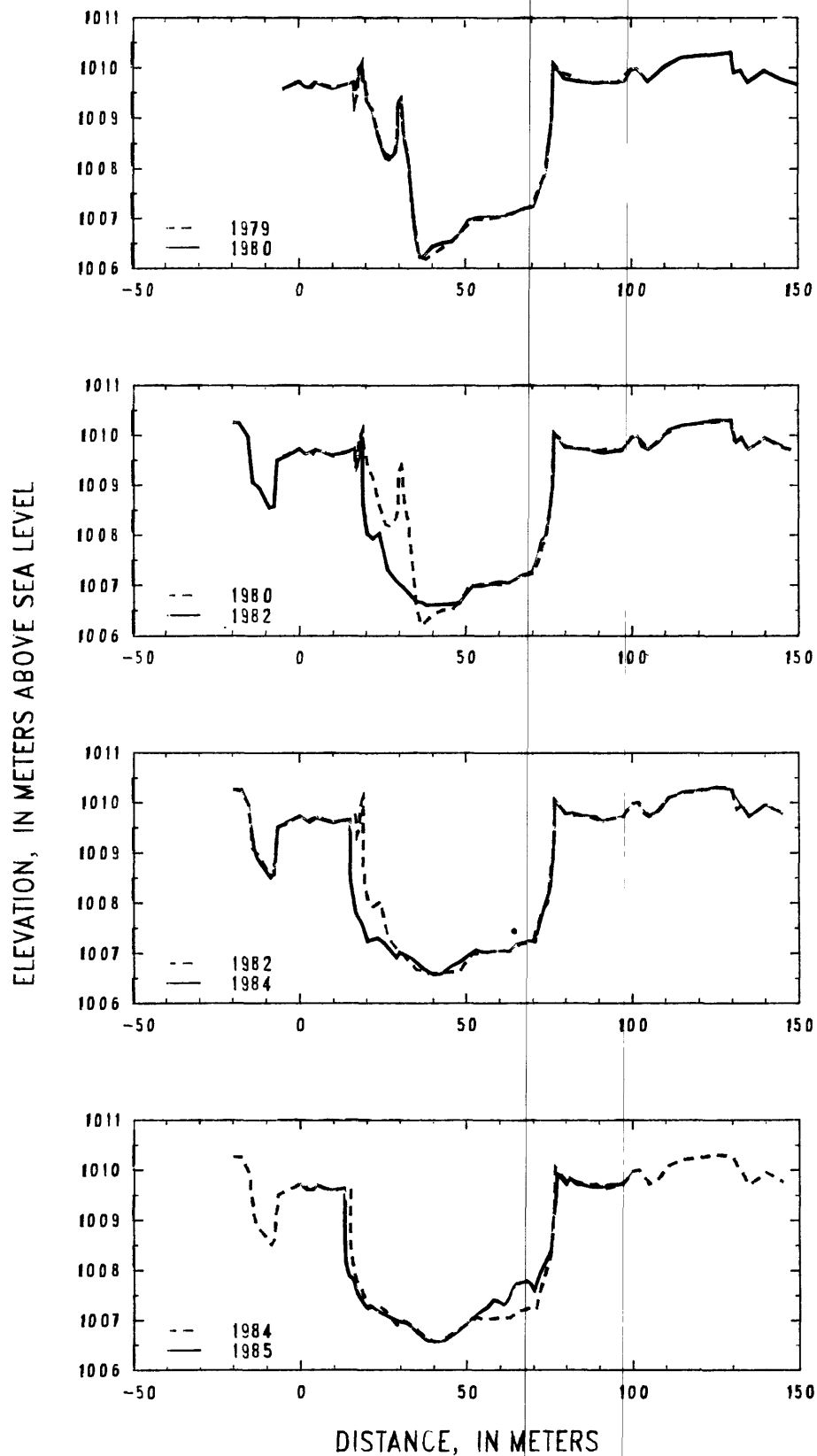


Figure 25.--Profiles of cross section PR122A from 1979 to 1985.

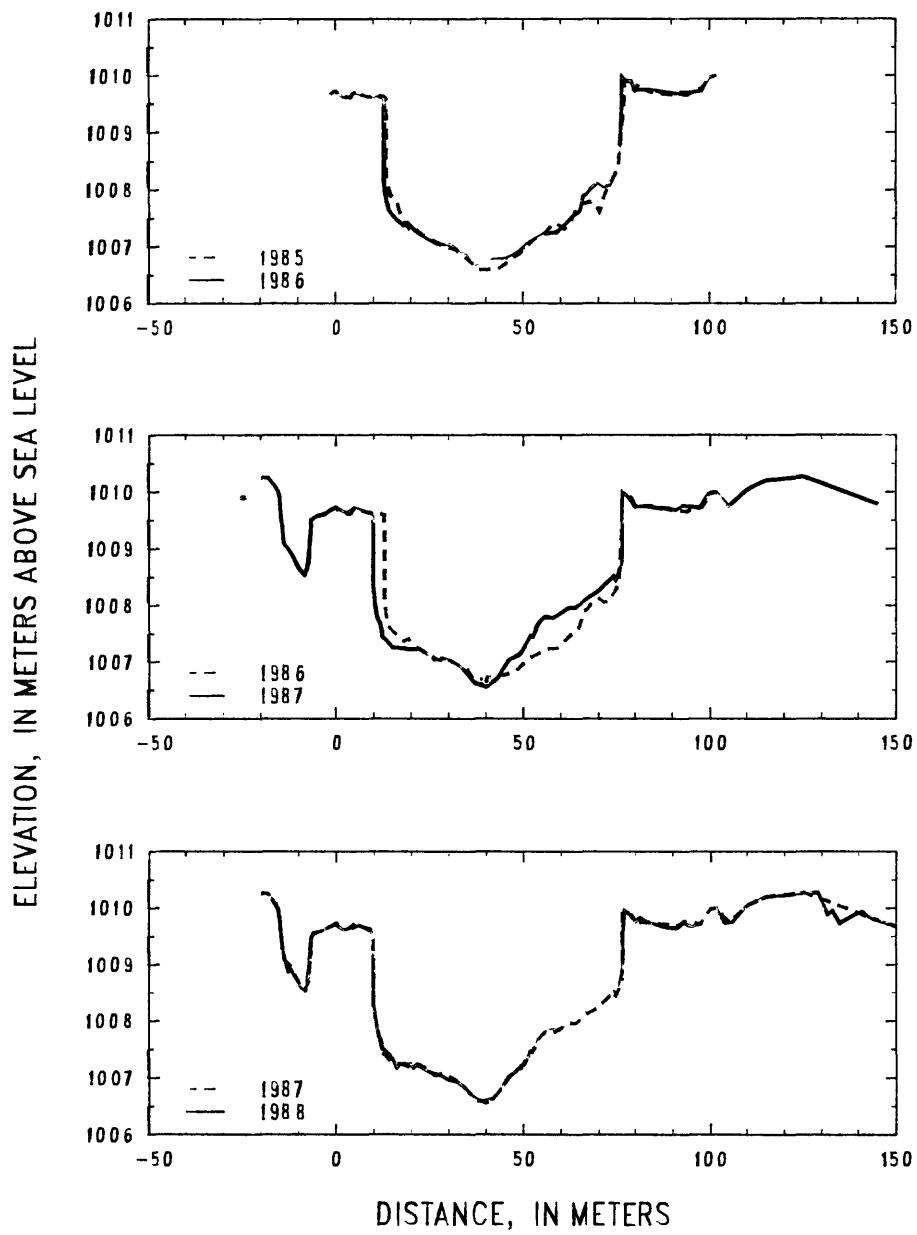


Figure 26.--Profiles of cross section PR122A from 1985 to 1988

Table 11.--Listing of horizontal stations and elevations for cross section PR122A
[Sta., station, distance in meters from a reference point on
the left bank; Elev., elevation, in meters above sea level].

1979		1980		1980		1982		1982	
Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
-1.5	1009.69	-5.0	1009.58	76.6	1010.04	-20.0	1010.27	76.6	1010.06
0.0	1009.74	-1.5	1009.68	78.0	1009.96	-18.0	1010.26	80.0	1009.76
3.0	1009.61	0.0	1009.73	80.0	1009.78	-15.2	1009.98	83.0	1009.74
5.0	1009.73	2.0	1009.62	82.0	1009.75	-14.0	1009.06	87.0	1009.71
10.0	1009.60	4.0	1009.61	85.0	1009.72	-12.0	1008.95	91.0	1009.64
16.7	1009.72	5.0	1009.72	89.0	1009.69	-9.0	1008.55	94.0	1009.68
16.9	1009.33	7.0	1009.66	93.0	1009.72	-7.6	1008.58	97.0	1009.70
17.7	1009.59	10.0	1009.59	96.0	1009.70	-6.6	1009.51	100.0	1009.97
18.0	1009.98	13.0	1009.66	98.0	1009.74	-4.0	1009.58	101.7	1010.00
19.2	1010.11	16.6	1009.72	100.0	1009.96	0.0	1009.74	103.0	1009.79
19.4	1009.69	16.8	1009.33	101.7	1009.99	2.0	1009.63	105.0	1009.72
19.9	1009.67	18.0	1009.91	105.0	1009.72	5.0	1009.72	108.0	1009.86
21.0	1009.27	19.1	1010.12	110.0	1010.02	10.0	1009.61	111.0	1010.11
22.0	1009.17	19.3	1009.74	115.0	1010.20	14.0	1009.66	115.0	1010.20
25.0	1008.36	20.0	1009.72	120.0	1010.24	16.0	1009.73	120.0	1010.24
28.0	1008.18	20.4	1009.36	125.0	1010.27	16.6	1009.75	125.0	1010.31
29.5	1008.50	22.0	1009.16	130.0	1010.31	17.1	1009.35	129.7	1010.29
30.0	1009.32	24.0	1008.57	131.0	1009.90	17.6	1009.47	131.4	1009.86
30.8	1009.40	26.0	1008.20	133.0	1009.95	18.4	1009.99	133.0	1009.96
31.5	1008.69	27.0	1008.17	135.0	1009.71	19.0	1010.10	135.0	1009.72
33.0	1008.14	29.0	1008.32	140.0	1009.94	19.0	1008.64	140.0	1009.96
34.2	1007.18	29.7	1008.61	145.0	1009.76	20.4	1008.03	145.0	1009.78
36.0	1006.25	29.9	1009.26	150.0	1009.66	22.0	1007.93		
38.0	1006.17	30.7	1009.39			24.0	1008.04		
40.0	1006.27	31.0	1009.26			25.5	1007.60		
44.0	1006.45	31.5	1008.66			26.5	1007.31		
48.0	1006.66	33.0	1008.14			29.0	1007.09		
52.0	1006.97	35.0	1006.67			31.0	1006.98		
56.0	1006.98	36.3	1006.21			33.0	1006.83		
60.0	1007.02	37.1	1006.22			35.0	1006.68		
64.0	1007.10	40.0	1006.43			37.0	1006.65		
67.0	1007.17	43.0	1006.51			38.0	1006.60		
70.0	1007.24	46.0	1006.53			48.0	1006.64		
73.0	1007.72	49.0	1006.75			50.0	1006.82		
74.3	1007.89	51.0	1006.96			52.0	1006.99		
76.1	1008.97	54.0	1007.02			55.0	1006.99		
76.6	1010.09	60.0	1007.02			57.0	1007.03		
79.0	1009.89	63.0	1007.05			60.0	1007.07		
81.4	1009.85	66.0	1007.16			63.0	1007.04		
85.0	1009.72	68.0	1007.21			66.0	1007.18		
89.0	1009.70	70.5	1007.23			70.0	1007.26		
93.0	1009.72	72.2	1007.55			72.0	1007.64		
96.0	1009.71	73.3	1007.81			73.0	1007.89		
100.0	1009.97	74.0	1007.87			74.4	1007.99		
101.7	1010.00	76.1	1008.98			76.4	1009.11		

Table 11.--Listing of horizontal stations and elevations for cross section PR122A--Continued.

1984		1984		1985		1985		1986	
Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
-20.0	1010.27	80.0	1009.76	-1.5	1009.68	76.2	1008.94	-1.5	1009.68
-17.4	1010.27	82.0	1009.79	0.0	1009.73	76.8	1009.37	0.0	1009.72
-15.3	1009.96	85.0	1009.72	2.0	1009.62	77.3	1009.92	2.0	1009.62
-13.8	1009.13	89.0	1009.71	4.0	1009.62	78.0	1009.89	4.0	1009.61
-13.0	1008.92	91.0	1009.62	5.0	1009.72	80.0	1009.72	5.0	1009.71
-10.4	1008.68	94.0	1009.68	7.0	1009.65	81.0	1009.85	7.0	1009.66
-8.6	1008.51	97.0	1009.71	10.0	1009.60	83.0	1009.73	10.0	1009.60
-7.6	1008.63	100.0	1009.98	12.0	1009.64	86.0	1009.69	12.0	1009.61
-6.6	1009.51	101.8	1010.01	13.0	1009.63	88.0	1009.67	12.8	1009.59
-5.0	1009.58	105.0	1009.73	13.4	1009.58	90.0	1009.66	12.8	1008.09
-1.5	1009.68	108.0	1009.84	13.4	1008.69	93.0	1009.71	13.9	1007.65
0.0	1009.73	111.0	1010.10	13.6	1008.16	96.0	1009.71	15.0	1007.54
3.0	1009.61	115.0	1010.21	14.6	1007.90	98.0	1009.78	17.0	1007.41
5.0	1009.71	120.0	1010.25	16.0	1007.82	100.0	1009.97	18.0	1007.36
7.0	1009.65	125.0	1010.31	17.1	1007.55	101.8	1010.00	19.0	1007.41
10.0	1009.60	130.0	1010.26	19.0	1007.33			21.0	1007.27
13.0	1009.65	135.0	1009.71	20.0	1007.26			24.0	1007.14
15.0	1009.67	140.0	1009.96	21.0	1007.31			27.0	1007.03
15.1	1008.50	145.0	1009.77	23.4	1007.17			30.0	1007.03
16.8	1007.79			26.0	1007.09			31.0	1006.99
18.4	1007.62			29.0	1006.99			33.0	1006.93
20.3	1007.24			32.0	1006.95			35.0	1006.87
23.2	1007.31			34.0	1006.83			37.0	1006.68
25.0	1007.22			36.0	1006.72			40.0	1006.70
29.0	1006.91			38.0	1006.60			42.0	1006.76
30.0	1007.02			40.0	1006.58			45.0	1006.77
32.0	1006.95			43.0	1006.59			48.0	1006.85
34.0	1006.87			46.0	1006.72			51.0	1007.04
37.0	1006.69			49.0	1006.88			53.3	1007.13
40.0	1006.57			52.0	1007.06			55.0	1007.20
42.0	1006.58			54.0	1007.17			57.0	1007.24
45.0	1006.72			56.0	1007.25			59.0	1007.25
48.0	1006.83			58.0	1007.41			61.0	1007.37
50.0	1006.92			59.0	1007.40			63.0	1007.52
53.0	1007.07			61.0	1007.31			65.0	1007.61
55.0	1007.02			62.0	1007.36			66.1	1007.89
60.0	1007.05			63.0	1007.48			67.0	1007.92
63.0	1007.05			64.0	1007.65			68.0	1008.02
65.0	1007.18			65.0	1007.73			70.0	1008.13
69.0	1007.25			68.0	1007.79			71.5	1008.05
70.8	1007.22			69.0	1007.75			73.0	1008.08
71.8	1007.55			70.3	1007.60			75.5	1008.39
75.4	1008.30			72.0	1007.95			76.3	1009.27
76.4	1009.16			74.0	1008.19			76.5	1009.98
76.7	1010.05			75.5	1008.41			77.3	1009.90

Table 11.--Listing of horizontal stations and elevations for cross section PR122A--Continued.

1986		1987		1987		1988		1988	
Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
79.0	1009.90	-20.0	1010.25	60.0	1007.87	-20.0	1010.26	46.0	1007.01
80.0	1009.74	-18.0	1010.25	62.0	1007.95	-18.0	1010.25	48.0	1007.12
81.0	1009.73	-16.0	1010.07	64.0	1007.96	-16.0	1010.04	49.5	1007.22
82.0	1009.75	-15.1	1009.96	67.0	1008.13	-15.2	1009.93	50.3	1007.23
84.0	1009.75	-13.8	1009.08	70.0	1008.25	-14.0	1009.13	52.0	1007.46
87.0	1009.71	-12.0	1008.94	72.0	1008.39	-12.7	1008.87	53.0	1007.49
90.0	1009.68	-10.0	1008.65	74.0	1008.52	-12.0	1008.91	54.0	1007.67
92.0	1009.67	-8.3	1008.54	74.7	1008.44	-9.6	1008.59	56.0	1007.81
94.0	1009.65	-7.4	1008.71	76.3	1008.71	-8.3	1008.53	58.0	1007.85
96.0	1009.72	-6.6	1009.51	76.5	1009.99	-7.4	1008.77	59.0	1007.83
98.0	1009.73	-5.0	1009.58	77.0	1009.98	-6.6	1009.49	61.0	1007.93
100.0	1009.97	-3.0	1009.60	79.0	1009.83	-6.0	1009.55	63.0	1007.96
101.7	1010.00	-1.5	1009.67	80.0	1009.73	-4.0	1009.59	66.0	1008.07
		0.0	1009.72	83.0	1009.74	-1.5	1009.67	69.0	1008.21
		3.0	1009.62	86.0	1009.71	0.0	1009.72	71.0	1008.31
		5.0	1009.71	89.0	1009.71	1.0	1009.65	73.0	1008.50
		7.0	1009.66	91.0	1009.67	2.0	1009.61	74.0	1008.53
		9.0	1009.62	93.0	1009.76	4.0	1009.62	75.0	1008.47
		10.0	1009.54	96.0	1009.72	6.0	1009.70	75.6	1008.57
		10.0	1008.29	97.4	1009.71	8.0	1009.64	76.5	1008.93
		11.0	1007.79	99.0	1009.89	9.9	1009.52	76.6	1009.66
		12.0	1007.65	100.0	1009.98	10.0	1008.33	76.8	1009.72
		12.2	1007.45	101.7	1010.00	10.8	1007.87	77.0	1009.96
		13.4	1007.36	105.0	1009.74	12.2	1007.51	79.0	1009.87
		15.0	1007.25	110.0	1010.04	14.0	1007.42	80.0	1009.75
		18.0	1007.23	115.0	1010.20	15.0	1007.33	81.3	1009.83
		20.0	1007.21	120.0	1010.24	16.0	1007.17	83.0	1009.74
		22.0	1007.23	125.0	1010.28	17.0	1007.25	86.0	1009.70
		24.0	1007.15	130.0	1010.16	18.0	1007.22	88.0	1009.65
		26.0	1007.03	145.0	1009.79	19.0	1007.18	91.0	1009.64
		28.0	1007.07			19.6	1007.24	93.0	1009.74
		31.0	1007.00			20.5	1007.17	95.0	1009.66
		34.0	1006.86			21.3	1007.23	97.0	1009.70
		37.0	1006.62			22.0	1007.21	98.0	1009.75
		40.0	1006.55			23.0	1007.15	100.0	1009.96
		43.0	1006.71			25.0	1007.08	101.7	1010.00
		46.0	1007.03			28.0	1007.03	103.0	1009.78
		49.0	1007.13			30.0	1006.96	104.0	1009.73
		51.2	1007.37			32.0	1006.94	106.0	1009.75
		51.9	1007.46			34.0	1006.85	110.0	1010.05
		52.5	1007.44			36.0	1006.71	115.0	1010.20
		53.8	1007.65			38.0	1006.59	120.0	1010.23
		55.0	1007.75			40.0	1006.60	125.0	1010.27
		56.0	1007.80			42.0	1006.63	129.0	1010.27
		58.0	1007.78			44.0	1006.80	131.7	1009.88

Table 11.--Listing of horizontal stations and elevations for cross section PR122A--Continued.

1988	
Sta.	Elev.
133.0	1009.95
135.0	1009.72
138.0	1009.86
141.0	1009.94
143.0	1009.82
145.0	1009.78
150.0	1009.67

Description of Cross Section PR125

Location: Township 8 South/Range 48 East--section 21
U.S. Geological survey quadrangle (1:24,000): Moorhead

Landowners--left bank: Virginia Williams
right bank: Amory Hubbard

Access: left bank

Permission from: Gay Ranch (T7S/R49E--20)

Reference pins

Station (meters)	Elevation (meters above sea level)	Comments
		Pins 0.0 and 5.0 were closest to leveling instrument.
0.0	1,008.17	0.16 meter above 1987 ground level.
5.0	1,008.01	0.12 meter above 1987 ground level.
100.8	1,007.41	0.11 meter above 1987 ground level.
105.4	1,007.57	Possibly covered by sand in 1978.
117.1	1,007.84	0.23 meter above 1987 ground level.

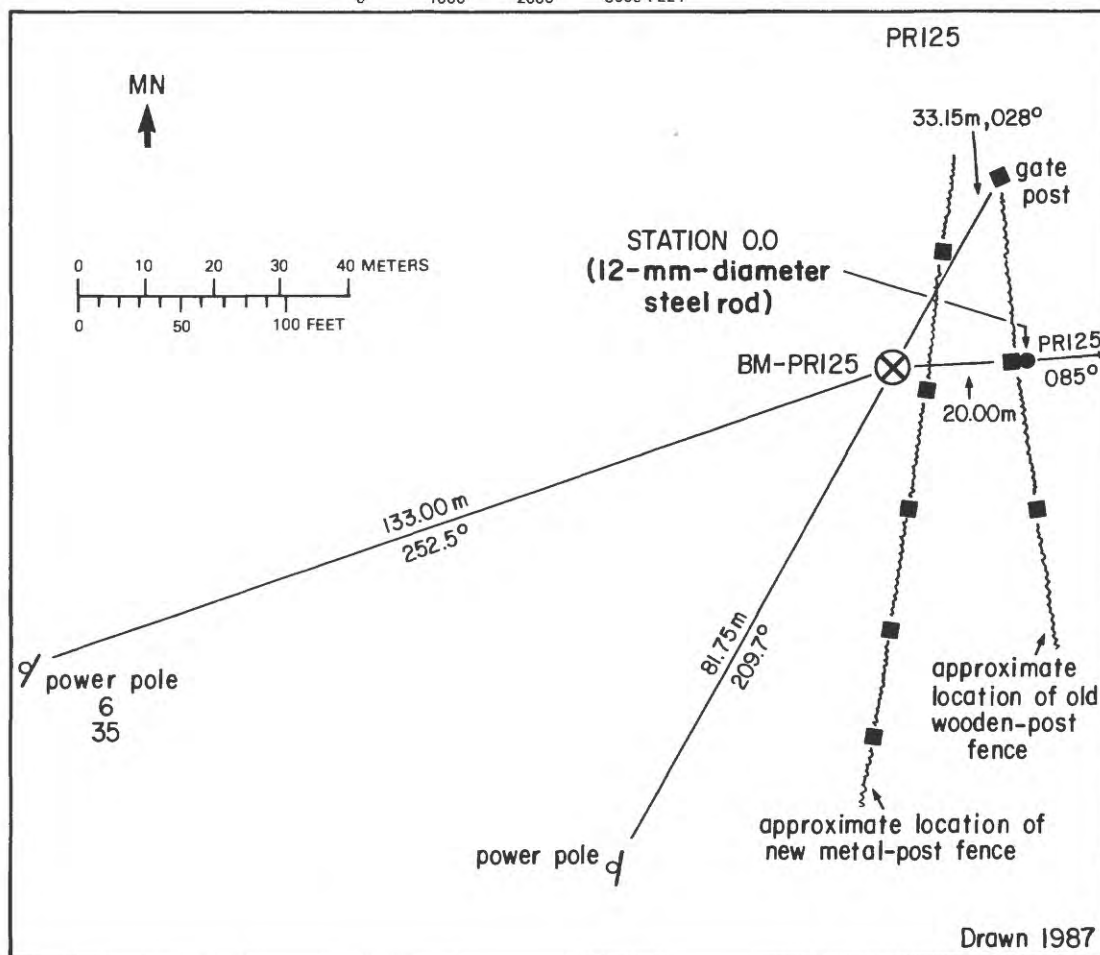
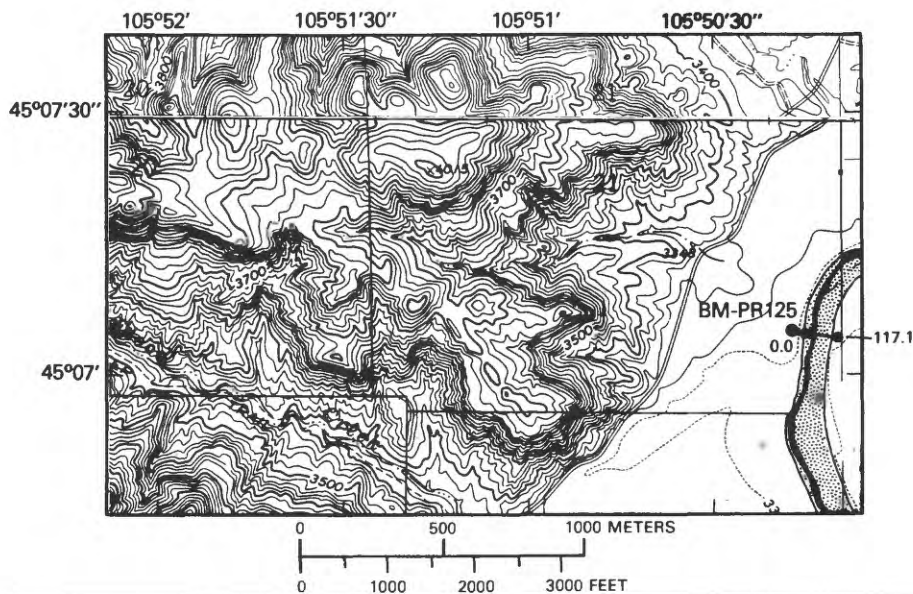


Figure 27.--Upper: Location of cross section PR125, bench mark BM-PR125, and left and right bank reference pins (tables 2 and 3) in the Moorhead quadrangle. Lower: Location of bench mark on the left bank. MN is magnetic north.

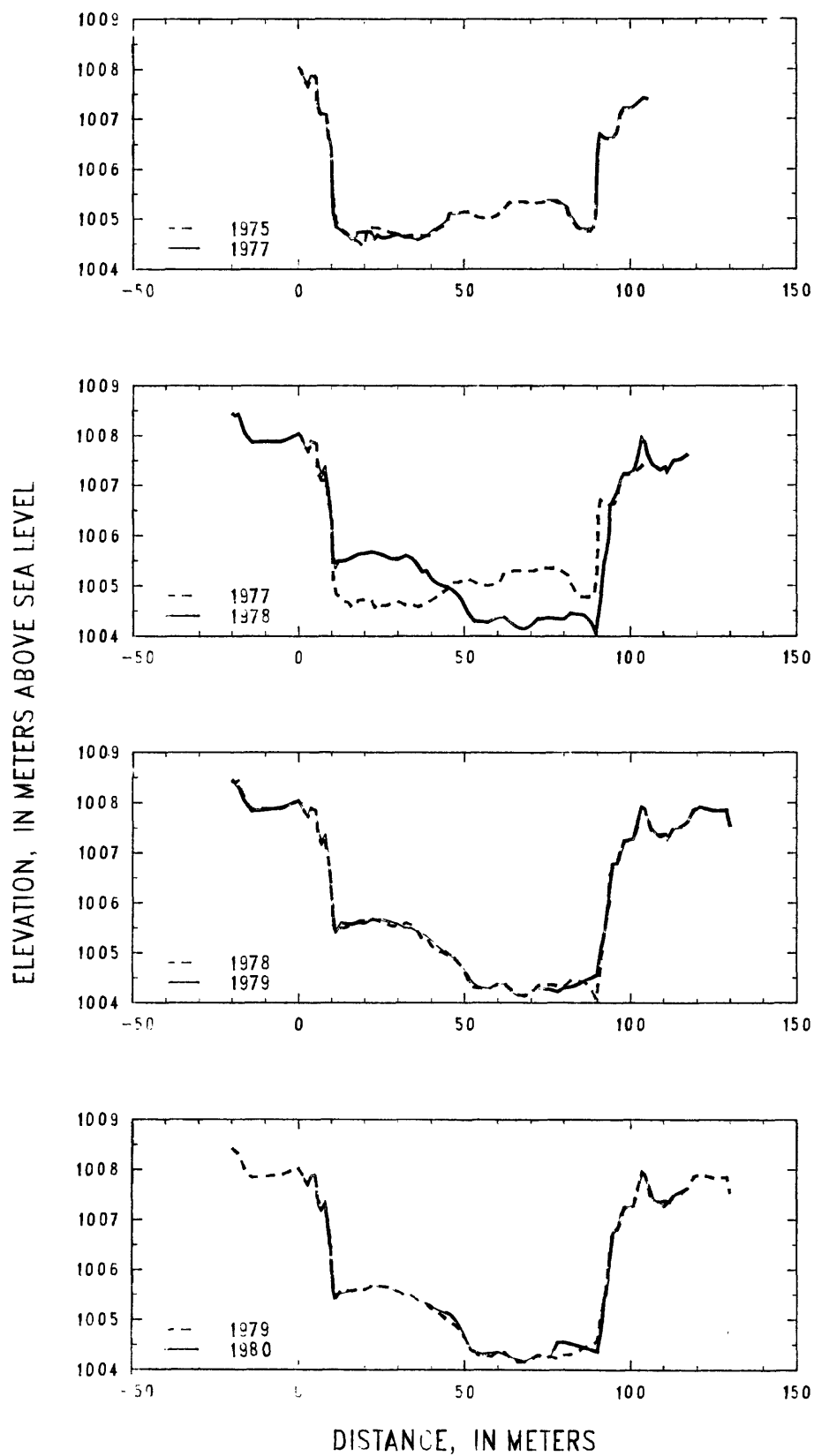


Figure 28 --Profiles of cross section PR125 from 1975 to 1980.

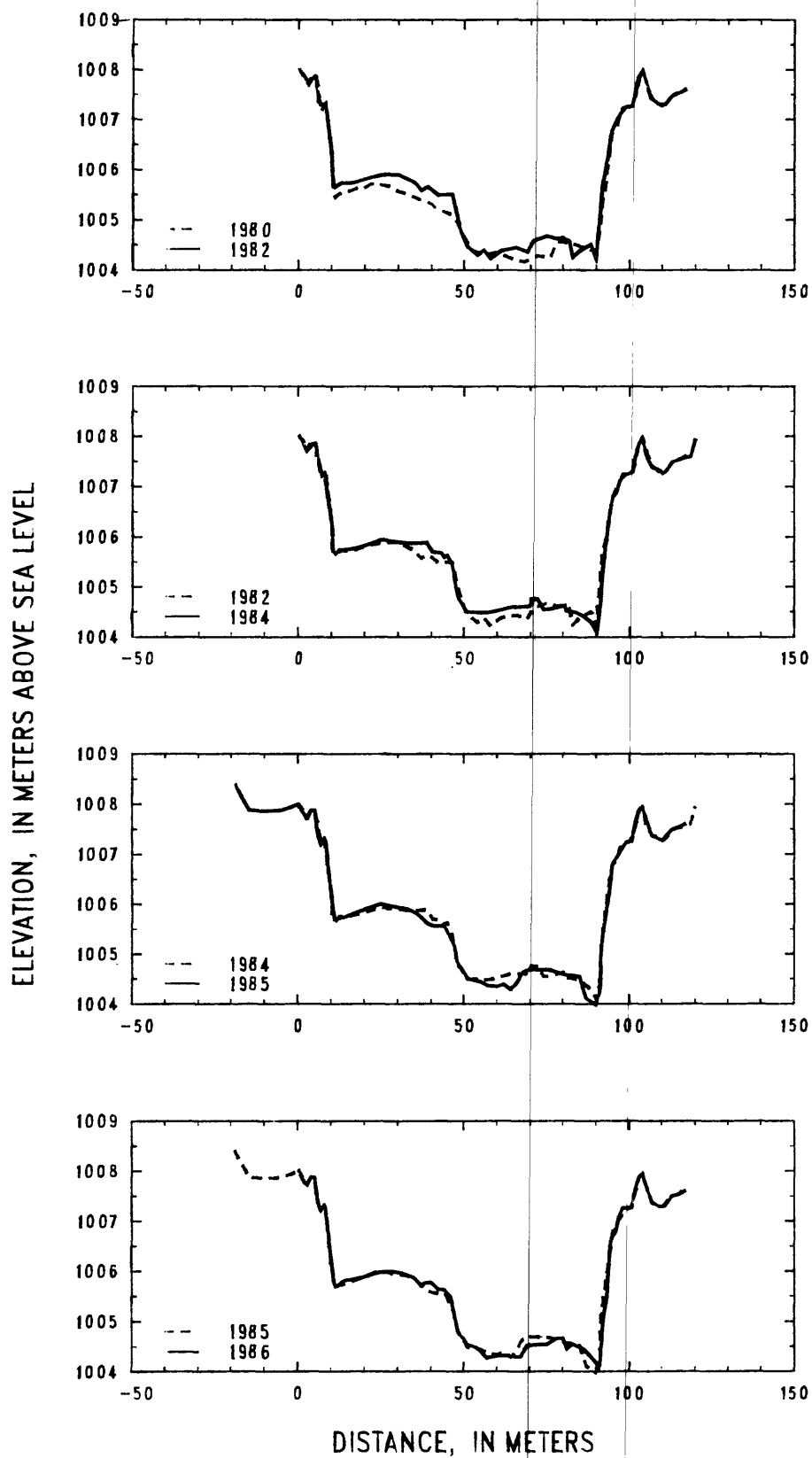


Figure 29.--Profiles of cross section PR125 from 1980 to 1986.

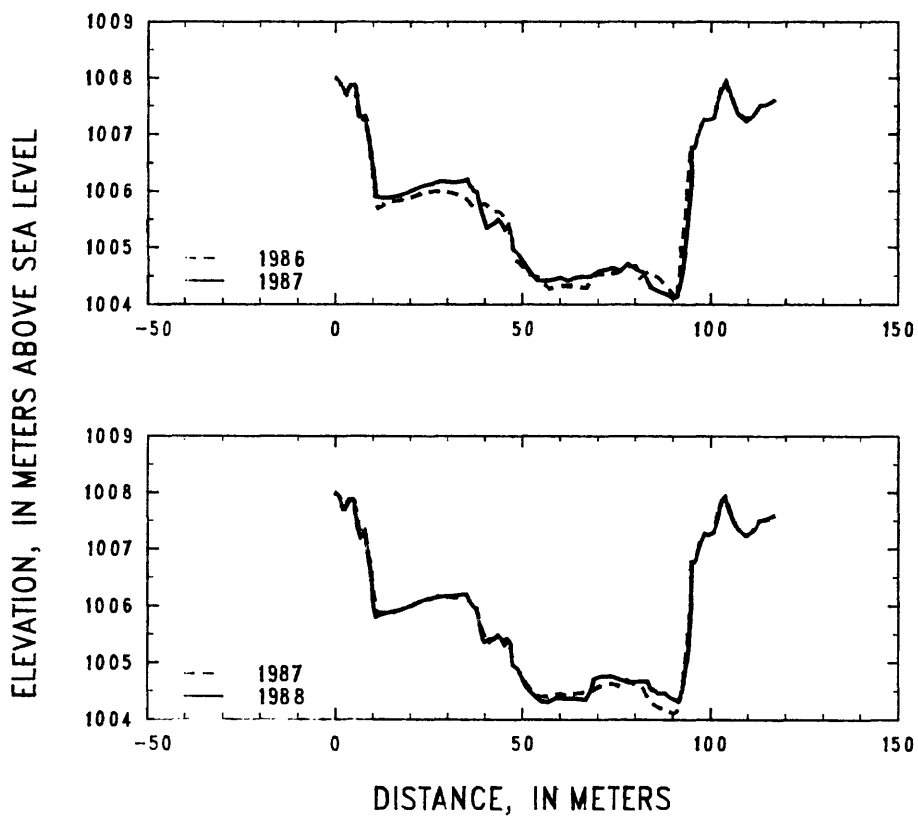


Figure 30.--Profiles of cross section PR125 from 1986 to 1988.

Table 12.--Listing of horizontal stations and elevations for cross section PR125
[Sta., station, distance in meters from a reference point on
the left bank; Elev., elevation, in meters above sea level].

1975		1975		1977		1977		1978	
Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
0.0	1008.04	50.0	1005.14	0.0	1008.04	70.0	1005.30	-20.0	1008.45
1.0	1007.96	52.0	1005.12	1.0	1007.99	74.0	1005.36	-19.0	1008.39
2.0	1007.77	54.0	1005.02	2.0	1007.78	78.0	1005.36	-18.0	1008.43
3.0	1007.66	56.0	1005.00	3.0	1007.69	81.2	1005.22	-16.0	1008.02
4.0	1007.84	58.0	1005.00	4.0	1007.86	82.0	1005.07	-14.0	1007.86
5.0	1007.86	60.0	1005.06	5.0	1007.87	83.5	1004.88	-10.0	1007.83
5.6	1007.79	62.0	1005.18	5.6	1007.82	85.0	1004.79	-5.0	1007.88
5.7	1007.41	63.6	1005.32	6.0	1007.27	87.0	1004.78	0.0	1008.03
6.0	1007.26	64.0	1005.33	7.0	1007.10	89.0	1004.81	1.0	1007.98
6.6	1007.12	66.0	1005.33	8.6	1007.09	89.9	1005.16	2.0	1007.81
7.0	1007.09	68.0	1005.34	9.3	1006.64	90.3	1006.44	3.0	1007.70
8.0	1007.16	70.0	1005.29	10.1	1006.44	91.0	1006.71	4.0	1007.88
8.6	1007.14	72.0	1005.31	10.7	1005.13	93.0	1006.60	5.5	1007.83
9.0	1006.82	74.0	1005.33	11.6	1004.83	95.0	1006.64	6.0	1007.38
9.3	1006.62	76.0	1005.37	13.0	1004.76	96.0	1006.76	7.0	1007.18
10.0	1006.53	78.0	1005.32	13.6	1004.72	97.0	1007.11	8.0	1007.33
10.1	1006.44	80.0	1005.29	14.0	1004.69	98.0	1007.22	9.0	1006.87
10.5	1005.58	81.0	1005.21	15.0	1004.67	100.0	1007.22	10.0	1006.41
11.0	1005.29	82.0	1005.01	16.0	1004.59	100.7	1007.23	10.5	1005.60
11.4	1004.97	84.0	1004.82	17.5	1004.61	104.0	1007.43	11.3	1005.38
11.9	1004.85	86.0	1004.75	17.9	1004.71	105.0	1007.42	12.0	1005.49
12.0	1004.81	88.0	1004.74	20.0	1004.73	105.4	1007.40	14.0	1005.50
14.0	1004.73	89.0	1004.84	21.8	1004.73			16.0	1005.56
15.0	1004.67	89.7	1005.06	23.0	1004.58			18.0	1005.63
16.0	1004.59	90.0	1005.93	24.0	1004.67			20.0	1005.64
18.0	1004.54	90.5	1006.42	25.0	1004.62			22.0	1005.68
19.5	1004.44	91.0	1006.67	26.0	1004.61			24.0	1005.64
20.0	1004.47	92.0	1006.62	28.0	1004.65			26.0	1005.59
20.9	1004.80	93.0	1006.61	30.0	1004.69			28.0	1005.53
22.0	1004.82	94.0	1006.60	32.0	1004.62			30.0	1005.52
24.0	1004.81	96.0	1006.72	34.0	1004.63			32.5	1005.60
26.0	1004.75	97.0	1007.05	36.0	1004.58			34.4	1005.54
28.0	1004.71	98.0	1007.19	38.0	1004.63			36.0	1005.41
30.0	1004.67	100.0	1007.21	40.3	1004.73			37.3	1005.27
32.0	1004.64			42.0	1004.81			38.7	1005.29
34.0	1004.65			44.9	1004.94			40.0	1005.14
36.0	1004.66			45.5	1005.08			42.0	1005.03
38.0	1004.65			48.0	1005.07			44.0	1004.98
40.0	1004.66			51.0	1005.15			46.0	1004.93
42.0	1004.78			54.0	1005.04			48.0	1004.81
43.9	1004.87			57.0	1005.00			49.0	1004.73
45.0	1004.94			60.0	1005.04			51.0	1004.46
45.6	1005.10			61.3	1005.14			53.0	1004.29
46.0	1005.10			61.9	1005.25			55.0	1004.28
48.0	1005.10			65.0	1005.31			57.0	1004.26

Table 12.--Listing of horizontal stations and elevations for cross section PR125 --Continued.

1978		1979		1979		1980		1980	
Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
60.0	1004.37	-20.0	1008.43	62.0	1004.36	0.0	1008.02	96.2	1006.85
62.0	1004.38	-18.0	1008.32	64.0	1004.23	2.0	1007.81	97.0	1007.10
64.0	1004.25	-16.0	1008.01	66.0	1004.16	3.0	1007.70	98.0	1007.24
66.0	1004.15	-14.0	1007.84	68.0	1004.16	4.0	1007.87	100.0	1007.26
68.0	1004.13	-10.0	1007.87	70.0	1004.24	5.0	1007.89	100.9	1007.27
70.0	1004.20	-5.0	1007.90	72.0	1004.30	5.4	1007.84	103.5	1007.96
72.0	1004.34	0.0	1008.04	74.0	1004.29	6.2	1007.30	104.4	1007.90
74.0	1004.35	2.0	1007.82	76.0	1004.26	7.0	1007.19	107.0	1007.38
76.0	1004.36	3.0	1007.72	78.0	1004.22	8.2	1007.33	110.0	1007.27
78.0	1004.33	4.0	1007.89	80.0	1004.31	9.7	1006.50	113.0	1007.49
80.0	1004.33	5.4	1007.85	82.0	1004.32	10.0	1006.47	117.1	1007.63
82.0	1004.45	5.7	1007.50	84.0	1004.37	10.6	1005.62		
84.0	1004.43	7.0	1007.18	86.0	1004.45	11.1	1005.44		
86.0	1004.41	8.0	1007.32	88.0	1004.50	12.0	1005.51		
88.0	1004.28	9.0	1006.95	90.0	1004.57	14.0	1005.55		
89.6	1004.06	10.0	1006.39	91.4	1005.19	16.0	1005.58		
91.0	1004.73	10.1	1006.24	91.8	1005.27	18.0	1005.63		
92.0	1005.47	10.3	1005.91	93.0	1005.90	20.0	1005.63		
92.7	1005.65	11.0	1005.48	94.6	1006.78	22.0	1005.70		
93.0	1005.80	11.5	1005.43	96.0	1006.80	25.0	1005.68		
93.5	1005.99	13.0	1005.60	98.0	1007.25	28.0	1005.64		
93.8	1006.58	14.0	1005.59	100.0	1007.28	30.0	1005.56		
95.0	1006.74	16.0	1005.57	100.8	1007.28	33.0	1005.50		
96.0	1006.85	18.0	1005.62	103.4	1007.93	36.0	1005.41		
97.0	1007.10	20.0	1005.60	104.4	1007.88	40.0	1005.31		
98.0	1007.23	22.0	1005.68	106.0	1007.49	41.0	1005.24		
100.0	1007.25	24.0	1005.68	108.0	1007.37	45.0	1005.12		
100.7	1007.27	26.0	1005.66	110.6	1007.38	46.0	1005.09		
101.6	1007.39	28.0	1005.61	111.0	1007.28	48.0	1004.92		
103.5	1007.95	30.0	1005.56	113.0	1007.50	50.0	1004.66		
104.0	1007.88	32.0	1005.48	115.0	1007.53	52.0	1004.41		
104.4	1007.88	34.0	1005.48	117.1	1007.63	55.0	1004.30		
105.0	1007.66	36.0	1005.39	119.0	1007.87	60.0	1004.34		
105.4	1007.59	38.0	1005.35	121.0	1007.92	65.0	1004.20		
106.5	1007.42	40.0	1005.22	125.0	1007.84	68.0	1004.16		
109.0	1007.31	42.0	1005.15	129.0	1007.86	72.0	1004.28		
110.6	1007.37	44.0	1005.04	130.0	1007.54	76.0	1004.24		
111.0	1007.27	46.0	1004.95			78.0	1004.55		
113.0	1007.50	48.0	1004.84			80.0	1004.56		
115.0	1007.52	50.0	1004.64			85.0	1004.47		
117.1	1007.62	52.0	1004.40			90.0	1004.36		
		54.0	1004.30			91.0	1004.72		
		56.0	1004.28			92.0	1005.44		
		58.0	1004.27			92.5	1005.50		
		60.0	1004.37			94.7	1006.75		

Table 12.--Listing of horizontal stations and elevations for cross section PR125 --Continued.

1982		1982		1984		1984		1985	
Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
0.0	1007.99	100.9	1007.27	0.0	1008.02	94.5	1006.65	-19.0	1008.40
1.0	1007.96	103.0	1007.87	1.0	1007.95	95.0	1006.79	-14.5	1007.87
3.0	1007.72	104.0	1007.99	2.6	1007.71	96.0	1006.86	-10.0	1007.85
5.0	1007.88	106.5	1007.44	3.5	1007.84	97.0	1007.08	-5.0	1007.87
5.4	1007.87	109.0	1007.31	5.3	1007.86	98.0	1007.25	0.0	1007.99
5.6	1007.62	111.0	1007.30	7.0	1007.20	99.0	1007.24	2.0	1007.78
6.6	1007.30	113.0	1007.49	8.0	1007.27	100.8	1007.29	3.0	1007.71
8.3	1007.30	115.0	1007.54	10.3	1006.21	103.0	1007.86	4.0	1007.87
10.0	1006.43	117.1	1007.61	10.4	1005.74	104.0	1007.95	5.0	1007.88
10.6	1005.73			11.4	1005.65	105.2	1007.61	5.3	1007.86
11.0	1005.64			12.5	1005.75	107.0	1007.38	6.0	1007.39
13.0	1005.73			15.0	1005.75	109.0	1007.34	7.0	1007.19
16.0	1005.72			20.0	1005.83	110.0	1007.26	8.0	1007.32
20.0	1005.81			25.0	1005.94	111.0	1007.30	8.4	1007.27
25.0	1005.89			29.0	1005.90	113.0	1007.49	11.0	1005.68
30.0	1005.90			32.0	1005.88	117.1	1007.58	12.0	1005.70
35.0	1005.73			35.0	1005.87	118.5	1007.60	15.0	1005.76
37.0	1005.57			38.6	1005.89	120.0	1007.94	20.0	1005.89
39.0	1005.65			40.4	1005.70			25.0	1006.01
42.0	1005.48			43.0	1005.68			30.0	1005.93
46.3	1005.50			43.9	1005.59			33.0	1005.90
48.0	1005.01			44.9	1005.63			36.0	1005.79
49.0	1004.77			46.3	1005.45			39.0	1005.60
51.0	1004.46			48.0	1004.80			41.0	1005.55
54.0	1004.29			51.0	1004.50			44.0	1005.56
56.0	1004.39			53.0	1004.49			47.0	1005.19
58.0	1004.22			56.0	1004.47			48.0	1004.83
61.0	1004.38			60.0	1004.52			50.3	1004.60
64.0	1004.42			64.0	1004.60			51.0	1004.49
66.0	1004.44			67.0	1004.61			55.0	1004.44
69.0	1004.35			70.0	1004.62			57.0	1004.36
71.0	1004.59			70.3	1004.77			60.0	1004.34
75.0	1004.68			72.0	1004.76			62.0	1004.39
78.0	1004.62			74.0	1004.55			64.0	1004.28
80.0	1004.64			76.0	1004.56			66.0	1004.41
82.0	1004.57			80.5	1004.64			67.2	1004.59
83.0	1004.24			81.0	1004.52			68.0	1004.65
85.0	1004.38			82.0	1004.51			70.0	1004.69
88.5	1004.51			84.0	1004.49			73.0	1004.69
90.0	1004.22			86.0	1004.42			76.0	1004.68
92.0	1005.73			88.5	1004.29			80.0	1004.58
92.7	1005.89			90.2	1004.09			85.0	1004.54
94.7	1006.78			91.3	1004.61			87.0	1004.11
97.0	1007.09			91.6	1005.12			90.0	1003.97
99.0	1007.26			93.0	1005.94			91.3	1004.26

Table 12.--Listings of horizontal stations and elevations for cross section PR125 --Continued.

1985		1986		1986		1987		1987	
Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
91.5	1005.04	0.0	1008.02	89.0	1004.26	0.0	1008.00	70.0	1004.57
93.0	1005.83	1.0	1007.95	91.0	1004.06	1.0	1007.97	72.0	1004.61
94.0	1006.24	2.0	1007.77	91.8	1004.60	3.0	1007.71	74.0	1004.63
95.0	1006.78	3.0	1007.71	92.2	1005.03	4.0	1007.87	76.0	1004.58
97.0	1007.03	4.0	1007.88	92.9	1005.31	5.0	1007.88	78.0	1004.70
99.0	1007.23	5.0	1007.88	93.4	1005.63	5.4	1007.86	80.0	1004.61
100.0	1007.25	5.3	1007.85	93.8	1006.10	6.6	1007.31	82.0	1004.56
100.8	1007.26	6.0	1007.40	94.6	1006.66	8.0	1007.32	84.0	1004.30
103.0	1007.88	7.0	1007.21	95.8	1006.77	10.0	1006.53	86.0	1004.22
104.0	1007.95	8.0	1007.32	96.8	1007.07	11.0	1005.89	88.0	1004.18
107.0	1007.36	8.4	1007.25	98.0	1007.26	13.0	1005.87	90.0	1004.10
110.0	1007.27	10.9	1005.77	100.0	1007.26	15.0	1005.88	91.0	1004.13
113.0	1007.49	11.5	1005.68	100.8	1007.29	17.0	1005.92	92.0	1004.38
117.1	1007.60	14.0	1005.80	102.0	1007.65	20.0	1005.99	93.2	1004.89
		17.0	1005.84	103.0	1007.87	23.0	1006.09	94.9	1006.15
		20.0	1005.88	104.0	1007.95	26.0	1006.13	94.9	1006.78
		23.0	1005.95	105.0	1007.74	28.0	1006.17	95.8	1006.78
		26.0	1005.99	107.0	1007.38	30.0	1006.16	97.0	1007.07
		29.0	1005.99	109.0	1007.29	32.0	1006.15	98.0	1007.26
		32.0	1005.94	111.0	1007.30	34.0	1006.17	100.0	1007.27
		35.0	1005.86	113.0	1007.50	35.3	1006.21	100.8	1007.30
		37.0	1005.70	115.0	1007.53	36.0	1006.08	102.0	1007.67
		38.0	1005.76	117.1	1007.61	36.6	1006.06	104.0	1007.95
		40.0	1005.77			37.0	1006.00	107.0	1007.38
		42.0	1005.64			37.8	1005.97	109.4	1007.23
		44.0	1005.62			39.0	1005.64	111.0	1007.31
		46.0	1005.47			40.6	1005.34	113.0	1007.50
		47.0	1005.19			43.0	1005.45	115.0	1007.53
		48.4	1004.76			43.5	1005.50	117.1	1007.61
		49.8	1004.68			44.4	1005.43		
		51.0	1004.54			45.3	1005.31		
		54.0	1004.47			46.3	1005.39		
		57.0	1004.27			47.0	1005.23		
		60.0	1004.32			47.6	1004.95		
		63.0	1004.32			48.6	1004.90		
		65.0	1004.30			50.0	1004.75		
		67.0	1004.29			52.0	1004.54		
		69.0	1004.51			54.0	1004.41		
		72.0	1004.54			56.0	1004.40		
		75.0	1004.54			58.0	1004.42		
		78.0	1004.66			60.0	1004.46		
		80.0	1004.67			62.0	1004.40		
		81.2	1004.45			64.0	1004.46		
		83.0	1004.56			66.0	1004.48		
		86.0	1004.46			68.0	1004.48		

Table 12.--Listing of horizontal stations and elevations for cross section PR125 --Continued.

1988		1988	
Sta.	Elev.	Sta.	Elev.
0.0	1007.99	64.0	1004.37
1.0	1007.97	67.0	1004.34
2.4	1007.70	68.6	1004.57
3.0	1007.71	69.0	1004.70
3.5	1007.84	70.0	1004.75
4.0	1007.88	72.0	1004.77
5.0	1007.88	74.0	1004.76
5.3	1007.85	76.0	1004.70
6.1	1007.36	78.5	1004.65
7.0	1007.20	80.0	1004.67
8.0	1007.32	82.0	1004.67
9.3	1006.72	83.4	1004.66
9.8	1006.51	84.0	1004.56
10.5	1005.94	84.5	1004.52
11.0	1005.81	85.0	1004.54
12.0	1005.84	86.0	1004.46
14.0	1005.88	88.0	1004.46
16.0	1005.90	89.0	1004.39
18.0	1005.95	91.5	1004.31
20.0	1006.00	92.7	1004.56
23.0	1006.09	93.3	1004.88
26.0	1006.14	94.0	1005.12
29.0	1006.16	95.0	1006.11
32.0	1006.18	95.1	1006.77
34.0	1006.20	96.0	1006.80
35.2	1006.20	97.0	1007.05
36.0	1006.08	98.4	1007.28
37.0	1005.99	99.5	1007.24
37.8	1005.96	100.8	1007.29
39.6	1005.40	101.5	1007.44
40.0	1005.37	103.0	1007.85
41.0	1005.41	104.0	1007.94
42.6	1005.43	105.0	1007.69
43.6	1005.50	106.0	1007.50
44.8	1005.39	107.0	1007.38
46.0	1005.42	109.4	1007.23
46.9	1005.34	111.6	1007.32
47.5	1004.96	113.0	1007.50
49.0	1004.88	115.0	1007.53
51.0	1004.58	117.1	1007.59
53.0	1004.44		
55.0	1004.32		
57.0	1004.30		
59.0	1004.38		
61.0	1004.37		

Description of Cross Section PR130

Location: Township 8 South/Range 48 East--section 14
U.S. Geological Survey quadrangle (1:24,000): Bloom Creek

Landowners--left bank: Gay Ranch
right bank: Jim Bowers

Access: left bank

Permission from: Gay Ranch (T7S/R49E--20)

Reference pins

Station (meters)	Elevation (meters above sea level)	Comments
-1.1	1,000.706	Pins -1.1 and 0.0 were closest to leveling instrument. Bent over, 0.02 meter above 1987 ground level.
0.0	1,000.669	Bent over, 0.02 meter above 1987 ground level.
101.9	1,000.641	0.06 meter above 1987 ground level.
108.4	1,000.924	0.01 meter above 1987 ground level.
110.6	1,000.932	0.20 meter above 1987 ground level.

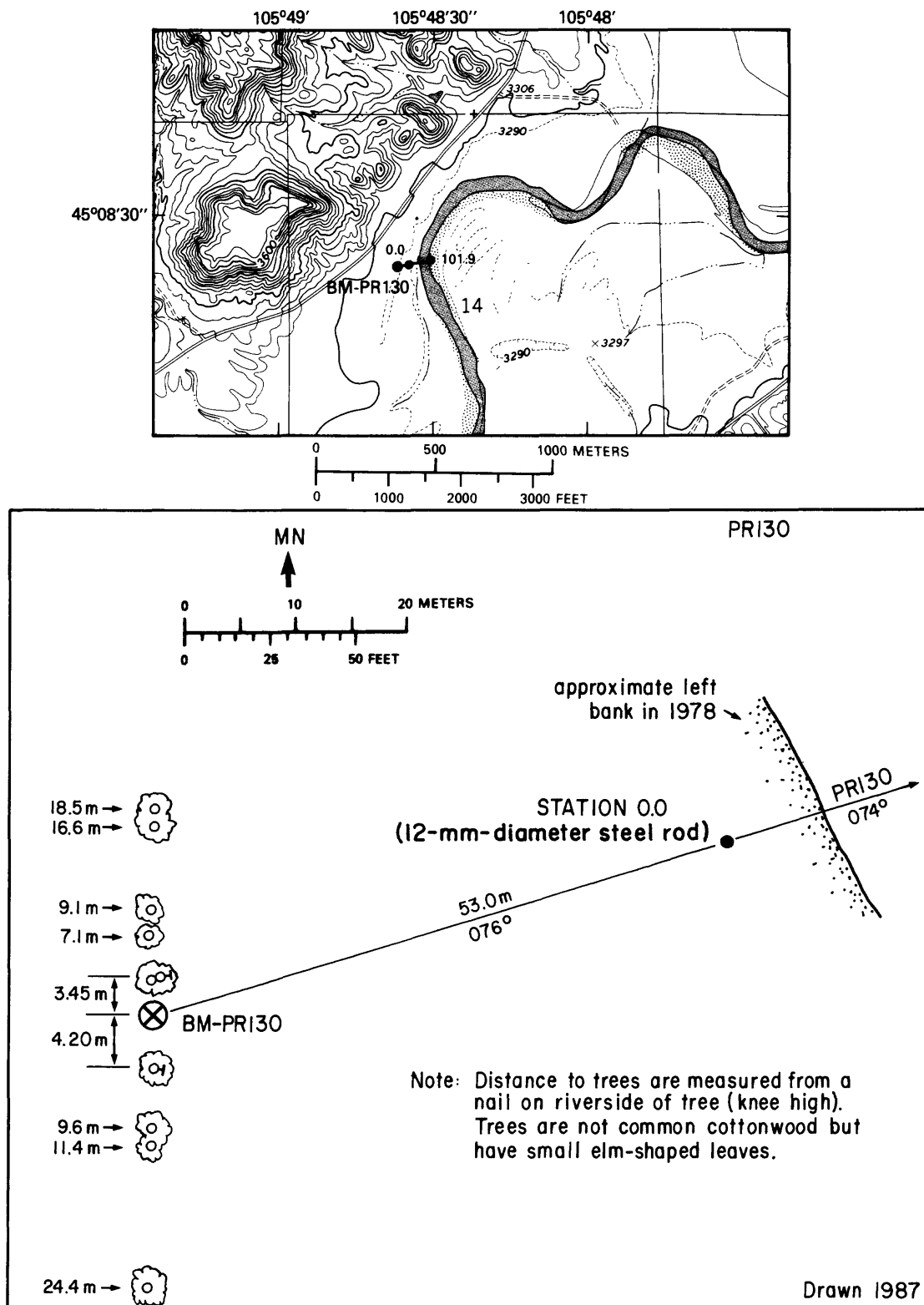


Figure 31.--Location of cross section PR130, bench mark BM-PR130, and left and right bank reference pins (tables 2 and 3) in the Bloom Creek quadrangle. Lower: Location of bench mark on the left bank. MN is magnetic north.

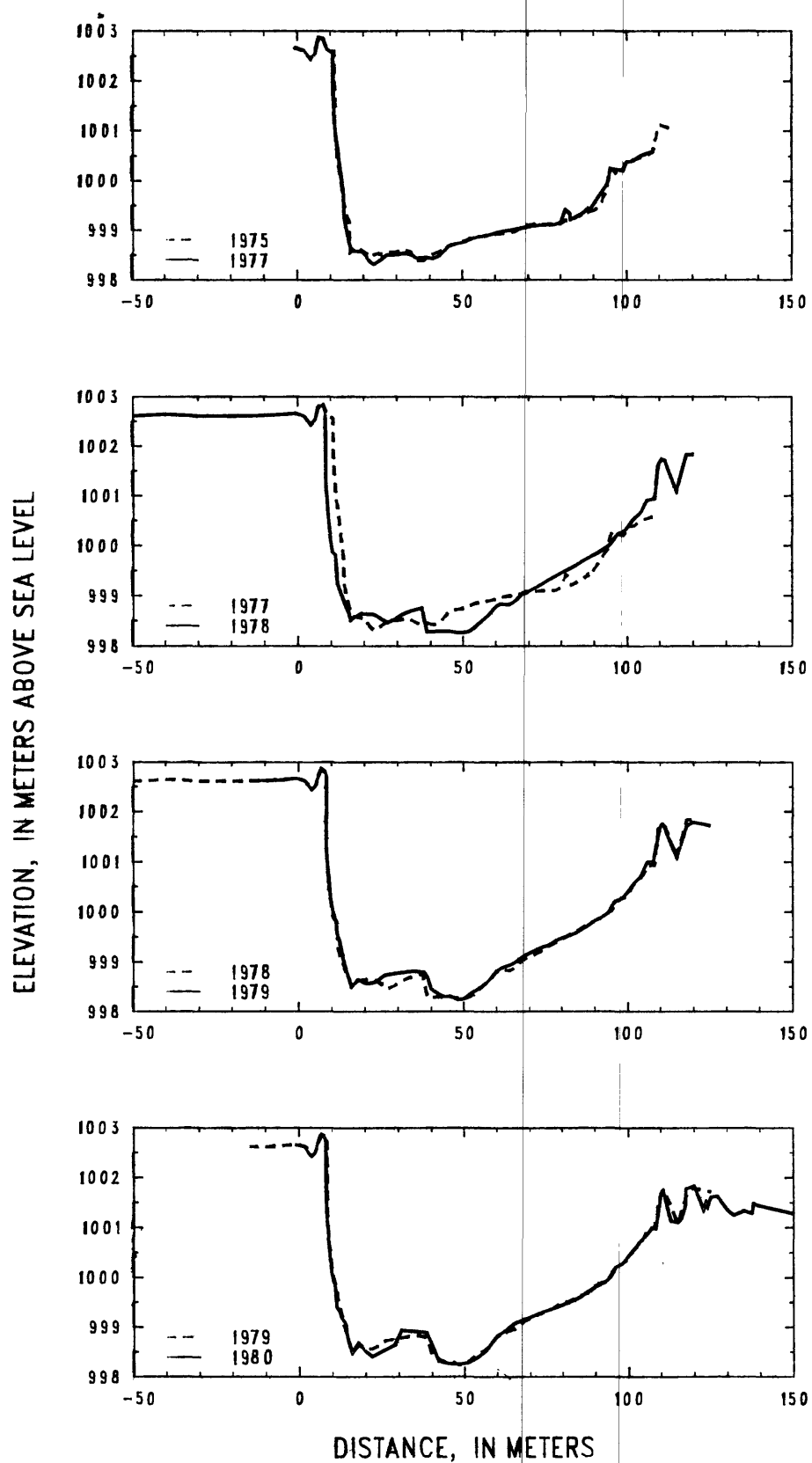


Figure 32.--Profiles of cross section PR130 from 1975 to 1980.

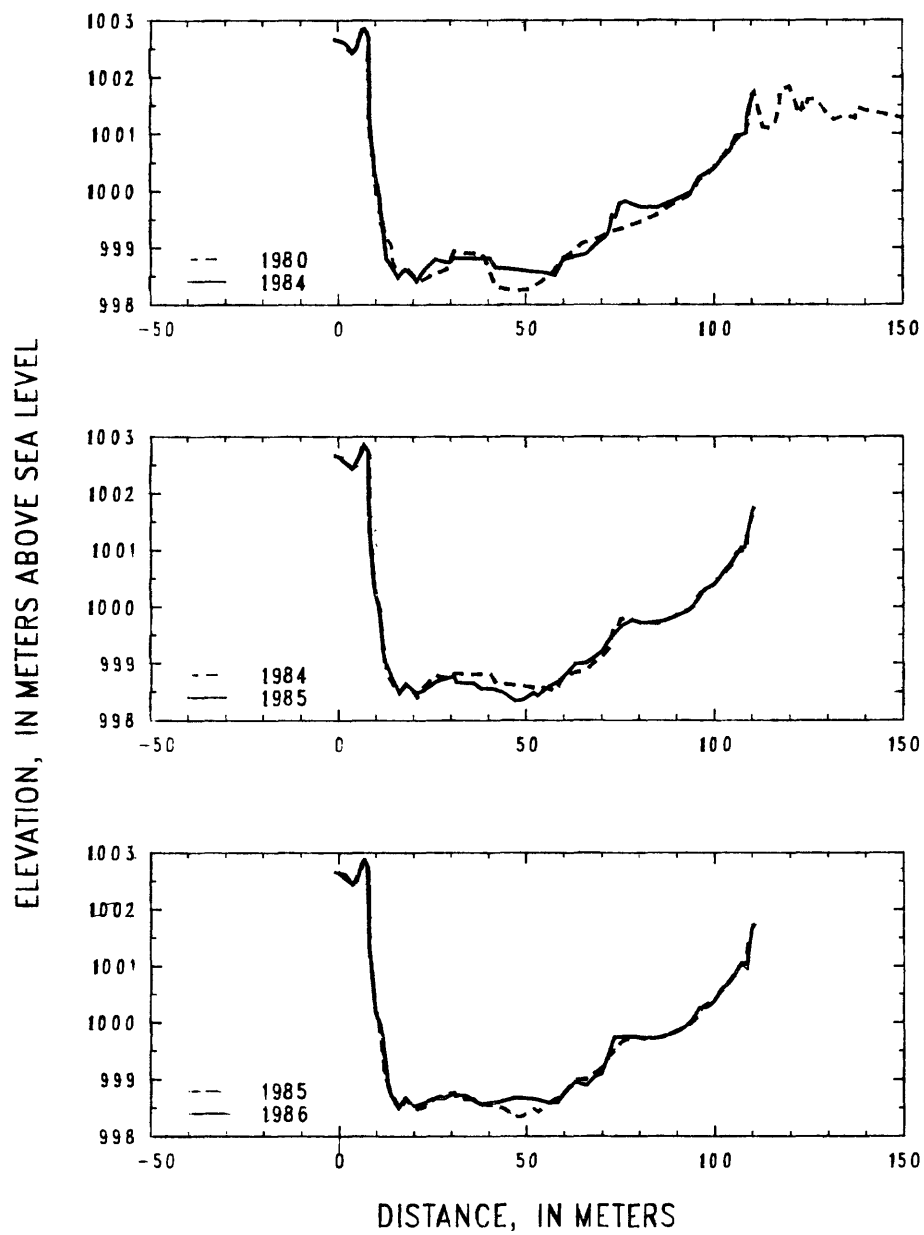


Figure 33.--Profiles of cross section PR130 from 1980 to 1986.

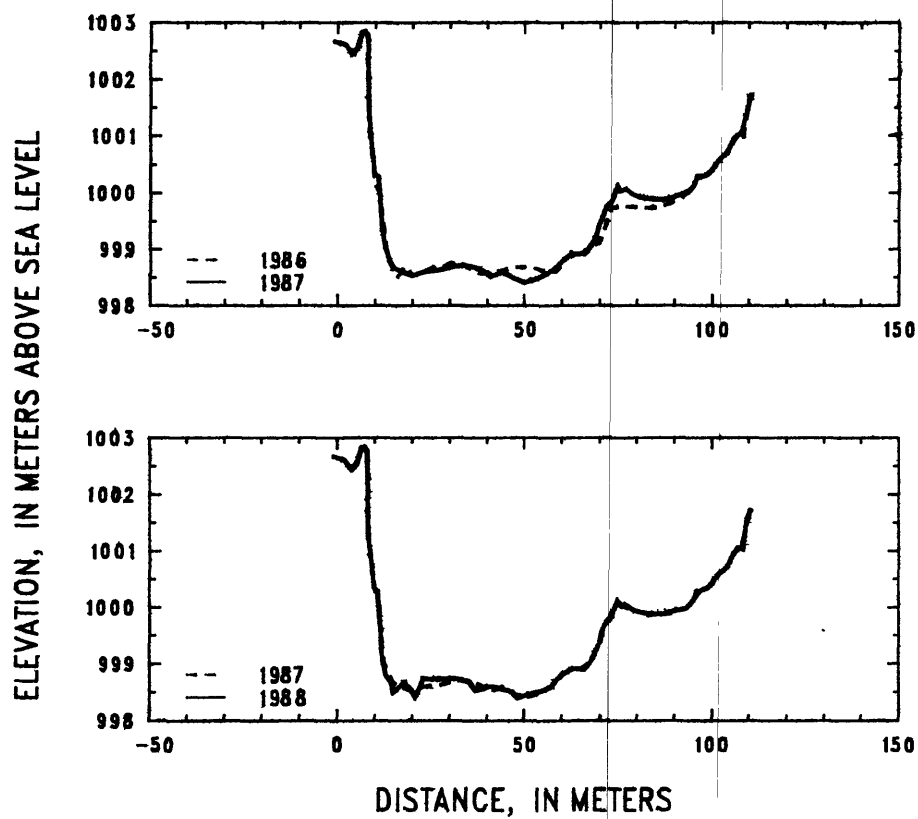


Figure 34.--Profiles of cross section PR130 from 1986 to 1988.

Table 13.--Listing of horizontal stations and elevations for cross section PR130
[Sta., station, distance in meters from a reference point on
the left bank; Elev., elevation, in meters above sea level].

1975		1975		1977		1977		1978	
Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
-1.1	1002.66	80.0	999.12	-1.1	1002.68	92.0	999.74	-50.0	1002.61
0.0	1002.65	82.0	999.23	0.0	1002.67	94.1	999.93	-40.0	1002.65
2.0	1002.60	84.0	999.24	2.0	1002.62	95.1	1000.25	-30.0	1002.60
4.0	1002.43	86.0	999.30	4.0	1002.43	99.0	1000.20	-20.0	1002.61
7.0	1002.90	88.0	999.37	5.4	1002.54	100.0	1000.39	-10.0	1002.62
8.0	1002.81	90.0	999.39	6.6	1002.88	101.8	1000.40	-1.1	1002.66
9.0	1002.63	92.0	999.51	7.8	1002.86	104.0	1000.50	0.0	1002.66
10.0	1002.60	94.0	999.85	9.0	1002.64	106.0	1000.55	2.0	1002.60
11.3	1002.61	95.0	1000.24	10.0	1002.60	108.0	1000.59	4.0	1002.43
11.5	1001.12	97.0	1000.13	10.8	1002.57	108.4	1000.66	5.4	1002.54
12.2	1000.38	98.0	1000.13	10.9	1001.63			6.6	1002.81
12.7	1000.24	100.0	1000.38	11.6	1001.01			8.0	1002.81
13.1	1000.05	105.0	1000.49	14.0	999.69			8.4	1002.69
14.0	999.57	108.0	1000.58	14.1	999.25			8.5	1001.24
15.0	999.29	110.0	1001.12	15.9	998.66			9.4	1000.40
15.6	999.18	115.0	1001.01	17.0	998.58			10.5	999.86
15.9	998.71			20.0	998.56			11.5	999.80
16.0	998.55			22.0	998.36			12.0	999.24
18.0	998.66			23.0	998.31			14.0	998.85
20.0	998.57			25.0	998.39			15.4	998.66
22.0	998.46			27.0	998.50			15.9	998.51
24.0	998.53			30.0	998.51			17.0	998.57
26.0	998.52			32.0	998.54			19.0	998.65
28.0	998.56			34.0	998.52			21.0	998.64
30.0	998.56			36.0	998.44			23.0	998.63
32.0	998.60			39.0	998.45			25.0	998.54
34.0	998.57			41.0	998.42			27.0	998.45
36.0	998.37			43.0	998.48			29.0	998.53
38.0	998.39			45.4	998.66			31.0	998.61
40.0	998.49			48.0	998.73			33.0	998.67
42.0	998.55			50.0	998.75			35.0	998.71
44.0	998.60			54.0	998.86			37.4	998.77
46.0	998.70			58.0	998.91			39.0	998.28
47.0	998.70			62.0	998.98			40.0	998.28
50.0	998.77			66.0	999.02			42.0	998.29
54.0	998.86			70.0	999.08			44.0	998.29
58.0	998.90			74.0	999.11			46.0	998.29
62.0	998.94			78.0	999.11			48.0	998.26
66.0	998.97			80.0	999.17			50.0	998.26
68.0	999.09			81.5	999.42			52.0	998.29
70.0	999.10			82.6	999.35			54.0	998.40
72.0	999.13			83.0	999.21			56.0	998.52
74.0	999.11			87.0	999.36			58.0	998.63
76.0	999.13			88.1	999.44			60.0	998.79
78.0	999.13			88.4	999.37			61.5	998.84

Table 13.--Listing of horizontal stations and elevations for cross section PR130 --Continued.

1978		1979		1979		1980		1980	
Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
64.0	998.82	-15.0	1002.63	62.0	998.89	-1.1	1002.66	96.0	1000.20
66.0	998.90	-10.0	1002.62	64.0	998.93	0.0	1002.65	98.0	1000.27
68.0	999.04	-5.0	1002.64	66.0	999.00	2.0	1002.60	100.0	1000.41
70.0	999.09	-1.1	1002.67	68.0	999.11	3.0	1002.48	101.8	1000.56
72.0	999.16	0.0	1002.66	70.0	999.18	4.0	1002.42	103.0	1000.67
76.0	999.31	2.0	1002.61	72.0	999.24	5.0	1002.49	105.0	1000.80
80.0	999.45	4.0	1002.43	74.0	999.30	6.6	1002.83	107.0	1000.99
84.0	999.59	5.0	1002.50	76.0	999.33	7.6	1002.85	108.5	1000.97
88.0	999.76	6.0	1002.69	78.0	999.43	8.3	1002.72	110.0	1001.70
92.0	999.89	7.0	1002.87	80.0	999.48	8.4	1001.24	110.6	1001.75
95.0	1000.03	8.0	1002.81	82.0	999.52	10.0	1000.14	113.0	1001.12
97.0	1000.23	8.5	1002.69	84.0	999.57	10.5	999.92	115.0	1001.09
99.0	1000.29	8.5	1001.20	86.0	999.65	11.1	999.85	116.0	1001.15
100.0	1000.35	10.0	1000.16	88.0	999.73	11.5	999.41	117.4	1001.45
101.8	1000.54	11.0	999.88	90.0	999.83	12.6	999.29	117.5	1001.77
104.0	1000.66	11.5	999.78	92.0	999.89	12.7	999.20	120.0	1001.83
106.0	1000.91	11.6	999.57	94.0	999.98	14.2	999.06	122.8	1001.34
108.0	1000.94	12.4	999.42	96.0	1000.20	14.7	998.79	123.5	1001.50
108.4	1000.93	12.6	999.30	98.0	1000.27	16.1	998.47	124.0	1001.40
109.6	1001.65	14.0	998.92	100.0	1000.39	18.0	998.68	125.0	1001.60
110.6	1001.74	15.0	998.70	101.8	1000.57	20.0	998.51	127.0	1001.62
111.5	1001.71	16.0	998.49	104.0	1000.70	22.0	998.41	130.0	1001.35
115.0	1001.08	18.0	998.64	106.0	1000.99	25.0	998.51	132.0	1001.24
118.0	1001.83	20.0	998.56	108.0	1001.00	29.0	998.64	135.0	1001.33
120.0	1001.84	22.0	998.56	110.0	1001.70	31.0	998.94	137.5	1001.27
		24.0	998.63	110.6	1001.76	34.0	998.91	138.0	1001.47
		26.0	998.73	111.0	1001.74	38.5	998.89	140.0	1001.42
		28.0	998.76	115.0	1001.08	40.0	998.67	150.0	1001.27
		30.0	998.78	118.0	1001.72	42.0	998.31		
		32.0	998.80	120.0	1001.79	45.0	998.26		
		34.0	998.82	125.0	1001.71	48.0	998.24		
		36.0	998.82			51.0	998.27		
		38.0	998.79			54.0	998.39		
		39.0	998.68			57.0	998.54		
		40.0	998.46			60.0	998.82		
		42.0	998.36			63.0	998.94		
		44.0	998.29			65.0	999.07		
		46.0	998.31			70.0	999.19		
		48.0	998.23			73.0	999.28		
		50.0	998.25			77.0	999.37		
		52.0	998.35			81.0	999.47		
		54.0	998.44			85.0	999.58		
		56.0	998.52			90.0	999.81		
		58.0	998.63			93.0	999.90		
		60.0	998.81			95.0	1000.05		

Table 13.--Listing of horizontal stations and elevations for cross section PR130 --Continued.

1982		1982		1984		1984		1985	
Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
-1.1	1002.67	100.0	1000.40	-1.1	1002.67	94.0	999.98	0.0	1002.65
0.0	1002.65	101.9	1000.57	0.0	1002.65	96.0	1000.24	4.0	1002.43
2.0	1002.60	106.0	1000.98	2.0	1002.60	100.0	1000.40	6.0	1002.68
4.0	1002.42	108.5	1000.97	4.0	1002.44	101.9	1000.56	7.0	1002.86
6.0	1002.67	110.0	1001.69	5.0	1002.50	104.0	1000.69	8.2	1002.74
7.0	1002.85	110.6	1001.74	6.6	1002.84	106.0	1000.96	8.5	1001.31
8.0	1002.80			7.3	1002.86	108.5	1001.01	10.0	1000.22
8.4	1002.68			8.4	1002.70	109.0	1001.38	11.0	999.99
8.5	1001.20			8.6	1001.30	110.6	1001.74	12.5	999.05
10.0	1000.27			10.0	1000.27			14.7	998.69
10.3	1000.06			11.0	1000.01			16.3	998.47
10.5	1000.01			13.0	998.81			18.0	998.64
11.2	1000.02			14.0	998.71			20.0	998.51
11.3	999.98			16.0	998.48			21.0	998.47
11.8	999.68			18.0	998.62			23.0	998.53
12.1	999.68			20.0	998.50			26.0	998.68
12.7	999.31			21.0	998.40			30.0	998.76
13.0	999.37			23.0	998.61			31.0	998.77
13.5	999.08			26.0	998.80			31.5	998.66
15.0	998.65			28.0	998.75			34.0	998.64
16.0	998.61			30.0	998.74			36.0	998.65
17.0	998.51			31.0	998.83			38.0	998.55
20.0	998.57			33.0	998.82			41.0	998.55
22.0	998.73			36.0	998.81			44.0	998.48
25.0	998.61			40.5	998.82			47.0	998.33
25.0	998.63			42.0	998.65			49.0	998.35
30.0	998.70			43.0	998.64			52.0	998.48
35.0	998.77			46.0	998.62			53.0	998.42
39.0	998.65			49.0	998.60			56.0	998.59
42.0	998.61			52.0	998.57			59.0	998.69
45.0	998.64			55.0	998.56			62.0	998.91
48.0	998.33			58.0	998.51			63.0	998.99
50.0	998.31			60.0	998.79			66.0	999.01
54.0	998.40			63.0	998.84			70.0	999.20
57.0	998.53			66.0	998.89			72.0	999.41
60.0	998.81			69.0	999.08			75.0	999.64
65.0	998.88			71.0	999.18			78.0	999.76
67.4	999.08			72.0	999.28			81.0	999.71
69.7	999.30			73.0	999.57			84.0	999.72
73.0	999.52			74.0	999.54			87.0	999.76
77.0	999.62			75.0	999.78			90.0	999.85
80.0	999.58			76.5	999.82			93.0	999.93
85.0	999.66			80.0	999.72			95.0	1000.08
90.0	999.84			85.0	999.70			97.0	1000.29
95.0	1000.06			90.0	999.85			100.0	1000.40

Table 13.--Listing of horizontal stations and elevations for cross section PR130 --Continued.

1985		1986		1986		1987		1987	
Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
101.9	1000.56	-1.1	1002.67	94.0	1000.05	-1.1	1002.67	87.0	999.87
105.0	1000.82	0.0	1002.65	96.0	1000.26	0.0	1002.65	89.0	999.90
107.0	1001.05	2.0	1002.61	98.0	1000.28	2.0	1002.61	91.0	999.95
108.0	1001.04	4.0	1002.44	100.0	1000.39	4.0	1002.44	93.0	999.99
110.0	1001.67	5.0	1002.50	101.9	1000.60	5.4	1002.57	95.0	1000.11
110.6	1001.75	6.6	1002.84	103.0	1000.65	6.5	1002.83	96.0	1000.29
		7.2	1002.88	105.0	1000.81	7.3	1002.85	98.0	1000.29
		8.1	1002.74	107.0	1001.04	8.2	1002.76	100.0	1000.41
		8.4	1001.33	108.5	1000.96	8.3	1002.40	101.9	1000.58
		10.1	1000.14	110.0	1001.68	8.4	1001.37	104.0	1000.70
		11.3	999.98	110.6	1001.74	10.0	1000.34	106.0	1000.96
		13.6	998.80			11.0	1000.28	108.0	1001.05
		16.0	998.49			12.2	999.29	109.0	1001.36
		18.0	998.68			12.8	999.00	110.6	1001.73
		20.0	998.53			15.0	998.66		
		22.0	998.57			17.0	998.59		
		25.0	998.66			20.0	998.52		
		28.0	998.67			23.0	998.60		
		30.0	998.74			26.0	998.61		
		31.0	998.74			29.0	998.65		
		34.0	998.71			32.0	998.70		
		36.0	998.63			35.0	998.70		
		38.0	998.56			38.0	998.63		
		41.0	998.59			41.0	998.50		
		44.0	998.62			44.0	998.59		
		47.0	998.68			47.0	998.47		
		50.0	998.67			50.0	998.39		
		53.0	998.64			53.0	998.45		
		56.0	998.58			56.0	998.54		
		58.5	998.59			59.0	998.70		
		60.5	998.79			61.0	998.84		
		63.0	998.96			63.0	998.90		
		66.0	998.89			65.0	998.91		
		68.0	999.05			67.2	999.00		
		69.9	999.10			68.8	999.16		
		72.0	999.48			70.4	999.51		
		73.3	999.74			72.0	999.76		
		75.0	999.74			73.3	999.83		
		77.0	999.75			74.8	1000.11		
		79.0	999.75			75.3	1000.02		
		81.0	999.73			77.0	1000.06		
		84.0	999.72			79.0	999.95		
		87.0	999.77			81.0	999.90		
		90.0	999.85			83.0	999.88		
		92.0	999.91			85.0	999.87		

Table 13.--Listing of horizontal stations and elevations for cross section PR130 --Continued.

1988		1988	
Sta.	Elev.	Sta.	Elev.
-1.0	1002.67	69.0	999.21
0.0	1002.65	70.5	999.42
2.0	1002.60	71.0	999.64
4.0	1002.43	73.0	999.82
5.0	1002.51	74.0	999.97
6.0	1002.67	74.8	1000.11
6.5	1002.83	76.0	1000.01
7.5	1002.85	78.0	999.99
8.1	1002.77	80.0	999.92
8.3	1002.42	83.0	999.88
8.4	1001.26	86.0	999.87
9.9	1000.43	89.0	999.92
10.5	1000.26	91.0	999.95
11.0	1000.24	93.0	999.98
11.8	999.48	95.0	1000.13
12.2	999.11	97.0	1000.30
13.1	998.79	99.0	1000.35
14.5	998.66	101.9	1000.59
15.0	998.48	104.0	1000.72
18.0	998.68	106.0	1000.96
20.0	998.52	107.0	1001.06
20.9	998.40	108.5	1001.03
22.7	998.64	109.4	1001.54
23.0	998.75	110.6	1001.73
25.0	998.72		
27.0	998.74		
29.0	998.72		
31.0	998.74		
33.0	998.72		
35.2	998.68		
37.0	998.52		
39.0	998.56		
41.0	998.61		
44.0	998.55		
47.0	998.50		
48.0	998.39		
50.0	998.43		
53.0	998.50		
55.0	998.52		
57.0	998.57		
58.3	998.68		
60.0	998.80		
63.0	998.91		
66.0	998.90		
67.7	999.02		

Description of Cross Section PR136

Location: Township 8 South/Range 49 East--section 6
U.S. Geological Survey quadrangle (1:24,000): Bloom Creek

Landowners--left bank: Gay Ranch
right bank: Jim Bowers

Access: left bank

Permission from: Gay Ranch (T7S/R49E--20)

Reference pins

Station (meters)	Elevation (meters above sea level)	Comments
		Pins -1.5, 0.0, 8.4 were closest to leveling instrument.
-1.5	994.728	New pin, 1978, 0.21 meter above 1987 ground level.
-1.5	994.531	Old pin, 0.01 meter above 1987 ground level.
0.0	994.600	0.02 meter above ground level.
8.4	994.327	Slow decrease in elevation, 0.40 meter above 1987 ground level.
112.0	994.459	0.06 meter above 1987 ground level.
115.0	994.799	0.13 meter above 1987 ground level.
117.8	994.859	0.18 meter above 1980 ground level.

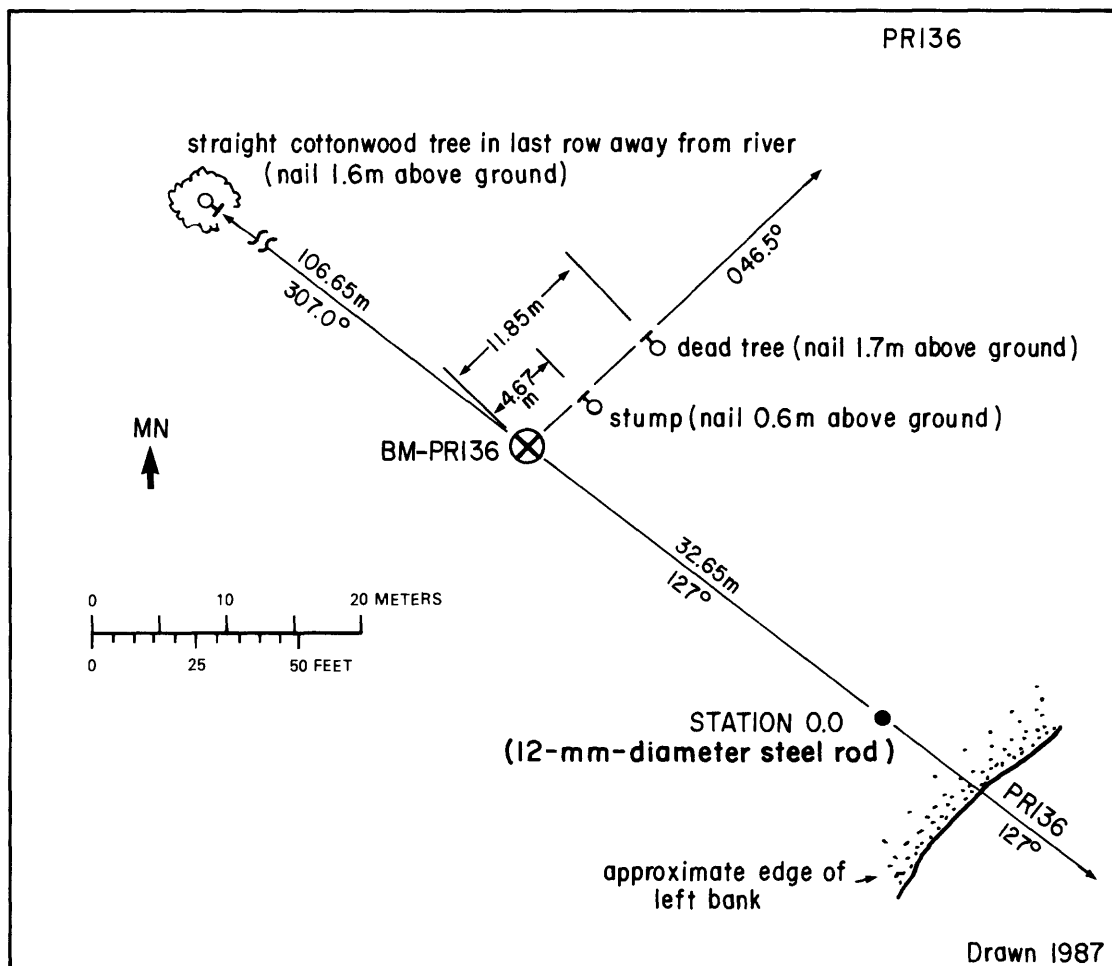
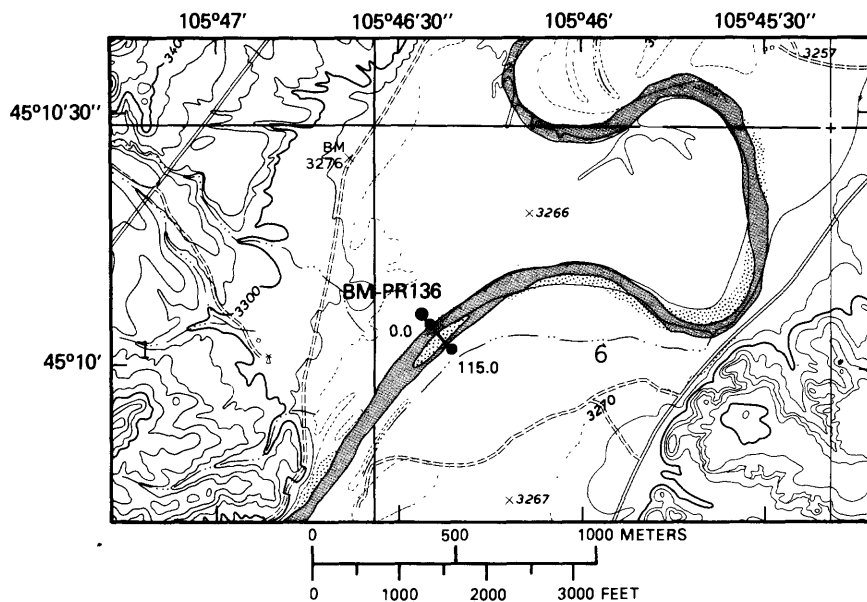


Figure 35.--Upper: Location of cross section PR136, bench mark BM-PR136, and left and right bank reference pins (tables 2 and 3) in the Bloom Creek quadrangle. Lower: Location of bench mark on the left bank. MN is magnetic north.

ELEVATION, IN METERS ABOVE SEA LEVEL

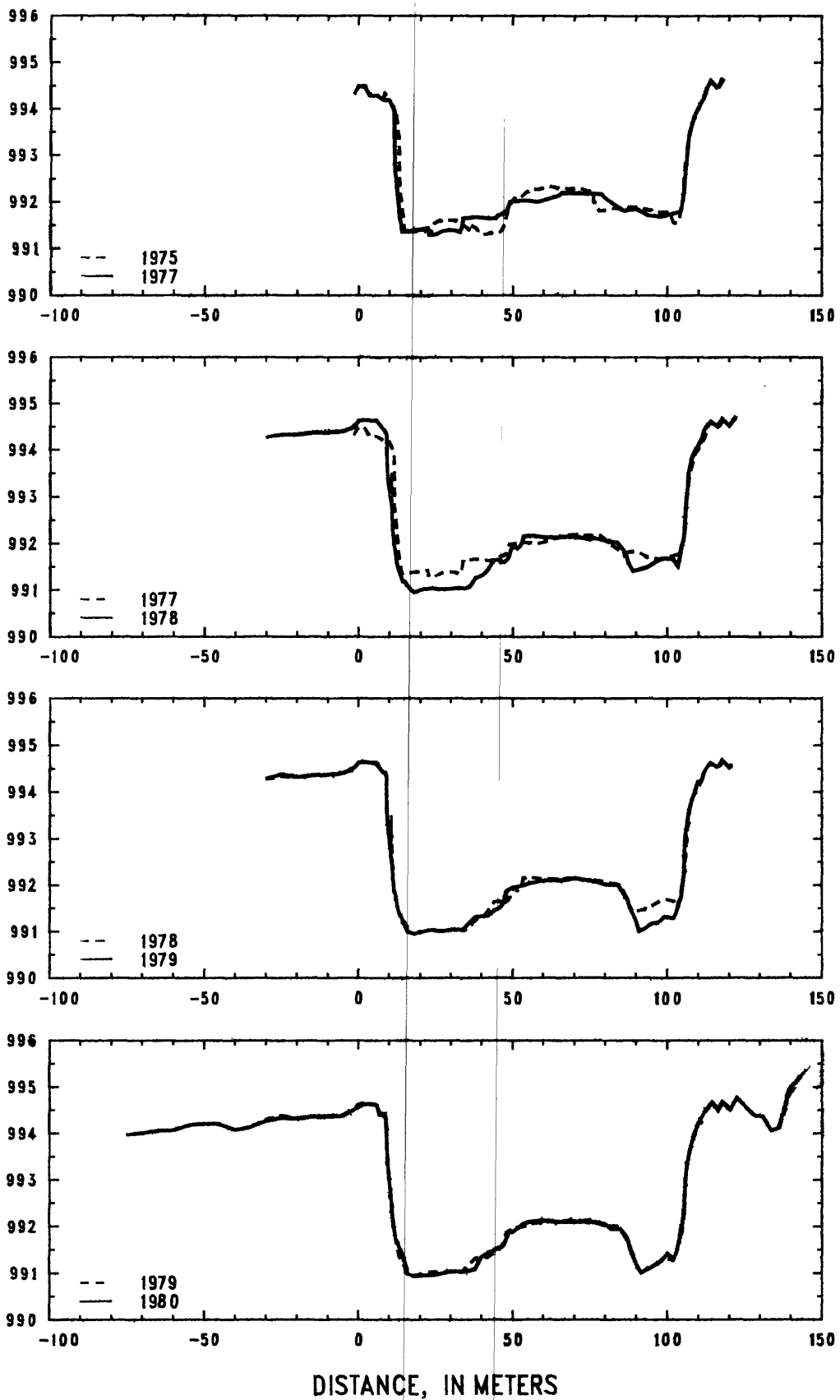


Figure 36.--Profiles of cross section PR136 from 1975 to 1980.

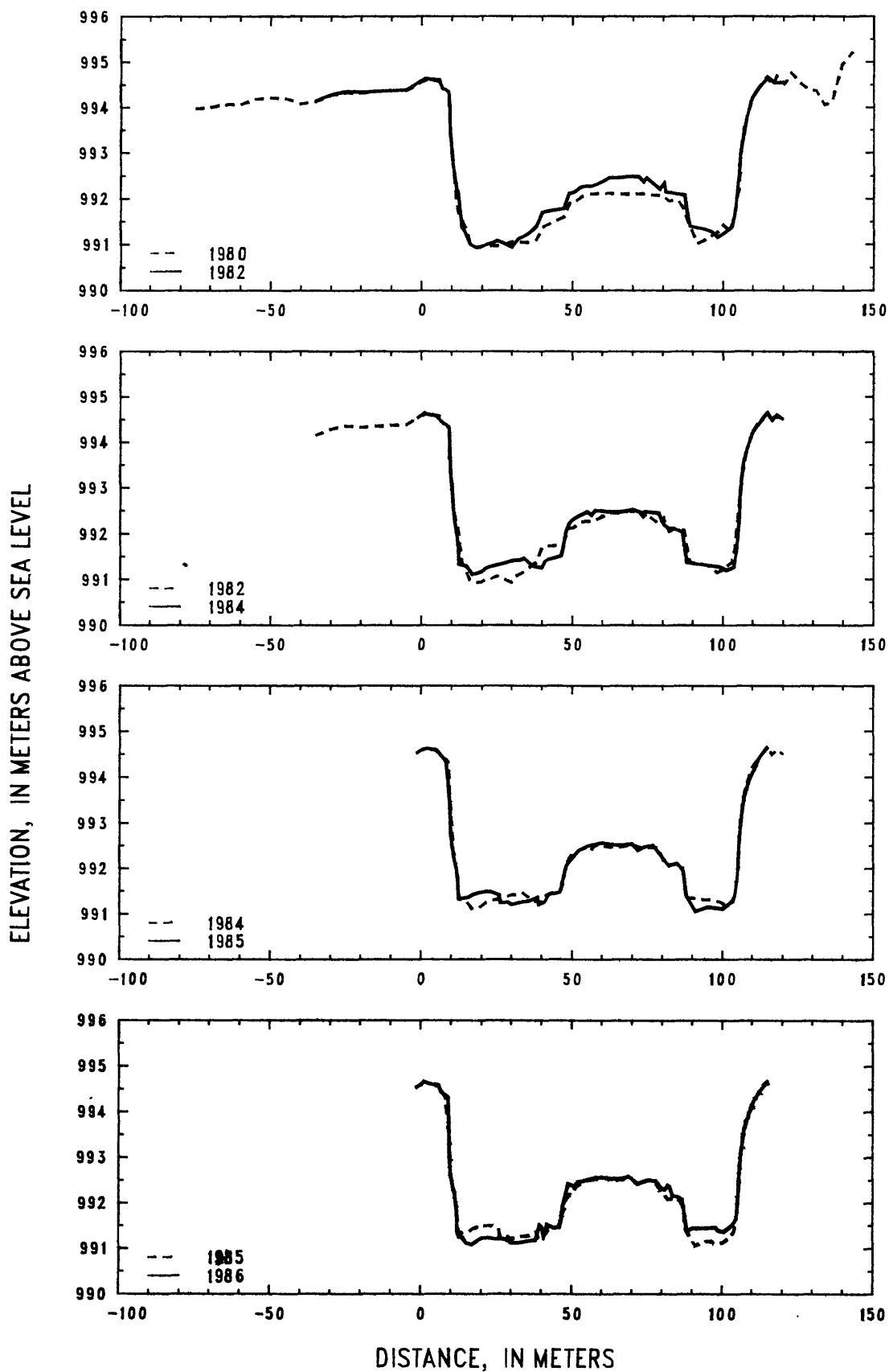


Figure 37.--Profiles of cross section PR136 from 1980 to 1986.

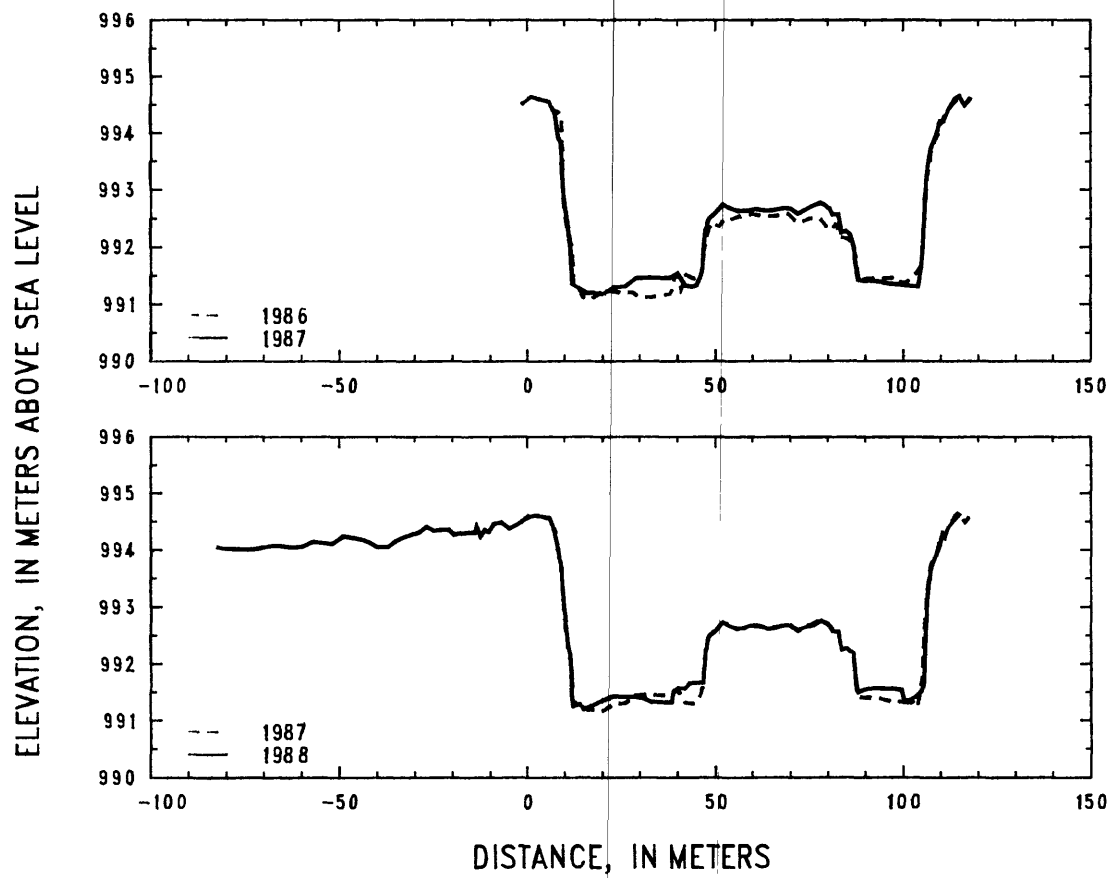


Figure 38.--Profiles of cross section PR136 from 1986 to 1988.

Table 14.--Listing of horizontal stations and elevations for cross section PR136
[Sta., station, distance in meters from a reference point on
the left bank; Elev., elevation, in meters above sea level].

1975		1975		1977		1977		1978	
Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
0.0	994.49	68.0	992.28	-1.5	994.32	98.0	991.67	-30.0	994.27
2.0	994.50	70.0	992.28	0.0	994.49	102.0	991.75	-25.0	994.34
4.0	994.29	72.0	992.29	2.0	994.47	104.4	991.78	-20.0	994.32
6.0	994.29	74.0	992.23	3.6	994.28	105.2	992.07	-15.0	994.37
8.0	994.20	76.0	992.22	6.0	994.29	107.0	993.38	-10.0	994.37
8.5	994.33	76.2	991.97	8.0	994.19	108.0	993.65	-5.0	994.40
10.0	994.19	78.0	991.80	10.0	994.18	109.0	993.89	-1.5	994.50
12.0	993.93	80.0	991.81	11.6	993.94	111.0	994.15	0.0	994.63
12.3	993.85	82.0	991.86	11.7	992.82	111.9	994.25	2.0	994.64
13.0	993.37	84.0	991.86	13.2	991.69	113.0	994.47	4.0	994.63
13.4	992.20	86.0	991.90	13.8	991.48	114.0	994.61	6.0	994.63
14.0	991.94	88.0	991.88	14.0	991.35	116.0	994.46	8.0	994.44
14.7	991.53	90.0	991.88	15.0	991.36	117.0	994.52	8.5	994.41
15.0	991.27	94.0	991.82	17.0	991.37	117.8	994.65	9.1	994.33
16.0	991.34	98.0	991.77	19.0	991.39			9.5	993.31
18.0	991.37	100.5	991.78	21.0	991.42			10.5	992.95
20.0	991.36	102.0	991.55	22.4	991.43			10.7	993.15
22.0	991.37	103.0	991.53	22.7	991.28			11.2	992.16
24.0	991.37	104.0	991.66	25.0	991.30			12.0	991.81
24.5	991.53	105.0	992.08	27.0	991.37			12.4	991.58
26.0	991.59	106.0	992.89	29.0	991.39			13.1	991.42
28.0	991.59	107.0	993.36	31.0	991.38			14.3	991.18
30.0	991.60	108.0	993.68	33.0	991.34			15.0	991.17
32.0	991.59	110.0	993.99	33.8	991.49			16.0	991.06
33.5	991.51	114.0	994.63	34.0	991.63			18.0	990.94
34.0	991.49	116.5	994.42	38.0	991.67			20.0	991.01
36.0	991.39	118.3	994.66	42.0	991.63			22.0	991.03
36.2	991.50			44.5	991.63			24.0	991.04
38.0	991.44			45.0	991.69			26.0	991.01
40.0	991.29			48.0	991.78			28.0	991.02
42.0	991.31			49.1	991.99			30.0	991.03
44.0	991.36			54.0	992.03			32.0	991.04
46.0	991.35			58.0	991.99			34.0	991.03
47.0	991.46			62.0	992.07			36.0	991.07
47.6	991.50			65.0	992.13			38.0	991.26
48.5	991.87			66.0	992.19			40.0	991.30
50.5	992.07			70.0	992.18			41.8	991.42
52.0	992.05			74.0	992.17			44.0	991.64
54.0	992.19			78.0	992.16			46.0	991.65
56.0	992.27			78.5	992.16			46.1	991.59
58.0	992.26			80.0	992.07			47.5	991.60
60.0	992.30			82.2	991.96			48.7	991.68
62.0	992.33			86.0	991.80			49.6	991.88
64.0	992.30			90.0	991.84			50.7	991.95
66.0	992.29			94.0	991.69			51.6	991.88

Table 14.--Listing of horizontal stations and elevations for cross section PR136 --Continued.

1978		1979		1979		1980		1980	
Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
52.8	991.96	-30.0	994.29	64.0	992.10	-75.0	993.97	80.0	992.05
53.6	992.15	-25.0	994.39	68.0	992.12	-70.0	994.00	82.0	991.94
56.0	992.17	-20.0	994.31	70.0	992.15	-65.0	994.06	85.0	991.95
60.0	992.13	-15.0	994.36	72.0	992.12	-60.0	994.06	87.0	991.76
64.0	992.12	-10.0	994.37	75.0	992.10	-55.0	994.18	88.0	991.54
68.0	992.15	-5.0	994.40	80.0	992.01	-50.0	994.21	90.0	991.20
72.0	992.13	-1.5	994.52	84.0	992.00	-45.0	994.20	91.5	991.00
75.0	992.08	0.0	994.62	84.5	992.00	-40.0	994.07	94.0	991.10
76.0	992.12	2.0	994.64	85.0	991.91	-35.0	994.13	97.0	991.21
80.0	992.05	4.0	994.63	87.0	991.73	-30.0	994.27	99.0	991.32
84.0	992.02	6.0	994.60	88.0	991.49	-25.0	994.33	100.0	991.42
86.0	991.87	8.0	994.41	89.0	991.37	-20.0	994.31	102.0	991.28
86.4	991.73	8.8	994.42	90.0	991.21	-15.0	994.36	103.2	991.48
86.9	991.74	9.2	994.24	91.0	991.00	-10.0	994.37	104.0	991.76
87.4	991.60	9.3	993.51	93.0	991.06	-5.0	994.37	105.3	992.20
89.0	991.40	10.0	993.06	95.0	991.18	-1.5	994.51	106.0	993.06
91.0	991.45	11.0	992.38	97.0	991.19	2.0	994.63	107.0	993.53
94.0	991.50	11.7	991.84	99.0	991.31	4.0	994.63	108.0	993.80
96.0	991.60	11.9	991.82	100.0	991.30	6.0	994.60	110.0	994.22
98.0	991.67	13.0	991.39	102.0	991.28	7.0	994.39	111.9	994.43
100.0	991.69	15.0	991.16	103.0	991.42	8.0	994.40	114.6	994.67
102.0	991.65	16.0	990.99	103.6	991.63	9.0	994.32	116.5	994.48
103.5	991.50	18.0	990.94	104.4	991.71	9.5	993.46	117.8	994.68
104.2	991.70	20.0	990.98	105.4	992.21	11.0	992.34	120.3	994.50
104.6	991.89	22.0	991.02	105.6	992.71	12.0	991.73	122.5	994.76
105.4	992.13	24.0	991.03	106.0	993.09	13.5	991.51	126.0	994.51
107.0	993.52	26.0	991.01	107.0	993.55	15.2	991.25	128.5	994.37
108.0	993.82	28.0	991.01	108.0	993.81	16.0	990.98	131.0	994.36
109.0	993.98	30.0	991.04	109.0	994.00	18.0	990.93	133.8	994.05
111.0	994.22	32.0	991.03	110.0	994.21	20.0	990.95	136.3	994.12
111.9	994.43	34.0	991.03	111.0	994.23	25.0	990.96	139.5	994.94
113.0	994.55	36.0	991.19	111.9	994.43	30.0	991.04	143.0	995.21
114.0	994.61	38.0	991.31	113.0	994.54	35.0	991.03		
116.0	994.52	40.0	991.33	114.0	994.62	38.0	991.09		
117.0	994.57	42.0	991.34	116.0	994.53	40.0	991.35		
117.8	994.67	44.0	991.45	117.0	994.57	43.0	991.46		
120.0	994.51	46.0	991.52	117.8	994.68	47.0	991.59		
122.0	994.70	47.0	991.61	120.0	994.51	49.0	991.89		
		48.0	991.86			50.0	991.87		
		50.0	991.96			53.0	992.03		
		52.0	991.97			55.0	992.09		
		54.0	992.01			60.0	992.12		
		56.0	992.05			65.0	992.09		
		58.0	992.07			70.0	992.09		
		60.0	992.10			75.0	992.10		

Table 14.--Listing of horizontal stations and elevations for cross section PR136 --Continued.

1982		1982		1984		1984		1985	
Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
-35.0	994.14	65.0	992.45	-1.5	994.53	86.7	992.03	-1.5	994.52
-30.0	994.28	69.0	992.49	0.0	994.57	88.0	991.36	0.0	994.58
-25.0	994.35	72.0	992.47	1.5	994.62	90.0	991.34	2.0	994.62
-20.0	994.32	73.5	992.36	3.0	994.60	93.0	991.32	5.0	994.58
-15.0	994.35	74.5	992.45	5.0	994.57	96.0	991.29	8.4	994.34
-10.0	994.37	77.0	992.30	7.0	994.42	99.0	991.26	9.4	993.73
-5.0	994.38	79.0	992.20	8.4	994.37	101.0	991.19	10.0	992.66
-1.5	994.54	80.4	992.34	9.2	994.29	103.7	991.27	11.0	992.22
0.0	994.59	81.0	992.14	9.7	993.40	105.0	991.81	12.0	991.89
1.0	994.64	84.0	992.10	10.8	992.42	105.6	992.30	12.5	991.42
3.0	994.62	87.3	992.07	12.3	991.80	105.8	992.88	13.0	991.33
6.0	994.57	88.0	991.70	12.5	991.32	107.0	993.56	16.0	991.37
7.0	994.41	89.0	991.38	15.0	991.28	108.0	993.81	17.0	991.42
8.4	994.37	93.0	991.33	17.0	991.10	110.0	994.22	20.0	991.49
9.0	994.34	96.0	991.27	20.0	991.17	111.9	994.39	23.0	991.49
9.3	994.17	98.0	991.14	21.5	991.24	115.0	994.65	26.0	991.41
9.4	993.60	100.0	991.23	24.0	991.30	116.4	994.48	26.4	991.24
10.6	992.60	103.0	991.38	27.0	991.34	118.0	994.60	29.0	991.26
11.7	992.18	104.0	991.69	30.0	991.41	120.0	994.50	30.0	991.20
12.2	992.13	105.0	992.29	33.0	991.42			33.0	991.26
13.0	991.69	106.0	993.04	34.0	991.46			36.0	991.28
13.4	991.36	108.0	993.82	37.0	991.28			38.6	991.37
14.0	991.30	110.0	994.23	40.0	991.24			39.0	991.20
16.0	990.99	111.9	994.42	41.0	991.39			41.0	991.26
18.0	990.92	115.0	994.66	42.0	991.43			42.4	991.43
20.0	990.94	117.0	994.54	46.2	991.51			45.0	991.46
21.0	990.99	120.0	994.55	47.0	991.71			46.0	991.48
23.0	991.01			48.0	992.07			48.0	992.06
25.0	991.07			49.0	992.22			49.0	992.15
27.0	991.02			50.0	992.29			50.0	992.20
29.0	990.95			52.0	992.38			52.0	992.39
30.0	990.93			55.0	992.47			55.0	992.49
32.0	991.11			56.4	992.40			60.0	992.57
35.0	991.21			57.5	992.50			65.0	992.50
38.0	991.38			60.0	992.49			70.0	992.54
40.0	991.69			63.0	992.46			72.0	992.40
43.0	991.73			67.0	992.47			74.0	992.48
47.0	991.78			70.0	992.52			77.0	992.51
48.8	992.11			73.6	992.43			80.0	992.26
50.4	992.13			74.2	992.47			82.0	992.08
52.5	992.24			78.7	992.44			85.0	992.11
54.7	992.27			80.5	992.18			87.0	991.95
56.0	992.26			81.7	992.13			88.0	991.40
59.0	992.34			82.3	992.05			91.0	991.06
62.0	992.45			84.0	992.11			95.0	991.16

Table 14.--Listing of horizontal stations and elevations for cross section PR136 --Continued.

1985		1986		1986		1987		1987	
Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
100.0	991.11	-1.5	994.52	75.0	992.50	-1.5	994.51	78.0	992.77
103.0	991.27	0.0	994.58	78.0	992.48	0.0	994.58	79.0	992.74
104.0	991.38	1.0	994.65	80.0	992.31	1.0	994.65	80.0	992.68
105.0	991.80	3.0	994.60	81.0	992.29	3.0	994.61	80.6	992.66
106.0	992.92	6.0	994.57	82.0	992.39	6.0	994.55	81.3	992.56
107.0	993.49	7.0	994.42	82.6	992.36	7.0	994.40	82.8	992.56
109.0	993.95	8.4	994.36	83.5	992.16	7.5	994.35	83.6	992.24
111.0	994.21	9.2	994.31	85.0	992.14	8.4	993.91	85.0	992.27
112.0	994.40	9.8	992.84	86.8	992.07	9.0	993.84	86.0	992.21
115.0	994.66	10.4	992.45	88.3	991.38	9.8	992.92	87.0	991.97
		10.7	992.34	90.0	991.44	10.7	992.47	87.2	991.76
		11.3	992.24	92.0	991.44	11.5	992.07	88.0	991.41
		12.2	991.80	95.0	991.45	11.8	991.84	90.0	991.40
		12.3	991.34	97.8	991.46	12.0	991.34	93.0	991.40
		13.0	991.23	98.6	991.39	14.0	991.27	96.0	991.35
		14.0	991.24	100.5	991.36	16.0	991.18	99.0	991.33
		15.0	991.12	102.8	991.48	18.0	991.20	102.0	991.30
		17.0	991.07	104.8	991.66	20.0	991.17	104.0	991.29
		20.0	991.22	105.3	992.06	23.0	991.30	105.0	991.76
		22.0	991.24	106.2	993.04	26.0	991.31	106.0	992.94
		25.0	991.19	107.6	993.72	29.0	991.46	106.3	993.21
		28.0	991.20	109.5	994.02	32.0	991.47	107.4	993.72
		30.0	991.11	110.0	994.15	35.0	991.45	109.0	993.97
		33.0	991.12	112.0	994.40	38.0	991.46	110.0	994.21
		36.0	991.16	115.0	994.65	40.0	991.54	111.0	994.20
		38.2	991.18			42.0	991.31	112.0	994.40
		39.5	991.51			44.0	991.29	114.0	994.61
		40.2	991.47			45.0	991.32	115.0	994.66
		40.9	991.26			46.4	991.51	116.5	994.48
		42.0	991.52			46.8	991.75	118.0	994.62
		44.0	991.44			47.0	992.02		
		46.0	991.46			47.6	992.33		
		46.6	991.64			48.2	992.48		
		47.0	991.94			50.0	992.59		
		48.8	992.41			52.0	992.74		
		50.0	992.38			54.0	992.67		
		51.0	992.35			56.0	992.62		
		52.0	992.45			59.0	992.63		
		54.0	992.48			61.0	992.66		
		57.0	992.54			63.0	992.64		
		60.0	992.57			65.0	992.63		
		63.0	992.53			68.0	992.67		
		66.0	992.53			70.0	992.67		
		69.0	992.58			72.0	992.57		
		72.0	992.41			75.0	992.69		

Table 14.--Listing of horizontal stations and elevations for cross section PR136 --Continued.

1988		1988		1988	
Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
-82.5	994.04	9.0	993.79	80.0	992.70
-81.0	994.02	9.3	993.63	81.0	992.63
-78.0	994.01	9.6	993.19	81.3	992.56
-75.0	994.00	11.0	992.28	82.9	992.55
-72.0	994.01	11.4	992.19	83.6	992.25
-69.0	994.07	11.8	991.91	85.0	992.27
-66.0	994.08	11.9	991.44	86.8	992.18
-63.0	994.04	12.3	991.25	87.5	991.57
-60.0	994.05	14.0	991.29	88.0	991.49
-57.0	994.15	15.0	991.19	90.0	991.55
-54.0	994.11	17.0	991.26	93.0	991.57
-52.0	994.10	20.0	991.36	95.0	991.56
-49.0	994.24	23.0	991.43	97.0	991.56
-46.0	994.20	26.0	991.42	99.5	991.53
-43.0	994.16	29.0	991.42	99.6	991.51
-40.0	994.05	31.0	991.39	100.3	991.32
-37.0	994.05	33.0	991.32	102.0	991.37
-35.0	994.16	35.0	991.34	104.0	991.45
-33.0	994.23	37.0	991.32	104.8	991.52
-31.0	994.27	38.5	991.32	105.4	991.65
-29.0	994.31	39.0	991.52	105.9	992.50
-27.0	994.42	39.1	991.53	106.5	993.23
-25.0	994.33	40.0	991.57	107.6	993.71
-23.0	994.36	42.0	991.56	109.5	994.02
-21.0	994.36	43.0	991.65	110.5	994.29
-19.6	994.27	44.0	991.66	111.2	994.22
-18.0	994.29	46.0	991.67	112.0	994.39
-16.0	994.30	46.8	991.67	115.0	994.64
-14.0	994.31	47.4	992.18		
-13.6	994.42	48.2	992.47		
-12.6	994.23	50.0	992.57		
-11.4	994.35	52.0	992.74		
-10.4	994.31	54.0	992.66		
-9.0	994.46	56.0	992.60		
-7.0	994.49	58.0	992.65		
-5.0	994.37	60.0	992.68		
-3.0	994.45	62.0	992.67		
-1.5	994.50	64.0	992.60		
0.0	994.58	66.0	992.63		
2.0	994.61	68.0	992.67		
4.0	994.58	70.0	992.68		
6.0	994.56	72.0	992.59		
7.0	994.40	74.0	992.65		
8.0	994.12	76.0	992.67		
8.4	993.92	78.0	992.76		

Description of Cross Section PR141

Location: Township 7 South/Range 49 East--section 29
U.S. Geological Survey quadrangle (1:24,000): Bloom Creek

Landowners--left bank: U.S. Government
right bank: U.S. Government

Access: left bank

Permission from: Gay Ranch (T7S/R49E--20)

Reference pins

Station (meters)	Elevation (meters above sea level)	Comments
		Pins 100.0 and 100.9 were closest to leveling instrument.
-26.5	988.467	0.12 meter above 1980 ground level.
-0.8	988.305	0.04 meter above 1984 ground level.
100.0	989.055	0.09 meter above 1987 ground level.
100.9	989.189	0.21 meter above 1984 ground level.

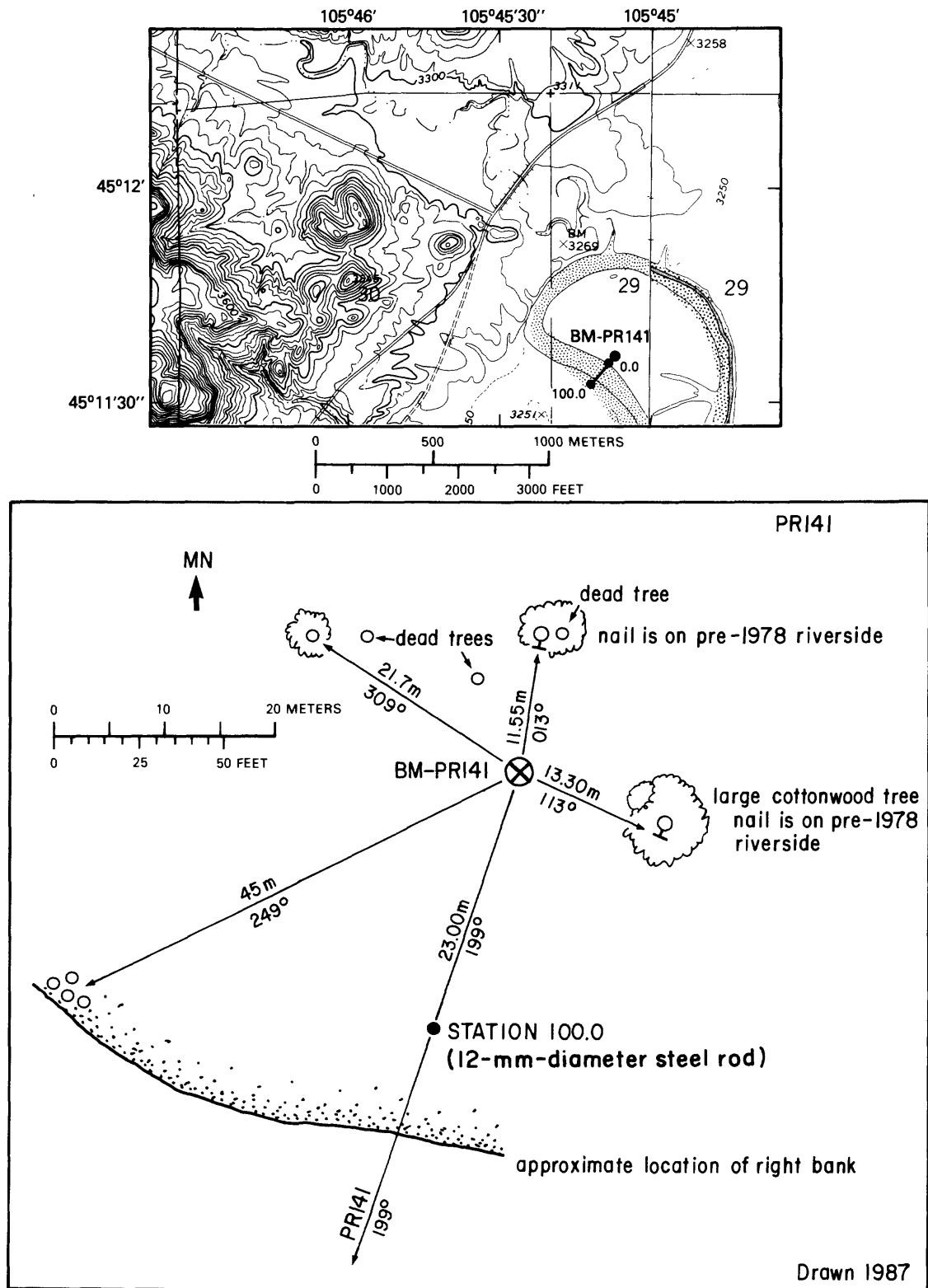


Figure 39.--Upper: Location of cross section PR141, bench mark BM-PR141, and left and right bank reference pins (tables 2 and 3) in the Bloom Creek quadrangle. Lower: Location of bench mark on the right bank of an abandoned channel.

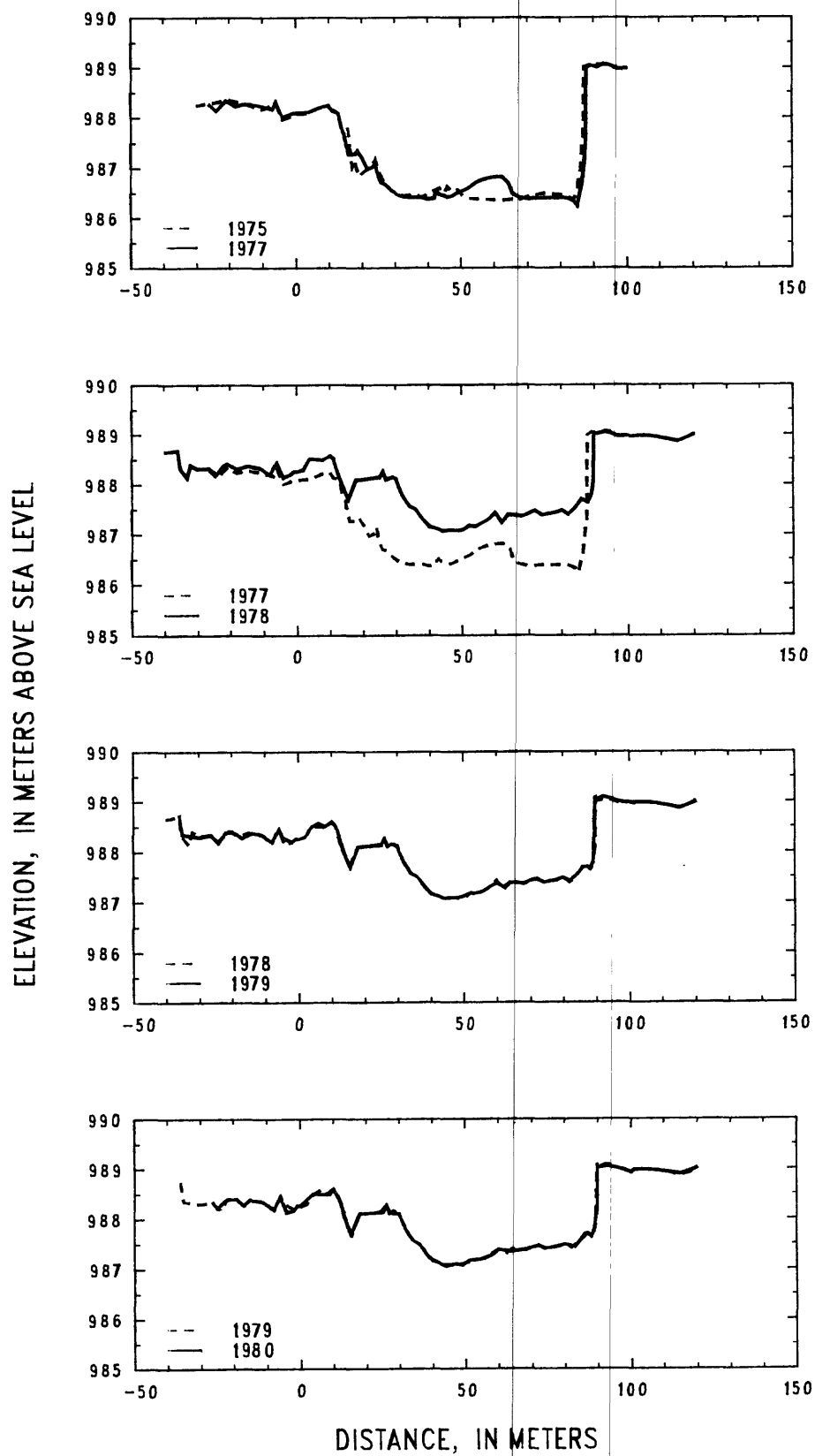


Figure 40.--Profiles of cross section PR141 from 1975 to 1980.

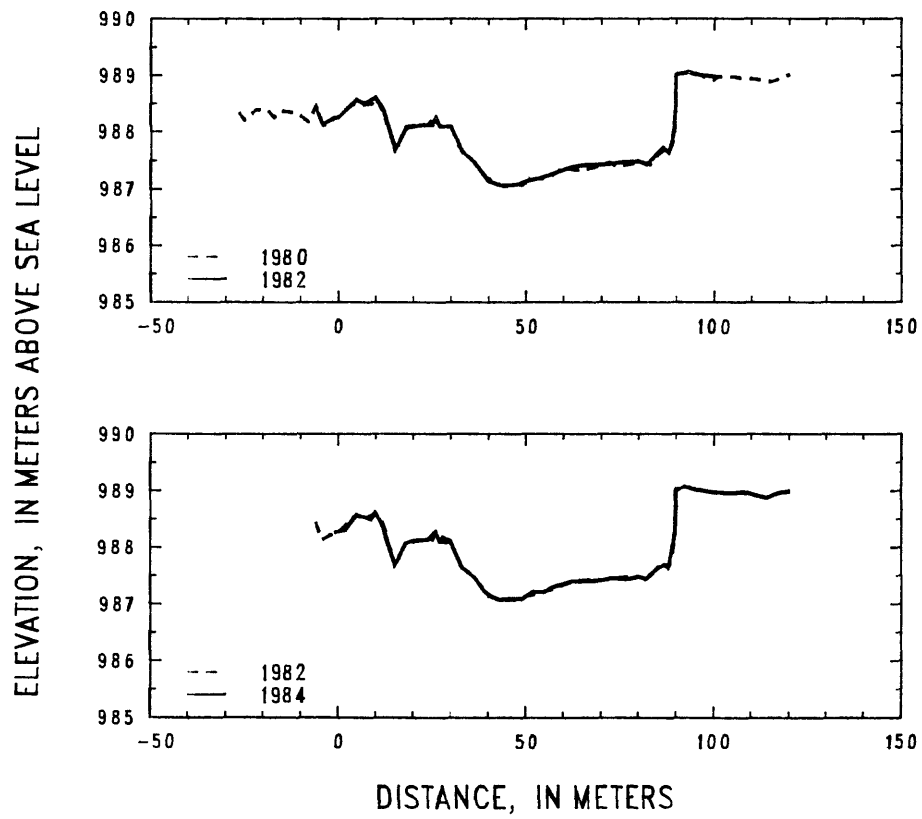


Figure 41.--Profiles of cross section PR141 from 1980 to 1984.

Table 15.--Listing of horizontal stations and elevations for cross section PR141
[Sta., station, distance in meters from a reference point on
the left bank; Elev., elevation, in meters above sea level].

1975		1975		1977		1977		1978	
Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
-30.0	988.25	64.0	986.35	-26.4	988.28	48.0	986.47	-40.0	988.66
-20.0	988.37	66.0	986.36	-25.0	988.21	50.0	986.53	-36.0	988.69
-10.0	988.17	68.0	986.36	-24.0	988.14	52.0	986.58	-35.0	988.32
-6.0	988.30	70.0	986.41	-21.0	988.36	55.0	986.72	-33.0	988.14
-4.0	987.96	72.0	986.45	-18.0	988.24	58.0	986.80	-32.0	988.40
0.0	988.08	74.0	986.48	-15.0	988.30	61.0	986.82	-30.0	988.32
2.0	988.07	76.0	986.49	-11.0	988.25	62.5	986.82	-26.5	988.34
4.0	988.11	78.0	986.47	-7.0	988.17	64.4	986.70	-24.0	988.21
6.0	988.18	80.0	986.46	-6.0	988.34	65.5	986.49	-22.0	988.40
8.0	988.22	82.0	986.42	-4.0	988.01	67.0	986.42	-21.0	988.43
10.0	988.21	84.0	986.36	-0.8	988.10	70.0	986.37	-18.0	988.32
12.0	988.13	85.0	986.52	0.0	988.10	73.0	986.39	-15.0	988.39
13.0	988.08	86.0	986.97	4.0	988.12	75.0	986.40	-13.0	988.36
14.0	987.74	87.0	987.81	8.0	988.23	77.0	986.40	-11.0	988.34
15.8	987.78	87.1	989.02	10.0	988.26	80.0	986.40	-8.0	988.19
17.0	987.02	89.0	989.05	11.0	988.14	82.0	986.39	-7.0	988.36
17.7	987.17	91.0	989.06	13.0	988.10	84.0	986.33	-6.0	988.45
19.0	986.83	93.0	989.07	14.0	987.77	85.1	986.23	-4.0	988.14
20.0	986.90	95.0	989.02	14.7	987.67	85.9	986.49	-2.0	988.21
22.0	987.00	97.0	988.97	15.0	987.52	86.5	986.65	-0.9	988.27
24.0	987.16	100.0	988.97	16.0	987.27	87.7	987.47	0.0	988.27
25.0	986.92			18.0	987.28	87.8	989.00	2.0	988.31
27.0	986.68			18.7	987.35	89.0	989.05	4.0	988.52
29.0	986.54			19.0	987.30	91.0	989.01	8.0	988.50
31.0	986.49			20.0	987.20	93.0	989.08	10.0	988.59
32.0	986.44			21.7	986.97	95.0	989.04	11.0	988.53
34.0	986.45			23.6	987.04	97.0	988.98	13.0	988.13
36.0	986.48			24.0	987.15	100.0	988.98	15.5	987.70
38.0	986.41			24.5	986.92			17.9	988.10
40.0	986.47			25.7	986.71			20.0	988.11
40.5	986.49			27.0	986.68			24.0	988.15
42.0	986.55			29.0	986.55			25.0	988.15
43.5	986.59			30.7	986.47			26.0	988.28
45.0	986.49			32.0	986.43			27.0	988.10
46.0	986.62			34.0	986.41			29.0	988.16
47.1	986.52			36.0	986.41			30.0	988.12
49.0	986.56			38.0	986.41			32.0	987.78
49.8	986.52			40.0	986.37			34.0	987.57
50.0	986.47			42.0	986.39			36.0	987.50
52.0	986.38			42.2	986.48			38.0	987.31
54.0	986.37			42.8	986.52			40.0	987.16
56.0	986.37			43.5	986.47			42.0	987.12
58.0	986.36			45.0	986.45			44.0	987.07
60.0	986.35			46.0	986.41			46.0	987.09
62.0	986.33			47.0	986.42			48.0	987.08

Table 15.--Listing of horizontal stations and elevations for cross section PR141 --Continued.

1978		1979		1979		1980		1980	
Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
50.0	987.09	-36.0	988.73	56.0	987.21	-26.5	988.34	83.0	987.43
52.0	987.18	-35.0	988.34	58.0	987.31	-25.0	988.22	85.0	987.60
54.0	987.16	-30.0	988.29	60.0	987.38	-22.0	988.40	87.0	987.71
56.0	987.23	-26.5	988.34	62.0	987.29	-19.0	988.41	88.0	987.64
58.0	987.31	-24.0	988.18	64.0	987.39	-17.0	988.27	88.9	987.78
60.0	987.44	-22.0	988.39	66.0	987.38	-15.0	988.39	89.8	988.25
62.0	987.23	-20.0	988.41	68.0	987.36	-11.0	988.34	89.8	989.00
64.0	987.40	-17.0	988.27	70.0	987.42	-8.0	988.19	90.0	989.02
66.0	987.39	-14.0	988.38	72.0	987.46	-6.0	988.46	93.0	989.06
68.0	987.36	-11.0	988.34	74.0	987.39	-4.0	988.13	96.0	989.01
70.0	987.42	-8.0	988.19	76.0	987.41	-2.0	988.18	100.0	988.92
72.0	987.48	-6.0	988.46	78.0	987.44	-0.9	988.27	100.9	988.98
74.0	987.39	-5.0	988.30	80.0	987.49	0.0	988.27	105.0	988.98
76.0	987.42	-2.0	988.19	82.0	987.41	4.0	988.51	110.0	988.94
78.0	987.44	-0.9	988.26	84.0	987.53	7.0	988.49	115.0	988.89
80.0	987.49	0.0	988.25	86.0	987.69	9.0	988.50	120.0	989.02
82.0	987.40	2.0	988.31	87.0	987.70	10.0	988.61		
84.0	987.53	4.0	988.50	88.5	987.67	12.0	988.37		
86.0	987.71	6.0	988.57	89.2	987.89	14.0	987.93		
88.0	987.64	8.0	988.50	89.7	989.15	15.4	987.69		
89.0	987.79	10.0	988.60	89.8	988.99	18.0	988.11		
89.6	988.06	11.0	988.53	90.0	989.02	21.0	988.12		
89.6	988.97	12.0	988.38	92.0	989.09	24.0	988.14		
90.0	989.02	14.0	987.94	94.0	989.06	26.0	988.28		
91.0	989.02	15.6	987.69	96.0	989.01	27.0	988.11		
93.0	989.06	18.0	988.10	98.0	988.97	30.0	988.10		
95.0	989.02	20.0	988.11	100.0	988.97	32.0	987.78		
97.0	988.96	22.0	988.12	100.9	988.97	34.0	987.57		
100.0	988.98	25.0	988.13	105.0	988.98	36.0	987.50		
100.9	988.96	26.0	988.27	110.0	988.94	39.0	987.22		
105.0	988.99	27.0	988.10	115.0	988.86	42.0	987.11		
110.0	988.94	28.0	988.16	120.0	988.99	44.0	987.05		
115.0	988.86	30.0	988.10			47.0	987.10		
120.0	989.01	32.0	987.79			49.0	987.07		
		34.0	987.57			51.0	987.17		
		36.0	987.50			55.0	987.20		
		38.0	987.32			58.0	987.28		
		40.0	987.16			60.0	987.39		
		42.0	987.12			63.0	987.34		
		44.0	987.07			67.0	987.37		
		46.0	987.08			70.0	987.42		
		48.0	987.08			72.0	987.47		
		50.0	987.12			74.0	987.40		
		52.0	987.18			77.0	987.43		
		54.0	987.18			80.0	987.49		

Table 15.--Listing of horizontal stations and elevations for cross section PR141 --Continued.

1982		1984		1984	
Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
-6.0	988.44	-0.9	988.27	108.0	988.39
-4.0	988.14	0.0	988.28	111.0	988.93
-0.9	988.27	2.0	988.32	114.0	988.88
0.0	988.27	5.0	988.58	117.0	988.97
5.0	988.59	9.0	988.50	120.0	989.00
7.0	988.51	10.0	988.62		
10.0	988.62	12.0	988.39		
12.0	988.42	13.0	988.14		
15.2	987.69	15.2	987.71		
18.0	988.08	16.0	987.77		
22.0	988.13	18.0	988.08		
25.0	988.13	20.0	988.12		
26.0	988.26	24.0	988.14		
27.0	988.10	26.0	988.28		
30.0	988.10	27.0	988.11		
33.0	987.66	28.0	988.19		
36.0	987.50	30.0	988.11		
40.0	987.15	33.0	987.66		
43.0	987.07	36.0	987.50		
48.0	987.08	39.0	987.23		
50.0	987.14	40.0	987.16		
54.0	987.20	43.0	987.07		
58.0	987.29	46.0	987.10		
61.0	987.37	49.0	987.09		
65.0	987.43	52.0	987.22		
70.0	987.43	55.0	987.21		
75.0	987.47	57.0	987.30		
80.0	987.49	60.0	987.35		
82.0	987.43	62.0	987.40		
86.5	987.73	65.0	987.40		
88.0	987.64	70.0	987.42		
89.0	987.84	73.0	987.46		
89.7	988.33	77.0	987.44		
89.8	989.01	80.0	987.49		
90.0	989.03	82.0	987.44		
93.0	989.07	85.0	987.63		
95.0	989.02	87.0	987.70		
100.0	988.98	88.2	987.67		
101.0	988.97	89.7	988.24		
		90.0	989.02		
		92.0	989.08		
		95.0	989.02		
		100.0	988.97		
		100.9	988.98		
		104.0	988.95		

Description of Cross Section PR141A

Location: Township 7 South/Range 49 East--section 29
U.S. Geological Survey quadrangle (1:24,000): Huckins School

Landowners--left bank: U.S. Government
right bank: U.S. Government

Access: left bank

Permission from: Gay Ranch (T7S/R49E--20)

Reference pins

Station (meters)	Elevation (meters above sea level)	Comments
		Pins -20.0, -1.2, and 0.0 were closest to the leveling instrument.
-20.0	987.560	0.16 meter above 1987 ground level.
-1.2	987.661	0.17 meter above 1987 ground level.
0.0	987.378	0.02 meter above 1987 ground level.
130.0	987.059	0.10 meter above 1987 ground level.
150.8	987.370	0.12 meter above 1987 ground level.
190.0	988.025	0.20 meter above 1986 ground level.

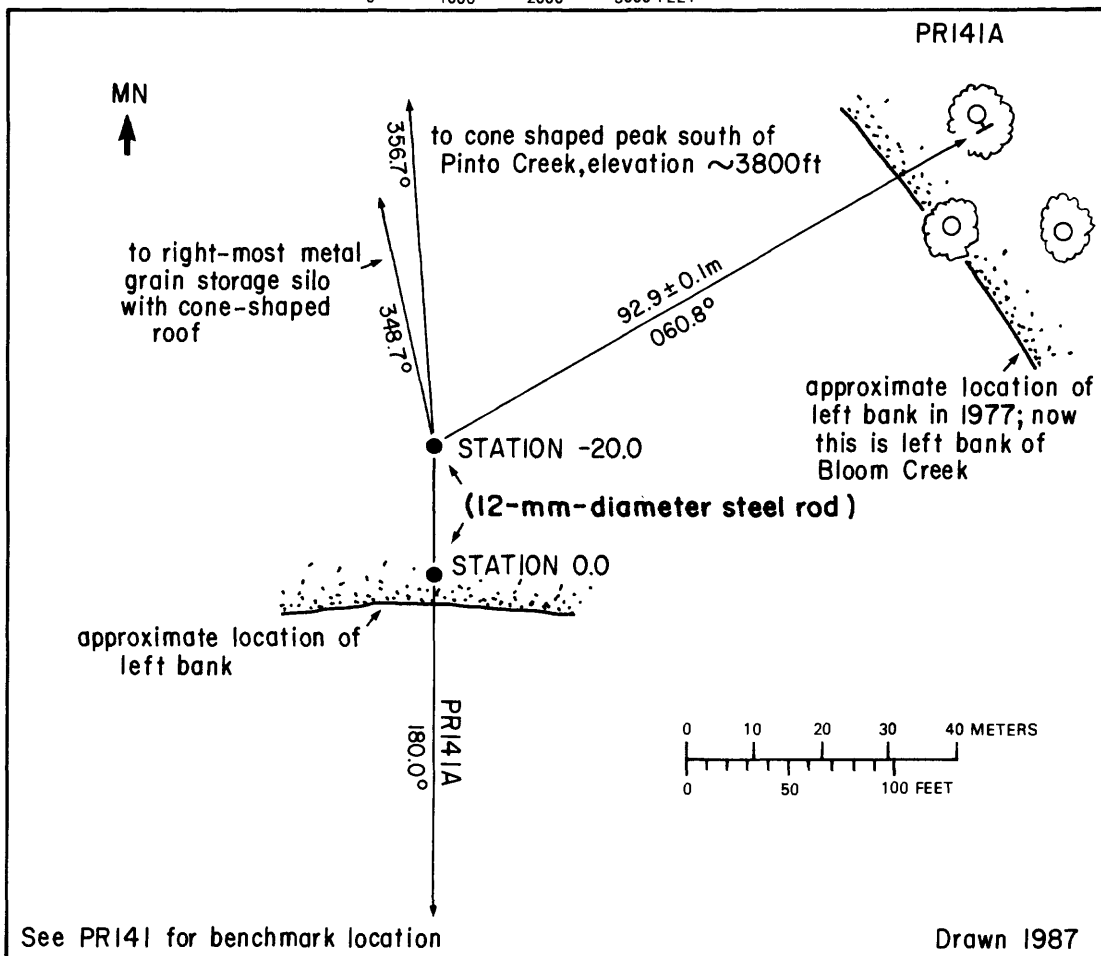
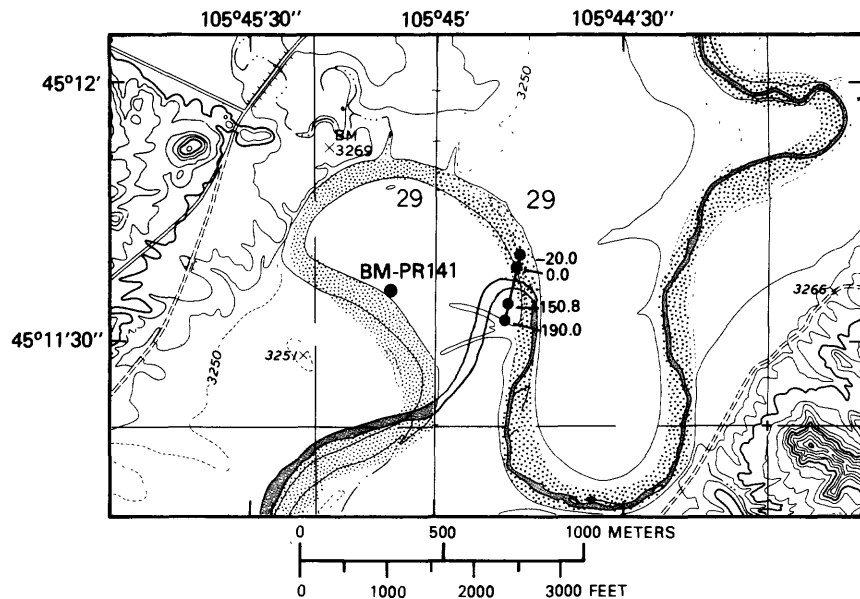


Figure 42.--Upper: Location of cross section PR141A, bench mark BM-PR141, and left and right bank reference pins (tables 2 and 3) in the Huckins School quadrangle. New channel is shown in its approximate location upstream and downstream from the section. Lower: Location of secondary bench marks (12-mm-diameter steel rod) at station 0.0 and -20.0 m on the left bank.

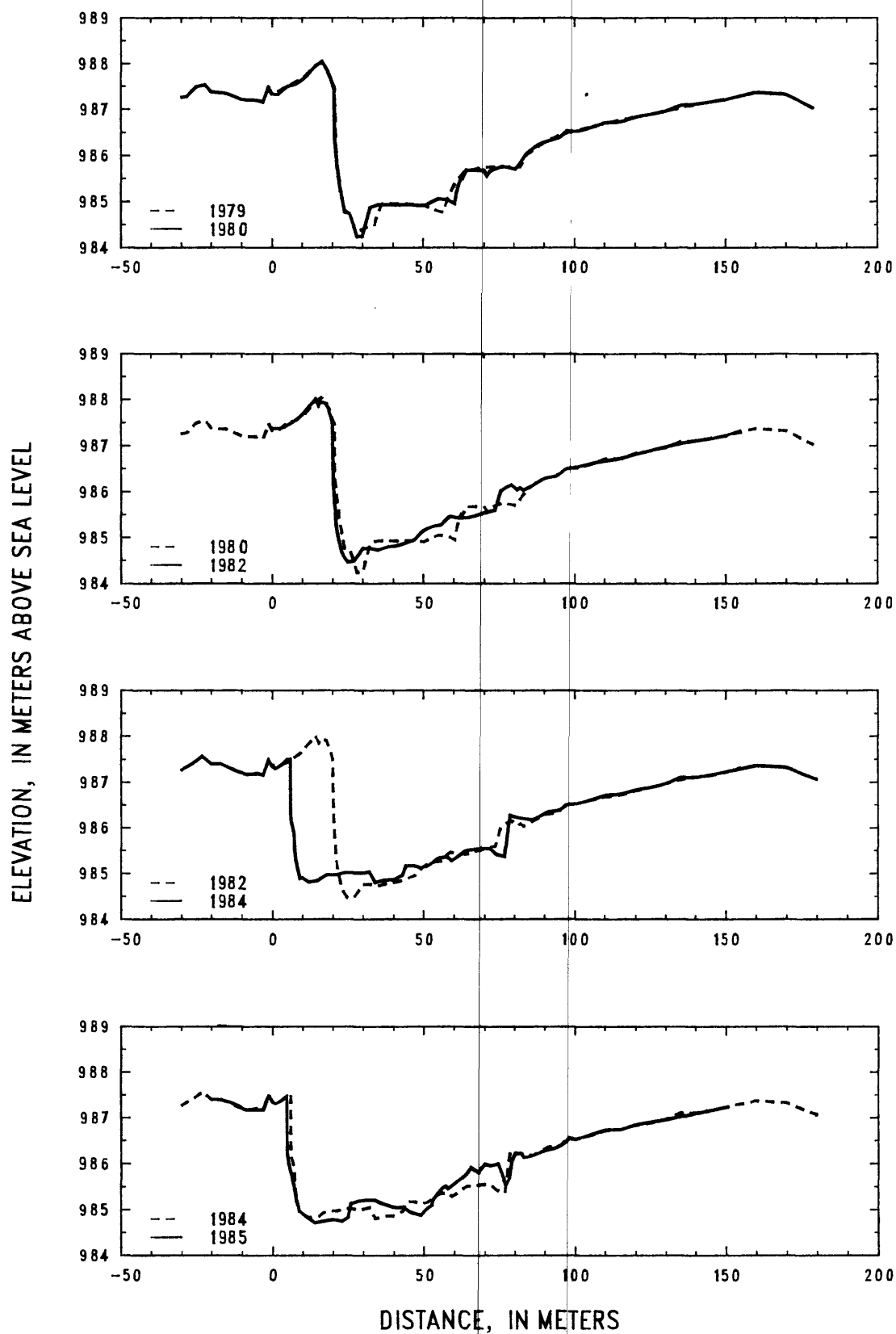


Figure 43.--Profiles of cross section PR141A from 1979 to 1985.

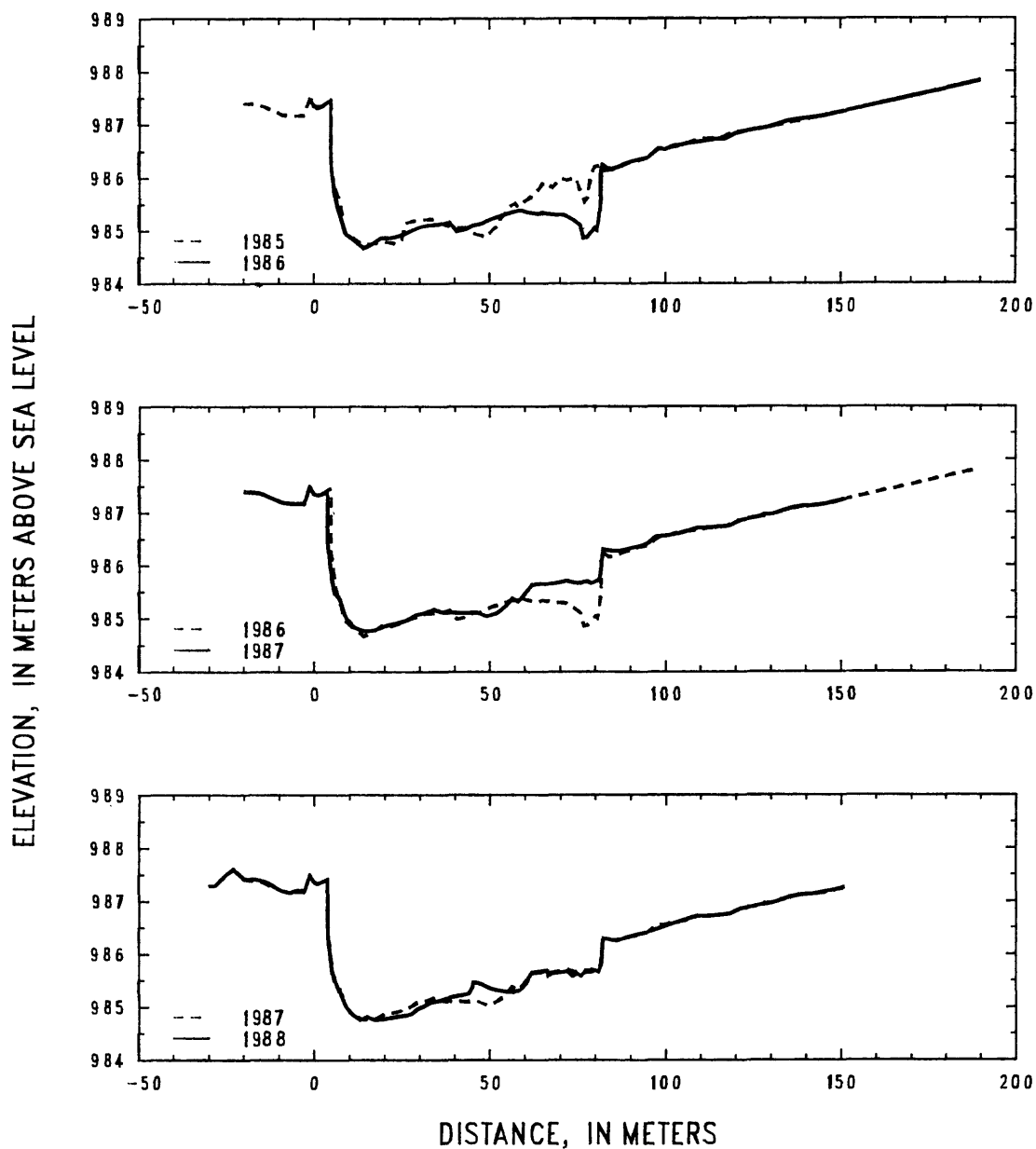


Figure 44.--Profiles of cross section PR141A from 1985 to 1988.

Table 16.--Listing of horizontal stations and elevations for cross section PR141A
[Sta., station, distance in meters from a reference point on
the left bank; Elev., elevation, in meters above sea level].

1979		1980		1980		1982		1982	
Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
-1.2	987.50	-30.0	987.27	88.0	986.24	-1.2	987.47	105.0	986.61
0.0	987.33	-28.0	987.29	92.0	986.33	0.0	987.38	110.0	986.68
5.0	987.51	-25.0	987.50	95.0	986.39	3.0	987.37	115.0	986.72
10.0	987.67	-22.0	987.55	97.5	986.53	7.0	987.51	120.0	986.81
15.0	988.00	-20.0	987.39	100.0	986.51	10.0	987.66	125.0	986.89
17.0	988.02	-15.0	987.36	105.0	986.60	13.0	987.90	130.0	986.97
20.7	987.49	-10.0	987.21	110.0	986.72	14.3	988.01	135.0	987.05
21.3	985.82	-5.0	987.20	115.0	986.73	15.5	987.86	140.0	987.11
21.9	985.50	-3.0	987.16	120.0	986.84	16.0	987.95	145.0	987.15
22.9	985.16	-1.2	987.49	125.0	986.90	18.0	987.91	150.0	987.22
24.0	984.82	0.0	987.34	130.0	986.96	20.0	987.52	150.8	987.24
26.0	984.71	2.0	987.33	135.0	987.09	20.4	986.00	155.0	987.32
27.0	984.47	5.0	987.51	140.0	987.12	21.5	985.12		
29.0	984.37	8.0	987.56	145.0	987.17	23.0	984.66		
31.0	984.44	11.0	987.70	150.0	987.22	24.0	984.54		
34.0	984.49	14.0	987.94	150.8	987.24	25.0	984.46		
35.0	984.75	16.6	988.06	160.0	987.38	27.0	984.48		
36.5	984.96	19.0	987.77	170.0	987.33	29.0	984.66		
40.0	984.96	20.7	987.46	179.0	987.03	30.0	984.76		
45.0	984.95	20.7	986.30			32.0	984.77		
50.0	984.92	22.0	985.49			35.0	984.72		
55.0	984.79	24.0	984.77			38.0	984.80		
56.6	984.76	25.7	984.74			41.0	984.81		
58.7	985.16	27.0	984.49			44.0	984.88		
61.0	985.46	28.0	984.24			47.0	984.95		
64.0	985.67	30.0	984.25			50.0	985.15		
70.0	985.75	32.5	984.88			53.0	985.24		
82.0	985.75	35.0	984.94			56.0	985.27		
84.0	986.01	40.0	984.93			58.4	985.44		
91.0	986.33	45.0	984.94			59.0	985.46		
97.0	986.48	50.0	984.91			62.0	985.41		
110.0	986.70	55.0	985.06			65.0	985.44		
120.0	986.84	58.0	985.04			70.0	985.54		
130.0	986.96	60.5	984.95			73.5	985.60		
140.0	987.11	61.0	985.19			75.5	986.02		
150.0	987.23	62.5	985.52			77.0	986.09		
150.8	987.24	63.0	985.50			79.0	986.15		
		64.2	985.69			81.0	986.04		
		70.0	985.68			82.0	986.09		
		71.0	985.56			83.0	986.03		
		72.0	985.67			86.0	986.14		
		76.0	985.77			90.0	986.29		
		80.4	985.70			94.0	986.34		
		82.1	985.85			97.0	986.49		
		84.0	986.04			100.0	986.52		

Table 16.--Listing of horizontal stations and elevations for cross section PR141A--Continued.

1984		1984		1985		1985		1986	
Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
-30.0	987.27	70.0	985.55	-20.0	987.41	70.0	985.99	-1.2	987.48
-26.0	987.42	72.0	985.54	-17.0	987.40	72.0	985.95	0.0	987.35
-23.0	987.57	74.0	985.42	-14.0	987.34	74.5	986.00	2.0	987.34
-20.0	987.40	76.8	985.37	-11.0	987.25	77.0	985.54	4.0	987.43
-17.0	987.41	78.0	986.10	-9.0	987.18	78.0	985.64	4.8	987.45
-14.0	987.31	78.5	986.28	-6.0	987.17	79.0	986.06	4.8	986.27
-11.0	987.22	80.0	986.24	-3.0	987.18	80.0	986.21	6.0	985.65
-8.0	987.17	84.0	986.19	-2.0	987.36	82.0	986.23	6.6	985.44
-5.0	987.20	86.0	986.17	-1.2	987.48	83.0	986.13	8.2	985.11
-3.0	987.16	91.0	986.36	0.0	987.35	86.0	986.17	8.7	984.98
-1.2	987.49	95.0	986.39	1.0	987.31	90.0	986.29	9.0	984.94
0.0	987.34	97.0	986.51	3.0	987.38	93.0	986.33	11.0	984.83
1.0	987.30	100.0	986.53	4.8	987.47	96.0	986.42	14.0	984.66
3.0	987.38	105.0	986.61	4.8	986.26	98.0	986.56	16.0	984.72
5.0	987.50	110.0	986.72	5.3	986.04	100.0	986.53	19.0	984.86
6.1	987.51	115.0	986.74	6.0	985.83	105.0	986.63	22.0	984.86
6.1	986.28	120.0	986.84	7.3	985.55	110.0	986.74	25.0	984.92
6.4	986.13	125.0	986.89	8.2	985.15	115.0	986.74	28.0	985.01
7.3	985.91	130.0	986.97	9.0	984.97	120.0	986.86	31.0	985.09
7.5	985.54	135.0	987.11	11.0	984.86	125.0	986.91	34.0	985.10
8.0	985.26	140.0	987.11	14.0	984.72	130.0	986.96	36.0	985.12
9.2	984.89	145.0	987.16	17.0	984.76	150.8	987.25	38.4	985.16
10.0	984.91	150.8	987.25	20.0	984.79			40.5	984.98
12.0	984.82	160.0	987.37	23.0	984.75			43.0	985.02
15.0	984.85	170.0	987.32	25.0	984.84			45.0	985.10
18.0	984.98	180.0	987.06	25.9	985.14			47.0	985.11
21.0	984.97			28.0	985.19			50.0	985.21
24.0	985.03			31.0	985.22			53.0	985.27
27.0	985.02			34.0	985.21			56.0	985.34
30.0	985.01			35.5	985.15			59.0	985.38
32.0	985.05			40.0	985.05			61.0	985.33
34.0	984.80			43.0	985.05			64.0	985.31
37.0	984.87			46.0	984.93			65.0	985.34
40.0	984.87			49.0	984.88			68.0	985.29
43.0	984.97			51.0	985.03			71.0	985.29
44.0	985.17			52.6	985.10			74.0	985.19
47.0	985.17			53.0	985.22			75.7	985.10
49.0	985.12			56.0	985.47			76.7	984.85
51.0	985.15			57.3	985.52			77.8	984.87
55.0	985.34			58.0	985.45			80.0	985.05
58.0	985.37			60.0	985.56			80.6	985.00
59.3	985.28			62.0	985.66			81.7	985.53
62.0	985.41			64.0	985.78			81.8	986.08
64.0	985.51			65.4	985.92			82.3	986.24
66.0	985.53			68.0	985.81			84.0	986.15

Table 16.--Listing of horizontal stations and elevations for cross section PR141A--Continued.

1986		1987		1987		1988		1988	
Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
86.0	986.18	-20.0	987.40	78.0	985.70	-30.0	987.28	50.0	985.35
89.0	986.28	-15.0	987.36	79.0	985.66	-28.0	987.29	53.0	985.30
92.0	986.34	-12.0	987.26	81.0	985.73	-26.0	987.43	55.0	985.28
95.0	986.38	-9.0	987.18	81.5	985.80	-25.0	987.50	56.7	985.28
98.0	986.54	-6.0	987.16	82.3	986.30	-23.0	987.60	57.0	985.30
100.0	986.53	-3.0	987.17	84.0	986.27	-21.0	987.47	58.0	985.30
102.0	986.60	-1.2	987.48	87.0	986.27	-20.0	987.40	59.0	985.34
105.0	986.62	0.0	987.36	90.0	986.33	-17.0	987.40	60.5	985.45
108.0	986.66	1.0	987.32	93.0	986.37	-15.0	987.38	60.9	985.53
111.0	986.69	2.0	987.34	95.0	986.42	-13.0	987.33	62.0	985.65
114.0	986.73	3.9	987.42	97.0	986.54	-11.0	987.24	64.0	985.67
117.0	986.73	3.9	986.45	100.0	986.56	-9.0	987.17	66.3	985.69
120.0	986.83	5.0	985.86	103.0	986.60	-7.0	987.14	66.6	985.58
125.0	986.90	5.4	985.64	106.0	986.65	-5.0	987.20	67.6	985.63
130.0	986.95	6.0	985.46	109.0	986.72	-2.7	987.20	70.0	985.65
135.0	987.07	7.0	985.39	112.0	986.71	-1.2	987.48	72.0	985.68
140.0	987.11	9.0	985.01	115.0	986.74	0.0	987.35	73.5	985.58
145.0	987.16	11.0	984.84	118.0	986.75	1.0	987.32	75.0	985.63
150.0	987.23	14.0	984.76	121.0	986.85	3.0	987.39	76.0	985.58
150.8	987.24	17.0	984.77	123.0	986.87	3.8	987.41	77.0	985.66
190.0	987.82	20.0	984.87	125.0	986.90	3.9	986.38	78.5	985.65
		23.0	984.90	126.5	986.92	5.3	985.62	79.0	985.72
		26.0	984.96	128.0	986.97	5.7	985.57	81.0	985.66
		29.0	985.08	130.0	986.96	5.9	985.50	81.9	985.84
		31.0	985.10	133.0	987.03	7.0	985.31	82.1	986.21
		34.0	985.17	136.0	987.09	9.0	985.01	82.3	986.30
		37.0	985.10	139.0	987.12	11.0	984.84	84.0	986.27
		40.0	985.12	142.0	987.12	13.0	984.76	86.0	986.25
		43.0	985.10	145.0	987.16	15.0	984.81	89.0	986.32
		46.0	985.12	148.0	987.20	17.0	984.75	92.0	986.37
		49.0	985.03	150.8	987.25	20.0	984.78	95.0	986.42
		52.0	985.10			23.0	984.81	97.4	986.48
		55.0	985.27			26.0	984.84	100.0	986.54
		56.4	985.38			27.7	984.87	103.0	986.61
		58.0	985.32			28.8	984.93	106.0	986.66
		59.2	985.40			30.0	984.98	109.0	986.72
		61.0	985.54			31.0	985.01	112.0	986.71
		62.0	985.63			33.0	985.09	115.0	986.74
		64.0	985.66			36.0	985.13	118.0	986.75
		67.0	985.65			39.0	985.19	121.0	986.86
		70.0	985.68			42.0	985.22	124.0	986.89
		72.0	985.72			44.0	985.25	126.0	986.92
		74.0	985.67			45.0	985.35	128.0	986.94
		76.0	985.67			45.3	985.46	130.0	986.96
		77.0	985.70			47.0	985.45	133.0	987.03

Table 16.--Listing of horizontal stations and elevations for cross section PR141A--Continued.

1988	
Sta.	Elev.
136.0	987.09
139.0	987.12
142.0	987.13
145.0	987.17
148.0	987.20
150.8	987.26

Description of Cross Section PR147

Location: Township 7 South/Range 49 East--section 21
U.S. Geological Survey quadrangle (1:24,000): Huckins School

Landowners--left bank: Gay Ranch
right bank Huckins Ranch

Access: left or right bank

Permission from: left bank, Gay Ranch (T7S/R49E--20)
right bank, Huckins Ranch (T7S/R49E--28)

Reference pins

Station (meters)	Elevation (meters above sea level)	Comments
		Pin 100.7 was closest to the leveling instrument from 1975 to 1985. Since 1985 pins -68.9, -0.9, and 0.0 were the closest.
-68.9	984.012	0.19 meter above 1987 ground level, on fenceline.
-0.9	983.979	Pin is bent.
0.0	983.906	0.06 meter above 1987 ground level.
100.7	983.266	0.10 meter above 1987 ground level.

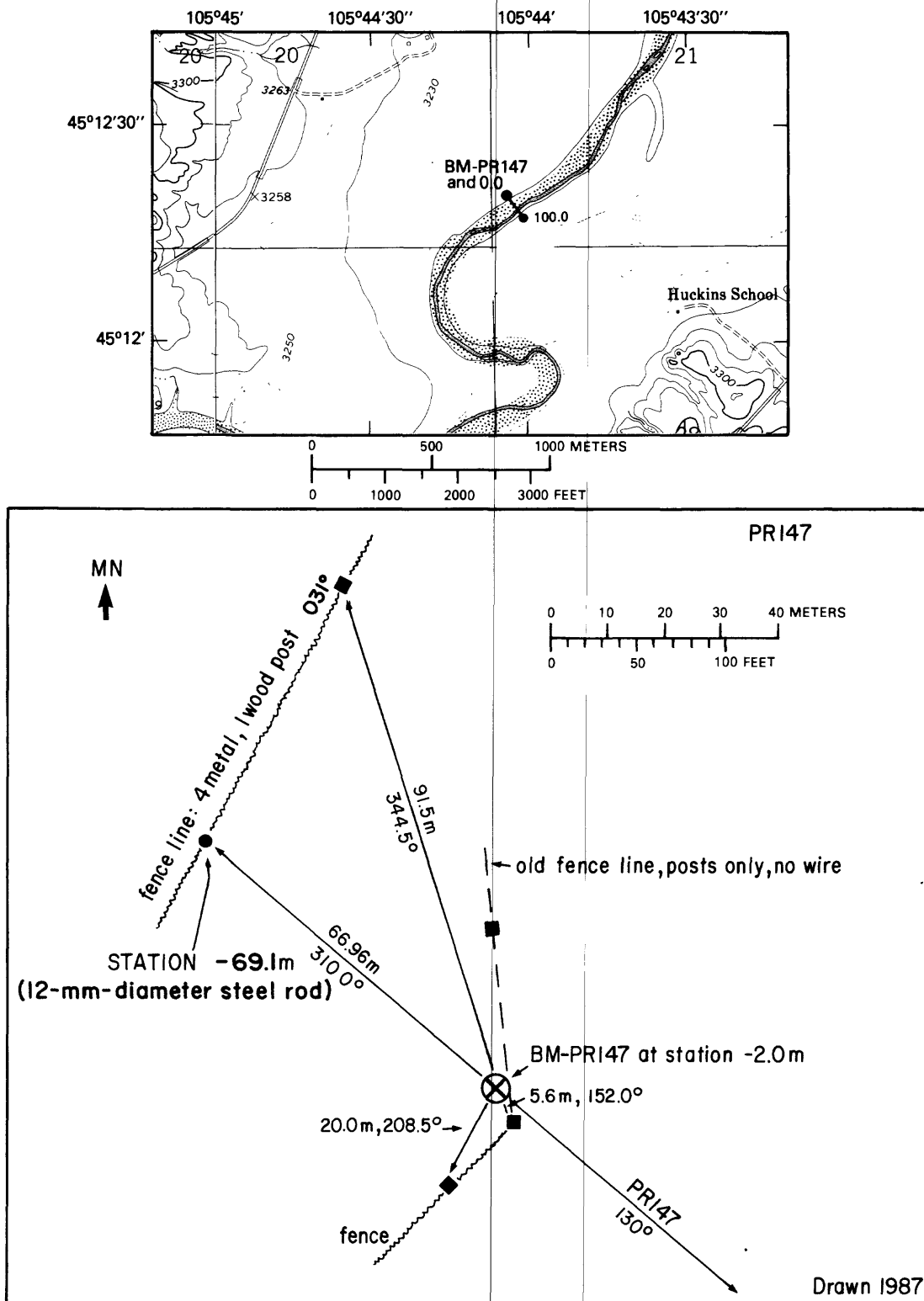


Figure 45.--Upper: Location of cross section PRI47, bench mark BM-PRI47, and left and right bank reference pins (tables 2 and 3) in the Huckins School quadrangle. Lower: Location of bench mark on the left bank. MN is magnetic north.

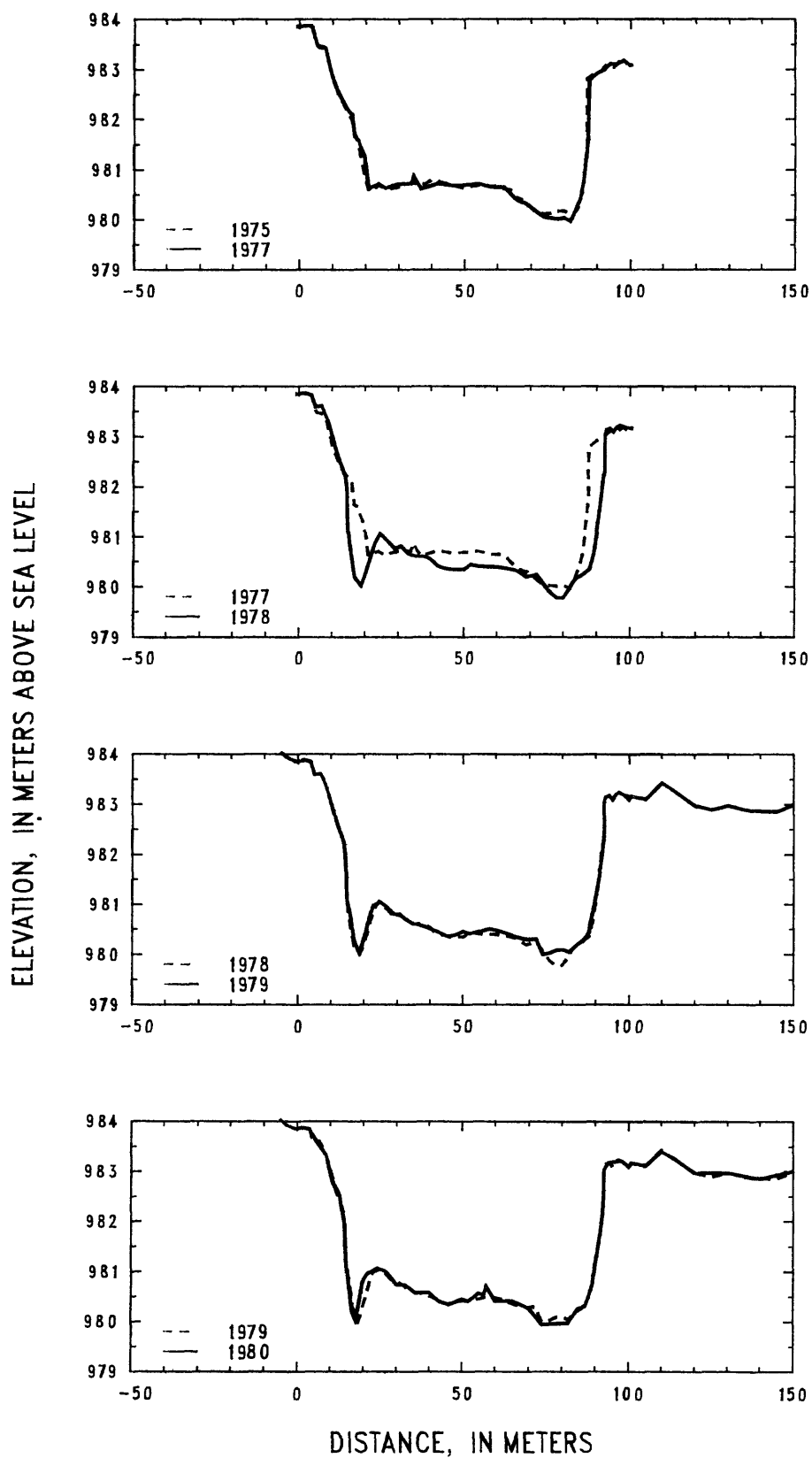
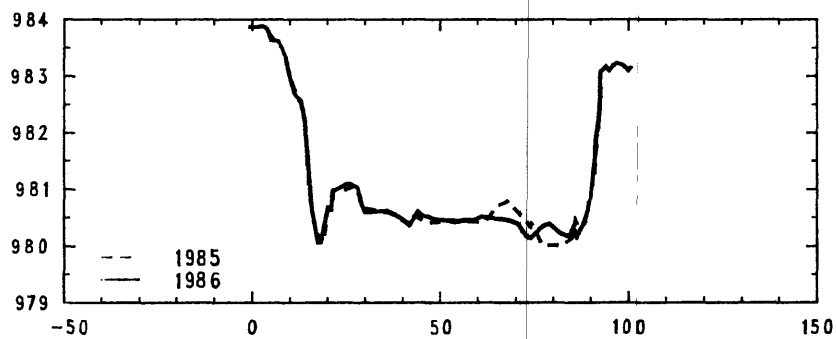
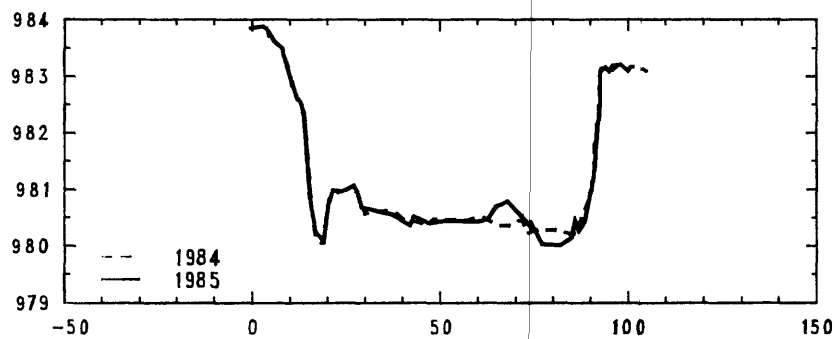
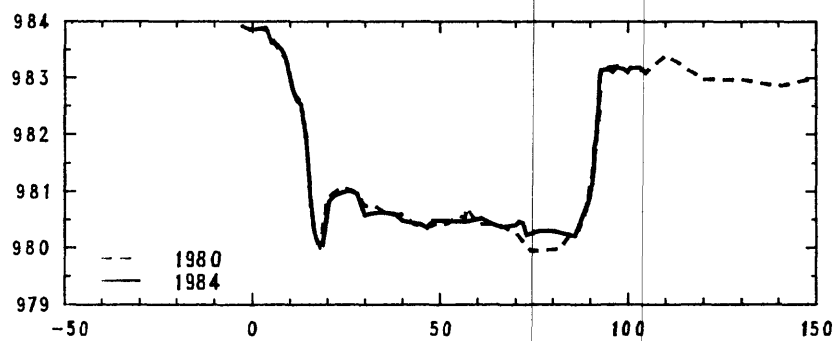


Figure 46.--Profiles of cross section PR147 from 1975 to 1980.

ELEVATION, IN METERS ABOVE SEA LEVEL



DISTANCE, IN METERS

Figure 47.--Profiles of cross section PR147 from 1980 to 1986.

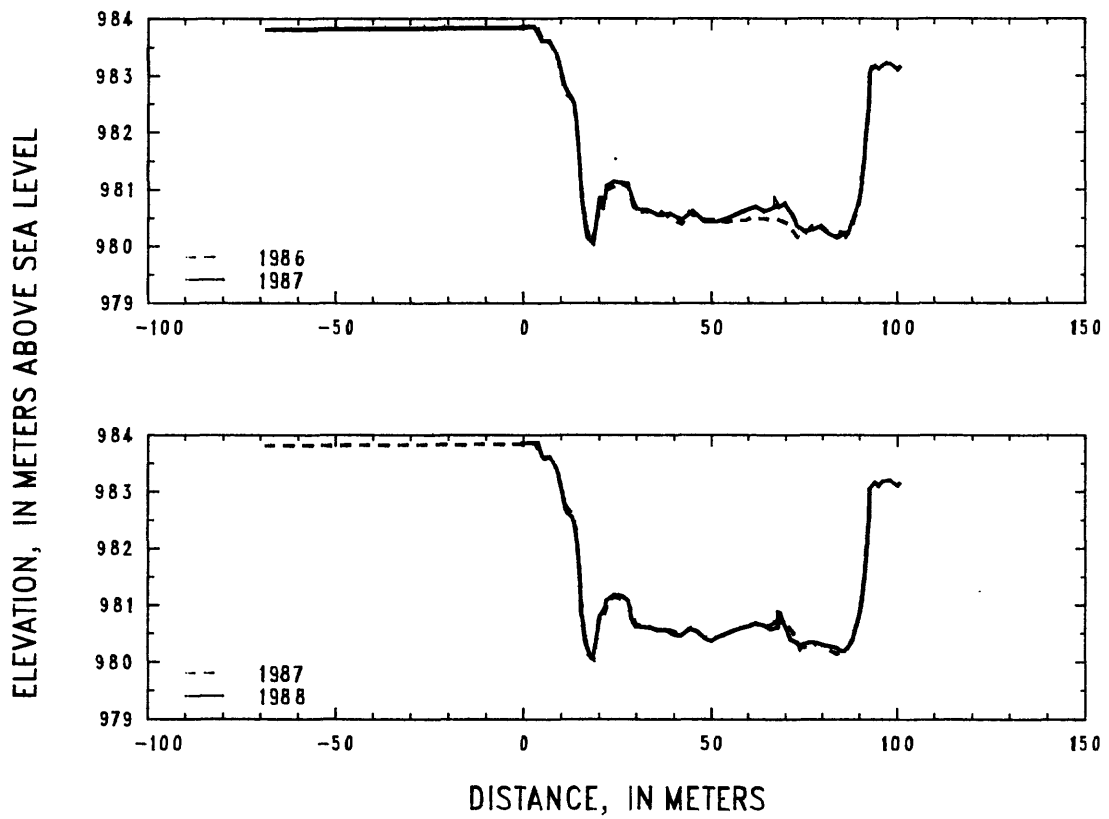


Figure 48.--Profiles of cross section PR147 from 1986 to 1988.

Table 17.--Listing of horizontal stations and elevations for cross section PR147
[Sta., station, distance in meters from a reference point on
the left bank; Elev., elevation, in meters above sea level].

1975		1975		1977		1977		1978	
Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
-0.9	983.86	78.0	980.17	-0.9	983.85	76.0	980.02	-0.9	983.86
0.0	983.87	80.0	980.17	0.0	983.85	78.0	980.00	0.0	983.86
2.0	983.87	82.0	980.09	2.0	983.87	80.0	980.03	2.0	983.87
4.0	983.86	83.0	980.12	3.7	983.87	82.0	979.96	4.0	983.82
5.0	983.56	84.0	980.20	5.5	983.47	83.0	980.09	5.2	983.59
6.0	983.43	85.0	980.38	7.0	983.46	84.2	980.30	7.0	983.61
8.0	983.43	85.8	980.61	8.0	983.42	84.8	980.36	9.0	983.31
10.0	982.90	87.0	981.42	10.0	982.90	86.0	980.70	12.0	982.58
12.0	982.46	87.1	982.82	11.0	982.66	87.5	981.65	14.0	982.26
14.0	982.24	89.0	982.90	13.0	982.38	87.7	982.78	14.6	981.96
16.0	981.97	91.0	982.96	15.0	982.16	90.0	982.92	14.9	981.36
18.0	981.42	93.0	983.10	16.0	982.09	92.0	982.98	15.0	981.06
20.0	980.81	95.0	983.03	16.8	981.64	94.0	983.11	16.0	980.59
21.0	980.57	97.0	983.19	17.9	981.58	96.0	983.10	17.0	980.18
22.0	980.58	100.0	983.08	18.0	981.52	98.0	983.18	19.0	980.01
24.0	980.68			19.7	981.26	100.0	983.07	21.0	980.42
26.0	980.61			19.8	981.14	100.6	983.09	23.0	980.88
28.0	980.62			20.1	981.09			24.6	981.06
30.0	980.66			21.0	980.61			27.2	980.89
32.0	980.71			22.0	980.65			29.0	980.76
34.0	980.73			24.0	980.71			31.0	980.81
36.0	980.72			26.0	980.62			33.0	980.67
38.0	980.71			28.0	980.67			35.0	980.60
40.0	980.79			30.0	980.71			38.0	980.60
42.0	980.78			32.0	980.71			40.0	980.54
44.0	980.72			34.0	980.71			42.0	980.42
46.0	980.71			34.7	980.87			44.0	980.37
48.0	980.64			35.7	980.74			46.0	980.34
50.0	980.63			37.0	980.61			48.0	980.34
52.0	980.66			40.0	980.67			50.0	980.34
54.0	980.69			42.0	980.72			52.0	980.44
56.0	980.69			44.0	980.70			54.0	980.41
58.0	980.66			46.0	980.67			57.0	980.39
60.0	980.67			48.0	980.67			60.0	980.39
62.0	980.61			50.0	980.69			63.0	980.36
64.0	980.58			52.0	980.69			66.0	980.32
64.7	980.55			54.0	980.71			69.0	980.19
64.9	980.42			58.0	980.64			72.0	980.24
66.0	980.44			62.0	980.64			74.0	980.06
67.3	980.38			64.0	980.50			76.0	979.87
68.0	980.31			66.0	980.37			78.0	979.77
70.0	980.23			69.0	980.29			80.0	979.77
72.0	980.12			70.0	980.24			82.0	979.99
74.0	980.11			72.0	980.13			84.0	980.18
76.0	980.12			74.0	980.04			86.0	980.25

Table 17.--Listing of horizontal stations and elevations for cross section PR147 --Continued.

1978		1979		1979		1980		1980	
Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
88.0	980.35	-5.0	984.03	76.0	980.02	-3.0	983.93	100.7	983.18
89.2	980.65	-3.0	983.92	78.0	980.09	-1.0	983.86	105.0	983.11
91.3	981.70	-0.9	983.86	80.0	980.10	0.0	983.85	110.0	983.40
92.0	982.20	0.0	983.85	82.0	980.04	2.0	983.87	115.0	983.20
92.5	982.26	2.0	983.88	84.0	980.18	4.0	983.84	120.0	982.97
92.6	983.04	4.0	983.84	86.0	980.27	6.0	983.61	130.0	982.97
93.0	983.13	5.2	983.59	88.0	980.43	9.0	983.33	140.0	982.85
94.0	983.16	7.0	983.61	90.0	981.11	11.0	982.77	150.0	983.01
95.0	983.08	9.0	983.32	91.5	981.75	13.0	982.55		
96.0	983.19	12.0	982.60	92.5	982.31	14.5	981.98		
97.0	983.23	14.0	982.26	92.6	983.05	15.2	981.12		
98.0	983.20	14.6	981.92	93.0	983.14	16.8	980.19		
99.0	983.17	14.9	981.25	94.0	983.18	18.0	980.02		
100.7	983.15	15.0	981.06	95.0	983.09	20.0	980.82		
		16.0	980.80	96.0	983.20	21.3	980.96		
		17.0	980.30	97.0	983.24	24.5	981.07		
		18.8	980.01	99.0	983.16	27.0	981.00		
		21.0	980.54	100.0	983.08	29.0	980.85		
		22.0	980.80	100.7	983.17	30.0	980.74		
		23.0	980.98	105.0	983.09	33.0	980.73		
		25.0	981.05	110.0	983.43	36.0	980.58		
		27.0	980.95	115.0	983.20	40.0	980.59		
		29.0	980.81	120.0	982.97	43.0	980.41		
		31.0	980.78	125.0	982.88	46.0	980.34		
		33.0	980.69	130.0	982.98	49.0	980.43		
		35.0	980.61	135.0	982.88	52.0	980.42		
		37.0	980.58	140.0	982.86	55.0	980.57		
		39.0	980.54	145.0	982.85	56.6	980.53		
		41.0	980.48	150.0	983.00	57.3	980.71		
		43.0	980.43			60.0	980.41		
		45.0	980.36			65.0	980.42		
		47.0	980.37			70.0	980.27		
		50.0	980.46			74.0	979.94		
		52.0	980.41			78.0	979.96		
		54.0	980.44			82.0	979.98		
		56.0	980.47			85.0	980.27		
		58.0	980.51			87.0	980.31		
		60.0	980.48			89.0	980.67		
		62.0	980.44			91.5	981.75		
		64.0	980.39			92.5	982.33		
		66.0	980.34			92.7	983.04		
		68.0	980.31			94.0	983.18		
		70.0	980.29			96.0	983.20		
		72.0	980.30			98.0	983.21		
		74.0	980.00			100.0	983.09		

Table 17.--Listing of horizontal stations and elevations for cross section PR147 --Continued.

1984		1984		1985		1985		1986	
Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
-0.9	983.86	91.0	981.34	0.0	983.87	88.5	980.43	-0.9	983.87
0.0	983.86	91.2	981.79	3.0	983.89	91.0	981.26	0.0	983.86
3.6	983.89	91.6	981.87	4.0	983.83	92.0	982.12	3.0	983.88
5.0	983.62	92.2	982.39	6.0	983.60	92.6	982.49	4.0	983.83
6.0	983.61	92.6	983.07	8.0	983.50	92.7	983.09	5.0	983.63
8.0	983.49	93.0	983.14	10.0	983.04	94.0	983.17	7.0	983.61
9.0	983.32	95.0	983.16	12.0	982.62	95.0	983.09	9.0	983.34
11.0	982.75	96.0	983.10	13.0	982.54	96.0	983.20	10.0	983.03
12.0	982.59	97.0	983.19	14.0	982.28	98.0	983.22	11.4	982.67
13.0	982.54	99.0	983.15	15.3	980.92	100.0	983.10	13.0	982.57
14.0	982.18	100.0	983.10	17.0	980.24	100.7	983.17	14.0	982.24
14.5	981.88	100.7	983.17	19.0	980.08			14.7	981.75
15.0	981.39	103.0	983.18	20.0	980.59			15.7	980.75
15.5	980.94	105.0	983.08	20.3	980.76			17.5	980.06
16.6	980.28			21.0	980.87			18.3	980.06
17.5	980.07			21.4	980.99			20.0	980.64
18.7	980.04			24.0	980.97			21.1	980.63
20.5	980.82			27.0	981.07			21.5	980.98
21.6	980.91			28.0	980.96			23.0	981.02
24.0	980.98			29.2	980.68			25.0	981.10
26.0	981.01			31.0	980.66			26.0	981.10
28.0	980.95			34.0	980.60			27.9	981.04
30.0	980.57			37.0	980.57			29.1	980.74
32.0	980.61			39.0	980.49			30.0	980.59
35.0	980.62			42.0	980.36			32.0	980.60
38.0	980.59			43.0	980.53			34.0	980.61
40.0	980.47			45.0	980.46			36.0	980.62
45.0	980.40			47.0	980.41			38.0	980.54
46.5	980.34			50.0	980.44			40.0	980.45
48.0	980.48			53.0	980.46			42.0	980.38
50.0	980.48			56.0	980.44			44.0	980.61
53.0	980.46			59.0	980.43			45.0	980.54
57.0	980.45			61.0	980.44			47.0	980.51
61.0	980.52			63.0	980.50			48.0	980.47
64.0	980.41			65.0	980.71			50.0	980.46
66.0	980.36			68.0	980.80			52.0	980.45
70.0	980.39			71.0	980.57			54.0	980.42
71.0	980.46			74.0	980.35			56.0	980.46
72.0	980.43			74.2	980.40			59.0	980.45
73.0	980.22			77.0	980.03			61.0	980.52
76.0	980.29			80.0	980.02			62.0	980.50
80.0	980.29			82.0	980.01			65.0	980.48
83.0	980.23			85.0	980.16			68.0	980.46
86.0	980.20			86.0	980.46			70.5	980.40
90.0	980.89			87.0	980.27			73.0	980.16

Table 17.--Listing of horizontal stations and elevations for cross section PR147 --Continued.

1986		1987		1987		1988		1988	
Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
74.0	980.14	-68.9	983.82	79.0	980.34	-0.9	983.87	58.7	980.61
77.0	980.35	0.0	983.85	81.0	980.24	0.0	983.85	60.0	980.63
79.0	980.40	2.0	983.87	84.0	980.14	2.0	983.87	62.0	980.68
82.0	980.21	2.9	983.87	87.0	980.25	3.8	983.86	64.0	980.65
84.4	980.17	5.0	983.61	89.5	980.72	5.0	983.62	66.0	980.57
85.4	980.34	7.0	983.61	90.2	980.95	5.7	983.57	67.9	980.61
86.3	980.17	9.0	983.37	91.2	981.51	7.0	983.61	68.0	980.87
88.3	980.42	11.0	982.79	91.4	981.83	8.8	983.43	68.6	980.85
89.8	980.77	13.3	982.54	92.5	982.56	10.0	983.11	68.7	980.81
91.3	981.60	14.0	982.29	92.6	983.07	11.4	982.67	70.2	980.58
91.4	981.81	14.5	981.88	93.0	983.15	12.0	982.60	71.3	980.40
92.5	982.49	14.9	981.57	94.0	983.17	13.0	982.55	73.2	980.34
92.6	983.07	15.5	980.85	95.0	983.11	14.0	982.31	74.0	980.23
94.0	983.17	17.0	980.15	96.0	983.20	15.0	981.57	75.0	980.33
95.0	983.09	18.6	980.04	98.0	983.22	15.5	980.84	77.0	980.36
96.0	983.20	20.3	980.85	100.0	983.10	15.8	980.72	78.5	980.34
97.0	983.24	21.6	980.84	100.7	983.17	16.3	980.38	80.0	980.30
99.0	983.17	22.1	981.07			18.0	980.07	82.0	980.27
100.0	983.09	24.0	981.14			18.6	980.07	84.0	980.25
100.7	983.16	26.0	981.12			19.6	980.49	85.0	980.20
		27.7	981.10			20.0	980.71	86.0	980.19
		28.8	980.86			20.2	980.79	87.7	980.34
		30.0	980.65			21.0	980.88	88.2	980.40
		33.0	980.63			21.6	980.92	90.2	980.89
		36.0	980.54			22.0	981.09	91.5	981.64
		39.0	980.57			24.0	981.18	91.6	981.82
		42.0	980.46			26.0	981.17	92.6	982.61
		45.0	980.62			27.0	981.12	92.6	983.06
		48.0	980.44			28.0	981.07	94.0	983.17
		51.0	980.43			28.8	980.76	95.0	983.10
		54.0	980.49			29.3	980.70	96.0	983.20
		57.0	980.57			30.0	980.62	98.0	983.21
		60.0	980.66			32.0	980.62	100.0	983.10
		62.0	980.70			34.0	980.60	100.7	983.17
		64.0	980.61			36.0	980.55		
		66.0	980.65			38.0	980.56		
		67.0	980.70			40.0	980.48		
		67.1	980.81			42.0	980.46		
		68.0	980.68			44.0	980.58		
		69.7	980.76			46.0	980.55		
		70.0	980.71			48.0	980.42		
		72.0	980.52			50.0	980.37		
		73.0	980.35			52.0	980.45		
		75.0	980.26			54.0	980.51		
		77.0	980.28			56.0	980.55		

Description of Cross Section PR151

Location: Township 7 South/Range 49 East--section 15
U.S. Geological Survey quadrangle (1:24,000): Huckins School

Landowners--left bank: Gay Ranch
right bank: Huckins Ranch

Access: right bank

Permission from: right bank--Huckins Ranch (T7S/R49E--28)

Reference pins

Station (meters)	Elevation (meters above sea level)	Comments
		Pins 100.0, 100.8, 101.1, and 101.2 were closest to the leveling instruments.
-0.9	977.634	0.15 meter above 1987 ground level.
0.0	977.544	0.10 meter above 1987 ground level.
100.0	977.115	0.07 meter above 1987 ground level.
101.1	976.980	Old pin, 0.02 meter above 1987 ground level.
101.2	977.056	New pin, 0.10 meter above 1987 ground level.

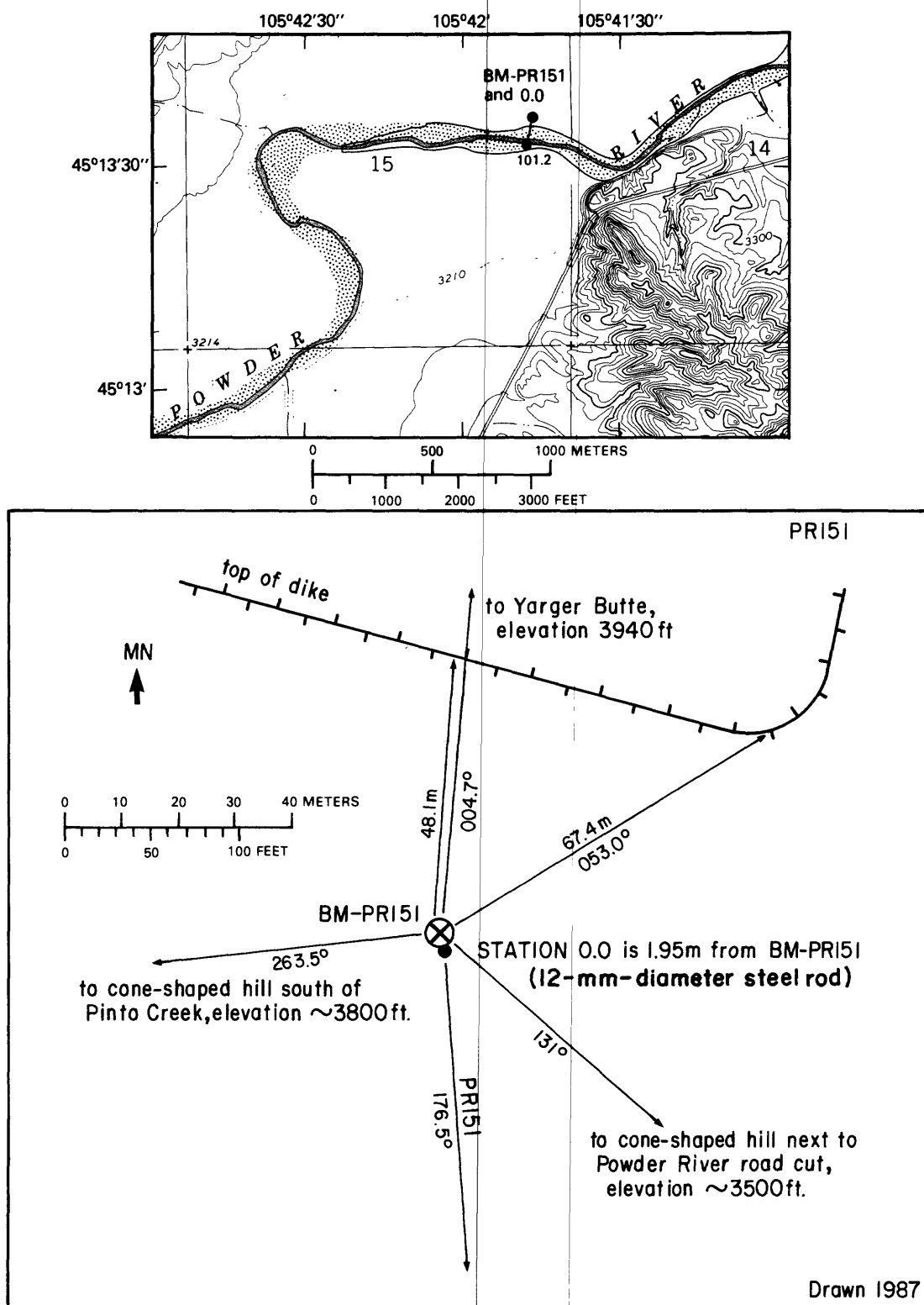


Figure 49.--Upper: Location of cross section PR151, bench mark BM-PR151, and left and right bank reference pins (tables 2 and 3) in the Huckins School quadrangle. Lower: Location of bench mark on the left bank. MN is magnetic north.

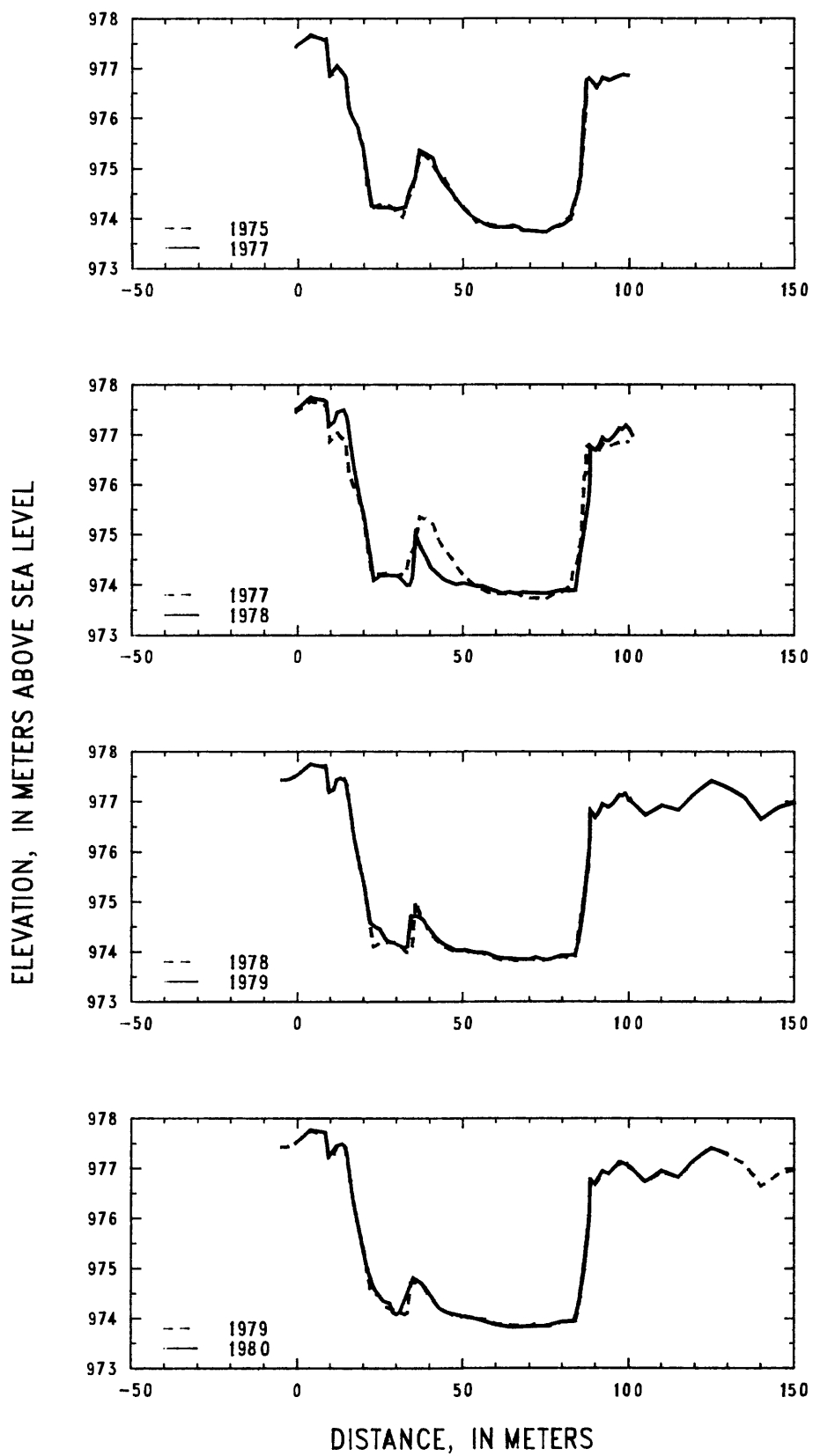


Figure 50.--Profiles of cross section PR151 from 1975 to 1980.

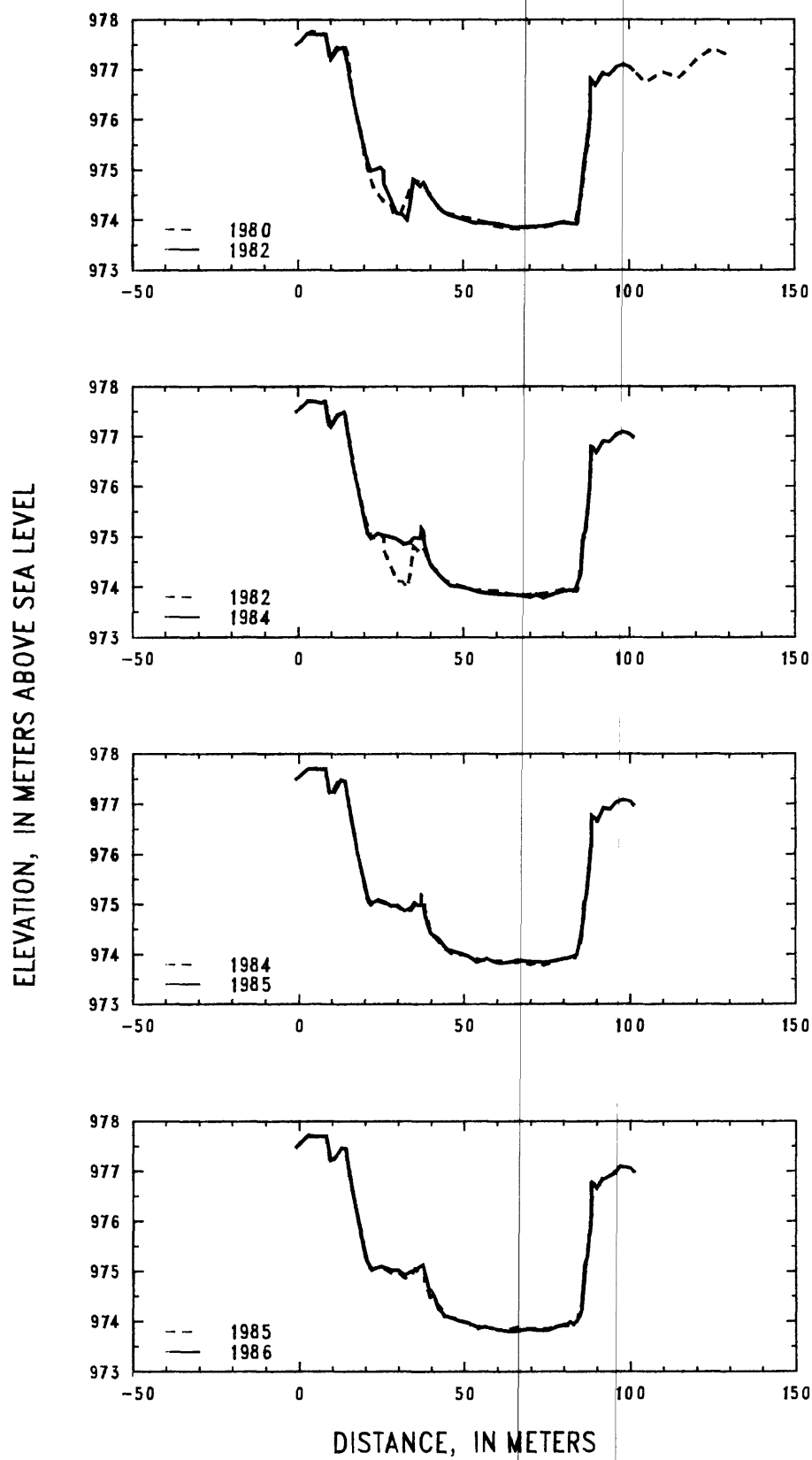


Figure 51.--Profiles of cross section PR151 from 1980 to 1986.

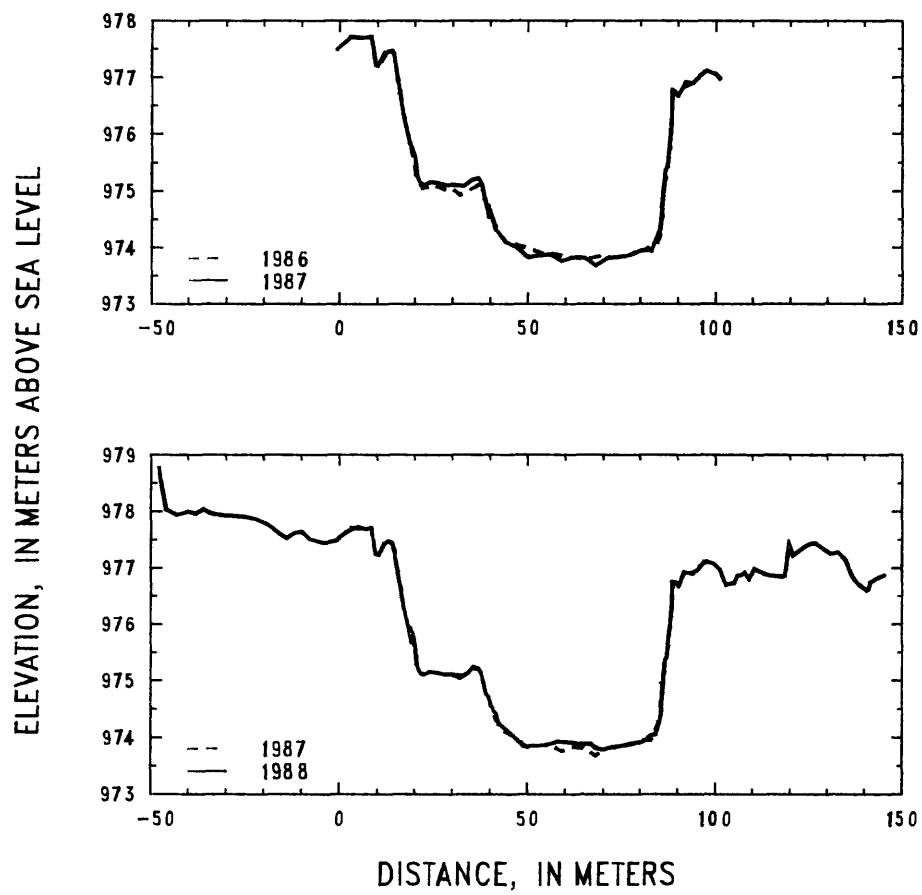


Figure 52.--Profiles of cross section PR151 from 1986 to 1988.

Table 18.--Listing of horizontal stations and elevations for cross section PR151
[Sta., station, distance in meters from a reference point on
the left bank; Elev., elevation, in meters above sea level].

1975		1975		1977		1977		1978	
Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
-0.8	977.43	66.0	973.81	-0.8	977.44	85.6	974.81	-0.9	977.51
0.0	977.48	68.0	973.74	0.0	977.48	86.6	976.16	0.0	977.54
2.0	977.56	70.0	973.75	4.0	977.67	87.0	976.20	2.0	977.64
4.0	977.69	72.0	973.74	8.0	977.58	87.2	976.75	4.0	977.76
6.0	977.62	74.0	973.71	8.7	977.60	88.0	976.80	6.0	977.71
8.0	977.57	76.0	973.75	9.8	976.87	90.0	976.65	8.0	977.69
8.8	977.56	78.0	973.84	12.0	977.05	91.0	976.67	8.8	977.66
9.9	976.85	80.0	973.88	14.5	976.83	92.0	976.81	9.4	977.23
11.0	976.91	81.0	973.95	15.7	976.17	94.0	976.75	10.0	977.20
12.0	977.04	83.0	974.07	17.0	975.96	96.0	976.82	11.0	977.25
14.0	976.90	84.0	974.36	18.0	975.85	98.0	976.87	12.0	977.45
14.7	976.78	85.0	974.54	19.0	975.58	100.0	976.85	13.0	977.48
15.8	976.16	85.7	974.87	19.7	975.44			14.0	977.50
17.0	975.96	87.1	976.23	22.4	974.25			15.0	977.32
18.0	975.87	87.2	976.70	24.0	974.22			17.0	976.38
19.0	975.59	87.3	976.76	27.0	974.23			19.0	975.66
19.4	975.59	88.0	976.80	30.0	974.18			20.0	975.41
20.0	975.33	90.3	976.60	32.8	974.24			22.0	974.56
21.1	974.55	92.0	976.82	34.0	974.56			23.0	974.10
21.5	974.53	94.0	976.76	35.6	974.78			25.0	974.19
22.5	974.20	96.0	976.82	36.9	975.36			27.0	974.20
24.0	974.26	98.0	976.87	39.0	975.28			30.0	974.19
26.0	974.29	100.0	976.86	41.0	975.20			31.2	974.14
28.0	974.25	100.8	976.84	42.0	974.98			33.0	974.00
30.0	974.14			44.0	974.74			34.0	974.00
31.9	974.02			47.0	974.49			34.9	974.13
33.0	974.27			50.0	974.20			35.8	975.02
35.0	974.63			53.0	974.01			37.0	974.78
37.2	975.25			56.0	973.90			39.0	974.54
38.0	975.28			57.0	973.87			40.3	974.35
40.0	975.17			59.0	973.82			42.0	974.24
42.0	974.94			61.0	973.82			44.0	974.12
44.0	974.85			63.0	973.82			46.0	974.06
46.0	974.61			65.0	973.85			48.0	974.01
48.0	974.35			67.0	973.81			50.0	974.04
50.0	974.23			68.0	973.75			52.0	974.00
52.0	974.09			71.0	973.73			54.0	973.97
53.7	973.95			73.0	973.73			56.0	973.97
54.0	973.92			75.0	973.71			58.0	973.92
55.0	973.95			77.0	973.81			60.0	973.87
56.0	973.93			79.9	973.86			62.0	973.83
58.0	973.87			82.5	973.98			64.0	973.86
60.0	973.84			83.2	974.26			66.0	973.82
62.0	973.81			84.8	974.51			68.0	973.86
64.0	973.81			85.1	974.75			70.0	973.85

Table 18.--Listing of horizontal stations and elevations for cross section PR151 --Continued.

1978		1979		1979		1980		1980	
Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
72.0	973.85	-5.0	977.43	74.0	973.84	-0.8	977.50	110.0	976.95
74.0	973.83	-3.0	977.43	76.0	973.84	0.0	977.53	115.0	976.82
76.0	973.85	-0.9	977.50	78.0	973.89	2.0	977.64	120.0	977.19
78.0	973.88	0.0	977.54	80.0	973.93	4.0	977.77	125.0	977.41
80.0	973.91	2.0	977.64	82.0	973.92	8.7	977.71	130.0	977.29
82.0	973.88	4.0	977.75	84.0	973.94	9.6	977.22		
84.0	973.90	6.0	977.71	84.8	974.15	12.0	977.45		
84.9	974.35	8.0	977.69	85.0	974.20	13.7	977.49		
88.0	975.72	8.6	977.71	86.5	974.92	14.7	977.42		
88.3	976.11	9.6	977.19	88.3	976.16	15.0	977.32		
88.4	976.74	11.0	977.24	88.5	976.82	17.0	976.36		
90.0	976.69	12.0	977.44	90.0	976.67	19.0	975.71		
91.0	976.78	13.0	977.47	91.0	976.79	21.0	975.06		
92.0	976.95	14.5	977.41	92.0	976.95	23.0	974.62		
93.0	976.89	16.0	976.84	93.0	976.91	26.0	974.35		
94.0	976.88	17.0	976.33	94.0	976.89	28.0	974.30		
95.0	976.95	19.0	975.68	95.0	976.95	29.0	974.12		
96.0	977.03	20.0	975.43	96.0	977.03	30.0	974.08		
97.0	977.13	22.0	974.58	97.0	977.13	31.0	974.11		
98.0	977.11	24.0	974.47	98.0	977.12	33.0	974.45		
99.0	977.19	25.0	974.45	99.0	977.16	35.2	974.81		
100.0	977.12	27.0	974.22	100.0	977.01	38.0	974.68		
101.1	976.97	30.0	974.15	101.1	976.97	40.0	974.49		
		32.5	974.08	101.2	976.96	42.5	974.22		
		33.4	974.11	105.0	976.72	45.0	974.12		
		34.5	974.72	110.0	976.92	50.0	974.04		
		36.0	974.72	115.0	976.82	55.0	973.97		
		38.0	974.65	120.0	977.17	60.0	973.86		
		40.0	974.45	125.0	977.41	65.0	973.81		
		42.0	974.27	130.0	977.27	70.0	973.84		
		44.3	974.15	135.0	977.08	75.0	973.85		
		46.0	974.10	140.0	976.64	80.0	973.94		
		48.0	974.03	145.0	976.88	83.6	973.94		
		50.0	974.04	150.0	976.98	85.0	974.26		
		52.0	974.01			86.5	974.94		
		54.0	973.98			88.2	976.00		
		56.0	973.98			88.5	976.77		
		58.0	973.95			90.0	976.69		
		60.0	973.88			92.0	976.94		
		62.0	973.87			94.0	976.88		
		64.0	973.87			96.0	977.04		
		66.0	973.85			98.0	977.11		
		68.0	973.84			100.0	977.05		
		70.0	973.84			101.2	976.97		
		72.0	973.89			105.0	976.73		

Table 18.--Listing of horizontal stations and elevations for cross section PR151 --Continued.

1982		1982		1984		1984		1985	
Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
-0.8	977.50	96.0	977.05	-0.9	977.50	86.8	975.13	-0.9	977.50
0.0	977.53	98.0	977.10	0.0	977.53	88.0	975.93	0.0	977.53
3.0	977.73	100.0	977.05	3.0	977.70	88.4	976.31	3.0	977.71
6.0	977.70	101.2	976.97	5.0	977.71	88.5	976.79	6.0	977.70
8.5	977.71			7.0	977.67	89.0	976.77	8.5	977.70
9.0	977.53			8.4	977.69	90.0	976.66	9.5	977.24
10.0	977.20			9.4	977.23	92.0	976.91	11.0	977.25
12.0	977.42			10.0	977.18	94.0	976.89	13.0	977.49
14.0	977.45			12.0	977.43	96.0	977.03	14.2	977.46
15.0	977.14			14.0	977.49	98.0	977.09	16.0	976.73
17.0	976.36			14.4	977.42	100.0	977.04	18.0	976.00
20.0	975.43			15.4	976.93	101.2	976.97	20.0	975.43
22.0	974.97			17.0	976.34			21.0	975.12
25.0	975.05			18.0	976.00			22.0	975.03
26.0	974.98			20.0	975.35			24.0	975.10
26.0	974.73			21.0	975.06			26.0	975.05
30.0	974.12			22.0	974.98			28.0	974.97
31.5	974.11			24.0	975.07			30.0	974.99
33.0	973.99			25.0	975.04			32.0	974.87
34.0	974.29			27.0	975.01			34.0	974.93
35.0	974.81			30.0	974.95			35.0	975.05
37.0	974.67			32.0	974.85			36.0	974.99
38.0	974.75			34.0	974.88			37.8	975.00
38.4	974.70			35.0	974.98			38.1	974.78
40.0	974.47			37.0	974.97			40.0	974.42
43.0	974.20			37.2	975.17			42.0	974.33
45.0	974.11			37.9	975.09			43.3	974.22
48.0	974.04			38.2	974.89			45.0	974.10
50.0	974.00			40.0	974.43			48.0	974.04
53.0	973.93			43.0	974.19			51.0	973.98
55.0	973.93			46.0	974.02			54.0	973.85
60.0	973.92			50.0	973.98			57.0	973.92
65.0	973.84			55.0	973.88			60.0	973.83
70.0	973.85			60.0	973.86			63.0	973.84
75.0	973.88			64.0	973.84			66.0	973.89
80.0	973.95			66.0	973.84			69.0	973.86
84.0	973.91			70.0	973.79			72.0	973.85
84.4	973.94			72.0	973.85			75.0	973.85
85.5	974.54			74.0	973.77			78.0	973.89
87.0	975.33			76.0	973.84			81.0	973.93
88.3	976.09			79.0	973.90			84.0	974.00
88.5	976.81			82.0	973.94			84.8	974.21
90.0	976.68			83.6	973.93			85.6	974.44
92.0	976.91			85.4	974.27			86.4	975.07
94.0	976.89			86.1	975.02			87.0	975.20

Table 18.--Listing of horizontal stations and elevations for cross section PR151 --Continued.

1985		1986		1986		1987		1987	
Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
88.3	976.14	-0.9	977.48	88.0	975.88	-0.8	977.49	86.7	975.36
88.5	976.78	0.0	977.53	88.3	976.33	0.0	977.53	87.0	975.41
90.3	976.66	3.0	977.72	88.4	976.77	3.0	977.70	88.0	975.92
92.0	976.93	6.0	977.69	89.0	976.76	6.0	977.69	88.4	976.18
94.0	976.90	8.5	977.70	90.0	976.66	8.5	977.71	88.5	976.77
96.0	977.05	9.7	977.21	91.0	976.80	9.7	977.21	90.0	976.68
98.0	977.10	11.0	977.26	93.0	976.88	10.2	977.19	91.0	976.79
100.0	977.06	13.0	977.47	95.0	976.94	12.0	977.43	92.0	976.91
101.2	976.97	14.3	977.45	97.0	977.10	14.0	977.45	94.0	976.89
		17.0	976.37	100.0	977.06	14.6	977.35	96.0	977.04
		19.0	975.72	101.2	976.97	17.0	976.32	97.6	977.11
		20.6	975.20			19.0	975.77	100.0	977.04
		22.0	975.04			20.0	975.61	101.2	976.96
		25.0	975.10			20.7	975.23		
		28.0	975.02			21.3	975.15		
		30.0	975.03			22.4	975.09		
		32.0	974.92			24.0	975.16		
		34.0	975.00			26.0	975.14		
		36.0	975.07			28.0	975.10		
		37.5	975.13			30.0	975.10		
		39.7	974.52			33.0	975.08		
		40.0	974.60			35.0	975.19		
		40.7	974.51			36.8	975.22		
		42.0	974.25			37.7	975.13		
		43.3	974.18			39.2	974.71		
		44.2	974.09			39.7	974.73		
		45.2	974.08			41.4	974.31		
		48.0	974.01			42.0	974.28		
		51.0	973.96			44.0	974.09		
		54.0	973.88			47.0	973.99		
		57.0	973.88			50.0	973.82		
		60.0	973.84			53.0	973.86		
		63.0	973.80			56.0	973.88		
		66.0	973.80			59.0	973.75		
		69.0	973.85			62.0	973.83		
		72.0	973.82			65.0	973.81		
		75.0	973.82			68.0	973.67		
		78.0	973.90			71.0	973.81		
		81.0	973.95			74.0	973.84		
		82.0	974.00			77.0	973.86		
		83.0	973.93			80.0	973.95		
		84.7	974.08			83.0	973.95		
		85.3	974.19			84.0	974.11		
		86.5	975.17			85.0	974.27		
		87.0	975.27			85.3	974.30		

Table 18.--Listing of horizontal stations and elevations for cross section PR151 --Continued.

1988		1988		1988	
Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
-48.0	978.78	35.5	975.24	106.0	976.86
-46.0	978.02	37.0	975.20	107.0	976.87
-43.0	977.93	37.7	975.12	108.0	976.92
-40.0	977.99	39.0	974.76	109.2	976.79
-38.0	977.95	39.6	974.73	110.4	976.98
-36.0	978.03	41.0	974.46	112.0	976.93
-34.0	977.96	41.7	974.40	114.0	976.86
-31.0	977.92	42.2	974.22	116.0	976.84
-28.0	977.91	43.0	974.21	118.0	976.83
-25.0	977.89	45.6	974.05	118.7	976.86
-22.0	977.86	47.0	973.97	119.7	977.41
-19.0	977.76	49.0	973.84	120.7	977.21
-16.0	977.60	51.0	973.86	122.0	977.28
-14.0	977.52	53.0	973.84	124.0	977.39
-12.0	977.62	56.0	973.88	126.0	977.43
-10.0	977.64	58.0	973.93	127.0	977.43
-8.0	977.50	61.0	973.92	129.0	977.32
-6.0	977.47	64.0	973.88	131.0	977.24
-4.0	977.43	67.0	973.88	133.0	977.28
-0.8	977.48	68.0	973.81	135.0	977.14
0.0	977.53	70.0	973.77	137.0	976.82
2.0	977.64	72.0	973.83	138.6	976.69
5.0	977.73	75.0	973.85	140.6	976.60
7.0	977.67	78.0	973.90	141.1	976.61
8.6	977.70	81.0	973.93	141.6	976.74
9.6	977.23	83.0	974.04	144.0	976.83
10.5	977.22	84.2	974.06	145.5	976.87
12.0	977.43	85.1	974.22		
13.0	977.48	85.7	974.42		
14.0	977.43	86.7	975.36		
14.7	977.28	87.1	975.41		
17.0	976.34	88.4	976.18		
18.0	976.04	88.6	976.75		
19.0	975.75	89.5	976.75		
19.2	975.88	90.3	976.66		
19.9	975.77	91.7	976.92		
20.6	975.28	93.0	976.89		
21.2	975.17	95.0	976.94		
22.0	975.10	97.0	977.10		
24.0	975.15	99.0	977.08		
26.0	975.14	100.0	977.05		
28.0	975.10	101.2	976.96		
30.0	975.11	102.8	976.69		
32.0	975.04	104.0	976.72		
34.0	975.12	105.0	976.72		

Description of Cross Section PR156A

Location: Township 7 South/Range 49 East--section 12
U.S. Geological Survey quadrangle (1:24,000): Huckins School

Landowners--left bank: Gay Ranch
right bank: Swope Ranch

Access: right bank

Permission from: Swope Ranch (T7S/R49E--12)

Reference pins

Station (meters)	Elevation (meters above sea level)	Comments
		Pins 130.0 and 131.0 were closest to leveling instrument.
-1.6	971.237	0.11 meter above 1987 ground level.
0.0	971.113	0.02 meter above 1987 ground level.
130.0	971.663	0.02 meter above 1987 ground level.
131.0	971.848	0.17 meter above 1987 ground level.

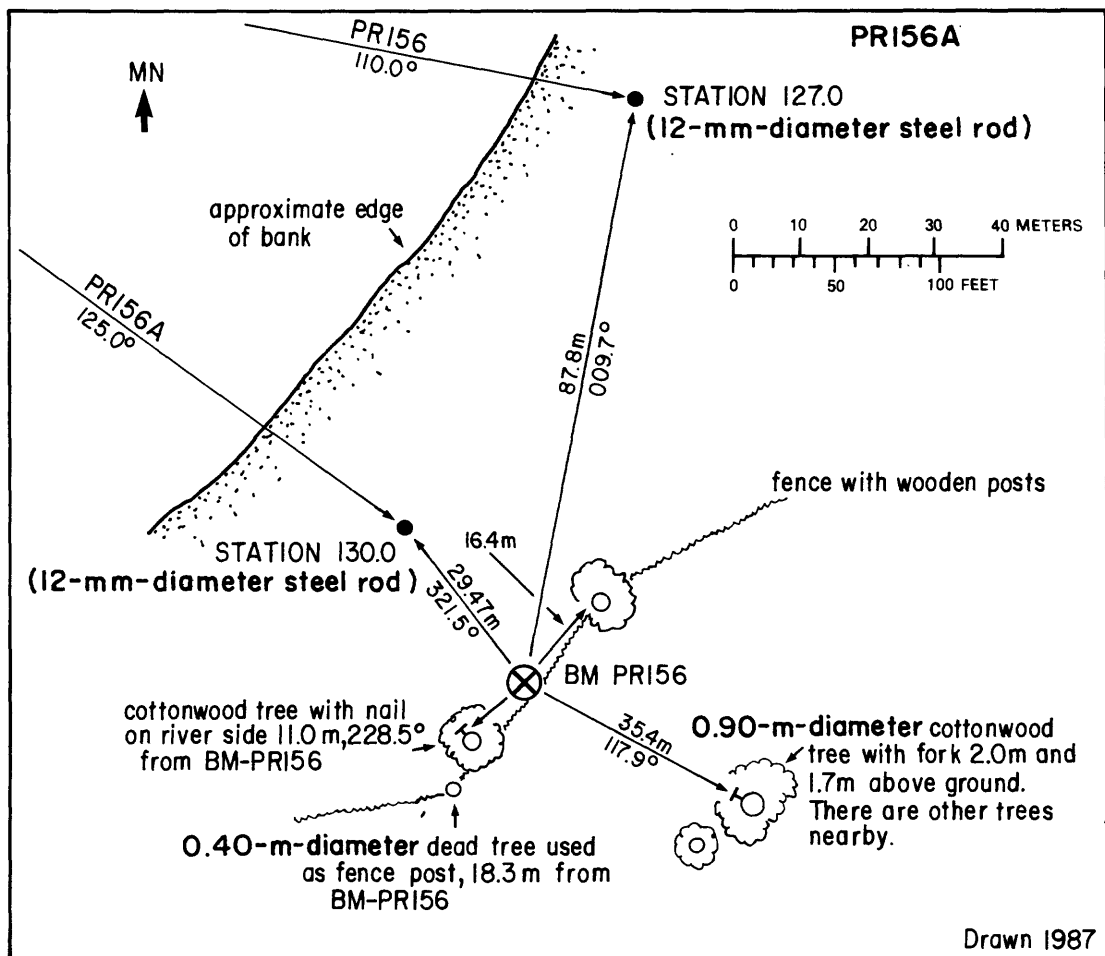
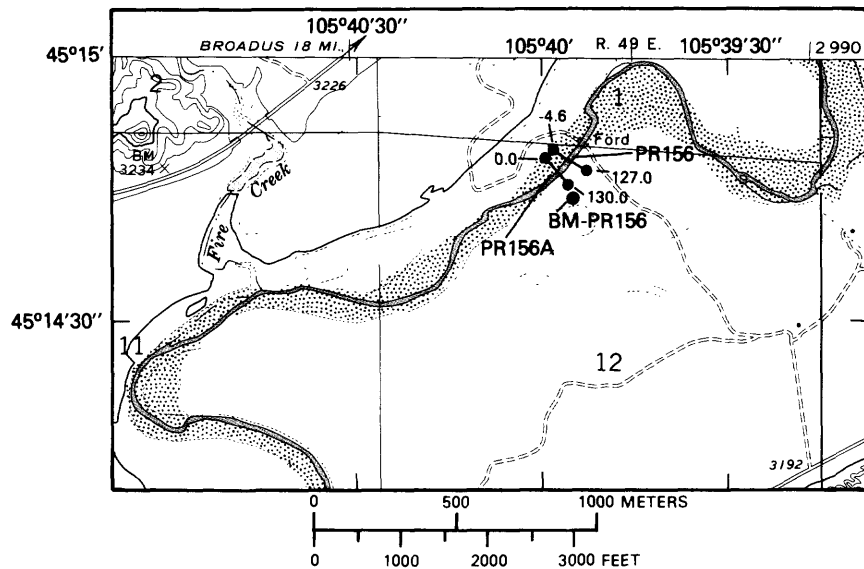


Figure 53.--Upper: Location of cross section PR156A, bench mark BM-PR151, and left and right bank reference pins (tables 2 and 3) in the Huckins School quadrangle. Lower: Location of bench mark on the left bank. MN is magnetic north.

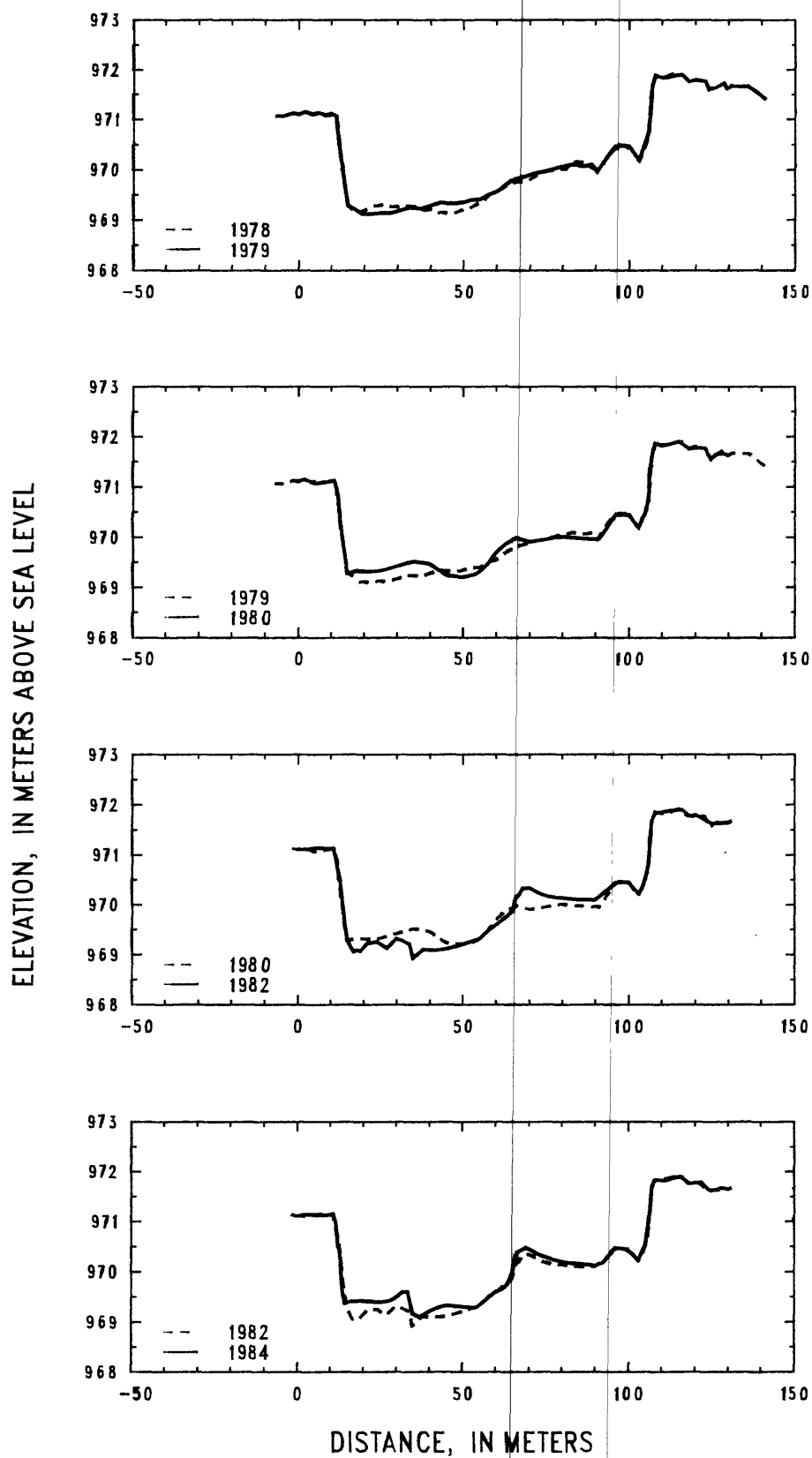


Figure 54.--Profiles of cross section PR156A from 1978 to 1984.

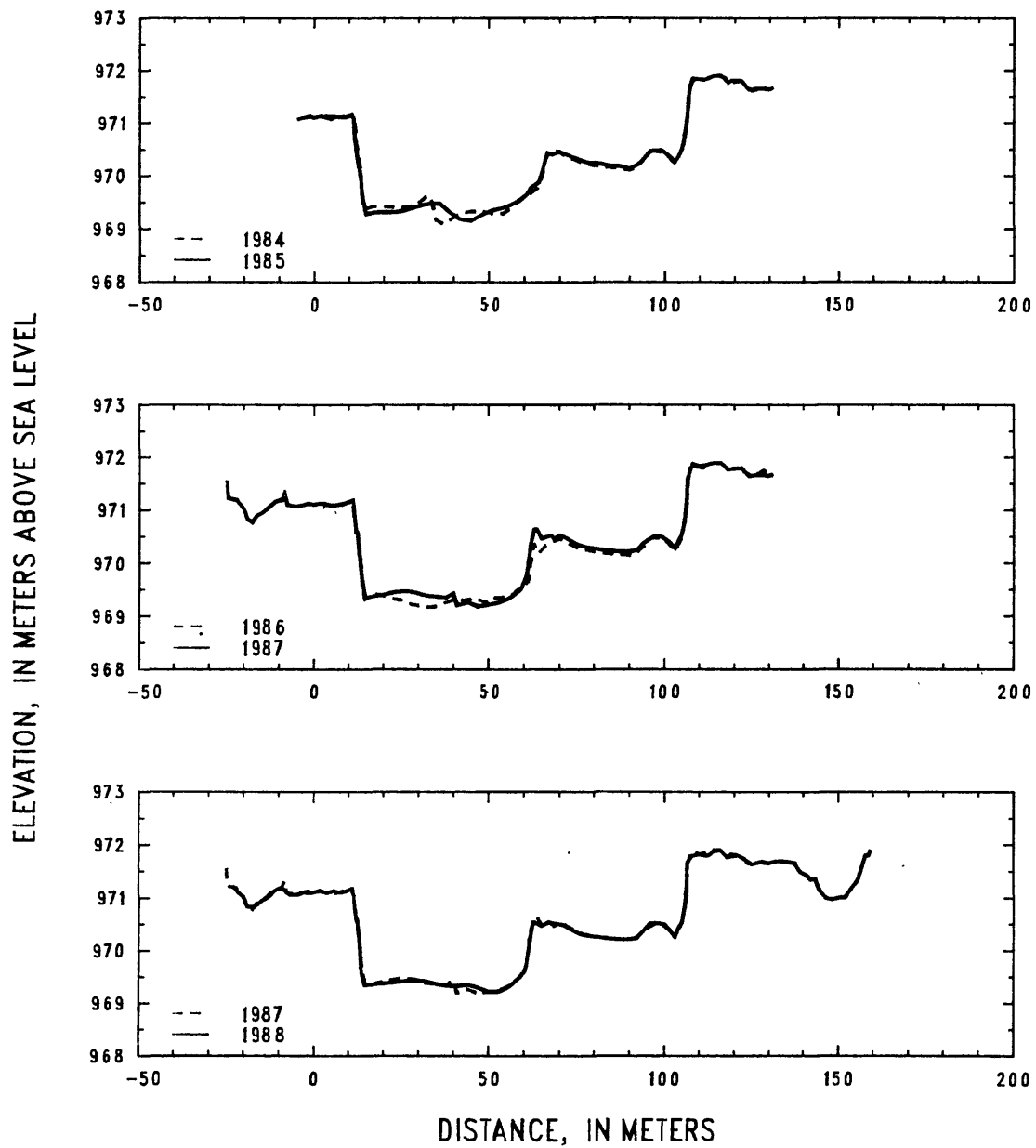


Figure 55.--Profiles of cross section PR156A from 1984 to 1988.

Table 19.--Listing of horizontal stations and elevations for cross section PR156A
[Sta., station, distance in meters from a reference point on
the left bank; Elev., elevation, in meters above sea level].

1978		1978		1979		1979		1980	
Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
-1.5	971.12	90.0	969.99	-7.0	971.06	106.0	970.74	-1.6	971.12
0.0	971.09	92.0	970.08	-5.0	971.05	107.0	971.66	0.0	971.10
2.0	971.14	94.0	970.31	-1.6	971.12	108.0	971.87	2.0	971.15
4.0	971.08	95.8	970.47	0.0	971.09	110.0	971.83	5.0	971.06
6.0	971.13	98.0	970.45	2.0	971.14	112.0	971.85	8.0	971.09
8.0	971.07	100.5	970.42	4.0	971.09	114.0	971.89	11.0	971.13
10.0	971.09	102.0	970.24	6.0	971.13	116.0	971.90	12.0	970.90
11.5	971.11	103.0	970.16	8.0	971.08	118.0	971.76	13.0	970.22
12.0	970.87	105.0	970.48	10.0	971.11	120.0	971.80	15.0	969.27
13.0	970.08	106.0	970.70	11.5	971.05	123.0	971.76	18.0	969.33
13.6	969.89	106.5	971.42	13.0	970.14	124.0	971.59	21.0	969.31
15.0	969.30	107.0	971.62	13.5	970.01	126.0	971.64	25.0	969.33
17.0	969.12	108.0	971.89	14.0	969.70	128.6	971.73	30.0	969.43
20.0	969.19	110.0	971.83	15.0	969.27	129.5	971.61	35.0	969.52
22.0	969.27	112.0	971.88	17.0	969.20	130.0	971.63	40.0	969.46
24.0	969.29	114.0	971.94	19.0	969.10	131.0	971.67	45.0	969.23
26.0	969.30	116.0	971.90	22.0	969.10	136.0	971.66	50.0	969.20
28.0	969.25	118.0	971.76	25.0	969.13	141.0	971.40	54.0	969.27
30.0	969.26	120.0	971.79	28.0	969.13			57.0	969.43
32.0	969.27	123.2	971.76	31.0	969.19			60.0	969.70
34.0	969.27	124.0	971.59	34.0	969.24			63.0	969.88
36.0	969.25	126.0	971.68	37.0	969.21			66.0	969.99
38.0	969.18	128.6	971.72	40.0	969.28			70.0	969.90
40.0	969.21	129.5	971.58	43.0	969.34			75.0	969.96
42.0	969.13	130.0	971.64	46.0	969.31			80.0	970.02
44.0	969.14	131.0	971.70	49.0	969.32			85.0	969.98
46.0	969.13			52.0	969.39			88.0	969.96
48.0	969.14			55.0	969.40			91.0	969.95
50.0	969.21			58.0	969.51			93.0	970.14
52.0	969.24			60.0	969.55			96.0	970.45
54.0	969.31			65.0	969.80			100.0	970.44
56.0	969.36			68.0	969.85			103.0	970.18
58.0	969.51			71.0	969.92			105.0	970.49
60.0	969.56			74.0	969.95			106.0	970.80
63.0	969.67			77.0	970.00			106.3	971.28
66.0	969.76			80.0	970.06			107.0	971.65
69.0	969.76			83.0	970.10			108.0	971.86
72.0	969.89			86.0	970.05			110.0	971.82
75.0	969.96			88.8	970.09			112.0	971.85
78.0	970.00			90.5	969.94			115.0	971.91
81.0	970.00			92.0	970.11			118.0	971.76
82.0	970.11			95.0	970.38			121.0	971.78
84.0	970.17			97.0	970.48			123.0	971.76
86.0	970.14			100.0	970.45			124.6	971.55
88.0	970.06			103.0	970.17			126.0	971.64

Table 19.--Listing of horizontal stations and elevations for cross section PR156A--Continued.

1980		1982		1982		1984		1984	
Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
128.0	971.67	0.0	971.10	110.0	971.85	-1.6	971.13	96.0	970.47
130.0	971.63	3.0	971.11	113.0	971.89	0.0	971.10	99.0	970.45
130.9	971.67	6.0	971.14	116.0	971.90	3.0	971.14	101.0	970.36
		10.0	971.12	118.0	971.77	6.0	971.12	102.0	970.28
		11.0	971.13	120.0	971.79	9.0	971.12	103.0	970.23
		13.0	970.49	125.0	971.62	11.0	971.15	104.0	970.38
		13.0	970.47	130.0	971.64	11.8	970.99	105.0	970.51
		13.9	969.89	130.9	971.67	12.5	970.49	105.7	970.79
		14.0	969.84			12.9	970.44	106.5	971.22
		15.0	969.36			13.4	970.07	107.0	971.67
		15.5	969.22			13.8	969.63	108.0	971.84
		17.0	969.05			14.5	969.37	109.0	971.84
		18.0	969.09			17.0	969.42	111.0	971.81
		19.0	969.06			20.0	969.42	114.0	971.89
		21.0	969.22			23.0	969.40	116.0	971.90
		24.0	969.25			25.0	969.39	118.0	971.76
		27.0	969.12			28.0	969.42	120.0	971.78
		30.0	969.32			30.0	969.49	122.0	971.79
		34.0	969.20			32.0	969.60	124.0	971.64
		35.0	968.92			33.5	969.60	125.0	971.61
		38.0	969.10			35.0	969.16	128.0	971.68
		41.0	969.08			37.0	969.09	130.0	971.64
		45.0	969.11			40.0	969.22	130.9	971.67
		50.0	969.21			43.0	969.30		
		55.0	969.31			45.0	969.33		
		58.0	969.50			48.0	969.32		
		61.0	969.64			51.0	969.29		
		65.0	969.87			54.0	969.28		
		66.0	970.13			57.0	969.44		
		67.0	970.20			60.0	969.60		
		68.0	970.33			61.0	969.62		
		70.0	970.34			63.5	969.75		
		74.0	970.19			65.0	969.96		
		77.0	970.14			66.5	970.39		
		80.0	970.13			69.0	970.48		
		85.0	970.09			70.0	970.44		
		90.0	970.09			73.0	970.33		
		95.0	970.38			76.0	970.26		
		97.0	970.46			80.0	970.19		
		100.0	970.44			83.0	970.16		
		103.0	970.21			87.0	970.14		
		104.0	970.31			90.0	970.11		
		105.8	970.68			92.0	970.17		
		107.0	971.66			93.0	970.24		
		108.0	971.83			95.0	970.40		

Table 19.--Listing of horizontal stations and elevations for cross section PR156A--Continued.

1985		1985		1986		1986		1987	
Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
-5.0	971.07	101.0	970.39	-1.6	971.12	94.0	970.33	-25.0	971.54
-1.5	971.13	103.0	970.25	0.0	971.10	96.0	970.47	-24.4	971.22
0.0	971.10	105.0	970.50	2.0	971.15	98.0	970.49	-22.0	971.18
2.0	971.14	106.0	970.86	5.0	971.09	100.0	970.45	-20.0	971.02
5.0	971.07	106.6	971.26	7.0	971.08	102.0	970.31	-19.0	970.82
6.0	971.12	107.0	971.64	9.0	971.12	103.0	970.23	-17.6	970.76
9.0	971.11	108.0	971.81	11.2	971.18	104.7	970.46	-16.3	970.90
11.0	971.16	109.0	971.84	12.4	970.44	105.7	970.79	-15.0	970.94
11.5	971.09	111.0	971.81	12.8	970.44	106.3	971.06	-13.0	971.05
11.7	970.74	113.0	971.88	13.5	970.05	106.6	971.55	-11.0	971.16
12.6	970.30	115.0	971.90	13.9	969.59	107.5	971.81	-9.0	971.20
13.5	969.99	117.0	971.86	14.7	969.32	108.2	971.89	-8.4	971.31
13.8	969.69	118.0	971.76	17.0	969.43	109.0	971.82	-7.6	971.09
15.0	969.28	119.0	971.81	19.0	969.41	111.0	971.80	-5.0	971.06
18.0	969.31	122.0	971.79	22.0	969.34	114.0	971.90	-1.6	971.13
21.0	969.32	124.0	971.63	25.0	969.30	116.0	971.89	0.0	971.10
24.0	969.32	127.0	971.66	28.0	969.22	118.0	971.76	2.0	971.13
27.0	969.37	130.0	971.63	31.0	969.19	120.0	971.79	5.0	971.08
30.0	969.43	130.9	971.67	34.0	969.17	123.0	971.72	7.0	971.09
33.0	969.48			37.0	969.25	125.0	971.61	10.0	971.16
36.0	969.48			40.0	969.31	128.3	971.75	11.4	971.19
39.0	969.30			43.0	969.31	130.0	971.63	11.7	970.92
42.0	969.17			46.0	969.34	130.9	971.67	12.3	970.60
45.0	969.15			49.0	969.26			12.6	970.58
48.0	969.27			51.0	969.36			13.8	969.77
51.0	969.35			54.0	969.35			14.8	969.35
54.0	969.39			57.0	969.42			17.0	969.38
57.0	969.47			58.0	969.49			20.0	969.41
60.0	969.60			60.0	969.59			23.0	969.46
61.3	969.68			61.3	969.67			26.0	969.47
62.0	969.78			61.6	969.82			29.0	969.45
64.3	969.88			62.7	970.35			32.0	969.39
66.6	970.44			63.0	970.36			35.0	969.37
68.0	970.40			63.5	970.20			38.0	969.35
70.0	970.46			64.2	970.19			39.0	969.41
72.0	970.40			66.0	970.33			40.0	969.44
75.0	970.32			68.0	970.41			41.0	969.20
78.0	970.24			70.0	970.47			44.0	969.27
81.0	970.23			73.0	970.36			47.0	969.18
84.0	970.18			76.0	970.27			50.0	969.22
87.0	970.18			79.0	970.23			53.0	969.26
90.0	970.13			82.0	970.20			56.0	969.34
93.0	970.24			85.0	970.18			59.0	969.51
96.0	970.47			88.0	970.16			60.8	969.75
99.0	970.49			91.0	970.14			62.0	970.39

Table 19.--Listing of horizontal stations and elevations for cross section PR156A--Continued.

1987		1988		1988		1988	
Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
63.0	970.65	-23.0	971.21	65.0	970.47	144.4	971.17
63.7	970.65	-20.0	971.01	67.0	970.55	146.3	971.00
65.0	970.46	-19.0	970.83	69.0	970.51	148.0	970.97
66.0	970.49	-17.0	970.81	71.0	970.49	150.0	971.01
67.7	970.53	-15.0	970.94	74.0	970.38	152.0	971.02
68.4	970.47	-13.0	971.02	76.0	970.31	154.0	971.20
70.0	970.53	-11.0	971.14	78.0	970.29	155.5	971.32
72.0	970.48	-9.0	971.20	80.0	970.27	157.0	971.62
74.0	970.38	-7.0	971.06	82.0	970.25	157.8	971.80
77.0	970.31	-5.0	971.06	84.0	970.23	158.7	971.80
80.0	970.27	-3.0	971.11	86.0	970.22	159.4	971.89
82.0	970.25	-1.6	971.09	88.0	970.21		
84.0	970.24	0.0	971.10	90.0	970.22		
87.0	970.21	2.0	971.14	92.0	970.24		
90.0	970.21	4.0	971.09	94.0	970.39		
92.0	970.25	6.0	971.14	96.0	970.52		
94.0	970.39	8.0	971.09	98.0	970.53		
97.0	970.51	10.0	971.15	100.0	970.49		
99.0	970.50	11.0	971.18	102.0	970.33		
101.0	970.42	11.4	971.13	103.0	970.26		
103.0	970.28	12.2	970.62	104.0	970.42		
104.2	970.45	12.6	970.57	105.0	970.52		
104.9	970.52	13.4	970.11	106.5	971.10		
105.8	970.79	13.8	969.59	106.7	971.65		
106.3	971.10	14.7	969.34	108.0	971.79		
106.7	971.59	17.0	969.37	110.0	971.82		
107.0	971.70	20.0	969.38	112.0	971.79		
108.0	971.88	23.0	969.41	113.0	971.81		
110.0	971.82	26.0	969.42	114.0	971.88		
112.0	971.86	29.0	969.44	116.0	971.90		
114.0	971.90	32.0	969.42	118.0	971.76		
116.0	971.90	35.0	969.37	119.0	971.82		
118.0	971.76	38.0	969.34	121.0	971.80		
120.0	971.79	41.0	969.33	123.0	971.73		
122.0	971.80	44.0	969.36	125.0	971.63		
124.0	971.65	47.0	969.30	128.0	971.69		
127.0	971.67	50.0	969.21	130.0	971.65		
130.0	971.64	53.0	969.23	130.9	971.67		
130.9	971.68	55.0	969.29	133.0	971.70		
		57.0	969.39	136.0	971.67		
		59.0	969.52	137.5	971.64		
		60.0	969.59	139.0	971.49		
		60.6	969.71	141.0	971.42		
		62.4	970.48	142.1	971.34		
		63.0	970.55	143.4	971.35		

Description of Cross Section PR156

Location: Township 7 South/Range 49 East--section 12
U.S. Geological Survey quadrangle (1:24,000): Huckins School

Landowners--left bank: Gay Ranch
right bank: Swope Ranch

Access: right bank

Permission from: Swope Ranch (T7S/R49E--12)

Reference pins

Station (meters)	Elevation (meters above sea level)	Comments
		Pin 127.0 was closest to leveling instrument.
-4.2	971.304	0.19 meter above 1987 ground level.
-1.6	971.039	0.07 meter above 1987 ground level.
127.0	971.779	±0.07 meter, 0.16 meter above 1987 ground level.

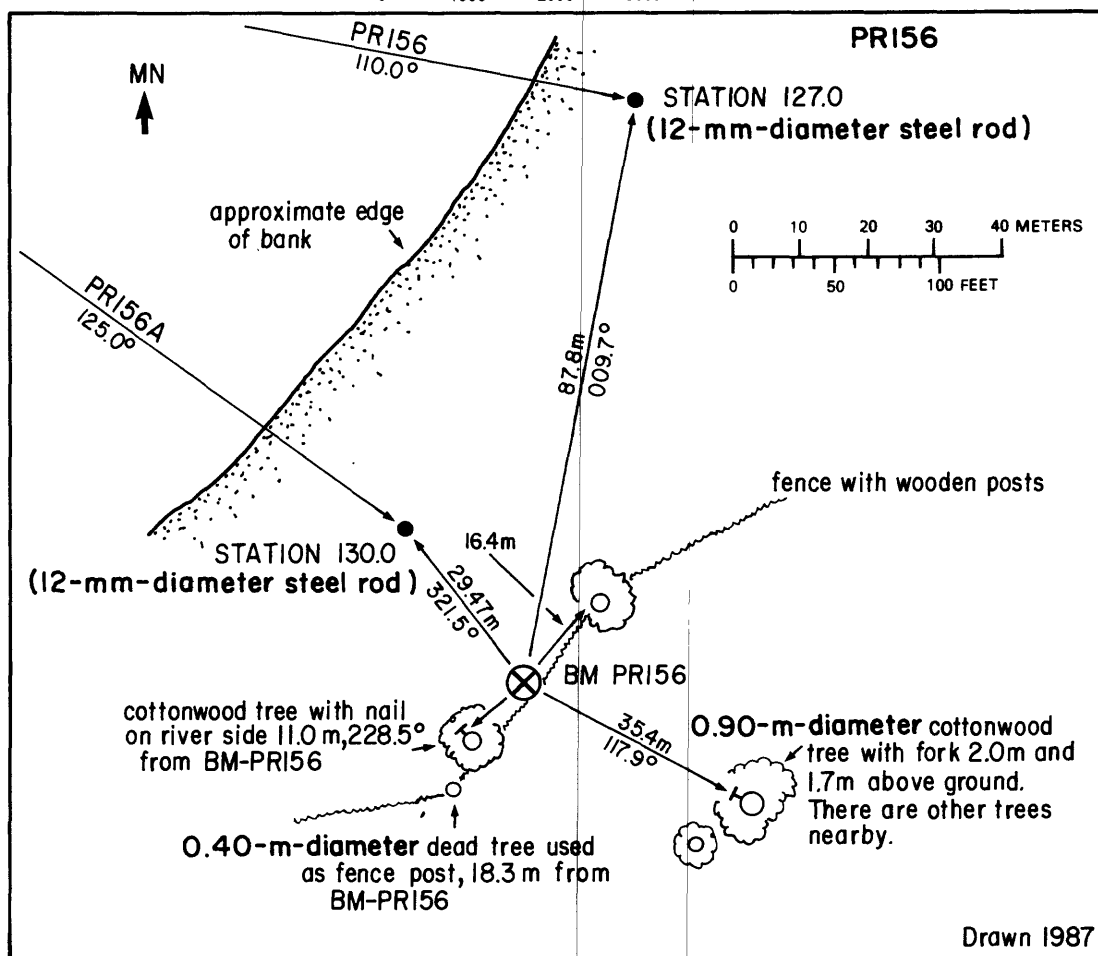
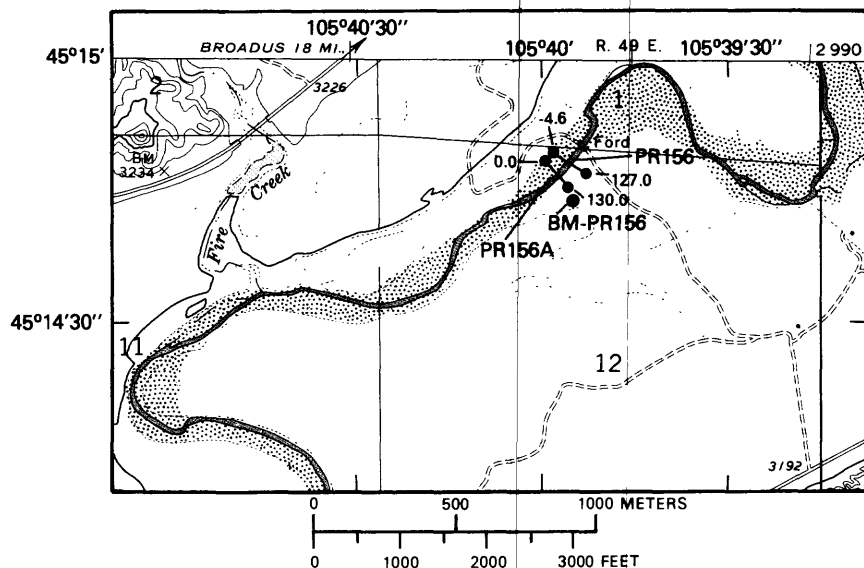


Figure 56.--Upper: Location of cross section PR156, bench mark BM-PR156, and left and right bank reference pins (tables 2 and 3) in the Huckins School quadrangle. Lower: Location of bench mark on the left bank. MN is magnetic north.

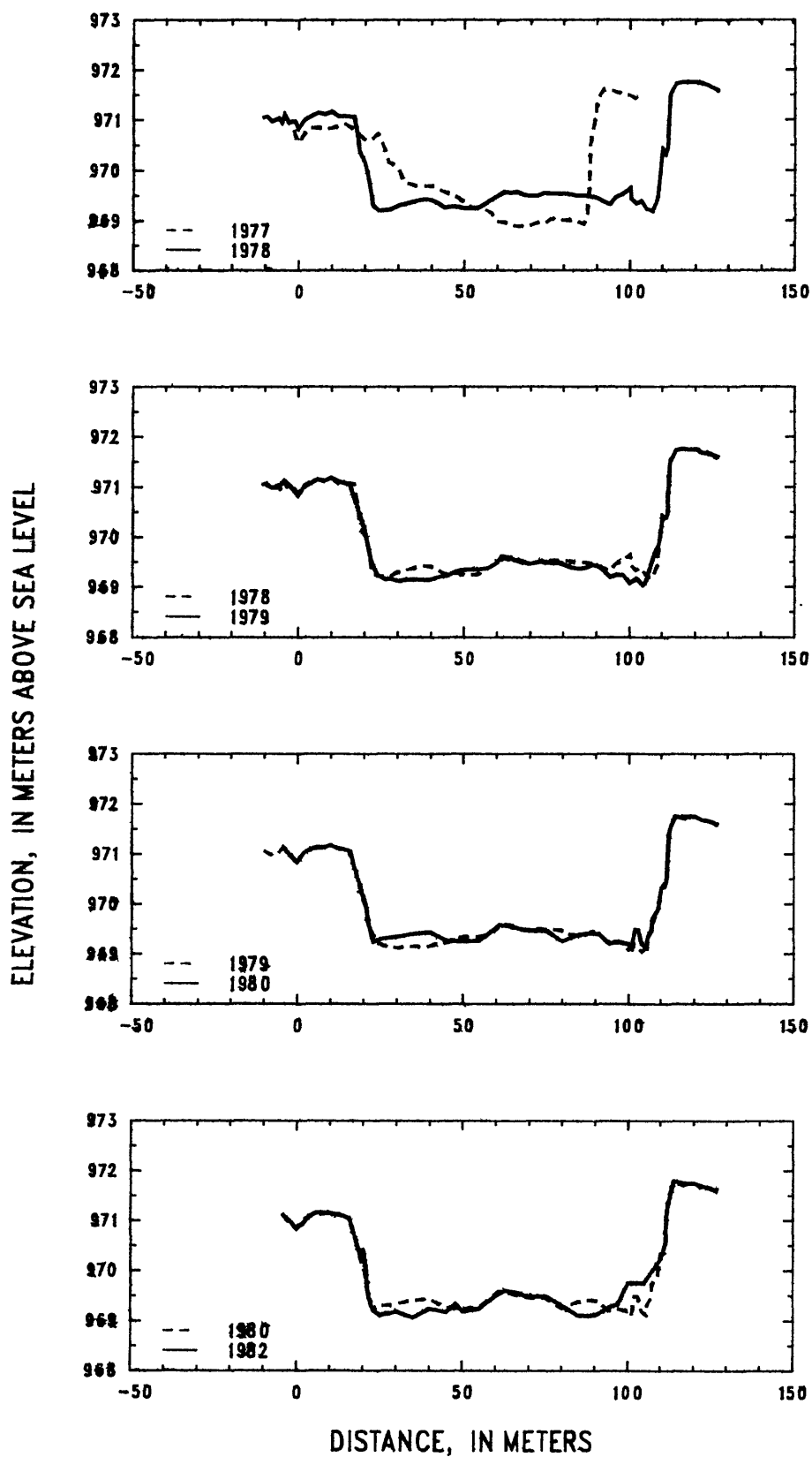


Figure 57.--Profiles of cross section PR156 from 1977 to 1982.

ELEVATION, IN METERS ABOVE SEA LEVEL

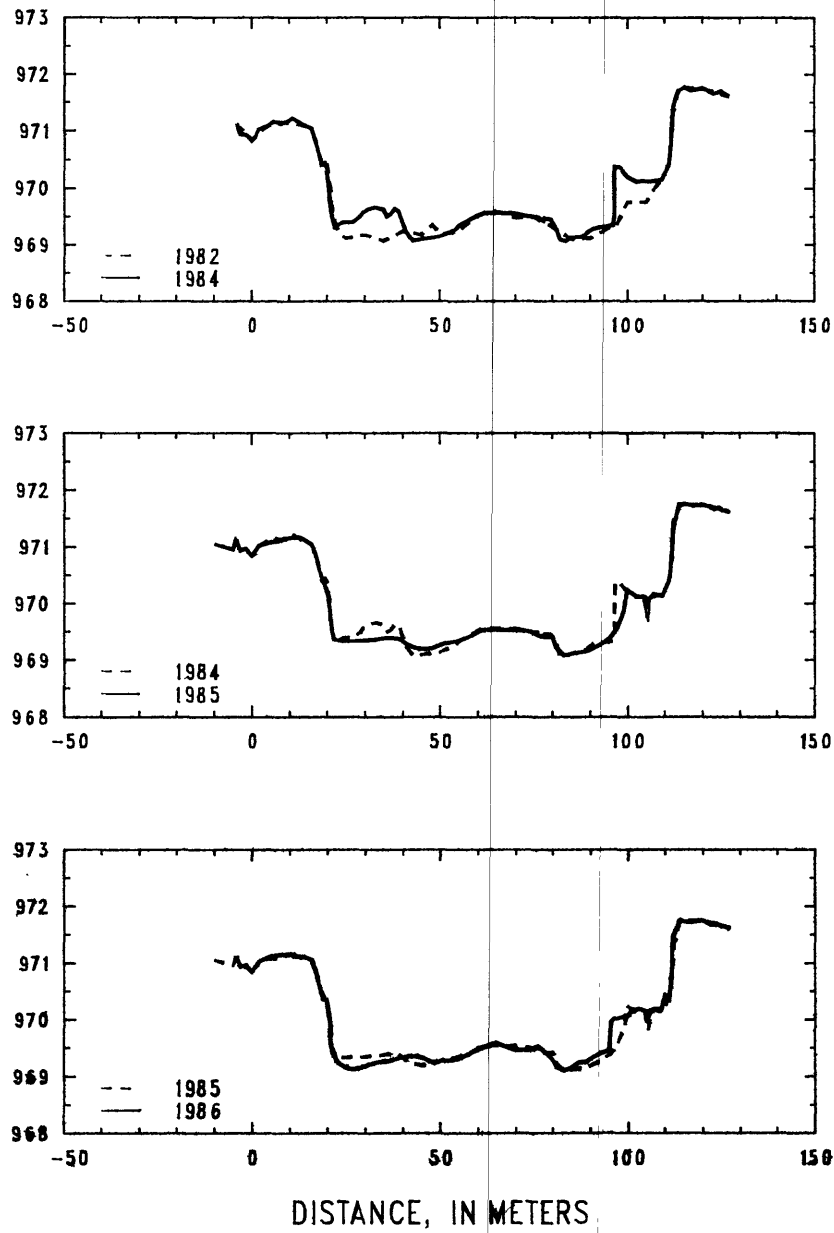


Figure 58.--Profiles of cross section PR156 from 1982 to 1986.

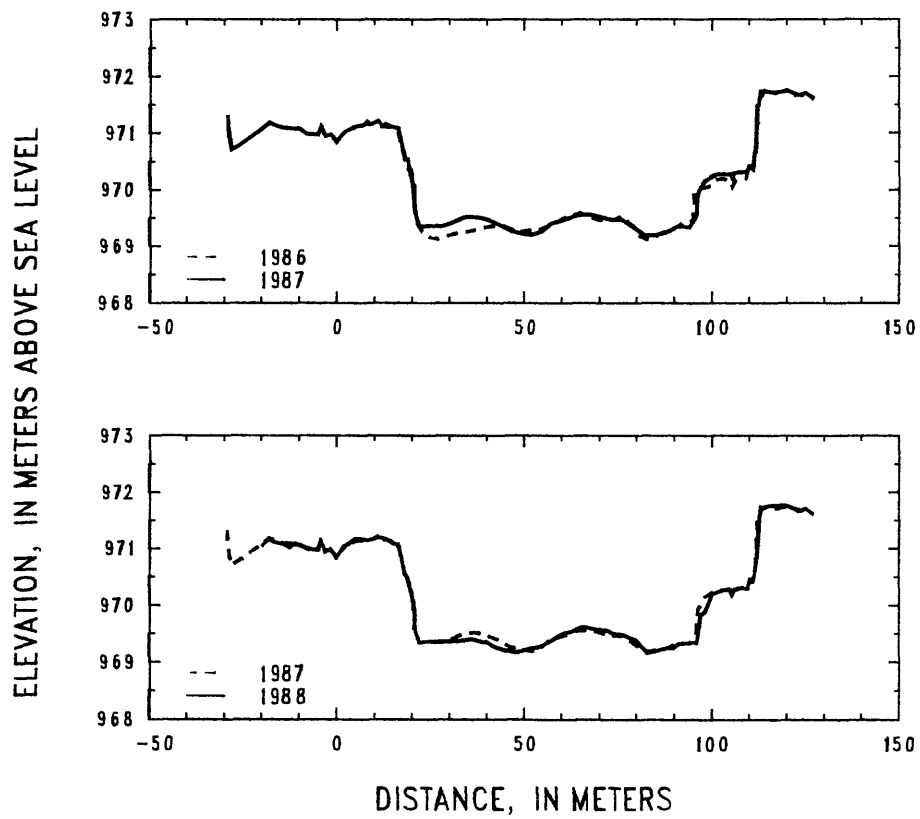


Figure 59.--Profiles of cross section PR156 from 1986 to 1988.

Table 20.--Listing of horizontal stations and elevations for cross section PR156
[Sta., station, distance in meters from a reference point on
the left bank; Elev., elevation, in meters above sea level].

1977		1977		1978		1978		1979	
Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
-1.6	970.78	84.0	968.97	-11.0	971.05	66.0	969.57	-10.0	971.05
0.0	970.54	86.0	968.92	-9.5	971.07	68.0	969.50	-8.0	970.98
2.0	970.73	87.2	969.15	-8.0	970.97	70.0	969.49	-6.0	970.99
4.0	970.84	87.8	969.65	-6.0	971.04	72.0	969.49	-4.2	971.13
6.0	970.84	88.0	970.49	-5.0	970.94	74.0	969.55	-2.0	970.98
8.0	970.82	89.7	971.06	-4.2	971.12	76.0	969.54	0.0	970.82
10.0	970.83	90.1	971.40	-3.0	970.94	78.0	969.53	2.0	971.03
12.0	970.87	92.0	971.61	-2.0	970.97	80.0	969.54	4.0	971.08
14.0	970.92	94.0	971.60	-1.0	970.97	82.0	969.52	6.0	971.15
16.0	970.83	96.0	971.54	0.0	970.82	84.0	969.49	8.0	971.12
18.0	970.72	98.0	971.53	2.0	971.01	86.0	969.49	10.0	971.18
20.0	970.59	100.0	971.48	4.0	971.08	88.0	969.48	12.0	971.10
22.0	970.61	101.8	971.42	6.0	971.15	90.0	969.45	14.0	971.08
24.0	970.71			8.0	971.11	92.0	969.37	15.5	971.06
26.0	970.39			10.0	971.17	94.0	969.32	18.0	970.56
27.1	970.15			12.0	971.07	95.5	969.46	20.0	970.14
28.0	970.13			14.0	971.08	98.0	969.54	22.0	969.50
30.0	970.03			16.8	971.05	100.2	969.65	24.0	969.23
31.7	969.76			17.7	970.76	100.4	969.44	26.0	969.15
34.0	969.71			18.0	970.53	100.6	969.42	28.0	969.16
36.0	969.67			18.5	970.34	102.0	969.33	30.0	969.11
38.0	969.68			19.8	970.18	103.5	969.39	33.0	969.15
40.0	969.68			21.2	969.79	105.0	969.23	36.0	969.15
42.0	969.61			22.4	969.30	107.0	969.18	39.0	969.14
44.0	969.56			24.0	969.20	108.6	969.43	42.0	969.20
46.0	969.52			26.0	969.21	110.0	970.42	45.0	969.23
48.0	969.45			28.0	969.23	111.0	970.31	48.0	969.32
50.0	969.35			30.0	969.30	111.6	970.45	51.0	969.35
52.0	969.26			32.0	969.33	112.3	971.51	54.0	969.35
54.0	969.24			34.0	969.37	114.0	971.73	57.0	969.37
56.0	969.22			36.0	969.40	116.0	971.76	60.0	969.49
58.0	969.15			38.0	969.43	120.0	971.76	61.4	969.62
59.0	969.03			40.0	969.41	123.0	971.72	64.0	969.58
60.0	968.97			42.0	969.34	126.0	971.62	67.0	969.49
62.0	968.96			44.0	969.26	127.0	971.58	70.0	969.46
64.0	968.90			46.0	969.27			73.0	969.51
66.0	968.88			48.0	969.28			76.0	969.48
68.0	968.87			50.0	969.24			79.0	969.48
70.0	968.91			52.0	969.24			82.0	969.39
72.0	968.95			54.0	969.25			85.0	969.36
74.0	968.93			56.0	969.32			87.0	969.38
76.0	969.03			58.0	969.42			89.0	969.45
78.0	969.01			60.0	969.49			90.0	969.42
80.0	969.00			62.0	969.57			92.0	969.34
82.0	968.99			64.0	969.55			94.0	969.19

Table 20.--Listing of horizontal stations and elevations for cross section PR156 --Continued.

1979		1980		1980		1982		1984	
Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
96.0	969.25	-4.2	971.12	111.0	970.35	-4.2	971.12	-4.2	971.11
98.0	969.23	-1.6	970.92	111.6	970.49	-1.6	970.96	-3.0	970.93
100.0	969.07	0.0	970.83	112.3	971.45	0.0	970.82	-1.6	970.93
102.0	969.17	2.0	971.03	114.0	971.76	3.0	971.02	0.0	970.83
104.0	969.03	5.0	971.12	117.0	971.71	6.0	971.16	1.0	970.88
105.0	969.11	8.0	971.13	118.0	971.76	10.0	971.15	2.0	971.03
106.0	969.33	10.0	971.18	120.0	971.76	14.0	971.09	4.0	971.08
108.0	969.73	12.0	971.11	122.0	971.68	16.0	971.04	6.0	971.16
109.0	969.83	14.0	971.10	125.0	971.65	19.0	970.36	8.0	971.12
110.0	970.32	16.0	971.05	127.0	971.59	20.0	970.40	11.0	971.22
111.6	970.46	18.0	970.54			21.0	970.03	13.0	971.13
112.4	971.49	20.0	970.10			21.5	969.55	15.0	971.07
114.0	971.73	21.0	969.87			23.0	969.21	16.0	971.04
116.0	971.76	21.1	969.67			25.0	969.11	17.0	970.83
118.0	971.74	22.0	969.49			30.0	969.18	18.0	970.55
120.0	971.75	23.0	969.24			35.0	969.06	18.5	970.40
122.0	971.68	25.0	969.30			40.0	969.24	19.5	970.44
124.0	971.66	30.0	969.34			45.0	969.17	19.9	970.38
126.0	971.62	35.0	969.41			48.0	969.35	20.6	970.02
127.0	971.59	40.0	969.44			50.0	969.18	21.0	969.61
		45.0	969.27			55.0	969.24	22.0	969.30
		50.0	969.24			60.0	969.50	24.0	969.39
		55.0	969.27			63.0	969.60	27.0	969.40
		61.0	969.59			66.0	969.57	29.0	969.50
		65.0	969.54			70.0	969.47	29.3	969.55
		70.0	969.46			75.0	969.49	31.0	969.63
		75.0	969.46			80.0	969.31	33.0	969.66
		80.0	969.25			85.0	969.10	35.0	969.61
		83.0	969.34			90.0	969.11	36.0	969.49
		87.0	969.42			95.0	969.30	37.0	969.54
		89.0	969.42			97.0	969.33	38.0	969.63
		91.0	969.40			100.0	969.75	39.0	969.59
		94.0	969.21			105.0	969.75	41.0	969.21
		97.0	969.24			107.0	969.95	43.0	969.06
		100.0	969.19			110.0	970.22	45.0	969.09
		101.0	969.11			111.5	970.52	50.0	969.14
		102.0	969.49			112.0	971.22	54.0	969.26
		103.0	969.48			114.0	971.80	55.0	969.33
		104.0	969.20			117.0	971.74	60.0	969.52
		105.5	969.12			120.0	971.74	62.0	969.56
		105.9	969.32			123.0	971.68	65.0	969.56
		107.0	969.45			127.0	971.60	70.0	969.55
		107.4	969.72					73.0	969.50
		109.2	969.91					76.0	969.48
		110.0	970.34					77.5	969.41

Table 20.--Listing of horizontal stations and elevations for cross section PR156 --Continued.

1984		1985		1985		1986		1986	
Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
77.8	969.47	-10.0	971.05	99.0	969.86	-4.2	971.12	91.0	969.36
79.5	969.44	-5.0	970.96	99.7	970.24	-3.0	970.95	93.0	969.42
81.0	969.28	-4.2	971.12	102.0	970.13	-1.6	970.95	94.9	969.45
82.0	969.08	-3.0	970.93	104.5	970.11	0.0	970.84	95.3	969.96
83.5	969.05	-1.6	970.97	105.4	969.80	2.0	971.03	96.0	970.01
85.0	969.12	0.0	970.84	105.8	970.08	5.0	971.12	98.0	970.04
88.0	969.14	2.0	971.02	107.0	970.17	7.0	971.15	100.0	970.08
90.0	969.25	4.0	971.07	109.3	970.13	10.0	971.17	101.0	970.17
92.0	969.30	7.0	971.10	111.2	970.45	12.0	971.11	103.0	970.19
94.0	969.31	10.0	971.16	111.8	970.79	14.0	971.11	105.0	970.13
96.1	969.34	13.0	971.16	112.4	971.34	16.0	971.05	105.4	970.04
96.5	969.51	16.0	971.04	113.0	971.48	17.0	970.83	106.0	970.16
96.5	970.37	17.0	970.87	113.7	971.75	18.8	970.36	107.0	970.19
98.0	970.35	18.0	970.56	115.0	971.76	19.8	970.35	109.0	970.19
100.0	970.19	20.0	970.20	117.0	971.73	20.6	970.04	110.0	970.43
102.5	970.10	20.8	969.91	121.0	971.73	20.9	969.55	111.0	970.35
104.0	970.12	21.2	969.51	124.0	971.67	21.5	969.38	111.8	970.78
106.0	970.11	22.0	969.36	127.0	971.61	23.0	969.23	112.0	971.46
108.0	970.13	24.0	969.33			25.0	969.14	114.0	971.75
109.4	970.15	27.0	969.33			27.0	969.12	115.0	971.72
111.1	970.39	30.0	969.35			30.0	969.19	117.0	971.71
111.9	970.78	33.0	969.37			33.0	969.25	120.0	971.75
112.4	971.44	36.0	969.40			36.0	969.27	122.0	971.67
113.6	971.69	39.0	969.38			39.0	969.32	124.0	971.67
115.0	971.76	42.0	969.24			42.0	969.37	127.0	971.60
117.0	971.70	45.0	969.19			45.0	969.33		
120.0	971.75	48.0	969.21			48.0	969.24		
123.0	971.65	51.0	969.30			51.0	969.28		
125.0	971.70	54.0	969.33			54.0	969.29		
127.0	971.61	57.0	969.39			57.0	969.37		
		61.0	969.53			60.0	969.48		
		64.0	969.55			63.0	969.54		
		67.0	969.53			64.8	969.59		
		71.0	969.53			66.0	969.55		
		74.0	969.50			69.0	969.47		
		77.0	969.41			72.0	969.46		
		80.0	969.41			74.0	969.47		
		81.0	969.22			76.0	969.53		
		83.0	969.08			79.0	969.36		
		86.0	969.13			80.4	969.24		
		89.0	969.16			81.0	969.16		
		92.0	969.25			83.0	969.10		
		95.0	969.38			85.0	969.16		
		96.0	969.47			86.6	969.24		
		97.0	969.55			89.0	969.25		

Table 20.--Listing of horizontal stations and elevations for cross section PR156 --Continued.

1987		1987		1988		1988	
Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
-29.5	971.31	70.0	969.52	-20.0	971.04	66.0	969.62
-28.0	970.70	73.0	969.46	-18.0	971.16	68.0	969.59
-25.0	970.83	76.0	969.47	-16.0	971.09	70.0	969.56
-20.0	971.07	79.0	969.34	-14.0	971.08	72.0	969.56
-18.0	971.19	82.0	969.19	-12.6	971.01	74.0	969.49
-15.0	971.10	85.0	969.19	-11.0	971.09	76.0	969.49
-10.0	971.07	88.0	969.24	-8.0	971.00	78.0	969.44
-8.0	970.98	91.0	969.35	-5.0	970.97	80.0	969.38
-5.0	970.97	94.0	969.33	-4.2	971.13	81.0	969.29
-4.2	971.12	95.9	969.53	-3.0	970.94	82.0	969.23
-3.0	970.94	96.2	969.94	-1.6	970.99	83.0	969.16
-1.6	970.98	98.0	970.16	0.0	970.83	84.0	969.18
0.0	970.85	99.6	970.22	2.0	971.04	86.0	969.21
2.0	971.02	101.0	970.27	3.0	971.06	88.0	969.25
5.0	971.13	103.0	970.28	5.0	971.17	89.8	969.25
7.0	971.14	104.9	970.27	7.0	971.15	91.0	969.32
8.0	971.20	105.4	970.20	9.0	971.14	93.0	969.34
9.0	971.14	106.0	970.29	11.0	971.20	95.0	969.35
11.0	971.22	107.0	970.31	13.0	971.17	96.0	969.34
12.0	971.11	109.4	970.31	15.0	971.08	97.0	969.84
13.0	971.16	110.0	970.42	16.3	971.07	98.0	969.88
15.0	971.10	111.0	970.41	17.0	970.91	99.0	970.03
16.3	971.08	111.7	970.77	18.0	970.59	100.0	970.20
17.0	970.89	112.0	971.48	19.0	970.46	101.0	970.22
18.2	970.53	112.5	971.50	20.0	970.16	103.0	970.28
18.9	970.53	113.0	971.74	20.7	969.92	104.6	970.29
19.8	970.17	115.0	971.72	20.8	969.57	105.4	970.18
20.3	970.03	117.0	971.71	22.0	969.33	106.0	970.27
20.7	969.59	118.0	971.72	24.0	969.36	108.0	970.31
22.0	969.34	120.0	971.75	27.0	969.37	109.5	970.30
25.0	969.36	123.0	971.67	30.0	969.36	110.2	970.46
28.0	969.34	125.0	971.71	33.0	969.38	111.0	970.42
31.0	969.42	127.0	971.61	36.0	969.41	111.4	970.52
34.0	969.51			39.0	969.35	112.0	970.87
37.0	969.52			40.0	969.35	112.5	971.47
40.0	969.47			42.0	969.26	113.0	971.69
43.0	969.38			45.0	969.20	114.0	971.75
46.0	969.27			48.0	969.16	116.0	971.77
49.0	969.22			51.0	969.23	118.0	971.76
52.0	969.19			54.0	969.26	120.0	971.77
55.0	969.27			57.0	969.36	122.0	971.71
57.0	969.40			60.0	969.50	124.0	971.68
61.0	969.48			62.0	969.53	125.0	971.71
64.0	969.55			64.0	969.58	127.0	971.62
67.0	969.57			65.0	969.61		

Description of Cross Section PR163

Location: Township 6 South/Range 50 East--section 32
U.S. Geological Survey quadrangle (1:24,000): Yarger Butte

Landowners--left bank: Gay Ranch
 right bank: Gay Ranch

Access: left bank

Permission from: Gay Ranch (T7S/R49E--20)

Reference pins

Station (meters)	Elevation (meters above sea level)	Comments
		Pin -73.0 was closest to leveling instrument.
-73.0	965.431	0.14 meter above 1987 ground level.
75.0	964.417	0.15 meter above 1987 ground level.
110.9	964.549	0.15 meter above 1987 ground level.

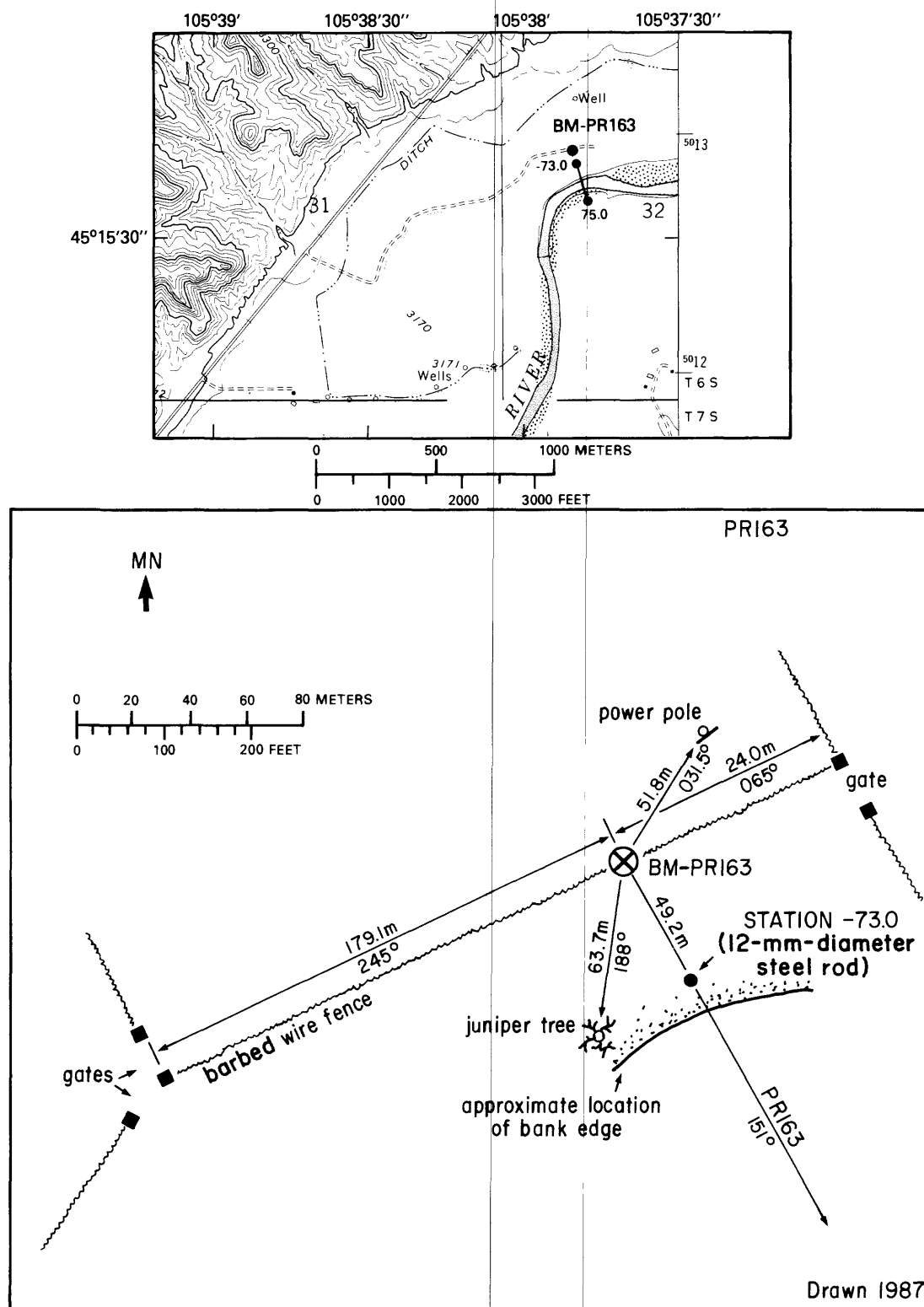


Figure 60.--Upper: Location of cross section PR163, bench mark BM-PR163, and left and right bank reference pins (tables 2 and 3) in the Yarger Butte quadrangle. Lower: Location of bench mark on the left bank. MN is magnetic north.

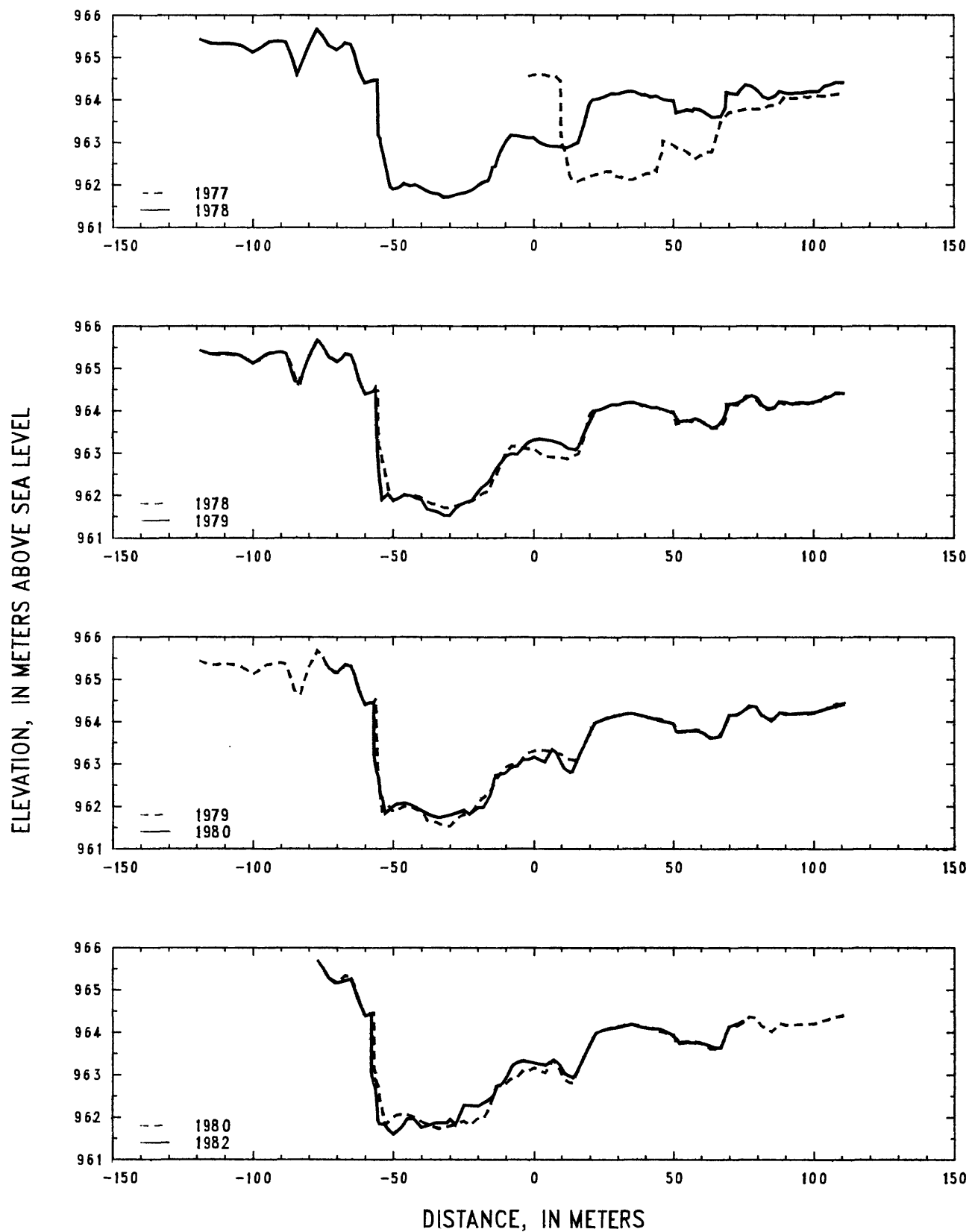


Figure 61.--Profiles of cross section PR163 from 1977 to 1982.

ELEVATION, IN METERS ABOVE SEA LEVEL

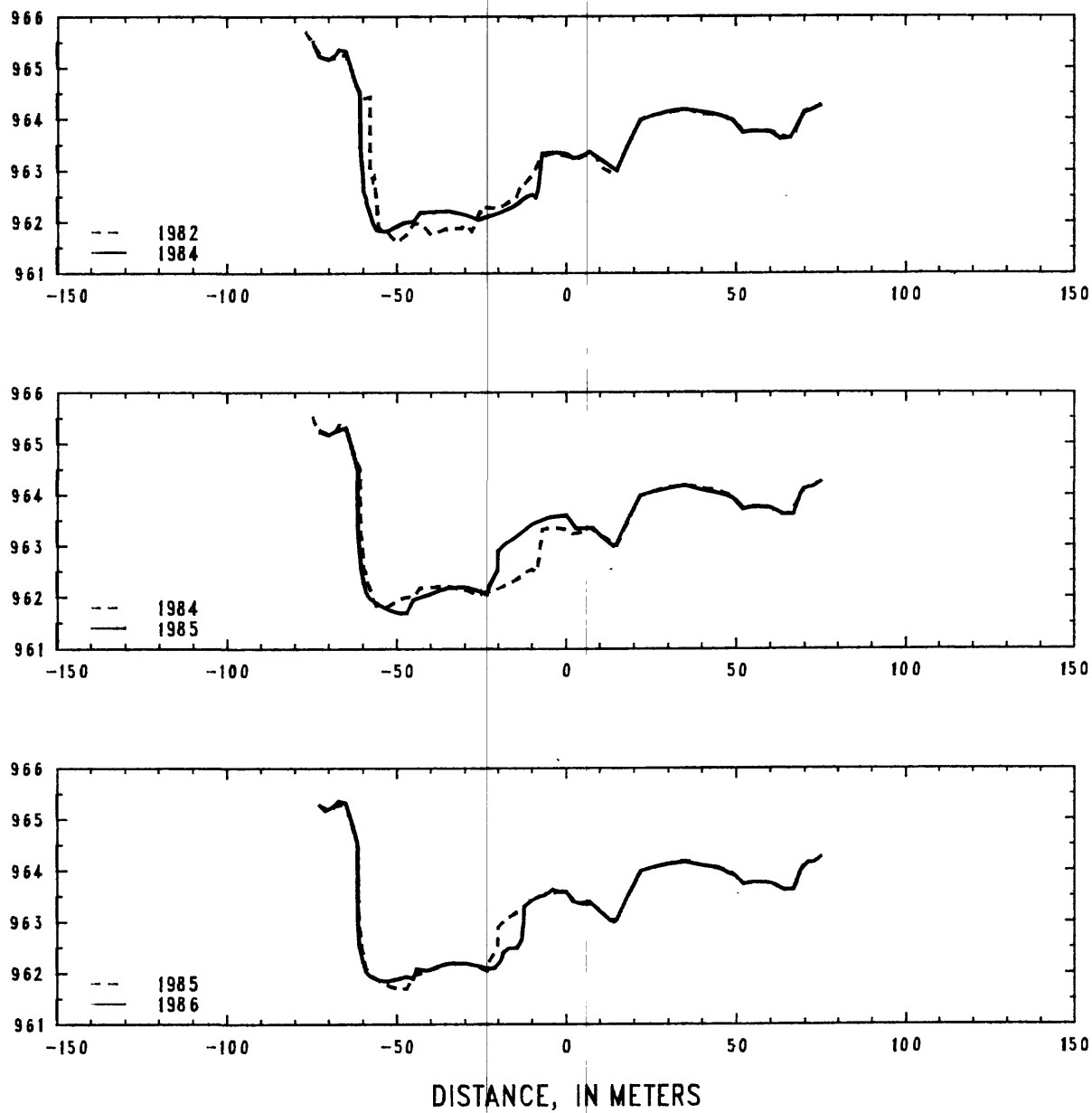


Figure 62.--Profiles of cross section PR163 from 1982 to 1986.

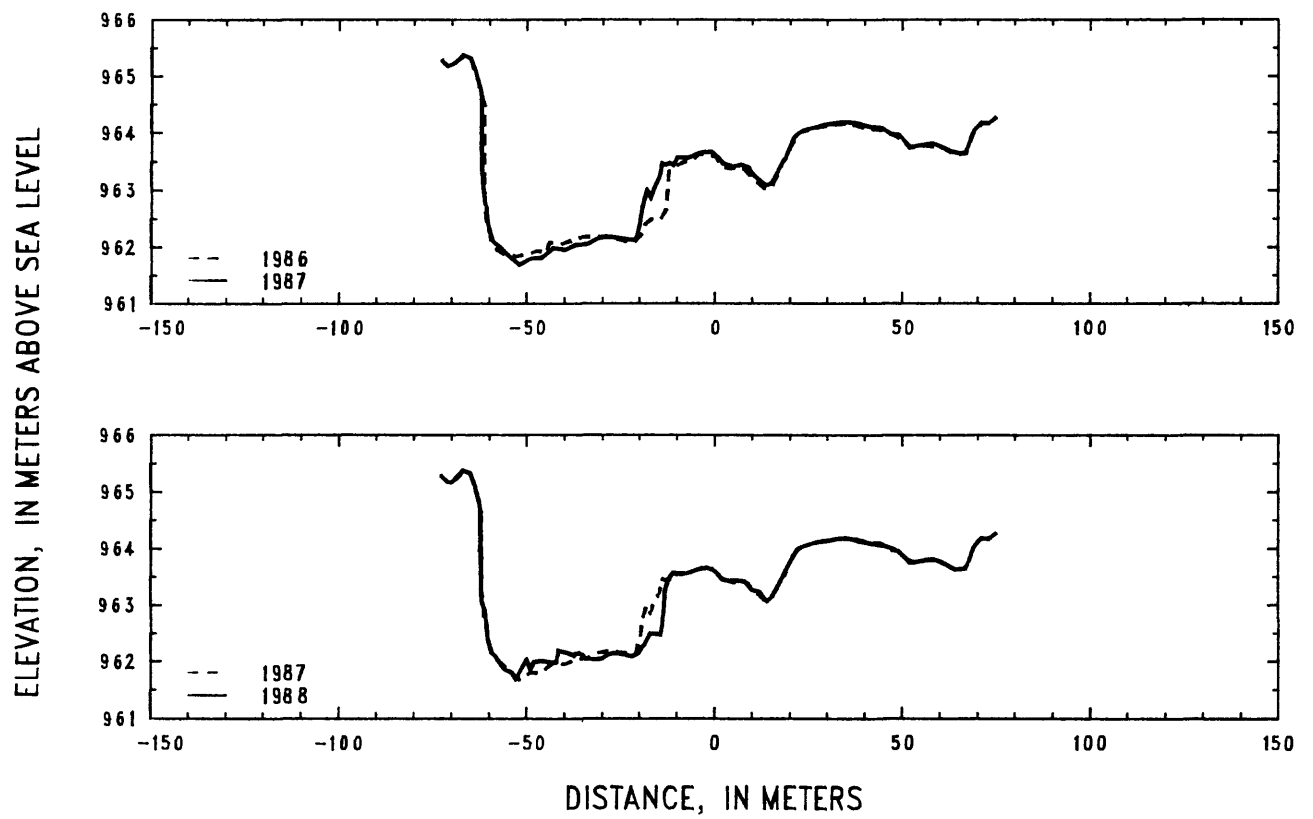


Figure 63.--Profiles of cross section PR163 from 1986 to 1988.

Table 21.--Listing of horizontal stations and elevations for cross section PR163
[Sta., station, distance in meters from a reference point on
the left bank; Elev., elevation, in meters above sea level].

1977		1977		1978		1978		1978	
Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
-1.6	964.56	67.1	963.48	-119.0	965.44	-24.0	961.82	68.8	963.81
0.0	964.59	70.0	963.70	-115.0	965.34	-22.0	961.88	69.2	964.18
2.0	964.58	72.0	963.73	-112.0	965.33	-20.0	961.97	70.0	964.16
4.0	964.60	74.0	963.75	-108.0	965.34	-18.0	962.06	73.0	964.12
6.0	964.55	76.0	963.78	-104.0	965.29	-16.0	962.11	74.0	964.22
8.0	964.56	78.0	963.79	-100.0	965.12	-15.0	962.30	76.0	964.35
9.8	964.45	80.0	963.78	-97.0	965.24	-14.6	962.41	78.0	964.33
9.8	963.18	82.0	963.78	-94.0	965.38	-13.5	962.44	80.0	964.23
10.1	963.20	84.0	963.85	-90.0	965.40	-12.0	962.75	82.0	964.07
10.3	962.95	86.0	963.87	-88.0	965.36	-10.0	963.00	84.0	964.02
11.1	962.85	88.0	963.91	-86.0	965.03	-8.0	963.17	86.0	964.07
12.6	962.37	90.0	964.09	-84.0	964.60	-6.0	963.15	88.0	964.19
13.0	962.23	92.0	964.03	-82.0	964.93	-2.0	963.10	90.0	964.15
14.0	962.10	94.0	964.04	-80.0	965.28	0.0	963.11	92.0	964.14
15.0	962.07	96.0	964.09	-77.0	965.67	2.0	962.99	94.0	964.17
16.0	962.08	98.0	964.05	-75.0	965.52	4.0	962.93	96.0	964.15
18.0	962.14	100.0	964.11	-73.0	965.29	6.0	962.90	98.0	964.19
20.0	962.20	102.0	964.09	-70.0	965.17	8.0	962.90	100.0	964.19
22.0	962.24	104.0	964.09	-68.0	965.27	10.0	962.89	102.0	964.20
24.0	962.29	110.8	964.16	-67.0	965.35	12.0	962.86	104.0	964.33
26.0	962.31			-65.0	965.31	14.0	962.93	106.0	964.35
28.0	962.31			-64.0	965.16	16.0	962.99	108.0	964.41
29.0	962.21			-62.0	964.67	18.0	963.39	110.9	964.40
30.0	962.19			-60.0	964.40	20.0	963.91		
32.0	962.17			-57.0	964.47	21.0	964.00		
34.0	962.12			-55.5	964.47	24.0	964.04		
36.0	962.12			-55.4	963.17	28.0	964.15		
38.0	962.20			-54.6	963.10	30.0	964.14		
40.0	962.25			-54.5	962.98	34.0	964.20		
42.0	962.27			-53.8	962.80	36.0	964.20		
43.0	962.36			-52.2	962.30	39.0	964.11		
44.0	962.31			-51.0	961.94	40.0	964.12		
44.1	962.37			-50.0	961.89	42.0	964.06		
45.4	962.65			-48.0	961.93	44.0	964.09		
46.2	962.76			-46.0	962.03	46.0	964.01		
46.3	963.03			-44.0	961.97	48.0	963.98		
48.0	962.98			-42.0	962.00	50.0	963.97		
50.0	962.92			-40.0	961.93	51.0	963.69		
52.0	962.83			-38.0	961.85	55.0	963.77		
54.0	962.80			-36.0	961.80	57.0	963.74		
56.0	962.71			-34.0	961.78	57.6	963.79		
58.0	962.61			-32.0	961.70	60.0	963.76		
60.0	962.69			-30.0	961.71	64.0	963.58		
62.0	962.77			-28.0	961.76	67.1	963.61		
64.0	962.78			-26.0	961.80	68.0	963.72		

Table 21.--Listing of horizontal stations and elevations for cross section PR163 --Continued.

1979		1979		1979		1980		1980	
Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
-119.0	965.44	-16.0	962.32	82.0	964.11	-75.0	965.52	14.0	962.82
-115.0	965.34	-14.0	962.58	84.0	964.05	-73.0	965.27	16.0	963.15
-110.0	965.37	-12.0	962.76	86.0	964.07	-71.0	965.16	18.0	963.44
-105.0	965.33	-10.0	962.93	88.0	964.22	-70.0	965.15	21.0	963.88
-100.0	965.13	-8.0	962.99	90.0	964.20	-69.0	965.22	22.0	963.98
-95.0	965.35	-6.0	962.97	92.0	964.16	-67.0	965.34	25.0	964.06
-90.0	965.40	-4.0	963.13	94.0	964.18	-65.0	965.31	30.0	964.15
-88.0	965.35	-2.0	963.26	96.0	964.20	-64.0	965.14	35.0	964.20
-85.0	964.70	0.0	963.31	98.0	964.17	-62.0	964.67	40.0	964.11
-83.0	964.65	2.0	963.34	100.0	964.21	-60.0	964.39	43.0	964.06
-82.0	964.93	4.0	963.32	102.0	964.24	-59.0	964.44	46.0	964.00
-80.0	965.29	6.0	963.29	104.0	964.31	-57.0	964.46	49.8	963.95
-77.0	965.68	8.0	963.26	106.0	964.34	-56.9	963.17	51.0	963.75
-75.0	965.52	10.0	963.22	108.0	964.43	-56.0	962.84	55.0	963.78
-73.0	965.27	12.0	963.12	110.9	964.40	-55.0	962.63	59.0	963.77
-70.0	965.15	15.0	963.08			-54.8	962.30	61.0	963.72
-68.0	965.26	16.0	963.17			-54.0	962.19	63.0	963.61
-67.0	965.36	19.0	963.60			-53.0	961.83	65.0	963.62
-65.0	965.31	21.0	963.89			-51.0	961.95	67.0	963.65
-64.0	965.15	22.0	964.01			-49.0	962.05	69.0	964.00
-62.0	964.67	24.0	964.04			-46.0	962.08	70.0	964.15
-60.0	964.39	28.0	964.15			-43.0	962.01	73.0	964.16
-57.0	964.47	30.0	964.15			-40.0	961.89	75.0	964.25
-56.3	964.55	34.0	964.20			-37.0	961.79	77.0	964.37
-55.6	962.90	36.0	964.19			-34.0	961.73	79.5	964.34
-55.0	962.42	40.0	964.12			-31.0	961.78	81.0	964.17
-54.0	961.90	42.0	964.07			-28.0	961.84	85.0	964.01
-52.0	962.04	45.0	964.06			-25.0	961.91	88.0	964.21
-50.0	961.87	48.0	963.99			-23.0	961.81	90.0	964.17
-48.0	961.94	50.0	963.94			-20.0	961.97	95.0	964.19
-46.0	962.01	52.0	963.74			-18.0	961.98	100.0	964.21
-44.0	962.00	54.0	963.77			-15.8	962.24	105.0	964.32
-42.0	961.93	56.0	963.77			-13.6	962.73	110.9	964.41
-40.0	961.89	58.0	963.82			-10.0	962.79		
-38.0	961.67	60.0	963.77			-8.0	962.92		
-36.0	961.63	62.0	963.67			-6.0	962.95		
-34.0	961.60	64.0	963.60			-4.0	963.10		
-32.0	961.52	66.0	963.64			-2.0	963.10		
-30.0	961.53	68.0	963.80			0.0	963.16		
-28.0	961.69	70.0	964.16			2.0	963.08		
-26.0	961.79	73.0	964.18			4.0	963.04		
-24.0	961.85	75.0	964.25			6.6	963.34		
-22.0	961.89	76.0	964.31			8.0	963.27		
-20.0	962.07	78.0	964.36			11.0	962.88		
-19.0	962.16	80.0	964.30			13.0	962.80		

Table 21.--Listing of horizontal stations and elevations for cross section PR163 --Continued.

1982		1982		1984		1984		1985	
Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
-77.0	965.70	22.0	963.98	-75.0	965.53	7.0	963.36	-73.0	965.28
-75.0	965.51	25.0	964.06	-73.0	965.23	10.0	963.21	-70.0	965.17
-73.0	965.28	30.0	964.12	-72.0	965.20	12.0	963.13	-68.0	965.25
-70.0	965.16	35.0	964.19	-70.0	965.16	15.0	962.99	-65.0	965.31
-65.0	965.26	40.0	964.09	-68.0	965.25	17.0	963.30	-61.4	964.49
-62.0	964.68	45.0	964.07	-67.0	965.36	20.0	963.72	-61.3	963.31
-60.0	964.39	49.0	963.95	-65.0	965.32	22.0	963.98	-60.3	962.49
-57.9	964.43	51.0	963.83	-63.0	964.90	25.0	964.06	-59.0	962.08
-57.9	963.04	52.0	963.73	-62.0	964.68	30.0	964.15	-58.0	961.97
-57.7	962.96	55.0	963.76	-61.0	964.51	35.0	964.19	-55.0	961.84
-57.0	962.79	60.0	963.75	-60.8	964.48	45.0	964.07	-52.0	961.74
-56.7	962.85	65.0	963.62	-60.6	963.27	49.0	963.97	-49.0	961.68
-56.2	962.52	67.0	963.63	-60.0	962.91	52.0	963.73	-47.0	961.70
-56.0	962.43	69.0	964.01	-59.8	962.57	55.0	963.76	-45.0	961.95
-55.5	961.91	70.0	964.14	-59.1	962.46	60.0	963.75	-41.0	962.04
-55.0	961.84	75.0	964.26	-58.9	962.35	63.0	963.61	-39.0	962.09
-53.0	961.83			-58.0	962.20	66.0	963.63	-35.0	962.19
-52.0	961.72			-57.0	961.96	68.0	963.86	-30.0	962.20
-50.0	961.59			-56.0	961.84	70.0	964.12	-26.0	962.12
-47.0	961.76			-55.0	961.82	75.0	964.26	-23.5	962.05
-45.0	961.96			-53.0	961.81			-22.5	962.26
-43.0	961.97			-50.0	961.92			-20.2	962.53
-40.0	961.75			-48.0	961.99			-20.0	962.90
-35.0	961.87			-45.0	962.01			-18.0	963.04
-31.0	961.87			-43.0	962.18			-15.0	963.16
-30.0	961.95			-42.0	962.18			-10.0	963.43
-28.0	961.81			-40.0	962.20			-5.0	963.56
-25.0	962.29			-39.0	962.19			0.0	963.60
-20.0	962.26			-38.0	962.21			3.0	963.34
-16.0	962.42			-35.0	962.22			8.0	963.35
-14.5	962.50			-33.0	962.18			10.0	963.20
-13.0	962.74			-29.0	962.12			14.0	962.99
-12.0	962.74			-26.0	962.03			15.0	963.04
-10.0	962.91			-24.0	962.09			18.0	963.48
-7.6	963.22			-20.0	962.17			22.0	963.99
-6.0	963.29			-15.0	962.32			25.0	964.05
-4.0	963.33			-12.0	962.48			30.0	964.13
0.0	963.27			-10.0	962.54			35.0	964.19
4.0	963.22			-9.0	962.48			40.0	964.09
7.0	963.35			-8.2	962.64			45.0	964.03
9.0	963.25			-7.0	963.33			49.0	963.94
11.0	963.02			-3.0	963.35			52.0	963.72
14.0	962.92			0.0	963.32			55.0	963.77
15.0	963.01			2.0	963.23			60.0	963.75
20.0	963.72			4.0	963.26			64.0	963.61

Table 21.--Listing of horizontal stations and elevations for cross section PR163 --Continued.

1985		1986		1986		1987		1987	
Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
67.0	963.63	-73.0	965.28	15.0	963.05	-73.0	965.29	9.0	963.38
69.0	964.03	-71.0	965.16	16.0	963.19	-71.0	965.17	10.0	963.26
70.0	964.12	-69.0	965.24	18.0	963.48	-69.0	965.24	13.5	963.07
73.0	964.17	-67.0	965.35	20.0	963.73	-67.0	965.37	15.0	963.11
75.0	964.26	-65.0	965.31	22.0	963.99	-65.0	965.30	16.0	963.23
		-63.0	964.90	25.0	964.05	-64.0	965.15	18.0	963.50
		-61.8	964.63	30.0	964.13	-62.1	964.69	18.6	963.53
		-61.4	964.48	35.0	964.17	-62.0	963.26	19.7	963.71
		-61.3	963.01	40.0	964.08	-61.1	962.75	21.0	963.91
		-60.8	962.49	45.0	964.04	-60.7	962.70	23.0	964.03
		-60.0	962.26	47.0	963.96	-60.5	962.49	26.0	964.09
		-59.0	962.02	50.0	963.88	-60.3	962.40	29.0	964.14
		-58.0	961.95	52.0	963.73	-59.0	962.09	32.0	964.17
		-56.0	961.87	55.0	963.77	-57.0	961.98	35.0	964.19
		-53.0	961.83	60.0	963.75	-55.0	961.85	38.0	964.16
		-50.0	961.88	62.0	963.68	-52.0	961.68	41.0	964.10
		-47.0	961.93	64.0	963.61	-49.0	961.80	44.0	964.09
		-45.0	961.89	66.8	963.63	-46.0	961.81	47.0	963.97
		-44.0	962.08	68.0	963.83	-43.0	961.98	49.0	963.95
		-41.0	962.05	69.0	964.01	-40.0	961.95	49.6	963.92
		-38.0	962.13	71.0	964.16	-37.0	962.04	52.0	963.74
		-35.0	962.19	73.0	964.16	-34.0	962.05	55.0	963.78
		-32.0	962.19	75.0	964.27	-31.0	962.16	58.0	963.81
		-29.0	962.19			-28.0	962.19	61.0	963.73
		-26.0	962.13			-25.0	962.15	63.0	963.66
		-23.0	962.08			-22.0	962.12	65.0	963.63
		-21.0	962.10			-21.0	962.13	66.8	963.64
		-19.2	962.24			-20.0	962.38	68.0	963.86
		-18.5	962.40			-19.2	962.73	69.0	964.03
		-17.0	962.48			-18.0	962.98	71.0	964.18
		-14.4	962.49			-17.0	962.85	73.0	964.17
		-13.1	962.64			-16.0	963.06	75.0	964.27
		-12.4	963.07			-14.6	963.24		
		-12.3	963.31			-14.0	963.47		
		-10.0	963.43			-13.0	963.43		
		-8.0	963.49			-12.0	963.47		
		-6.0	963.52			-11.0	963.42		
		-4.0	963.63			-10.0	963.56		
		-2.0	963.58			-7.0	963.56		
		0.0	963.58			-4.0	963.65		
		2.0	963.40			-1.0	963.66		
		4.0	963.36			1.0	963.54		
		7.0	963.39			2.0	963.45		
		10.0	963.20			5.0	963.39		
		13.0	963.02			7.0	963.44		

Table 21.--Listing of horizontal stations and elevations for cross section PR163 --Continued.

1988		1988		1988	
Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
-73.0	965.29	-14.4	962.47	69.0	964.02
-71.0	965.17	-14.0	962.61	71.0	964.18
-70.0	965.16	-13.3	962.97	73.0	964.17
-68.0	965.27	-13.2	963.26	75.0	964.27
-67.0	965.38	-12.0	963.49		
-65.0	965.32	-11.0	963.57		
-64.0	965.15	-9.0	963.54		
-63.0	964.90	-7.0	963.56		
-62.3	964.71	-5.0	963.62		
-62.0	963.14	-2.0	963.67		
-61.7	963.01	0.0	963.60		
-61.0	962.90	2.0	963.45		
-60.5	962.41	4.0	963.42		
-59.4	962.15	6.0	963.43		
-58.5	962.10	8.0	963.41		
-57.7	962.01	10.0	963.27		
-56.0	961.86	12.0	963.23		
-54.0	961.81	13.0	963.12		
-53.0	961.68	14.0	963.06		
-51.0	961.92	15.0	963.12		
-50.0	962.03	17.0	963.36		
-49.0	961.85	19.0	963.63		
-48.0	961.99	21.0	963.89		
-46.0	962.01	22.0	963.99		
-44.0	961.98	24.0	964.06		
-42.1	961.98	27.0	964.11		
-41.7	962.09	30.0	964.14		
-41.6	962.20	33.0	964.18		
-39.0	962.14	36.0	964.18		
-37.4	962.09	39.0	964.11		
-37.0	962.13	42.0	964.08		
-36.0	962.15	45.0	964.04		
-35.0	962.09	48.0	963.98		
-34.6	962.04	50.0	963.88		
-32.0	962.02	51.0	963.81		
-30.0	962.05	53.0	963.75		
-29.0	962.10	55.0	963.78		
-27.0	962.15	58.0	963.82		
-24.5	962.12	60.0	963.77		
-22.0	962.08	62.0	963.70		
-20.5	962.13	64.0	963.62		
-20.0	962.18	65.0	963.63		
-19.5	962.24	66.4	963.64		
-18.7	962.28	67.0	963.68		
-17.1	962.49	68.0	963.83		

Description of Cross Section PR167

Location: Township 6 South/Range 50 East--section 28
U.S. Geological Survey quadrangle (1:24,000): Lonesome Peak

Landowners--left bank: Gay Ranch
right bank Gay Ranch

Access: right bank, across Daily Ranch

Permission from: John Daily (T6S/R50E--22)

Reference pins

Station (meters)	Elevation (meters above sea level)	Comments
		Pins 150.0 and 150.6 were closest to leveling instrument.
-1.6	959.633	0.06 meter above 1987 ground level.
150.0	959.489	0.04 meter above 1987 ground level.
150.6	959.615	0.18 meter above 1987 ground level.

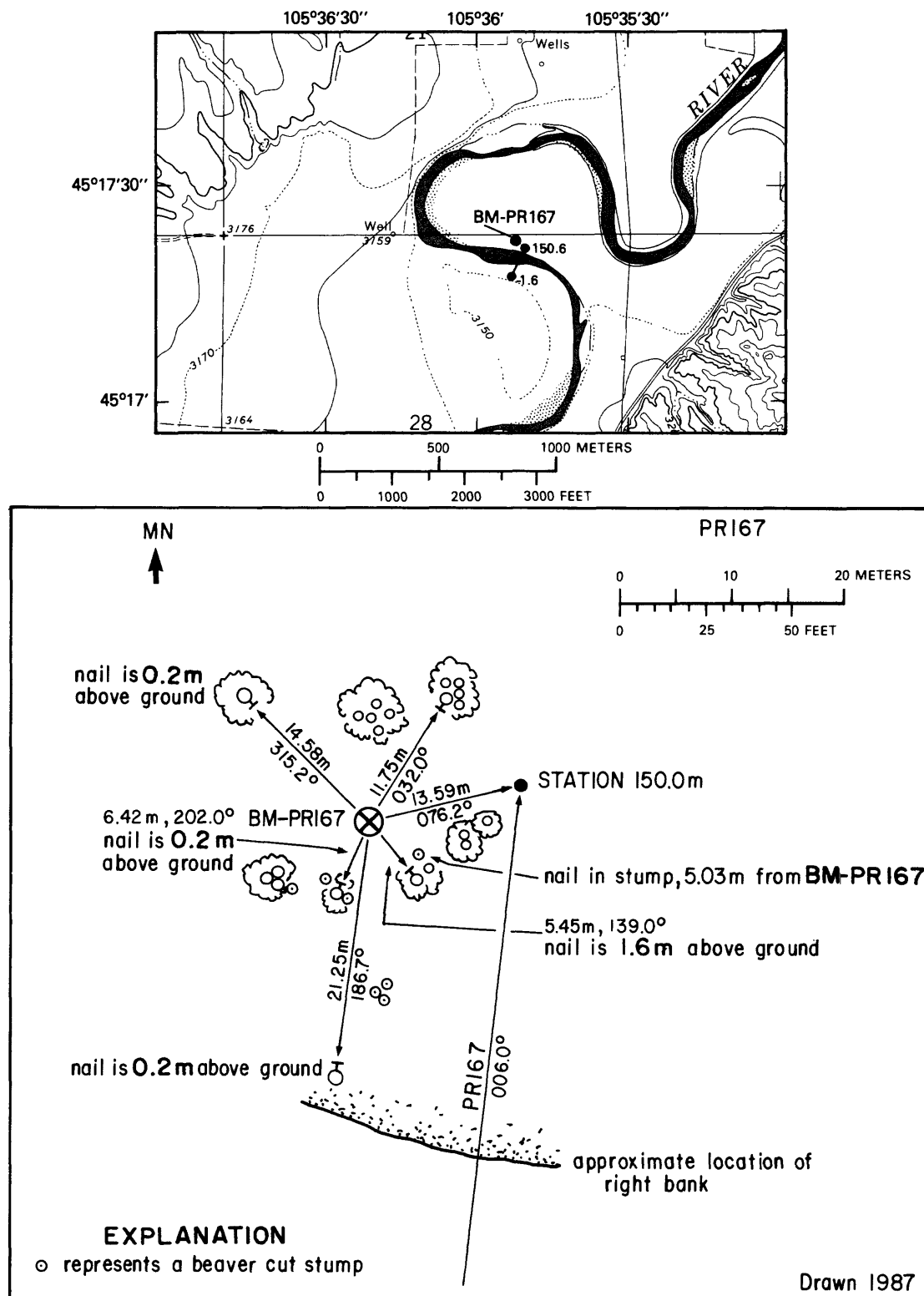


Figure 64.--Upper: Location of cross section PR167, bench mark BM-PR167, and left and right bank reference pins (tables 2 and 3) in the Lonesome Peak quadrangle. Lower: Location of bench mark on the left bank. MN is magnetic north.

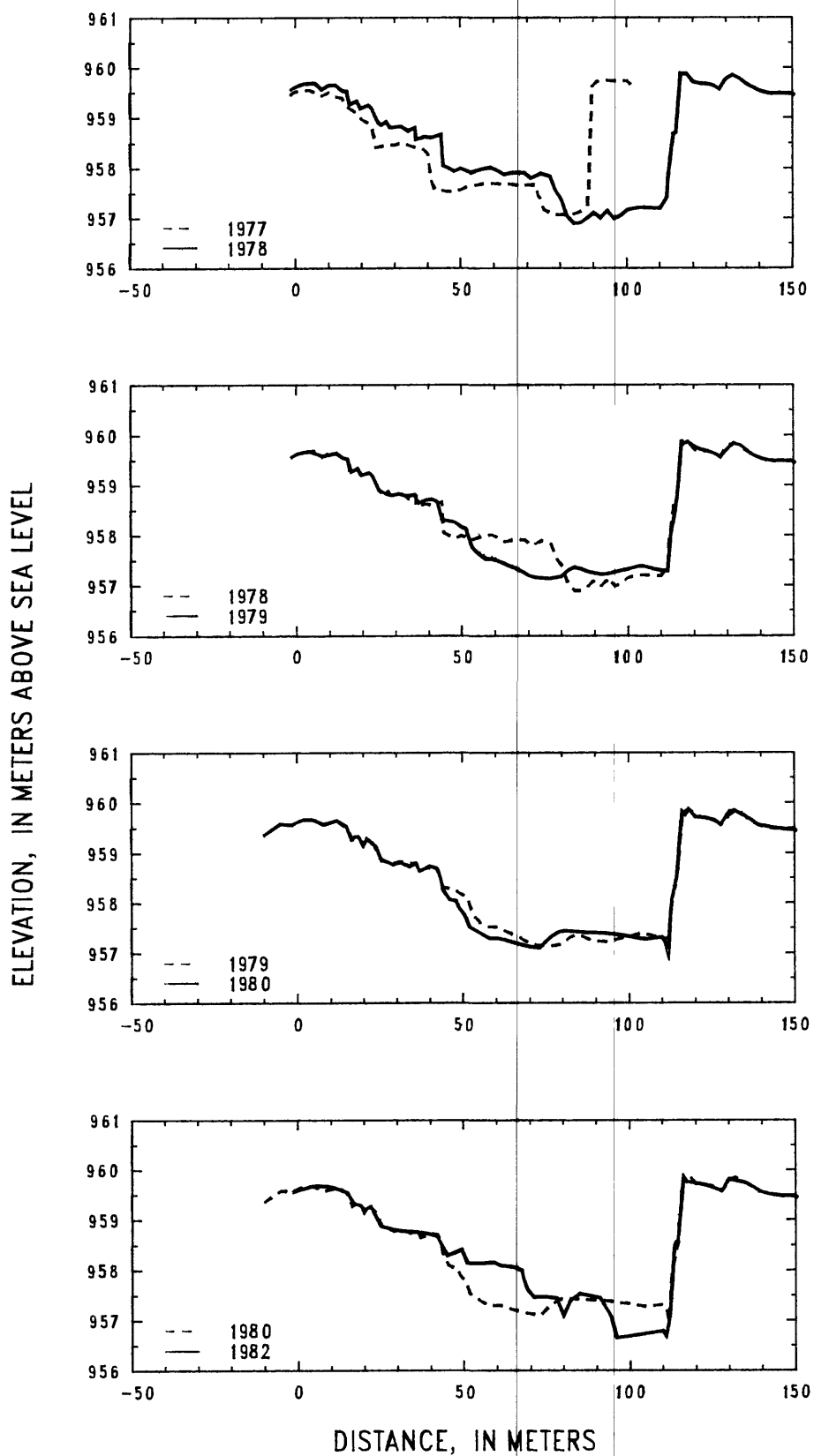


Figure 65.--Profiles of cross section PR167 from 1977 to 1982.

ELEVATION, IN METERS ABOVE SEA LEVEL

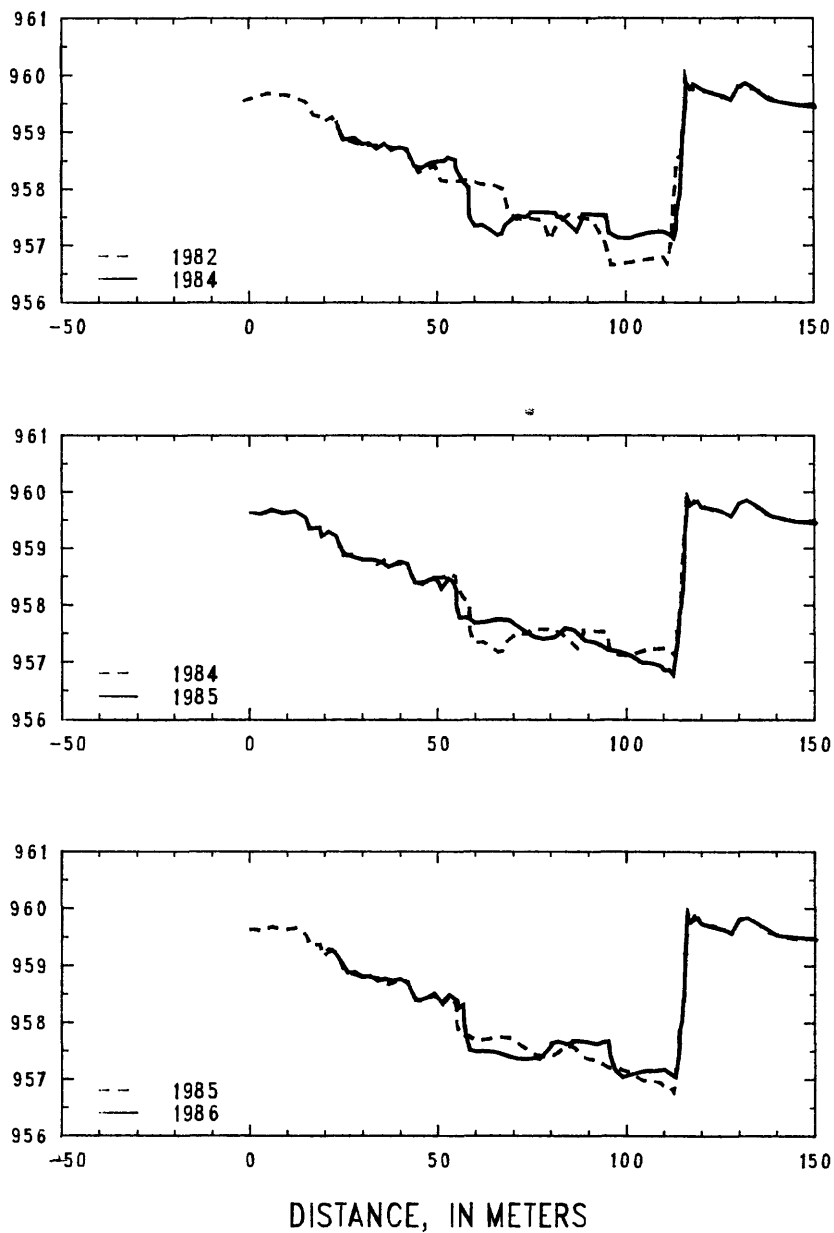


Figure 66.--Profiles of cross section PR167 from 1982 to 1986.

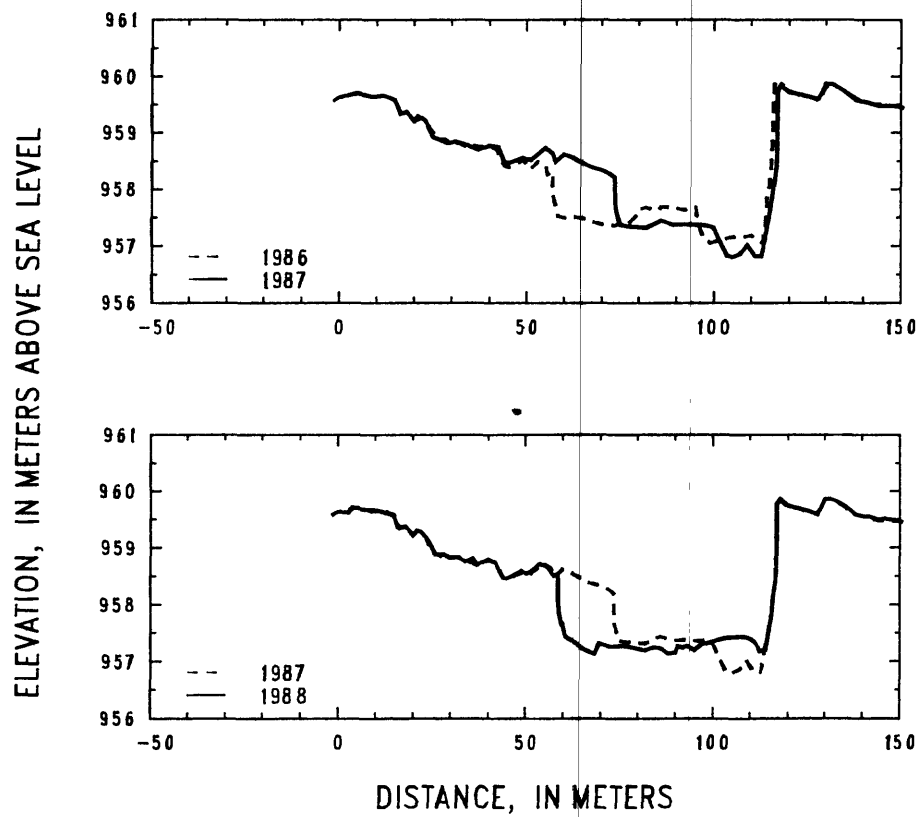


Figure 67.--Profiles of cross section PR167 from 1986 to 1988.

Table 22.--Listing of horizontal stations and elevations for cross section PR167
[Sta., station, distance in meters from a reference point on
the left bank; Elev., elevation, in meters above sea level].

1977		1977		1978		1978		1979	
Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
-1.6	959.45	79.0	957.05	-1.6	959.56	84.0	956.89	-1.6	959.56
0.0	959.52	81.0	957.06	0.0	959.62	86.0	956.90	0.0	959.62
2.0	959.54	83.0	957.06	2.0	959.67	88.0	956.99	2.0	959.66
4.0	959.55	85.0	957.09	4.0	959.69	90.0	957.10	4.0	959.68
6.0	959.50	87.0	957.16	6.0	959.69	92.0	956.99	6.0	959.63
8.0	959.43	88.0	957.25	8.0	959.56	94.0	957.14	8.0	959.57
10.0	959.50	88.4	957.41	10.0	959.65	96.0	956.98	10.0	959.61
12.0	959.41	89.6	959.62	12.0	959.66	98.0	957.04	12.0	959.64
14.0	959.38	91.0	959.71	14.0	959.54	100.0	957.16	14.0	959.54
16.0	959.18	93.0	959.74	15.4	959.52	102.0	957.19	15.4	959.52
18.0	959.10	95.0	959.73	16.3	959.26	104.0	957.21	16.6	959.26
20.0	958.96	97.0	959.72	18.6	959.33	106.0	957.21	18.6	959.34
22.0	958.87	100.0	959.73	19.6	959.18	108.0	957.19	19.7	959.20
23.3	958.77	101.6	959.63	22.0	959.25	110.0	957.19	22.0	959.25
24.4	958.40			23.0	959.19	112.0	957.40	23.0	959.20
26.0	958.43			25.0	958.89	112.4	957.83	25.0	958.89
28.0	958.47			26.0	958.85	114.0	958.68	27.0	958.82
30.0	958.45			27.5	958.92	114.8	958.70	29.0	958.79
32.0	958.50			28.5	958.80	115.5	959.30	31.0	958.83
34.0	958.45			30.0	958.81	116.2	959.88	33.0	958.78
36.0	958.41			32.0	958.83	118.0	959.87	36.0	958.80
38.0	958.40			34.0	958.73	120.0	959.71	37.0	958.63
40.0	958.27			36.2	958.80	122.0	959.67	39.0	958.70
41.0	957.74			36.5	958.56	124.0	959.67	41.0	958.72
42.0	957.57			39.0	958.62	126.0	959.64	42.5	958.66
44.0	957.55			41.0	958.60	128.0	959.56	44.0	958.31
46.0	957.52			44.0	958.67	130.0	959.77	46.0	958.28
48.0	957.54			44.6	958.04	132.0	959.85	48.0	958.25
50.0	957.56			46.0	958.00	134.0	959.78	50.0	958.15
52.0	957.62			48.0	957.93	136.0	959.67	51.3	958.12
54.0	957.65			50.0	957.99	138.0	959.60	53.0	957.76
56.0	957.67			53.0	957.90	140.0	959.53	55.0	957.62
58.0	957.69			56.0	957.98	142.0	959.49	57.0	957.52
60.0	957.68			59.0	958.01	144.0	959.47	60.0	957.51
62.0	957.67			61.0	957.94	146.0	959.49	62.0	957.45
64.0	957.67			63.0	957.86	148.0	959.48	64.0	957.39
66.0	957.65			65.0	957.90	150.0	959.47	66.0	957.34
68.0	957.64			67.0	957.91	150.6	959.44	68.0	957.27
70.0	957.65			69.0	957.90			70.0	957.19
72.5	957.65			71.0	957.79			72.0	957.15
73.3	957.43			74.0	957.89			74.0	957.14
73.8	957.41			76.9	957.82			76.0	957.13
74.0	957.31			78.5	957.54			78.0	957.15
75.0	957.16			80.0	957.39			80.0	957.18
77.0	957.08			82.0	957.03			82.0	957.30

Table 22.--Listing of horizontal stations and elevations for cross section PR167 --Continued.

1979		1980		1980		1982		1982	
Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
84.0	957.36	-10.0	959.35	100.0	957.32	-1.6	959.56	123.0	959.69
86.0	957.32	-5.0	959.58	105.0	957.26	5.0	959.69	128.0	959.57
88.0	957.26	-1.6	959.56	110.0	957.31	10.0	959.66	130.0	959.81
90.0	957.24	0.0	959.62	111.0	957.21	15.0	959.54	135.0	959.74
92.0	957.21	2.0	959.67	111.9	956.96	17.0	959.31	140.0	959.54
94.0	957.23	5.0	959.66	112.4	957.59	19.0	959.28	145.0	959.48
96.0	957.26	8.0	959.56	112.8	958.03	20.0	959.19	150.0	959.48
98.0	957.30	12.0	959.65	113.3	958.14	22.0	959.27	150.6	959.44
100.0	957.32	14.8	959.53	114.5	958.53	25.0	958.88		
102.0	957.36	16.4	959.26	115.4	959.30	30.0	958.78		
104.0	957.39	17.6	959.33	116.1	959.82	35.0	958.76		
106.0	957.36	18.6	959.33	117.0	959.75	39.0	958.72		
108.0	957.31	20.0	959.14	118.0	959.87	42.0	958.67		
110.0	957.29	21.0	959.29	120.0	959.71	45.0	958.29		
112.0	957.28	23.7	959.13	123.0	959.69	49.5	958.41		
113.0	958.05	25.5	958.84	126.0	959.64	51.0	958.14		
114.0	958.35	27.0	958.83	127.8	959.55	55.0	958.13		
115.0	958.82	29.0	958.76	130.5	959.82	59.0	958.16		
116.2	959.80	31.0	958.81	132.0	959.84	61.0	958.09		
118.0	959.87	34.0	958.72	135.0	959.72	65.0	958.06		
120.0	959.76	36.0	958.79	137.0	959.65	67.5	957.99		
122.0	959.70	37.0	958.64	139.0	959.55	67.7	957.89		
124.0	959.68	40.0	958.73	142.0	959.51	69.0	957.62		
126.0	959.63	42.0	958.69	145.0	959.47	71.0	957.46		
128.0	959.55	43.0	958.55	150.0	959.45	74.0	957.48		
130.0	959.71	44.0	958.26	150.6	959.42	78.0	957.44		
132.0	959.83	46.0	958.06			80.0	957.09		
134.0	959.80	48.0	958.03			82.0	957.40		
136.0	959.68	49.0	957.88			85.0	957.54		
138.0	959.59	50.0	957.80			88.0	957.49		
140.0	959.53	51.0	957.69			91.0	957.45		
142.0	959.49	52.0	957.51			94.0	957.11		
144.0	959.47	55.0	957.40			95.0	956.92		
146.0	959.48	58.0	957.29			96.0	956.65		
148.0	959.47	61.0	957.29			110.0	956.79		
150.0	959.47	65.0	957.20			111.0	956.68		
150.6	959.43	70.0	957.12			112.0	957.04		
		73.0	957.09			113.0	957.95		
		76.0	957.30			113.4	958.46		
		79.0	957.42			114.0	958.56		
		81.0	957.44			114.6	958.59		
		84.0	957.42			115.5	959.29		
		87.0	957.40			116.2	959.86		
		90.0	957.40			117.0	959.76		
		95.0	957.37			120.0	959.73		

Table 22.--Listing of horizontal stations and elevations for cross section PR167 --Continued.

1984		1984		1985		1985		1986	
Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
23.0	959.18	101.0	957.11	0.0	959.63	104.0	956.98	20.0	959.19
25.0	958.86	104.0	957.19	3.0	959.61	107.0	956.97	22.0	959.27
28.0	958.89	107.0	957.23	6.0	959.68	109.0	956.93	24.0	959.10
30.0	958.78	110.0	957.24	9.0	959.62	110.0	956.86	26.0	958.87
32.0	958.80	112.0	957.17	12.0	959.66	111.5	956.86	28.0	958.88
34.0	958.70	112.7	957.11	15.0	959.54	112.5	956.77	30.0	958.79
36.0	958.79	113.2	957.23	16.0	959.35	114.0	957.60	32.0	958.81
38.0	958.68	113.6	957.63	18.6	959.37	114.3	957.90	34.0	958.73
40.0	958.73	114.5	957.90	19.3	959.21	114.6	957.96	36.0	958.77
42.0	958.69	115.0	958.81	21.0	959.29	115.4	958.46	38.0	958.73
44.0	958.39	115.9	959.50	23.0	959.21	115.6	959.27	40.0	958.76
46.0	958.36	116.0	959.91	25.0	958.91	115.9	959.45	42.0	958.69
48.0	958.45	116.2	959.83	27.0	958.85	116.3	959.89	44.0	958.41
50.0	958.48	117.0	959.75	30.0	958.79	116.9	959.76	45.0	958.39
52.0	958.49	118.0	959.84	33.0	958.79	119.0	959.84	47.0	958.43
53.0	958.55	120.0	959.75	35.0	958.75	120.0	959.72	49.0	958.51
54.9	958.50	123.0	959.68	37.0	958.66	123.0	959.69	51.0	958.35
55.0	958.36	126.0	959.63	40.0	958.76	126.0	959.63	53.0	958.49
57.0	958.11	128.0	959.56	42.0	958.71	127.9	959.56	55.2	958.38
58.5	958.01	130.0	959.79	44.0	958.39	130.0	959.78	55.6	958.25
58.6	957.54	132.0	959.85	46.0	958.39	132.0	959.85	56.8	958.31
59.1	957.43	135.0	959.72	49.0	958.47	135.0	959.73	57.2	957.89
60.0	957.33	138.0	959.57	50.0	958.42	138.0	959.58	58.4	957.51
62.0	957.35	140.0	959.53	51.0	958.28	141.0	959.52	60.0	957.48
64.0	957.26	145.0	959.47	53.0	958.46	144.0	959.47	63.0	957.50
66.0	957.17	150.0	959.44	54.0	958.41	147.0	959.46	66.0	957.46
67.0	957.19	150.6	959.43	55.0	958.26	150.0	959.47	68.0	957.41
68.0	957.35			55.1	957.98	150.6	959.43	70.0	957.37
69.5	957.43			56.0	957.77			73.0	957.35
70.7	957.50			58.0	957.77			76.0	957.38
71.6	957.52			60.0	957.68			77.0	957.36
73.0	957.49			63.0	957.70			77.7	957.42
74.0	957.50			66.0	957.75			80.0	957.58
75.0	957.58			69.0	957.73			80.2	957.64
78.0	957.58			71.7	957.60			82.0	957.67
81.5	957.56			75.0	957.45			84.0	957.62
82.0	957.49			78.0	957.40			85.6	957.64
83.0	957.49			81.0	957.43			85.8	957.68
87.0	957.23			84.0	957.59			88.0	957.67
88.3	957.42			86.0	957.56			90.0	957.65
88.8	957.55			89.0	957.37			92.0	957.62
90.5	957.54			92.0	957.33			94.0	957.66
94.8	957.51			95.0	957.20			95.2	957.67
95.5	957.21			98.0	957.18			95.5	957.43
98.0	957.12			101.0	957.11			97.0	957.15

Table 22.--Listing of horizontal stations and elevations for cross section PR167 --Continued.

1986		1987		1987		1988		1988	
Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
99.0	957.04	-1.6	959.57	100.0	957.30	-1.6	959.58	68.4	957.12
102.0	957.11	0.0	959.63	101.5	957.08	0.0	959.63	69.6	957.32
105.0	957.16	5.0	959.71	103.5	956.81	3.0	959.61	72.0	957.26
108.0	957.15	9.0	959.63	105.0	956.79	4.0	959.71	74.0	957.26
110.0	957.18	12.0	959.66	107.0	956.85	7.0	959.67	76.0	957.28
112.0	957.09	15.0	959.57	109.0	957.01	10.0	959.66	78.0	957.25
113.0	957.04	16.5	959.33	111.0	956.81	13.0	959.60	80.0	957.22
113.9	957.43	18.0	959.37	112.8	956.80	15.0	959.55	82.0	957.19
114.2	957.87	20.0	959.20	115.0	957.61	16.0	959.36	84.0	957.25
114.6	957.97	21.0	959.29	116.8	958.45	18.0	959.38	86.0	957.23
115.2	958.34	23.0	959.21	117.0	959.76	20.0	959.21	88.0	957.13
115.5	958.76	25.0	958.91	118.0	959.83	21.0	959.31	90.0	957.15
115.8	959.45	27.0	958.86	120.0	959.71	22.0	959.28	90.6	957.27
116.2	959.89	29.0	958.80	122.0	959.70	24.0	959.12	92.0	957.24
116.5	959.81	31.0	958.84	125.0	959.64	26.0	958.88	93.0	957.28
117.0	959.76	34.0	958.78	128.0	959.60	28.0	958.89	95.0	957.20
118.0	959.87	37.0	958.69	130.0	959.87	30.0	958.81	97.0	957.31
120.0	959.73	40.0	958.78	132.0	959.86	32.0	958.84	99.0	957.33
123.0	959.67	42.5	958.74	135.0	959.73	34.0	958.75	101.1	957.38
126.0	959.63	44.0	958.47	138.0	959.58	35.0	958.78	103.0	957.41
128.0	959.57	45.0	958.46	141.0	959.54	36.0	958.81	105.5	957.43
130.0	959.81	47.0	958.50	144.0	959.47	37.0	958.69	107.0	957.43
132.0	959.84	49.0	958.56	147.0	959.48	38.0	958.73	109.0	957.43
135.0	959.74	51.0	958.51	150.0	959.45	40.0	958.79	110.4	957.38
140.0	959.53	53.0	958.62	150.6	959.43	42.0	958.73	111.4	957.32
145.0	959.49	55.0	958.73			44.0	958.46	112.5	957.18
150.0	959.46	57.0	958.63			45.0	958.45	114.0	957.20
150.6	959.45	57.8	958.48			47.0	958.52	114.5	957.38
		60.0	958.62			49.0	958.60	115.8	957.87
		62.0	958.56			50.4	958.53	116.1	958.16
		64.0	958.49			52.0	958.61	116.9	958.50
		67.0	958.39			54.0	958.71	117.0	959.78
		70.0	958.33			56.0	958.66	118.0	959.86
		72.0	958.28			57.7	958.50	119.0	959.79
		73.5	958.20			58.7	958.54	120.0	959.73
		73.8	957.62			58.8	958.10	122.0	959.71
		75.0	957.36			59.0	957.84	124.0	959.67
		77.0	957.33			59.7	957.64	126.0	959.63
		82.0	957.31			60.0	957.65	128.0	959.58
		83.0	957.34			60.3	957.53	130.0	959.86
		86.0	957.44			60.7	957.43	132.0	959.86
		89.0	957.36			61.7	957.39	134.0	959.78
		92.0	957.37			63.0	957.35	136.0	959.70
		95.0	957.36			65.0	957.23	138.0	959.59
		98.0	957.35			67.0	957.16	140.0	959.54

Table 22.--Listing of horizontal stations and elevations for cross section PR167 --Continued.

1988	
Sta.	Elev.
142.0	959.55
144.0	959.48
146.0	959.51
148.0	959.48
150.0	959.47
150.6	959.44

Description of Cross Section PR175

Location: Township 6 South/Range 50 East--section 15

U.S. Geological Survey quadrangle (1:24,000): Lonesome Peak

Landowners--left bank: Frances Rice

right bank: Frances Rice

Access: left bank

Permission from: Frances Rice (residence in Broadus)

Reference pins

Station (meters)	Elevation (meters above sea level)	Comments
		Pins at stations less than 200.0 were closest to leveling instrument.
-39.3	953.486	0.20 meter above 1980 ground level, on fenceline.
-1.7	953.653	0.08 meter above 1982 ground level.
-0.7	953.769	0.19 meter above 1982 ground level.
0.0	953.522	At 1982 ground level.
100.0	952.793	0.03 meter above 1987 ground level.
124.0	952.845	0.04 meter above 1987 ground level.
250.0	952.106	Bent over, possibly covered.
300.0	953.184	0.03 meter above 1987 ground level.
320.0	953.563	±0.03 meter, long level sight; 0.14 meter above 1987 ground level.

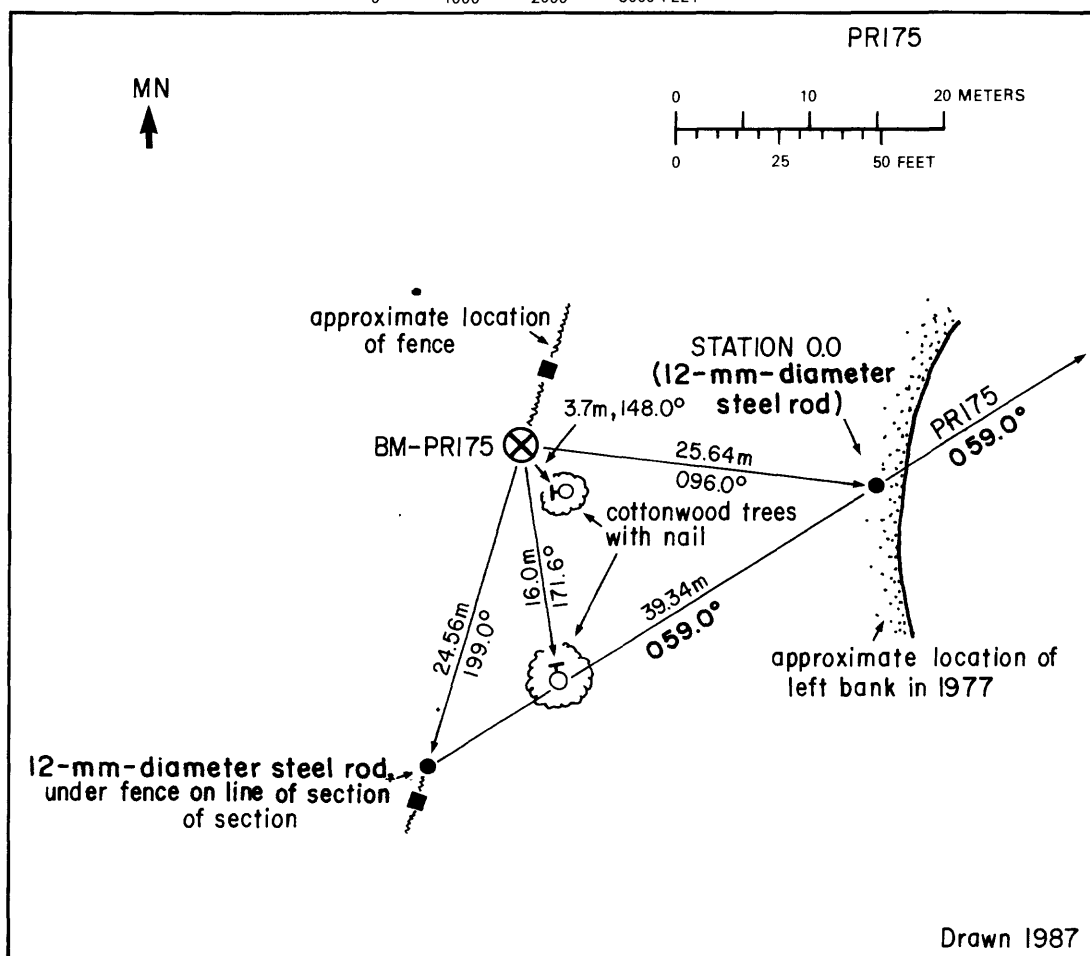
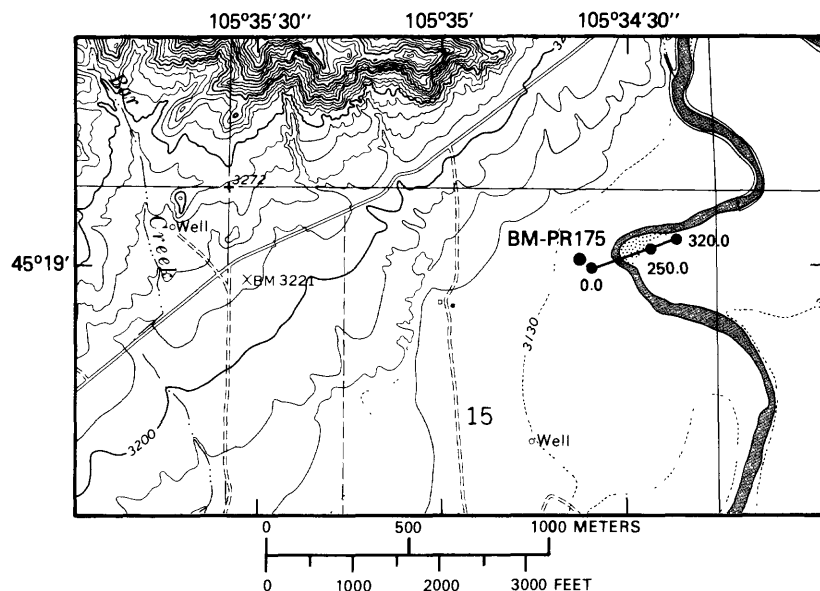


Figure 68.--Upper: Location of cross section PR175, bench mark BM-PR175, and left and right bank reference pins (tables 2 and 3) in the Lonesome Peak quadrangle. Lower: Location of bench mark on the left bank. MN is magnetic north.

ELEVATION, IN METERS ABOVE SEA LEVEL

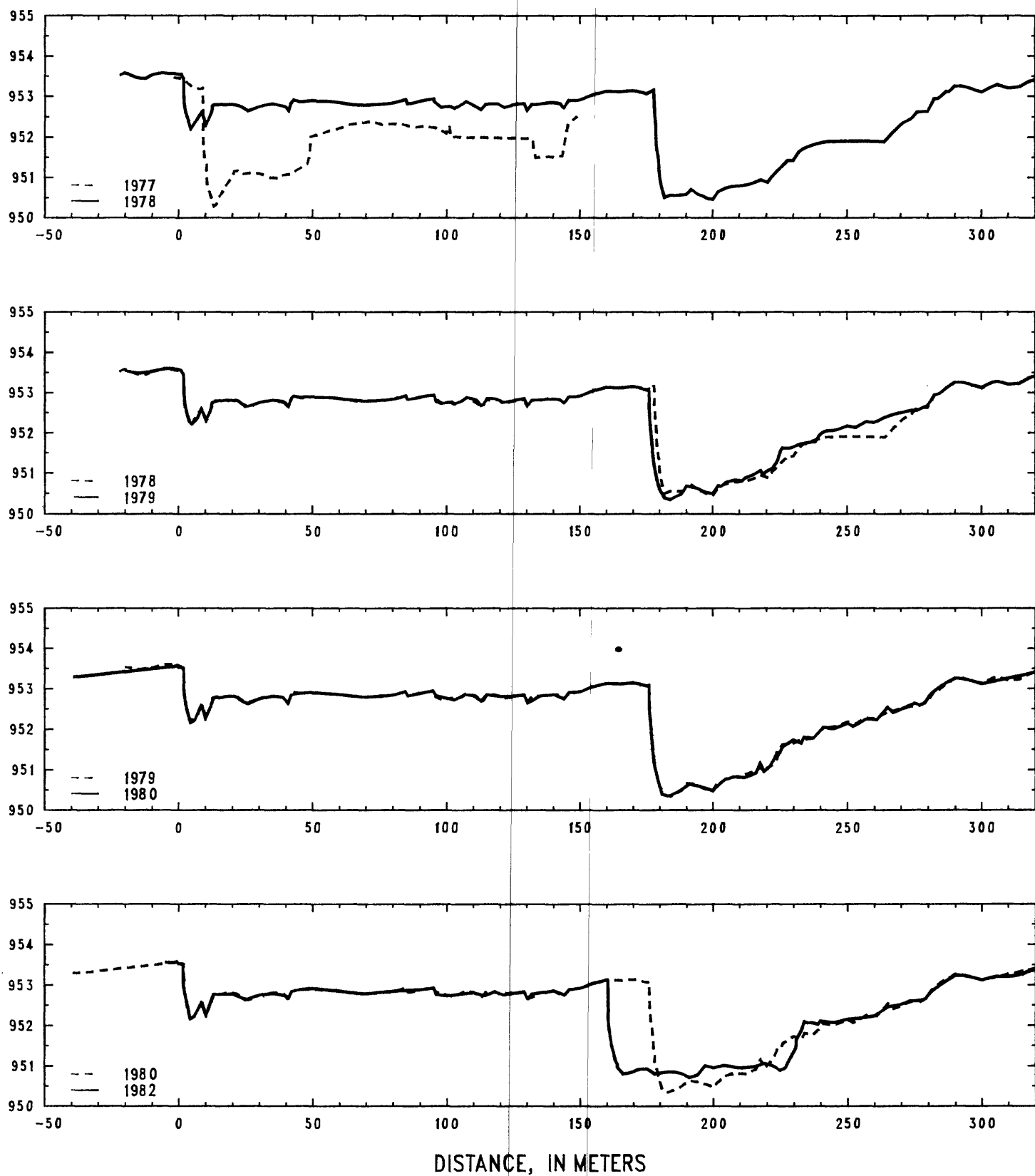


Figure 69.--Profiles of cross section PR175 from 1977 to 1982.

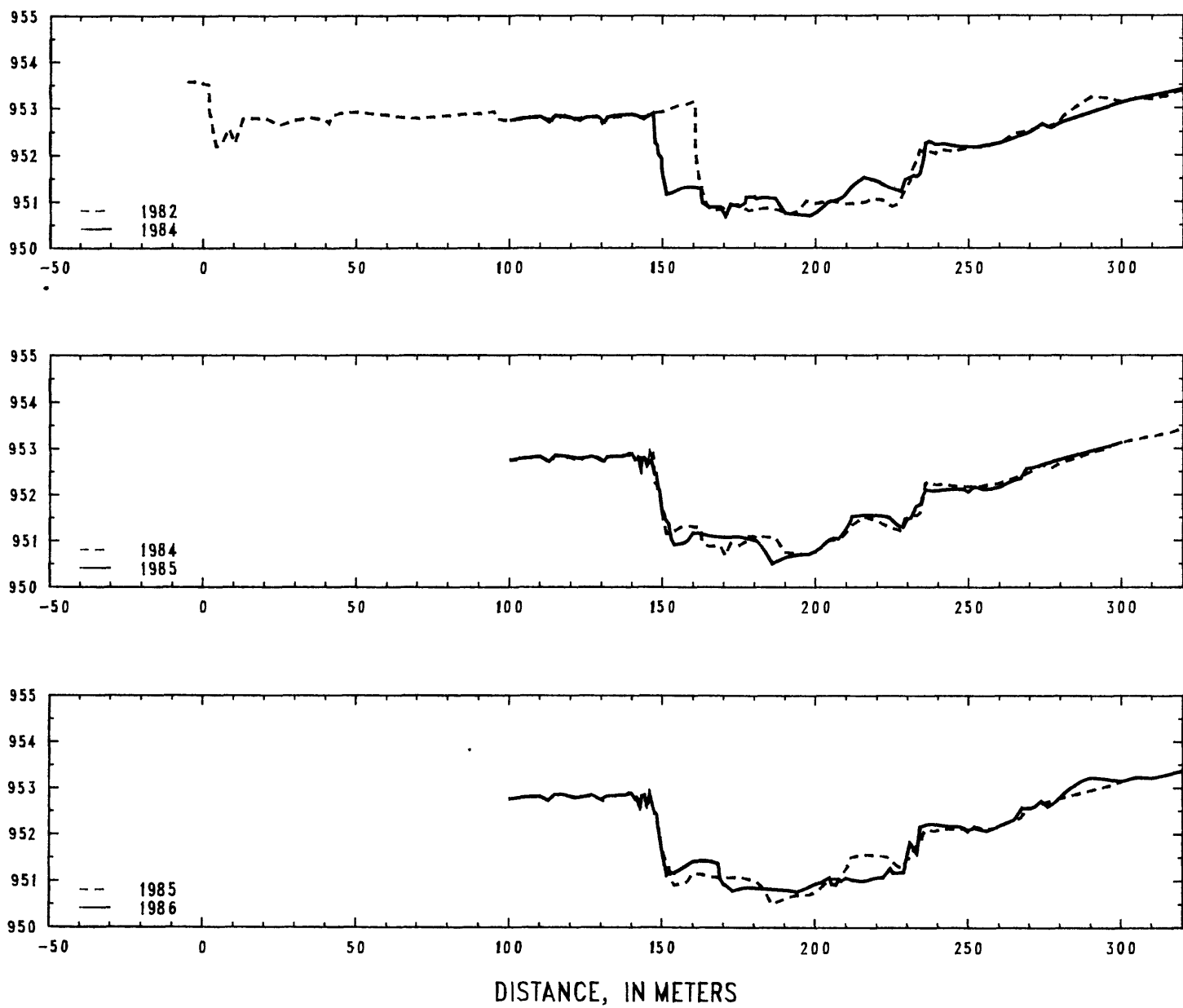


Figure 70.--Profiles of cross section PR175 from 1982 to 1986.

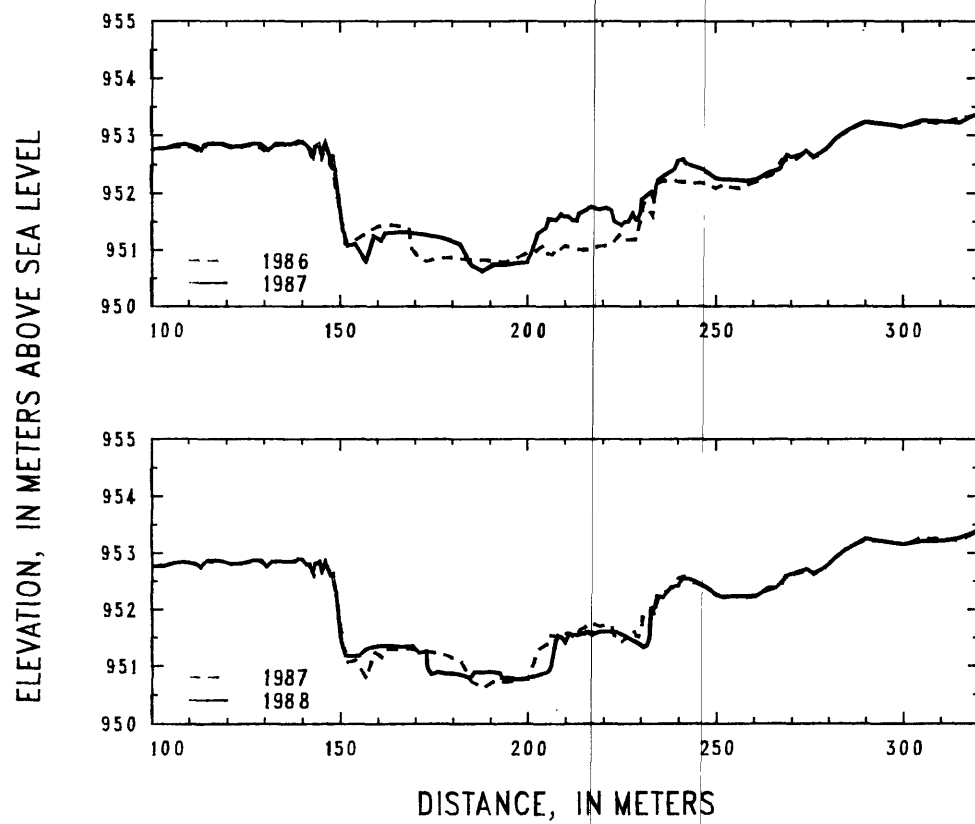


Figure 71.--Profiles of cross section PR175 from 1986 to 1988.

Table 23.--Listing of horizontal stations and elevations for cross section PR175
[Sta., station, distance in meters from a reference point on
the left bank; Elev., elevation, in meters above sea level].

1977		1977		1978		1978		1978	
Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
-1.7	953.46	76.0	952.30	-22.0	953.53	95.3	952.95	198.0	950.47
0.0	953.46	80.0	952.33	-20.2	953.58	95.4	952.87	200.0	950.45
2.0	953.42	84.0	952.30	-18.0	953.53	98.0	952.73	202.0	950.65
4.0	953.30	88.0	952.23	-16.0	953.47	100.0	952.75	204.0	950.71
6.0	953.20	92.0	952.26	-14.0	953.45	101.5	952.75	206.0	950.76
8.0	953.18	96.0	952.22	-12.0	953.45	103.1	952.70	210.0	950.80
9.0	953.21	100.0	952.09	-10.2	953.53	107.5	952.88	214.0	950.84
9.3	951.79	101.2	952.28	-8.0	953.57	113.0	952.67	218.0	950.95
9.8	951.41	101.6	952.00	-6.0	953.59	114.7	952.81	220.5	950.88
10.4	951.32	132.2	951.96	-4.0	953.57	116.0	952.82	221.5	950.98
10.6	950.90	133.3	951.49	-1.7	953.56	119.0	952.82	224.0	951.15
11.0	950.79	143.3	951.54	1.0	953.55	121.5	952.73	228.0	951.43
12.0	950.53	145.7	952.34	2.0	953.45	126.0	952.82	230.0	951.42
13.0	950.27	148.8	952.50	2.1	952.80	129.2	952.83	232.0	951.63
14.0	950.32			2.7	952.57	130.3	952.65	234.0	951.73
15.0	950.50			3.7	952.38	132.0	952.81	238.0	951.83
16.0	950.60			4.6	952.19	133.3	952.80	242.0	951.89
17.0	950.73			8.5	952.61	140.0	952.86	246.0	951.91
18.0	950.83			10.3	952.29	142.5	952.82	250.0	951.91
19.0	950.93			12.4	952.65	143.3	952.75	260.0	951.90
20.1	951.01			12.5	952.77	144.0	952.72	264.0	951.89
20.8	951.16			13.0	952.79	145.7	952.91	268.0	952.18
22.0	951.17			16.0	952.80	148.8	952.90	271.0	952.36
24.0	951.08			20.0	952.81	150.0	952.91	274.0	952.46
26.0	951.11			23.0	952.76	155.0	953.05	276.0	952.62
28.0	951.10			26.0	952.64	160.0	953.14	280.0	952.64
30.0	951.09			30.0	952.75	165.0	953.12	282.5	952.95
31.7	951.05			35.0	952.82	170.0	953.15	284.0	952.96
33.0	951.02			40.0	952.74	175.0	953.07	287.0	953.13
35.0	950.98			41.0	952.64	178.0	953.17	288.0	953.12
37.0	950.98			42.0	952.85	178.4	952.45	290.0	953.26
38.0	951.04			43.0	952.92	178.7	952.33	293.0	953.26
40.0	951.07			45.3	952.86	178.9	951.86	296.0	953.19
42.0	951.09			50.0	952.90	179.1	951.66	300.0	953.11
44.0	951.18			52.0	952.88	179.5	951.54	304.0	953.25
46.0	951.26			56.0	952.88	180.2	950.97	306.0	953.30
48.0	951.33			60.0	952.85	181.0	950.71	310.0	953.20
49.0	951.56			64.0	952.80	182.0	950.50	314.0	953.24
49.4	952.00			68.0	952.78	184.0	950.56	318.0	953.39
52.0	952.05			72.0	952.80	186.0	950.55	320.0	953.41
56.0	952.15			76.0	952.81	188.0	950.56		
60.0	952.21			80.0	952.84	190.0	950.58		
64.0	952.31			84.9	952.93	192.0	950.71		
68.0	952.34			85.5	952.81	194.0	950.59		
72.0	952.39			90.0	952.89	196.0	950.54		

Table 23.--Listing of horizontal stations and elevations for cross section PR175 --Continued.

1979		1979		1979		1979		1980	
Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
-20.0	953.55	100.0	952.75	200.0	950.50	320.0	953.41	-39.3	953.28
-15.0	953.48	102.0	952.77	202.0	950.69			-1.7	953.55
-10.0	953.52	103.0	952.72	203.0	950.67			-0.7	953.58
-5.0	953.61	106.0	952.80	205.0	950.78			0.0	953.52
-0.7	953.59	107.5	952.89	208.0	950.83			1.0	953.53
1.0	953.55	111.0	952.82	209.0	950.85			1.8	953.51
2.0	953.45	113.0	952.68	211.0	950.81			2.0	953.42
2.1	952.87	114.0	952.71	212.0	950.89			2.1	952.88
3.0	952.52	115.0	952.86	215.0	950.96			3.0	952.49
4.0	952.28	118.0	952.85	217.9	951.07			4.4	952.15
5.0	952.21	121.0	952.76	218.7	950.95			6.0	952.21
7.0	952.35	124.0	952.79	220.0	951.05			8.4	952.58
8.5	952.60	127.0	952.84	222.0	951.11			8.7	952.57
10.3	952.31	129.0	952.86	224.0	951.27			10.0	952.25
12.0	952.56	130.4	952.67	225.4	951.56			12.0	952.56
12.5	952.76	132.0	952.82	226.0	951.63			13.0	952.77
14.0	952.79	135.0	952.82	229.0	951.63			15.0	952.76
15.0	952.80	138.0	952.85	232.0	951.72			18.0	952.81
18.0	952.82	142.0	952.85	235.0	951.76			21.0	952.80
22.0	952.80	144.0	952.75	238.0	951.79			24.0	952.67
25.0	952.65	145.0	952.82	240.0	951.98			26.0	952.62
28.0	952.70	146.0	952.91	242.0	952.05			30.0	952.74
30.0	952.75	148.0	952.90	246.0	952.08			35.0	952.81
35.0	952.82	150.0	952.93	250.0	952.18			39.0	952.78
39.0	952.78	151.0	952.95	253.0	952.13			40.8	952.63
41.0	952.65	155.0	953.06	257.0	952.28			42.0	952.84
42.0	952.86	160.0	953.14	260.0	952.25			45.0	952.88
43.0	952.92	165.0	953.12	264.0	952.40			50.0	952.90
45.0	952.89	170.0	953.16	268.0	952.48			55.0	952.87
50.0	952.90	175.0	953.07	271.0	952.52			60.0	952.84
54.0	952.88	176.1	953.10	274.0	952.57			65.0	952.80
58.0	952.87	176.3	952.47	276.0	952.56			70.0	952.78
62.0	952.83	177.0	951.89	280.0	952.69			75.0	952.81
66.0	952.80	178.0	951.20	282.5	952.96			80.0	952.83
70.0	952.79	179.0	950.85	284.0	952.97			84.7	952.92
74.0	952.80	180.0	950.58	287.0	953.13			85.6	952.81
78.0	952.82	182.0	950.39	290.0	953.26			90.0	952.88
82.0	952.86	184.0	950.34	293.0	953.26			95.0	952.94
84.7	952.93	186.0	950.42	296.0	953.19			96.0	952.82
85.5	952.83	188.0	950.48	300.0	953.13			100.0	952.74
89.0	952.88	190.0	950.68	304.0	953.26			103.0	952.71
92.0	952.92	192.0	950.66	306.0	953.29			107.0	952.85
95.3	952.95	194.0	950.63	310.0	953.20			110.0	952.82
96.0	952.78	196.0	950.56	314.0	953.23			113.0	952.68
98.0	952.73	198.0	950.51	318.0	953.38			115.0	952.84

Table 23.--Listing of horizontal stations and elevations for cross section PR175 --Continued.

1980		1980		1982		1982		1982	
Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
120.0	952.79	252.0	952.06	-5.0	953.57	146.0	952.89	239.0	952.02
125.0	952.80	257.0	952.24	-1.7	953.57	150.0	952.92	240.0	952.11
129.0	952.84	261.0	952.23	-0.7	953.58	151.0	952.94	245.0	952.07
130.4	952.64	265.0	952.54	0.0	953.52	155.0	953.05	250.0	952.16
135.0	952.81	267.0	952.40	1.9	953.50	158.0	953.09	255.0	952.18
140.0	952.85	270.0	952.49	2.0	952.95	160.0	953.14	260.0	952.24
144.0	952.73	275.0	952.63	4.3	952.18	160.3	953.12	265.0	952.46
146.0	952.90	277.0	952.58	6.0	952.22	160.4	953.11	270.0	952.52
150.0	952.92	279.0	952.66	8.4	952.56	160.6	952.16	273.0	952.60
151.0	952.94	281.0	952.86	10.3	952.25	160.6	952.15	276.0	952.61
155.0	953.05	285.0	953.07	13.0	952.77	160.8	951.96	279.0	952.66
160.0	953.13	290.0	953.26	16.0	952.78	161.5	951.61	281.0	952.83
165.0	953.11	295.0	953.21	20.0	952.79	162.0	951.45	285.0	953.02
170.0	953.14	300.0	953.11	25.0	952.63	162.4	951.36	290.0	953.24
175.0	953.06	320.0	953.40	30.0	952.75	163.0	951.18	295.0	953.21
176.0	953.08			35.0	952.80	164.0	951.03	300.0	953.12
176.0	952.52			40.0	952.73	164.0	950.96	305.0	953.21
177.0	951.92			41.0	952.67	166.0	950.80	310.0	953.19
178.0	951.10			42.0	952.85	169.0	950.83	315.0	953.27
181.0	950.38			45.0	952.89	172.0	950.92	320.0	953.40
183.0	950.34			50.0	952.92	175.0	950.93		
185.0	950.39			55.0	952.88	178.0	950.80		
188.0	950.49			60.0	952.85	181.0	950.84		
191.0	950.64			65.0	952.80	185.0	950.86		
195.0	950.58			70.0	952.78	188.0	950.81		
200.0	950.47			75.0	952.82	191.0	950.71		
201.0	950.55			80.0	952.85	194.0	950.78		
204.0	950.73			85.0	952.87	197.0	951.01		
208.0	950.83			90.0	952.89	200.0	950.95		
212.0	950.80			90.0	952.88	204.0	951.02		
216.0	950.92			95.0	952.93	207.0	950.98		
217.6	951.16			96.0	952.76	210.0	950.95		
219.0	950.94			100.0	952.72	213.0	950.97		
221.0	951.06			105.0	952.78	216.0	950.99		
223.0	951.26			110.0	952.81	219.0	951.07		
224.0	951.42			114.0	952.73	222.0	951.01		
225.0	951.41			118.0	952.84	225.0	950.89		
226.0	951.56			121.0	952.75	227.0	950.95		
230.0	951.73			125.0	952.80	229.7	951.32		
233.0	951.65			129.0	952.83	230.8	951.45		
234.0	951.80			130.3	952.66	231.0	951.65		
237.5	951.77			132.0	952.78	233.0	951.88		
241.0	952.04			136.0	952.82	234.0	952.10		
245.0	952.01			140.0	952.86	235.0	952.06		
250.0	952.14			144.0	952.75	237.0	952.07		

Table 23.--Listing of horizontal stations and elevations for cross section PR175 --Continued.

1984		1984		1985		1985		1986	
Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
100.0	952.73	200.0	950.75	100.0	952.74	186.0	950.49	100.0	952.75
105.0	952.79	202.0	950.86	105.0	952.79	190.0	950.63	105.0	952.80
110.0	952.82	204.0	950.99	110.0	952.82	194.0	950.69	110.0	952.81
113.0	952.70	207.0	951.03	113.0	952.71	198.0	950.70	113.0	952.71
115.0	952.84	209.0	951.10	115.0	952.85	201.0	950.80	115.0	952.86
120.0	952.79	212.0	951.35	120.0	952.81	204.0	950.99	118.0	952.86
123.0	952.73	215.6	951.52	123.0	952.77	206.0	951.05	121.0	952.78
124.0	952.77	218.0	951.47	124.0	952.79	207.5	951.03	124.0	952.79
125.0	952.81	220.7	951.41	127.0	952.83	210.0	951.26	127.0	952.85
129.0	952.81	221.3	951.37	130.0	952.73	211.2	951.39	130.0	952.74
131.0	952.69	224.0	951.29	131.0	952.71	211.7	951.52	132.0	952.82
132.0	952.81	228.0	951.21	132.0	952.82	214.0	951.54	135.0	952.84
135.0	952.84	229.2	951.48	135.0	952.83	217.0	951.56	138.0	952.85
140.0	952.87	232.0	951.56	137.0	952.82	220.0	951.54	140.0	952.89
143.0	952.78	233.0	951.54	139.0	952.89	224.0	951.50	141.2	952.75
145.0	952.81	234.0	951.60	140.0	952.88	227.0	951.31	141.6	952.79
146.9	952.89	235.0	951.88	141.0	952.75	228.7	951.28	142.7	952.57
147.6	952.24	235.9	952.25	142.0	952.77	230.0	951.47	143.4	952.82
148.3	952.20	237.0	952.29	143.0	952.53	231.0	951.49	144.3	952.85
148.7	951.99	239.0	952.21	143.3	952.77	233.0	951.75	145.1	952.62
149.6	951.92	242.0	952.23	144.5	952.77	234.5	951.79	146.1	952.87
149.8	951.67	245.0	952.18	145.0	952.61	235.0	951.98	147.4	952.47
151.3	951.15	250.0	952.17	145.6	952.68	236.0	952.10	148.2	952.42
153.0	951.18	252.0	952.16	146.0	952.86	239.0	952.07	149.1	951.98
156.0	951.29	255.0	952.20	146.3	952.74	242.0	952.10	150.2	951.58
159.0	951.32	260.0	952.25	147.5	952.43	245.0	952.12	151.5	951.13
162.4	951.27	263.0	952.32	148.0	952.44	248.0	952.12	152.0	951.17
162.7	951.06	266.0	952.39	148.6	952.16	250.0	952.05	154.0	951.17
163.0	950.96	270.0	952.49	149.2	952.06	252.0	952.17	157.0	951.29
165.0	950.88	274.0	952.66	150.0	951.64	255.0	952.10	160.0	951.41
168.0	950.89	277.0	952.57	150.4	951.60	260.0	952.15	163.0	951.44
169.0	950.88	280.0	952.69	151.0	951.44	265.0	952.32	166.0	951.42
170.5	950.67	300.0	953.13	152.0	951.36	267.0	952.35	168.3	951.37
172.3	950.94	320.0	953.41	153.0	951.01	269.0	952.57	168.7	951.11
175.0	950.89			154.0	950.90	271.0	952.58	169.0	951.03
177.0	950.97			157.0	950.94	275.0	952.68	170.0	950.92
177.4	951.10			158.5	951.00	300.0	953.13	171.0	950.89
180.0	951.10			160.0	951.17			173.0	950.78
180.5	951.05			162.0	951.15			176.0	950.85
183.0	951.09			165.0	951.09			179.0	950.86
187.0	951.06			170.0	951.06			182.0	950.83
188.0	950.95			175.0	951.09			185.0	950.82
190.0	950.74			180.0	951.00			188.0	950.81
193.0	950.72			180.8	950.99			191.0	950.80
198.0	950.69			183.0	950.83			194.0	950.76

Table 23.--Listing of horizontal stations and elevations for cross section PR175 --Continued.

1986		1986		1987		1987		1987	
Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
197.0	950.85	295.0	953.19	100.0	952.76	182.0	951.09	255.0	952.23
200.0	950.95	300.0	953.14	104.0	952.78	185.0	950.72	258.0	952.20
202.0	950.97	305.0	953.24	106.0	952.82	188.0	950.61	261.0	952.24
203.2	951.03	310.0	953.21	109.0	952.85	191.0	950.74	264.0	952.35
204.6	951.08	315.0	953.29	112.0	952.80	194.0	950.72	267.0	952.41
205.4	950.92	320.0	953.37	113.2	952.73	197.0	950.76	269.0	952.65
206.8	950.91			114.1	952.84	200.0	950.77	270.0	952.62
207.7	951.04			116.0	952.85	202.8	951.29	273.0	952.67
208.5	951.00			119.0	952.86	205.0	951.39	274.0	952.74
210.0	951.07			121.0	952.80	205.7	951.54	276.0	952.62
212.0	951.02			124.0	952.81	207.0	951.53	279.0	952.73
215.0	950.99			127.0	952.86	207.8	951.52	282.0	952.93
216.5	951.00			129.0	952.85	209.0	951.62	285.0	953.09
219.0	951.07			131.0	952.74	210.0	951.58	290.0	953.24
222.0	951.08			133.0	952.85	211.0	951.59	295.0	953.20
224.6	951.27			135.0	952.85	212.0	951.52	300.0	953.15
225.4	951.17			137.0	952.84	213.2	951.51	305.0	953.27
227.0	951.17			139.0	952.90	213.7	951.64	310.0	953.25
229.0	951.19			140.1	952.89	215.0	951.68	315.0	953.22
231.0	951.82			142.0	952.76	217.0	951.76	320.0	953.39
233.3	951.59			142.9	952.62	219.0	951.70		
234.3	952.16			143.5	952.81	221.0	951.74		
236.0	952.20			144.4	952.86	222.4	951.68		
238.0	952.23			145.1	952.67	223.0	951.50		
240.0	952.19			146.0	952.85	225.0	951.43		
242.0	952.18			147.3	952.62	226.0	951.49		
244.0	952.16			148.0	952.64	227.0	951.50		
246.0	952.17			148.3	952.48	228.0	951.63		
248.0	952.15			148.6	952.40	228.8	951.53		
250.0	952.08			149.5	951.93	229.4	951.52		
252.0	952.14			150.7	951.35	230.2	951.66		
253.0	952.11			151.0	951.31	230.6	951.89		
256.0	952.07			152.0	951.06	233.0	952.02		
259.0	952.15			154.0	951.10	233.6	951.88		
262.0	952.24			157.0	950.78	234.7	952.21		
265.0	952.32			159.0	951.24	237.0	952.33		
267.6	952.57			161.0	951.16	239.0	952.41		
270.0	952.55			162.0	951.29	240.0	952.56		
272.0	952.61			164.0	951.30	241.4	952.59		
274.0	952.72			167.0	951.32	241.9	952.51		
276.0	952.60			170.0	951.29	244.0	952.47		
279.0	952.72			172.0	951.27	246.0	952.42		
282.0	952.93			174.0	951.24	248.0	952.35		
287.0	953.16			176.0	951.23	250.0	952.25		
290.0	953.23			179.0	951.16	252.0	952.23		

Table 23.--Listing of horizontal stations and elevations for cross section PR175 --Continued.

1988		1988		1988	
Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
100.0	952.76	174.2	950.85	250.0	952.25
103.0	952.76	176.0	950.90	252.0	952.21
106.0	952.83	178.0	950.86	255.0	952.24
109.0	952.85	180.0	950.88	258.0	952.23
112.0	952.79	183.0	950.82	261.0	952.25
113.0	952.74	184.7	950.79	264.0	952.38
114.0	952.82	185.7	950.90	266.0	952.38
115.0	952.87	187.0	950.89	269.0	952.61
118.0	952.87	190.0	950.90	272.0	952.67
121.0	952.80	192.4	950.87	274.0	952.71
124.0	952.81	193.0	950.79	276.0	952.63
127.0	952.88	195.0	950.79	279.0	952.74
129.0	952.87	197.0	950.76	282.0	952.92
130.5	952.75	200.0	950.79	285.0	953.08
132.0	952.85	203.0	950.85	290.0	953.25
135.0	952.85	205.0	950.89	295.0	953.20
138.0	952.85	205.7	950.93	300.0	953.15
139.0	952.90	206.2	951.00	305.0	953.22
140.0	952.89	207.6	951.47	310.0	953.20
141.0	952.79	208.2	951.52	315.0	953.27
141.8	952.80	209.0	951.51	320.0	953.39
142.7	952.64	210.0	951.42		
143.4	952.82	211.0	951.57		
144.4	952.84	213.0	951.53		
145.1	952.67	216.0	951.60		
146.0	952.83	217.0	951.55		
147.3	952.61	219.0	951.61		
148.0	952.63	221.0	951.61		
148.3	952.44	223.0	951.61		
148.9	952.30	225.0	951.55		
150.1	951.42	227.0	951.48		
151.3	951.18	229.0	951.41		
153.0	951.18	230.8	951.33		
155.0	951.18	231.5	951.35		
157.0	951.31	232.3	951.48		
159.0	951.34	232.8	952.02		
161.0	951.36	233.6	952.01		
163.0	951.36	234.5	952.24		
166.0	951.34	236.0	952.20		
168.0	951.34	238.0	952.40		
169.2	951.35	240.0	952.43		
170.8	951.22	241.0	952.55		
172.9	951.26	243.0	952.54		
173.0	950.99	246.0	952.44		
173.3	950.93	248.0	952.36		

Description of Cross Section PR180

Location: Township 6 South/Range 50 East--section 12
U.S. Geological Survey quadrangle (1:24,000): Lonesome Peak

Landowners--left bank: EB Ranch
right bank: U.S. Government

Access: left bank

Permission from: J.L. Wilson or Howard Best (T6S/R50E--1)

Reference pins

Station (meters)	Elevation (meters above sea level)	Comments
-40.0	949.987	Pins -40.0 and -30.0 were closest to leveling instrument. Bent, 0.15 meter above 1987 ground level.
-30.0	949.789	Bent, 0.02 meter above 1987 ground level.
102.0	948.906	At 1978 ground level.
103.4	948.966	0.06 meter above 1987 ground level.
111.3	949.773	0.20 meter above 1987 ground level.

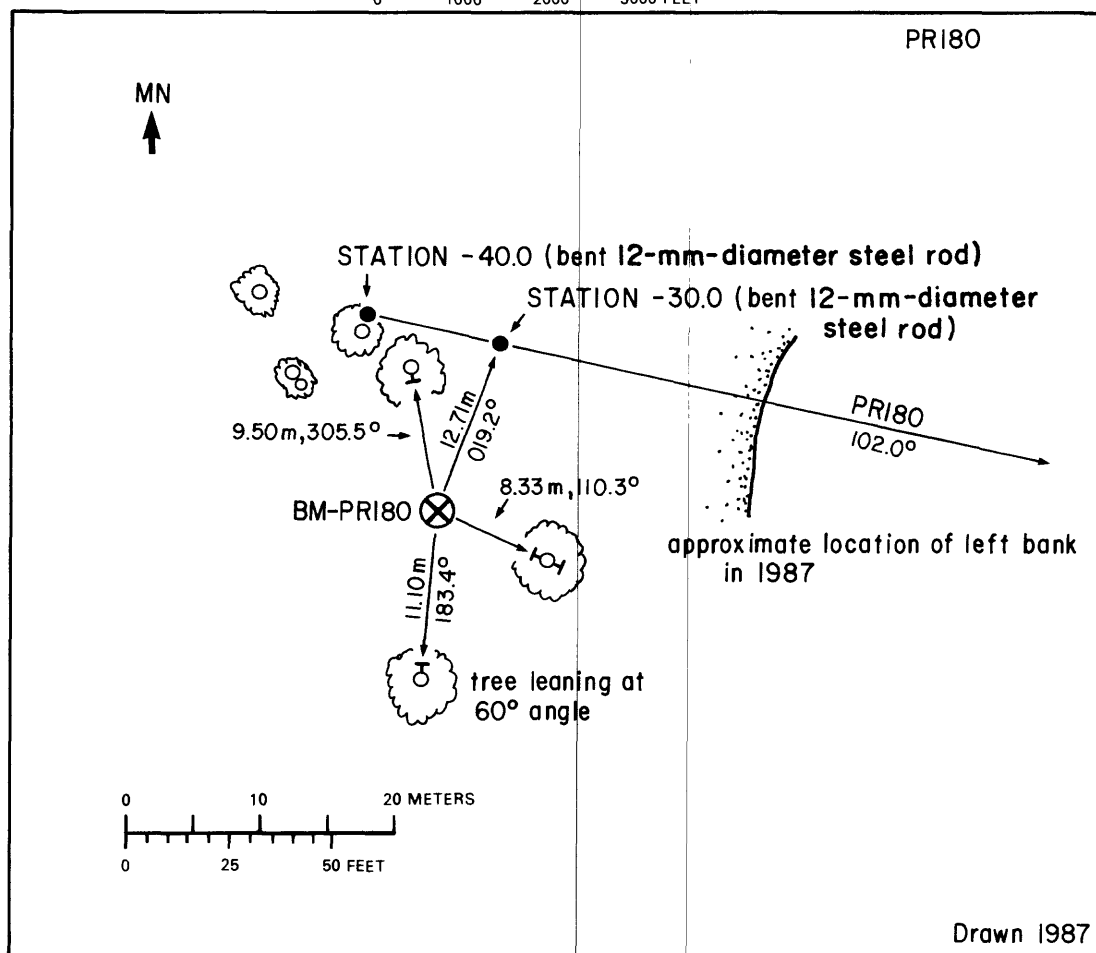
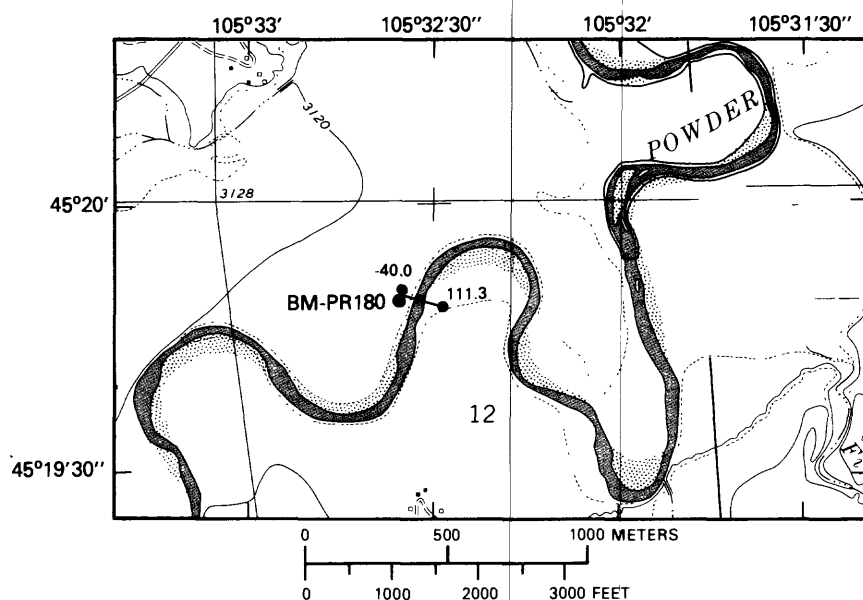


Figure 72.--Upper: Location of cross section PR180, bench mark BM-PR180, and left and right bank reference pins (tables 2 and 3) in the Lonesome Peak quadrangle. Lower: Location of bench mark on the left bank. MN is magnetic north.

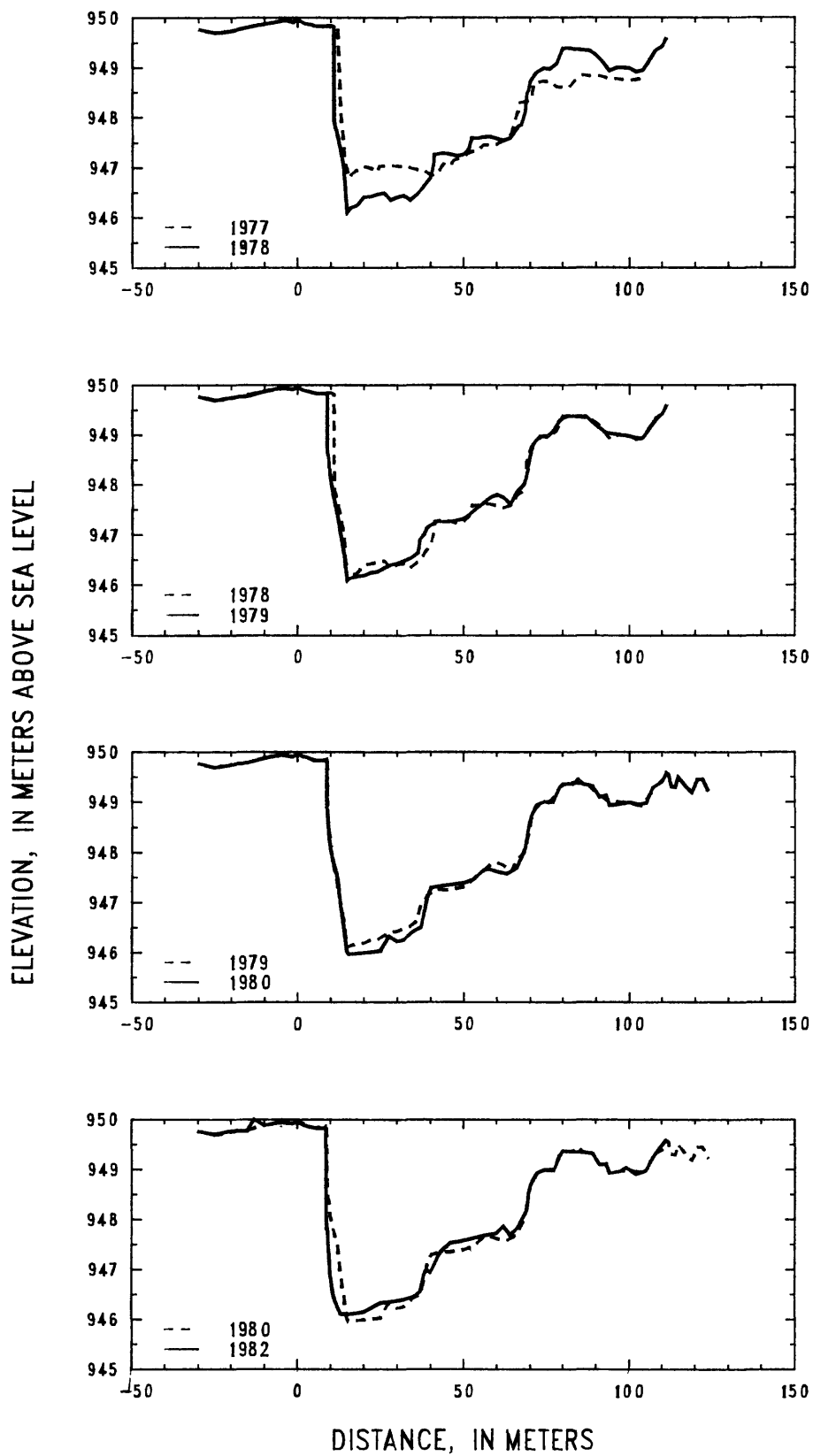


Figure 73.--Profiles of cross section PR180 from 1977 to 1982.

ELEVATION, IN METERS ABOVE SEA LEVEL

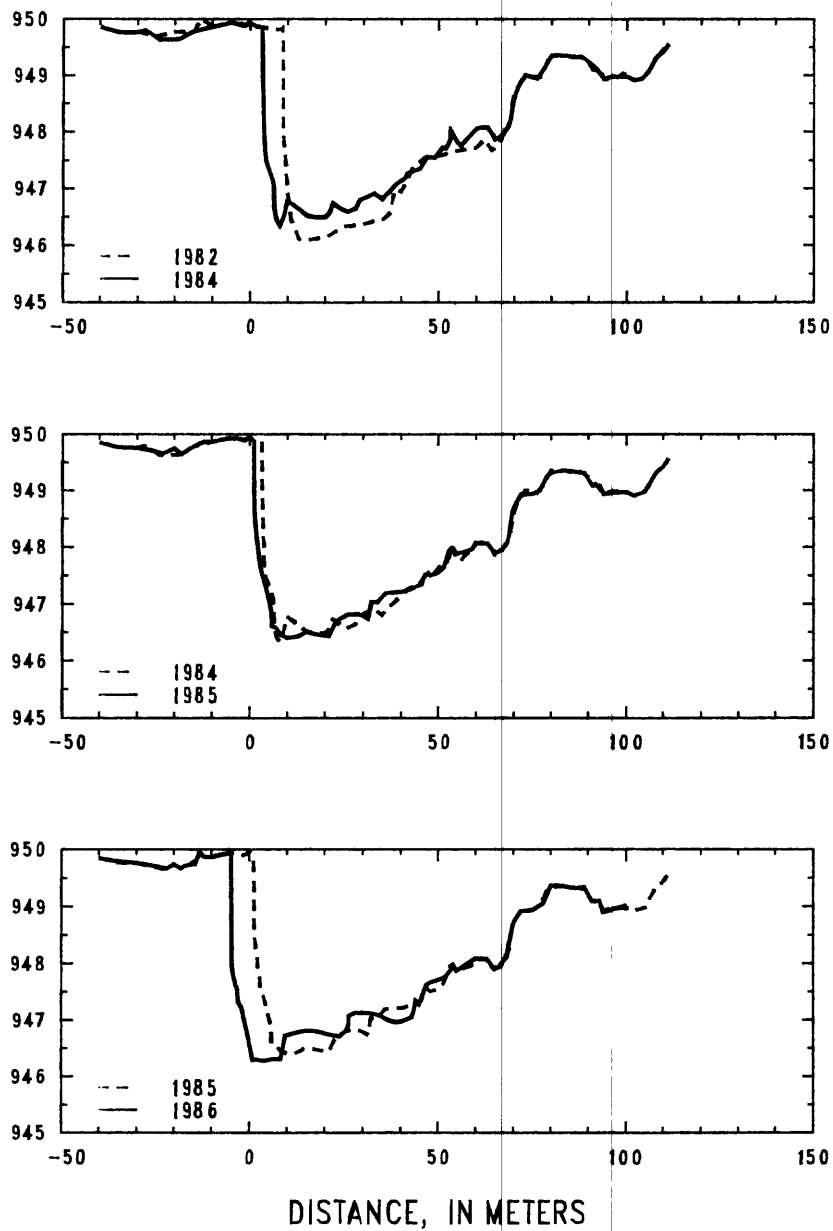


Figure 74.--Profiles of cross section PR180 from 1982 to 1986.

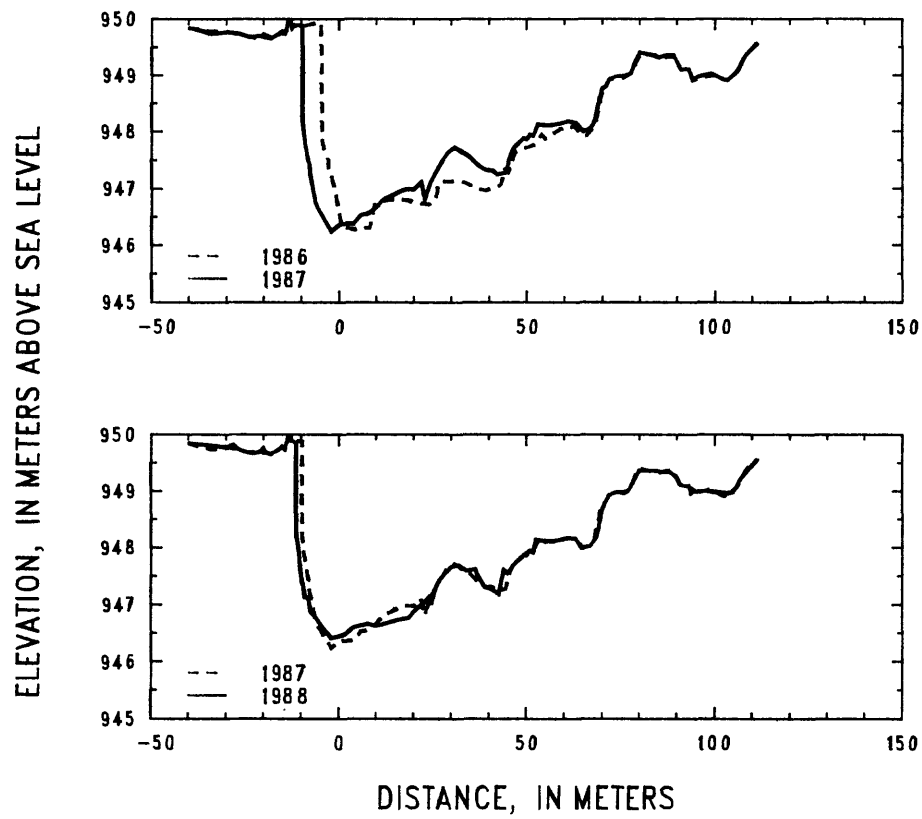


Figure 75.--Profiles of cross section PR180 from 1986 to 1988.

Table 24.--Listing of horizontal stations and elevations for cross section PR180
[Sta., station, distance in meters from a reference point on
the left bank; Elev., elevation, in meters above sea level].

1977		1977		1978		1978		1979	
Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
-1.5	949.90	70.6	948.39	-30.0	949.77	62.0	947.53	-30.0	949.78
0.0	949.98	71.2	948.69	-25.0	949.69	64.0	947.59	-25.0	949.69
2.0	949.88	74.0	948.72	-20.0	949.74	66.4	947.82	-20.0	949.76
4.0	949.86	76.0	948.71	-15.0	949.82	67.4	947.85	-15.0	949.79
6.0	949.81	78.0	948.60	-10.0	949.88	68.7	948.12	-10.0	949.89
8.0	949.82	80.0	948.59	-7.0	949.91	69.0	948.47	-5.0	949.95
10.0	949.83	82.0	948.60	-5.0	949.94	69.6	948.55	-1.5	949.91
12.1	949.78	84.0	948.76	-4.0	949.96	70.0	948.72	0.0	949.96
13.1	948.05	86.0	948.85	-1.5	949.91	72.0	948.91	2.0	949.89
13.4	947.78	88.0	948.82	0.0	949.97	74.0	948.99	4.0	949.86
14.3	947.13	90.0	948.83	2.0	949.88	76.0	948.97	6.0	949.83
15.0	946.93	92.0	948.81	4.0	949.86	78.0	949.08	8.0	949.83
15.5	946.78	94.0	948.75	6.0	949.82	80.0	949.39	9.0	949.84
16.0	946.84	96.0	948.77	8.0	949.84	82.0	949.39	9.0	948.68
18.0	946.96	98.0	948.75	10.0	949.85	84.0	949.36	9.5	948.53
20.0	947.01	100.0	948.73	11.0	949.82	86.0	949.35	10.0	948.12
22.0	946.98	103.4	948.77	11.1	947.93	88.0	949.34	11.0	947.74
24.0	946.90			11.6	947.76	90.0	949.25	12.0	947.40
24.6	947.02			13.9	947.03	92.0	949.10	13.0	946.99
26.0	947.03			15.0	946.09	94.0	948.93	14.0	946.64
28.0	947.03			16.0	946.19	96.0	949.00	15.0	946.10
30.0	947.02			18.0	946.25	98.0	949.00	16.0	946.14
32.0	947.01			20.0	946.41	100.0	948.99	18.0	946.18
34.0	946.98			22.0	946.42	102.0	948.91	20.0	946.19
36.0	946.94			24.0	946.47	104.0	948.94	22.0	946.25
38.0	946.93			26.0	946.49	106.0	949.13	24.0	946.26
40.0	946.84			28.0	946.34	108.0	949.34	26.0	946.34
42.0	946.85			30.0	946.41	110.0	949.43	28.0	946.41
44.0	947.07			32.0	946.44	111.2	949.59	30.0	946.43
46.0	947.05			34.0	946.34			32.0	946.49
47.0	947.14			36.0	946.46			34.0	946.53
48.0	947.16			38.0	946.61			36.2	946.64
50.0	947.22			40.0	946.79			36.9	946.91
52.0	947.30			40.9	947.03			38.0	946.99
54.0	947.33			41.2	947.26			39.0	947.14
56.0	947.44			44.0	947.29			40.0	947.19
58.0	947.45			46.0	947.26			42.0	947.26
60.0	947.46			48.0	947.22			45.0	947.25
62.0	947.54			50.0	947.26			48.0	947.29
64.0	947.63			51.5	947.36			50.0	947.32
65.3	947.83			52.5	947.59			52.0	947.42
66.0	948.04			54.0	947.58			54.0	947.54
66.5	948.11			56.0	947.61			56.0	947.63
66.8	948.29			58.0	947.62			58.0	947.75
69.0	948.32			60.0	947.57			60.0	947.80

Table 24.--Listing of horizontal stations and elevations for cross section PR180 --Continued.

1979		1980		1980		1982		1982	
Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
62.0	947.74	-30.0	949.77	84.6	949.45	-30.0	949.76	80.0	949.37
64.0	947.60	-25.0	949.68	86.0	949.35	-25.0	949.69	83.0	949.35
66.0	947.85	-20.0	949.75	89.0	949.31	-20.0	949.77	86.0	949.33
68.0	948.00	-15.0	949.79	91.0	949.09	-15.0	949.77	89.0	949.31
69.0	948.21	-10.0	949.88	93.0	949.13	-13.0	950.00	91.0	949.09
70.0	948.58	-5.0	949.94	94.0	948.93	-10.0	949.87	93.0	949.10
71.0	948.82	-1.5	949.90	97.0	948.96	-5.0	949.94	94.0	948.92
73.0	948.98	0.0	949.96	100.0	948.99	-1.5	949.90	97.0	948.95
75.0	948.96	5.0	949.82	103.0	948.94	0.0	949.95	99.0	949.03
77.0	949.08	8.0	949.83	105.3	948.98	2.0	949.87	102.0	948.90
79.0	949.30	8.9	949.85	107.2	949.28	5.0	949.82	105.0	948.97
81.0	949.38	9.0	948.68	110.0	949.40	6.0	949.81	108.0	949.32
83.0	949.39	10.0	948.09	111.3	949.58	8.5	949.82	111.3	949.58
85.0	949.37	11.0	947.77	112.0	949.54	8.6	949.83		
87.0	949.37	11.7	947.59	112.8	949.30	8.7	948.10		
90.0	949.19	12.4	947.36	114.0	949.29	9.0	947.78		
93.0	949.04	12.7	947.08	114.8	949.50	9.2	947.75		
100.0	948.97	14.0	946.52	117.0	949.31	10.0	946.96		
102.0	948.94	15.0	946.00	119.0	949.18	10.0	946.93		
104.0	948.93	15.5	945.96	120.7	949.45	11.0	946.44		
106.0	949.12	25.0	946.03	122.2	949.45	13.0	946.10		
108.0	949.31	27.5	946.33	123.8	949.22	15.0	946.09		
110.0	949.43	30.0	946.22			20.0	946.14		
111.3	949.60	32.0	946.25			25.0	946.33		
		35.0	946.43			30.0	946.37		
		37.3	946.51			35.0	946.44		
		39.0	947.08			37.0	946.55		
		40.2	947.30			38.2	946.92		
		45.0	947.35			39.0	946.99		
		50.0	947.39			40.0	946.93		
		53.0	947.46			43.0	947.35		
		56.0	947.65			46.0	947.53		
		58.0	947.66			50.0	947.57		
		60.0	947.61			55.0	947.66		
		63.0	947.57			60.0	947.72		
		66.0	947.69			62.0	947.86		
		68.5	948.08			64.0	947.67		
		69.6	948.54			66.0	947.81		
		70.4	948.74			69.0	948.19		
		72.0	948.94			69.5	948.53		
		74.0	949.00			70.0	948.67		
		77.0	949.00			72.0	948.92		
		79.0	949.30			74.0	948.99		
		80.0	949.36			77.0	948.97		
		83.0	949.36			79.0	949.27		

Table 24.--Listing of horizontal stations and elevations for cross section PR180 --Continued.

1984		1984		1985		1985		1986	
Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
-40.0	949.86	52.0	947.71	-40.0	949.85	54.0	947.98	-40.0	949.85
-35.0	949.76	53.0	947.84	-35.0	949.76	55.0	947.87	-35.0	949.79
-30.0	949.76	53.2	948.03	-30.0	949.75	57.0	947.91	-30.0	949.77
-28.0	949.80	55.0	947.80	-26.0	949.70	59.0	947.96	-25.0	949.70
-24.0	949.63	56.0	947.75	-23.0	949.65	60.0	948.07	-22.0	949.66
-19.0	949.64	58.0	947.91	-20.0	949.75	63.0	948.06	-20.0	949.74
-15.0	949.78	60.0	948.06	-18.0	949.64	65.0	947.88	-18.0	949.66
-10.0	949.87	61.0	948.08	-15.0	949.78	67.0	947.96	-17.0	949.72
-5.0	949.94	63.0	948.08	-12.0	949.87	68.6	948.13	-14.3	949.74
-1.5	949.88	64.0	947.97	-10.0	949.86	69.7	948.61	-13.0	949.97
0.0	949.94	65.0	947.86	-7.0	949.91	70.3	948.73	-12.3	949.88
2.0	949.86	66.0	947.89	-4.0	949.94	72.0	948.93	-11.0	949.86
3.2	949.86	68.0	948.04	-1.5	949.89	75.0	948.94	-8.0	949.90
3.4	948.69	69.0	948.19	0.0	949.95	77.0	949.00	-6.0	949.93
3.7	948.03	70.0	948.60	1.2	949.87	79.0	949.28	-4.8	949.93
4.0	947.67	71.0	948.79	1.3	948.63	81.0	949.34	-4.5	947.89
4.3	947.47	73.0	949.01	2.0	948.14	84.0	949.37	-3.7	947.63
5.3	947.30	76.0	948.94	3.0	947.60	86.0	949.33	-3.1	947.56
6.4	947.09	78.0	949.13	4.0	947.38	89.0	949.30	-2.9	947.31
6.5	946.62	80.0	949.36	5.9	946.89	91.0	949.08	-2.1	947.24
7.0	946.44	81.0	949.36	6.0	946.60	93.0	949.08	-0.6	946.80
8.0	946.33	84.0	949.36	7.0	946.58	94.0	948.93	1.0	946.29
9.0	946.49	86.0	949.32	8.0	946.47	97.0	948.96	2.0	946.30
10.0	946.78	88.0	949.34	10.0	946.40	100.0	948.98	4.0	946.27
13.0	946.63	90.0	949.23	13.0	946.43	102.0	948.91	6.0	946.31
15.0	946.52	92.0	949.11	15.0	946.51	105.0	948.98	8.4	946.31
17.0	946.49	94.0	948.93	18.0	946.46	107.0	949.21	9.7	946.73
20.0	946.49	96.0	948.99	21.0	946.43	108.0	949.33	12.0	946.78
21.0	946.55	98.0	948.98	23.0	946.70	110.0	949.43	15.0	946.82
22.0	946.74	100.0	948.98	26.0	946.81	111.3	949.56	18.0	946.80
24.0	946.63	102.0	948.91	29.0	946.82			21.0	946.74
26.0	946.58	104.0	948.93	31.4	946.73			24.0	946.71
28.0	946.64	106.0	949.09	32.3	947.03			25.6	946.81
29.2	946.80	108.0	949.33	34.0	947.04			26.3	946.92
33.0	946.91	110.0	949.43	36.0	947.19			26.4	947.08
35.0	946.80	111.3	949.55	38.0	947.20			28.0	947.13
35.8	946.87			41.0	947.22			31.0	947.13
37.0	946.94			44.0	947.30			34.0	947.09
39.0	947.09			45.7	947.35			37.0	946.99
41.1	947.19			46.1	947.46			39.0	946.96
41.6	947.26			47.4	947.55			41.0	947.00
45.0	947.35			48.0	947.49			43.0	947.06
47.0	947.56			50.0	947.55			43.7	947.20
49.0	947.54			51.5	947.64			44.0	947.35
51.0	947.72			53.0	947.94			45.0	947.27

Table 24.--Listing of horizontal stations and elevations for cross section PR180 --Continued.

1986		1987		1987		1988		1988	
Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
47.0	947.63	-40.0	949.84	41.0	947.30	-40.0	949.85	30.0	947.66
48.0	947.67	-37.0	949.79	42.0	947.24	-30.0	949.77	32.0	947.70
50.0	947.72	-34.0	949.73	44.4	947.27	-28.0	949.82	34.0	947.59
52.0	947.76	-32.0	949.74	45.6	947.56	-27.0	949.74	36.5	947.62
54.0	947.94	-30.0	949.77	46.6	947.71	-25.0	949.69	37.0	947.51
55.0	947.87	-27.0	949.74	48.0	947.80	-23.0	949.66	39.0	947.30
57.0	947.96	-24.0	949.68	49.2	947.88	-21.0	949.69	41.0	947.26
60.0	948.09	-21.0	949.70	50.0	947.86	-20.0	949.76	42.7	947.18
63.0	948.08	-18.0	949.65	51.0	947.94	-19.5	949.67	42.9	947.24
64.5	947.93	-15.0	949.78	51.9	947.92	-18.0	949.65	44.0	947.61
66.0	947.92	-14.2	949.73	53.0	948.13	-16.0	949.72	45.0	947.54
68.1	948.10	-13.3	949.99	55.0	948.10	-15.0	949.79	47.0	947.73
70.0	948.72	-12.8	949.96	57.0	948.12	-14.3	949.73	49.0	947.85
72.0	948.93	-12.4	949.85	59.0	948.14	-13.3	949.99	51.0	947.95
75.0	948.93	-12.0	949.90	61.0	948.18	-12.8	949.99	51.8	947.91
78.0	949.06	-9.7	949.87	63.0	948.15	-12.4	949.88	52.6	948.14
80.0	949.38	-9.7	948.20	65.0	947.99	-11.3	949.85	55.0	948.11
83.0	949.37	-8.8	947.71	67.0	948.05	-11.3	948.22	58.0	948.12
86.0	949.32	-7.9	947.41	68.0	948.16	-10.6	947.99	61.0	948.17
89.0	949.34	-7.6	947.20	69.0	948.48	-10.1	947.60	63.0	948.17
91.0	949.10	-7.3	947.13	70.0	948.76	-9.8	947.39	64.7	947.99
93.0	949.11	-6.0	946.69	71.0	948.80	-9.5	947.35	67.0	948.04
94.0	948.90	-4.0	946.46	72.0	948.94	-9.0	947.13	68.6	948.18
97.0	948.97	-2.0	946.24	74.0	948.98	-8.0	947.12	70.0	948.67
100.0	949.01	0.0	946.36	76.0	948.98	-7.3	946.86	71.0	948.80
		2.0	946.38	77.6	949.03	-6.0	946.77	72.0	948.94
		4.0	946.37	78.8	949.25	-4.0	946.56	74.0	948.99
		6.0	946.53	80.0	949.40	-2.0	946.41	76.0	948.96
		8.0	946.56	82.0	949.37	0.0	946.44	77.0	948.99
		10.0	946.66	85.0	949.31	2.0	946.50	79.0	949.26
		12.0	946.81	87.0	949.36	4.0	946.60	80.0	949.36
		14.0	946.87	89.0	949.36	6.0	946.63	82.0	949.36
		16.0	946.94	91.0	949.09	8.0	946.66	84.0	949.37
		18.0	946.99	93.0	949.10	10.0	946.62	86.0	949.34
		20.0	946.98	94.0	948.92	12.0	946.66	88.0	949.34
		22.0	947.11	96.0	948.99	14.0	946.70	90.0	949.25
		23.0	946.81	99.0	949.03	16.0	946.74	91.0	949.10
		24.5	947.12	102.0	948.92	18.7	946.77	93.0	949.09
		27.0	947.42	103.4	948.90	20.5	946.91	95.0	948.99
		29.0	947.62	106.0	949.07	23.0	947.04	98.0	949.01
		31.0	947.72	108.0	949.34	24.1	947.13	100.1	948.98
		33.0	947.62	111.3	949.57	25.0	947.04	103.5	948.96
		35.0	947.54			25.7	947.23	105.0	948.98
		37.0	947.40			26.5	947.38	107.0	949.22
		39.0	947.32			28.0	947.53	109.0	949.38
								111.3	949.56

Description of Cross Section PR183

Location: Township 6 South/Range 50 East--section 1
U.S. Geological Survey quadrangle (1:24,000): Lonesome Peak

Landowners--left bank: EB Ranch
right bank: EB Ranch

Access: left bank

Permission from: J.L. Wilson or Howard Best (T6S/R50E--1)

Reference pins

Station (meters)	Elevation (meters above sea level)	Comments
-7.0	945.955	Pins 100.0 and 101.1 were closest to leveling instrument.
0.0	945.669	0.17 above 1987 ground level. Elevation increased 0.07 meter between 1980 and 1985, 0.06 meter above 1987 ground level.
100.0	945.648	At 1987 ground level.
101.1	945.857	0.10 meter above 1987 ground level.

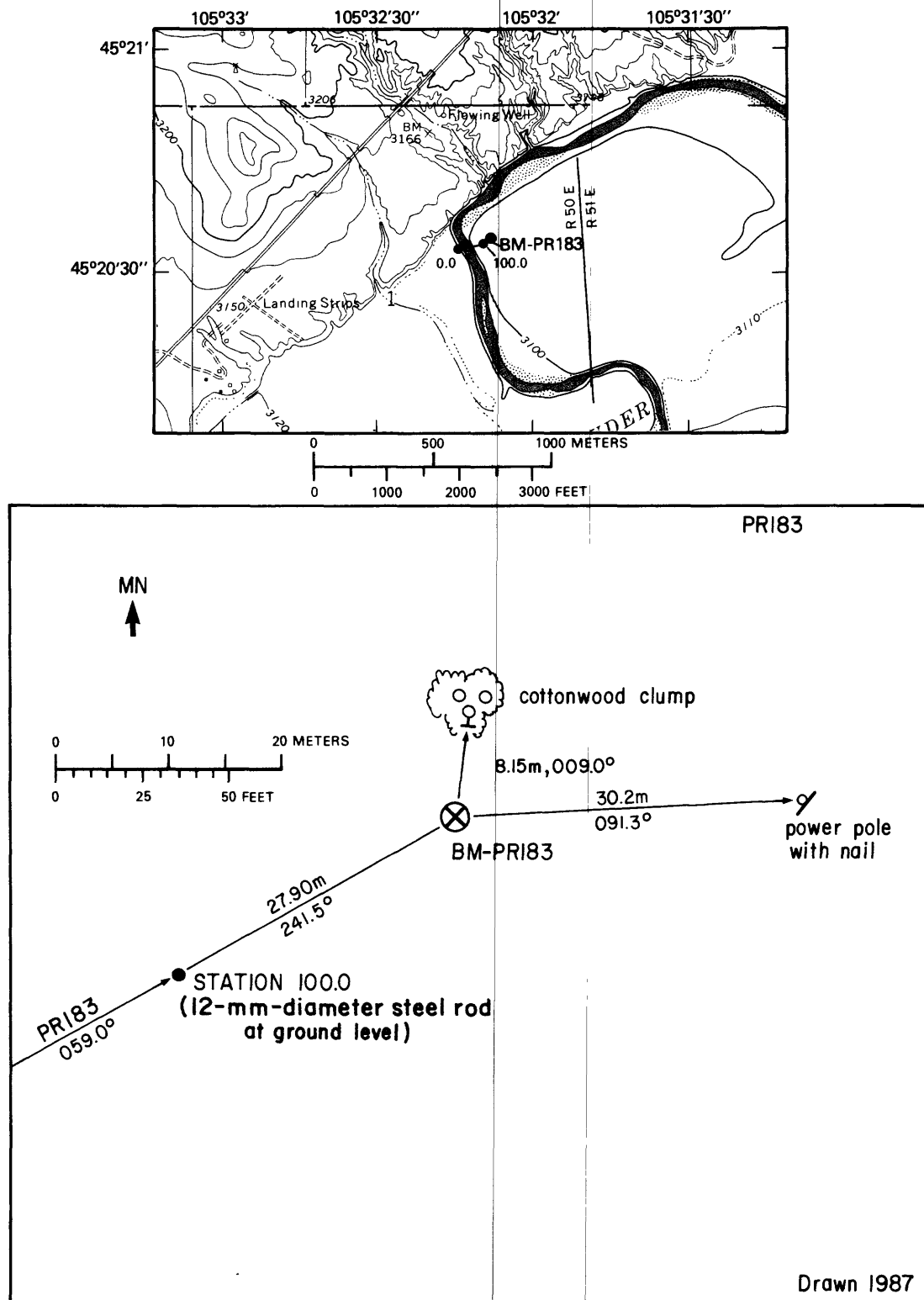


Figure 76.--Upper: Location of cross section PR183, bench mark BM-PR183, and left and right bank reference pins (tables 2 and 3) in the Lonesome Peak quadrangle. Lower: Location of bench mark on the left bank. MN is magnetic north.

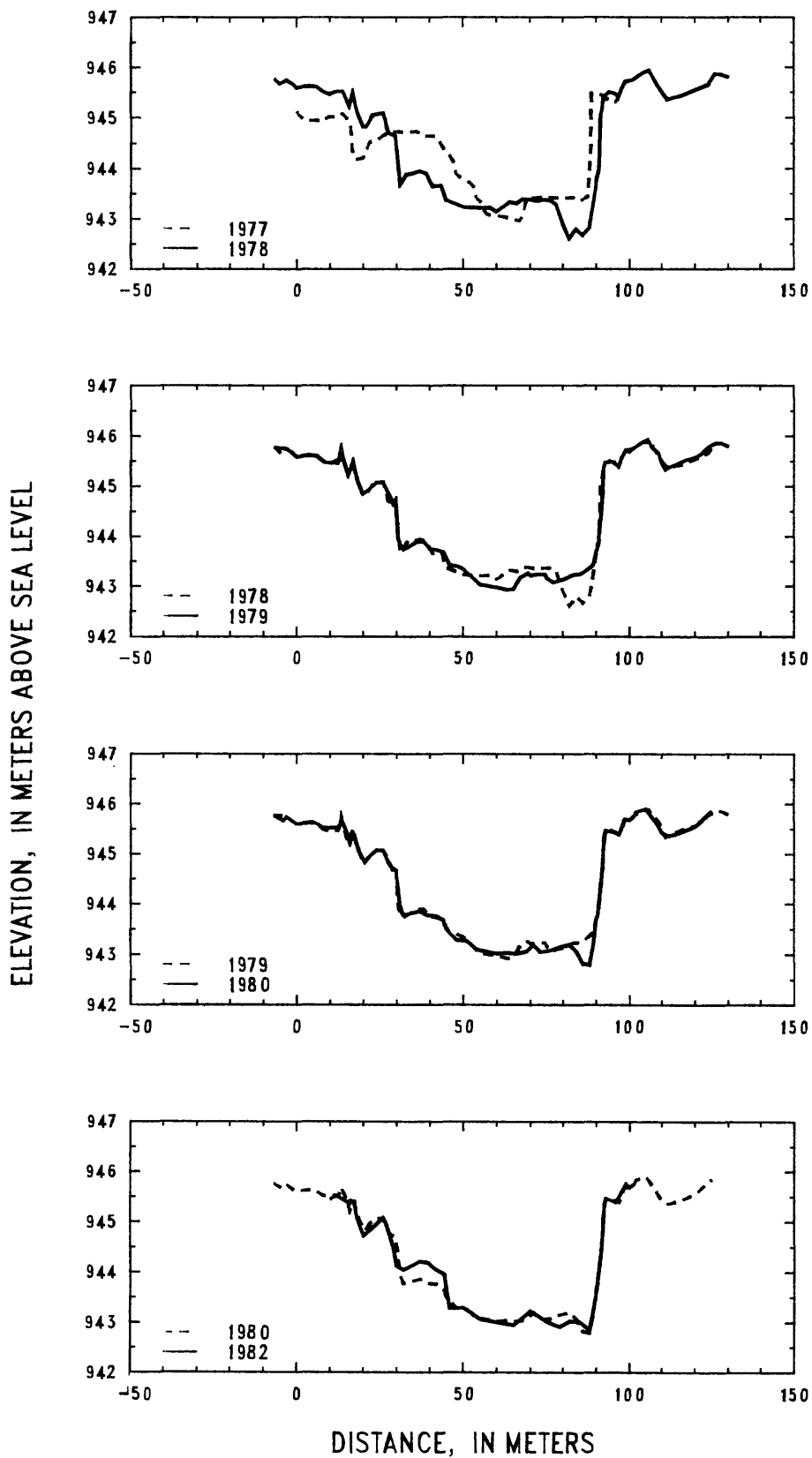


Figure 77.--Profiles of cross section PR183 from 1977 to 1982.

ELEVATION, IN METERS ABOVE SEA LEVEL

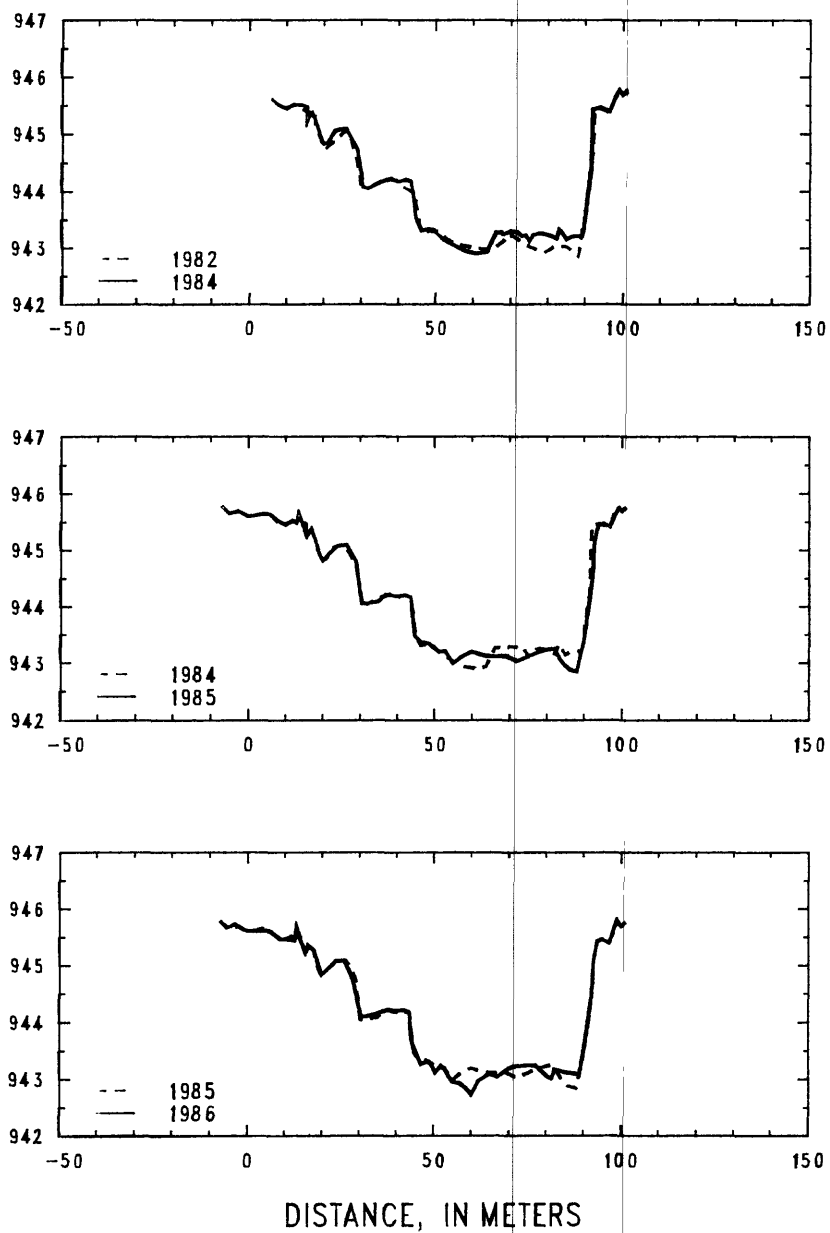


Figure 78.--Profiles of cross section PR183 from 1982 to 1986.

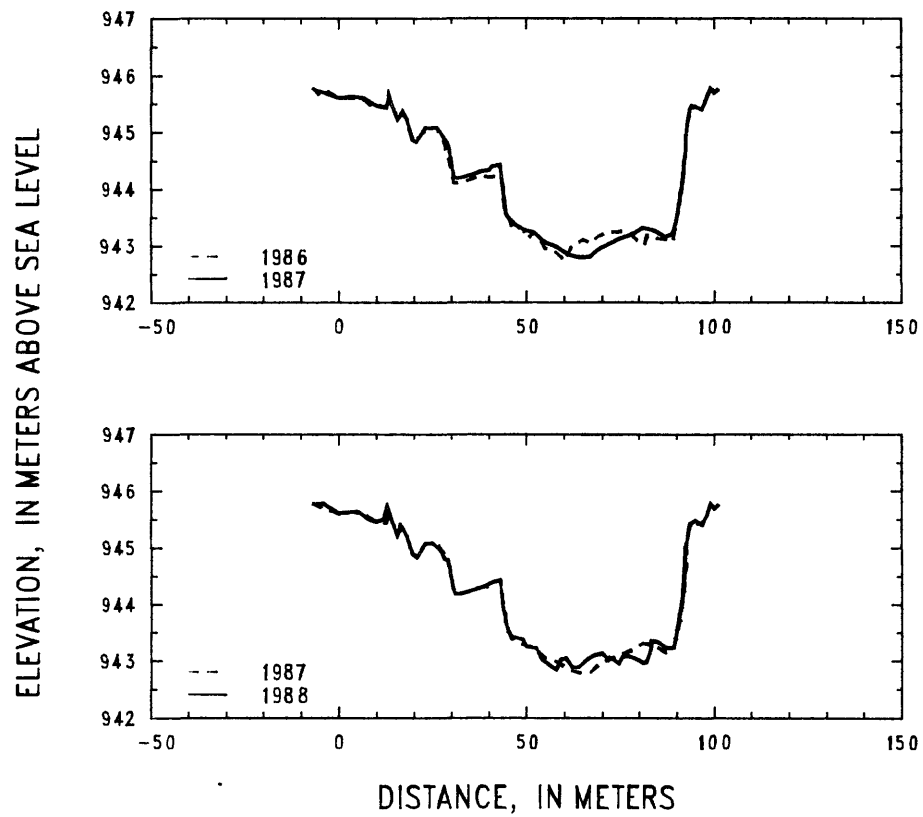


Figure 79.--Profiles of cross section PR183 from 1986 to 1988.

Table 25.--Listing of horizontal stations and elevations for cross section PR183
[Sta., station, distance in meters from a reference point on
the left bank; Elev., elevation, in meters above sea level].

1977		1977		1978		1978		1979	
Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
0.0	945.11	75.0	943.42	-7.0	945.77	76.0	943.37	-7.0	945.77
2.0	944.96	77.0	943.42	-5.0	945.67	78.0	943.28	-3.0	945.74
4.0	944.94	79.0	943.40	-3.0	945.75	80.0	942.90	0.0	945.59
6.0	944.94	81.0	943.41	-1.0	945.66	82.0	942.60	2.0	945.60
8.0	944.94	83.0	943.42	0.0	945.59	84.0	942.80	4.0	945.62
10.0	945.02	85.0	943.34	2.0	945.62	86.0	942.67	6.0	945.60
12.0	945.00	87.5	943.43	4.0	945.63	88.0	942.81	8.0	945.48
14.0	945.08	88.3	944.23	6.0	945.62	89.8	943.57	10.0	945.46
16.3	944.88	88.6	945.47	8.0	945.51	90.3	943.83	12.5	945.46
16.8	944.36	90.0	945.46	10.0	945.46	90.8	943.93	13.5	945.76
18.0	944.17	92.0	945.43	12.0	945.52	91.0	944.15	14.0	945.54
20.0	944.20	94.0	945.32	14.0	945.52	91.3	945.01	15.5	945.21
22.0	944.52	96.0	945.30	16.0	945.22	91.7	945.11	17.0	945.50
24.0	944.54	98.1	945.63	17.0	945.50	92.3	945.41	18.5	945.07
26.0	944.65	99.2	945.72	18.0	945.20	94.0	945.51	20.0	944.84
28.0	944.70	100.0	945.64	19.0	944.98	96.0	945.46	22.0	944.95
30.0	944.73	101.1	945.60	20.0	944.82	96.7	945.38	24.0	945.08
32.0	944.71			21.0	944.83	97.6	945.57	26.0	945.08
34.0	944.72			23.0	945.06	98.7	945.72	28.0	944.80
36.0	944.73			26.1	945.10	101.1	945.75	29.0	944.64
38.0	944.64			27.5	944.71	104.0	945.89	29.8	944.73
40.0	944.63			29.7	944.64	106.0	945.94	30.6	943.90
42.0	944.64			31.2	943.67	108.0	945.70	32.0	943.72
44.0	944.40			33.0	943.88	111.6	945.36	34.0	943.81
46.0	944.23			35.0	943.91	114.0	945.41	36.0	943.89
47.3	944.10			37.0	943.95	115.7	945.43	38.0	943.90
47.8	943.88			39.0	943.89	124.0	945.66	40.0	943.74
49.0	943.82			41.0	943.64	126.0	945.87	42.0	943.73
51.0	943.76			43.5	943.66	128.0	945.86	44.0	943.68
53.0	943.63			43.9	943.58	130.0	945.80	46.0	943.41
54.0	943.41			45.0	943.36			48.0	943.40
55.0	943.34			47.0	943.31			50.0	943.34
56.0	943.19			50.0	943.23			51.0	943.27
57.0	943.09			52.0	943.22			53.0	943.15
58.0	943.06			54.0	943.22			55.0	943.03
59.0	943.05			56.0	943.21			57.0	943.00
60.0	943.05			58.0	943.23			59.0	942.98
62.0	943.03			60.0	943.14			61.0	942.96
64.0	943.00			62.0	943.24			63.0	942.92
66.0	942.96			64.0	943.33			65.0	942.94
67.0	942.95			66.0	943.30			67.0	943.18
68.0	943.09			68.0	943.39			69.4	943.26
69.1	943.40			70.0	943.38			70.2	943.21
71.0	943.41			72.0	943.35			72.0	943.24
73.0	943.42			74.0	943.37			74.5	943.24

Table 25.--Listing of horizontal stations and elevations for cross section PR183 --Continued.

1979		1980		1980		1982		1984	
Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
75.0	943.16	-7.0	945.76	90.5	943.79	10.0	945.44	6.0	945.61
77.0	943.07	-4.0	945.65	91.9	944.68	12.0	945.52	8.0	945.50
80.0	943.14	-3.0	945.73	92.2	945.15	16.0	945.36	10.0	945.45
83.0	943.23	0.0	945.59	92.8	945.47	16.3	945.42	12.0	945.51
85.0	943.24	5.0	945.63	95.0	945.44	17.4	945.40	13.0	945.51
87.0	943.31	8.0	945.51	96.8	945.38	18.0	945.09	14.0	945.51
89.0	943.42	11.0	945.52	98.6	945.70	20.2	944.72	15.5	945.47
90.0	943.70	12.8	945.51	100.0	945.67	26.0	945.08	15.5	945.22
90.8	943.86	13.5	945.68	101.1	945.72	27.0	944.95	16.0	945.31
91.0	944.10	14.9	945.45	102.0	945.84	28.6	944.59	17.0	945.37
91.9	944.71	16.0	945.20	105.0	945.90	30.0	944.12	18.0	945.20
92.2	945.32	17.0	945.41	108.0	945.63	32.0	944.04	19.0	944.96
92.6	945.47	19.0	945.00	110.0	945.42	37.0	944.21	20.0	944.82
94.0	945.50	20.5	944.82	112.0	945.35	39.5	944.18	21.0	944.84
96.0	945.43	22.0	944.95	115.0	945.41	41.0	944.08	23.0	945.06
96.7	945.38	24.0	945.07	120.0	945.55	44.4	943.95	24.0	945.08
97.6	945.56	26.0	945.06	125.0	945.85	45.3	943.53	26.0	945.10
98.7	945.72	28.0	944.76			46.0	943.28	27.0	944.95
100.0	945.68	29.9	944.66			50.0	943.29	29.0	944.72
101.1	945.75	31.0	943.97			55.0	943.06	30.0	944.31
104.0	945.88	32.0	943.77			60.0	943.00	30.6	944.06
106.0	945.89	35.0	943.82			65.0	942.94	32.0	944.04
107.0	945.76	37.0	943.85			70.0	943.23	35.0	944.15
109.0	945.66	39.0	943.77			75.0	943.01	38.0	944.22
110.0	945.45	42.0	943.75			79.0	942.91	40.0	944.16
111.0	945.33	44.0	943.67			82.0	943.03	42.0	944.20
112.0	945.38	45.0	943.48			85.0	943.02	43.4	944.16
118.0	945.54	48.0	943.28			88.0	942.84	44.0	943.98
120.0	945.57	51.0	943.26			90.0	943.54	44.7	943.51
122.0	945.65	54.0	943.09			92.0	944.74	46.0	943.30
123.0	945.72	57.0	943.05			92.4	945.36	48.0	943.33
124.0	945.78	60.0	943.01			93.0	945.47	49.5	943.31
126.0	945.86	63.0	943.03			96.0	945.39	50.0	943.26
128.0	945.86	66.0	943.01			99.0	945.76	52.0	943.14
130.0	945.79	69.0	943.06			100.0	945.68	55.0	943.03
		71.0	943.19			101.1	945.74	58.0	942.93
		73.0	943.05					61.0	942.89
		76.0	943.07					63.8	942.93
		79.0	943.15					66.2	943.27
		82.0	943.19					67.6	943.27
		84.0	943.07					68.0	943.23
		86.0	942.81					70.0	943.29
		88.0	942.78					72.0	943.27
		89.2	943.20					73.0	943.20
		90.0	943.70					74.0	943.22

Table 25.--Listing of horizontal stations and elevations for cross section PR183 --Continued.

1984		1985		1985		1986		1986	
Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
75.0	943.11	-7.0	945.78	84.0	943.01	-7.0	945.78	80.0	943.06
76.0	943.23	-5.0	945.65	86.0	942.88	-5.0	945.66	81.5	943.01
78.0	943.26	-2.5	945.69	88.0	942.84	-3.0	945.73	82.3	943.18
81.0	943.20	0.0	945.60	89.8	943.33	0.0	945.60	85.0	943.12
82.3	943.15	2.0	945.62	91.6	944.22	3.0	945.61	88.0	943.10
83.0	943.32	4.0	945.65	92.4	944.64	6.0	945.61	88.9	943.06
83.6	943.28	6.0	945.63	92.5	945.03	9.0	945.46	90.3	943.54
85.0	943.14	8.0	945.52	93.6	945.43	11.0	945.47	91.6	944.16
86.5	943.20	10.0	945.45	95.0	945.48	12.8	945.44	92.3	944.60
89.3	943.21	12.0	945.53	96.7	945.40	13.3	945.68	92.6	945.04
89.6	943.29	13.0	945.48	98.2	945.63	14.1	945.48	93.6	945.41
91.5	944.30	13.5	945.65	99.0	945.73	15.7	945.22	95.0	945.46
91.7	944.63	14.5	945.46	100.0	945.68	16.4	945.36	96.7	945.39
92.0	945.43	15.8	945.24	100.9	945.75	17.8	945.27	99.0	945.80
94.0	945.47	17.0	945.39			20.0	944.83	100.0	945.68
96.5	945.39	18.0	945.20			22.0	944.97	101.1	945.75
98.0	945.66	19.0	944.94			23.7	945.08		
99.0	945.77	20.0	944.81			26.0	945.09		
100.0	945.68	22.0	944.96			28.0	944.81		
101.1	945.77	24.0	945.08			30.7	944.10		
		26.5	945.10			32.0	944.10		
		29.0	944.78			35.0	944.15		
		30.5	944.06			38.0	944.23		
		32.0	944.06			40.0	944.20		
		35.0	944.09			42.0	944.22		
		37.0	944.22			43.5	944.18		
		40.0	944.18			44.1	943.66		
		42.0	944.20			46.6	943.26		
		43.6	944.16			48.5	943.32		
		44.6	943.48			49.5	943.24		
		46.0	943.37			50.4	943.11		
		48.4	943.34			52.0	943.24		
		51.0	943.20			53.0	943.17		
		53.0	943.20			55.0	942.95		
		55.0	942.98			57.0	942.93		
		57.0	943.10			59.0	942.81		
		60.0	943.20			60.0	942.72		
		63.0	943.13			62.0	942.97		
		66.0	943.11			65.0	943.10		
		69.0	943.13			67.0	943.04		
		72.0	943.03			69.0	943.16		
		75.0	943.12			71.0	943.22		
		78.0	943.20			73.0	943.24		
		81.0	943.25			75.0	943.25		
		82.0	943.25			77.0	943.25		

Table 25.--Listing of horizontal stations and elevations for cross section PR183 --Continued.

1987		1987		1988		1988	
Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
-7.0	945.77	91.8	944.17	-7.0	945.78	66.0	943.02
0.0	945.61	92.0	944.49	-4.0	945.78	68.0	943.11
4.0	945.64	92.4	944.65	-3.0	945.73	70.0	943.14
7.0	945.59	92.6	945.03	0.0	945.61	71.7	943.01
10.0	945.46	93.5	945.40	2.0	945.62	72.0	943.06
12.8	945.43	94.0	945.47	5.0	945.64	74.5	942.94
13.4	945.63	96.7	945.40	8.0	945.50	75.5	943.07
14.0	945.50	99.0	945.77	10.0	945.46	77.0	943.09
15.7	945.22	100.0	945.69	12.0	945.51	79.0	943.04
17.0	945.37	101.1	945.76	13.0	945.73	81.0	942.96
18.0	945.25			14.0	945.51	82.0	942.98
19.6	944.87			15.6	945.22	83.2	943.21
20.7	944.82			16.5	945.40	83.3	943.35
23.0	945.08			18.0	945.23	85.0	943.34
24.0	945.08			19.5	944.90	87.0	943.24
26.2	945.09			21.0	944.85	88.0	943.22
29.0	944.78			23.0	945.08	89.2	943.23
29.5	944.67			25.0	945.09	91.7	944.15
30.8	944.19			27.0	944.95	92.3	945.01
32.0	944.18			28.0	944.80	92.6	945.06
34.0	944.22			29.0	944.78	93.4	945.42
36.0	944.25			30.5	944.25	95.0	945.48
38.0	944.31			31.0	944.18	96.6	945.41
40.0	944.32			33.0	944.19	97.8	945.55
41.0	944.39			35.0	944.24	99.0	945.78
43.0	944.42			37.0	944.28	100.0	945.68
44.6	943.54			39.0	944.32	101.1	945.75
45.4	943.48			41.0	944.40		
47.0	943.36			42.9	944.43		
49.0	943.28			43.9	943.88		
52.0	943.22			44.2	943.85		
55.0	943.05			44.6	943.61		
58.0	942.98			46.0	943.38		
61.0	942.84			47.0	943.42		
64.0	942.78			49.0	943.37		
67.0	942.80			50.0	943.24		
69.0	942.94			52.5	943.22		
72.0	943.03			54.0	943.02		
75.0	943.12			55.0	942.97		
78.0	943.19			57.0	942.87		
81.0	943.31			58.0	942.84		
84.0	943.27			59.0	943.01		
87.0	943.15			60.4	943.05		
89.0	943.20			62.0	942.87		
90.1	943.47			64.0	942.89		

Description of Cross Section PR191

Location: Township 5 South/Range 50 East--section 25
U.S. Geological Survey quadrangle (1:24,000): Eldon Mountain

Landowners--left bank: Doug and Lucille Randall
right bank: Doug and Lucille Randall

Access: left bank

Permission from: Doug and Lucille Randall (T5S/R51E--8)
or Craig Randall (T5S/R51E--17)

Reference pins

Station (meters)	Elevation (meters above sea level)	Comments
		Pins -0.4 and 0.0 were closest to leveling instrument.
-0.4	937.994	0.16 meter above 1986 ground level.
0.0	937.698	At 1987 ground level.
150.3	936.632	0.27 meter above 1977 ground level, possibly buried in 1978.
151.6	937.081	0.19 meter above 1987 ground level.
186.0	936.924	0.17 meter above 1979 ground level.

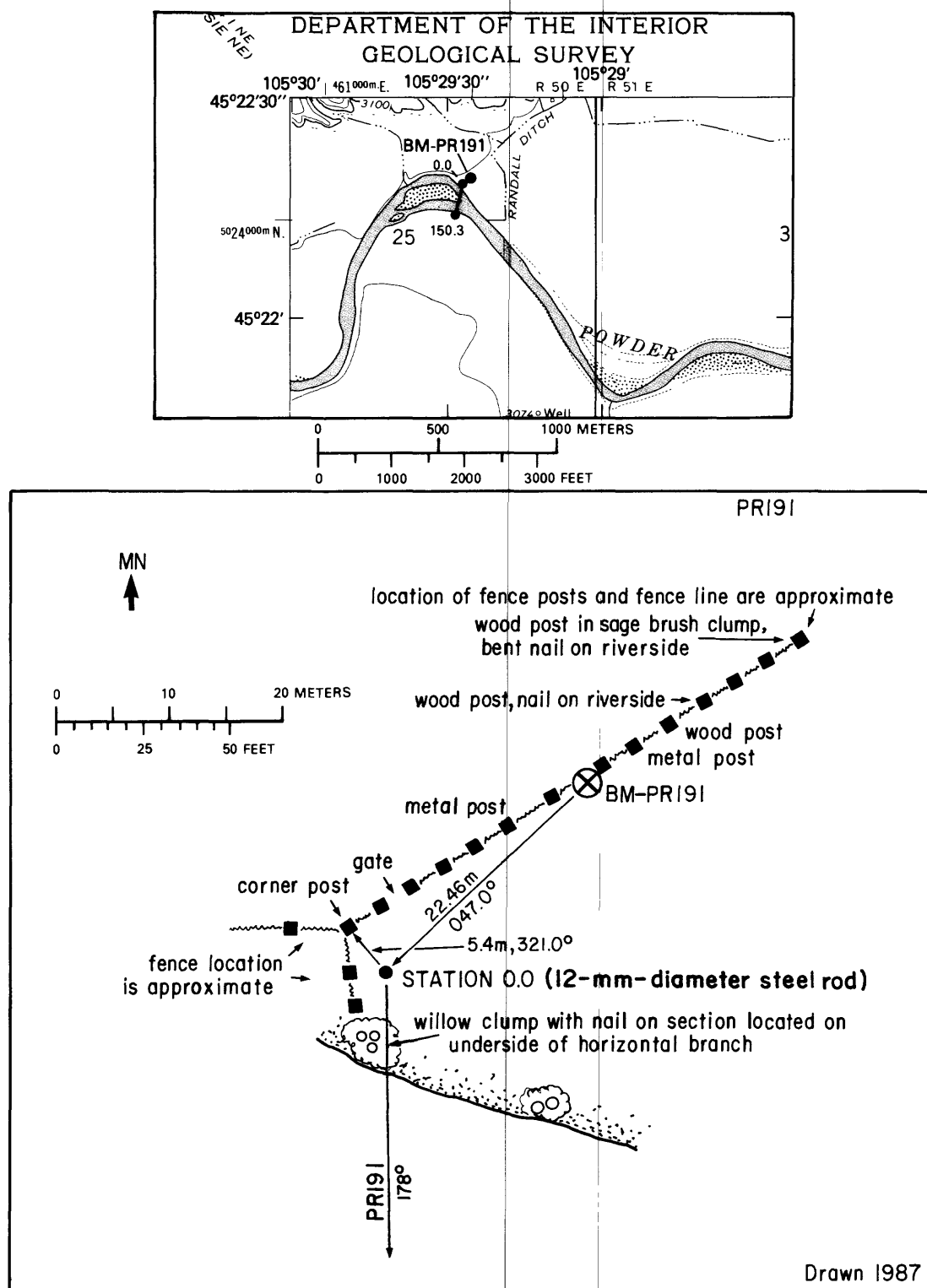


Figure 80.--Upper: Location of cross section PR191, bench mark BM-PR191, and left and right bank reference pins (tables 2 and 3) in the Eldon Mountain quadrangle. Lower: Location of bench mark on the left bank. MN is magnetic north.

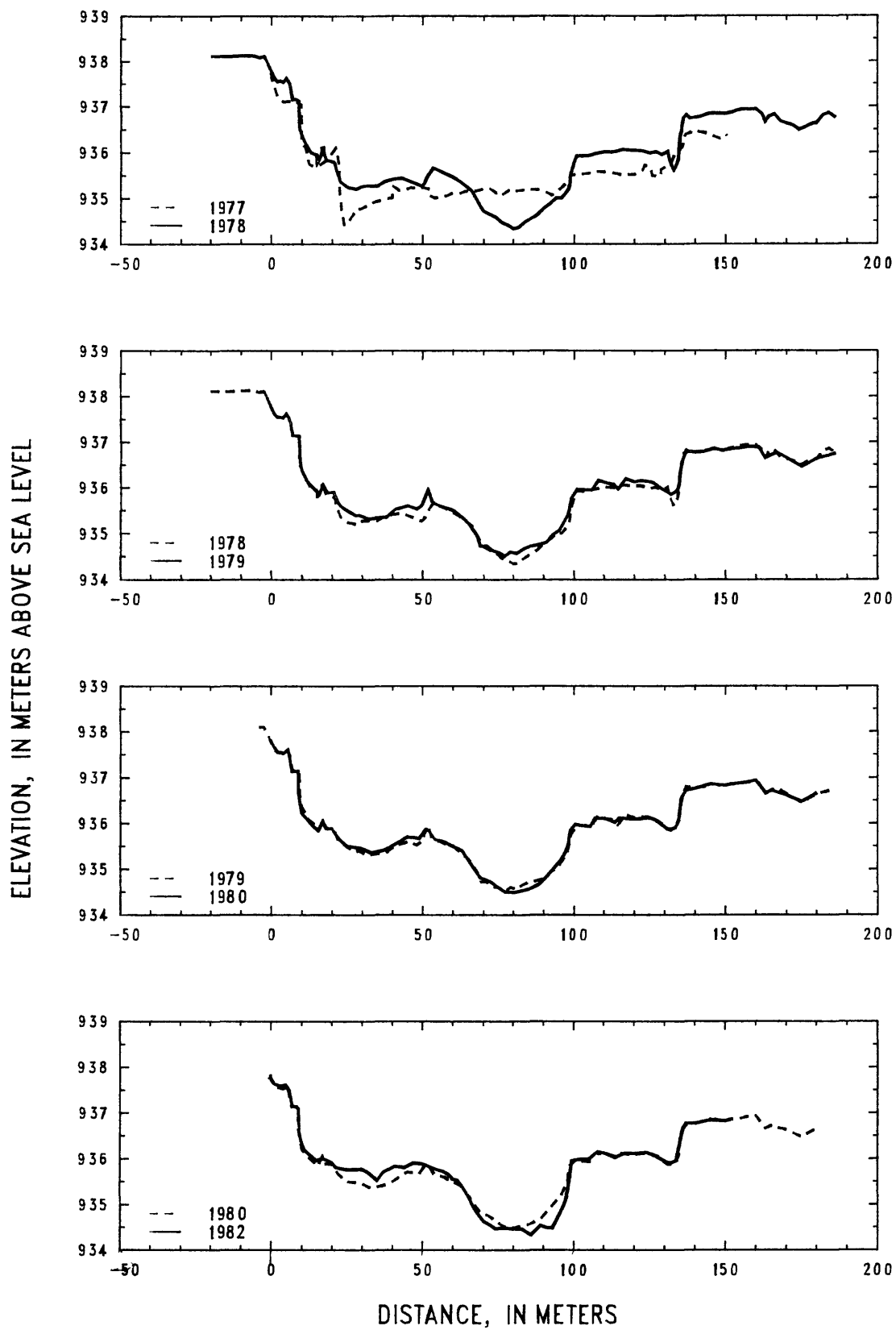


Figure 81.--Profiles of cross section PR191 from 1977 to 1982.

ELEVATION, IN METERS ABOVE SEA LEVEL

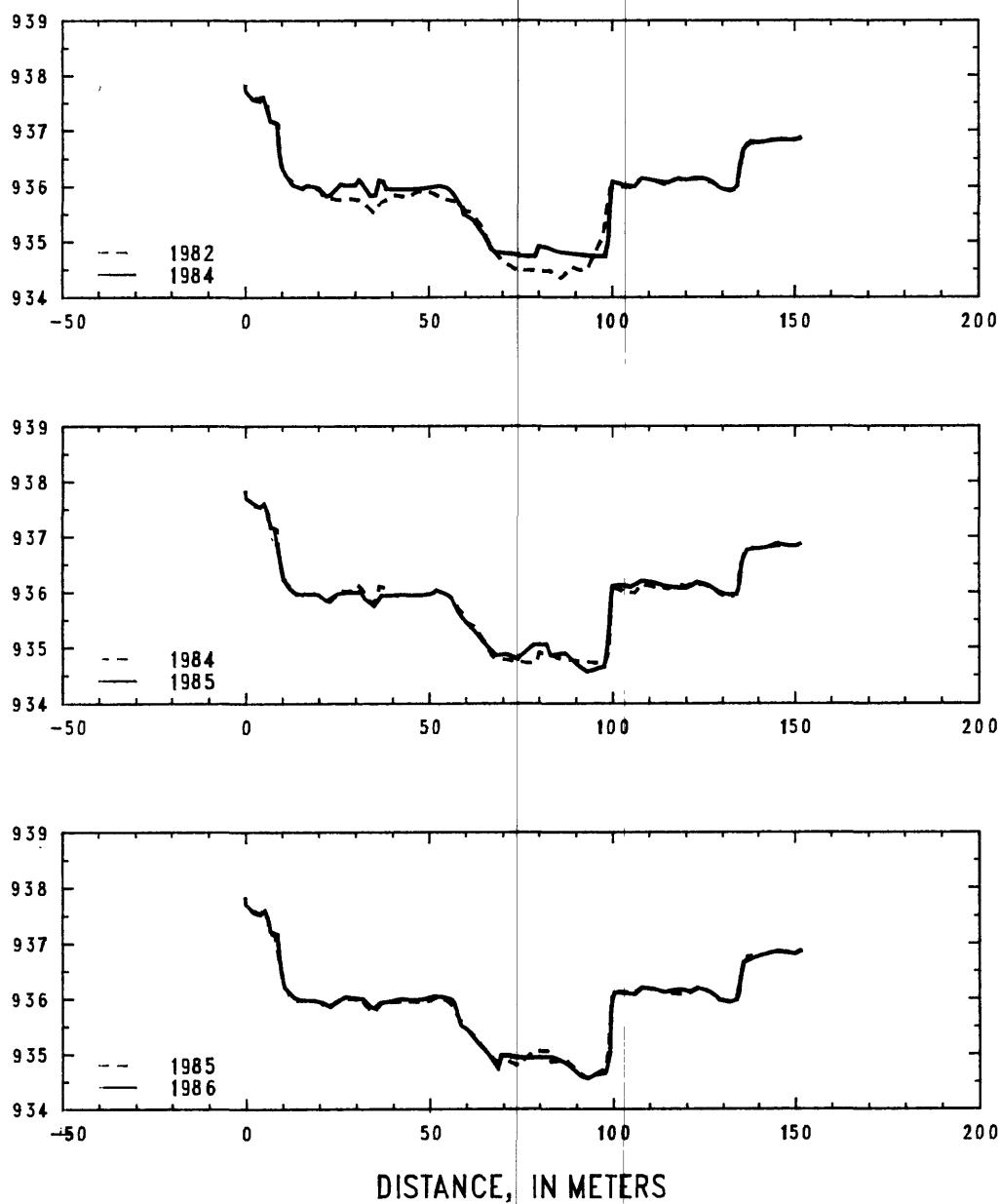


Figure 82.--Profiles of cross section PR191 from 1982 to 1986.

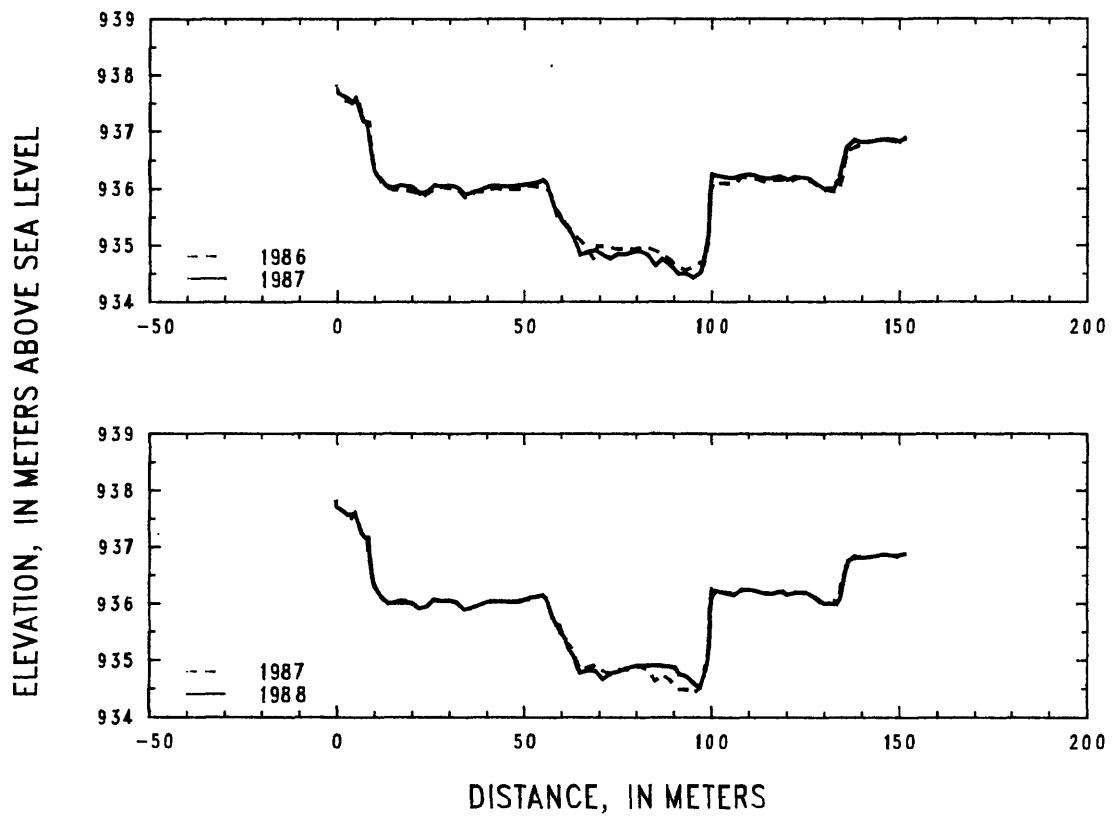


Figure 83.--Profiles of cross section PR191 from 1986 to 1988.

Table 26.--Listing of horizontal stations and elevations for cross section PR191
[Sta., station, distance in meters from a reference point on
the left bank; Elev., elevation, in meters above sea level].

1977		1977		1978		1978		1978	
Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
-0.4	937.73	66.0	935.15	-20.0	938.12	60.0	935.46	138.0	936.74
2.0	937.23	68.0	935.17	-15.0	938.10	62.0	935.37	140.0	936.76
4.0	937.10	70.0	935.21	-10.0	938.13	64.0	935.27	142.0	936.78
6.0	937.12	72.0	935.22	-6.0	938.13	66.0	935.17	144.0	936.84
8.0	937.10	74.0	935.12	-4.0	938.08	68.0	934.93	146.0	936.85
9.8	937.04	75.5	935.10	-2.4	938.11	70.0	934.71	148.0	936.84
10.0	936.18	76.0	935.07	-0.4	937.84	72.0	934.64	150.0	936.83
11.1	936.12	77.0	935.11	1.0	937.64	74.0	934.59	151.6	936.87
12.4	935.74	79.0	935.20	2.0	937.55	76.0	934.46	152.0	936.87
14.0	935.69	80.0	935.16	3.0	937.57	78.0	934.41	154.0	936.92
16.0	935.74	84.0	935.19	4.0	937.53	80.0	934.33	156.0	936.94
18.0	935.83	88.0	935.19	5.0	937.63	82.0	934.37	158.0	936.93
20.0	936.00	91.5	935.11	6.0	937.51	84.0	934.49	160.0	936.94
21.0	936.09	92.6	935.06	7.0	937.15	86.0	934.56	162.0	936.82
21.6	935.94	93.6	935.10	8.1	937.16	88.0	934.64	163.0	936.65
22.2	935.77	95.6	935.22	9.1	937.12	90.0	934.78	164.0	936.77
22.5	935.10	98.2	935.38	9.2	936.52	92.0	934.87	166.0	936.83
22.6	935.00	98.8	935.50	11.0	936.20	94.0	935.00	168.0	936.67
23.0	934.78	104.0	935.54	13.0	935.99	96.0	935.00	170.0	936.62
24.0	934.41	108.0	935.58	14.9	935.94	98.0	935.18	172.0	936.59
25.0	934.45	112.0	935.56	15.0	935.76	98.6	935.32	174.0	936.48
26.0	934.56	116.0	935.50	16.5	935.98	98.7	935.50	176.0	936.54
28.0	934.76	120.0	935.52	16.6	936.10	99.5	935.67	178.0	936.61
30.0	934.78	122.6	935.61	17.1	936.11	100.0	935.79	180.0	936.64
32.0	934.86	123.4	935.72	17.2	936.00	100.8	935.92	182.0	936.81
34.0	934.93	125.0	935.68	18.0	935.84	103.0	935.92	184.0	936.86
36.0	934.95	125.9	935.49	20.5	935.79	105.0	935.93	186.0	936.75
38.0	934.99	128.5	935.48	21.0	935.73	107.0	935.97		
39.8	935.01	128.8	935.62	21.1	935.64	110.0	936.01		
40.0	935.07	132.0	935.76	22.7	935.36	113.0	936.00		
40.2	935.14	133.0	935.93	25.0	935.24	116.0	936.06		
40.3	935.26	135.6	936.11	28.0	935.20	119.0	936.04		
42.0	935.17	136.7	936.39	30.0	935.27	122.0	936.04		
44.0	935.19	140.0	936.47	32.0	935.28	125.0	935.98		
46.0	935.24	144.0	936.40	35.0	935.27	127.0	936.01		
48.0	935.21	148.0	936.29	37.0	935.36	129.0	935.94		
50.0	935.24	150.0	936.38	40.0	935.42	131.0	936.02		
52.3	935.19	150.3	936.36	43.0	935.44	131.4	935.82		
52.4	935.05			46.0	935.36	133.0	935.60		
54.0	935.00			49.6	935.26	134.4	935.80		
56.0	935.03			50.5	935.32	135.0	936.38		
58.2	935.06			51.4	935.46	135.3	936.43		
60.0	935.12			53.4	935.66	135.5	936.55		
62.0	935.11			56.0	935.58	136.0	936.75		
64.0	935.16			58.0	935.52	137.0	936.82		

Table 26.--Listing of horizontal stations and elevations for cross section PR191 --Continued.

1979		1979		1979		1980		1980	
Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
-4.0	938.10	77.0	934.50	180.0	936.64	-0.4	937.82	110.0	936.11
-2.4	938.10	79.0	934.60	186.0	936.75	1.0	937.65	113.6	936.02
-0.4	937.82	81.0	934.56			2.0	937.55	115.0	936.12
1.0	937.62	83.0	934.65			4.0	937.52	120.0	936.08
2.0	937.54	85.0	934.71			5.5	937.60	125.0	936.13
3.0	937.55	88.0	934.75			6.9	937.13	128.0	936.04
4.0	937.53	91.0	934.81			8.9	937.14	131.0	935.87
5.0	937.62	92.6	934.95			9.1	936.62	133.7	935.90
6.0	937.50	95.0	935.06			10.2	936.21	134.6	936.05
7.0	937.14	97.8	935.37			13.0	935.99	135.5	936.56
9.2	937.13	98.6	935.59			15.5	935.84	137.0	936.73
9.4	936.62	99.0	935.76			17.0	936.05	140.0	936.76
10.0	936.38	101.0	935.96			18.0	935.89	145.0	936.86
12.0	936.10	103.0	935.95			20.0	935.89	150.0	936.82
14.0	935.98	106.0	935.95			22.0	935.68	151.6	936.86
15.7	935.85	108.0	936.16			25.0	935.50	155.0	936.88
17.0	936.06	111.0	936.09			30.0	935.45	160.0	936.94
18.4	935.88	113.0	936.07			33.0	935.36	163.3	936.65
20.4	935.90	114.5	935.96			37.0	935.41	165.0	936.72
22.0	935.65	116.0	936.10			40.0	935.51	168.0	936.66
23.0	935.58	117.0	936.19			45.0	935.71	170.0	936.62
25.0	935.49	120.0	936.12			49.0	935.67	175.0	936.47
28.0	935.38	122.0	936.15			51.0	935.87	180.0	936.66
29.0	935.40	124.0	936.14			52.0	935.84		
32.0	935.31	126.0	936.11			54.0	935.65		
35.0	935.34	128.0	936.01			57.0	935.60		
38.0	935.36	130.0	935.93			60.0	935.49		
41.0	935.53	132.0	935.84			63.0	935.40		
42.0	935.54	134.0	935.93			66.0	935.10		
45.0	935.60	134.7	936.05			69.0	934.81		
48.0	935.52	135.1	936.37			72.0	934.74		
49.7	935.61	136.0	936.65			75.0	934.59		
51.7	935.95	137.0	936.80			77.0	934.50		
53.0	935.70	140.0	936.77			80.0	934.48		
54.0	935.64	143.0	936.80			83.0	934.53		
56.0	935.59	146.0	936.86			86.0	934.58		
59.0	935.52	149.0	936.81			89.0	934.68		
60.0	935.50	151.6	936.85			92.0	934.91		
63.0	935.34	155.0	936.87			96.0	935.22		
65.0	935.22	158.0	936.91			98.0	935.49		
67.9	934.95	161.0	936.88			98.7	935.84		
69.0	934.72	163.0	936.64			100.5	935.98		
71.0	934.73	165.0	936.72			103.0	935.94		
73.0	934.62	167.0	936.76			105.5	935.93		
75.0	934.59	175.0	936.45			107.0	936.11		

Table 26.--Listing of horizontal stations and elevations for cross section PR191 --Continued.

1982		1982		1984		1984		1985	
Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
-0.4	937.83	105.0	935.99	-0.4	937.82	79.0	934.73	-0.4	937.83
0.0	937.72	108.0	936.15	0.0	937.70	80.0	934.91	0.0	937.69
1.0	937.64	111.0	936.10	2.0	937.56	82.0	934.90	3.0	937.56
3.0	937.58	114.0	936.03	4.0	937.53	85.0	934.81	4.0	937.53
5.0	937.61	117.0	936.13	5.0	937.60	90.0	934.76	5.0	937.60
6.0	937.50	120.0	936.11	7.0	937.17	95.0	934.73	6.0	937.45
7.0	937.17	124.0	936.14	8.0	937.16	98.0	934.73	7.0	937.16
9.0	937.10	127.0	936.06	8.7	937.13	99.0	935.04	8.0	937.14
9.5	936.55	130.0	935.95	9.3	936.59	99.6	935.98	9.0	936.72
10.0	936.38	132.0	935.90	10.0	936.34	100.1	936.09	10.4	936.21
11.0	936.19	134.0	935.96	11.0	936.20	103.0	936.02	12.0	936.07
15.0	935.96	136.0	936.67	13.0	936.02	106.0	935.99	14.0	935.96
17.0	936.01	137.0	936.77	15.6	935.95	108.0	936.15	16.0	935.97
20.0	935.93	140.0	936.77	17.0	936.02	112.0	936.09	20.0	935.95
21.3	935.81	145.0	936.85	20.0	935.96	115.0	936.06	22.0	935.84
25.0	935.75	150.0	936.82	22.0	935.82	118.0	936.15	25.0	935.97
30.0	935.77	151.6	936.85	23.0	935.83	120.0	936.11	28.0	936.00
32.5	935.68			26.0	936.04	122.0	936.15	30.8	935.99
35.0	935.52			27.0	936.02	125.0	936.14	31.3	936.03
37.0	935.71			30.0	936.02	127.4	936.07	32.4	935.88
41.0	935.84			31.0	936.12	129.0	935.97	35.0	935.75
44.0	935.80			31.4	936.09	131.0	935.92	37.0	935.94
47.0	935.91			34.0	935.83	133.0	935.92	39.0	935.94
50.0	935.89			35.4	935.84	134.2	936.00	42.0	935.96
55.0	935.75			36.4	936.11	135.0	936.36	45.0	935.94
57.0	935.72			37.4	936.09	136.0	936.66	48.0	935.95
59.0	935.64			38.3	935.95	138.0	936.80	50.0	935.96
60.0	935.55			42.0	935.94	140.0	936.78	52.0	936.03
61.5	935.53			45.0	935.95	145.0	936.84	54.0	935.99
64.3	935.28			47.0	935.95	150.0	936.83	56.0	935.89
67.0	934.89			50.0	935.98	151.6	936.87	58.0	935.63
70.0	934.63			53.0	936.01			60.0	935.46
72.0	934.56			55.0	935.97			63.0	935.25
74.0	934.47			57.0	935.83			65.0	935.07
77.0	934.48			58.0	935.71			68.0	934.86
80.0	934.46			59.4	935.59			71.0	934.88
83.0	934.46			59.5	935.49			74.0	934.79
86.0	934.33			62.0	935.39			75.0	934.86
89.0	934.54			64.0	935.21			77.0	934.97
91.0	934.48			65.7	935.04			78.5	935.06
93.0	934.48			67.0	934.86			80.0	935.06
97.0	935.02			68.0	934.81			82.0	935.06
98.0	935.29			70.0	934.79			83.0	934.85
99.4	935.96			73.0	934.77			85.0	934.88
102.0	935.99			76.0	934.73			87.0	934.90

Table 26.--Listing of horizontal stations and elevations for cross section PR191 --Continued.

1985		1986		1986		1987		1987	
Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
90.0	934.69	-0.4	937.83	89.0	934.73	0.0	937.70	81.0	934.89
93.0	934.56	0.0	937.70	91.0	934.60	1.0	937.66	83.0	934.83
96.0	934.63	1.0	937.63	93.0	934.56	3.0	937.59	85.0	934.63
97.7	934.66	2.0	937.56	95.0	934.63	4.0	937.50	87.0	934.75
98.7	935.07	4.0	937.52	97.0	934.70	5.0	937.60	89.0	934.63
99.6	935.93	5.3	937.59	98.0	934.67	7.0	937.18	91.0	934.48
100.0	936.11	6.3	937.43	99.0	935.01	8.0	937.15	93.0	934.49
102.0	936.13	6.8	937.21	99.1	935.09	10.0	936.32	95.0	934.41
105.0	936.09	8.7	937.16	99.5	935.88	11.0	936.22	97.0	934.51
108.0	936.20	9.3	936.66	100.3	936.11	13.0	936.05	98.0	934.74
111.0	936.17	10.5	936.22	103.0	936.09	15.0	936.01	99.0	935.13
114.0	936.10	13.0	936.03	106.0	936.08	17.0	936.06	99.3	935.24
117.0	936.08	15.0	935.97	108.0	936.20	20.0	936.03	99.7	936.01
120.0	936.07	16.0	935.98	111.0	936.17	22.0	935.91	100.1	936.25
123.0	936.18	19.0	935.96	114.0	936.11	24.0	935.95	101.0	936.23
126.0	936.12	21.0	935.93	117.0	936.15	26.0	936.07	103.0	936.20
129.0	935.99	23.0	935.85	119.0	936.16	28.0	936.04	105.0	936.18
132.0	935.94	25.0	935.96	121.0	936.12	30.0	936.06	107.0	936.20
134.0	935.96	27.0	936.04	123.0	936.20	32.0	936.02	109.0	936.24
134.7	936.11	30.0	936.01	126.0	936.13	34.0	935.90	111.0	936.23
135.5	936.55	32.0	935.99	128.0	936.05	36.0	935.93	113.0	936.19
137.0	936.76	34.0	935.85	129.0	935.98	38.0	935.98	115.0	936.17
139.0	936.78	35.0	935.83	132.0	935.93	40.0	936.03	118.0	936.21
142.0	936.80	36.6	935.93	134.0	935.98	42.0	936.06	120.0	936.15
145.0	936.87	39.0	935.95	136.0	936.66	44.0	936.04	122.0	936.21
148.0	936.83	42.0	936.00	140.0	936.78	46.0	936.03	124.0	936.19
150.0	936.82	45.0	935.98	145.0	936.86	48.0	936.04	126.0	936.17
151.6	936.87	48.0	935.99	150.0	936.81	50.0	936.07	128.0	936.07
		51.0	936.05	151.6	936.87	52.0	936.09	130.0	935.99
		54.0	936.03			54.0	936.13	132.0	935.99
		56.0	935.98			55.0	936.15	132.6	935.98
		56.8	935.91			55.9	936.10	133.3	936.12
		58.7	935.51			58.0	935.66	133.8	936.10
		60.0	935.46			59.4	935.54	135.0	936.44
		63.0	935.22			60.0	935.41	136.0	936.72
		65.8	935.01			62.4	935.23	138.0	936.85
		68.5	934.74			64.0	934.99	140.0	936.80
		69.5	934.98			65.0	934.82	142.0	936.81
		71.0	934.98			67.0	934.88	144.0	936.84
		74.0	934.94			69.0	934.91	146.0	936.86
		77.0	934.92			71.0	934.81	148.0	936.86
		80.0	934.94			73.0	934.75	150.0	936.81
		83.0	934.95			75.0	934.84	151.6	936.89
		85.0	934.90			77.0	934.83		
		87.0	934.84			79.0	934.88		

Table 26.--Listing of horizontal stations and elevations for cross section PR191 --Continued.

1988		1988	
Sta.	Elev.	Sta.	Elev.
-0.4	937.83	75.0	934.80
0.0	937.70	77.0	934.86
1.0	937.67	80.0	934.91
3.0	937.57	83.0	934.91
5.0	937.59	86.0	934.91
7.0	937.21	89.0	934.88
8.0	937.16	90.3	934.87
8.6	937.17	91.5	934.75
9.0	936.73	93.0	934.73
10.0	936.34	96.0	934.55
12.0	936.10	97.0	934.53
14.0	936.00	98.7	934.87
16.0	936.02	99.3	935.20
18.0	936.02	99.6	935.87
20.0	936.01	100.0	936.10
22.0	935.91	101.0	936.23
24.0	935.95	103.0	936.19
26.0	936.08	106.0	936.15
28.0	936.04	108.0	936.24
30.0	936.06	111.0	936.23
32.0	936.02	114.0	936.16
34.0	935.90	116.0	936.17
36.0	935.92	118.0	936.20
38.0	935.97	119.0	936.22
40.0	936.03	120.0	936.15
43.0	936.05	122.0	936.19
46.0	936.03	125.0	936.20
49.0	936.04	128.0	936.09
51.0	936.10	130.0	936.00
53.0	936.12	132.0	935.99
55.0	936.14	133.4	935.99
56.0	936.07	134.4	936.10
58.0	935.70	135.6	936.58
59.0	935.60	136.5	936.76
59.4	935.61	138.0	936.81
60.0	935.47	140.0	936.81
61.1	935.36	143.0	936.83
61.7	935.21	146.0	936.87
63.1	935.09	149.0	936.84
64.2	934.87	151.6	936.88
65.0	934.78		
67.0	934.83		
69.0	934.81		
71.0	934.66		
73.0	934.77		

Description of Cross Section PR194

Location: Township 5 South/Range 51 East--section 30
U.S. Geological Survey quadrangle (1:24,000): Eldon Mountain

Landowners--left bank: Doug and Lucille Randall
right bank: Doug and Lucille Randall

Access: right bank, across Stuver Ranch

Permission from: Shirley or John Stuver (T5S/R51E--31)

Reference pins

Station (meters)	Elevation (meters above sea level)	Comments
-1.2	934.316	Pins 96.0 and 113.3 were closest to leveling instruments. Bent, 0.13 meter above 1987 ground level.
0.0	934.186	0.01 meter above 1987 ground level.
96.0	934.229	Bent flush with 1988 ground level.
113.3	933.970	0.10 meter above 1988 ground level

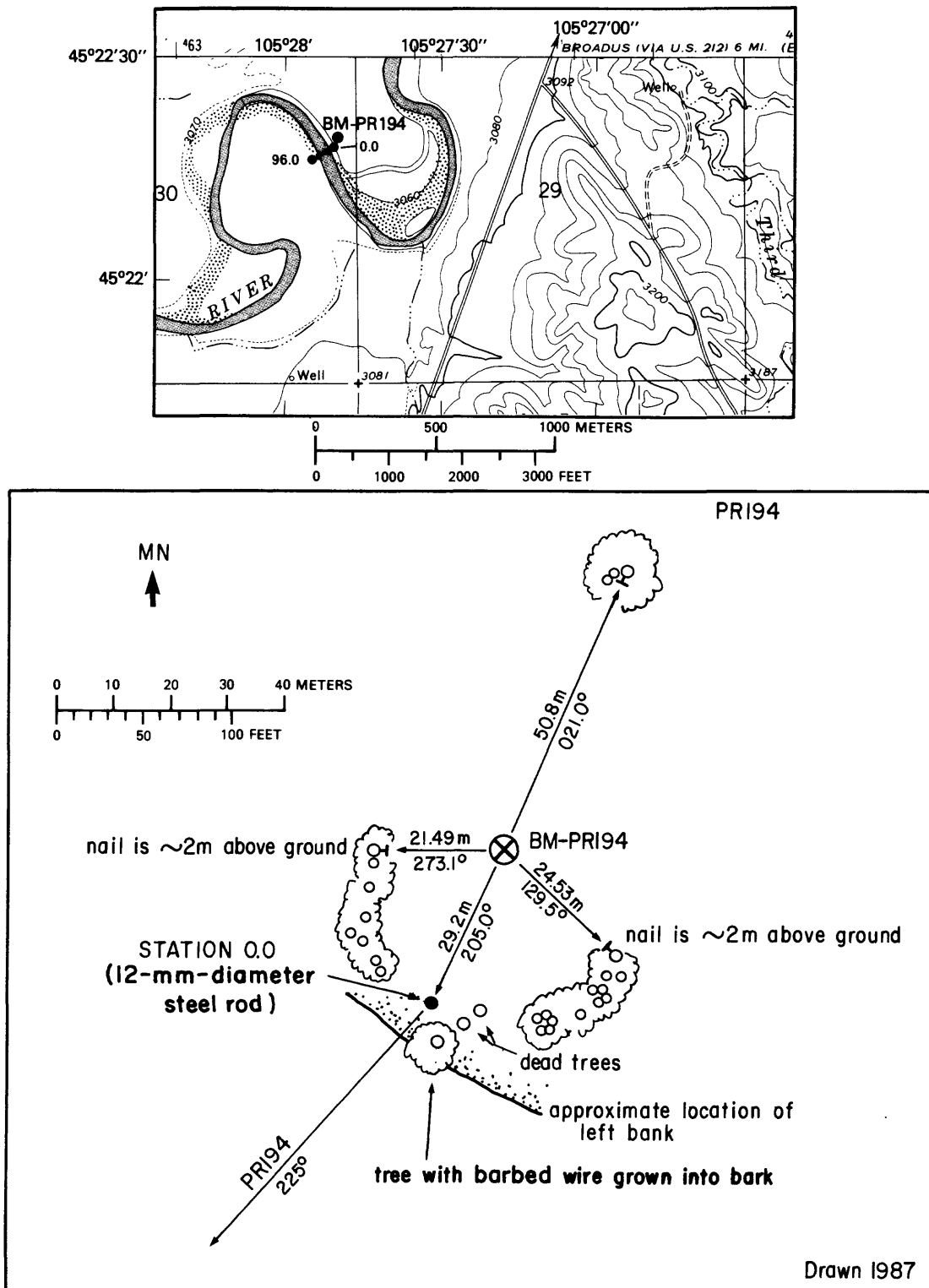


Figure 84.--Upper: Location of cross section PR194, bench mark BM-PR194, and left and right bank reference pins (tables 2 and 3) in the Eldon Mountain quadrangle. Lower: Location of bench mark on the left bank. MN is magnetic north.

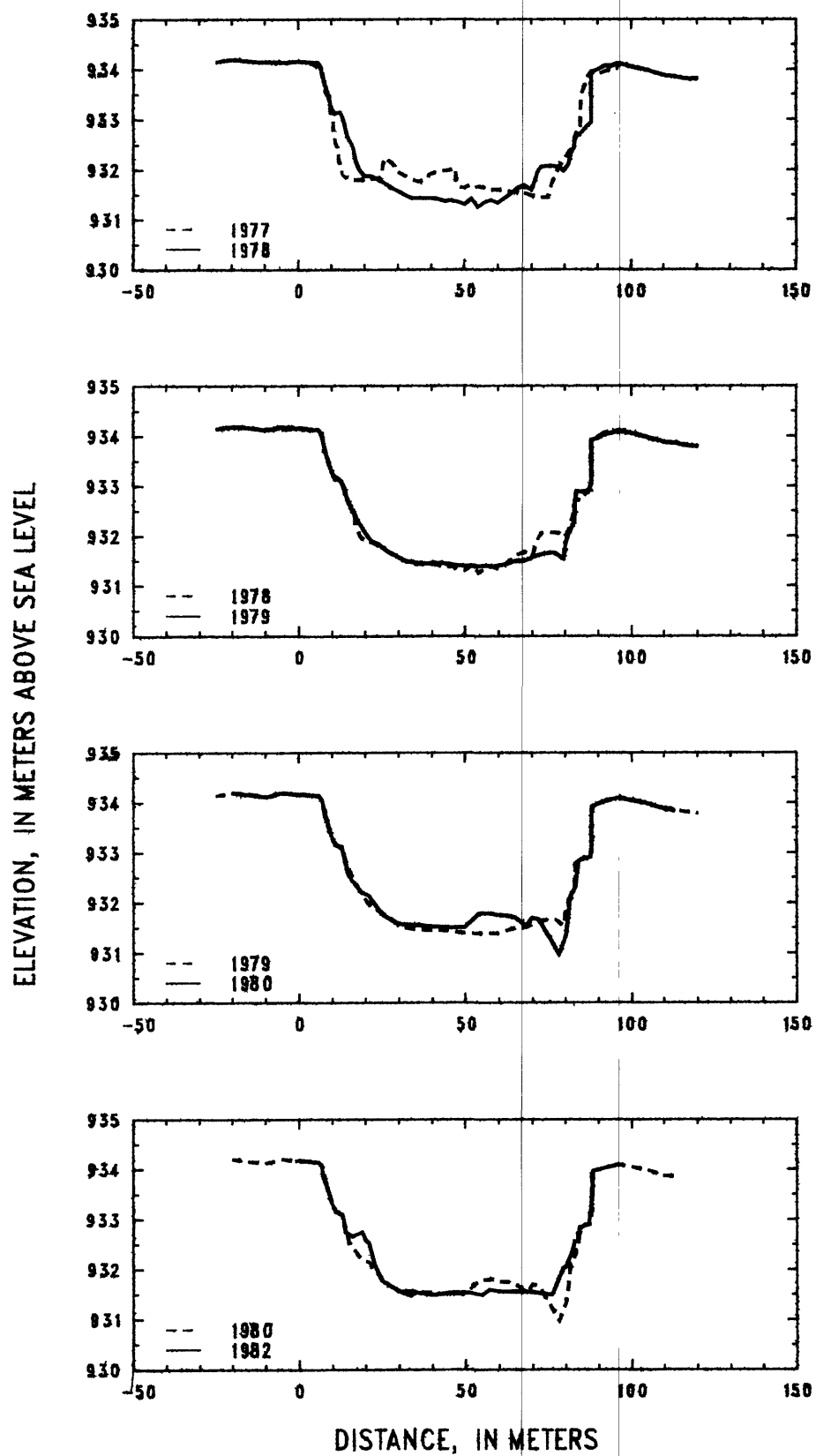


Figure 85.--Profiles of cross section PR194 from 1977 to 1982.

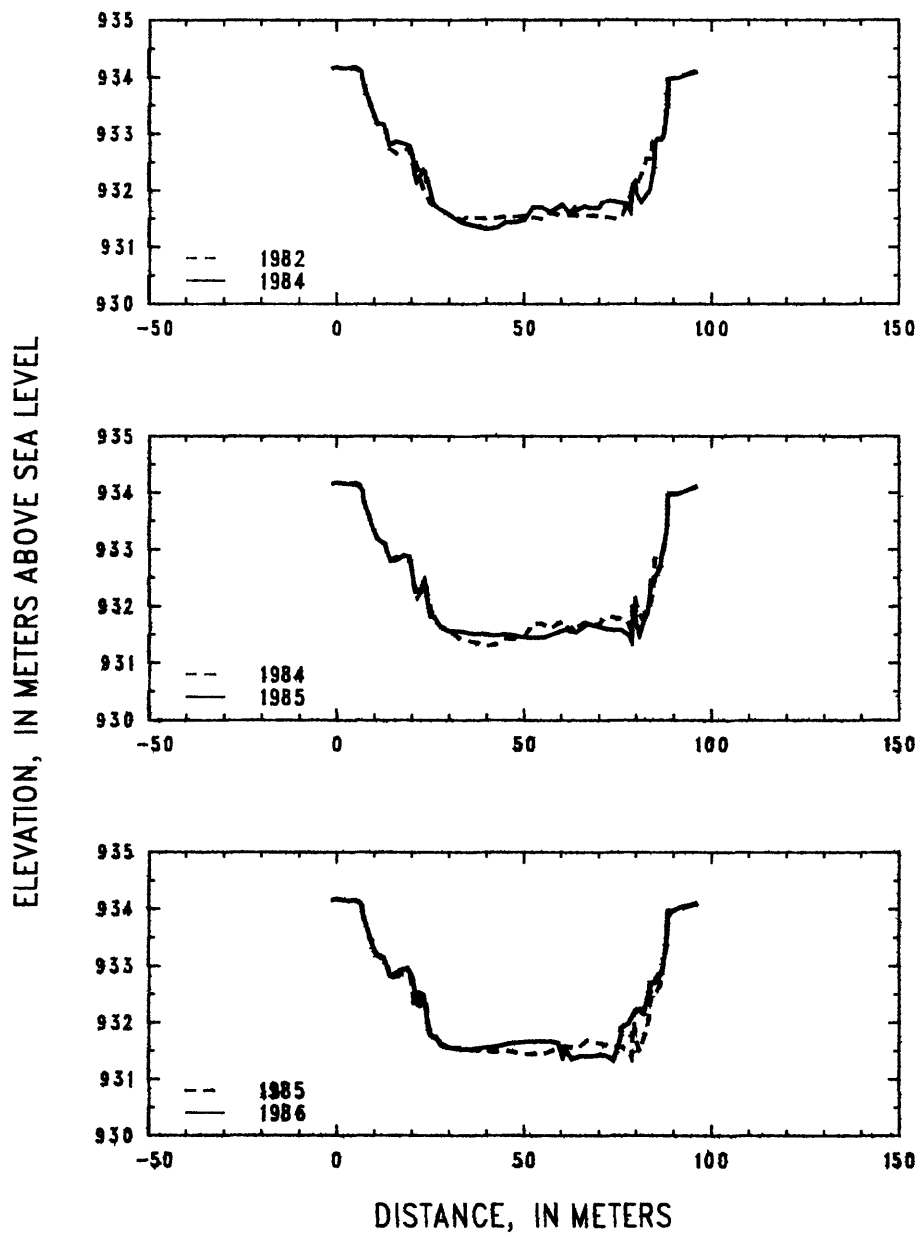


Figure 86.--Profiles of cross section PR194 from 1982 to 1986.

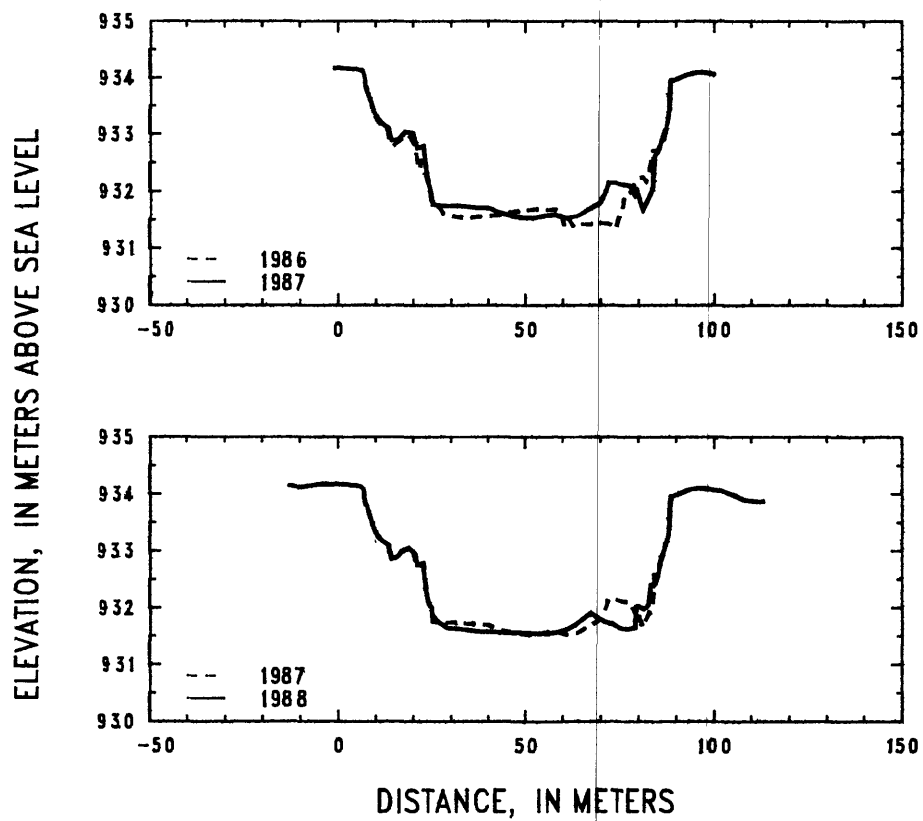


Figure 87.--Profiles of cross section PR194 from 1986 to 1988.

Table 27.--Listing of horizontal stations and elevations for cross section PR194
[Sta., station, distance in meters from a reference point on
the left bank; Elev., elevation, in meters above sea level].

1977		1977		1978		1978		1979	
Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
-1.2	934.15	58.0	931.59	-25.0	934.15	64.0	931.53	-25.0	934.14
0.0	934.16	60.0	931.60	-20.0	934.20	66.0	931.64	-20.0	934.19
2.0	934.15	62.0	931.59	-16.0	934.17	68.0	931.68	-15.0	934.17
4.0	934.11	64.0	931.55	-12.0	934.14	70.0	931.59	-10.0	934.11
6.0	934.07	66.0	931.56	-8.0	934.14	72.0	931.98	-5.0	934.19
7.4	933.98	68.0	931.53	-4.0	934.13	73.0	932.06	-1.2	934.15
8.4	933.54	70.0	931.48	-1.2	934.15	75.0	932.08	0.0	934.16
9.4	933.48	72.0	931.43	0.0	934.17	78.0	932.06	2.0	934.15
10.2	933.01	74.8	931.45	2.0	934.15	79.5	931.97	4.0	934.12
10.6	932.94	76.0	931.72	4.0	934.14	81.0	932.09	6.0	934.13
10.8	932.74	78.0	932.03	6.0	934.13	82.0	932.34	7.0	934.02
11.3	932.52	80.0	932.23	7.0	934.04	82.9	932.45	8.0	933.73
12.0	932.45	82.0	932.42	7.2	933.94	83.0	932.66	10.0	933.27
12.4	932.17	84.0	932.74	9.0	933.53	83.5	932.74	12.0	933.12
13.0	932.10	84.6	932.85	10.0	933.26	84.5	932.70	13.0	933.10
13.3	931.91	85.0	933.49	11.0	933.13	87.0	932.89	14.0	932.86
14.0	931.86	87.0	933.86	12.7	933.15	88.0	932.94	16.0	932.52
16.0	931.80	88.0	933.96	13.8	933.00	88.0	933.95	18.0	932.29
18.0	931.80	90.0	933.89	14.8	932.68	90.0	934.00	20.0	932.06
20.0	931.79	92.0	933.96	16.5	932.47	92.0	934.07	22.0	931.89
22.0	931.82	94.0	934.00	17.0	932.35	94.0	934.07	24.0	931.83
24.7	931.85	95.0	934.02	17.3	932.19	96.0	934.12	26.0	931.72
26.0	932.25	96.0	934.02	18.6	931.99	98.0	934.09	26.8	931.70
28.5	932.12			20.0	931.88	100.0	934.05	29.0	931.60
29.3	931.98			22.0	931.88	105.0	933.98	32.0	931.49
32.0	931.88			24.0	931.80	110.0	933.87	35.0	931.46
34.0	931.81			26.0	931.74	113.0	933.86	38.0	931.44
36.0	931.76			28.0	931.64	116.0	933.81	41.0	931.46
38.0	931.81			30.0	931.57	120.0	933.80	44.0	931.44
39.0	931.84			32.0	931.50			47.0	931.41
39.1	931.90			34.0	931.43			50.0	931.39
41.0	931.95			36.0	931.43			53.0	931.38
43.0	931.98			38.0	931.43			56.0	931.40
45.0	931.99			40.0	931.43			59.0	931.38
47.2	932.03			42.0	931.41			62.0	931.43
47.4	931.76			44.0	931.36			65.0	931.50
48.3	931.66			46.0	931.39			68.0	931.50
49.0	931.64			48.0	931.35			71.0	931.59
50.0	931.63			50.0	931.30			74.0	931.65
50.5	931.66			52.0	931.42			77.0	931.66
52.0	931.69			54.0	931.25			79.0	931.55
53.0	931.64			56.0	931.35			79.5	931.53
54.0	931.66			58.0	931.39			80.0	931.81
55.2	931.65			60.0	931.33			81.0	932.05
56.0	931.62			62.0	931.44			82.8	932.27

Table 27.--Listing of horizontal stations and elevations for cross section PR194 --Continued.

1979		1980		1980		1982		1984	
Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
83.0	932.74	-20.0	934.20	100.0	934.03	-1.2	934.17	-1.2	934.16
83.5	932.89	-15.0	934.15	105.0	933.97	0.0	934.18	0.0	934.19
85.0	932.87	-10.0	934.11	110.0	933.86	3.0	934.15	2.0	934.16
87.0	932.90	-5.0	934.20	113.0	933.84	6.0	934.13	5.0	934.18
88.0	933.03	-1.2	934.16			7.0	934.05	6.8	934.10
88.0	933.91	0.0	934.17			7.2	933.90	7.2	933.90
90.0	933.97	2.0	934.16			9.0	933.54	9.0	933.52
92.0	934.03	4.0	934.14			10.0	933.30	11.0	933.18
94.0	934.05	6.0	934.13			11.0	933.17	12.7	933.16
96.0	934.09	7.0	934.05			13.0	933.10	14.0	932.81
98.0	934.08	10.0	933.31			13.5	932.99	16.0	932.87
100.0	934.05	11.0	933.15			14.0	932.74	18.0	932.83
105.0	933.96	13.0	933.11			16.0	932.65	19.6	932.78
110.0	933.87	15.0	932.52			19.0	932.75	20.3	932.62
113.0	933.86	19.0	932.19			20.0	932.58	20.7	932.32
116.0	933.81	21.0	932.14			21.0	932.53	21.4	932.15
120.0	933.78	25.0	931.77			23.0	932.03	23.1	932.37
		30.0	931.57			25.0	931.77	23.6	932.34
		35.0	931.55			30.0	931.56	24.0	932.17
		40.0	931.52			33.5	931.47	24.3	932.19
		45.0	931.50			35.0	931.54	25.8	931.77
		50.0	931.51			40.0	931.48	27.0	931.68
		54.0	931.78			45.0	931.53	30.0	931.56
		58.0	931.79			50.0	931.54	33.0	931.43
		59.0	931.75			55.0	931.48	36.0	931.38
		63.0	931.74			57.0	931.59	40.0	931.30
		65.0	931.70			60.0	931.56	43.0	931.34
		68.0	931.54			65.0	931.55	45.0	931.43
		69.0	931.60			70.0	931.54	48.0	931.44
		70.0	931.70			75.0	931.49	50.0	931.47
		72.0	931.66			76.0	931.50	52.4	931.69
		76.0	931.20			79.2	932.03	54.7	931.70
		78.0	930.96			80.0	932.05	57.0	931.60
		79.0	931.15			82.2	932.39	60.5	931.75
		80.0	931.31			82.7	932.56	62.3	931.57
		81.0	931.75			83.9	932.55	63.6	931.69
		81.5	932.11			84.3	932.84	63.8	931.64
		83.0	932.29			85.0	932.85	66.4	931.72
		84.0	932.83			87.0	932.91	67.2	931.68
		87.6	932.91			88.0	933.37	70.0	931.68
		87.9	933.07			88.4	933.97	70.7	931.74
		88.0	933.91			90.0	933.99	71.0	931.79
		90.0	933.98			93.0	934.04	73.0	931.82
		93.0	934.05			96.0	934.09	76.0	931.78
		96.0	934.09					77.5	931.76

Table 27.--Listing of horizontal stations and elevations for cross section PR194 --Continued.

1984		1985		1985		1986		1986	
Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
78.5	931.61	-1.2	934.17	81.0	931.49	-1.2	934.17	78.0	931.98
79.2	932.11	0.0	934.19	82.3	931.79	0.0	934.17	79.0	932.13
79.8	932.16	2.0	934.16	83.0	931.87	3.0	934.15	80.0	932.22
80.4	931.91	4.0	934.15	84.0	932.45	5.0	934.16	81.0	932.25
81.5	931.79	6.0	934.13	84.6	932.43	6.0	934.13	82.0	932.16
83.7	932.00	7.0	934.03	86.4	932.67	7.0	934.05	83.5	932.54
84.9	932.42	7.3	933.84	86.9	932.96	7.2	933.92	83.8	932.71
85.0	932.83	9.0	933.52	87.5	933.10	9.0	933.52	85.0	932.70
85.7	932.91	10.0	933.31	88.2	933.36	10.5	933.23	86.0	932.86
86.7	932.90	11.0	933.18	88.5	933.97	12.0	933.15	86.8	932.88
87.3	932.97	13.0	933.10	89.0	933.97	12.8	933.15	88.0	933.31
88.2	933.41	14.4	932.79	91.0	933.98	14.2	932.82	88.5	933.97
88.6	933.96	16.0	932.81	93.0	934.03	15.0	932.80	90.0	933.98
89.0	933.99	18.0	932.90	96.0	934.11	17.0	932.93	92.0	934.05
91.0	933.98	19.5	932.87			19.0	932.98	94.0	934.07
93.0	934.04	20.0	932.70			20.3	932.82	96.0	934.10
95.0	934.09	21.0	932.26			21.5	932.38		
96.0	934.10	22.4	932.30			22.2	932.53		
		23.5	932.47			23.2	932.49		
		24.0	932.30			24.8	931.82		
		24.3	932.04			25.7	931.75		
		25.0	931.82			26.7	931.72		
		26.0	931.81			28.0	931.60		
		28.0	931.62			31.0	931.55		
		30.0	931.55			34.0	931.52		
		33.0	931.55			37.0	931.55		
		36.0	931.51			40.0	931.56		
		39.0	931.51			43.0	931.58		
		42.0	931.48			46.0	931.64		
		45.0	931.51			49.0	931.66		
		48.0	931.47			52.0	931.67		
		51.0	931.44			55.0	931.67		
		55.0	931.44			58.0	931.67		
		58.0	931.52			59.4	931.64		
		61.0	931.59			60.5	931.39		
		64.0	931.54			61.5	931.53		
		67.0	931.69			63.0	931.36		
		70.0	931.64			65.0	931.42		
		73.0	931.58			68.0	931.41		
		76.0	931.58			70.0	931.44		
		78.0	931.50			72.0	931.42		
		78.8	931.38			74.0	931.33		
		79.1	931.78			75.0	931.57		
		79.6	932.00			75.9	931.73		
		80.0	931.72			76.0	931.91		

Table 27.--Listing of horizontal stations and elevations for cross section PR194 --Continued.

1987		1987		1988		1988	
Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
-1.2	934.18	85.0	932.67	-13.0	934.16	67.4	931.90
0.0	934.18	87.0	933.07	-10.0	934.12	69.0	931.83
3.0	934.15	87.4	933.09	-8.0	934.15	71.0	931.75
5.0	934.15	88.1	933.34	-6.0	934.17	73.0	931.72
6.5	934.13	88.5	933.95	-4.0	934.18	75.0	931.64
7.0	934.05	90.0	933.98	-1.2	934.17	77.0	931.61
7.4	933.82	92.0	934.04	0.0	934.19	79.2	931.65
10.0	933.34	94.0	934.08	2.0	934.17	79.4	932.02
12.0	933.16	96.0	934.11	4.0	934.15	80.0	932.04
13.0	933.13	100.0	934.07	5.0	934.16	81.5	931.97
13.6	933.11			6.7	934.10	82.6	932.04
14.3	932.88			7.0	934.06	83.3	932.40
16.0	932.90			7.2	933.89	84.2	932.39
18.0	933.04			8.0	933.75	84.9	932.49
20.0	933.01			10.0	933.32	86.0	932.80
21.0	932.75			11.0	933.23	87.1	933.07
22.8	932.79			12.0	933.18	88.0	933.26
23.8	932.19			13.6	933.10	88.6	933.96
24.4	932.05			14.4	932.86	90.0	933.99
25.1	931.76			16.0	932.90	92.0	934.04
28.0	931.73			17.0	933.00	94.0	934.09
31.0	931.75			19.0	933.05	96.0	934.10
34.0	931.73			20.6	932.94	98.0	934.09
37.0	931.70			21.2	932.75	100.0	934.06
40.0	931.70			22.7	932.75	102.0	934.05
43.0	931.61			23.8	932.21	104.0	934.00
46.0	931.56			24.2	932.07	106.0	933.95
49.0	931.53			25.0	932.01	108.0	933.89
52.0	931.52			25.1	931.87	110.0	933.87
55.0	931.56			26.5	931.76	112.0	933.86
58.0	931.58			29.0	931.64	113.3	933.87
61.0	931.52			32.0	931.62		
64.0	931.56			35.0	931.59		
67.0	931.68			38.0	931.57		
70.0	931.80			41.0	931.57		
71.5	932.02			44.0	931.55		
72.0	932.15			47.0	931.56		
74.0	932.14			50.0	931.55		
76.0	932.11			53.0	931.54		
77.8	932.09			56.0	931.54		
79.0	931.92			59.0	931.58		
79.6	932.01			61.0	931.62		
81.1	931.66			63.0	931.69		
83.8	932.05			64.2	931.75		
84.3	932.60			66.0	931.84		

Description of Cross Section PR200A

Location: Township 5 South/Range 51 East--section 8
U.S. Geological Survey quadrangle (1:24,000): Broadus

Landowners--left bank: Doug and Lucille Randall
right bank: Doug and Lucille Randall

Access: left bank

Permission from: Doug and Lucille Randall (T5S/R51E--8)
or Craig Randall (T5S/R51E--17)

Reference pins

Station (meters)	Elevation (meters above sea level)	Comments
-6.4	927.802	Pin -6.4 was closest to leveling instrument. 0.05 meter above 1987 ground level, on fenceline.
150.0	926.445	0.07 meter above 1987 ground level.
150.9	926.520	0.17 meter above 1987 ground level.
250.0	926.913	0.10 meter above 1987 ground level.
275.0	926.849	0.10 meter above 1987 ground level.

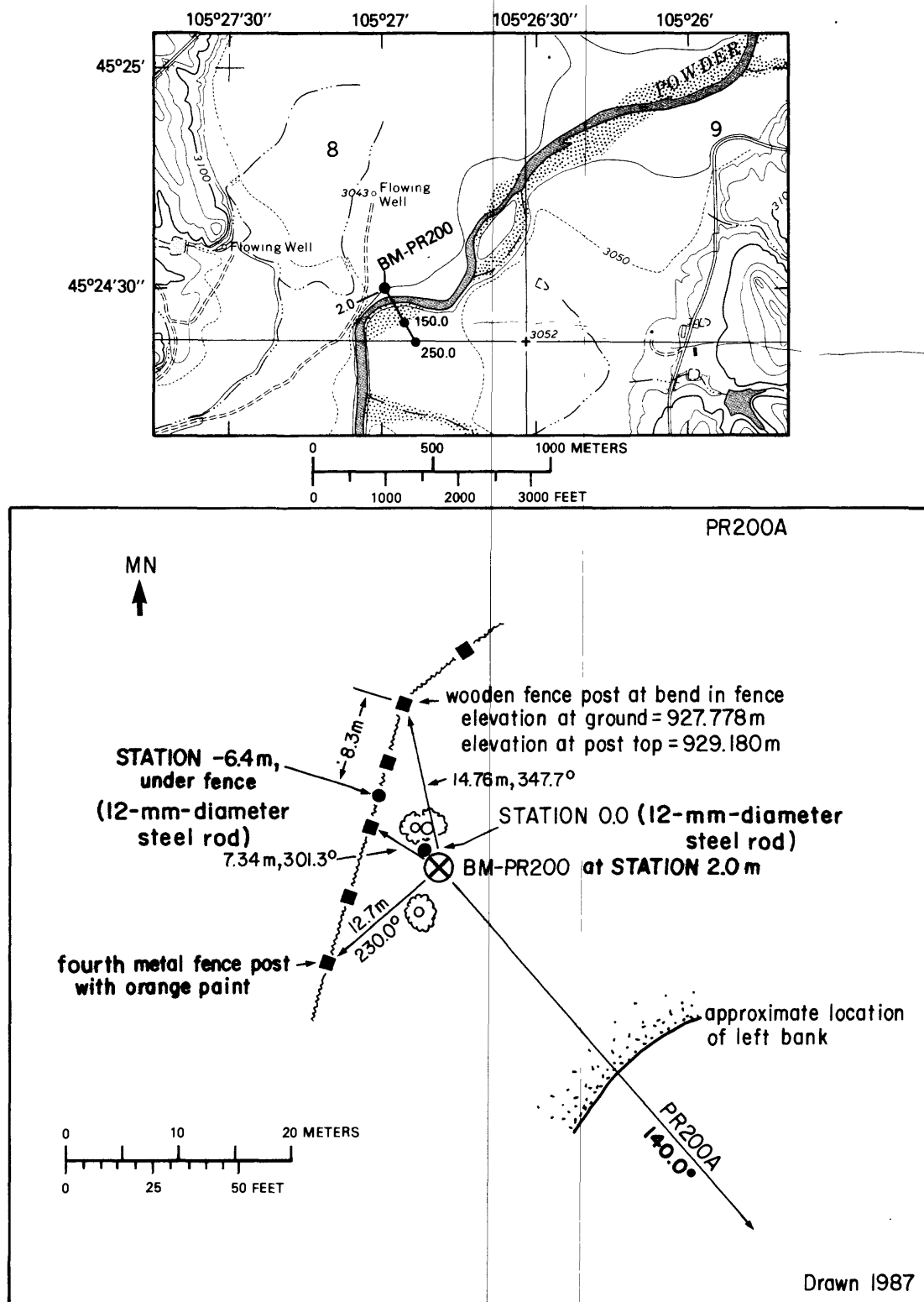


Figure 88.--Upper: Location of cross section PR200A, bench mark BM-PR200, and left and right bank reference pins (tables 2 and 3) in the Broadus quadrangle. Lower: Location of bench mark on the left bank. MN is magnetic north.

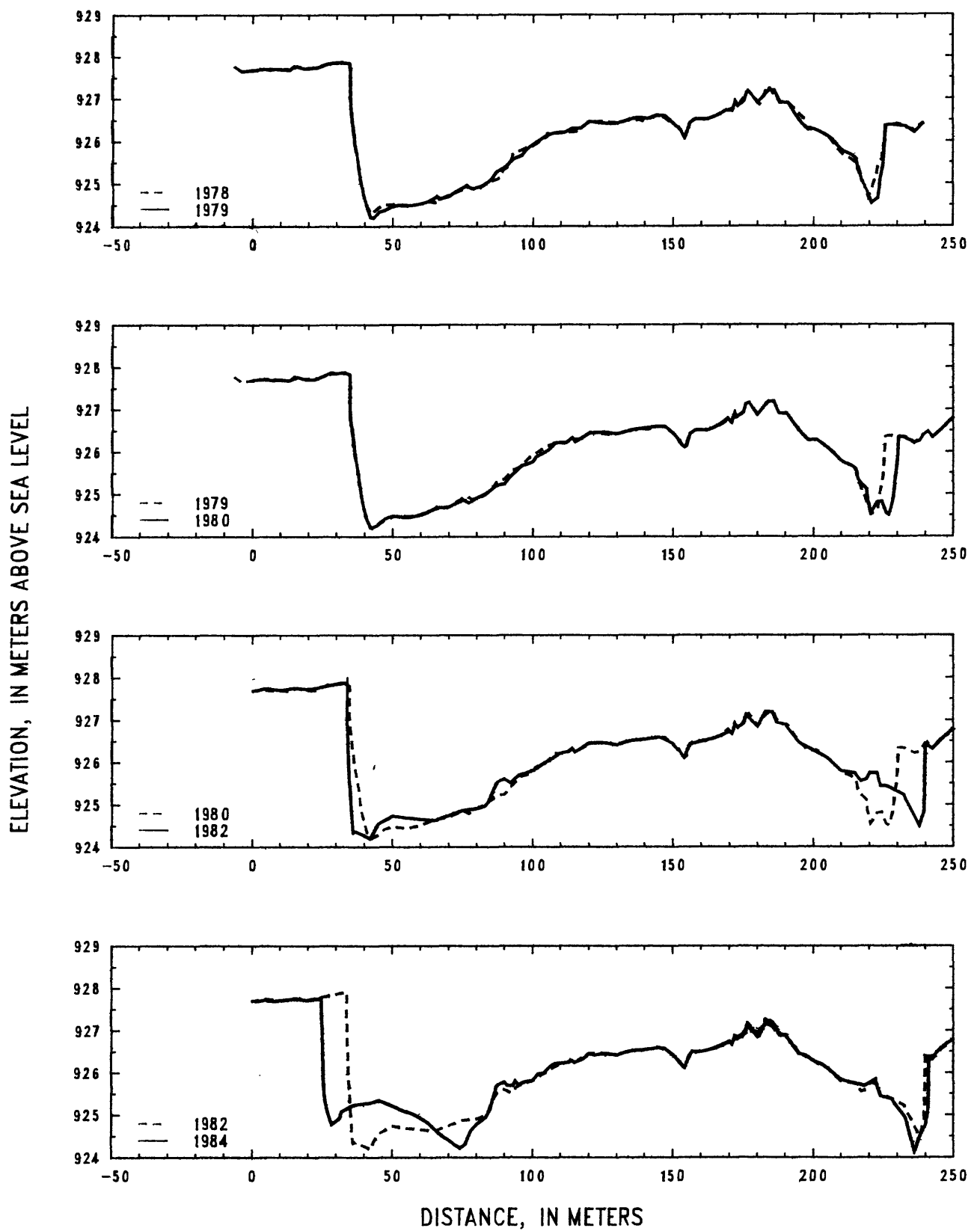


Figure 89.--Profiles of cross section PR200A from 1978 to 1984.

ELEVATION, IN METERS ABOVE SEA LEVEL

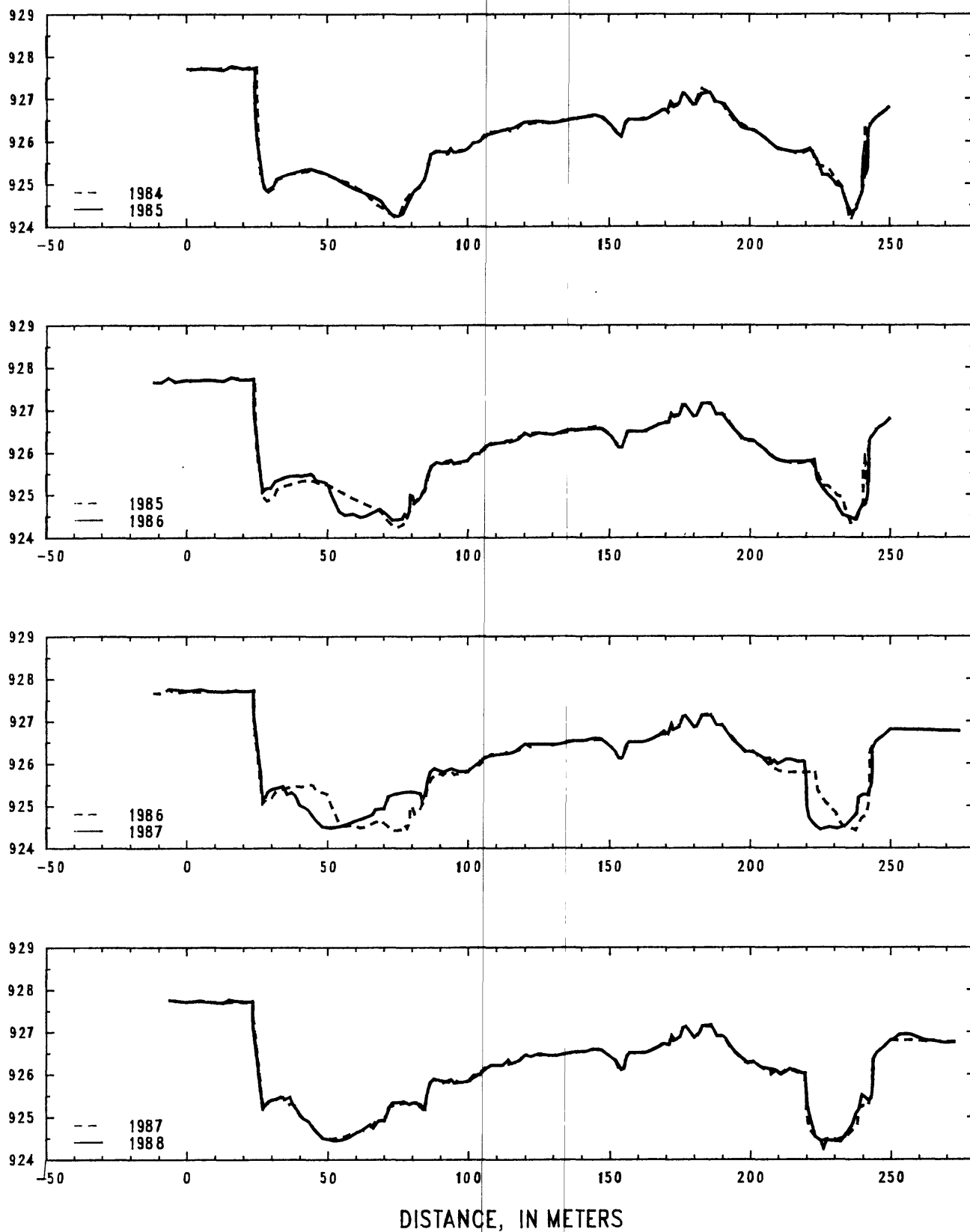


Figure 90.--Profiles of cross section PR200A from 1984 to 1988.

Table 28.--Listing of horizontal stations and elevations for cross section PR200A
[Sta., station, distance in meters from a reference point on
the left bank; Elev., elevation, in meters above sea level].

1978		1978		1978		1979		1979	
Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
0.0	927.68	89.5	925.31	239.4	926.41	-6.5	927.77	101.0	925.97
4.0	927.72	91.5	925.41			-4.0	927.65	105.0	926.14
6.0	927.68	93.0	925.71			0.0	927.69	108.0	926.21
8.0	927.71	100.0	925.89			4.0	927.72	111.0	926.20
10.0	927.70	104.9	926.10			6.0	927.71	114.0	926.30
13.0	927.70	105.0	926.18			7.0	927.72	117.0	926.30
14.0	927.71	110.0	926.19			10.0	927.70	120.0	926.46
16.0	927.78	115.0	926.22			13.0	927.68	123.0	926.44
18.0	927.73	120.0	926.45			15.0	927.78	126.0	926.41
20.0	927.74	125.0	926.46			18.0	927.72	129.0	926.41
22.0	927.73	130.0	926.41			21.0	927.73	132.0	926.45
24.0	927.77	135.0	926.50			24.0	927.77	135.0	926.52
26.0	927.82	140.0	926.47			27.0	927.84	138.0	926.55
28.0	927.84	145.0	926.61			30.0	927.86	141.0	926.52
30.0	927.86	150.0	926.39			33.0	927.86	144.0	926.61
32.0	927.87	150.9	926.34			34.8	927.84	147.0	926.59
34.0	927.86	152.7	926.24			34.9	927.80	150.0	926.42
34.9	927.82	154.2	926.08			35.0	926.89	150.9	926.36
35.0	926.82	156.0	926.43			36.5	925.90	152.0	926.30
36.0	926.29	158.0	926.52			37.2	925.73	154.0	926.06
36.2	926.14	163.0	926.50			38.2	925.23	156.0	926.42
36.4	925.96	168.0	926.69			40.0	924.61	158.0	926.51
36.7	925.76	173.0	926.80			42.0	924.21	162.0	926.50
37.2	925.70	176.5	927.18			43.0	924.19	166.0	926.60
37.7	925.46	180.7	926.85			45.0	924.34	169.0	926.72
38.1	925.39	183.7	927.29			47.0	924.38	171.0	926.70
38.5	925.15	188.0	926.89			50.0	924.47	172.0	926.93
38.9	924.96	190.5	926.92			53.0	924.51	173.0	926.81
40.0	924.59	196.5	926.51			56.0	924.48	175.0	926.92
42.0	924.29	197.0	926.30			59.0	924.52	176.0	927.12
45.0	924.44	200.0	926.28			62.0	924.57	177.0	927.15
47.0	924.50	205.0	926.10			65.0	924.67	180.0	926.88
50.0	924.51	210.0	925.70			65.7	924.71	184.0	927.19
53.0	924.47	215.9	925.45			66.7	924.64	186.0	927.19
56.0	924.48	216.7	925.21			70.0	924.70	188.0	926.89
59.0	924.51	219.6	924.65			73.0	924.85	191.0	926.88
62.0	924.57	222.5	925.21			76.4	924.96	194.0	926.56
65.0	924.55	223.2	925.42			78.0	924.88	196.0	926.38
68.0	924.67	224.5	925.57			82.0	924.95	198.0	926.25
71.0	924.74	225.1	925.91			85.0	925.09	200.0	926.27
74.0	924.84	225.5	925.92			87.0	925.28	203.0	926.17
76.0	924.93	225.9	926.35			90.0	925.37	206.0	926.06
80.0	924.84	227.0	926.36			93.0	925.58	210.0	925.77
83.0	924.99	230.0	926.40			96.0	925.66	214.0	925.64
88.0	925.12	235.0	926.26			98.0	925.83	215.3	925.56

Table 28.--Listing of horizontal stations and elevations for cross section PR200A--Continued.

1979		1980		1980		1980		1982	
Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
216.0	925.28	0.0	927.70	125.0	926.47	230.2	925.82	0.0	927.70
217.0	925.14	4.0	927.72	130.0	926.42	230.4	926.34	5.0	927.76
217.2	925.04	7.0	927.69	135.0	926.51	232.0	926.34	10.0	927.71
218.0	924.97	10.0	927.70	140.0	926.56	236.0	926.21	15.0	927.77
220.0	924.65	13.0	927.68	144.0	926.59	238.0	926.24	20.0	927.73
220.7	924.52	16.0	927.76	147.0	926.59	239.4	926.39	25.0	927.80
222.0	924.60	19.0	927.70	150.0	926.42	241.0	926.47	30.0	927.87
223.0	924.64	22.0	927.70	150.9	926.36	242.6	926.33	32.0	927.89
224.0	925.12	25.0	927.78	153.0	926.15	246.0	926.54	33.0	927.89
225.0	925.40	28.0	927.88	154.0	926.10	250.0	926.79	33.8	927.84
225.7	926.35	30.0	927.85	154.8	926.14			33.9	927.87
227.0	926.37	33.0	927.88	156.0	926.43			34.0	927.01
230.0	926.36	34.8	927.81	158.0	926.51			34.9	925.54
233.0	926.33	34.9	926.91	162.0	926.50			35.7	924.67
236.0	926.19	36.7	925.88	166.0	926.61			36.2	924.34
239.4	926.40	37.2	925.72	169.5	926.78			37.0	924.37
		38.0	925.40	170.8	926.68			42.0	924.20
		39.1	924.83	172.0	926.92			43.0	924.31
		41.0	924.35	172.5	926.80			45.0	924.56
		42.4	924.20	175.0	926.92			50.0	924.74
		45.0	924.29	175.7	927.11			55.0	924.69
		47.0	924.42	177.0	927.15			60.0	924.66
		50.0	924.49	180.0	926.86			65.0	924.63
		55.0	924.44	182.0	927.04			70.0	924.75
		60.0	924.51	184.0	927.18			75.0	924.88
		65.0	924.66	186.0	927.18			80.0	924.91
		70.0	924.70	187.7	926.90			83.0	924.98
		75.0	924.87	190.5	926.90			84.2	925.09
		77.0	924.79	195.0	926.47			87.0	925.51
		80.0	924.92	198.0	926.26			88.0	925.56
		83.0	925.00	201.0	926.28			90.0	925.61
		87.0	925.21	205.0	926.09			92.0	925.52
		88.0	925.22	210.0	925.77			95.0	925.70
		90.0	925.24	214.0	925.65			100.0	925.81
		92.0	925.42	215.3	925.58			105.0	926.03
		96.0	925.67	216.0	925.34			110.0	926.22
		98.0	925.71	217.0	925.23			113.0	926.26
		100.0	925.77	219.0	925.10			114.0	926.34
		101.0	925.88	219.4	924.87			115.0	926.24
		105.0	926.01	220.5	924.54			120.0	926.46
		108.0	926.21	222.7	924.80			125.0	926.47
		112.0	926.21	224.5	924.82			130.0	926.41
		114.0	926.33	226.0	924.54			135.0	926.52
		115.0	926.23	227.0	924.50			140.0	926.55
		120.0	926.44	228.4	924.82			145.0	926.61

Table 28.--Listing of horizontal stations and elevations for cross section PR200A--Continued.

1982		1984		1984		1984		1985	
Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
150.0	926.43	0.0	927.70	108.0	926.22	220.0	925.74	1.0	927.68
150.9	926.35	3.0	927.69	110.0	926.22	222.4	925.84	4.0	927.70
152.0	926.31	5.0	927.73	113.0	926.24	222.6	925.69	7.0	927.71
154.0	926.10	6.0	927.69	114.0	926.29	224.0	925.43	10.0	927.70
156.0	926.43	10.0	927.70	115.0	926.23	225.0	925.41	13.0	927.67
160.0	926.50	15.0	927.75	118.0	926.32	228.0	925.36	16.0	927.77
165.0	926.58	20.0	927.71	120.0	926.45	230.0	925.17	20.0	927.71
170.0	926.74	24.8	927.77	122.0	926.40	233.0	924.91	22.0	927.71
171.0	926.67	25.8	925.45	125.0	926.45	234.0	924.68	24.2	927.73
172.0	926.91	27.0	925.07	130.0	926.41	236.0	924.13	24.3	926.95
173.0	926.82	28.5	924.77	135.0	926.51	238.0	924.48	25.0	926.05
175.0	926.93	31.4	924.92	140.0	926.54	239.5	924.69	27.6	924.90
176.0	927.13	32.0	925.08	142.0	926.56	240.0	924.74	28.5	924.84
180.0	926.84	36.0	925.22	145.0	926.59	241.0	925.09	30.0	924.90
183.0	927.21	39.0	925.26	147.0	926.57	241.3	926.38	31.0	924.95
185.5	927.19	42.0	925.28	150.0	926.41	243.0	926.38	32.0	925.12
187.0	926.94	45.0	925.34	150.9	926.36	245.0	926.54	35.0	925.20
190.0	926.89	50.0	925.21	153.0	926.19	247.0	926.65	38.0	925.27
195.0	926.45	54.0	925.08	154.3	926.10	250.0	926.79	41.0	925.31
200.0	926.27	57.0	925.03	156.0	926.41			44.0	925.35
205.0	926.10	60.0	924.92	157.0	926.50			47.0	925.27
210.0	925.79	63.0	924.80	160.0	926.49			50.0	925.23
215.0	925.74	65.5	924.64	165.0	926.58			53.0	925.14
217.0	925.55	68.0	924.48	170.0	926.74			56.0	925.01
219.0	925.60	70.0	924.41	171.0	926.66			59.0	924.90
220.2	925.75	72.0	924.30	172.0	926.83			62.0	924.81
223.0	925.74	74.0	924.21	173.0	926.79			64.3	924.74
224.0	925.44	76.0	924.31	175.0	926.87			67.0	924.66
226.0	925.44	78.0	924.64	176.5	927.16			69.0	924.59
232.4	925.22	80.0	924.78	179.0	926.92			71.0	924.40
238.0	924.49	83.0	924.92	180.4	926.86			73.0	924.27
239.0	924.71	85.0	925.14	183.0	927.25			75.0	924.23
239.5	924.82	86.0	925.42	185.0	927.16			77.0	924.30
240.0	926.43	87.0	925.68	186.0	927.16			79.0	924.60
242.5	926.31	88.0	925.72	188.0	926.88			81.0	924.83
245.0	926.51	90.0	925.77	190.0	926.89			83.0	924.95
250.0	926.80	91.0	925.69	195.0	926.43			84.7	925.10
		93.0	925.69	197.0	926.40			87.0	925.69
		94.0	925.80	200.0	926.26			89.0	925.77
		95.0	925.70	203.0	926.19			91.0	925.74
		97.0	925.78	206.0	926.05			93.0	925.75
		100.0	925.81	209.0	925.86			94.0	925.83
		102.0	925.96	212.0	925.78			95.0	925.73
		104.0	925.98	215.0	925.74			98.0	925.77
		106.0	926.13	218.0	925.68			100.0	925.82

Table 28.--Listing of horizontal stations and elevations for cross section PR200A--Continued.

1985		1985		1986		1986		1986	
Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
102.0	925.96	221.5	925.82	-12.0	927.65	78.8	924.54	172.0	926.92
104.0	925.98	224.0	925.55	-9.0	927.65	79.2	924.69	172.5	926.86
107.0	926.15	226.0	925.20	-6.4	927.76	79.5	924.99	175.0	926.90
110.0	926.21	228.0	925.20	-4.0	927.66	80.2	924.98	176.0	927.12
113.0	926.27	230.0	925.06	0.0	927.71	81.0	924.81	177.0	927.13
116.0	926.30	231.0	924.96	3.0	927.69	83.0	924.93	178.0	927.03
120.0	926.44	232.8	924.92	7.0	927.71	84.0	925.08	180.0	926.85
125.0	926.47	234.0	924.65	10.0	927.70	84.7	925.14	181.0	926.86
130.0	926.42	236.0	924.31	13.0	927.68	85.2	925.34	183.0	927.16
135.0	926.49	238.0	924.40	16.0	927.77	86.0	925.49	184.0	927.16
140.0	926.55	239.2	924.67	19.0	927.71	87.0	925.66	186.0	927.16
145.0	926.61	240.3	924.80	22.0	927.71	89.0	925.78	188.0	926.89
148.0	926.54	240.4	925.48	23.8	927.73	91.0	925.73	190.0	926.92
150.0	926.42	241.0	925.80	23.9	926.95	92.0	925.79	192.0	926.72
150.9	926.36	241.4	925.52	27.0	925.07	94.0	925.82	195.0	926.49
153.0	926.17	241.4	925.22	28.0	925.15	95.0	925.74	198.0	926.30
154.5	926.10	242.2	925.38	29.8	925.17	97.0	925.78	201.0	926.28
156.0	926.44	242.3	926.24	31.4	925.32	100.0	925.81	203.0	926.19
157.0	926.52	243.0	926.35	34.0	925.39	102.0	925.97	205.0	926.09
160.0	926.49	245.0	926.54	36.0	925.44	104.0	925.98	208.0	925.90
163.0	926.51	248.0	926.67	39.0	925.46	106.0	926.11	210.0	925.82
166.0	926.60	250.0	926.80	40.6	925.44	108.0	926.22	213.0	925.78
169.0	926.73			42.0	925.47	110.0	926.22	216.0	925.78
170.7	926.71			43.9	925.50	113.0	926.24	219.0	925.78
172.0	926.92			44.7	925.48	114.0	926.29	222.0	925.80
173.0	926.83			46.0	925.34	115.0	926.24	223.0	925.83
175.0	926.89			48.0	925.31	118.0	926.33	224.0	925.36
176.0	927.08			49.5	925.28	120.0	926.46	226.0	925.15
177.0	927.13			50.5	925.19	122.0	926.39	228.0	924.98
180.0	926.85			50.9	925.08	125.0	926.47	230.5	924.83
181.0	926.86			52.0	924.90	130.0	926.42	231.2	924.70
183.0	927.13			53.2	924.74	135.0	926.52	233.0	924.51
186.0	927.15			54.0	924.61	140.0	926.54	235.0	924.49
188.0	926.92			56.0	924.52	144.0	926.56	237.4	924.41
191.0	926.86			57.0	924.53	147.0	926.57	239.5	924.70
194.0	926.58			59.0	924.56	150.0	926.41	241.0	924.77
197.0	926.32			61.5	924.47	150.9	926.37	242.0	924.98
199.0	926.27			63.0	924.49	153.3	926.12	242.1	925.24
202.0	926.24			66.0	924.59	154.6	926.11	242.5	925.38
205.0	926.09			68.5	924.66	156.5	926.50	242.7	926.30
207.0	925.98			71.0	924.53	159.0	926.50	244.0	926.43
210.0	925.81			73.0	924.41	162.0	926.49	246.0	926.60
213.0	925.77			76.5	924.44	165.0	926.58	248.0	926.67
216.0	925.73			77.5	924.55	168.0	926.68	250.0	926.80
219.0	925.76			78.3	924.47	171.0	926.71		

Table 28.--Listing of horizontal stations and elevations for cross section PR200A--Continued.

1987		1987		1987		1988		1988	
Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
-6.4	927.76	86.6	925.82	188.0	926.90	-6.4	927.76	83.0	925.23
0.0	927.71	88.0	925.89	190.0	926.90	0.0	927.70	84.6	925.18
5.0	927.75	91.0	925.80	192.0	926.71	5.0	927.74	85.1	925.46
8.0	927.69	94.0	925.88	194.0	926.53	7.0	927.71	85.9	925.69
11.0	927.69	97.0	925.81	196.0	926.41	10.0	927.71	86.6	925.81
14.0	927.70	100.0	925.83	198.0	926.28	13.0	927.69	88.0	925.90
17.0	927.72	103.0	925.99	200.0	926.28	15.0	927.77	90.0	925.85
20.0	927.70	106.0	926.15	202.5	926.22	17.0	927.74	93.0	925.81
22.0	927.71	109.0	926.21	205.0	926.11	20.0	927.72	94.0	925.88
23.6	927.72	112.0	926.22	207.0	926.12	22.0	927.71	95.0	925.79
23.6	927.31	115.0	926.25	207.6	926.00	23.3	927.73	98.0	925.82
25.7	926.04	117.0	926.31	208.6	926.07	23.3	927.23	100.0	925.84
26.2	925.79	120.0	926.46	209.8	925.99	26.5	925.45	102.0	925.98
26.5	925.37	123.0	926.46	211.0	926.03	27.3	925.23	104.0	925.99
27.0	925.19	126.0	926.45	213.0	926.11	29.0	925.37	106.0	926.13
27.8	925.21	129.0	926.44	215.0	926.08	30.0	925.40	108.0	926.22
28.7	925.34	132.0	926.45	217.0	926.04	32.0	925.43	110.0	926.22
30.0	925.40	135.0	926.50	219.0	926.05	33.3	925.48	112.0	926.22
32.0	925.43	138.0	926.55	219.4	926.03	35.0	925.42	114.0	926.34
34.0	925.47	141.0	926.54	220.0	925.56	36.5	925.47	115.0	926.25
35.5	925.27	144.0	926.59	220.1	925.07	37.5	925.29	118.0	926.33
37.0	925.32	147.0	926.58	221.0	924.71	39.0	925.15	120.0	926.46
38.1	925.26	150.0	926.42	223.0	924.53	41.0	924.96	122.0	926.42
40.0	925.02	150.9	926.36	225.0	924.43	43.0	924.90	125.0	926.49
42.9	924.91	152.0	926.30	228.0	924.50	45.0	924.72	128.0	926.44
45.0	924.72	153.2	926.13	231.0	924.46	46.7	924.61	131.0	926.43
48.0	924.51	154.7	926.13	234.0	924.54	48.0	924.50	134.0	926.49
51.0	924.48	156.0	926.44	236.0	924.68	50.0	924.47	137.0	926.52
54.0	924.51	157.0	926.51	238.0	924.83	52.0	924.44	140.0	926.55
57.0	924.57	159.0	926.50	238.5	925.19	54.0	924.45	141.0	926.54
60.0	924.65	162.0	926.50	240.0	925.27	57.0	924.51	144.0	926.60
63.0	924.72	165.0	926.58	241.0	925.27	59.7	924.61	147.0	926.58
66.0	924.81	167.0	926.65	241.7	925.25	62.0	924.69	150.0	926.42
67.0	924.92	169.3	926.76	242.4	925.40	64.0	924.78	150.9	926.37
69.0	924.93	170.8	926.69	243.0	925.47	65.0	924.83	152.0	926.32
70.0	924.93	172.0	926.93	243.6	925.74	66.0	924.74	154.0	926.11
71.5	925.23	172.6	926.79	243.6	926.35	68.0	924.92	155.0	926.13
74.0	925.29	174.7	926.86	245.0	926.54	70.0	924.91	156.0	926.43
77.0	925.33	176.0	927.11	247.0	926.63	72.0	925.26	157.0	926.52
79.0	925.34	177.0	927.13	250.0	926.81	73.0	925.33	160.0	926.50
81.0	925.33	180.0	926.87	275.0	926.75	75.0	925.35	163.0	926.52
83.1	925.29	181.0	926.88			77.0	925.36	166.0	926.61
83.6	925.14	183.0	927.14			79.0	925.29	169.0	926.72
84.8	925.32	185.0	927.13			80.0	925.34	171.0	926.70
85.6	925.61	186.0	927.15			81.5	925.35	172.0	926.92

Table 28.--Listing of horizontal stations and elevations for cross section PR200A--Continued.

1988		1988	
Sta.	Elev.	Sta.	Elev.
173.0	926.81	250.0	926.82
175.0	926.88	251.0	926.83
176.0	927.10	253.0	926.94
177.0	927.13	255.0	926.95
180.0	926.87	256.7	926.95
182.0	926.99	262.0	926.80
183.0	927.15	266.0	926.78
184.0	927.15	269.0	926.74
186.0	927.17	272.0	926.75
188.0	926.90		
190.0	926.91		
191.0	926.85		
194.0	926.55		
197.0	926.37		
199.0	926.26		
201.0	926.30		
204.0	926.15		
207.0	926.11		
209.0	926.09		
211.0	926.00		
214.0	926.13		
216.0	926.08		
218.0	926.02		
219.5	926.02		
220.3	925.24		
222.0	924.80		
223.0	924.52		
225.0	924.44		
226.0	924.25		
227.0	924.45		
230.0	924.44		
232.0	924.42		
234.0	924.60		
236.0	924.80		
236.6	924.90		
237.5	925.10		
238.4	925.16		
239.6	925.51		
242.0	925.39		
243.0	925.44		
243.6	925.73		
243.7	926.35		
245.0	926.52		
246.0	926.57		
248.0	926.68		

Description of Cross Section PR206

Location: Township 5 South/Range 51 East--section 2
U.S. Geological Survey quadrangle (1:24,000): Broadus

Landowners--left bank: Ron and Twila Talcott
right bank: Charles Russell

Access: right bank

Permission from: Charles Russell (T5S/R51E--10)

Reference pins

Station (meters)	Elevation (meters above sea level)	Comments
<hr/>		
-30.0	921.075	Pins 101.9 and 139.6 were closest to leveling instrument. ±0.003 meter, 0.10 meter above 1987 ground level.
101.9	921.496	Upstream bolt in upstream circular, concrete footing.
139.6	921.237	On fence line, 0.11 meter above 1986 ground level.

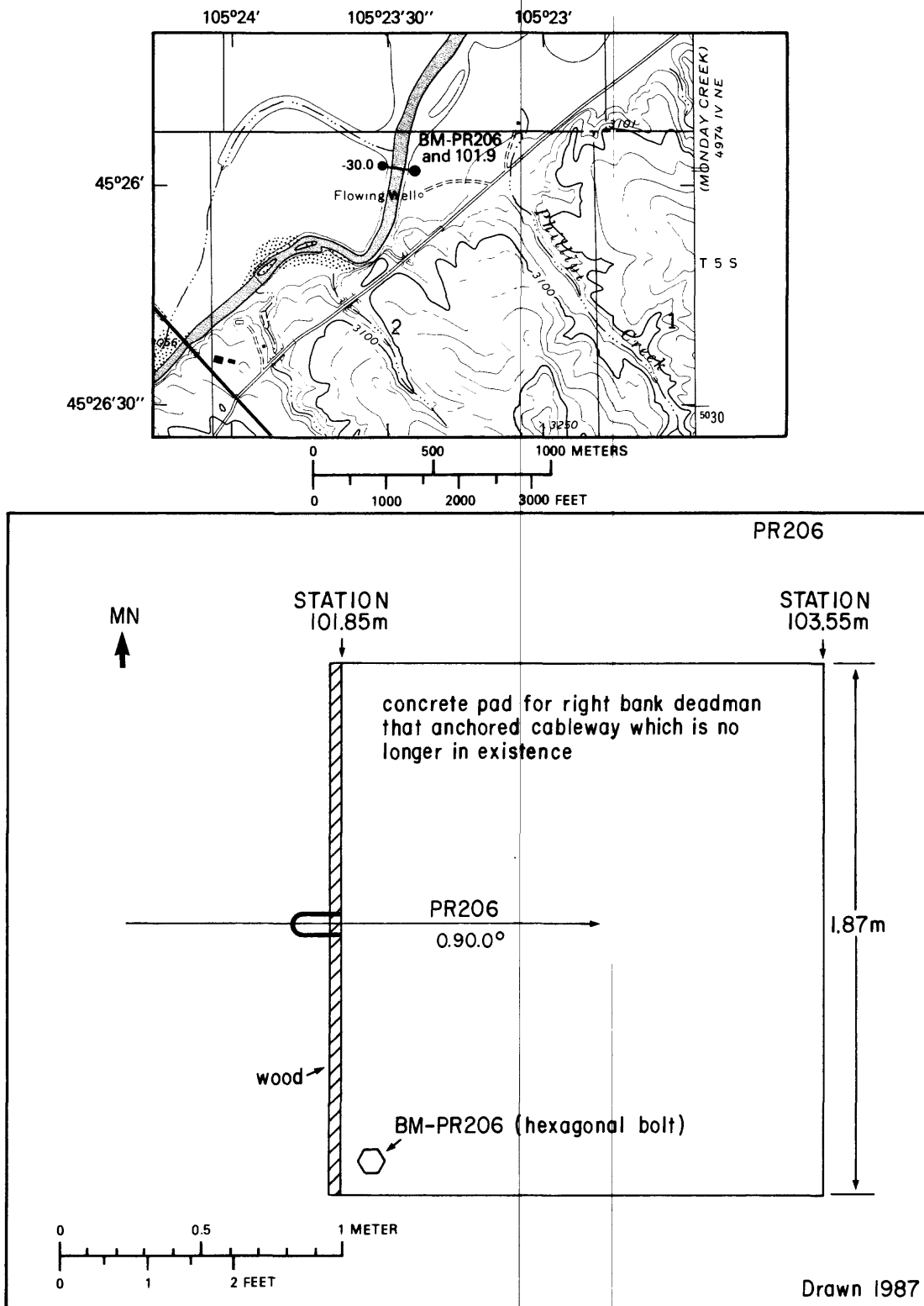


Figure 91.--Upper: Location of cross section PR206, bench mark BM-PR206, and left and right bank reference pins (tables 2 and 3) in the Broadus quadrangle. Lower: Location of bench mark on the left bank. MN is magnetic north.

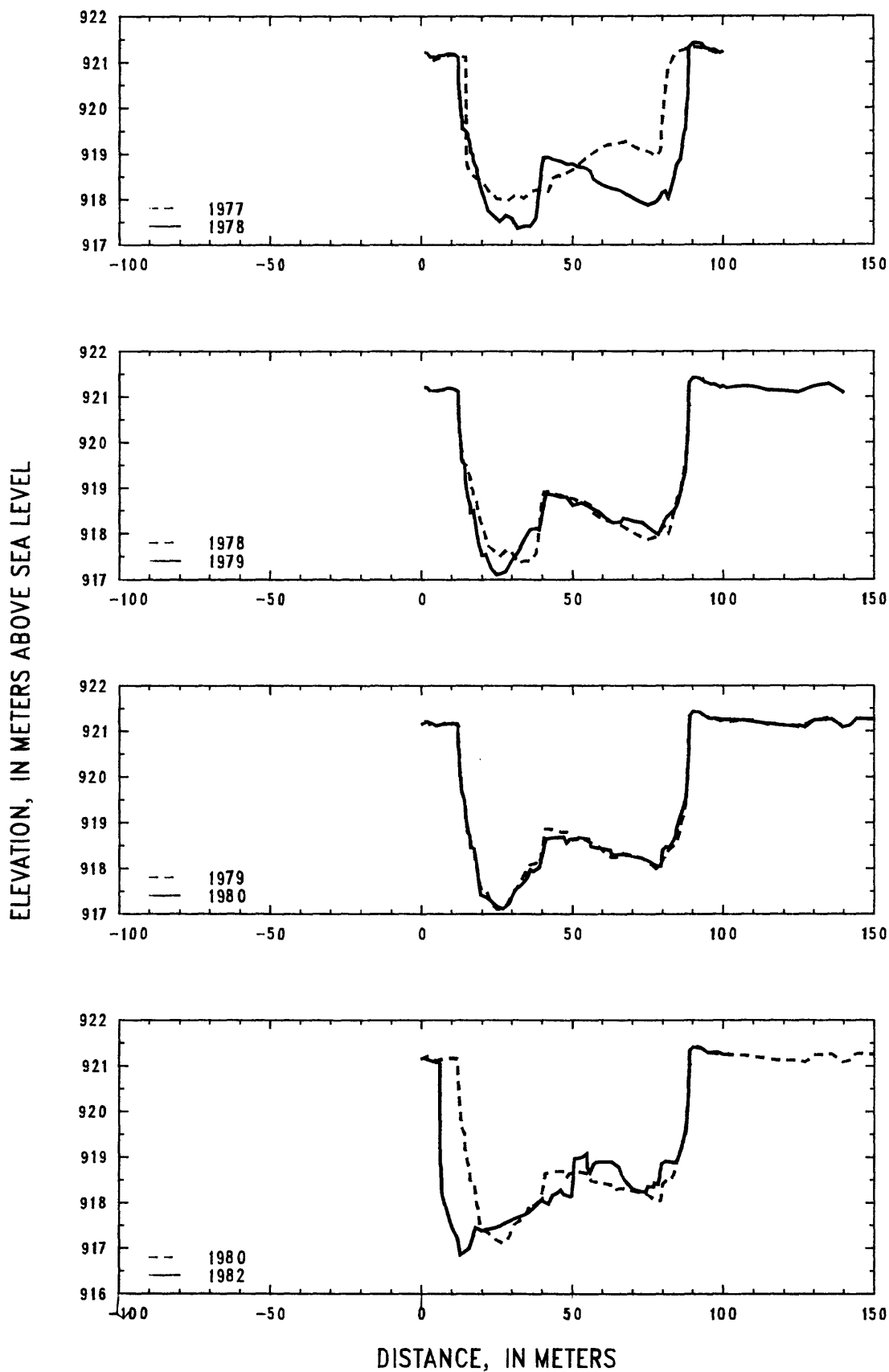
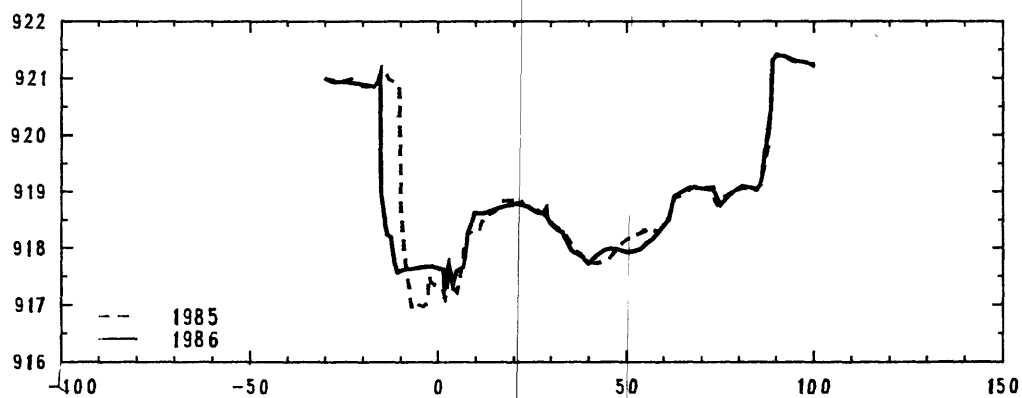
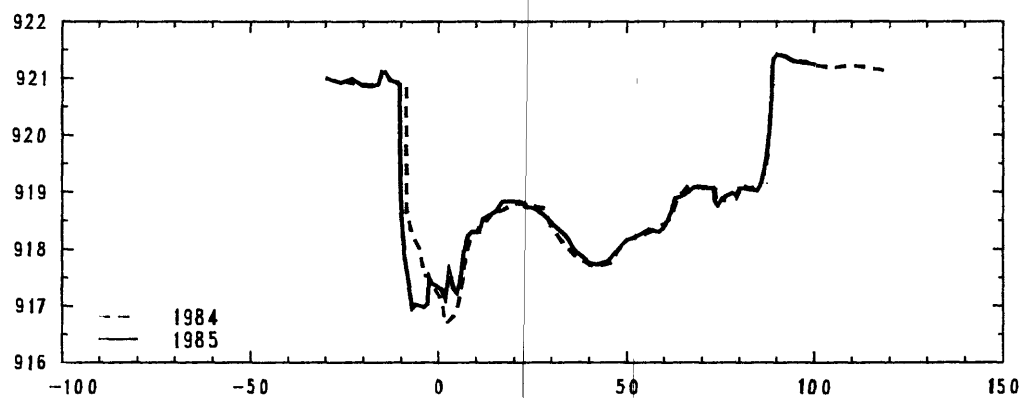
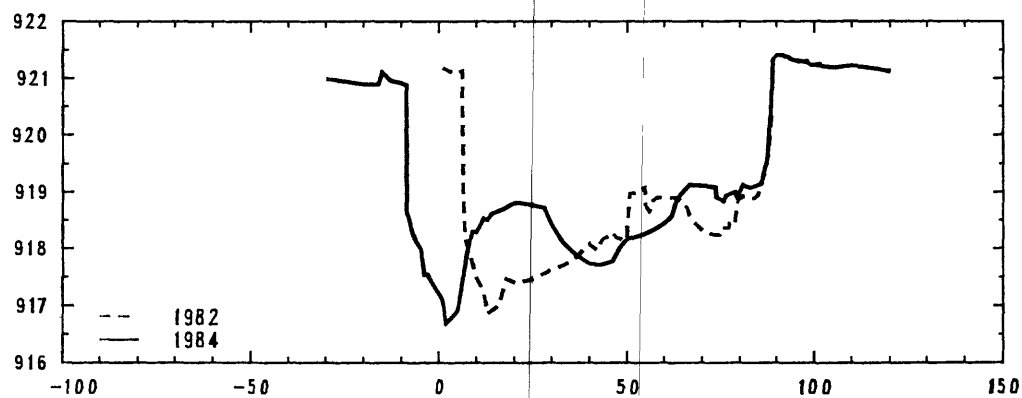


Figure 92.--Profiles of cross section PR206 from 1977 to 1982.

ELEVATION, IN METERS ABOVE SEA LEVEL



DISTANCE, IN METERS

Figure 93.--Profiles of cross section PR206 from 1982 to 1986.

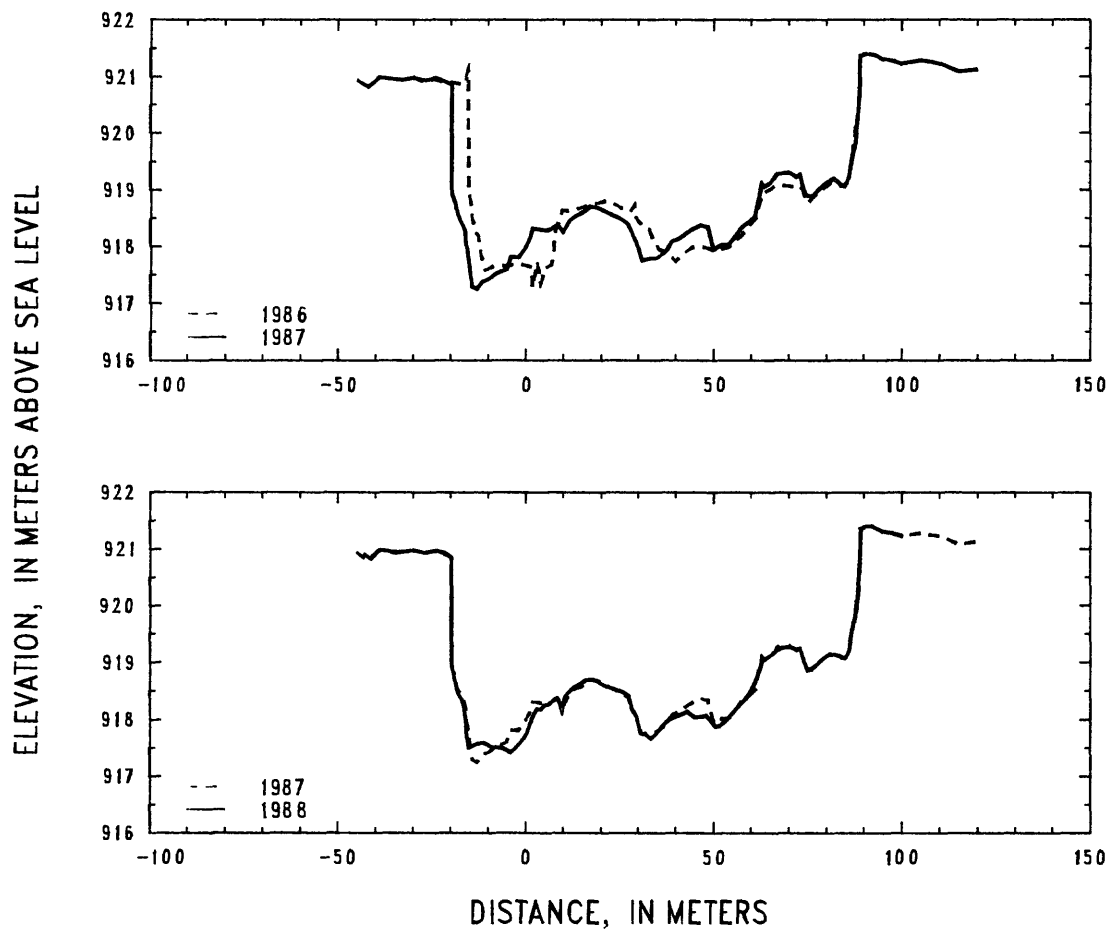


Figure 94.--Profiles of cross section PR206 from 1986 to 1988.

Table 29.--Listing of horizontal stations and elevations for cross section PR206
[Sta., station, distance in meters from a reference point on
the left bank; Elev., elevation, in meters above sea level].

1977		1977		1978		1978		1979	
Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
4.0	921.04	80.0	919.77	1.0	921.23	42.0	918.92	1.0	921.21
6.0	921.10	81.9	920.91	2.0	921.21	44.0	918.86	2.0	921.21
8.0	921.14	84.0	921.16	3.0	921.12	46.0	918.84	3.0	921.13
10.1	921.17	86.0	921.26	4.0	921.12	48.0	918.77	5.0	921.13
12.0	921.16	88.0	921.30	5.0	921.11	50.0	918.77	7.0	921.15
14.0	921.12	90.0	921.34	6.0	921.15	52.0	918.70	9.0	921.20
14.8	921.12	94.0	921.32	7.0	921.15	54.0	918.69	11.0	921.17
15.0	918.97	98.0	921.19	8.0	921.17	56.1	918.61	12.3	921.11
15.2	918.75	100.0	921.14	9.0	921.20	57.0	918.45	12.4	920.58
16.0	918.61			10.0	921.19	60.0	918.30	12.6	920.50
18.0	918.47			11.0	921.18	63.0	918.24	12.7	920.29
20.0	918.41			12.3	921.10	66.0	918.19	12.9	920.19
22.5	918.16			12.4	920.53	69.0	918.07	13.0	919.99
23.0	918.12			12.6	920.50	72.0	917.95	13.4	919.61
24.0	918.10			12.7	920.22	75.0	917.87	14.0	919.59
25.0	918.01			12.9	920.22	78.0	917.95	14.5	919.39
27.0	918.00			13.0	919.99	79.0	918.02	14.7	919.11
29.0	917.98			13.2	919.95	80.0	918.15	15.2	918.89
31.0	918.10			13.3	919.82	81.0	918.18	15.4	918.79
32.0	918.09			13.5	919.80	82.0	918.02	16.3	918.62
34.0	918.01			13.6	919.55	83.7	918.45	16.4	918.46
36.0	918.16			14.5	919.51	85.0	918.79	17.3	918.50
38.0	918.21			15.5	919.44	86.0	918.88	18.0	918.12
40.0	918.16			15.6	919.34	87.2	919.46	19.0	917.78
42.0	918.16			16.2	919.23	87.7	919.54	20.0	917.53
43.4	918.47			16.3	919.03	88.0	919.98	21.3	917.54
45.0	918.52			17.1	918.97	88.1	920.02	23.0	917.23
47.0	918.54			17.2	918.83	88.2	920.13	25.0	917.10
48.0	918.58			18.4	918.68	88.4	920.19	26.0	917.11
50.0	918.65			18.5	918.58	88.9	921.34	28.0	917.18
52.0	918.76			19.0	918.40	90.0	921.42	30.0	917.42
54.0	918.88			20.0	918.17	91.0	921.43	32.0	917.59
56.0	918.97			21.0	918.01	93.0	921.41	34.0	917.86
58.0	919.07			22.0	917.74	94.0	921.32	36.0	918.09
60.0	919.15			24.0	917.62	96.0	921.28	38.0	918.12
62.0	919.20			26.0	917.51	97.0	921.29	39.0	918.08
64.0	919.21			28.0	917.65	99.0	921.20	40.0	918.40
66.0	919.24			30.0	917.58	100.0	921.24	41.0	918.86
68.0	919.28			32.0	917.35			43.0	918.85
70.0	919.17			34.0	917.40			46.0	918.79
72.0	919.10			36.0	917.40			48.0	918.80
74.0	919.07			38.0	917.58			50.0	918.61
76.0	919.02			39.5	918.40			53.0	918.67
78.0	918.93			40.0	918.75			56.0	918.56
79.4	919.07			40.5	918.91			59.0	918.46

Table 29.--Listing of horizontal stations and elevations for cross section PR206 --Continued.

1979		1980		1980		1982		1982	
Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
61.0	918.33	0.0	921.15	78.0	918.04	1.0	921.17	84.0	918.88
63.0	918.23	2.0	921.21	79.4	918.04	3.0	921.12	85.0	918.94
66.0	918.25	5.0	921.11	80.0	918.41	5.0	921.08	87.0	919.37
67.0	918.34	8.0	921.17	81.0	918.47	6.3	921.13	88.0	919.78
70.0	918.26	11.0	921.17	82.0	918.45	6.5	918.88	88.5	920.34
73.0	918.23	12.0	921.15	83.0	918.55	6.8	918.74	89.0	921.34
76.0	918.09	12.1	921.12	84.0	918.66	7.0	918.21	90.0	921.42
78.5	917.97	12.3	920.62	85.0	918.95	10.0	917.50	93.0	921.38
81.0	918.33	12.5	920.51	87.8	919.53	12.0	917.23	95.0	921.29
84.0	918.53	12.6	920.29	88.5	920.35	13.0	916.86	98.0	921.31
85.0	918.64	13.4	919.65	89.0	921.33	16.0	917.01	100.0	921.25
87.4	919.33	14.3	919.52	90.0	921.43	18.0	917.46	101.8	921.26
87.7	919.47	14.8	919.04	92.0	921.41	20.0	917.39		
88.5	920.35	15.6	918.83	93.0	921.38	25.0	917.46		
88.8	921.30	16.1	918.64	95.0	921.28	30.0	917.63		
90.0	921.43	16.3	918.45	97.0	921.27	35.0	917.76		
92.0	921.41	17.5	918.43	100.0	921.24	40.0	918.08		
94.0	921.32	19.6	917.42	105.0	921.24	40.0	918.05		
96.0	921.27	22.0	917.34	110.0	921.20	42.0	917.97		
97.0	921.27	24.5	917.18	120.0	921.12	43.5	918.17		
99.0	921.21	27.0	917.11	125.0	921.12	45.0	918.22		
100.0	921.24	29.0	917.23	127.0	921.08	46.0	918.29		
101.0	921.19	31.0	917.53	130.0	921.24	47.0	918.19		
105.0	921.24	33.0	917.62	136.0	921.26	49.5	918.13		
110.0	921.23	35.0	917.79	139.6	921.08	49.8	918.15		
115.0	921.14	36.0	917.97	142.0	921.13	50.3	918.56		
120.0	921.13	37.0	917.93	144.0	921.27	50.6	918.97		
125.0	921.09	39.0	918.02	150.0	921.25	53.0	919.00		
130.0	921.24	40.0	918.23			54.8	919.08		
135.0	921.29	41.0	918.64			55.0	918.77		
140.0	921.08	43.0	918.67			56.0	918.66		
		47.0	918.69			57.0	918.85		
		48.0	918.55			58.0	918.90		
		49.0	918.64			63.0	918.90		
		51.0	918.64			65.5	918.78		
		52.0	918.68			67.0	918.53		
		55.3	918.64			70.0	918.30		
		56.2	918.47			73.0	918.24		
		60.0	918.42			74.5	918.24		
		62.7	918.39			75.0	918.36		
		63.2	918.29			77.0	918.36		
		66.8	918.31			77.2	918.44		
		70.0	918.25			78.5	918.40		
		73.0	918.22			79.7	918.86		
		75.0	918.17			81.0	918.92		

Table 29.--Listing. of horizontal stations and elevations for cross section PR206 --Continued.

1986		1987		1987		1988		1988	
Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
40.0	917.72	-45.0	920.93	37.0	917.89	-43.0	920.91	30.8	917.75
42.0	917.87	-42.0	920.81	39.1	918.08	-41.0	920.82	32.0	917.73
44.0	917.97	-39.0	920.99	41.0	918.13	-39.0	920.98	33.5	917.66
46.0	917.99	-36.0	920.96	43.0	918.25	-37.0	920.98	35.0	917.75
48.0	917.97	-33.0	920.94	45.0	918.32	-35.0	920.93	37.0	917.93
50.0	917.92	-30.0	920.98	46.5	918.37	-32.0	920.96	39.0	918.03
52.0	917.94	-27.0	920.93	48.5	918.33	-30.0	920.98	41.0	918.07
54.0	917.99	-24.0	920.98	50.0	917.94	-27.0	920.93	43.0	918.14
55.3	918.08	-22.0	920.91	52.0	918.02	-24.0	920.97	45.0	918.03
57.0	918.15	-19.7	920.85	54.0	918.02	-21.0	920.91	47.0	918.05
59.0	918.31	-19.7	918.92	56.0	918.19	-19.7	920.83	48.0	918.07
61.3	918.51	-19.0	918.80	57.5	918.33	-19.7	918.97	49.0	917.99
62.8	918.92	-18.0	918.53	59.0	918.40	-18.0	918.46	50.5	917.87
65.0	919.00	-16.1	918.27	61.0	918.52	-17.0	918.35	51.6	917.89
67.0	919.08	-15.9	918.12	62.9	919.11	-16.0	918.15	53.0	917.96
69.0	919.07	-14.2	917.28	63.5	919.05	-15.6	917.72	55.0	918.11
72.0	919.04	-13.0	917.24	65.0	919.11	-15.0	917.50	57.0	918.27
73.1	919.04	-11.5	917.38	67.0	919.27	-13.0	917.57	59.0	918.39
75.0	918.75	-10.0	917.42	70.0	919.30	-11.0	917.59	61.0	918.63
76.0	918.84	-8.0	917.51	72.0	919.21	-9.0	917.51	62.5	918.91
78.0	918.97	-5.0	917.60	73.0	919.26	-6.0	917.49	63.0	919.07
81.0	919.10	-4.0	917.81	74.4	918.89	-4.0	917.41	63.3	919.04
83.0	919.07	-2.0	917.81	76.0	918.87	-2.0	917.54	65.0	919.13
85.0	919.04	0.0	918.00	78.0	919.00	0.0	917.72	68.0	919.26
86.0	919.17	1.0	918.12	80.0	919.12	2.0	918.07	70.0	919.27
88.5	920.42	1.8	918.31	82.0	919.19	3.0	918.18	72.0	919.23
89.1	921.33	4.0	918.28	84.0	919.07	4.0	918.17	73.0	919.24
90.0	921.40	6.0	918.27	85.0	919.07	5.0	918.25	74.0	919.03
92.0	921.40	8.5	918.37	86.0	919.18	6.0	918.26	75.0	918.86
95.0	921.30	10.0	918.24	87.0	919.62	8.0	918.36	77.0	918.93
98.0	921.27	11.6	918.45	87.6	919.77	8.8	918.34	79.0	919.07
100.0	921.21	13.0	918.53	88.8	920.60	9.7	918.14	81.0	919.16
		15.0	918.59	89.1	921.37	10.3	918.36	83.0	919.13
		17.0	918.70	91.0	921.40	11.0	918.44	85.0	919.07
		19.0	918.68	93.0	921.37	13.0	918.57	86.0	919.19
		21.0	918.60	95.0	921.30	14.0	918.60	86.9	919.58
		23.0	918.54	97.0	921.29	16.0	918.69	88.0	919.92
		25.0	918.48	100.0	921.22	18.0	918.71	88.8	920.60
		27.0	918.39	105.0	921.29	20.0	918.62	89.2	921.37
		28.0	918.26	110.0	921.23	22.0	918.56	90.0	921.40
		29.0	918.11	115.0	921.08	24.0	918.51	92.0	921.41
		29.4	918.06	120.0	921.12	26.0	918.47	94.0	921.32
		31.0	917.74			27.4	918.41	96.0	921.30
		33.0	917.78			28.2	918.17	98.0	921.25
		35.0	917.79			29.5	918.04	100.0	921.22

Table 29.--Listing of horizontal stations and elevations for cross section PR206 --Continued.

1984		1984		1985		1985		1986	
Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
-30.0	920.98	55.0	918.26	-30.0	921.00	48.0	918.03	-30.0	920.99
-25.0	920.94	58.0	918.36	-26.0	920.92	50.0	918.16	-28.0	920.92
-20.0	920.88	60.0	918.44	-23.0	920.99	53.0	918.24	-25.0	920.94
-18.0	920.88	62.0	918.57	-20.0	920.86	56.0	918.34	-22.0	920.90
-16.0	920.90	63.5	918.89	-18.0	920.86	58.7	918.29	-19.0	920.88
-15.0	921.11	66.6	919.12	-16.0	920.89	60.0	918.39	-17.0	920.85
-13.0	920.96	69.5	919.10	-15.0	921.10	61.5	918.58	-16.0	920.92
-10.0	920.91	73.5	919.07	-14.0	921.12	63.0	918.90	-15.3	921.10
-8.7	920.87	73.7	918.89	-13.0	920.98	65.0	918.94	-15.1	919.02
-8.5	918.61	75.7	918.82	-10.3	920.89	68.0	919.09	-14.0	918.42
-8.0	918.55	76.3	918.93	-9.9	918.75	71.0	919.07	-13.5	918.24
-7.0	918.24	78.7	918.99	-9.0	917.88	73.2	919.08	-12.5	918.19
-6.0	918.11	79.3	918.89	-8.0	917.43	73.4	918.84	-12.0	917.90
-4.8	917.98	81.0	919.12	-7.0	916.95	74.2	918.76	-11.7	917.80
-4.0	917.53	83.0	919.06	-6.0	917.03	75.3	918.89	-10.8	917.57
-3.0	917.53	86.0	919.14	-4.0	916.97	78.0	918.99	-9.0	917.63
-1.0	917.30	87.5	919.57	-3.0	917.04	79.2	918.94	-7.0	917.64
0.0	917.19	88.6	920.60	-2.5	917.50	80.0	919.07	-4.0	917.67
1.0	917.08	89.0	921.33	-2.0	917.40	82.0	919.06	-1.0	917.68
2.0	916.68	90.0	921.41	0.0	917.32	85.0	919.02	0.0	917.65
4.0	916.81	92.0	921.40	1.0	917.28	86.0	919.15	1.5	917.62
5.0	916.91	94.0	921.32	2.0	917.12	87.6	919.71	1.8	917.27
6.0	917.24	97.0	921.29	3.0	917.62	88.6	920.48	3.0	917.72
7.0	917.66	98.0	921.28	4.0	917.30	89.0	921.32	4.0	917.34
7.8	917.99	99.0	921.23	5.0	917.22	90.0	921.42	5.0	917.60
9.0	918.29	100.0	921.23	6.0	917.50	92.0	921.40	6.9	917.67
10.0	918.28	105.0	921.18	7.0	917.98	94.0	921.31	7.4	917.89
12.0	918.53	110.0	921.23	8.0	918.24	97.0	921.27	8.0	918.27
13.0	918.50	117.0	921.15	9.0	918.31	100.0	921.24	8.6	918.37
14.0	918.61	120.0	921.11	11.0	918.31			9.7	918.63
17.0	918.68			12.0	918.54			12.0	918.61
20.0	918.80			15.0	918.65			15.0	918.69
22.0	918.80			17.0	918.83			18.0	918.75
25.0	918.76			20.0	918.84			21.0	918.80
28.1	918.70			22.0	918.83			24.0	918.72
30.0	918.40			23.0	918.74			26.0	918.63
33.0	918.10			25.0	918.72			27.7	918.60
36.0	917.90			28.0	918.60			28.9	918.72
39.0	917.75			31.0	918.40			29.0	918.53
40.0	917.71			34.0	918.22			30.0	918.43
43.0	917.70			36.0	917.98			32.0	918.31
46.0	917.76			38.0	917.87			33.1	918.28
48.0	918.01			40.0	917.75			33.5	918.19
50.0	918.16			42.0	917.72			35.5	917.94
52.0	918.20			45.0	917.79			38.0	917.85