SEDIMENT AND STREAM-VELOCITY DATA FOR THE SACRAMENTO RIVER NEAR HOOD, CALIFORNIA, MAY 1978 TO SEPTEMBER 1981

By Jerry G. Harmon

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CONTENTS

ILLUSTRATIONS

TABLE

CONVERSION FACTORS

For readers who may prefer to use the International System of Units rather than inch-pound units, the conversion factors for the terms used in this report are listed below.

Multiply	By	To obtain
ft (feet)	0.3048	m (meters)
ft/s (feet per second)	0.3048	m/s (meters per second)
ft^3/s (cubic feet per second)	0.02832	m^3/s (cubic meters per second)
mi (miles)	1.609	km (kilometers)
mi^2 (square miles)	2.590	km^2 (square kilometers)
tons	907	kg (kilograms)

ALTITUDE DATUM

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 "mean sea level."

TRADE NAMES

The use of trade names in this report is for identification purposes only and does not imply endorsement by the Geological Survey.

SEDIMENT AND STREAM-VELOCITY DATA FOR THE SACRAMENTO RIVER NEAR HOOD, CALIFORNIA, MAY 1978 TO SEPTEMBER 1981

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ABSTRACT

The California Department of Water Resources intends to use Sacramento River sediment and stream-velocity data to determine the required dimensions of a settling basin for the intake of the proposed Peripheral Canal near Hood, California. From May 1978 to September 1981, sediment and stream-velocity data were collected at high, medium, and low flows in four cross sections of the river near Hood. Each of the four cross sections was measured at 25 points for suspended-sediment concentration, percent of suspended sediment that is sand, and magnitude and direction of stream velocity. Size distribution of bed material, streamflow, water temperature, and suspended-sediment discharge are included with the suspended-sediment and stream-velocity data presented in this report.

INTRODUCTION

Sacramento River sediment and stream-velocity data are required to determine the proper dimensions of a settling basin for the intake of the proposed Peripheral Canal, which would transport water from the Sacramento River, through the San Joaquin River Delta, to the California Aqueduct near Tracy, California (Graves, 1977). The canal intake site is near the apex of a river bend about 0.5 mile downstream from Hood, California (fig. 1).

Suspended sand transported by the river could affect operation of the canal because deposition of sand occurs where stream velocity decreases enough to allow suspended particles to settle. Options for the Peripheral Canal intake design are being considered; however, a wide, low-velocity intake might be required to protect fish (Graves, 1977). Whatever intake design is selected, sand deposition is expected to occur at the canal intake. The amount and size of sediment that would be transported to the canal intake can be estimated from the data collected for this study, so that the proper size for the settling basin can be determined. This report, prepared in cooperation with the California Department of Water Resources, presents sediment and stream-velocity data collected from May 1978 to September 1981 at four cross sections in the Sacramento River near Hood.

DESCRIPTION OF STUDY REACH

At Hood, the Sacramento River has a drainage area of more than 23,500 mi^2. Mean annual flow at Hood is 23,590 ft^3/s, based on records for the Sacramento River at Sacramento (about 21 miles upstream) during the period 1949-79. The river channel along the study reach is leveed on both banks.

Selection of four cross sections for data collection in the study reach was based on the proposed location of the canal intake (fig. 1). The four cross sections, shown in figure 2, are oriented with the left bank (facing downstream) on the left side of the page. River-mile locations of the cross sections in downstream order are 38.45, 37.85, 37.16, and 35.64. The river-mile system is based on mile zero at the meeting of the Sacramento and San Joaquin Rivers near Collinsville, Calif.

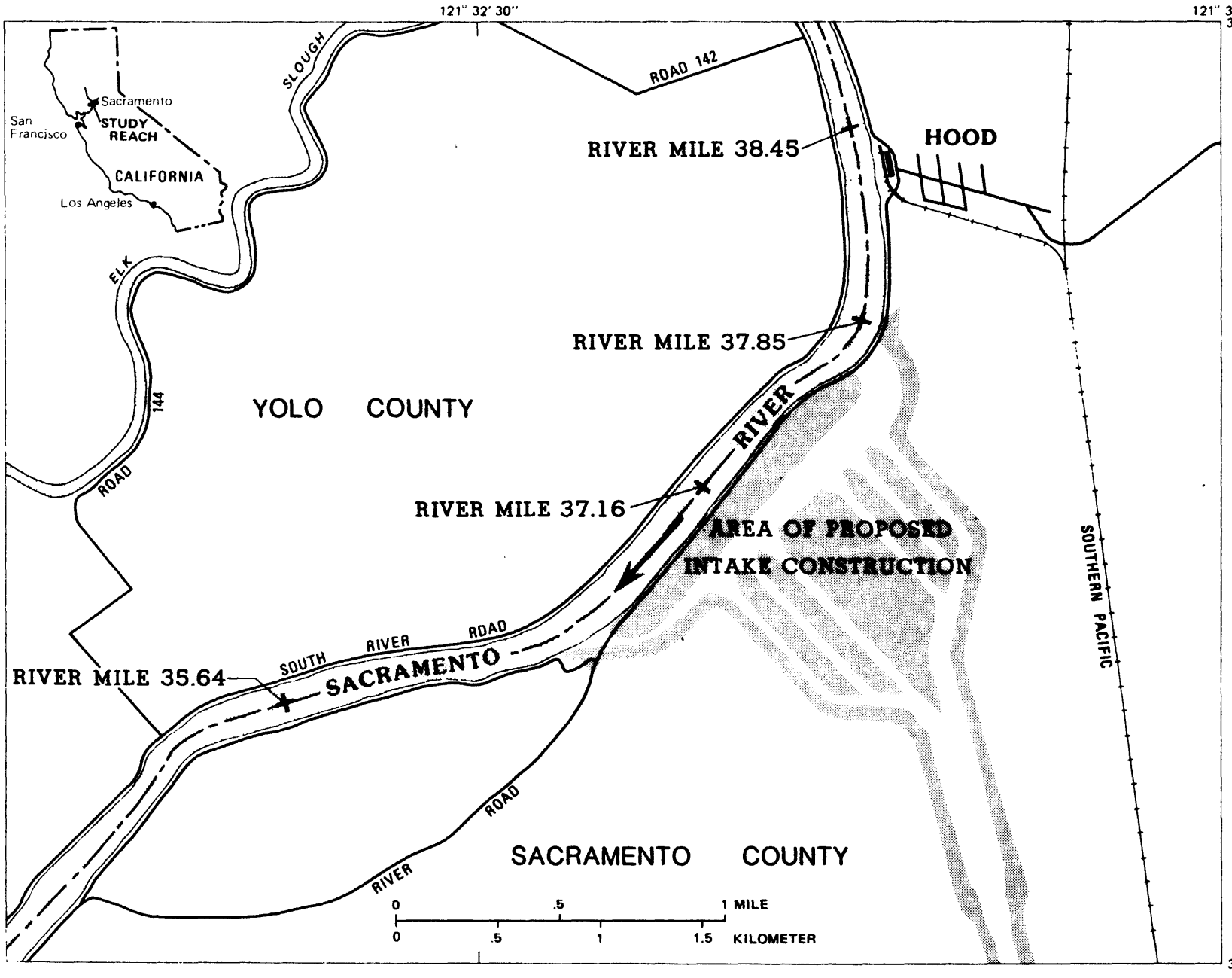
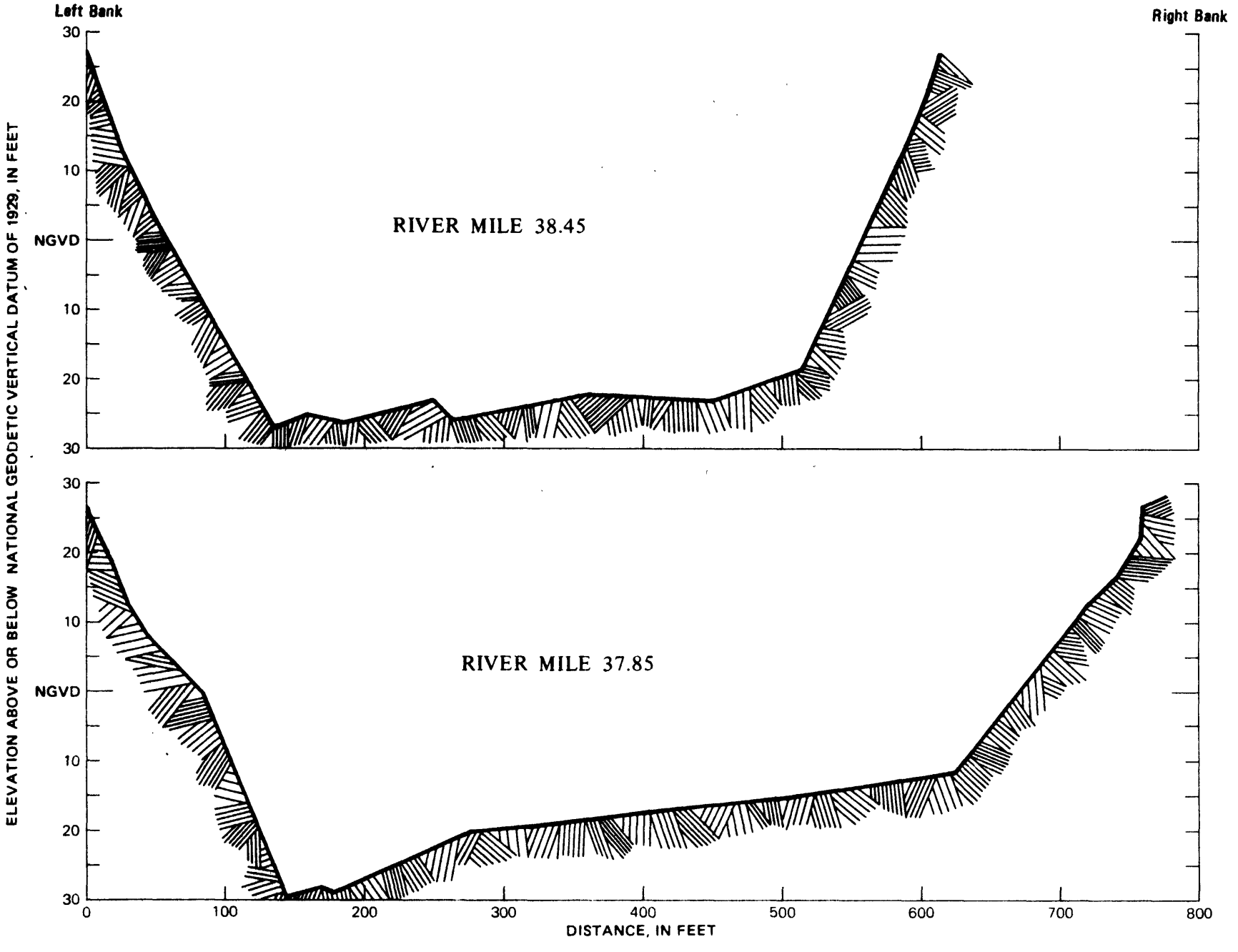


FIGURE 1. – Study reach.


Left Bank
Right Bank
RIVER MILE 38.45
RIVER MILE 37.85
ELEVATION ABOVE OR BELOW NATIONAL GEODETIC VERTICAL DATUM OF 1929, IN FEET
NGVD
30
20
10
0
100
200
300
400
500
600
700
800
DISTANCE, IN FEET

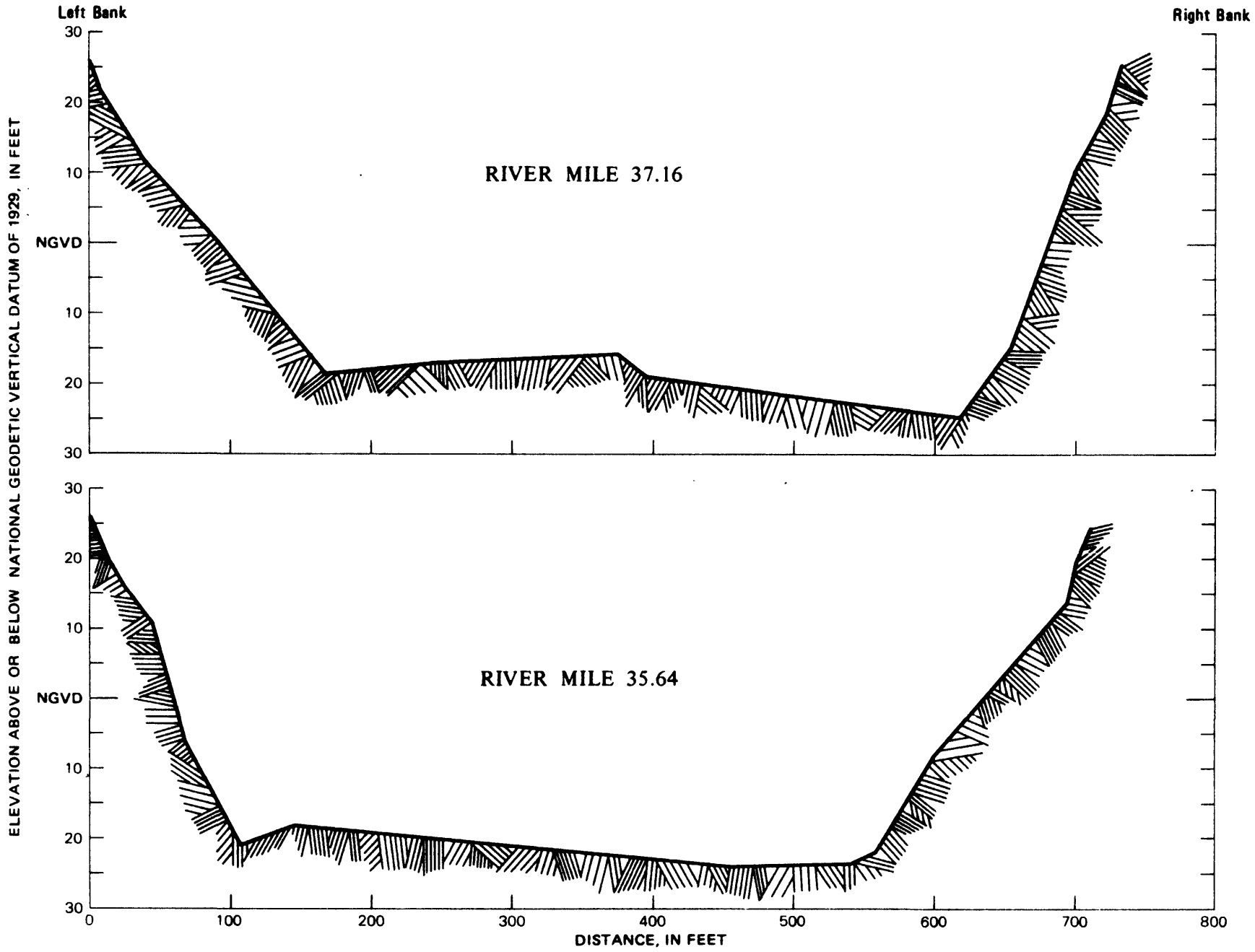


FIGURE 2. – Cross sections of the Sacramento River surveyed in 1982.

METHODS

Suspended Sediment

During each visit, suspended-sediment samples were taken with a USP-61 point-integrating sampler at 25 points in each cross section selected in the study reach. Six anchored buoys were placed in each cross section, and the sampling boat was held in place by ropes between successive adjacent pairs of buoys for a total of five sampling locations per cross section. Sampling locations were computed by means of sextant angle readings from left-bank cross-section markers, to the boat, to stationary markers at known distances upstream from the cross sections. Sampling locations are designated by distance, in feet, from the streamward top edge of the levee on the left bank, which was the initial point of each cross section. At each sampling location, point samples were taken: (1) within 2 feet below the water surface, (2) one-fourth total depth, (3) one-half total depth, (4) three-fourths total depth, and (5) within 2 feet above the streambed. Suspended-sediment analyses included concentration and percent of concentration that is sand.

Some of the data sets include depth-integrated suspended-sediment measurements for comparison at a later time with average values of the point-integrated samples. Water temperature, a necessary property for water-quality studies (Porterfield, 1972), was measured and recorded at the time of collection of each data set tabulated in this report.

Bed Material

At each location where suspended-sediment samples were taken, bed-material samples were taken with a USBM-54 sampler suspended from a boom on the side of the boat. The bed-material samples were dried, sieved, and weighed to provide the particle-size distribution. More than 90 percent of the bed material sampled was sand.

Stream Velocity

Stream velocity was measured at each depth at which point-integrated suspended-sediment samples were taken. A double boom at the front of the boat provided simultaneous suspension of the USP-61 sampler and a Price AA current meter. To prevent interference between meter and sampler and to ascertain the filling rate of the sampler, velocities were measured just before samples were taken at each depth, and the current meter was moved to the next highest depth before the suspended-sediment sample was taken. Beginning March 26, 1980, when a Marsh-McBirney electromagnetic current meter replaced the Price AA current meter, data sets included an azimuth measurement (direction in degrees to magnetic north) for each velocity measured. The University of California, Davis, requested the use of the Marsh-McBirney meter, so that a mathematical model of the stream-velocity characteristics of the river in the study reach can be developed from the velocity data.

Streamflow

Because tides affect the Sacramento River at Hood most of the time, streamflow at Hood is computed with a transient-flow model (Oltmann, 1980), which uses synchronized stage data recorded at 15-minute intervals at the upper (Sacramento) and lower (Hood) ends of the model reach. Streamflow for each 15-minute interval is computed and listed on computer printouts. Streamflow values computed for this study ranged from 3,600 ft^3/s to 76,200 ft^3/s. Instantaneous streamflow values are given for the median time of most data sets. The Geological Survey makes periodic streamflow measurements to verify the flows computed by the model.

Total Sediment Discharges

Total sediment discharges were computed by the revised modified-Einstein method (Burkham and Dawdy, 1980), using two data sets from river mile 37.85 and one data set from river mile 38.45. The data sets were collected at flows of 25,000 ft^3/s, 40,000 ft^3/s, and 54,400 ft^3/s (table 1).

TABLE 1. - Computed sediment discharges, Sacramento River near Hood

Date	Time	River mile	Stream-flow (ft^3/s)	Mean concentration of suspended sediment (mg/L)	Suspended sediment discharge (ton/d)	Total sediment discharge (ton/d)
May 18, 1978	1200	37.85	25,000	52	3,510	4,320
Jan. 19, 1979	1245	38.45	40,000	202	21,800	25,500
Feb. 22, 1979	1120	37.85	54,400	246	36,100	43,100

SELECTED REFERENCES

Burkham, D. E., and Dawdy, D. R., 1980, General study of the modified Einstein method of computing total sediment discharge: U.S. Geological Survey Water-Supply Paper 2066, 67 p.

Graves, W. P., 1977, Sediment study, alternative Delta water facilities; Peripheral Canal plan: California Department of Water Resources, 120 p.

Odenweller, D. B., and Brown, R. L., 1982, Delta fish facilities program report through June 30, 1982: California Department of Water Resources, Technical Report 6 of the Interagency Ecological Studies Program for the Sacramento-San Joaquin Estuary, 91 p.

Oltmann, R. N., 1980, Extension of transient-flow model of the Sacramento River at Sacramento, California: U.S. Geological Survey Water-Resources Investigations 80-30, 29 p.

Porterfield, George, 1972, Computation of fluvial-sediment discharge: U.S. Geological Survey Techniques of Water-Resources Investigations, book 3, chapter C3, 66 p.

Next page is 9

SUSPENDED-SEDIMENT AND STREAM-VELOCITY DATA FOR RIVER MILE 38.45

Date June 22, 1978 Time 1039-1433 Water temp (°C) 21.0

Streamflow (ft^3/s) 18,600 Suspended-sediment discharge (ton/d) 2,010

Distance from initial point (ft)	Total depth (ft)	Sample depth (ft)	Suspended sediment concentration (mg/L)	Percent of suspended sediment that is sand	Stream velocity (ft/s)
123	26.3	1.0	22	13	1.60
		6.6	25	15	1.69
		13.2	40	8	1.69
		19.7	54	6	1.35
		25.3	61	12	1.22
187	25.3	1.0	19	32	1.94
		6.3	32	6	1.94
		12.6	46	9	1.77
		19.0	61	9	1.49
		24.3	76	9	1.11
236	27.0	1.0	24	18	2.19
		6.8	26	17	2.11
		13.5	31	11	2.03
		20.2	53	10	1.52
		26.0	81	9	.54
358	23.5	1.0	16	10	2.19
		5.9	26	7	2.36
		11.8	32	5	2.11
		17.6	27	27	1.94
		22.5	52	8	1.77
459	24.5	1.0	18	14	2.06
		6.1	20	16	2.03
		12.2	20	12	1.86
		18.4	62	13	1.69
		23.5	80	12	1.08

SUSPENDED-SEDIMENT AND STREAM-VELOCITY DATA FOR RIVER MILE 38.45--Continued

Date Nov. 27, 1978 Time 1223-1509 Water temp (°C) 10.5

Streamflow (ft^3/s) 5,300 Suspended-sediment discharge (ton/d) 200

Distance from initial point (ft)	Total depth (ft)	Sample depth (ft)	Suspended sediment concentration (mg/L)	Percent of suspended sediment that is sand	Stream velocity (ft/s)
135	29.3	1.0	14	20	0.39
		7.3	11	4	.52
		14.6	10	7	.62
		22.0	16	3	.54
		28.3	12	6	.35
196	27.8	1.0	12	6	.48
		7.0	13	2	.56
		13.9	13	4	.49
		20.8	15	5	.54
		26.8	16	6	.14
255	24.1	1.0	11	4	.49
		6.0	12	2	.56
		12.0	15	2	.56
		18.0	13	3	.54
		23.1	16	4	.43
368	25.3	1.0	17	2	.60
		6.3	12	2	.56
		12.6	14	3	.60
		18.9	14	2	.54
		24.3	16	3	.34
437	24.6	1.0	13	1	.72
		6.2	13	1	.84
		12.3	18	1	.75
		18.4	15	3	.48
		23.6	17	5	.62

SUSPENDED-SEDIMENT AND STREAM-VELOCITY DATA FOR RIVER MILE 38.45--Continued

Date Jan. 19, 1979 Time 1205-1329 Water temp (°C) 8.5

Streamflow (ft^3/s) 40,000 Suspended-sediment discharge (ton/d) 21,800

Distance from initial point (ft)	Total depth (ft)	Sample depth (ft)	Suspended sediment concentration (mg/L)	Percent of suspended sediment that is sand	Stream velocity (ft/s)
129	30.0	1.0	144	10	3.12
		7.5	198	26	3.27
		15.0	228	25	2.85
		22.5	375	55	2.33
		29.0	309	44	2.04
209	29.7	1.0	178	15	3.63
		7.4	196	25	3.35
		14.8	209	26	2.98
		22.3	217	24	2.60
		28.7	325	46	2.14
272	28.4	1.0	162	18	3.63
		7.1	185	18	3.63
		14.2	202	22	3.63
		21.3	198	33	3.12
		27.4	216	25	2.60
386	28.4	1.0	161	16	3.56
		7.1	175	19	3.87
		14.2	163	24	3.42
		21.3	188	20	2.85
		27.4	192	36	1.41
452	30.0	1.0	155	16	3.12
		7.5	160	25	3.27
		15.0	162	20	3.05
		22.5	170	17	2.55
		29.0	173	15	1.91

SUSPENDED-SEDIMENT AND STREAM-VELOCITY DATA FOR RIVER MILE 38.45--Continued

Date Feb. 13, 1979 Time 1245-1450 Water temp (°C) 11.0

Streamflow (ft^3/s) 13,100 Suspended-sediment discharge (ton/d) 566

Distance from initial point (ft)	Total depth (ft)	Sample depth (ft)	Suspended sediment concentration (mg/L)	Percent of suspended sediment that is sand	Stream velocity (ft/s)
142	28.0	1.0	13	28	0.58
		7.0	19	5	.73
		14.0	11	15	.58
		21.0	19	24	.54
		27.0	23	5	.43
203	25.4	1.0	12	30	1.06
		6.4	16	5	1.03
		12.7	15	29	.95
		19.1	17	25	.86
		24.4	20	9	.82
269	24.2	1.0	13	15	1.44
		6.0	17	8	1.41
		12.1	14	22	1.41
		18.1	19	12	1.29
		23.2	19	36	1.03
379	23.8	1.0	17	15	1.62
		6.0	15	40	1.58
		11.9	16	25	1.26
		17.9	18	15	1.51
		22.8	20	6	.97
452	24.1	1.0	10	14	1.58
		6.0	18	7	1.54
		12.0	14	18	1.11
		18.0	12	23	1.11
		23.1	17	21	.75

SUSPENDED-SEDIMENT AND STREAM-VELOCITY DATA FOR RIVER MILE 38.45--Continued

Date Apr. 13, 1979 Time 1010-1140 Water temp (°C) 15.5

Streamflow (ft^3/s) 19,900 Suspended-sediment discharge (ton/d) 1,960

Distance from initial point (ft)	Total depth (ft)	Sample depth (ft)	Suspended sediment concentration (mg/L)	Percent of suspended sediment that is sand	Stream velocity (ft/s)
139	27.0	1.0	26	17	1.88
		6.8	41	22	1.88
		13.5	48	29	1.68
		20.2	50	16	1.41
		26.0	48	8	.82
190	26.0	1.0	31	11	2.05
		6.5	38	16	2.15
		13.0	41	7	1.68
		19.5	42	13	1.54
		25.0	40	14	1.14
245	25.3	1.0	32	7	2.10
		6.3	38	17	1.96
		12.7	33	17	2.10
		19.0	38	10	1.96
		24.3	48	16	1.08
330	23.6	1.0	26	18	2.25
		5.9	29	13	2.20
		11.8	33	9	2.25
		17.7	38	3	1.38
		22.6	41	8	1.41
433	24.1	1.0	33	15	2.15
		6.0	21	23	2.00
		12.0	35	38	1.84
		18.0	39	3	1.62
		23.1	25	11	1.32

SUSPENDED-SEDIMENT AND STREAM-VELOCITY DATA FOR RIVER MILE 38.45--Continued

Date June 5, 1979 Time 1015-1150 Water temp (°C) 20.5

Streamflow (ft^3/s) 13,600 Suspended-sediment discharge (ton/d) 771

Distance from initial point (ft)	Total depth (ft)	Sample depth (ft)	Suspended sediment concentration (mg/L)	Percent of suspended sediment that is sand	Stream velocity (ft/s)
142	24.5	1.0	14	5	1.80
		6.1	22	10	1.65
		12.2	28	15	1.65
		18.4	30	15	1.65
		23.5	45	23	1.35
219	24.7	1.0	16	6	1.88
		6.2	19	5	1.84
		12.4	22	5	1.65
		18.5	25	7	1.41
		23.7	32	8	.89
262	24.4	1.0	16	6	1.88
		6.1	17	4	1.68
		12.2	21	6	1.73
		18.3	21	6	1.65
		23.4	25	6	1.01
393	22.8	1.0	15	6	1.84
		5.7	17	6	1.80
		11.4	18	5	1.65
		17.1	22	7	1.58
		21.8	25	7	1.26
452	23.2	1.0	13	3	1.73
		5.8	16	4	1.65
		11.6	17	4	1.70
		17.4	19	3	1.26
		22.2	19	6	1.01

SUSPENDED-SEDIMENT AND STREAM-VELOCITY DATA FOR RIVER MILE 38.45--Continued

Date July 18, 1979 Time 0930-1110 Water temp (°C) 22.5

Streamflow (ft^3/s) 17,300 Suspended-sediment discharge (ton/d) 1,490

Distance from initial point (ft)	Total depth (ft)	Sample depth (ft)	Suspended sediment concentration (mg/L)	Percent of suspended sediment that is sand	Stream velocity (ft/s)
151	26.6	1.0	15	16	1.92
		6.6	29	19	1.68
		13.3	40	10	1.88
		20.0	47	11	1.20
		25.6	64	14	.95
196	25.2	1.0	17	20	2.05
		6.3	30	12	2.00
		12.6	31	9	1.92
		18.9	39	19	1.84
		24.2	67	8	1.65
249	24.0	1.0	20	14	2.05
		6.0	31	8	1.96
		12.0	35	9	1.84
		18.0	42	7	1.92
		23.0	44	14	1.44
404	24.2	1.0	19	11	2.15
		6.0	17	26	2.20
		12.1	23	18	2.10
		18.1	31	16	1.84
		23.2	34	8	1.29
448	24.0	1.0	18	13	2.05
		6.0	20	18	2.05
		12.0	22	15	1.68
		18.0	27	17	1.23
		23.0	26	18	1.08

SUSPENDED-SEDIMENT AND STREAM-VELOCITY DATA FOR RIVER MILE 38.45--Continued

Date July 18, 1979 Time 1130-1315 Water temp (°C) 22.5

Streamflow (ft^3/s) 11,300 Suspended-sediment discharge (ton/d) 732

Distance from initial point (ft)	Total depth (ft)	Sample depth (ft)	Suspended sediment concentration (mg/L)	Percent of suspended sediment that is sand	Stream velocity (ft/s)
151	26.6	1.0	16	7	1.26
		6.6	18	12	1.41
		13.3	26	11	1.58
		20.0	41	12	1.08
		25.6	50	9	.80
196	25.0	1.0	14	7	1.54
		6.2	21	6	1.51
		12.5	33	16	1.29
		18.8	43	8	1.32
		24.0	70	4	.97
249	25.6	1.0	22	7	1.51
		6.4	21	7	1.38
		12.8	21	27	1.38
		19.2	26	2	1.14
		24.6	26	13	.70
404	25.2	1.0	13	1	1.41
		6.3	14	1	1.54
		12.6	16	3	1.51
		18.9	15	7	1.14
		24.2	21	11	.86
448	24.4	1.0	14	4	1.08
		6.1	13	4	1.11
		12.2	16	11	1.23
		18.3	16	5	.86
		23.4	20	4	.75

SUSPENDED-SEDIMENT AND STREAM-VELOCITY DATA FOR RIVER MILE 38.45--Continued

Date Sept. 12, 1979 Time 0930-1100 Water temp (°C) 22.0

Streamflow (ft^3/s) -- Suspended-sediment discharge (ton/d) --

Distance from initial point (ft)	Total depth (ft)	Sample depth (ft)	Suspended sediment concentration (mg/L)	Percent of suspended sediment that is sand	Stream velocity (ft/s)
145	27.4	1.0	19	9	1.08
		6.8	20	8	1.11
		13.7	24	3	.99
		20.5	25	4	.84
		26.4	28	2	.65
226	26.0	1.0	15	0	1.18
		6.5	19	0	1.08
		13.0	19	5	.99
		18.5	27	4	.93
		25.0	36	2	.84
269	25.4	1.0	22	5	1.29
		6.4	22	6	1.23
		12.7	22	0	1.08
		19.0	22	0	.91
		24.4	40	0	.69
324	24.0	1.0	19	2	1.32
		6.0	--	--	1.20
		12.0	24	12	1.11
		18.0	24	5	1.14
		23.0	28	11	.80
430	23.8	1.0	20	6	1.41
		6.0	21	6	1.23
		11.9	23	8	1.14
		17.9	25	9	.86
		22.8	25	6	.66

SUSPENDED-SEDIMENT AND STREAM-VELOCITY DATA FOR RIVER MILE 38.45--Continued

Date Sept. 12, 1979 Time 1115-1225 Water temp (°C) 22.0

Streamflow (ft^3/s) -- Suspended-sediment discharge (ton/d) --

Distance from initial point (ft)	Total depth (ft)	Sample depth (ft)	Suspended sediment concentration (mg/L)	Percent of suspended sediment that is sand	Stream velocity (ft/s)
145	27.7	1.0	16	0	1.08
		6.9	17	4	1.08
		13.8	21	3	.97
		20.7	27	5	.91
		26.7	29	2	.70
226	26.6	1.0	15	7	1.18
		6.6	27	0	1.14
		13.3	27	11	.95
		20.0	17	0	.89
		25.6	14	3	.70
269	24.4	1.0	13	0	1.29
		6.1	17	4	1.18
		12.2	17	1	1.29
		18.3	17	1	.97
		23.4	18	1	.95
324	24.8	1.0	14	0	1.41
		6.2	15	2	1.32
		12.4	16	0	1.14
		18.6	21	12	.95
		23.8	22	6	.99
430	25.0	1.0	13	0	1.54
		6.2	17	5	1.51
		12.5	15	3	1.47
		18.8	14	6	1.01
		24.0	13	2	.84

SUSPENDED-SEDIMENT AND STREAM-VELOCITY DATA FOR RIVER MILE 38.45--Continued

Date Sept. 12, 1979 Time 1240-1400 Water temp (°C) 22.5

Streamflow (ft^3/s) -- Suspended-sediment discharge (ton/d) --

Distance from initial point (ft)	Total depth (ft)	Sample depth (ft)	Suspended sediment concentration (mg/L)	Percent of suspended sediment that is sand	Stream velocity (ft/s)
145	27.4	1.0	20	5	1.68
		6.8	25	6	1.62
		13.7	30	9	1.41
		20.6	31	3	1.32
		26.4	32	4	.95
226	26.4	1.0	15	12	1.58
		6.6	24	5	1.51
		13.2	20	0	1.51
		19.8	35	0	1.03
		25.4	37	5	.95
269	25.6	1.0	14	4	1.65
		6.4	20	0	1.58
		12.8	17	4	1.38
		19.2	28	9	1.14
		24.6	21	6	.93
324	25.0	1.0	15	5	1.58
		6.2	18	10	1.62
		12.5	18	0	1.38
		18.7	19	15	1.33
		24.0	22	5	.93
430	24.8	1.0	19	23	1.68
		6.2	21	22	1.65
		12.4	15	5	1.51
		18.6	17	3	1.29
		23.8	15	0	.91

SUSPENDED-SEDIMENT AND STREAM-VELOCITY DATA FOR RIVER MILE 38.45--Continued

Date Feb. 28, 1980 Time 1400-1540 Water temp (°C) 10.5

Streamflow (ft^3/s) 75,300 Suspended-sediment discharge (ton/d) 31,100

Distance from initial point (ft)	Total depth (ft)	Sample depth (ft)	Suspended sediment concentration (mg/L)	Percent of suspended sediment that is sand	Stream velocity (ft/s)
132	39.2	1.0	88	12	5.20
		9.8	117	35	4.75
		19.6	149	50	4.16
		29.4	200	61	3.72
		38.2	--	--	1.41
	Depth integrated		176	63	
226	38.2	1.0	97	25	5.58
		9.6	140	46	5.45
		19.1	154	56	4.48
		28.7	284	73	4.07
		37.2	--	--	1.97
	Depth integrated		159	52	
296	38.0	1.0	94	23	5.45
		9.5	107	35	5.20
		19.0	140	46	4.75
		28.5	174	55	4.75
		37.0	340	81	2.92
	Depth integrated		165	53	
344	37.3	1.0	89	16	5.45
		9.3	123	32	5.32
		18.6	116	38	4.55
		27.9	151	48	4.16
		36.3	383	78	3.13
	Depth integrated		118	37	
400	36.8	1.0	91	20	5.45
		9.2	104	29	5.45
		18.4	119	35	5.20
		27.6	119	34	4.55
		35.8	148	47	3.50
	Depth integrated		127	37	

SUSPENDED-SEDIMENT AND STREAM-VELOCITY DATA FOR RIVER MILE 38.45--Continued

Date June 27, 1980 Time 1045-1500 Water temp (°C) 19.5

Streamflow (ft^3/s) 24,500 Suspended-sediment discharge (ton/d) 3,110

Distance from initial point (ft)	Total depth (ft)	Sample depth (ft)	Suspended sediment concentration (mg/L)	Percent of suspended sediment that is sand	Stream velocity	
					Rate (ft/s)	Direction (degrees to magnetic north)
142	25.0	2.0	36	12	2.08	143
		6.2	48	28	2.01	143
		12.5	58	9	1.74	143
		18.7	71	12	1.62	143
		23.5	88	14	1.48	145
	Depth integrated		60	--		
206	27.0	2.0	36	12	2.34	145
		6.8	42	9	2.25	143
		13.5	50	10	2.12	148
		20.3	50	11	1.78	148
		25.5	64	17	1.36	148
	Depth integrated		48	--		
272	26.0	2.0	43	12	2.39	148
		6.5	43	12	--	--
		13.0	47	12	2.23	145
		19.5	55	11	1.61	145
		24.5	58	16	1.41	145
	Depth integrated		48	--		
379	25.9	2.0	30	16	2.47	152
		6.5	41	13	2.19	155
		13.0	47	10	2.21	155
		19.5	48	12	2.10	154
		24.4	55	13	1.30	148
	Depth integrated		26	--		
448	25.4	2.0	18	10	2.30	148
		6.4	30	7	2.30	148
		12.7	34	14	1.96	148
		19.1	42	14	1.67	148
		23.9	48	21	1.59	155
	Depth integrated		28	--		

SUSPENDED-SEDIMENT AND STREAM-VELOCITY DATA FOR RIVER MILE 38.45--Continued

Date Apr. 28, 1981 Time 1250-1420 Water temp (°C) 18.0

Streamflow (ft^3/s) 11,600 Suspended-sediment discharge (ton/d) 438

Distance from initial point (ft)	Total depth (ft)	Sample depth (ft)	Suspended sediment concentration (mg/L)	Percent of suspended sediment that is sand	Stream velocity: Rate (ft/s)	Stream velocity: Direction (degrees to magnetic north)
171	26.4	2.0	13	7	0.91	155
		6.6	21	20	.87	167
		13.2	17	5	.79	162
		19.8	24	8	1.01	165
		25.0	27	4	.32	180
	Depth integrated		20	3		
196	25.4	2.0	11	7	1.18	139
		6.4	12	5	1.07	143
		12.7	15	18	.97	148
		19.0	14	4	.76	155
		24.0	15	6	.57	163
	Depth integrated		12	0		
275	25.4	2.0	12	8	1.38	149
		6.4	13	6	1.23	148
		12.7	15	11	.97	148
		19.0	16	8	.79	149
		24.0	15	5	.37	176
	Depth integrated		11	3		
333	26.2	2.0	10	6	1.80	152
		6.2	11	6	1.40	152
		12.4	12	6	1.40	151
		18.6	13	6	1.39	153
		24.8	14	4	1.55	159
	Depth integrated		10	2		
408	24.4	2.0	10	3	1.24	151
		5.8	12	5	1.22	155
		11.5	11	2	1.48	155
		17.2	11	0	.73	166
		23.0	12	2	.64	179
	Depth integrated		13	7		

SUSPENDED-SEDIMENT AND STREAM-VELOCITY DATA FOR RIVER MILE 38.45--Continued

Date Sept. 15, 1981 Time 1015-1215 Water temp (°C) 21.5

Streamflow (ft^3/s) 17,800 Suspended-sediment discharge (ton/d) 2,070

Distance from initial point (ft)	Total depth (ft)	Sample depth (ft)	Suspended sediment concentration (mg/L)	Percent of suspended sediment that is sand	Stream velocity	
					Rate (ft/s)	Direction (degrees to magnetic north)
155	27.1	2.0	29	4	1.80	145
		6.8	43	4	1.73	142
		13.6	55	6	1.65	141
		20.4	71	8	1.35	143
		25.6	94	16	1.03	147
	Depth integrated		56	14		
226	25.6	2.0	28	4	1.92	137
		6.4	36	4	1.84	137
		12.8	41	3	1.70	137
		19.2	54	4	1.38	137
		24.1	63	5	1.21	135
	Depth integrated		40	6		
269	23.5	2.0	32	5	2.05	138
		5.9	33	3	1.92	138
		11.8	39	7	1.80	137
		17.7	44	3	1.35	137
		22.0	60	4	1.58	142
	Depth integrated		41	5		
365	25.5	2.0	27	5	2.15	138
		6.4	31	4	2.05	138
		12.8	37	2	1.96	138
		19.2	40	6	1.54	138
		24.0	49	5	1.35	137
	Depth integrated		38	7		
433	23.5	2.0	26	5	2.29	145
		5.9	31	6	2.10	145
		11.8	38	5	2.05	142
		17.7	35	4	1.80	142
		22.0	36	5	1.58	140
	Depth integrated		32	6		

BED MATERIAL PARTICLE-SIZE DISTRIBUTION AT RIVER MILE 38.45

Distance from initial point (ft)	Percent finer than indicated sieve size (millimeters)										
	64.0	32.0	16.0	8.00	4.00	2.00	1.00	0.50	0.25	0.125	0.062
					June 22, 1978						
123				100	99.0	94.4	71.0	13.2	9.5	5.2	1.7
187					100	99.8	98.1	53.7	1.0	.5	.4
236					100	99.9	99.7	94.6	9.3	.8	.1
358				100	99.9	99.1	97.6	95.5	71.1	19.6	10.8
459	100	34.3	34.3	34.3	33.6	33.3	32.9	29.8	17.3	7.4	1.5
Average	100	86.9	86.9	86.9	86.5	85.3	79.9	57.4	21.6	6.7	2.9
					November 27, 1978						
135				100	98.9	96.8	88.5	21.9	5.5	4.1	2.4
196				100	99.8	99.4	98.7	75.6	3.3	.3	.2
255					100	99.9	99.8	95.2	6.4	.4	.2
368					100	99.7	97.5	93.1	34.7	11.7	8.4
437					100	97.9	92.6	87.0	80.3	64.9	35.2
Average				100	99.7	98.7	95.4	74.6	26.0	16.3	9.3
					January 19, 1979						
129			100	99.8	99.8	99.7	99.5	98.7	36.9	3.8	0.1
209				100	99.8	99.8	99.7	97.7	23.0	6.0	.1
272				100	99.9	99.7	99.0	80.8	2.3	.2	0
386			100	99.9	99.0	97.8	92.7	32.4	.4	.1	0
452			100	97.0	90.5	87.2	76.6	15.7	8.8	3.9	.8
Average			100	99.3	97.8	96.8	93.5	65.1	14.3	2.8	.2
					February 13,1979						
142						100	99.9	99.1	91.9	53.9	24.9
203						100	99.9	98.6	27.2	3.8	1.5
269					100	99.9	99.9	94.0	8.4	.2	.1
379				100	98.2	96.9	93.7	46.7	2.6	.9	.1
452				100	99.7	97.0	77.5	9.8	2.9	2.3	1.5
Average				100	99.6	98.8	94.2	69.6	26.6	12.2	5.6

BED MATERIAL PARTICLE-SIZE DISTRIBUTION AT RIVER MILE 38.45--Continued

Distance from initial point (ft)	Percent finer than indicated sieve size (millimeters)										
	64.0	32.0	16.0	8.00	4.00	2.00	1.00	0.50	0.25	0.125	0.062
					April 13, 1979						
139						100	99.9	99.5	62.8	11.3	3.5
190				100	99.9	99.9	99.8	99.3	17.5	.6	.1
245						100	99.9	88.6	5.7	.1	0
330				100	99.6	99.3	98.1	76.4	3.7	1.1	.4
433			100	99.9	99.1	94.6	76.7	17.8	4.5	3.1	1.3
Average			100	100	99.7	98.8	94.9	76.3	18.8	3.2	1.1
					June 5, 1979						
142					100	99.8	99.4	99.2	91.8	31.7	15.7
219					100	99.9	99.8	99.6	48.6	4.2	1.6
262						100	99.9	93.6	8.7	.8	.4
393					100	99.9	99.4	72.5	1.7	.6	.4
452				100	99.8	99.6	97.6	39.7	1.3	.5	.3
Average				100	100	99.8	99.2	80.9	30.4	7.6	3.7
					July 18, 1979						
151				100	99.5	97.2	81.9	18.9	7.2	4.4	1.9
196					100	99.7	98.2	62.1	1.1	.1	.1
249							100	98.5	26.3	3.4	1.5
404							100	99.6	60.0	18.5	11.8
448					100	99.9	99.9	99.5	92.9	55.9	23.2
Average				100	99.9	99.4	96.0	75.7	37.5	16.5	7.7
					September 12, 1979						
145					100	99.0	87.3	20.0	5.6	3.6	1.4
226				100	99.9	99.8	98.0	46.8	4.1	3.1	2.3
269							100	97.6	13.6	0.5	0.2
324					100	99.9	99.2	93.4	44.1	15.7	11.7
430							100	99.6	84.2	51.1	29.1
Average				100	100	99.7	96.9	71.5	30.3	14.8	8.9

BED MATERIAL PARTICLE-SIZE DISTRIBUTION AT RIVER MILE 38.45--Continued

Distance from initial point (ft)	Percent finer than indicated sieve size (millimeters)										
	64.0	32.0	16.0	8.00	4.00	2.00	1.00	0.50	0.25	0.125	0.062
					Feb. 28, 1980						
132						100	99.9	99.8	65.0	2.1	0.1
226						100	99.9	99.5	32.1	.7	.1
296						100	99.9	83.7	3.4	.1	0
344				100	99.7	99.3	98.4	67.0	2.3	.2	.1
400			100	97.8	95.8	92.8	74.8	8.1	0.6	.1	0
Average			100	99.6	99.1	98.4	94.6	71.6	20.7	.6	.1
					June 27, 1980						
142							100	99.7	97.0	87.2	66.8
206					100	99.9	99.8	98.5	26.0	.6	.1
272					100	99.9	99.8	91.0	6.3	.2	.1
379						100	99.4	63.5	1.2	.1	0
448				100	99.9	99.4	89.3	16.6	7.7	4.9	1.9
Average					100	99.8	97.7	73.9	27.6	18.6	13.8
					April 28, 1981						
171						100	99.6	97.8	91.2	75.8	49.1
196						100	99.9	99.3	45.4	3.9	1.8
275							100	99.2	21.8	2.7	1.5
333						100	99.7	75.4	3.4	.5	.3
408				100	99.3	95.3	69.7	13.3	8.5	6.5	3.6
Average				100	99.9	99.1	93.8	77.0	34.1	17.9	11.3
					September 15, 1981						
155						100	99.7	95.0	81.8	66.0	43.2
226							100	99.5	27.5	.8	.5
269							100	96.3	29.8	14.8	10.1
365				100	99.8	99.8	99.4	81.7	7.7	3.7	2.2
433				100	98.2	95.3	82.2	15.4	7.3	5.7	3.6
Average				100	99.6	99.0	96.3	77.6	30.8	18.2	11.9

SUSPENDED-SEDIMENT AND STREAM-VELOCITY DATA FOR RIVER MILE 37.85

Date May 18, 1978 Time 1030-1330 Water temp (°C) 17.5

Streamflow (ft^3/s) 25,000 Suspended-sediment discharge (ton/d) 3,510

Distance from initial point (ft)	Total depth (ft)	Sample depth (ft)	Suspended sediment concentration (mg/L)	Percent of suspended sediment that is sand	Stream velocity (ft/s)
128	27.4	1.0	31	4	1.92
		6.8	51	5	1.97
		13.7	50	4	1.51
		20.5	53	4	1.41
		26.4	70	10	1.11
257	21.7	1.0	36	6	2.20
		5.4	50	4	2.74
		10.8	55	4	2.10
		16.2	67	8	1.68
		20.7	81	8	1.35
389	18.0	1.0	42	4	2.29
		4.5	46	6	2.34
		9.0	54	5	2.34
		13.5	60	2	2.16
		17.0	75	7	1.62
523	16.6	1.0	42	7	2.68
		4.2	45	5	2.44
		8.3	49	4	2.39
		12.4	54	6	2.20
		15.6	61	4	1.96
647	14.3	1.0	34	4	2.55
		3.6	46	6	2.44
		7.2	45	14	2.10
		10.8	54	6	2.10
		13.3	51	6	1.96

SUSPENDED-SEDIMENT AND STREAM-VELOCITY DATA FOR RIVER MILE 37.85--Continued

Date Nov. 22, 1978 Time 1350-1600 Water temp (°C) 10.5

Streamflow (ft^3/s) 17,200 Suspended-sediment discharge (ton/d) 1,020

Distance from initial point (ft)	Total depth (ft)	Sample depth (ft)	Suspended sediment concentration (mg/L)	Percent of suspended sediment that is sand	Stream velocity (ft/s)
189	30.0	1.0	23	6	1.47
		7.5	19	4	1.44
		15.0	22	8	1.23
		22.5	16	9	.99
		29.0	34	3	.80
235	23.6	1.0	14	8	1.73
		5.9	23	3	1.65
		11.8	24	6	1.50
		17.7	27	5	1.65
		22.6	32	3	.46
324	21.6	1.0	17	2	1.50
		5.4	19	6	1.54
		10.8	22	5	1.44
		16.2	24	2	1.33
		20.6	30	4	.46
389	18.8	1.0	20	3	1.65
		4.7	22	4	1.50
		9.4	22	4	1.65
		14.1	21	3	1.41
		17.8	23	0	.78
530	16.6	1.0	18	4	1.61
		4.2	19	3	1.54
		8.3	20	4	1.41
		12.4	22	5	1.21
		15.6	23	4	.52

SUSPENDED-SEDIMENT AND STREAM-VELOCITY DATA FOR RIVER MILE 37.85--Continued

Date Jan. 19, 1979 Time 1355-1527 Water temp (°C) 9.0

Streamflow (ft^3/s) 40,000 Suspended-sediment discharge (ton/d) 21,100

Distance from initial point (ft)	Total depth (ft)	Sample depth (ft)	Suspended sediment concentration (mg/L)	Percent of suspended sediment that is sand	Stream velocity (ft/s)
120	30.0	1.0	159	20	3.35
		7.5	186	27	3.35
		15.0	209	34	2.79
		22.5	224	30	2.49
		29.0	194	35	1.69
338	25.0	1.0	170	34	3.42
		6.2	197	26	3.35
		12.5	220	32	2.98
		18.8	255	47	2.79
		24.0	279	45	1.57
516	23.2	1.0	158	18	3.19
		5.8	175	23	3.19
		11.6	179	34	2.85
		17.4	205	26	2.24
		22.2	218	31	1.91
579	21.4	1.0	158	16	3.19
		5.4	175	22	3.19
		10.7	187	19	2.98
		16.0	203	24	2.43
		20.4	222	33	1.69
640	18.4	1.0	160	17	3.27
		4.6	163	27	2.98
		9.2	184	19	3.05
		13.8	183	20	2.60
		17.4	200	26	2.24

SUSPENDED-SEDIMENT AND STREAM-VELOCITY DATA FOR RIVER MILE 37.85--Continued

Date Feb. 13, 1979 Time 1005-1215 Water temp (°C) 11.0

Streamflow (ft^3/s) 16,800 Suspended-sediment discharge (ton/d) 771

Distance from initial point (ft)	Total depth (ft)	Sample depth (ft)	Suspended sediment concentration (mg/L)	Percent of suspended sediment that is sand	Stream velocity (ft/s)
204	28.0	1.0	19	22	1.41
		7.0	21	19	1.47
		14.0	20	20	1.23
		21.0	26	25	1.16
		27.0	27	23	1.16
302	22.6	1.0	15	18	1.65
		5.6	17	13	1.58
		11.3	17	6	1.41
		16.9	17	16	1.47
		21.6	19	12	1.11
396	19.2	1.0	14	7	1.84
		4.8	16	17	1.65
		9.6	13	22	1.68
		14.4	18	20	1.68
		18.2	37	62	.95
467	18.0	1.0	11	20	1.65
		4.5	13	18	1.65
		9.0	12	19	1.65
		13.5	17	16	1.47
		17.0	21	5	1.00
558	16.2	1.0	13	7	1.73
		4.0	14	12	1.68
		8.1	14	17	1.58
		12.1	11	12	1.54
		15.2	18	44	1.26

SUSPENDED-SEDIMENT AND STREAM-VELOCITY DATA FOR RIVER MILE 37.85--Continued

Date Feb. 22, 1979 Time 1015-1235 Water temp (°C) 9.0

Streamflow (ft^3/s) 54,400 Suspended-sediment discharge (ton/d) 36,100

Distance from initial point (ft)	Total depth (ft)	Sample depth (ft)	Suspended sediment concentration (mg/L)	Percent of suspended sediment that is sand	Stream velocity (ft/s)
143	37.0	1.0	171	24	2.74
		9.2	211	32	3.34
		18.5	219	28	3.21
		27.7	238	33	3.28
		36.0	237	37	1.80
367	28.4	1.0	195	31	4.07
		7.1	225	37	3.98
		14.2	276	42	3.80
		21.3	365	55	3.35
		27.4	337	55	2.55
453	26.4	1.0	200	27	3.98
		6.6	192	20	3.80
		13.2	251	33	3.65
		19.8	311	46	3.13
		25.4	410	55	1.51
537	25.0	1.0	180	18	4.16
		6.2	206	25	3.89
		12.5	212	27	3.80
		18.7	264	38	3.35
		24.0	305	46	1.96
620	22.2	1.0	169	17	3.57
		5.6	212	25	3.89
		11.1	270	19	3.57
		16.7	232	28	3.35
		21.2	265	40	2.39

SUSPENDED-SEDIMENT AND STREAM-VELOCITY DATA FOR RIVER MILE 37.85--Continued

Date March 19, 1979 Time 0940-1130 Water temp (°C) 12.5

Streamflow (ft^3/s) 28,400 Suspended-sediment discharge (ton/d) 4,370

Distance from initial point (ft)	Total depth (ft)	Sample depth (ft)	Suspended sediment concentration (mg/L)	Percent of suspended sediment that is sand	Stream velocity (ft/s)
180	28.7	1.0	40	13	2.50
		7.2	58	16	2.34
		14.4	59	26	1.88
		21.6	68	22	1.62
		27.7	69	21	1.20
279	23.8	1.0	46	12	2.50
		6.0	58	16	2.68
		11.9	61	17	2.39
		17.9	64	19	2.50
		22.8	89	28	1.80
374	22.0	1.0	37	13	2.50
		5.5	51	13	2.55
		11.0	61	17	2.39
		16.5	63	21	2.10
		21.0	64	26	1.80
516	21.0	1.0	45	16	2.44
		5.2	47	11	2.55
		10.5	50	13	2.39
		15.7	57	12	2.00
		20.0	64	14	1.68
661	20.0	1.0	42	6	2.61
		5.0	59	6	2.44
		10.0	49	8	2.25
		15.0	66	26	2.20
		19.0	67	10	1.63

SUSPENDED-SEDIMENT AND STREAM-VELOCITY DATA FOR RIVER MILE 37.85--Continued

Date April 13, 1979 Time 1215-1325 Water temp (°C) 16.0

Streamflow (ft^3/s) 19,700 Suspended-sediment discharge (ton/d) 2,450

Distance from initial point (ft)	Total depth (ft)	Sample depth (ft)	Suspended sediment concentration (mg/L)	Percent of suspended sediment that is sand	Stream velocity (ft/s)
189	24.4	1.0	39	12	1.96
		6.1	44	18	2.10
		12.2	50	26	1.54
		18.3	68	5	1.41
		23.4	96	5	1.32
316	21.5	1.0	35	9	2.05
		5.4	41	7	2.05
		10.8	41	12	1.84
		16.1	50	6	1.80
		20.5	53	12	1.51
382	19.3	1.0	39	7	1.96
		4.8	40	8	1.88
		9.6	47	11	1.92
		14.4	57	8	1.62
		18.3	56	17	1.58
460	16.7	1.0	35	9	2.25
		4.2	38	6	2.15
		8.4	45	8	2.25
		12.5	45	12	1.96
		15.7	48	13	1.44
586	14.8	1.0	41	16	1.92
		3.7	39	12	2.05
		7.4	45	13	2.00
		11.1	12	23	1.65
		13.8	45	13	1.68

SUSPENDED-SEDIMENT AND STREAM-VELOCITY DATA FOR RIVER MILE 37.85--Continued

Date June 5, 1979 Time 1220-1355 Water temp (°C) 21.0

Streamflow (ft^3/s) 8,100 Suspended-sediment discharge (ton/d) 306

Distance from initial point (ft)	Total depth (ft)	Sample depth (ft)	Suspended sediment concentration (mg/L)	Percent of suspended sediment that is sand	Stream velocity (ft/s)
197	24.9	1.0	13	5	1.18
		6.3	16	2	1.14
		12.4	18	3	.80
		18.7	20	3	.70
		23.9	27	9	.70
302	20.6	1.0	11	1	1.11
		5.2	13	1	1.14
		10.3	14	4	.95
		15.4	15	1	.73
		19.6	17	2	.56
382	18.8	1.0	11	8	1.03
		4.7	7	7	1.03
		9.4	18	8	.99
		14.1	13	22	.72
		17.8	16	12	.72
495	17.0	1.0	11	12	1.14
		4.2	13	8	.99
		8.5	11	4	.95
		12.8	15	5	.75
		16.0	13	6	.69
544	16.3	1.0	15	14	.86
		4.0	12	11	.86
		8.2	8	27	.70
		12.2	14	17	.72
		15.3	15	20	.56

SUSPENDED-SEDIMENT AND STREAM-VELOCITY DATA FOR RIVER MILE 37.85--Continued

Date July 17, 1979 Time 1110-1320 Water temp (°C) 23.0

Streamflow (ft^3/s) 12,600 Suspended-sediment discharge (ton/d) 510

Distance from initial point (ft)	Total depth (ft)	Sample depth (ft)	Suspended sediment concentration (mg/L)	Percent of suspended sediment that is sand	Stream velocity (ft/s)
174	26.6	1.0	14	15	1.18
		6.7	18	10	1.16
		13.3	19	6	1.08
		20.0	25	5	.97
		25.6	36	38	.75
309	22.1	1.0	12	2	1.20
		6.5	17	16	1.18
		11.0	13	12	1.08
		17.5	19	10	.75
		21.1	17	21	.38
396	20.2	1.0	10	11	1.20
		5.0	8	8	1.23
		10.1	15	10	1.23
		15.1	14	6	1.08
		19.2	17	9	.80
453	19.4	1.0	9	7	1.26
		4.9	13	8	1.11
		9.7	10	10	1.08
		14.6	14	5	.95
		18.4	12	7	.75
558	17.2	1.0	9	24	1.26
		4.3	13	9	1.26
		8.6	14	13	1.14
		12.9	14	5	1.03
		16.2	15	7	.41

SUSPENDED-SEDIMENT AND STREAM-VELOCITY DATA FOR RIVER MILE 37.85--Continued

Date July 17, 1979 Time 1325-1505 Water temp (°C) 23.0

Streamflow (ft^3/s) 16,300 Suspended-sediment discharge (ton/d) 528

Distance from initial point (ft)	Total depth (ft)	Sample depth (ft)	Suspended sediment concentration (mg/L)	Percent of suspended sediment that is sand	Stream velocity (ft/s)
174	26.9	1.0	14	8	1.23
		6.8	9	3	1.18
		13.5	10	8	1.11
		20.3	13	8	.99
		25.9	16	5	.73
309	23.0	1.0	8	6	1.35
		5.8	14	17	1.29
		11.5	10	0	1.29
		17.3	12	0	1.18
		22.0	19	2	.69
396	19.6	1.0	12	13	1.38
		4.9	12	8	1.38
		9.8	12	5	1.26
		14.7	13	8	1.20
		18.6	11	11	.93
453	18.4	1.0	10	12	1.54
		4.6	12	9	1.47
		9.2	11	5	1.38
		13.8	16	13	1.32
		17.4	12	16	1.08
558	16.8	1.0	7	10	1.65
		4.2	12	5	1.62
		8.4	11	16	1.47
		12.6	14	13	1.23
		15.8	19	15	.84

SUSPENDED-SEDIMENT AND STREAM-VELOCITY DATA FOR RIVER MILE 37.85--Continued

Date Aug. 15, 1979 Time 1030-1210 Water temp (°C) 21.0

Streamflow (ft^3/s) 12,900 Suspended-sediment discharge (ton/d) 801

Distance from initial point (ft)	Total depth (ft)	Sample depth (ft)	Suspended sediment concentration (mg/L)	Percent of suspended sediment that is sand	Stream velocity (ft/s)
197	27.2	1.0	24	17	1.41
		6.8	27	20	1.51
		13.6	19	6	1.11
		20.4	16	24	1.01
		26.2	42	19	.80
250	24.0	1.0	13	0	1.41
		6.0	26	33	1.41
		12.0	28	12	1.29
		18.0	36	5	1.08
		23.0	65	6	.86
324	20.4	1.0	14	16	1.35
		5.1	17	12	1.41
		10.2	23	7	1.18
		15.3	28	11	1.11
		19.4	46	11	.76
439	19.0	1.0	12	23	1.38
		4.2	13	9	1.32
		9.5	21	14	1.35
		13.8	13	39	1.14
		18.0	24	10	.69
537	16.0	1.0	11	19	1.41
		4.0	13	15	1.47
		8.0	12	16	1.32
		12.0	12	26	.75
		15.0	26	14	.75

SUSPENDED-SEDIMENT AND STREAM-VELOCITY DATA FOR RIVER MILE 37.85--Continued

Date Aug. 16, 1979 Time 0830-1000 Water temp (°C) 21.0

Streamflow (ft^3/s) 19,900 Suspended-sediment discharge (ton/d) 2,040

Distance from initial point (ft)	Total depth (ft)	Sample depth (ft)	Suspended sediment concentration (mg/L)	Percent of suspended sediment that is sand	Stream velocity (ft/s)
189	29.0	1.0	17	19	1.80
		7.2	38	11	1.65
		14.5	46	18	1.54
		21.8	61	28	1.62
		28.0	48	16	1.18
257	22.4	1.0	20	16	2.05
		5.6	31	25	2.05
		11.2	40	20	1.92
		16.8	52	15	1.65
		21.4	60	6	1.11
345	20.4	1.0	32	18	2.10
		5.1	36	14	2.10
		10.2	42	27	1.80
		15.3	51	21	1.65
		19.4	69	15	1.29
432	17.8	1.0	27	20	2.25
		4.2	26	29	2.25
		8.4	31	23	1.92
		12.6	34	22	1.65
		16.8	47	17	1.41
537	14.0	1.0	23	13	2.20
		3.5	26	10	2.44
		7.0	33	18	2.15
		10.5	30	18	1.80
		13.0	42	10	1.80

SUSPENDED-SEDIMENT AND STREAM-VELOCITY DATA FOR RIVER MILE 37.85--Continued

Date Aug. 16, 1979 Time 1000-1115 Water temp (°C) 21.0

Streamflow (ft^3/s) 15,300 Suspended-sediment discharge (ton/d) 1,490

Distance from initial point (ft)	Total depth (ft)	Sample depth (ft)	Suspended sediment concentration (mg/L)	Percent of suspended sediment that is sand	Stream velocity (ft/s)
189	28.8	1.0	25	17	1.92
		7.2	36	24	1.84
		14.4	39	12	1.44
		21.6	37	8	1.41
		27.8	44	8	1.03
257	22.4	1.0	29	3	2.10
		5.6	35	9	2.00
		11.2	40	20	1.92
		16.8	51	7	1.76
		21.4	58	5	1.54
345	19.0	1.0	20	7	2.20
		4.8	30	19	1.92
		9.5	45	7	1.80
		14.2	49	20	1.41
		18.0	60	11	1.29
432	18.2	1.0	21	17	2.00
		4.6	23	13	1.96
		9.1	28	5	1.80
		13.6	34	8	1.65
		17.2	41	10	1.47
537	14.0	1.0	19	17	2.00
		3.5	25	13	2.15
		7.0	30	8	2.00
		10.5	33	12	1.92
		13.0	39	21	1.68

SUSPENDED-SEDIMENT AND STREAM-VELOCITY DATA FOR RIVER MILE 37.85--Continued

Date Aug. 16, 1979 Time 1130-1310 Water temp (°C) 21.0

Streamflow (ft^3/s) 12,300 Suspended-sediment discharge (ton/d) 797

Distance from initial point (ft)	Total depth (ft)	Sample depth (ft)	Suspended sediment concentration (mg/L)	Percent of suspended sediment that is sand	Stream velocity (ft/s)
189	29.0	1.0	20	12	1.62
		7.2	25	36	1.38
		14.5	30	17	1.11
		21.8	30	9	1.26
		28.0	29	17	.91
257	22.2	1.0	19	16	1.38
		5.6	27	13	1.41
		11.1	30	17	1.16
		16.6	43	12	1.26
		21.2	57	19	.70
345	20.0	1.0	13	15	1.38
		5.0	17	9	1.38
		10.0	25	25	1.32
		15.0	25	21	.97
		19.0	35	14	.91
432	18.4	1.0	17	13	1.14
		4.6	17	15	1.26
		9.2	22	17	1.11
		13.8	21	12	.99
		17.4	24	10	.97
537	14.8	1.0	11	6	1.35
		3.7	13	7	1.35
		7.4	15	10	1.32
		11.1	20	11	1.08
		13.8	21	9	1.14

SUSPENDED-SEDIMENT AND STREAM-VELOCITY DATA FOR RIVER MILE 37.85--Continued

Date Feb. 28, 1980 Time 1055-1235 Water temp (°C) 11.0

Streamflow (ft^3/s) 76,200 Suspended-sediment discharge (ton/d) 39,500

Distance from initial point (ft)	Total depth (ft)	Sample depth (ft)	Suspended sediment concentration (mg/L)	Percent of suspended sediment that is sand	Stream velocity (ft/s)
166	37.1	1.0	101	26	4.55
		9.3	121	37	4.48
		18.6	158	53	4.48
		27.9	212	62	3.89
		36.1	406	83	3.13
	Depth Integrated		129	41	
279	34.2	1.0	90	18	4.75
		8.5	109	30	4.75
		17.1	173	56	4.48
		25.6	274	72	3.72
		33.2	501	84	3.13
	Depth Integrated		202	62	
345	30.8	1.0	103	27	5.45
		7.7	138	50	4.75
		15.4	128	57	4.37
		23.1	206	64	4.16
		29.8	365	81	3.21
	Depth Integrated		152	60	
425	28.3	1.0	98	25	5.45
		7.1	107	32	4.96
		14.2	137	45	4.75
		21.3	174	56	3.35
		27.3	483	84	3.43
	Depth Integrated		155	52	
558	24.6	1.0	92	22	5.08
		6.2	101	28	4.96
		12.3	121	40	4.16
		18.4	157	52	3.98
		23.6	245	71	3.72
	Depth Integrated		130	39	

SUSPENDED-SEDIMENT AND STREAM-VELOCITY DATA FOR RIVER MILE 37.85--Continued

Date March 26, 1980 Time 1050-1440 Water temp (°C) 11.5

Streamflow (ft^3/s) 32,600 Suspended-sediment discharge (ton/d) --

Distance from initial point (ft)	Total depth (ft)	Sample depth (ft)	Suspended sediment concentration (mg/L)	Percent of suspended sediment that is sand	Stream velocity Rate (ft/s)	Stream velocity Direction (degrees to magnetic north)
175	31.0	1.0	No sediment samples		2.54	180
		5.0			2.48	182
		10.0			2.32	185
		15.0			2.12	187
		20.0			1.97	190
		24.6			1.72	191
		25.6			1.64	191
		26.6			1.72	189
		27.6			1.75	195
		28.6			1.96	200
		29.6			1.57	195
295	24.9	1.0			2.70	--
		5.0			2.67	181
		10.0			2.51	184
		15.0			2.26	186
		17.0			2.24	186
		19.0			2.07	186
		20.0			2.19	187
		21.0			1.93	186
		22.0			1.92	188
		23.0			1.79	188
		23.4			1.83	188

SUSPENDED-SEDIMENT AND STREAM-VELOCITY DATA FOR RIVER MILE 37.85--Continued

Date March 26, 1980 Time 1050-1440 Water temp (°C) 11.5

Streamflow (ft^3/s) 32,600 Suspended-sediment discharge (ton/d) --

Distance from initial point (ft)	Total depth (ft)	Sample depth (ft)	Suspended sediment concentration (mg/L)	Percent of suspended sediment that is sand	Stream velocity	
					Rate (ft/s)	Direction (degrees to magnetic north)
405	22.4	1.0	No sediment samples		2.72	--
		5.0			2.66	184
		10.0			2.54	185
		15.0			2.37	182
		17.0			2.20	187
		18.0			2.25	188
		19.0			2.10	187
		20.0			1.93	186
		21.0			1.74	188
510	20.0	1.0			2.72	179
		5.0			2.72	183
		10.0			2.57	184
		14.0			2.40	184
		15.0			2.22	186
		16.0			2.22	185
		17.0			2.02	187
		18.0			1.99	187
		18.6			1.77	188
595	17.4	1.0			2.59	--
		5.0			2.46	180
		10.0			2.30	183
		13.0			2.24	187
		14.0			2.12	187
		15.0			2.10	188
		16.0			1.91	186

SUSPENDED-SEDIMENT AND STREAM-VELOCITY DATA FOR RIVER MILE 37.85--Continued

Date June 26, 1980 Time 0940-1325 Water temp (°C) 19.0

Streamflow (ft^3/s) 25,200 Suspended-sediment discharge (ton/d) 3,200

Distance from initial point (ft)	Total depth (ft)	Sample depth (ft)	Suspended sediment concentration (mg/L)	Percent of suspended sediment that is sand	Stream velocity	
					Rate (ft/s)	Direction (degrees to magnetic north)
174	30.4	2.0	41	13	1.86	183
		7.6	44	8	1.62	183
		15.2	49	10	1.58	185
		22.8	42	9	1.52	191
		28.9	42	9	1.16	193
	Depth integrated		40	--		
279	23.5	2.0	38	12	2.13	180
		5.9	48	10	2.06	183
		11.8	55	12	1.86	185
		17.7	62	11	1.60	188
		22.0	66	21	1.30	190
	Depth integrated		52	--		
367	21.7	2.0	45	12	2.25	181
		5.4	48	18	2.24	178
		10.8	45	20	1.99	183
		16.2	58	16	1.64	185
		20.2	48	39	1.28	188
	Depth integrated		44	--		
453	19.6	2.0	38	11	2.43	183
		4.9	25	33	2.20	184
		9.8	45	17	2.04	189
		14.7	49	13	1.89	190
		18.1	58	16	1.23	191
	Depth integrated		44	--		
578	15.5	2.0	39	12	2.31	183
		3.9	41	15	2.24	183
		7.8	57	13	2.28	188
		11.7	43	19	2.06	189
		14.0	40	25	1.69	190
	Depth integrated		44	--		

SUSPENDED-SEDIMENT AND STREAM-VELOCITY DATA FOR RIVER MILE 37.85--Continued

Date Nov. 12, 1980 Time 1340-1550 Water temp (°C) 13.5

Streamflow (ft^3/s) 14,800 Suspended-sediment discharge (ton/d) --

Distance from initial point (ft)	Total depth (ft)	Sample depth (ft)	Suspended sediment concentration (mg/L)	Percent of suspended sediment that is sand	Stream velocity	
					Rate (ft/s)	Direction (degrees to magnetic north)
151	27.5	1.0	No sediment samples		1.18	171
		6.8			.94	172
		13.7			.93	171
		20.4			.82	171
		26.0			.64	130
242	22.5	1.0			.87	164
		5.6			1.34	178
		11.2			1.16	178
		16.8			1.00	187
		21.0			1.03	207
302	20.0	1.0			1.22	175
		5.0			1.18	176
		10.0			1.10	175
		15.0			1.10	195
		18.5			1.02	175
345	17.4	1.0			1.00	173
		4.4			1.03	173
		8.7			.98	173
		13.0			.93	175
		15.9			.81	173
432	14.0	1.0			.92	172
		3.5			.85	176
		7.0			.85	173
		10.5			.79	175
		12.5			.71	175

SUSPENDED-SEDIMENT AND STREAM-VELOCITY DATA FOR RIVER MILE 37.85--Continued

Date Nov. 13, 1980 Time 0945-1220 Water temp (°C) 12.5

Streamflow (ft^3/s) 12,000 Suspended-sediment discharge (ton/d) --

Distance from initial point (ft)	Total depth (ft)	Sample depth (ft)	Suspended sediment concentration (mg/L)	Percent of suspended sediment that is sand	Stream velocity: Rate (ft/s)	Stream velocity: Direction (degrees to magnetic north)
105	29.5	1.0	No sediment samples		0.74	149
		7.3			.74	150
		14.7			.58	178
		22.0			.58	143
		28.0			.18	265
367	24.4	1.0			1.35	168
		6.1			1.09	175
		12.2			.94	178
		18.3			.85	172
		22.9			.73	178
396	20.8	1.0			1.83	174
		5.2			1.78	179
		10.4			1.61	179
		15.6			1.37	179
		19.3			.95	171
523	18.2	1.0			2.34	172
		4.6			2.22	178
		9.1			2.09	178
		13.6			1.95	176
		16.7			1.55	175
620	14.0	1.0			2.48	180
		3.5			2.42	180
		7.0			2.36	180
		10.5			2.09	180
		12.5			1.90	180

SUSPENDED-SEDIMENT AND STREAM-VELOCITY DATA FOR RIVER MILE 37.85--Continued

Date Nov. 13, 1980 Time 1305-1500 Water temp (°C) 13.0

Streamflow (ft^3s) 14,500 Suspended-sediment discharge (ton/d) --

Distance from initial point (ft)	Total depth (ft)	Sample depth (ft)	Suspended sediment concentration (mg/L)	Percent of suspended sediment that is sand	Stream velocity Rate (ft/s)	Stream velocity Direction (degrees to magnetic north)
105	29.0	1.0	No sediment samples		2.20	175
		7.2			1.58	175
		14.5			1.61	185
		21.7			1.42	195
		27.5			1.06	181
367	23.8	1.0			2.22	137
		6.0			2.18	137
		11.9			2.13	180
		17.8			1.69	222
		22.3			1.42	215
396	20.4	1.0			2.53	178
		5.1			2.44	180
		10.2			2.11	180
		15.3			1.84	188
		18.5			1.64	186
523	17.5	1.0			2.52	173
		4.4			2.27	179
		8.8			2.55	179
		13.1			2.19	201
		16.0			1.47	190
620	13.0	1.0			2.35	190
		3.2			2.42	190
		6.5			2.44	190
		9.8			2.24	193
		11.5			2.07	188

SUSPENDED-SEDIMENT AND STREAM-VELOCITY DATA FOR RIVER MILE 37.85--Continued

Date Nov. 14, 1980 Time 0900-1130 Water temp (°C) 11.5

Streamflow (ft^3/s) 3,600 Suspended-sediment discharge (ton/d) --

Distance from initial point (ft)	Total depth (ft)	Sample depth (ft)	Suspended sediment concentration (mg/L)	Percent of suspended sediment that is sand	Stream velocity Rate (ft/s)	Stream velocity Direction (degrees to magnetic north)
143	30.0	1.0	No sediment samples		0.04	135
		7.5			.10	150
		15.0			.04	135
		22.5			.07	176
		28.5			.08	173
227	25.2	1.0			.24	171
		6.3			.16	175
		12.6			.13	180
		18.9			.09	180
		23.7			.08	180
353	20.0	1.0			.10	139
		5.0			.12	147
		10.0			.11	146
		15.0			.13	147
		18.5			.09	148
446	18.2	1.0			.17	145
		4.5			.21	173
		9.1			.17	172
		13.6			.14	175
		16.7			.12	172
571	14.0	1.0			.22	145
		3.5			.24	159
		7.0			.21	146
		10.5			.19	158
		12.5			.15	168

SUSPENDED-SEDIMENT AND STREAM-VELOCITY DATA FOR RIVER MILE 37.85--Continued

Date Nov. 14, 1980 Time 1145-1340 Water temp (°C) 12.0

Streamflow (ft^3/s) 10,000 Suspended-sediment discharge (ton/d) --

Distance from initial point (ft)	Total depth (ft)	Sample depth (ft)	Suspended sediment concentration (mg/L)	Percent of suspended sediment that is sand	Stream velocity	
					Rate (ft/s)	Direction (degrees to magnetic north)
143	30.2	1.0	No sediment samples		0.44	135
		7.5			.61	180
		15.1			.59	180
		22.6			.47	186
		28.7			.38	169
227	24.5	1.0			.82	174
		6.1			.74	174
		12.2			.61	173
		18.3			.56	173
		23.0			.52	176
353	21.0	1.0			1.16	171
		5.2			1.05	178
		10.5			.97	178
		15.7			.88	177
		19.5			.63	172
446	18.5	1.0			1.27	178
		4.6			1.20	179
		9.2			1.14	179
		13.8			1.02	180
		17.0			.89	173
571	14.0	1.0			1.31	180
		3.5			1.26	180
		7.0			1.21	180
		10.5			1.13	181
		12.5			.95	181

SUSPENDED-SEDIMENT AND STREAM-VELOCITY DATA FOR RIVER MILE 37.85--Continued

Date Nov. 14, 1980 Time 1350-1550 Water temp (°C) 12.0

Streamflow (ft^3/s) 14,200 Suspended-sediment discharge (ton/d) --

Distance from initial point (ft)	Total depth (ft)	Sample depth (ft)	Suspended sediment concentration (mg/L)	Percent of suspended sediment that is sand	Stream velocity	
					Rate (ft/s)	Direction (degrees to magnetic north)
143	29.0	1.0	No sediment samples		1.00	223
		7.2			.92	211
		14.5			.97	176
		21.7			.91	178
		27.5			.66	179
227	24.5	1.0			1.17	179
		6.1			1.20	183
		12.2			1.17	185
		18.5			1.02	187
		23.0			.77	178
353	19.5	1.0			1.21	153
		4.8			1.35	174
		9.7			1.32	179
		14.5			1.17	180
		18.0			1.03	185
446	17.5	1.0			1.25	178
		4.3			1.43	180
		8.7			1.34	179
		13.0			1.31	188
		16.0			1.21	185
571	14.0	1.0			1.42	180
		3.5			1.35	180
		7.0			1.41	180
		10.5			1.25	180
		12.5			1.20	150

SUSPENDED-SEDIMENT AND STREAM-VELOCITY DATA FOR RIVER MILE 37.85--Continued

Date April 29, 1981 Time 1030-1305 Water temp (°C) 19.0

Streamflow (ft^3/s) 5,910 Suspended-sediment discharge (ton/d) 239

Distance from initial point (ft)	Total depth (ft)	Sample depth (ft)	Suspended sediment concentration (mg/L)	Percent of suspended sediment that is sand	Stream velocity: Rate (ft/s)	Stream velocity: Direction (degrees to magnetic north)
189	23.0	2.0	16	4	0.60	180
		5.8	23	5	.52	180
		11.5	25	3	.40	180
		17.3	26	4	.35	180
		21.6	31	7	.00	180
	Depth integrated		23	6		
287	21.4	2.0	13	2	.79	191
		5.4	15	5	.82	180
		10.7	18	6	.68	198
		16.1	19	3	.38	199
		20.0	21	2	.50	192
	Depth integrated		17	6		
360	20.3	2.0	10	1	.81	202
		5.1	12	2	.83	199
		10.2	14	7	.85	243
		15.3	14	1	.41	262
		18.9	14	1	.64	267
	Depth integrated		13	4		
481	18.5	2.0	10	8	.76	250
		4.6	11	3	.65	249
		9.3	12	1	.52	249
		13.9	13	5	.70	306
		17.1	13	4	.55	312
	Depth integrated		11	2		
558	17.0	2.0	8	7	.59	174
		4.2	10	6	.53	190
		8.5	11	3	.42	180
		12.7	12	5	.44	282
		15.6	12	6	.49	213
	Depth integrated		11	6		

SUSPENDED-SEDIMENT AND STREAM-VELOCITY DATA FOR RIVER MILE 37.85--Continued

Date April 29, 1981 Time 1345-1510 Water temp (°C) 19.5

Streamflow (ft^3/s) 10,500 Suspended-sediment discharge (ton/d) --

Distance from initial point (ft)	Total depth (ft)	Sample depth (ft)	Suspended sediment concentration (mg/L)	Percent of suspended sediment that is sand	Stream velocity Rate (ft/s)	Stream velocity Direction (degrees to magnetic north)
189	24.4	2.0	No sediment samples		0.65	187
		6.1			.58	190
		12.2			.55	190
		18.3			.40	191
		23.0			.25	215
287	23.4	2.0			.74	215
		5.8			.64	201
		11.7			.62	185
		17.5			.34	197
		22.0			.43	223
360	21.0	2.0			.94	180
		5.2			1.02	203
		10.5			.64	188
		15.7			.58	188
		19.6			.33	198
481	19.0	2.0			1.32	187
		4.8			1.25	187
		9.5			1.04	180
		14.3			.86	249
		17.6			.75	211
558	17.3	2.0			1.28	59
		4.3			.89	60
		8.6			1.21	101
		12.9			.81	180
		15.9			.76	189

SUSPENDED-SEDIMENT AND STREAM-VELOCITY DATA FOR RIVER MILE 37.85--Continued

Date Sept. 17, 1981 Time 0840-1100 Water temp (°C) 22.5

Streamflow (ft^3/s) 14,900 Suspended-sediment discharge (ton/d) 724

Distance from initial point (ft)	Total depth (ft)	Sample depth (ft)	Suspended sediment concentration (mg/L)	Percent of suspended sediment that is sand	Stream velocity: Rate (ft/s)	Stream velocity: Direction (degrees to magnetic north)
143	30.3	2.0	11	2	0.89	175
		7.6	14	11	.93	170
		15.2	18	7	.69	184
		22.8	34	57	.62	184
		28.8	18	9	.54	185
	Depth integrated		22	4		
235	24.2	2.0	11	4	1.35	183
		6.0	8	6	1.32	185
		12.1	16	5	1.23	187
		18.1	19	22	1.11	182
		22.7	22	6	.93	190
	Depth integrated		16	6		
324	20.3	2.0	12	2	1.58	182
		5.1	16	4	1.62	182
		10.2	6	0	1.51	182
		15.3	16	3	1.32	187
		18.8	24	0	.93	185
	Depth integrated		14	0		
410	18.7	2.0	14	1	1.76	182
		4.7	16	0	1.70	182
		9.4	17	1	1.58	182
		14.1	19	4	1.35	187
		17.2	23	4	1.07	187
	Depth integrated		19	5		
579	15.4	2.0	18	7	1.76	187
		3.8	19	6	1.80	187
		7.7	17	4	1.65	187
		11.5	24	5	1.54	187
		13.9	27	3	1.20	187
	Depth integrated		30	11		

BED MATERIAL PARTICLE-SIZE DISTRIBUTION AT RIVER MILE 37.85

Distance from initial point (ft)	Percent finer than indicated sieve size (millimeters)										
	64.0	32.0	16.0	8.00	4.00	2.00	1.00	0.50	0.25	0.125	0.062
					May 18, 1978						
128					100	99.9	99.5	94.2	18.4	4.0	1.1
257				100	99.9	99.7	98.4	85.0	11.6	1.4	.4
389					100	99.8	97.4	74.7	6.1	1.0	.9
523				100	97.6	95.8	91.2	65.7	6.3	.2	0
647					100	99.9	97.4	57.7	1.7	.2	.1
Average				100	99.5	99.0	96.8	75.5	8.8	1.4	.5
					November 22, 1978						
189				100	99.9	99.2	97.3	57.2	2.2	.8	.6
235				100	99.1	97.6	95.9	74.8	5.5	.2	0
324			100	99.8	98.7	97.2	95.9	85.3	12.2	1.4	0.3
389					100	99.9	99.1	83.6	6.2	.8	.4
530			100	99.5	93.4	86.9	82.0	73.6	45.7	15.2	3.1
Average			100	99.9	98.2	96.2	94.0	74.9	14.4	3.7	.9
					January 19, 1979						
120					100	99.9	96.3	47.7	1.1	.2	0
338					100	99.9	97.5	65.9	5.6	.5	.0
516				100	99.7	99.2	97.6	79.9	5.0	.3	.1
579				100	99.7	98.8	97.5	82.8	5.5	.3	.1
640					100	99.8	99.2	94.4	14.1	1.6	.1
Average				100	99.9	99.5	97.6	74.1	6.3	.6	.1
					Feb. 13, 1979						
204					100	99.7	98.6	90.1	12.1	5.2	1.7
302				100	99.9	99.5	98.4	83.4	13.6	1.2	.5
396					100	99.9	99.1	84.5	5.6	.6	.3
467					100	99.9	99.4	81.6	9.3	1.0	.2
558					100	99.4	94.9	56.5	1.0	.2	.1
Average					100	99.7	98.1	79.2	8.3	1.6	.6

BED MATERIAL PARTICLE-SIZE DISTRIBUTION AT RIVER MILE 37.85--Continued

Distance from initial point (ft)	Percent finer than indicated sieve size (millimeters)										
	64.0	32.0	16.0	8.00	4.00	2.00	1.00	0.50	0.25	0.125	0.062
					Feb. 22, 1979						
143	Hard pan					100	96.6	79.8	50.6	33.7	20.2
367				100	99.4	99.2	98.8	89.9	14.4	2.1	.1
453				100	99.8	99.5	98.9	84.1	11.2	.7	.1
537				100	99.1	98.0	94.7	63.3	3.1	.3	.1
620					100	99.1	93.8	42.6	.6	.2	.1
Average				100	99.7	99.2	96.6	71.9	16.0	7.4	4.1
					March 19, 1979						
180					100	99.6	98.7	91.2	14.9	1.2	.2
279			100	98.7	97.2	96.7	96.3	88.5	27.5	1.9	.1
374				100	99.1	98.7	97.5	78.8	10.2	1.1	.1
516					100	99.6	98.4	76.4	6.0	.2	.1
661				100	97.9	97.2	93.6	60.2	2.7	.2	.1
Average			100	99.7	98.8	98.4	96.9	79.0	12.3	.9	.1
					April 13, 1979						
189				100	99.6	98.7	94.9	9 .7	28.7	8.1	4.4
316					100	99.9	99.6	9 .6	17.5	.6	.2
382					100	99.8	99.0	86.6	8.2	.5	.1
460					100	99.9	98.0	67.0	7.9	.1	.1
586			100	99.0	93.9	91.1	85.0	39.7	3.4	.6	.1
Average			100	99.8	98.7	97.9	95.3	74.9	13.1	2.0	1.0
					June 5, 1979						
197				100	99.9	99.5	98.6	84.5	12.7	1.7	1.0
302				100	99.5	96.8	92.0	76.0	44.4	15.3	10.1
382				100	99.7	98.7	95.7	66.7	14.8	2.8	1.4
495				100	99.7	98.2	96.1	71.4	7.4	.5	.2
544			100	97.1	94.1	92.8	86.5	42.5	4.0	.6	.1
Average			100	99.4	98.6	97.2	93.8	68.2	16.7	4.2	2.6

BED MATERIAL PARTICLE-SIZE DISTRIBUTION AT RIVER MILE 37.85--Continued

Distance from initial point (ft)	Percent finer than indicated sieve size (millimeters)										
	64.0	32.0	16.0	8.00	4.00	2.00	1.00	0.50	0.25	0.125	0.062
					July 17, 1979						
174			100	98.3	95.1	93.7	92.5	71.9	6.6	0.9	0.2
309						100	99.8	85.2	4.5	.2	.1
396					100	99.6	97.5	75.7	12.9	2.3	1.3
453					100	99.9	99.2	86.3	14.1	.3	.1
558				100	99.9	99.7	99.5	95.1	35.0	11.6	5.6
Average			100	99.7	99.0	98.6	97.7	82.8	14.6	3.1	1.5
					August 15, 1979						
197						100	99.4	89.7	37.2	23.6	12.1
250					100	99.9	99.3	90.5	23.4	7.4	4.1
324					100	99.9	99.1	83.8	10.3	.7	.2
439				100	99.4	95.4	92.1	67.3	9.7	.9	.3
537					100	98.7	95.5	58.2	2.5	.2	.1
Average				100	99.9	98.8	97.1	77.9	16.6	6.6	3.4
					August 16, 1979						
189						100	99.7	83.8	6.7	.5	.2
257			100	99.7	98.9	97.9	95.4	72.9	13.6	1.9	.8
345					100	99.8	99.3	88.5	14.1	1.1	.5
432					100	99.8	98.4	83.1	15.6	2.3	1.3
537				100	99.7	98.3	94.6	73.3	33.4	16.2	5.3
Average			100	99.9	99.7	99.2	97.5	80.3	16.7	4.4	1.6
					February 28, 1980						
166		100	97.1	97.1	95.9	94.8	92.2	77.5	13.0	.5	.1
279					100	99.8	99.5	94.0	21.9	.5	.1
345				100	99.8	99.6	98.7	80.7	9.8	.3	.1
425				100	99.5	98.2	95.3	62.5	3.3	.2	.1
558				100	99.9	99.8	99.0	66.8	2.8	.2	.1
Average		100	99.4	99.4	99.0	98.4	96.9	76.3	10.2	.3	.1

BED MATERIAL PARTICLE-SIZE DISTRIBUTION AT RIVER MILE 37.85--Continued

Distance from initial point (ft)	Percent finer than indicated sieve size (millimeters)										
	64.0	32.0	16.0	8.00	4.00	2.00	1.00	0.50	0.25	0.125	0.062
					June 26, 1980						
174						RIP-RAP					
279						100	99.6	91.5	15.6	0.7	0.1
367					100	99.9	99.0	85.1	7.5	.2	0
453				100	99.9	99.9	99.1	77.0	3.4	.1	0
578				100	99.9	98.6	89.4	37.4	1.9	.2	.1
Average					100	99.6	96.8	72.8	7.1	.3	0
					April 29, 1981						
189					100	99.6	98.2	91.5	27.9	13.6	9.5
287				100	99.2	97.7	95.2	82.2	43.8	20.4	14.3
360					100	99.5	98.5	78.2	7.4	.3	.2
481				100	98.7	97.6	95.2	57.4	2.4	.3	.1
558				100	99.7	97.8	87.9	31.4	2.7	.9	.5
Average				100	99.5	98.4	95.0	68.1	16.8	7.1	4.9
					September 17, 1981						
143						100	99.5	95.7	83.7	65.6	46.9
235					100	99.9	98.5	83.3	26.1	10.9	7.2
324					100	99.7	98.3	84.8	25.1	8.4	5.3
410				100	98.5	96.6	95.6	79.1	6.6	1.9	1.1
579				100	99.8	99.6	97.0	57.5	3.7	2.4	1.9
Average				100	99.7	99.2	97.8	80.1	29.0	17.8	12.5

SUSPENDED-SEDIMENT AND STREAM-VELOCITY DATA FOR RIVER MILE 37.16

Date Nov. 22, 1978 Time 0950-1320 Water temp (°C) 10.5

Streamflow (ft^3/s) 8,360 Suspended-sediment discharge (ton/d) 361

Distance from initial point (ft)	Total depth (ft)	Sample depth (ft)	Suspended sediment concentration (mg/L)	Percent of suspended sediment that is sand	Stream velocity (ft/s)
114	20.8	1.0	14	3	1.11
		5.2	14	4	1.13
		10.4	17	4	1.08
		15.6	19	9	.95
		19.8	20	8	.76
245	22.6	1.0	14	2	.95
		5.6	16	2	.93
		11.3	12	6	.89
		16.9	18	1	.78
		21.6	20	3	.38
372	23.7	1.0	13	3	.75
		5.9	14	9	.72
		11.8	16	4	.73
		17.7	15	3	.65
		22.7	15	5	.48
403	24.6	1.0	13	4	.82
		6.2	10	4	.80
		12.3	18	4	.73
		18.5	17	6	.80
		23.6	17	7	.45
501	26.6	1.0	15	4	.76
		6.7	15	0	.73
		13.3	18	1	.57
		20.0	16	3	.70
		25.6	19	3	.40

SUSPENDED-SEDIMENT AND STREAM-VELOCITY DATA FOR RIVER MILE 37.16--Continued

Date Feb. 22, 1979 Time 1305-1445 Water temp (°C) 9.5

Streamflow (ft^3/s) 55,700 Suspended-sediment discharge (ton/d) 36,400

Distance from initial point (ft)	Total depth (ft)	Sample depth (ft)	Suspended sediment concentration (mg/L)	Percent of suspended sediment that is sand	Stream velocity (ft/s)
194	27.0	1.0	179	16	3.57
		6.8	211	25	3.65
		13.5	210	28	3.50
		20.3	232	32	3.13
		26.0	294	43	2.68
311	26.0	1.0	186	18	4.07
		6.5	216	25	3.89
		13.0	232	31	3.35
		19.5	245	34	3.35
		25.0	283	40	3.13
414	29.0	1.0	157	11	4.16
		7.2	178	19	4.16
		14.5	213	29	4.16
		21.7	253	33	3.72
		28.0	284	47	2.20
479	31.4	1.0	169	17	4.16
		7.8	219	29	4.16
		15.7	253	34	4.07
		23.5	329	46	3.21
		30.4	421	55	2.10
524	34.0	1.0	194	22	3.35
		8.5	213	25	3.35
		17.0	244	35	2.92
		25.5	294	38	2.74
		33.0	350	47	1.65

SUSPENDED-SEDIMENT AND STREAM-VELOCITY DATA FOR RIVER MILE 37.16--Continued

Date Sept. 6, 1979 Time 0910-1100 Water temp (°C) 22.0

Streamflow (ft^3/s) -- Suspended-sediment discharge (ton/d) --

Distance from initial point (ft)	Total depth (ft)	Sample depth (ft)	Suspended sediment concentration (mg/L)	Percent of suspended sediment that is sand	Stream velocity (ft/s)
83	20.4	1.0	22	6	1.76
		5.1	27	6	1.68
		10.2	34	7	1.51
		15.3	35	7	1.41
		19.4	43	6	1.38
204	20.4	1.0	27	6	1.96
		5.1	31	5	1.92
		10.2	30	4	1.96
		15.3	35	7	1.54
		19.4	41	8	1.14
341	23.0	1.0	28	2	2.25
		5.7	31	4	2.20
		11.5	37	5	1.80
		17.3	39	4	1.68
		22.0	48	7	1.14
424	24.0	1.0	28	6	2.10
		6.0	40	12	2.10
		12.0	42	5	1.68
		18.0	50	4	1.68
		23.0	63	5	1.41
490	25.0	1.0	31	8	2.00
		6.2	36	6	1.92
		12.5	47	10	1.65
		18.8	54	10	1.76
		24.0	62	8	1.20

SUSPENDED-SEDIMENT AND STREAM-VELOCITY DATA FOR RIVER MILE 37.16--Continued

Date Sept. 6, 1979 Time 1135-1255 Water temp (°C) 22.5

Streamflow (ft^3/s) -- Suspended-sediment discharge (ton/d) --

Distance from initial point (ft)	Total depth (ft)	Sample depth (ft)	Suspended sediment concentration (mg/L)	Percent of suspended sediment that is sand	Stream velocity (ft/s)
83	19.8	1.0	33	18	1.76
		4.9	34	5	1.84
		9.9	39	7	1.68
		14.9	49	8	1.62
		18.8	68	10	1.08
204	19.9	1.0	32	11	2.20
		4.9	45	15	1.96
		10.0	50	8	1.84
		14.9	50	17	1.68
		18.9	64	8	1.44
341	22.0	1.0	36	13	2.15
		5.5	43	9	2.25
		11.0	49	14	2.20
		16.5	59	13	1.65
		21.0	67	11	1.70
424	23.0	1.0	32	29	2.25
		5.7	47	32	2.20
		11.5	57	3	1.68
		17.3	69	17	1.68
		22.0	90	17	1.38
490	24.6	1.0	32	11	2.10
		6.2	42	16	2.10
		12.3	48	10	1.68
		18.4	63	16	1.54
		23.6	95	13	1.32

SUSPENDED-SEDIMENT AND STREAM-VELOCITY DATA FOR RIVER MILE 37.16--Continued

Date Sept. 6, 1979 Time 1300-1410 Water temp (°C) 22.5

Streamflow (ft^3/s) -- Suspended-sediment discharge (ton/d) --

Distance from initial point (ft)	Total depth (ft)	Sample depth (ft)	Suspended sediment concentration (mg/L)	Percent of suspended sediment that is sand	Stream velocity (ft/s)
83	19.0	1.0	14	20	2.10
		4.7	22	10	1.92
		9.5	36	28	1.84
		14.3	47	23	1.65
		18.0	66	13	1.58
204	19.4	1.0	36	17	2.61
		4.8	50	8	2.00
		9.7	41	16	1.96
		14.6	55	10	1.68
		18.4	62	25	1.23
341	21.4	1.0	28	23	2.25
		5.3	45	19	2.05
		10.7	53	13	2.10
		16.1	66	6	1.65
		20.4	81	12	1.41
424	22.4	1.0	31	11	2.25
		5.6	48	9	2.00
		11.2	61	18	1.92
		16.8	79	10	1.65
		21.4	99	19	1.38
490	24.6	1.0	29	12	1.92
		6.2	40	14	2.00
		12.3	47	9	1.92
		18.4	69	14	1.58
		23.6	91	20	1.35

SUSPENDED-SEDIMENT AND STREAM-VELOCITY DATA FOR RIVER MILE 37.16--Continued

Date Feb. 29, 1980 Time 1300-1420 Water temp (°C) 11.5

Streamflow (ft^3/s) 72,600 Suspended-sediment discharge (ton/d) 35,300

Distance from initial point (ft)	Total depth (ft)	Sample depth (ft)	Suspended sediment concentration (mg/L)	Percent of suspended sediment that is sand	Stream velocity (ft/s)
185	30.2	1.0	96	23	4.55
		7.6	100	29	4.37
		15.1	111	34	3.89
		22.7	123	39	3.35
		29.2	166	54	2.25
	Depth Integrated		98	32	
297	30.0	1.0	89	20	5.20
		7.5	127	32	4.65
		15.0	150	45	4.48
		22.5	181	58	3.21
		29.0	451	83	1.96
	Depth Integrated		150	49	
372	33.2	1.0	94	24	4.96
		8.3	122	41	4.48
		16.6	151	51	4.55
		24.9	248	70	3.65
		32.2	417	84	2.25
	Depth Integrated		159	53	
428	35.6	1.0	89	22	4.96
		8.9	117	38	4.48
		17.8	120	39	4.48
		26.7	226	66	2.99
		34.6	386	80	2.68
	Depth Integrated		189	60	
479	36.0	1.0	88	20	4.55
		9.0	113	36	4.37
		18.0	139	49	3.89
		27.0	202	57	3.35
		35.0	403	81	2.25
	Depth Integrated		167	55	

SUSPENDED-SEDIMENT AND STREAM-VELOCITY DATA FOR RIVER MILE 37.16--Continued

Date June 25, 1980 Time 1020-1340 Water temp (°C) 19.0

Streamflow (ft^3/s) 24,600 Suspended-sediment discharge (ton/d) 3,060

Distance from initial point (ft)	Total depth (ft)	Sample depth (ft)	Suspended sediment concentration (mg/L)	Percent of suspended sediment that is sand	Stream velocity	
					Rate (ft/s)	Direction (degrees to magnetic north)
120	15.5	1.5	29	6	1.99	194
		3.9	35	9	1.99	194
		7.8	38	9	1.96	194
		11.7	42	17	2.01	194
		14.0	46	--	1.81	195
	Depth integrated		37	--		
201	19.0	1.5	36	36	2.44	196
		4.8	37	10	2.14	196
		9.5	43	8	2.23	195
		14.3	46	8	2.06	196
		17.5	50	9	1.74	197
	Depth integrated		39	--		
344	22.0	1.5	46	10	2.27	194
		5.5	46	8	2.26	192
		11.0	52	8	2.13	192
		16.5	63	12	1.92	194
		20.5	62	15	1.91	196
	Depth integrated		49	--		
479	23.5	1.5	33	13	2.26	196
		5.9	38	10	2.14	196
		11.8	45	10	2.07	196
		17.7	53	10	1.96	192
		22.0	61	14	1.56	191
	Depth integrated		49	--		
509	23.5	1.5	43	14	1.99	195
		5.9	46	16	1.88	196
		11.8	51	19	1.85	196
		17.7	53	8	1.68	198
		22.0	60	13	1.43	196
	Depth integrated		51	--		

SUSPENDED-SEDIMENT AND STREAM-VELOCITY DATA FOR RIVER MILE 37.16--Continued

Date April 30, 1981 Time 1130-1420 Water temp (°C) 19.5

Streamflow (ft^3/s) 4,960 Suspended-sediment discharge (ton/d) 214

Distance from initial point (ft)	Total depth (ft)	Sample depth (ft)	Suspended sediment concentration (mg/L)	Percent of suspended sediment that is sand	Stream velocity: Rate (ft/s)	Stream velocity: Direction (degrees to magnetic north)
102	19.4	2.0	18	6	1.18	298
		4.9	19	4	1.18	312
		9.7	21	7	1.09	311
		14.6	22	5	1.00	316
		18.0	20	4	.93	320
	Depth integrated		22	11		
236	19.5	2.0	14	9	.83	348
		4.9	13	10	.92	347
		9.8	14	5	.81	350
		14.7	20	7	.62	346
		18.1	19	9	.58	11
	Depth integrated		17	12		
307	22.0	2.0	14	9	.69	19
		5.2	14	6	.68	20
		10.3	15	13	.49	20
		15.5	18	8	.51	55
		20.6	20	10	.35	51
	Depth integrated		18	10		
410	24.7	2.0	12	12	.29	201
		6.2	13	22	.44	5
		12.4	16	9	.37	65
		18.6	19	9	.31	275
		23.3	17	8	.25	330
	Depth integrated		15	8		
532	25.8	2.0	11	12	.33	237
		6.5	13	8	.26	18
		12.9	16	21	.15	92
		19.4	16	8	.23	216
		24.4	17	9	.18	245
	Depth integrated		14	12		

SUSPENDED-SEDIMENT AND STREAM-VELOCITY DATA FOR RIVER MILE 37.16--Continued

Date April 30, 1981 Time 1450-1615 Water temp (°C) 19.5

Streamflow (ft^3/s) 6,780 Suspended-sediment discharge (ton/d) --

Distance from initial point (ft)	Total depth (ft)	Sample depth (ft)	Suspended sediment concentration (mg/L)	Percent of suspended sediment that is sand	Stream velocity Rate (ft/s)	Stream velocity Direction (degrees to magnetic north)
102	19.9	2.0	No sediment samples		0.44	197
		5.0			.37	259
		10.0			.39	39
		15.0			.27	22
		18.5			.37	21
236	20.4	2.0			.57	203
		5.1			.62	300
		10.2			.51	319
		15.3			.50	16
		19.0			.37	358
307	23.0	2.0			.54	315
		5.8			.59	343
		11.5			.65	312
		17.3			.57	255
		21.6			.40	220
410	26.2	2.0			.77	222
		6.6			.85	268
		13.1			.71	319
		19.7			.68	323
		24.8			.30	202
532	25.6	2.0			.89	219
		6.4			.94	260
		12.8			.96	274
		19.2			.74	278
		24.2			.64	278

SUSPENDED-SEDIMENT AND STREAM-VELOCITY DATA FOR RIVER MILE 37.16--Continued

Date Sept. 16, 1981 Time 1215-1355 Water temp (°C) 22.5

Streamflow (ft^3/s) 17,500 Suspended-sediment discharge (ton/d) 1,840

Distance from initial point (ft)	Total depth (ft)	Sample depth (ft)	Suspended sediment concentration (mg/L)	Percent of suspended sediment that is sand	Stream velocity	
					Rate (ft/s)	Direction (degrees to magnetic north)
220	19.2	2.0	21	1	1.70	202
		4.8	27	3	1.58	202
		9.6	29	7	1.62	202
		14.4	34	6	1.38	202
		17.7	42	5	1.18	202
	Depth integrated		30	7		
311	19.5	2.0	22	3	1.88	200
		4.9	23	1	1.88	201
		9.8	28	2	1.84	201
		14.7	29	2	1.58	200
		18.0	25	2	1.11	200
	Depth integrated		29	4		
414	20.0	2.0	26	7	2.05	200
		5.0	36	5	1.92	201
		10.0	35	4	1.88	200
		15.0	44	4	1.54	201
		18.5	42	4	1.23	202
	Depth integrated		31	4		
479	21.8	2.0	23	7	2.00	200
		5.4	26	6	1.96	200
		10.9	42	4	1.88	201
		16.3	66	6	1.76	200
		20.3	98	5	1.26	200
	Depth integrated		35	7		
548	24.0	2.0	28	7	1.76	202
		6.0	31	5	1.84	198
		12.0	44	5	1.65	195
		18.0	63	6	1.54	195
		22.5	94	22	1.21	195
	Depth integrated		47	6		

BED MATERIAL PARTICLE-SIZE DISTRIBUTION AT RIVER MILE 37.16

Distance from initial point (ft)	Percent finer than indicated sieve size (millimeters)										
	64.0	32.0	16.0	8.00	4.00	2.00	1.00	0.50	0.25	0.125	0.062
					November 22, 1978						
114				100	99.6	98.9	95.3	55.8	21.9	15.8	4.8
245			100	99.7	98.5	96.7	92.3	66.8	8.0	1.8	.2
372			100	99.7	97.6	93.8	90.0	67.8	14.5	5.1	2.5
403			100	99.8	99.7	99.5	99.0	91.3	8.7	.1	0
501					100	99.9	99.4	98.5	35.2	12.6	4.7
Average			100	99.8	99.1	97.8	95.2	76.0	17.7	7.1	2.4
					February 22, 1979						
194					100	99.9	99.6	81.4	7.6	1.2	.1
311					100	99.9	96.6	51.7	3.9	.3	.1
414			100	98.9	97.7	96.7	93.3	67.2	10.9	.6	0
479						100	99.9	97.1	19.4	1.6	.1
524					100	99.9	99.9	98.9	37.3	5.1	.9
Average			100	99.8	99.5	99.3	98.5	79.3	15.8	1.8	.2
					September 6, 1979						
83							100	98.2	23.3	.9	.5
204			100	99.7	99.7	99.6	99.4	95.1	22.8	1.6	.3
341				100	99.9	98.5	94.4	72.0	10.3	2.7	1.3
424					100	99.9	99.5	87.1	4.2	.3	.1
490					100	99.9	96.6	59.6	14.0	10.1	4.6
Average			100	99.9	99.9	99.6	98.0	82.4	14.9	3.1	1.4
					February 29, 1980						
185					100	99.9	99.4	86.1	13.2	.3	.1
297				100	99.9	99.9	97.5	56.6	2.5	.1	.1
372				100	99.8	99.2	96.9	68.7	5.4	.2	.1
428		100	99.1	97.5	97.0	96.9	91.9	44.9	3.4	.2	.1
479				100	99.3	99.3	98.8	94.8	24.3	.4	.1
Average		100	99.8	99.5	99.2	99.0	96.9	70.2	9.8	.2	.1

BED MATERIAL PARTICLE-SIZE DISTRIBUTION AT RIVER MILE 37.16--Continued

Distance from initial point (ft)	Percent finer than indicated sieve size (millimeters)										
	64.0	32.0	16.0	8.00	4.00	2.00	1.00	0.50	0.25	0.125	0.062
					June 25, 1980						
120				100	99.9	99.4	92.9	42.4	3.6	1.5	0.3
201					100	99.7	95.1	54.6	1.6	.1	0
344					100	99.8	94.8	43.8	3.4	.9	.2
479				100	99.0	97.4	95.1	80.9	20.2	2.2	.7
509					100	99.7	98.9	96.4	49.2	11.4	5.8
Average				100	99.8	99.2	95.4	63.6	15.6	3.2	1.4
					April 30, 1981						
102						100	99.4	96.0	44.5	20.5	12.1
236				100	99.9	99.7	99.3	93.7	23.8	6.3	4.0
307				100	99.9	98.5	93.2	68.3	12.0	3.5	2.3
410				100	99.9	99.6	96.3	67.7	3.2	.2	.1
532				100	96.3	93.1	80.3	34.3	4.1	1.9	.9
Average				100	99.2	98.2	93.7	72.0	17.5	6.5	3.9
					September 16, 1981						
220					100	99.8	96.0	49.5	12.9	9.9	5.5
311				100	98.9	97.3	91.6	62.0	15.6	9.5	6.5
414					100	99.5	97.7	64.7	5.6	4.2	3.4
479				100	99.4	98.4	96.7	77.4	15.0	5.3	3.3
548						100	99.6	97.0	24.9	16.5	12.1
Average				100	99.7	99.0	96.3	70.1	14.8	9.1	6.2

SUSPENDED-SEDIMENT AND STREAM-VELOCITY DATA FOR RIVER MILE 35.64

Date Nov. 21, 1978 Time 1200-1412 Water temp (°C) 10.5

Streamflow (ft^3/s) 14,200 Suspended-sediment discharge (ton/d) 498

Distance from initial point (ft)	Total depth (ft)	Sample depth (ft)	Suspended sediment concentration (mg/L)	Percent of suspended sediment that is sand	Stream velocity (ft/s)
126	20.9	1.0	10	3	1.65
		5.4	11	0	1.57
		10.5	14	5	1.38
		15.9	13	7	1.23
		19.9	17	16	.70
287	21.8	1.0	15	11	1.38
		5.4	12	13	1.50
		10.9	14	14	1.35
		16.3	16	7	1.21
		20.8	16	8	.93
426	24.8	1.0	17	5	1.23
		6.2	12	12	1.23
		12.4	14	11	1.28
		18.7	14	10	.93
		23.8	15	8	.75
557	26.0	1.0	8	7	1.13
		6.2	12	3	1.06
		12.5	9	10	.95
		18.8	12	9	.78
		25.0	16	26	.60

Note: Only four locations were sampled.

SUSPENDED-SEDIMENT AND STREAM-VELOCITY DATA FOR RIVER MILE 35.64--Continued

Date March 19, 1979 Time 1200-1330 Water temp (°C) 13.0

Streamflow (ft^3/s) 30,400 Suspended-sediment discharge (ton/d) 4,840

Distance from initial point (ft)	Total depth (ft)	Sample depth (ft)	Suspended sediment concentration (mg/L)	Percent of suspended sediment that is sand	Stream velocity (ft/s)
133	22.0	1.0	46	10	2.74
		5.5	44	7	2.80
		11.0	53	8	2.61
		16.5	62	9	2.15
		21.0	64	10	1.58
246	22.6	1.0	51	8	2.80
		6.6	54	13	2.80
		11.3	56	12	2.80
		17.9	60	12	2.39
		21.6	60	16	2.20
312	24.4	1.0	52	8	2.74
		6.1	60	11	2.80
		12.2	64	12	2.68
		18.3	75	15	2.39
		23.4	72	38	2.20
407	26.6	1.0	54	8	2.74
		6.7	62	15	2.74
		13.3	65	16	2.50
		20.0	78	19	2.25
		25.6	80	21	1.58
537	27.0	1.0	43	10	2.55
		6.7	45	13	2.61
		13.5	57	19	2.39
		20.2	65	27	1.92
		26.0	63	21	1.11

SUSPENDED-SEDIMENT AND STREAM-VELOCITY DATA FOR RIVER MILE 35.64--Continued

Date Sept. 11, 1979 Time 1000-1140 Water temp (°C) 22.0

Streamflow (ft^3/s) -- Suspended-sediment discharge (ton/d) --

Distance from initial point (ft)	Total depth (ft)	Sample depth (ft)	Suspended sediment concentration (mg/L)	Percent of suspended sediment that is sand	Stream velocity (ft/s)
139	20.2	1.0	16	8	1.14
		5.0	18	14	1.06
		10.1	18	12	1.14
		15.2	20	15	1.01
		19.2	22	7	.69
250	22.0	1.0	14	12	1.20
		5.5	27	52	1.23
		11.0	17	15	1.14
		16.5	23	18	1.03
		21.0	27	14	.84
325	23.0	1.0	12	0	1.38
		5.7	15	0	1.26
		11.5	15	2	1.11
		17.3	18	3	1.01
		22.0	22	7	.76
446	24.4	1.0	15	0	1.20
		6.1	14	1	1.18
		12.2	18	7	1.11
		18.3	19	2	.99
		23.4	23	0	.84
570	25.2	1.0	17	6	1.41
		6.3	22	2	1.20
		12.6	20	8	1.32
		18.9	25	5	1.14
		24.2	26	29	.76

SUSPENDED-SEDIMENT AND STREAM-VELOCITY DATA FOR RIVER MILE 35.64--Continued

Date Sept. 11, 1979 Time 1200-1320 Water temp (°C) 22.0

Streamflow (ft^3/s) -- Suspended-sediment discharge (ton/d) --

Distance from initial point (ft)	Total depth (ft)	Sample depth (ft)	Suspended sediment concentration (mg/L)	Percent of suspended sediment that is sand	Stream velocity (ft/s)
139	20.0	1.0	14	0	1.58
		5.0	17	1	1.54
		10.0	22	1	1.38
		15.0	22	6	1.14
		19.0	22	11	1.11
250	21.4	1.0	18	0	1.84
		5.3	21	0	1.68
		10.7	22	9	1.65
		16.1	28	20	1.62
		20.4	23	11	1.11
325	21.8	1.0	22	6	1.76
		5.4	25	0	1.68
		10.9	26	10	1.51
		16.4	29	8	1.20
		20.8	34	10	1.23
446	23.6	1.0	25	4	1.84
		5.9	33	14	1.84
		11.8	34	25	1.58
		17.7	40	12	1.58
		22.6	46	8	1.03
570	24.6	1.0	21	11	1.88
		6.2	28	16	1.84
		12.3	31	7	1.84
		18.4	36	10	1.51
		23.6	44	7	1.11

SUSPENDED-SEDIMENT AND STREAM-VELOCITY DATA FOR RIVER MILE 35.64--Continued

Date Sept. 11, 1979 Time 1340-1500 Water temp (°C) 22.5

Streamflow (ft^3/s) -- Suspended-sediment discharge (ton/d) --

Distance from initial point (ft)	Total depth (ft)	Sample depth (ft)	Suspended sediment concentration (mg/L)	Percent of suspended sediment that is sand	Stream velocity (ft/s)
139	19.8	1.0	19	23	1.96
		5.0	22	7	1.92
		9.9	27	11	1.76
		14.9	32	17	1.65
		18.8	31	11	1.32
250	20.6	1.0	21	10	2.05
		5.2	28	26	2.05
		10.3	29	11	1.92
		15.4	28	9	1.80
		19.6	39	14	1.41
325	21.2	1.0	26	10	1.88
		5.3	33	19	1.92
		10.6	34	6	1.92
		15.9	33	21	1.80
		20.2	51	22	1.54
446	23.2	1.0	27	5	2.05
		5.8	31	8	1.92
		11.6	45	10	1.84
		17.4	48	9	1.65
		22.2	61	16	1.29
570	24.2	1.0	22	9	2.10
		6.0	31	4	2.10
		12.1	43	10	1.88
		18.2	49	11	1.88
		23.2	57	20	1.06

SUSPENDED-SEDIMENT AND STREAM-VELOCITY DATA FOR RIVER MILE 35.64--Continued

Date Feb. 29, 1980 Time 1000-1120 Water temp (°C) 11.0

Streamflow (ft^3/s) 73,100 Suspended-sediment discharge (ton/d) 34,700

Distance from initial point (ft)	Total depth (ft)	Sample depth (ft)	Suspended sediment concentration (mg/L)	Percent of suspended sediment that is sand	Stream velocity (ft/s)
157	31.1	1.0	81	84	4.85
		7.8	100	27	4.37
		15.5	106	28	4.26
		23.3	157	55	4.26
		30.1	107	35	2.50
	Depth integrated		95	25	
250	32.6	1.0	82	13	4.65
		7.9	104	28	4.75
		15.8	117	34	4.55
		23.7	142	46	3.80
		31.6	678	89	2.99
	Depth integrated		111	34	
331	32.4	1.0	91	23	4.96
		8.1	118	38	5.20
		16.2	166	53	4.46
		24.3	187	57	3.72
		31.4	390	81	3.72
	Depth integrated		147	52	
407	35.3	1.0	109	15	5.20
		8.8	126	35	5.20
		17.6	159	48	4.07
		26.4	336	76	3.65
		34.3	--	--	2.15
	Depth integrated		195	64	
465	37.0	1.0	84	85	4.96
		9.2	115	30	4.96
		18.5	129	44	4.26
		27.7	130	40	4.07
		36.0	412	82	3.21
	Depth integrated		100	70	

SUSPENDED-SEDIMENT AND STREAM-VELOCITY DATA FOR RIVER MILE 35.64--Continued

Date June 24, 1980 Time 1100-1455 Water temp (°C) 19.5

Streamflow (ft^3/s) 20,600 Suspended-sediment discharge (ton/d) 2,390

Distance from initial point (ft)	Total depth (ft)	Sample depth (ft)	Suspended sediment concentration (mg/L)	Percent of suspended sediment that is sand	Stream velocity: Rate (ft/s)	Stream velocity: Direction (degrees to magnetic north)
139	21.0	2.0	33	8	2.34	227
		4.7	32	20	2.26	231
		10.5	42	12	1.99	234
		15.2	46	12	1.87	233
		19.5	52	22	1.44	230
	Depth integrated		40	--		
225	21.5	2.0	26	10	2.18	230
		5.4	26	--	2.14	231
		10.8	26	13	1.93	232
		16.2	58	9	1.86	230
		20.0	58	13	1.63	230
	Depth integrated		37	--		
350	21.9	2.0	41	8	2.08	228
		5.5	51	19	1.88	228
		11.0	54	11	1.82	228
		16.5	64	12	1.53	228
		20.4	69	11	1.54	228
	Depth integrated		50	--		
439	24.7	2.0	29	--	1.64	229
		6.2	35	8	1.72	227
		12.4	48	9	1.56	229
		18.6	56	10	1.40	231
		23.2	76	12	1.15	225
	Depth integrated		45	--		
530	25.7	2.0	16	18	1.57	229
		6.4	19	14	1.47	233
		12.8	28	11	1.14	233
		19.2	33	6	1.03	235
		24.2	45	8	1.11	236
	Depth integrated		32	--		

SUSPENDED-SEDIMENT AND STREAM-VELOCITY DATA FOR RIVER MILE 35.64--Continued

Date May 1, 1981 Time 1005-1310 Water temp (°C) 20.0

Streamflow (ft^3/s) 9,480 Suspended-sediment discharge (ton/d) 461

Distance from initial point (ft)	Total depth (ft)	Sample depth (ft)	Suspended sediment concentration (mg/L)	Percent of suspended sediment that is sand	Stream velocity	
					Rate (ft/s)	Direction (degrees to magnetic north)
126	19.9	2.0	17	13	1.83	100
		5.0	15	11	1.77	100
		10.0	18	11	1.58	108
		15.0	22	12	1.38	126
		18.5	24	8	1.27	129
	Depth integrated		21	9		
275	20.9	2.0	17	8	1.43	87
		5.2	15	13	1.59	96
		10.4	18	8	1.23	90
		15.6	22	9	1.40	122
		19.5	24	8	1.44	73
	Depth integrated		20	8		
375	21.4	2.0	16	8	1.25	119
		5.4	18	10	1.19	121
		10.8	20	9	1.05	110
		16.2	20	13	1.35	129
		20.0	23	9	1.28	91
	Depth integrated		19	9		
465	23.9	2.0	13	12	.85	99
		6.0	17	12	.91	93
		12.0	18	8	.76	97
		18.0	19	18	.89	92
		22.5	21	16	.45	108
	Depth integrated		19	10		
584	25.2	2.0	12	10	.63	94
		6.3	13	11	.63	98
		12.6	15	6	.68	98
		18.9	14	14	.75	101
		23.8	17	8	.77	123
	Depth integrated		14	11		

SUSPENDED-SEDIMENT AND STREAM-VELOCITY DATA FOR RIVER MILE 35.64--Continued

Date Sept. 16, 1981 Time 0855-1115 Water temp (°C) 22.5

Streamflow (ft^3/s) 16,700 Suspended-sediment discharge (ton/d) 1,350

Distance from initial point (ft)	Total depth (ft)	Sample depth (ft)	Suspended sediment concentration (mg/L)	Percent of suspended sediment that is sand	Stream velocity: Rate (ft/s)	Stream velocity: Direction (degrees to magnetic north)
133	21.0	2.0	14	3	1.51	235
		5.2	16	2	1.47	245
		10.5	18	2	1.44	245
		15.7	18	5	1.32	245
		19.5	22	6	1.03	232
	Depth integrated		18	8		
200	21.8	2.0	15	5	1.67	232
		5.4	19	5	1.67	232
		10.9	23	4	1.51	232
		16.3	26	6	1.35	232
		20.3	25	5	1.11	230
	Depth integrated		27	6		
287	23.5	2.0	20	7	1.84	232
		5.9	27	6	1.76	232
		11.8	35	11	1.65	232
		17.7	30	4	1.47	232
		22.0	36	6	1.29	232
	Depth integrated		25	15		
426	25.0	2.0	30	5	1.80	233
		6.2	35	6	1.76	233
		12.5	39	6	1.70	232
		18.7	51	4	1.62	232
		23.5	69	6	1.33	232
	Depth integrated		37	5		
542	25.5	2.0	27	6	1.73	235
		6.4	36	5	1.80	235
		12.8	35	4	1.84	237
		19.2	41	6	1.47	235
		24.0	48	10	1.26	227
	Depth integrated		32	8		

BED MATERIAL PARTICLE-SIZE DISTRIBUTION AT RIVER MILE 35.64

Distance from initial point (ft)	Percent finer than indicated sieve size (millimeters)										
	64.0	32.0	16.0	8.00	4.00	2.00	1.00	0.50	0.25	0.125	0.062
					November 21, 1978						
126				100	99.9	99.7	99.3	94.5	11.0	0.2	0.0
287			100	99.1	98.4	91.8	89.4	78.0	10.7	1.4	.5
426				100	99.9	99.3	97.9	71.5	3.9	.4	.1
557				100	99.9	99.6	96.6	41.6	2.0	1.4	.8
Average			100	99.8	99.5	97.6	95.8	71.4	6.9	.8	.4
					March 19, 1979						
133					100	99.6	96.8	48.7	1.4	.4	.2
246				100	99.9	99.5	96.5	66.4	2.2	.3	.1
312				100	98.7	97.9	95.9	77.7	13.1	1.3	.3
407					100	99.8	99.3	91.8	10.9	.4	.1
537					100	99.9	99.7	95.6	11.0	.5	.2
Average				100	99.7	99.3	97.6	76.0	7.7	.6	.2
					September 11, 1979						
139						100	99.9	98.6	25.7	.7	.2
250						100	99.9	96.1	11.1	.6	.3
325					100	99.9	99.2	76.7	3.6	.4	.2
446					100	99.8	97.9	55.1	1.2	.2	.1
570						100	99.8	72.1	29.4	14.9	5.4
Average					100	99.9	99.3	79.7	14.2	3.4	1.2
					February 29, 1980						
157				100	99.5	99.3	97.4	50.4	2.0	.2	.1
250				100	99.8	98.9	95.5	41.3	1.1	.2	.1
331			100	96.7	95.5	94.5	92.9	71.3	5.4	.2	.1
407				100	99.4	98.3	94.2	70.1	8.6	.2	.1
465			100	95.8	93.7	92.7	92.0	87.5	23.6	.6	.1
Average			100	98.5	97.6	96.7	94.4	64.1	8.1	.3	.1

BED MATERIAL PARTICLE-SIZE DISTRIBUTION AT RIVER MILE 35.64--Continued

Distance from initial point (ft)	Percent finer than indicated sieve size (millimeters)										
	64.0	32.0	16.0	8.00	4.00	2.00	1.00	0.50	0.25	0.125	0.062
					June 24, 1980						
139				100	99.9	99.6	96.5	40.3	2.0	0.8	0.3
225				100	99.9	99.2	94.4	46.1	1.6	.2	.1
350					100	99.8	99.1	77.5	4.6	.2	0
439			100	99.7	99.3	98.8	98.5	92.3	15.5	1.3	.4
530						100	99.6	95.7	10.3	1.9	.8
Average			100	99.9	99.8	99.5	97.6	70.4	6.8	.9	.3
					May 1, 1981						
126				100	99.8	99.4	99.2	96.5	37.4	3.7	.6
275				100	99.5	97.8	95.4	77.1	19.3	4.5	2.6
375				100	99.6	98.5	94.7	55.4	4.6	.7	.4
465					100	99.6	96.6	44.1	1.8	.3	.1
584				100	99.6	99.3	98.0	68.4	42.7	29.9	14.8
Average				100	99.7	98.9	96.8	68.3	21.2	7.8	3.7
					September 16, 1981						
133				100	99.9	99.2	84.3	22.9	6.1	4.5	3.0
200				100	99.2	96.5	91.4	47.2	8.2	4.3	2.6
287				100	97.8	95.2	91.9	67.6	14.0	5.4	3.0
426					100	99.4	97.6	84.2	27.4	7.7	4.4
542					100	99.9	99.6	94.7	8.0	1.7	1.4
Average				100	99.4	98.0	93.0	63.3	12.7	4.7	2.9