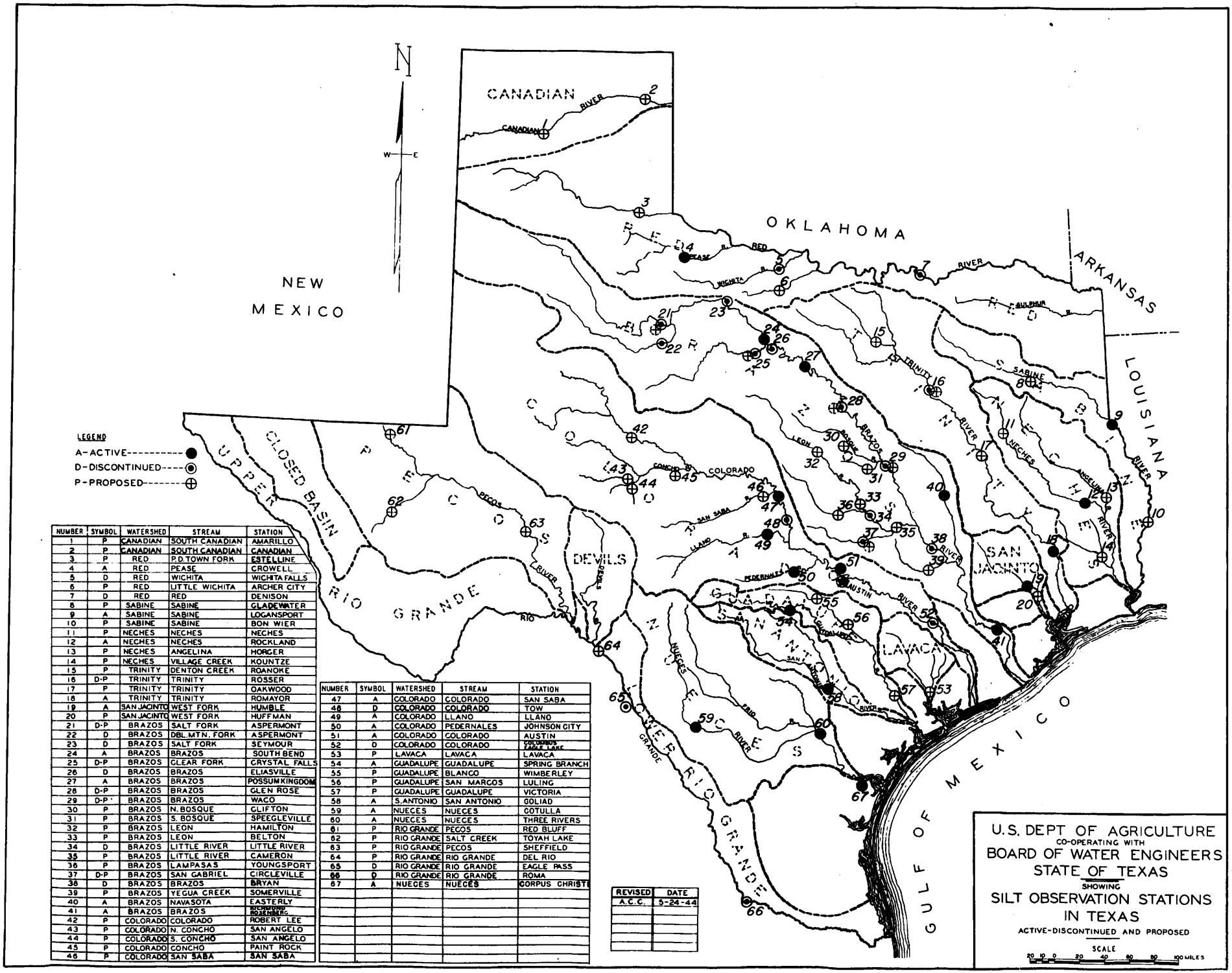

LEGEND
A-ACTIVE----------●
D-DISCONTINUED----◉
P-PROPOSED--------⊕

NUMBER	SYMBOL	WATERSHED	STREAM	STATION
1	P	CANADIAN	SOUTH CANADIAN	AMARILLO
2	P	CANADIAN	SOUTH CANADIAN	CANADIAN
3	P	RED	P.D.TOWN FORK	ESTELLINE
4	A	RED	PEASE	CROWELL
5	D	RED	WICHITA	WICHITA FALLS
6	P	RED	LITTLE WICHITA	ARCHER CITY
7	D	RED	RED	DENISON
8	P	SABINE	SABINE	GLADEWATER
9	A	SABINE	SABINE	LOGANSPORT
10	P	SABINE	SABINE	BON WIER
11	P	NECHES	NECHES	NECHES
12	A	NECHES	NECHES	ROCKLAND
13	P	NECHES	ANGELINA	HORGER
14	P	NECHES	VILLAGE CREEK	KOUNTZE
15	P	TRINITY	DENTON CREEK	ROANOKE
16	D-P	TRINITY	TRINITY	ROSSER
17	P	TRINITY	TRINITY	OAKWOOD
18	A	TRINITY	TRINITY	ROMAYOR
19	A	SAN JACINTO	WEST FORK	HUMBLE
20	P	SAN JACINTO	WEST FORK	HUFFMAN
21	D-P	BRAZOS	SALT FORK	ASPERMONT
22	D	BRAZOS	DBL.MTN. FORK	ASPERMONT
23	D	BRAZOS	SALT FORK	SEYMOUR
24	A	BRAZOS	BRAZOS	SOUTH BEND
25	D-P	BRAZOS	CLEAR FORK	CRYSTAL FALLS
26	D	BRAZOS	BRAZOS	ELIASVILLE
27	A	BRAZOS	BRAZOS	POSSUM KINGDOM
28	D-P	BRAZOS	BRAZOS	GLEN ROSE
29	D-P	BRAZOS	BRAZOS	WACO
30	P	BRAZOS	N. BOSQUE	CLIFTON
31	P	BRAZOS	S. BOSQUE	SPEEGLEVILLE
32	P	BRAZOS	LEON	HAMILTON
33	P	BRAZOS	LEON	BELTON
34	D	BRAZOS	LITTLE RIVER	LITTLE RIVER
35	P	BRAZOS	LITTLE RIVER	CAMERON
36	P	BRAZOS	LAMPASAS	YOUNGSPORT
37	D-P	BRAZOS	SAN GABRIEL	CIRCLEVILLE
38	D	BRAZOS	BRAZOS	BRYAN
39	P	BRAZOS	YEGUA CREEK	SOMERVILLE
40	A	BRAZOS	NAVASOTA	EASTERLY
41	A	BRAZOS	BRAZOS	RICHMOND ROSENBERG
42	P	COLORADO	COLORADO	ROBERT LEE
43	P	COLORADO	N. CONCHO	SAN ANGELO
44	P	COLORADO	S. CONCHO	SAN ANGELO
45	P	COLORADO	CONCHO	PAINT ROCK
46	P	COLORADO	SAN SABA	SAN SABA

NUMBER	SYMBOL	WATERSHED	STREAM	STATION
47	A	COLORADO	COLORADO	SAN SABA
48	D	COLORADO	COLORADO	TOW
49	A	COLORADO	LLANO	LLANO
50	A	COLORADO	PEDERNALES	JOHNSON CITY
51	A	COLORADO	COLORADO	AUSTIN
52	D	COLORADO	COLORADO	COLUMBUS EAGLE LAKE
53	P	LAVACA	LAVACA	LAVACA
54	A	GUADALUPE	GUADALUPE	SPRING BRANCH
55	P	GUADALUPE	BLANCO	WIMBERLEY
56	P	GUADALUPE	SAN MARCOS	LULING
57	P	GUADALUPE	GUADALUPE	VICTORIA
58	A	S.ANTONIO	SAN ANTONIO	GOLIAD
59	A	NUECES	NUECES	COTULLA
60	A	NUECES	NUECES	THREE RIVERS
61	P	RIO GRANDE	PECOS	RED BLUFF
62	P	RIO GRANDE	SALT CREEK	TOYAH LAKE
63	P	RIO GRANDE	PECOS	SHEFFIELD
64	P	RIO GRANDE	RIO GRANDE	DEL RIO
65	D	RIO GRANDE	RIO GRANDE	EAGLE PASS
66	D	RIO GRANDE	RIO GRANDE	ROMA
67	A	NUECES	NUECES	CORPUS CHRISTI

REVISED	DATE
A.C.C.	5-24-44

U.S. DEPT OF AGRICULTURE
CO-OPERATING WITH
BOARD OF WATER ENGINEERS
STATE OF TEXAS
SHOWING
SILT OBSERVATION STATIONS IN TEXAS
ACTIVE-DISCONTINUED AND PROPOSED

SCALE
20 10 0 20 40 60 80 100 MILES

CONTENTS

THE SILT LOAD OF TEXAS STREAMS
(Progress report as of September 30, 1944)

By Dean W. Bloodgood, Associate Irrigation Engineer, Division of Irrigation, Soil Conservation Service, 1/ and A. A. Meador, Testing Engineer, Board of Water Engineers.

INTRODUCTION

In the greater part of Texas the precipitation varies widely throughout the year and also from year to year. At times long droughts occur, especially in the western part of the state, and at other times the precipitation is excessive. As a result of this erratic precipitation, wide fluctuations occur in the natural flow of the streams, sometimes varying in the course of a few days from only a small flow or even none at all to heavy floods.

It is planned to established many reservoirs on the streams of Texas for the regulation and conservation of their waters so that these resources may be developed to their fullest usefulness. Many storages have already been built, such as the Buchanan, Marshall Ford, Possum Kingdom, Red Bluff and Denison reservoirs. Nevertheless, many additional larger reservoirs, as well as small storages on tributaries, must be created before the water resources of the state become completely available for domestic, livestock, municipal, irrigation, power and other uses, and before the prevention of floods in lower stream channels can be accomplished.

Many Texas streams carry large quantities of silt resulting from erosion on their watershed, especially at times of heavy precipitation. When a reservoir is established on such a silt-carrying stream, much of the transported material is deposited and the storage capacity of the reservoir is reduced accordingly. Hence, when each new reservoir is built, it is necessary to estimate the rate at which it will be filled with silt in order that its economic feasibility may be determined. To obtain accurate information both as to the amounts of silt carried in Texas streams and the manner and conditions of its deposition in reservoirs, a cooperative silt investigation was begun in June 1924. This investigation has been carried on continuously to the present time.

The principal purpose of this cooperative investigation is to obtain the facts regarding the amount of silt carried by Texas streams from which the length of life of any proposed reservoir may be estimated. Accumulated results show definitely that, as affected by silt deposition, the life of any large reservoir built on major Texas streams will be far in excess of that necessary to satisfy the financial and economic consideration involved.

1/ Under the supervision of W. W. McLaughlin, Chief of Division of Irrigation, Soil Conservation Service, U. S. Department of Agriculture.

It is also a matter of great importance to Texas cities and towns that will have to, more and more, resort to the streams for increased water supplies, to know the amount of silt being carried by such streams throughout the year. Determining the desirability of the supply and the economic handling and treating such supply depends upon a knowledge of the silt load of the stream. This is also true of the various industries seeking location in Texas. For many large industries, the quality of the water supply is of major importance, and consideration cannot be given to the location of such an industry along a stream unless the quality of water has been determined.

Silt Investigations - Method and Procedure

Sampling equipment:-- An eight-ounce sample is accepted as being both convenient and sufficient in volume for all tests. Narrow mouthed bottles are found to be more convenient for use in the laboratory.

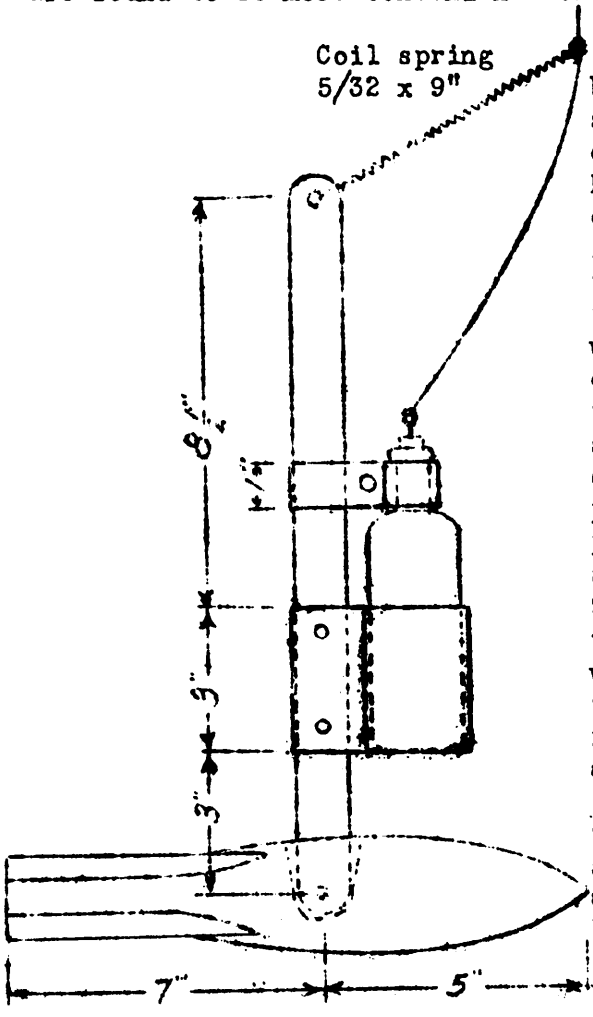

Fig. 1--Sampling apparatus used in Texas

The apparatus adopted for handling bottles in the process of taking samples, shown in Figure 1, consists of a one-eighth by three-quarter by fifteen inch hanger to which a sheet metal bottle container, 2½ inches in diameter, is fastened in such a way that the top of the neck of a round eight-ounce bottle is 0.8 foot above the lower extremity when attached to an old style 15-pound current meter weight. Above the container is a sliding clamp with a loop slightly larger in diameter than the lip on the neck of the bottle. In order to prevent the stopper from being removed prematurely by tension produced in the stopper line by the current, a 5/32 by 9 inch coil spring is attached to the top of the hanger and to the stopper wire in such a manner that the spring takes the tension. A No. 8 sash cord is used as a hand line for lowering and raising the apparatus, and a 3/32-inch cotton chalk line is used to remove the stopper. In order to hold the stopper line away from the apparatus and prevent entanglement with the hoisting line, a piece of stiff baling wire 17½ inches long is used as a connection between the rubber stopper and the line.

For sampling flood waters with high velocities, a special hanger made of steel, one-eighth inch thick, one-inch wide, and 16-1/4 inches long, with the vertical bottle container, using a 100 pound weight, was provided. The hoisting line used with this equipment was a 3/16 inch diameter airplane strand cable, and a hand winch with a 4-inch drum attached to an A-frame. 1/

Method of sampling -- A study of many samples taken at various depths throughout a cross-section and at different gage heights showed that a sample from six-tenths the depth gave the mean percentage of silt in the vertical within limits of permissible error. It was further disclosed that the mean percentage of silt by weight in verticals as abscissas and the distances from the edge of the water surface in a cross-section as ordinates showed that the weighted mean of the results obtained from the 6/10 depths at three points in the cross-section, viz., 1/6, 1/2, and 5/6 of the width, gave mean percentages for the cross-section.

Bed load -- That portion of the silt load which is rolled along the bed of the stream by the velocity of the water is not included in this report for the reason that no practicable means have yet been devised for securing reliable measurement.

Samples are taken daily at designated intervals in the cross-section and each sample is immediately labeled for identification, as shown in Figure 2.

Stream_____ At_____

Date_____ Sampler_____

Station_____ Depth_____

Gage Height_____ Color_____

Time_____

Figure 2 - Bottle label.

Laboratory method -- (a) Fold Whatman No. 2 filter papers, 24 cm in diameter, three times; dry in oven at 110° C for 1½ hours, cool in a dessicator for one-half hour, and weigh on analytical balance to nearest .005 gram. (b) Weigh eight ounce silt laden water samples on torsion balance to nearest one-tenth gram. (c) Place one of the above oven dried filter papers in a No. 16 ribbed glass funnel, and into this pour an eight-ounce sample whose weight has been recorded. (d) Air dry the filter paper containing the silt and then transfer to oven where procedure is same as outlined in (a).

Then from the above data - oven dry weight of silt divided by wet weight of 8-ounce sample and multiplied by one hundred, gives the percentage of dry silt by weight.

If the sample be taken at the surface of the stream (within the top 10 inches of flow) the per cent of silt by weight is multiplied by the factor 1.102 to secure the percentage that should be used for the six-tenths depth.

1/ The sampling of flood waters in regular field work has been confined to surface flow (top 8 inches) and as a result the 100 pound weight, etc. have not been required.

The daily average per cent of silt is accepted as - (1) that shown by a single sample when only one sample is received (2) that shown as an average when two samples are received (3) that shown as a weighted average when three samples are received; namely, add together the percentages for the one-sixth and five-sixth intervals, and to this sum add twice the percentage shown at midstream. Divide this total by four to secure weighted average.

Silt data subsequent to December 31, 1930, have been computed in accordance with the procedure used prior to that date and published by the United States Department of Agriculture, Bureau of Agricultural Engineering, as Technical Bulletin No. 382, "The Silt Load of Texas Streams" by the late O. A. Faris.

Since one cubic foot of run-off (water) is assumed to weigh 62.5 pounds, and one cubic foot of silt deposit in reservoirs is assumed to weigh 70 pounds, it follows that:

One ac.ft. of runoff = 1361.25 tons
One ac.ft. of silt = 1524.60 tons

$$\frac{\text{Tons of silt}}{1524.60} = \text{Tons of silt} \times .00065590975 = \text{ac.ft. of silt.}$$

$$\frac{\text{Tons of silt} \times 100}{\text{Ac.ft. of run-off} \times 1361.25} = \frac{\text{Tons of silt}}{\text{Ac.ft. of runoff}} \times .073462$$

= per cent of dry silt by weight.

The average weight of the dry material in silt deposits which are continuously submerged approaches 30 pounds per cubic foot. In those deposits which are occasionally exposed, the average dry weight approaches 70 pounds per cubic foot. In deposits where reservoirs are used exclusively for flood control, the average weight ultimately approaches 90 pounds per cubic foot. After a careful consideration of the volume-weight ratios of silt samples in different degrees of consolidation together with the fact that an indeterminable volume of vegetable matter in the form of logs and brush deposited in reservoirs become water-logged and lasts indefinitely, seventy (70) pounds was selected as the average ultimate weight of the dry material per cubic foot of deposit in reservoirs where the deposits are subjected to alternate wetting and drying.

In order to compute the silt load in acre-feet, the silt sampling station must be located where a stream flow measuring station is maintained.

The discharge records for stations on the Rio Grande were furnished by the International Boundary Commission. The discharge records for Inks Dam were furnished by the Lower Colorado River Authority; and that at Possum Kingdom Dam, by the Brazos River Conservation and Reclamation District. The discharge records for all other stations set up in this report were supplied by the Water Resources Branch of the United States Geological Survey.

The following organizations have assisted in the collection of water samples and other associated work:

Water Resources Branch of the United States Geological Survey, Austin, Texas; International Boundary Commission, El Paso, Texas; the Brazos River Conservation and Reclamation District, Mineral Wells, Texas; Lower Colorado River Authority, Austin, Texas; City of Houston, Houston, Texas; and City of Corpus Christ, Corpus Christi, Texas.

SILT RECORD
(As of Sept. 30, 1944)

Prepared by
TEXAS BOARD OF WATER ENGINEERS
and
UNITED STATES DEPARTMENT OF AGRICULTURE
Soil Conservation Service
Division of Irrigation

Stream: NAVASOTA
Station: EASTERLY (Samples were taken from bridge on U. S. Highway No. 79).

Water Year	Discharge			Average percent of silt by weight
	Water Acre-feet	Silt tons	Silt Acre-feet	
1941-42 1/	199,800	142,600	94	.052
1942-43	84,820	59,600	39	.052
1943-44	592,700	889,340	584	.110
TOTALS	877,320	1,091,540	717	

For period of 2.748 years.

Average discharge in acre-feet per year	319,258
Average acre-feet of silt per year	261
Average acre-feet of silt per year per square mile of contributing watershed	.275
Average tons of silt per year	397,213
Average percent of silt by weight	.091
Drainage area in square miles (net)	949

1/ Station was established January 1, 1942.

Note: A water-year extends from October 1 to the following September 30, inclusive.

SILT RECORD

Navasota River near Easterly 1943-44

Month	Discharge			Silt percent by weight
	Water Acre-feet	Silt tons	Silt Acre-feet	
(1943)				
October	3,890	4,710	3	.089
November	855	1,350	1	.116
December	966	920	1	.070
(1944)				
January	59,150	60,290	40	.075
February	127,900	192,190	126	.110
March	63,820	68,050	45	.078
April	5,950	6,850	4	.085
May	310,200	533,680	350	.126
June	18,280	19,470	13	.078
July	416	210	0	.037
August	294	440	0	.110
September	945	1,180	1	.092
Totals	592,700	889,340	584	

U. S. G. S. yearly discharge in acre-feet	592,700
Total silt for year in acre-feet	584
Acre-feet of silt per year per sq. mile of contributing watershed	.615
Average percent of silt by weight for year	.110
Drainage area in square miles (net)	949

SILT RECORD

(As of Sept. 30, 1944)

Prepared by
TEXAS BOARD OF WATER ENGINEERS
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UNITED STATES DEPARTMENT OF AGRICULTURE
Soil Conservation Service
Division of Irrigation

Stream: BRAZOS
Station: SOUTH BEND (Samples were taken from bridge on State Highway No. 67).

Water Year	Discharge			Average percent of silt by weight
	Water Acre feet	Silt Tons	Silt Acre-feet	
1941-42 1/	672,200	4,581,930	3,005	.501
1942-43	491,100	3,846,100	2,523	.575
1943-44	171,400	1,071,620	703	.459
TOTALS	1,334,700	9,499,650	6,231	

For the period of 2.710 years.

Average discharge in acre-feet per year	492,509
Average acre-feet of silt per year	2,299
Average acre-feet of silt per year per square mile of contributing watershed	.186
Average tons of silt per year	3,505,406
Average percent of silt by weight	.523
Drainage area in square miles (net)	12,360

1/ Station was established January 15, 1942.

Note: A water-year extends from October 1 to the following September 30, inclusive.

SILT RECORD

Brazos River at South Bend 1943-44

Month	Discharge			Silt percent by weight
	Water Acre-feet	Silt tons	Silt Acre-feet	
1943				
October	743	500	0	.049
November	67	50	0	.055
December	198	120	0	.045
(1944)				
January	1,540	1,000	1	.048
February	15,820	168,860	111	.784
March	13,250	56,540	37	.313
April	3,240	3,770	2	.085
May	48,650	239,010	157	.361
June	38,360	166,390	109	.319
July	28,230	366,970	241	.955
August	11,620	53,560	35	.339
September	9,640	14,850	10	.113
Totals	171,400	1,071,620	703	

U.S.G.S. yearly discharge in acre-feet	171,400
Total silt for year in acre-feet	703
Acre-feet of silt per year per sq.mile of contributing watershed	.057
Average per cent of silt by weight for year	.459
Drainage area in square miles (net)	12,360

SILT RECORD

Brazos River at Possum Kingdom Dam 1943-44

Month	Discharge			Silt percent by weight
	Water Acre-feet	Silt tons	Silt Acre-feet	
(1943)				
October	4,180	1,490	1	.026
November	1,470	630	1	.031
December	1,270	320	0	.019
(1944)				
January	7,020	460	0	.005
February	4,990	370	0	.005
March	3,570	260	0	.005
April	2,510	180	0	.005
May	8,610	470	0	.004
June	13,320	2,210	2	.012
July	13,260	1,880	1	.010
August	24,720	5,380	4	.016
September	7,120	1,940	1	.020
Totals	92,040	15,590	10	

U. S. G. S. yearly discharge in acre-feet	92,040
Total silt for year in acre-feet	10
Acre-feet of silt per year per sq. mile of contributing watershed	.001
Average percent of silt by weight for year	.012
Drainage area in square miles (net)	13,310

SILT RECORD
(As of Sept. 30, 1944)

Prepared by
TEXAS BOARD OF WATER ENGINEERS
and
UNITED STATES DEPARTMENT OF AGRICULTURE
Soil Conservation Service
Division of Irrigation

Stream: BRAZOS
Station: POSSUM KINGDOM DAM (Samples were taken in tailrace and over spillway).

Water Year	Discharge			Average percent of silt by weight
	Water Acre-feet	Silt tons	Silt Acre-feet	
1941-42 1/	588,000	55,070	36	.007
1942-43	851,300	625,770	410	.054
1943-44	92,040	15,590	10	.012
TOTALS	1,531,340	696,430	456	

For period of 2.710 years.

Average discharge in acre-feet per year	565,070
Average acre-feet of silt per year	168
Average acre-feet of silt per year per square mile of contributing watershed	.013
Average tons of silt per year	256,985
Average percent of silt by weight	.033
Drainage area in square miles (net)	13,310

1/ Station was established Jan. 15, 1942.

Note: A water-year extends from October 1 to the following September 30, inclusive.

SILT RECORD
(As of Sept. 30, 1944)

Prepared by
TEXAS BOARD OF WATER ENGINEERS
and
UNITED STATES DEPARTMENT OF AGRICULTURE
Soil Conservation Service
Division of Irrigation

Stream: BRAZOS
Station: ROSENBERG-RICHMOND

Water Year	Discharge			Average percent of silt by weight
	Water Acre-feet	Silt tons	Silt Acre-feet	
1923-24 1/	494,900	714,220	468	.106
1924-25	1,237,300	12,676,710	8,314	.753
1925-26	8,762,800	44,939,350	29,476	.377
1926-27	5,562,600	34,377,320	21,739	.454
1927-28	3,318,400	28,163,890	18,472	.623
1928-29	6,000,000	32,284,200	21,174	.395
1929-30	5,218,900	38,686,330	25,373	.545
1930-31	5,640,000	27,766,660	18,212	.362
1931-32 2-3/	8,040,000	63,649,510	41,749	.582
1932-33	2,560,000	15,175,520	9,954	.435
1933-34	3,370,000	23,318,780	15,294	.508
1934-35	7,334,000	63,472,990	41,633	.636
1935-36	6,032,000	40,330,500	26,453	.491
1936-37	5,406,000	25,531,710	16,747	.347
1937-38	7,204,000	55,656,280	36,544	.568
1938-39	1,966,000	14,742,470	9,668	.551
1939-40	3,161,000	23,679,220	15,531	.550
1940-41	16,120,000	97,306,510	63,824	.443
1941-42	8,523,000	71,490,110	46,891	.616
1942-43	3,255,000	11,426,360	7,496	.258
1943-44	7,627,000	46,735,630	30,654	.450
TOTALS	116,832,900	772,124,270	505,666	

For period of 20.306 years.

Average discharge in acre-feet per year	5,753,615
Average acre-feet of silt per year	24,902
Average acre-feet of silt per year per square mile of contributing watershed	.715
Average tons of silt per year	38,024,439
Average percent of silt by weight	.485
Drainage area in square miles (net)	34,810

1/ Station was established at Rosenberg, June 11, 1924.
2/ Station was discontinued at Rosenberg, April 12, 1932.
3/ Station was established at Richmond, April 13, 1932.
Note: A water-year extends from October 1 to the following September 30, inclusive.

SILT RECORD

Brazos River at Richmond, 1943-44

Month	Discharge			Silt percent by weight
	Water Acre-feet	Silt tons	Silt Acre-feet	
(1943)				
October	89,100	127,010	83	.105
November	56,190	43,150	28	.056
December	91,460	125,170	82	.101
(1944)				
January	677,800	2,270,910	1,490	.246
February	955,000	4,984,040	3,269	.383
March	1,132,000	5,103,150	3,347	.331
April	338,200	362,420	238	.079
May	2,804,000	28,001,000	18,366	.734
June	1,029,000	5,202,560	3,412	.371
July	135,000	100,920	66	.055
August	66,550	36,160	24	.040
September	252,200	379,140	249	.110
Totals	7,627,000	46,735,630	30,654	

U.S.G.S. yearly discharge in acre-feet	7,627,000
Total silt for year in acre feet	30,654
Acre-feet of silt per year per sq.mile of contributing watershed	.881
Average per cent of silt by weight for year	.450
Drainage area in square miles (net)	34,810

SILT RECORD
(As of Sept. 30, 1944)

Prepared by
TEXAS BOARD OF WATER ENGINEERS
and
UNITED STATES DEPARTMENT OF AGRICULTURE
Soil Conservation Service
Division of Irrigation

Stream: LLANO
Station: LLANO (Samples were taken at U. S. gaging station ½ mile downstream from bridge on State Highway No. 16).

Water Year	Discharge			Average percent of silt by weight
	Water Acre-feet	Silt tons	Silt Acre-feet	
1941-42 1/	66,000	252,700	166	.281
1942-43	235,500	381,560	250	.119
1943-44	196,100	120,450	79	.045
TOTALS	497,600	754,710	495	

For period of 2.167 years.

Average discharge in acre-feet per year	229,626
Average acre-feet of silt per year	228
Average acre-feet of silt per year per square mile of contributing watershed	.057
Average tons of silt per year	348,274
Average percent of silt by weight	.111
Drainage area in square miles (net)	4,000

1/ Station was established August 1, 1942.

Note: A water-year extends from October 1 to the following September 30, inclusive.

SILT RECORD

Llano River at Llano 1943-44

Month	Discharge			Silt percent by weight
	Water Acre-feet	Silt tons	Silt Acre-feet	
(1943)				
October	9,880	3,740	2	.028
November	7,270	1,610	1	.016
December	10,060	1,060	1	.008
(1944)				
January	21,260	6,770	4	.023
February	20,920	9,100	6	.032
March	19,450	9,170	6	.035
April	10,440	5,490	4	.039
May	53,010	50,700	33	.070
June	20,070	18,060	12	.066
July	3,950	2,150	1	.040
August	6,060	3,880	3	.047
September	13,700	8,720	6	.047
Totals	196,100	120,450	79	

U. S. G. S. yearly discharge in acre-feet	196,100
Total silt for year in acre-feet	79
Acre-feet of silt per year per sq. mile of contributing watershed	.020
Average percent of silt by weight for year	.045
Drainage area in square miles (net)	4,000

SILT RECORD
(As of Sept. 30, 1944)

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TEXAS BOARD OF WATER ENGINEERS
and
UNITED STATES DEPARTMENT OF AGRICULTURE
Soil Conservation Service
Division of Irrigation

Stream: PEDERNALES
Station: JOHNSON CITY (Samples were taken from highway bridge on U. S. Highway No. 281, about 1½ miles north of Johnson City).

Water Year	Discharge			Average percent of silt by weight
	Water Acre-feet	Silt tons	Silt Acre-feet	
1941-42 1/	22,630	107,030	70	.347
1942-43	79,850	150,740	99	.139
1943-44	167,700	724,550	476	.317
TOTALS	270,180	982,320	645	

For period of 2.167 years.

Average discharge in acre-feet per year	124,679
Average acre-feet of silt per year	298
Average acre-feet of silt per year per square mile of contributing watershed	.315
Average tons of silt per year	453,309
Average percent of silt by weight	.267
Drainage area in square miles (net)	947

1/ Station was established August 1, 1942.

Note: A water-year extends from October 1 to the following September 30, inclusive.

SILT RECORD

Pedernales River near Johnson City 1943-44

Month	Discharge			Silt percent by weight
	Water Acre-feet	Silt tons	Silt Acre-feet	
(1943)				
October	778	181	0	.017
November	671	72	0	.009
December	1,130	128	0	.008
(1944)				
January	2,490	757	1	.022
February	2,990	1,217	1	.030
March	6,400	7,607	5	.087
April	2,550	935	1	.027
May	67,100	236,826	155	.259
June	7,760	2,103	1	.020
July	1,580	147	0	.007
August	60,480	461,369	303	.560
September	13,730	13,207	9	.071
Totals	167,700	724,549	476	

U. S. G. S. yearly discharge in acre-feet	167,700
Total silt for year in acre-feet	476
Acre-feet of silt per year per sq. mile of contributing watershed	.503
Average percent of silt by weight for year	.317
Drainage area in square miles (net)	947

SILT RECORD
(As of Sept. 30, 1944)

Prepared by
TEXAS BOARD OF WATER ENGINEERS
and
UNITED STATES DEPARTMENT OF AGRICULTURE
Soil Conservation Service
Division of Irrigation

Stream: COLORADO
Station: NEAR SAN SABA (Samples were taken from Red Bluff bridge about midway between San Saba and Lometa).

Water Year	Discharge			Average percent of silt by weight
	Water Acre-feet	Silt tons	Silt Acre-feet	
1929-30 1/	24,000	143,140	94	.439
1930-31	1,370,000	5,136,520	3,369	.275
1931-32	2,220,000	9,934,850	6,516	.328
1932-33	475,000	1,303,620	855	.201
1933-34	504,000	2,121,550	1,391	.309
1934-35	2,564,000	14,423,520	9,459	.413
1935-36	2,276,000	7,520,550	4,933	.243
1936-37	1,197,000	2,688,230	1,764	.165
1937-38	2,809,000	8,923,940	5,853	.233
1938-39	819,400	3,709,100	2,432	.333
1939-40	773,700	3,191,810	2,094	.303
1940-41	2,053,000	8,613,430	5,650	.308
1941-42	1,286,000	4,571,140	2,998	.261
1942-43	475,100	703,520	461	.109
1943-44	592,790	2,129,300	1,397	.264
TOTALS	19,438,990	75,114,220	49,266	

For period of 14.055 years.

Average discharge in acre-feet per year	1,383,066
Average acre-feet of silt per year	3,505
Average acre-feet of silt per year per square mile of contributing watershed	.186
Average tons of silt per year	5,344,306
Average percent of silt by weight	.284
Drainage area in square miles (net)	18,800

1/ Station was established September 11, 1930.

Note: A water-year extends from October 1 to the following September 30, inclusive.

Note: Water samples were discontinued at old Red Bluff bridge and started one half mile upstream at the new Red Bluff bridge on May 24, 1940.

SILT RECORD

Colorado River near San Saba 1943-44

Month	Discharge			Silt percent by weight
	Water Acre-feet	Silt tons	Silt Acre-feet	
(1943)				
October	25,060	76,830	50	.225
November	7,340	3,330	2	.038
December	13,100	5,130	3	.029
(1944)				
January	40,830	54,780	36	.099
February	43,910	75,720	50	.127
March	39,910	44,290	29	.082
April	20,840	20,530	14	.072
May	196,600	1,035,080	679	.387
June	48,250	71,170	47	.108
July	55,630	413,320	271	.546
August	24,980	23,910	16	.070
September	76,340	305,210	200	.294
Totals	592,790	2,129,300	1,397	

U. S. G. S. yearly discharge in acre-feet	592,800
Total silt for year in acre-feet	1,397
Acre-foot of silt per year per sq. mile of contributing watershed	.074
Average percent of silt by weight for year	.264
Drainage area in square miles (net)	18,800

SILT RECORD
(As of Sept. 30, 1944)

Prepared by
TEXAS BOARD OF WATER ENGINEERS
and
UNITED STATES DEPARTMENT OF AGRICULTURE
Soil Conservation Service
Division of Irrigation

Stream: COLORADO
Station: INKS DAM (Samples were taken from tailrace)

Water Year	Discharge			Average percent of silt by weight
	Water Acre-feet	Silt tons	Silt Acre-feet	
1941-42 1/	285,200	41,270	27	.011
1942-43	662,400	67,090	44	.007
1943-44	768,040	127,980	84	.012
TOTALS	1,715,640	236,340	155	

For period of 2.167 years.

Average discharge in acre-feet per year	791,712
Average acre-feet of silt per year	72
Average acre-feet of silt per year per square mile of contributing watershed	.004
Average tons of silt per year	109,063
Average percent of silt by weight	.010
Drainage area in square miles (net)	19,490

1/ Station was established August 1, 1942.

Note: A water-year extends from October 1 to the following September 30, inclusive.

SILT RECORD

Colorado River at Inks Dam 1943-44

Month	Discharge			Silt percent by weight
	Water Acre-feet	Silt tons	Silt Acre-feet	
(1943)				
October	31,560	2,370	2	.006
November	40,030	8,250	5	.015
December	51,110	6,950	5	.010
(1944)				
January	26,430	1,890	1	.005
February	24,680	2,450	2	.007
March	81,940	5,440	4	.005
April	56,460	3,850	2	.005
May	116,800	23,810	16	.015
June	107,500	20,430	13	.014
July	56,760	10,730	7	.014
August	95,410	26,000	17	.020
September	79,360	15,810	10	.015
Totals	768,040	127,980	84	

U. S. G. S. yearly discharge in acre-feet	768,000
Total silt for year in acre-feet	84
Acre-feet of silt per year per sq. mile of contributing watershed	.004
Average percent of silt by weight for year	.012
Drainage area in square miles (net)	19,490

SILT RECORD
(As of Sept. 30, 1944)

Prepared by
TEXAS BOARD OF WATER ENGINEERS
and
UNITED STATES DEPARTMENT OF AGRICULTURE
Soil Conservation Service
Division of Irrigation

Stream: COLORADO
Station: AUSTIN (Samples were taken from Congress Avenue or Montopolis bridges).

Water Year	Discharge			Average percent of silt by weight
	Water Acre-feet	Silt tons	Silt Acre-feet	
1936-37 1/	48,040	1,830	1	.003
1937-38*	3,610,000	8,881,220	5,826	.181
1938-39	986,600	735,150	481	.055
1939-40*	1,334,000	906,750	596	.050
1940-41	3,869,000	979,240	642	.019
1941-42	986,400	121,570	80	.009
1942-43	1,788,000	328,050	215	.013
1943-44	1,392,380	186,590	122	.010
TOTALS	14,014,420	12,140,400	7,963	

For period of 7.164 years.

Average discharge in acre-feet per year	1,956,228
Average acre-feet of silt per year	1,112
Average acre-feet of silt per year per square mile of contributing watershed	.042
Average tons of silt per year	1,694,640
Average percent of silt by weight	.064
Drainage area in square miles (net)	26,360

1/ Station was established August 2, 1937.
Note: A water-year extends from October 1 to the following September 30, inclusive.

(*) Rehabilitation of the old Austin Dam (now termed Tom Miller Dam) was started August 1, 1938. This construction at times doubtless distorted the silt load of samples which were taken from 1½ to 4 miles downstream therefrom. Rehabilitation was completed and the impounding of water was begun on January 7, 1940.

SILT RECORD

Colorado River at Austin 1943-44

Month	Discharge			Silt percent by weight
	Water Acre-feet	Silt tons	Silt Acre-feet	
(1943)				
October	84,930	10,100	7	.009
November	77,340	6,740	4	.006
December	82,280	7,620	5	.007
(1944)				
January	75,880	14,190	9	.014
February	82,920	16,650	11	.015
March	76,520	11,470	7	.011
April	73,310	3,900	3	.004
May	118,100	19,410	13	.012
June	161,300	23,640	15	.011
July	194,700	19,840	13	.007
August	188,900	19,550	13	.008
September	176,200	33,480	22	.014
Totals	1,392,380	186,590	122	

U. S. G. S. yearly discharge in acre-feet	1,392,000
Total silt for year in acre-feet	122
Acre-feet of silt per year per sq. mile of contributing watershed	.005
Average percent of silt by weight for year	.010
Drainage area in square miles (net)	26,360

SILT RECORD
(As of Sept. 30, 1944)

Prepared by
TEXAS BOARD OF WATER ENGINEERS
and
UNITED STATES DEPARTMENT OF AGRICULTURE
Soil Conservation Service
Division of Irrigation

Stream: GUADALUPE
Station: SPRING BRANCH (Samples were taken 4 miles southeast of Spring Branch from bridge on old Highway No. 46).

Water Year	Discharge			Average percent of silt by weight
	Water Acre-feet	Silt tons	Silt Acre-feet	
1941-42 1/	167,150	164,150	108	.072
1942-43	145,600	79,630	52	.040
1943-44	272,800	401,650	262	.108
TOTALS	585,550	645,430	422	

For period of 2.748 years.

Average discharge in acre-feet per year	213,082
Average acre-feet of silt per year	154
Average acre-feet of silt per year per square mile of contributing watershed	.108
Average tons of silt per year	234,873
Average percent of silt by weight	.081
Drainage area in square miles (net)	1,432

1/ Station was established January 1, 1942.

Note: A water-year extends from October 1 to the following September 30, inclusive.

SILT RECORD

Guadalupe River at Spring Branch 1943-44

Month	Discharge			Silt percent by weight
	Water Acre-feet	Silt tons	Silt Acre-feet	
(1943)				
October	4,370	920	1	.015
November	3,760	350	0	.007
December	5,480	350	0	.005
(1944)				
January	9,070	1,960	1	.016
February	14,040	20,200	13	.106
March	30,710	41,060	26	.098
April	17,450	4,300	3	.018
May	102,200	248,460	163	.179
June	37,880	9,420	6	.018
July	11,640	2,410	2	.015
August	17,640	59,570	39	.248
September	18,610	12,650	8	.050
Totals	272,800	401,650	262	

U. S. G. S. yearly discharge in acre-feet	272,800
Total silt for year in acre-feet	262
Acre-feet of silt per year per sq. mile of contributing watershed	.183
Average percent of silt by weight for year	.108
Drainage area in square miles (net)	1,432

SILT RECORD
(As of Sept. 30, 1944)

Prepared by
TEXAS BOARD OF WATER ENGINEERS
and
UNITED STATES DEPARTMENT OF AGRICULTURE
Soil Conservation Service
Division of Irrigation

Stream: NECHES
Station: NEAR ROCKLAND (Samples were taken from bridge on Woodville-Lufkin highway--one daily in midstream).

Water Year	Discharge			Average percent of silt by weight
	Water Acre-feet	Silt tons	Silt Acre-feet	
1929-30 1/	10,620	290	0	.002
1930-31	1,490,000	229,220	151	.011
1931-32	2,560,000	193,940	128	.006
1932-33	1,400,000	144,700	95	.008
1933-34	1,550,000	174,070	112	.008
1934-35	2,602,000	297,100	194	.008
1935-36	1,041,000	140,280	91	.010
1936-37	928,400	110,180	71	.009
1937-38	1,400,000	225,940	147	.012
1938-39	854,400	140,590	91	.012
1939-40	1,098,000	227,590	149	.015
1940-41	3,578,000	586,140	384	.012
1941-42	2,522,000	550,920	361	.016
1942-43	748,500	316,090	207	.031
1943-44	3,230,410	1,865,580	1,223	.042
TOTALS	25,013,330	5,202,630	3,404	

For period of 14.148 years.

Average discharge in acre-feet per year	1,767,976
Average acre-feet of silt per year	241
Average acre-feet of silt per year per square mile of contributing watershed	.068
Average tons of silt per year	367,729
Average percent of silt by weight	.015
Drainage area in square miles (net)	3,539

1/ Station was established August 8, 1930.

Note: A water-year extends from October 1 to the following September 30, inclusive.

SILT RECORD
Neches River at Rockland, 1943-44

Month	Discharge			Silt percent by weight
	Water Acre-feet	Silt tons	Silt Acre-feet	
(1943)				
October	16,380	8,050	5	.036
November	34,600	19,970	13	.042
December	39,370	16,720	11	.031
(1944)				
January	237,830	128,010	84	.040
February	341,460	176,300	116	.038
March	425,120	221,260	145	.038
April	1,471,400	889,170	583	.044
May	296,800	180,670	119	.045
June	297,640	179,120	117	.044
July	23,260	15,310	10	.048
August	8,130	4,660	3	.042
September	38,420	26,340	17	.050
Totals	3,230,410	1,865,580	1,223	

U. S. G. S. yearly discharge in acre-feet	3,230,410
Total silt for year in acre-feet	1,223
Acre-feet of silt per year per sq. mile of contributing watershed	.346
Average percent of silt by weight for year	.042
Drainage area in square miles (net)	3,539

SILT RECORD

(As of Sept. 30, 1944)

Prepared by
TEXAS BOARD OF WATER ENGINEERS
and
UNITED STATES DEPARTMENT OF AGRICULTURE
Soil Conservation Service
Division of Irrigation

Stream: NUECES
Station: COTULLA (Samples were taken from highway bridge in Cotulla).

Water Year	Discharge			Average percent of silt by weight
	Water Acre-feet	Silt tons	Silt Acre-feet	
1941-42 1/	141,400	64,130	42	.033
1942-43	64,240	33,270	22	.038
1943-44	482,500	367,860	241	.056
TOTALS	688,140	465,260	305	

For period of 2.748 years.

Average discharge in acre-feet per year	250,415
Average acre-feet of silt per year	111
Average acre-feet of silt per year per square mile of contributing watershed	.021
Average tons of silt per year	169,308
Average per cent of silt by weight	.050
Drainage area in square miles (net)	5,260

1/ Station was established January 1, 1942.

Note: A water-year extends from Oct. 1 to the following September 30, inclusive.

SILT RECORD

Nueces River at Cotulla 1943-44

Month	Discharge			Silt percent by weight
	Water Acre-feet	Silt Tons	Silt Acre-feet	
(1943)				
October	5,320	4,950	3	.068
November	1,250	590	0	.035
December	235	40	0	.012
(1944)				
January	36	0	0	0
February	10	0	0	0
March	2,380	2,750	2	.085
April	72	10	0	.010
May	42,090	33,290	22	.058
June	37,820	20,720	14	.040
July	4	0	0	0
August	180,400	173,860	114	.071
September	212,900	131,710	86	.045
Totals	482,500	367,860	241	

U.S.G.S. yearly discharge in acre-feet	482,500
Total silt for year in acre-feet	241
Acre-feet of silt per year per sq.mile of contributing watershed	.046
Average per cent of silt by weight for year	.056
Drainage area in square miles (net)	5,260

SILT RECORD
(As of Sept. 30, 1944)

Prepared by
TEXAS BOARD OF WATER ENGINEERS
and
UNITED STATES DEPARTMENT OF AGRICULTURE
Soil Conservation Service
Division of Irrigation

Stream: NUECES
Station: NEAR THREE RIVERS (Samples were taken 2 miles south of Three Rivers from railroad bridge, except at extreme low stage when samples were taken at low dam).

Water Year	Discharge			Average percent of silt by weight
	Water Acre-feet	Silt tons	Silt Acre-feet	
1/				
1927-28	318,927	617,917	405	.142
1928-29	741,299	1,303,605	855	.129
1929-30	596,507	721,443	473	.089
1930-31	456,000	443,420	291	.071
1931-32	1,010,000	581,880	381	.042
1932-33	287,000	275,050	179	.070
1933-34	254,000	668,320	438	.193
1934-35	2,547,000	2,383,630	1,565	.069
1935-36	768,200	752,320	494	.072
1936-37	318,000	142,270	94	.033
1937-38	479,700	771,540	506	.118
1938-39	306,600	450,960	297	.108
1939-40	840,200	1,035,600	679	.091
1940-41	1,301,000	1,635,320	1,073	.092
1941-42	1,108,000	987,340	648	.065
1942-43	260,500	323,990	213	.091
1943-44	700,090	668,660	439	.070
TOTALS	12,293,023	13,763,265	9,030	

For period of 17.000 years.

Average discharge in acre-feet per year	723,119
Average acre-feet of silt per year	531
Average acre-feet of silt per year per square mile of contributing watershed	.034
Average tons of silt per year	809,604
Average percent of silt by weight	.082
Drainage area in square miles (net)	15,600

1/ Station was established October 1, 1927.

Note: A water-year extends from October 1 to the following September 30, inclusive.

SILT RECORD
Nueces River at Three Rivers 1943-44

Month	Discharge			Silt percent by weight
	Water Acre-feet	Silt tons	Silt Acre-feet	
(1943)				
October	11,190	14,260	9	.094
November	6,480	5,660	4	.064
December	4,120	3,050	2	.054
(1944)				
January	7,570	21,490	14	.209
February	2,230	1,390	1	.046
March	10,430	20,840	14	.147
April	3,000	1,860	1	.046
May	112,800	221,690	145	.144
June	175,300	124,310	82	.052
July	5,240	10,030	7	.141
August	22,630	73,440	48	.238
September	339,100	170,640	112	.037
Totals	700,090	668,660	439	

U. S. G. S. yearly discharge in acre-feet	700,090
Total silt for year in acre-feet	439
Acre-feet of silt per year per sq. mile of contributing watershed	.028
Average percent of silt by weight for year	.070
Drainage area in square miles (net)	15,600

SILT RECORD
(As of Sept. 30, 1944)

Prepared by
TEXAS BOARD OF WATER ENGINEERS
and
UNITED STATES DEPARTMENT OF AGRICULTURE
Soil Conservation Service
Division of Irrigation

Stream: NUECES
Station: CORPUS CHRISTI DAM (Samples were taken below and adjacent to outlet gates).

Water Year	Discharge			Average percent of silt by weight
	Water Acre-feet	Silt tons	Silt Acre-feet	
1941-42 1/	1,203,000	546,500	358	.033
1942-43	249,600	44,790	29	.013
1943-44	740,310	323,550	212	.032
TOTALS	2,192,910	914,840	599	

For period of 2.660 years.

Average discharge in acre-feet per year	824,402
Average acre-feet of silt per year	225
Average acre-feet of silt per year per square mile of contributing watershed	.014
Average tons of silt per year	343,925
Average percent of silt by weight	.032
Drainage area in square miles (net)	16,660

1/ Station was established February 2, 1942.

Note: A water-year extends from October 1 to the following September 30, inclusive.

SILT RECORD

Nueces River at Corpus Christi Dam 1943-44

Month	Discharge			Silt percent by weight
	Water Acre-feet	Silt tons	Silt Acre-feet	
(1943)				
October	11,490	1,380	1	.009
November	4,560	760	0	.012
December	5,830	1,390	1	.018
(1944)				
January	5,630	1,340	1	.017
February	5,370	1,020	1	.014
March	14,020	3,540	2	.019
April	4,460	1,180	1	.019
May	76,310	13,410	9	.013
June	213,500	110,190	72	.038
July	10,400	3,200	2	.023
August	12,940	3,320	2	.019
September	375,800	182,820	120	.036
Totals	740,310	323,550	212	

U. S. G. S. yearly discharge in acre-feet	740,310
Total silt for year in acre-feet	212
Acre-feet of silt per year per sq. mile of contributing watershed	.013
Average percent of silt by weight for year	.032
Drainage area in square miles (net)	16,660

SILT RECORD
(As of Sept. 30, 1944)

Prepared by
TEXAS BOARD OF WATER ENGINEERS
and
UNITED STATES DEPARTMENT OF AGRICULTURE
Soil Conservation Service
Division of Irrigation

Stream: PEASE
Station: CROWELL (Samples were taken from highway bridge about 10 miles north of Crowell on U. S. Highway No. 283).

Water Year	Discharge			Average percent of silt by weight
	Water Acre-feet	Silt tons	Silt Acre-feet	
1941-42 1/	36,630	485,320	318	.973
1942-43	80,680	601,090	394	.547
1943-44	54,190	908,130	596	1.231
TOTALS	171,500	1,994,540	1,308	

For period of 2.252 years.

Average discharge in acre-feet per year	76,155
Average acre-feet of silt per year	581
Average acre-feet of silt per year per square mile of contributing watershed	.241
Average tons of silt per year	885,675
Average percent of silt by weight	.854
Drainage area in square miles (net)	2,410

1/ Station was established July 1, 1942.

Note: A water-year extends from October 1 to the following September 30, inclusive.

SILT RECORD

Pease River near Crowell 1943-44

Month	Discharge			Silt percent by weight
	Water Acre-feet	Silt tons	Silt Acre-feet	
(1943)				
October	539	950	1	.129
November	260	180	0	.051
December	1,120	590	1	.039
(1944)				
January	1,030	560	0	.040
February	858	1,440	1	.123
March	680	380	0	.041
April	377	250	0	.049
May	5,610	38,850	26	.509
June	33,560	808,470	530	1.770
July	2,670	11,140	7	.306
August	3,420	29,960	20	.644
September	4,070	15,360	10	.277
Totals	54,190	908,130	596	

U. S. G. S. yearly discharge in acre-feet	54,190
Total silt for year in acre-feet	596
Acre-feet of silt per year per sq. mile of contributing watershed	.247
Average percent of silt by weight for year	1.231
Drainage area in square miles (net)	2,410

SILT RECORD
(As of May 31, 1943)

Prepared by
TEXAS BOARD OF WATER ENGINEERS
and
UNITED STATES DEPARTMENT OF AGRICULTURE
Soil Conservation Service
Division of Irrigation

Stream: RIO GRANDE
Station: EAGLE PASS (Samples were taken from railroad bridge at 1/6, 1/2, and 5/6 starting from the American side).

Water year	Discharge		Silt	Average percent of silt by weight
	Water Acre-feet	Silt tons	Acre-feet	
1933-34 1/	956,000	2,666,280	1,749	.205
1934-35 2/	2,722,260	9,872,380	6,474	.266
1935-36	3,068,000	12,763,170	8,373	.306
1936-37	2,177,600	12,789,460	8,389	.431
1937-38	4,237,100	26,546,130	17,410	.460
1938-39	2,189,100	4,037,870	2,649	.136
1939-40	1,965,000	5,747,650	3,770	.215
1940-41	3,333,600	23,961,040	15,716	.528
1941-42	6,229,100	34,442,100	22,591	.406
1942-43*	1,959,000	2,328,340	1,527	.087
TOTALS	28,836,760	135,154,420	88,648	

For period of 9.068 years.

Average discharge in acre-feet per year	3,180,057
Average acre-feet of silt per year	9,776
Average acre-feet of silt per year per square mile of contributing watershed	.078
Average tons of silt per year	14,904,545
Average percent of silt by weight	.344
Drainage area in square miles (net)	125,26

1/Station was established April 2, 1934.
2/May 15 to June 17 both inclusive excluded because of insufficient sampling.
* Station was discontinued May 31, 1943.
Note: The weight of a cubic foot of dried silt is recorded in the report of the International Boundary Commission as being 66.7 lbs., whereas in this report the weight is assumed to be 70 pounds.

SILT RECORD

Rio Grande at Eagle Pass 1942-43

Month	Discharge			Silt percent by weight
	Water Acre-feet	Silt tons	Silt Acre-feet	
1942				
October	573,300	916,250	601	.117
November	320,100	267,300	175	.061
December	225,800	76,500	50	.025
1943				
January	196,500	49,110	32	.018
February	155,700	31,440	21	.015
March	156,800	42,020	28	.020
April	126,500	65,960	43	.038
May	204,300	879,760	577	.316
TOTALS	1,959,000	2,328,340	1,527	

I.B.C. discharge for period (0.663 year) in acre feet ------ 1,959,000*

Total silt for year in acre-feet ---------- 1,527*

Acre-feet of silt per year per sq. mile of contributing watershed ----------

Average percent of silt by weight for year ---------- .087

Drainage area in square miles (net) ---------- 125,260

*For part of the year. Station was discontinued May 31, 1943

SILT RECORD
(As of Sept. 30, 1943)

Prepared by
TEXAS BOARD OF WATER ENGINEERS
and
UNITED STATES DEPARTMENT OF AGRICULTURE
Soil Conservation Service
Division of Irrigation

Stream: RIO GRANDE
Station: ROMA (Samples taken from bridge).

Water Year	Discharge			Average percent of silt by weight
	Water Acre-feet	Silt tons	Silt Acre-feet	
1928-29 1/	1,581,200	7,702,590	5,052	.358
1929-30	2,716,000	13,606,340	8,924	.368
1930-31	3,833,390	12,546,450	8,230	.240
1931-32	5,068,870	29,277,200	19,204	.424
1932-33	7,181,930	25,814,910	16,930	.264
1933-34	2,958,430	5,007,560	3,285	.124
1934-35	5,224,000	28,338,410	18,588	.399
1935-36	3,964,000	18,267,040	11,982	.339
1936-37	2,528,000	10,169,180	6,671	.296
1937-38	4,612,600	30,704,920	20,141	.489
1938-39	2,830,500	8,725,140	5,721	.226
1939-40	2,990,200	14,098,900	9,248	.346
1940-41	4,252,100	31,763,860	20,834	.549
1941-42	7,112,500	31,787,620	20,850	.328
1942-43 2/	2,245,600	4,413,620	2,895	.144
TOTALS	59,099,320	272,223,740	178,555	

For period of 14.184 years.

Average discharge in acre-feet per year	4,166,619
Average acre-feet of silt per year	12,588
Average acre-feet of silt per year per square mile of contributing watershed	.080
Average tons of silt per year	19,192,311
Average percent of silt by weight	.338
Drainage area in square miles (net)	157,204

1/ Station was established March 26, 1929
2/ For part of the year. Station discontinued on May 31, 1943.
Note: A water-year extends from October 1 to the following September 30, inclusive.

Note: The weight of a cubic foot of dried silt is recorded in the report of the International Boundary Commission as being sixty-six and seven tenths (66.7) pounds, whereas in this report the weight is assumed to be seventy (70) pounds.

Note: The delay in compiling this report was due to the fact that Rio Grande discharge was incomplete at the time other Texas silt station records were being computed.

SILT RECORD

Rio Grande at Roma 1942-43*

Month	Discharge			Silt percent by weight
	Water Acre-feet	Silt tons	Silt Acre-feet	
(1942)				
October	728,800	2,606,910	1,710	.263
November	338,700	312,470	205	.068
December	244,000	68,200	45	.021
(1943)				
January	226,200	177,620	117	.058
February	168,000	14,010	9	.006
March	165,400	32,280	21	.014
April	135,500	73,770	48	.040
May	239,000	1,128,360	740	.347
Totals	2,245,600	4,413,620	2,895	

I. B. C. discharge for period in acre-feet (0.666 year)-----	2,245,600
Total silt for 0.666 year in acre-feet----------	2,895
Acre-feet of silt per year per sq. mile of contributing watershed----------	
Average percent of silt by weight for year----------	.144
Drainage area in square miles (net)----------	157,204

*Station was discontinued on May 31, 1943.

(SILT RECORD)
(As of Sept. 30, 1944)

Prepared by
TEXAS BOARD OF WATER ENGINEERS
and
UNITED STATES DEPARTMENT OF AGRICULTURE
Soil Conservation Service
Division of Irrigation

Stream: SABINE
Station: LOGANSPORT (Samples 1/6, 1/2, and 5/6, were taken from highway bridge in downtown Shreveport).

Water Year	Discharge			Average percent of silt by weight
	Water Acre-feet	Silt tons	Silt Acre-feet	
1932-33 1/	2,545,700	503,740	330	.015
1933-34 2/	69,200	5,780	4	.006
1934-35 3/	13,910	400	0	.002
1935-36	841,400	137,020	89	.012
1936-37	1,690,000	270,430	176	.012
1937-38	3,155,000	537,990	353	.013
1938-39	1,326,000	291,500	190	.016
1939-40	1,303,000	458,990	301	.026
1940-41	4,876,000	825,330	541	.012
1941-42	3,817,000	1,439,880	944	.028
1942-43	1,717,000	999,370	655	.043
1943-44	4,193,000	3,002,050	1,969	.053
TOTALS	25,547,210	8,472,480	5,552	

For period of 10.156 years.

Average discharge in acre-feet per year	2,515,430
Average acre-feet of silt per year	547
Average acre-feet of silt per year per square mile of contributing watershed	.113
Average tons of silt per year	834,234
Average per cent of silt by weight	.024
Drainage area in square miles (net)	4,358

1/ Station was established December 1, 1932
2/ Station was discontinued December 27, 1933
3/ Station was reestablished September 1, 1935
Note: A water-year extends from October 1 to the following Sept. 30, incl.

SILT RECORD

Sabine River at Logansport 1943-44

Month	Discharge			Silt per cent by weight
	Water Acre-feet	Silt tons	Silt Acre-feet	
(1943)				
October	60,880	43,000	28	.052
November	20,640	12,770	8	.045
December	68,640	45,430	30	.049
(1944)				
January	388,300	269,120	177	.051
February	406,500	328,120	215	.059
March	642,900	489,260	321	.056
April	566,300	437,810	287	.057
May	1,566,000	997,910	655	.047
June	419,200	342,580	225	.060
July	23,290	15,410	10	.049
August	8,120	4,840	3	.044
September	22,300	15,800	10	.052
Totals	4,193,000	3,002,050	1,969	

U.S.G.S. yearly discharge in acre-feet	4,193,000
Total silt for year in acre-feet	1,969
Acre-feet of silt per year per sq.mile of contributing watershed	.405
Average per cent of silt by weight for year	.053
Drainage area in square miles (net)	4,858

SILT RECORD
(As of Sept. 30, 1944)

Prepared by
TEXAS BOARD OF WATER ENGINEERS
and
UNITED STATES DEPARTMENT OF AGRICULTURE
Soil Conservation Service
Division of Irrigation

Stream: SAN ANTONIO
Station: GOLIAD (Samples were taken in Goliad from bridge on State Highway No. 29).

Water Year	Discharge			Average percent of silt by weight
	Water Acre-feet	Silt tons	Silt Acre-feet	
1941-42 1/	699,600	848,340	556	.089
1942-43	453,200	581,740	382	.094
1943-44	365,100	725,630	475	.146
TOTALS	1,517,900	2,155,710	1,413	

For period of 2.748 years.

Average discharge in acre-feet per year	552,365
Average acre-feet of silt per year	514
Average acre-feet of silt per year per square mile of contributing watershed	.131
Average tons of silt per year	784,465
Average percent of silt by weight	.104
Drainage area in square miles (net)	3,914

1/ Station was established January 1, 1942.

Note: A water-year extends from October 1 to the following September 30, inclusive.

SILT RECORD

San Antonio River at Goliad 1943-44

Month	Discharge			Silt percent by weight
	Water Acre-feet	Silt tons	Silt Acre-feet	
(1943)				
October	15,760	9,040	6	.042
November	18,810	15,860	10	.062
December	17,410	9,600	6	.040
(1944)				
January	28,130	32,490	21	.085
February	21,250	25,780	17	.089
March	28,700	40,860	27	.105
April	17,350	13,430	9	.057
May	114,400	392,100	257	.252
June	31,050	60,100	39	.142
July	16,970	12,480	8	.054
August	21,920	41,130	27	.138
September	33,310	72,760	48	.160
Totals	365,100	725,630	475	

U. S. G. S. yearly discharge in acre-feet	365,100
Total silt for year in acre-feet	475
Acre-feet of silt per year per sq. mile of contributing watershed	.121
Average percent of silt by weight for year	.146
Drainage area in square miles (net)	3,914

SILT RECORD
(As of Sept. 30, 1944)
Prepared by
TEXAS BOARD OF WATER ENGINEERS
and
UNITED STATES DEPARTMENT OF AGRICULTURE
Soil Conservation Service
Division of Irrigation

Stream: WEST FORK OF SAN JACINTO
Station: NEAR HUMBLE (Samples were taken from highway bridge about 2 miles north of Humble).

Water Year	Discharge			Average percent of silt by weight
	Water Acre-feet	Silt tons	Silt Acre-feet	
1932-33 1/	253,210	144,800	93	.042
1933-34 2/	7,450	520	0	.005
1936-37 3/	12,540	1,370	1	.008
1937-38	491,900	150,650	97	.022
1938-39	319,500	120,660	77	.028
1939-40	282,700	162,070	105	.042
1940-41	2,566,000	896,050	588	.026
1941-42	909,200	373,670	245	.030
1942-43	545,800	290,820	191	.039
1943-44	881,200	660,570	434	.055
TOTALS	6,269,500	2,801,180	1,831	

For period of 8,337 years.

Average discharge in acre-feet per year	752,009
Average acre-feet of silt per year	220
Average acre-feet of silt per year per square mile of contributing watershed	.121
Average tons of silt per year	335,994
Average percent of silt by weight	.033
Drainage area in square miles (net)	1,811

1/ Station established December 1, 1932.
2/ Station discontinued December 31, 1933.
3/ Station reestablished July 1, 1937.

Note: A water-year extends from October 1 to the following September 30, inclusive.

SILT RECORD

West Fork of San Jacinto River near Humble 1943-44

Month	Discharge			Silt percent by weight
	Water Acre-feet	Silt tons	Silt Acre-feet	
(1943)				
October	4,550	2,730	2	.044
November	10,520	6,640	4	.046
December	27,280	20,290	13	.055
(1944)				
January	209,300	149,100	98	.052
February	176,000	135,240	89	.056
March	180,400	150,690	99	.061
April	22,400	14,000	9	.046
May	184,000	135,580	89	.054
June	37,090	25,850	17	.051
July	5,610	3,860	3	.051
August	8,020	5,060	3	.046
September	16,070	11,530	8	.053
Total	881,200	660,570	434	

U. S. G. S. yearly discharge in acre-feet	881,200
Total silt for year in acre-feet	434
Acre-feet of silt per year per sq. mile of contributing watershed	.240
Average percent of silt by weight for year	.055
Drainage area in square miles (net)	1,811

SILT RECORD
(As of Sept. 30, 1944)

Prepared by
TEXAS BOARD OF WATER ENGINEERS
and
UNITED STATES DEPARTMENT OF AGRICULTURE
Soil Conservation Service
Division of Irrigation

Stream: TRINITY
Station: ROMAYOR (Samples were taken from the railroad bridge).

Water Year	Discharge			Average percent of silt by weight
	Water Acre-feet	Silt tons	Silt Acre-feet	
1935-36 1/	42,130	5,220	4	.009
1936-37	3,901,000	3,481,600	2,285	.066
1937-38	6,753,000	6,741,220	4,423	.073
1938-39	2,165,000	3,199,280	2,099	.109
1939-40	3,218,000	4,999,040	3,280	.114
1940-41	12,260,000	9,657,990	6,335	.058
1941-42	9,901,000	9,447,990	6,197	.070
1942-43	4,298,000	4,914,950	3,224	.084
1943-44	7,588,000	11,433,850	7,501	.111
TOTALS	50,126,130	53,881,140	35,348	

For period of 8.142 years.

Average discharge in acre-feet per year	6,156,488
Average acre-feet of silt per year	4,341
Average acre-feet of silt per year per square mile of contributing watershed	.253
Average tons of silt per year	6,618,293
Average percent of silt by weight	.079
Drainage area in square miles (net)	17,190

1/ Station was established August 10, 1936.

Note: A water-year extends from October 1 to the following September 30, inclusive.

SILT RECORD

Trinity River at Romayor 1943-44

Month	Discharge			Silt percent by weight
	Water Acre-feet	Silt tons	Silt Acre-feet	
(1943)				
October	233,700	376,320	247	.118
November	47,240	34,920	23	.054
December	131,600	144,300	95	.081
(1944)				
January	728,400	1,310,430	860	.132
February	874,700	1,427,980	937	.120
March	1,148,000	1,751,320	1,149	.112
April	391,700	473,320	310	.089
May	3,009,000	4,922,740	3,230	.120
June	793,100	821,500	539	.076
July	68,270	34,110	22	.037
August	48,020	29,510	19	.045
September	114,700	107,400	70	.069
Totals	7,588,000	11,433,850	7,501	

U. S. G. S. yearly discharge in acre-feet	7,588,000
Total silt for year in acre-feet	7,501
Acre-feet of silt per year per sq. mile of contributing watershed	.436
Average percent of silt by weight for year	.111
Drainage area in square miles (net)	17,190

SUMMARY OF SILT RECORDS COVERING MAJOR STREAMS OF TEXAS

Prepared by TEXAS BOARD OF WATER ENGINEERS and UNITED STATES DEPARTMENT OF AGRICULTURE

Austin, Texas — As of September 30, 1944

Watershed	Stream	Silt station	Years samples taken	Total length record	Average per Year: Run-off	Silt		Silt per sq-mi net watershed	Silt by weight	Net drainage area
				years	ac-ft	ac-ft	tons	ac-ft	percent	sq-mi
Brazos	Salt Fork	Aspermont[1]	1924-25	1.238	111,100	2,818	4,297,420	1.272	2.342	2,216
Brazos	Salt Fork	Seymour[1]	1924-30	6.107	337,790	5,450	8,309,370	1.038	1.307	5,250
Brazos	Dbl.Mt.Fk.	Aspermont[1]	1924-33	9.244	135,280	2,665	406,240	1.765	2.206	1,510
Brazos	Clear Fk.	Crystal Falls[1]	1925-29	3.307	214,440	568	866,020	.131	.297	4,320
Brazos	Clear Fk.	Eliasville[1]	1924-25	1.244	177,240	429	808,630	.092	.335	5,740
Brazos	Little Riv.	Little River[1]	1924-29	4.962	419,870	752	1,147,190	.143	.201	5,253
Brazos	San Gabriel	Circleville[1]	1924-29	5.403	110,744	222	339,590	.369	.225	602
Brazos	Navasota	Easterly	1942-44	2.748	319,258	261	397,213	.275	.091	949
Brazos	Brazos	South Bend	1942-44	2.710	492,509	2,299	3,505,406	.186	.523	12,360
Brazos	Brazos	Possum K. Dam	1942-44	2.710	565,070	163	256,985	.013	.033	13,310
Brazos	Brazos	Mineral Wells[1]	1924-34	10.332	953,550	6,506	9,920,060	.468	.764	13,910
Brazos	Brazos	Glen Rose[1]	1924-29	4.588	1,181,370	8,378	12,773,810	.537	.794	15,600
Brazos	Brazos	Waco[1]	1924-33	9.254	1,717,130	10,325	15,742,010	.536	.673	19,260
Brazos	Brazos	Bryan[1]	1899-02	3.419	4,156,740	39,117	-----	1.340	.943*	29,190
Brazos	Brazos	Richmond-Rosenberg	1924-44	20.306	5,753,615	24,902	38,024,439	.715	.485	34,810
Colorado	Llano	Llano	1942-44	2.167	229,626	228	348,274	.057	.111	4,000
Colorado	Pedernales	Johnson City	1942-44	2.167	124,679	298	453,309	.315	.267	947
Colorado	Colorado	San Saba	1940-44	14.055	1,383,066	3,505	5,344,306	.186	.294	18,800
Colorado	Colorado	Tow[1]	1927-32	5.162	1,245,440	3,360	5,122,520	.174	.302	19,300
Colorado	Colorado	Inks Dam	1942-44	2.167	791,712	72	109,063	.004	.010	19,490
Colorado	Colorado	Austin	1937-44	7.164	1,956,228	1,112	1,694,640	.042	.064	26,360
Colorado	Colorado	Columbus-E. Lake[4]	30-33-37-41	6.997	3,167,710	5,398	8,991,960	.202	.209	29,140

*Percent of silt by volume

1/ 4/ Silt progress reports by numbers showing data by months when station was discontinued.

(Continued next page)

(Continued)

Watershed	Stream	Silt station	Years samples taken	Total Length record	Average per Year: Run-off	Silt		Silt per sq-mi net watershed	Silt by weight	Net drainage area
				years	ac-ft	ac-ft	tons	ac-ft	percent	sq-mi
Guadalupe	Guadalupe	Spring Branch	1942-44	2.748	213,082	154	234,873	.108	.031	1,432
Neches	Neches	Rockland	1930-44	14.148	1,767,976	241	367,729	.068	.015	3,539
Nueces	Nueces	Cctulla	1942-44	2.748	250;415	111	169;308	.021	.050	5;260
Nueces	Nueces	Three Rivers	1927-44	17.000	723;119	531	809;604	.034	.082	15;600
Nueces	Nueces	Corpus Christi Dam	1942-44	2.660	824,402	225	343,925	.014	.032	16,060
Red	Pease	Crowell	1942-44	2.252	76,155	581	885,675	.241	.954	2,410
Red	Wichita	Wichita Falls[1]	1900-02	2.014	566,420	5,516	------	1.776	.974*	3,105
Red	Red	Denison[1]	30-33 36-39	6.260	3,326,780	13,640	20,793,380	.415	.459	32,840
Rio Grande	Rio Grande	Eagle Pass	1934-43[5]	9.068	3;180;057	9;776	14;904;545	.078	.344	125;260
Rio Grande	Rio Grande	Roma	1929-43[5]	14.184	4,166,619	12,588	19,192,311	.080	.333	157,204
Sabine	Sabine	Logansport, La.	32-33 35-44	10.156	2,515,480	547	834,234	.113	.024	4,858
San Antonio	San Antonio	Falls City[1]	1927-33	5.967	127;120	142	216;730	.069	.125	2;070
San Antonio	San Antonio	Goliad	1942-44	2.748	552,365	514	784,465	.131	.104	3,914
San Jacinto	West Fork	Humble	32-33 37-44	8.337	752,009	220	335,994	.121	.033	1,811
Trinity	Trinity	Rosser[1]	1938-40	1.598	760;700	936	1;504;920	.122	.145	8;057
Trinity	Trinity	Romayor	1936-44	8.142	3,156,488	4,341	6,618,293	.253	.079	17,190

*Percent by volume

1/ 4/ Silt progress reports by numbers showing data by months when station was discontinued.

5/ Station was discontinued on May 31, 1943.