14241500 SOUTH FORK TOUTLE RIVER AT TOUTLE, WA

LOCATION.--Lat 46°19'26", long 122°42'28", in SE ¼ NW ¼ sec.29, T.10 N., R.1 E., Cowlitz County, Hydrologic Unit 17080005, on right bank at upstream side of bridge on South Toutle Road, 3.1 mi downstream from Johnson Creek, 0.8 mi upstream from Studebaker Creek, approximately 1.0 mi upstream from mouth, and 1.3 mi southeast of Toutle.

DRAINAGE AREA.--120 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1939 to December 1957, February 1996 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 460 ft above NGVD of 1929, from topographic map. Prior to Feb. 9, 1996, water-stage recorder at site 0.6 mi upstream, at datum at NGVD of 1929 (river-profile survey).

REMARKS.--Records good. No regulation or diversion upstream from station.

AVERAGE DISCHARGE.--25 years (water years 1940-57, 1997-2003), 632 ft^3/s, 71.57 in/yr, 457,900 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, not determined Feb. 8, 1996, gage height, 28.81 ft, from high-water mark; maximum daily discharge, 17,400 ft^3/s Feb. 8, 1996; minimum discharge, 61 ft^3/s Sept. 3-6, 2003.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Jan. 9, 1990, produced discharge of 19,200 ft^3/s as recorded at station 14241490, 2.2 mi upstream. A flood believed to be in excess of 100,000 ft^3/s (from Ph.d. thesis by Fairchild, U. Wash., 1985) occurred at about 1000 hours on May 18, 1980, from a mudflow caused by the eruption of Mount St. Helens.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 4,200 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Dec 16	0845	4,720	25.35	Mar 22	1100	4,670	25.32
Jan 31	1500	*9,360	*27.47				

Minimum discharge, 61 ft^3/s, Sept. 3, 4, 5, 6, gage height, 20.80 ft.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	100	67	124	1,240	4,310	481	866	584	220	131	81	67
2	83	67	121	1,690	2,520	460	802	534	211	120	81	64
3	120	67	118	2,290	1,830	492	762	503	201	117	81	63
4	131	67	117	2,410	1,420	435	697	648	192	114	81	62
5	99	69	115	2,090	1,140	541	657	688	185	113	81	62
6	90	71	111	1,400	952	822	717	585	178	114	84	63
7	84	78	108	1,050	819	972	879	524	174	110	81	71
8	80	184	106	838	716	977	1,060	491	171	114	80	92
9	78	289	104	702	631	1,680	1,310	441	169	114	84	95
10	76	296	253	603	581	1,750	1,130	415	169	106	87	87
11	73	261	564	536	523	1,600	1,060	388	166	104	85	101
12	73	319	999	725	476	2,760	1,090	373	158	103	80	105
13	71	424	1,380	696	441	3,370	1,440	356	173	101	78	79
14	70	418	1,980	802	410	2,720	1,180	347	173	101	77	72
15	69	279	2,900	668	415	2,300	973	367	154	98	76	70
16	69	282	3,490	574	557	1,900	835	384	146	96	81	86
17	67	371	1,860	506	748	1,500	784	373	140	94	79	110
18	67	303	1,220	463	807	1,230	734	364	139	92	76	85
19	68	380	895	432	699	1,080	644	328	141	90	75	78
20	71	321	700	406	757	1,320	583	310	145	89	74	78
21	71	264	618	391	1,090	2,080	699	302	172	90	73	73
22	69	224	515	503	1,220	3,780	696	296	216	88	72	70
23	68	199	446	792	1,040	2,600	734	295	181	86	73	68
24	67	180	393	877	854	1,780	1,040	300	160	86	73	67
25	67	165	375	850	729	1,450	861	317	147	86	73	65
26	67	154	467	2,380	645	1,500	781	284	139	85	74	64
27	67	146	716	1,720	572	1,330	687	264	134	84	77	65
28	70	140	736	1,200	525	1,120	602	254	132	82	75	64
29	74	135	657	1,150	---	943	606	248	128	82	73	e65
30	71	129	736	1,630	---	836	604	239	130	81	71	67
31	68	---	1,160	7,420	---	865	---	236	---	81	68	---
TOTAL	2,398	6,349	24,084	39,034	27,427	46,674	25,513	12,038	4,944	3,052	2,404	2,258
MEAN	77.4	212	777	1,259	980	1,506	850	388	165	98.5	77.5	75.3
MAX	131	424	3,490	7,420	4,310	3,780	1,440	688	220	131	87	110
MIN	67	67	104	391	410	435	583	236	128	81	68	62
AC-FT	4,760	12,590	47,770	77,420	54,400	92,580	50,610	23,880	9,810	6,050	4,770	4,480
CFSM	0.64	1.76	6.47	10.5	8.16	12.5	7.09	3.24	1.37	0.82	0.65	0.63
IN.	0.74	1.97	7.47	12.10	8.50	14.47	7.91	3.73	1.53	0.95	0.75	0.70

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1940 - 2003, BY WATER YEAR (WY)

MEAN	372	887	1,182	1,040	1,090	852	758	648	406	193	116	133
MAX	1,222	1,655	2,031	2,488	2,451	1,647	1,142	1,097	772	414	172	409
(WY)	(1998)	(1956)	(1997)	(1953)	(1996)	(1950)	(1996)	(1948)	(1955)	(1955)	(1954)	(1941)
MIN	75.3	106	389	318	381	297	257	211	132	97.2	77.5	75.3
(WY)	(1953)	(1953)	(1945)	(2001)	(1941)	(1941)	(1941)	(1947)	(1940)	(1940)	(2003)	(2003)

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1940 - 2003	
ANNUAL TOTAL	203,273		196,175			
ANNUAL MEAN	557		537		632	
HIGHEST ANNUAL MEAN					928	1997
LOWEST ANNUAL MEAN					317	2001
HIGHEST DAILY MEAN	6,880	Jan 7	7,420	Jan 31	17,400	Feb 8, 1996
LOWEST DAILY MEAN	67	Sep 26	62	Sep 4	62	Sep 4, 2003
ANNUAL SEVEN-DAY MINIMUM	68	Oct 22	64	Aug 31	64	Aug 31, 2003
ANNUAL RUNOFF (AC-FT)	403,200		389,100		457,900	
ANNUAL RUNOFF (CFSM)	4.64		4.48		5.27	
ANNUAL RUNOFF (INCHES)	63.01		60.81		71.57	
10 PERCENT EXCEEDS	1,200		1,310		1,350	
50 PERCENT EXCEEDS	376		253		425	
90 PERCENT EXCEEDS	74		71		98	

e Estimated

14241500 SOUTH FORK TOUTLE RIVER AT TOUTLE, WA—Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--February 1996 to current year.

PERIOD OF DAILY RECORD.--
SUSPENDED SEDIMENT DISCHARGE: February 1996 to March 1999, October 1999 to current year. Water year 1999, daily sediment discharge values for period October to March, monthly sediment discharge values only for the period April to September.

INSTRUMENTATION.--Samples obtained by observer, February 1996 to September 1999. Automatic pumping sampler since October 1999.

REMARKS.--Station was placed in operation after the station at South Fork Toutle River at Camp 12, near Toutle, WA (14241490) was destroyed by flood of February 1996. Current site is 2.2 miles downstream from destroyed station.

EXTREMES FOR PERIOD OF DAILY RECORDS.--
SEDIMENT CONCENTRATION: Maximum daily, 18,000 mg/L (estimated) Oct. 4, 1997; minimum, 1 mg/L on many days 1996, 1998-2003,
SEDIMENT DISCHARGE: Maximum daily, 356,000 tons Jan. 1, 1997; minimum, 0.25 tons Aug. 29, and Oct. 25, 2002.

EXTREMES FOR CURRENT YEAR.--
SEDIMENT CONCENTRATION: Maximum daily, 2,890 mg/L Jan. 31; minimum, 1 mg/L on many days.
SEDIMENT DISCHARGE: Maximum daily, 62,800 tons Jan. 31; minimum, 0.25 tons Oct. 25.

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY)
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Day	Mean discharge (cfs)	Mean concen-tration (mg/l)	Load (tons/day)	Mean discharge (cfs)	Mean concen-tration (mg/l)	Load (tons/day)	Mean discharge (cfs)	Mean concen-tration (mg/l)	Load (tons/day)
		OCTOBER			NOVEMBER			DECEMBER	
1	100	7	0.64	67	3	0.55	124	3	0.89
2	83	3	0.75	67	4	0.67	121	1	0.46
3	120	6	2.0	67	3	0.59	118	2	0.56
4	131	7	2.7	67	4	0.66	117	1	0.36
5	99	2	0.57	69	2	0.45	115	1	0.34
6	90	2	0.60	71	3	0.63	111	2	0.56
7	84	2	0.35	78	6	1.3	108	2	0.58
8	80	2	0.53	184	24	13	106	2	0.54
9	78	2	0.32	289	27	21	104	1	0.38
10	76	3	0.53	296	19	16	253	6	6.6
11	73	3	0.59	261	7	5.1	564	52	106
12	73	3	0.59	319	25	29	999	209	772
13	71	3	0.57	424	30	35	1,380	203	836
14	70	3	0.56	418	e44	e52	1,980	548	3,640
15	69	3	0.56	279	e22	e17	2,900	841	6,700
16	69	3	0.55	282	e24	e21	3,490	1,210	12,100
17	67	3	0.54	371	e41	e41	1,860	354	1,860
18	67	3	0.54	303	e25	e20	1,220	198	663
19	68	3	0.58	380	e41	e42	895	117	287
20	71	5	0.89	321	e30	e27	700	36	70
21	71	6	1.2	264	22	16	618	21	36
22	69	7	1.3	224	17	10	515	15	21
23	68	6	1.0	199	14	7.4	446	13	16
24	67	3	0.56	180	11	5.5	393	13	14
25	67	1	0.25	165	10	4.3	375	8	8.4
26	67	2	0.32	154	5	1.9	467	19	24
27	67	2	0.45	146	2	0.69	716	55	120
28	70	5	0.91	140	3	1.3	736	48	96
29	74	5	1.0	135	2	0.83	657	27	49
30	71	3	0.54	129	2	0.74	736	35	74
31	68	3	0.53	---	---	---	1,160	82	262
TOTAL	2,398	---	23.02	6,349	---	392.61	24,084	---	27,765.67

14241500 SOUTH FORK TOUTLE RIVER AT TOUTLE, WA—Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY)—CONTINUED
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Day	Mean discharge (cfs)	Mean concen-tration (mg/l)	Load (tons/day)	Mean discharge (cfs)	Mean concen-tration (mg/l)	Load (tons/day)	Mean discharge (cfs)	Mean concen-tration (mg/l)	Load (tons/day)
		JANUARY			FEBRUARY			MARCH	
1	1,240	104	387	4,310	1,400	17,900	481	3	4.1
2	1,690	172	835	2,520	434	3,050	460	2	2.5
3	2,290	380	2,500	1,830	210	1,040	492	2	2.3
4	2,410	319	2,320	1,420	194	744	435	3	3.7
5	2,090	189	1,120	1,140	187	579	541	6	11
6	1,400	72	279	952	136	354	822	14	32
7	1,050	40	113	819	55	121	972	72	191
8	838	29	67	716	24	47	977	11	30
9	702	12	23	631	8	13	1,680	122	595
10	603	7	11	581	5	7.8	1,750	75	357
11	536	6	9.0	523	5	7.2	1,600	50	219
12	725	17	35	476	6	7.4	2,760	440	3,820
13	696	13	25	441	5	6.2	3,370	734	6,720
14	802	12	27	410	5	5.0	2,720	369	2,780
15	668	7	13	415	7	8.0	2,300	121	759
16	574	3	4.9	557	51	79	1,900	45	234
17	506	1	1.7	748	85	177	1,500	9	40
18	463	1	1.4	807	81	180	1,230	16	52
19	432	3	3.1	699	65	123	1,080	14	41
20	406	4	4.0	757	87	180	1,320	28	102
21	391	2	2.2	1,090	136	405	2,080	110	704
22	503	14	24	1,220	120	395	3,780	637	6,760
23	792	26	57	1,040	75	213	2,600	263	1,950
24	877	29	71	854	45	105	1,780	85	414
25	850	23	53	729	29	58	1,450	55	217
26	2,380	325	2,250	645	15	26	1,500	62	252
27	1,720	121	592	572	5	7.7	1,330	47	169
28	1,200	38	127	525	2	2.3	1,120	23	70
29	1,150	25	81	---	---	---	943	15	37
30	1,630	90	432	---	---	---	836	9	20
31	7,420	2,890	62,800	---	---	---	865	10	23
TOTAL	39,034	---	74,268.3	27,427	---	25,840.6	46,674	---	26,611.6
		APRIL			MAY			JUNE	
1	866	13	30	584	1	1.7	220	1	0.72
2	802	6	13	534	2	2.5	211	1	0.62
3	762	6	12	503	1	1.6	201	10	5.2
4	697	12	22	648	3	5.3	192	11	5.9
5	657	7	13	688	3	5.0	185	12	5.8
6	717	7	14	585	1	1.6	178	12	5.8
7	879	13	33	524	1	1.4	174	12	5.8
8	1,060	10	28	491	1	1.3	171	13	5.9
9	1,310	15	54	441	1	1.2	169	12	5.6
10	1,130	14	44	415	1	1.1	169	11	4.9
11	1,060	9	27	388	1	1.1	166	9	4.0
12	1,090	e13	e39	373	1	1.0	158	7	3.1
13	1,440	e37	e150	356	1	1.0	173	6	2.7
14	1,180	e20	e64	347	1	1.1	173	9	4.3
15	973	21	56	367	2	2.0	154	6	2.5
16	835	12	27	384	2	2.1	146	5	1.8
17	784	8	18	373	2	2.0	140	5	1.7
18	734	10	20	364	2	1.7	139	4	1.6
19	644	5	8.3	328	1	1.1	141	4	1.6
20	583	5	7.5	310	1	0.97	145	5	2.1
21	699	5	9.1	302	1	1.1	172	12	5.5
22	696	11	21	296	10	7.6	216	14	8.3
23	734	15	31	295	25	20	181	7	3.7
24	1,040	13	37	300	10	7.9	160	4	1.8
25	861	6	14	317	7	6.3	147	3	1.0
26	781	9	19	284	2	1.6	139	3	0.95
27	687	6	11	264	2	1.3	134	2	0.89
28	602	3	4.2	254	2	1.2	132	2	0.84
29	606	1	1.7	248	2	1.1	128	2	0.78
30	604	1	1.6	239	1	0.94	130	2	0.76
31	---	---	---	236	1	0.85	---	---	---
TOTAL	25,513	---	829.4	12,038	---	86.66	4,944	---	96.16

14241500 SOUTH FORK TOUTLE RIVER AT TOUTLE, WA—Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY)—CONTINUED
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Day	Mean discharge (cfs)	Mean concen-tration (mg/l)	Load (tons/day)	Mean discharge (cfs)	Mean concen-tration (mg/l)	Load (tons/day)	Mean discharge (cfs)	Mean concen-tration (mg/l)	Load (tons/day)
		JULY			AUGUST			SEPTEMBER	
1	131	2	0.74	81	2	0.39	67	2	0.37
2	120	2	0.65	81	2	0.38	64	2	0.41
3	117	2	0.63	81	2	0.37	63	3	0.49
4	114	2	0.62	81	2	0.36	62	2	0.42
5	113	2	0.61	81	2	0.35	62	2	0.34
6	114	2	0.62	84	2	0.36	63	2	0.35
7	110	2	0.60	81	2	0.33	71	3	0.66
8	114	2	0.62	80	1	0.32	92	6	1.6
9	114	2	0.62	84	1	0.33	95	8	2.0
10	106	2	0.58	87	5	1.1	87	7	1.7
11	104	2	0.57	85	18	4.0	101	9	2.5
12	103	2	0.56	80	28	6.1	105	11	3.2
13	101	2	0.55	78	20	4.3	79	6	1.3
14	101	2	0.55	77	10	2.2	72	4	0.83
15	98	2	0.53	76	2	0.50	70	3	0.65
16	96	2	0.52	81	3	0.61	86	8	1.9
17	94	2	0.52	79	2	0.39	110	12	3.6
18	92	2	0.50	76	3	0.69	85	8	1.9
19	90	2	0.50	75	5	0.98	78	6	1.3
20	89	2	0.49	74	6	1.3	78	5	1.1
21	90	2	0.49	73	7	1.3	73	5	0.91
22	88	2	0.48	72	6	1.3	70	4	0.76
23	86	2	0.47	73	6	1.2	68	4	0.70
24	86	2	0.47	73	4	0.84	67	4	0.65
25	86	2	0.47	73	5	0.94	65	3	0.60
26	85	2	0.46	74	4	0.89	64	3	0.56
27	84	2	0.44	77	4	0.79	65	3	0.53
28	82	2	0.42	75	3	0.69	64	3	0.49
29	82	2	0.42	73	3	0.60	e65	e3	e0.53
30	81	2	0.40	71	3	0.52	67	3	0.44
31	81	2	0.39	68	2	0.43	---	---	---
TOTAL	3,052	---	16.49	2,404	---	34.86	2,258	---	32.79
YEAR	196,175	155,998.16							

e Estimated