Water-Data Report 2008

14240525 NORTH FORK TOUTLE RIVER BELOW SEDIMENT RETENTION STRUCTURE NEAR KID VALLEY, WA

Lower Columbia Basin
Lower Cowlitz Subbasin

LOCATION.--Lat 46°22′19″, long 122°34′40″ referenced to North American Datum of 1927, Cowlitz County, WA, Hydrologic Unit 17080005, 1.3 mi downstream from Sediment Retention Structure, on left bank, 0.7 mi upstream from the mouth of the Green River, 1.8 mi east of Kid Valley, and at mile 12.0.

DRAINAGE AREA.--175 mi^2.

SURFACE-WATER RECORDS

PERIOD OF RECORD.--October 1989 to September 1998, October 2000 to September 2002, October 2006 to current year.

REVISED RECORDS.--WDR-US-2007: 2001-02 (Average Annual Runoff).

GAGE.--Water-stage recorder. Datum of gage is 700.00 ft above sea level (levels by U.S. Army Corps of Engineers).

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

AVERAGE DISCHARGE FOR PERIOD OF RECORD.--13 years (water years 1990-98, 2001-2002, 2007-2008), 755 ft^3/s, 58.60 in/yr, 546,800 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 13,100 ft^3/s, Feb. 8, 1996, gage height, 62.13 ft; minimum discharge, 141ft^3/s, Sept. 24, 25, 2001.

EXTREMES OUTSIDE PERIOD OF RECORD.--An outstanding flood occurred on May 18, 1980, from a mudflow caused by the eruption ofMount St. Helens.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 3,000 ft^3/s and (or) maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)
Dec 3	1700	*7,050	*59.94
No other peak greater than base discharge			

Minimum daily discharge, 275 ft^3/s, Sept. 12.

14240525 NORTH FORK TOUTLE RIVER BELOW SEDIMENT RETENTION STRUCTURE NEAR KID VALLEY, WA—Continued

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2007 TO SEPTEMBER 2008
DAILY MEAN VALUES
[e, estimated]

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	462	383	388	715	765	1,240	675	820	e1,000	819	e480	e420
2	457	362	736	939	660	982	636	785	e960	809	e490	e400
3	538	e340	e5,000	1,090	603	897	618	826	e1,040	e840	e490	e380
4	470	e320	e4,000	1,330	571	830	690	843	e1,200	e780	e480	e370
5	370	e300	2,550	1,510	679	775	644	936	e1,070	e750	e470	e365
6	341	292	1,980	1,170	663	702	733	1,000	1,090	e730	e460	e360
7	400	286	e1,650	970	923	663	787	944	1,240	e710	e450	e355
8	452	282	e1,300	983	975	689	799	875	1,170	e690	e450	e350
9	395	278	e1,150	907	1,080	674	780	826	1,140	e680	e440	e345
10	398	387	e960	1,140	1,060	720	765	817	1,550	e670	e430	e335
11	372	332	e820	1,820	956	982	742	876	1,590	e650	e420	e300
12	358	499	726	1,640	899	860	860	855	1,300	e640	e420	e275
13	332	469	713	1,320	901	1,080	1,060	868	1,110	e620	e410	e300
14	313	336	698	1,180	785	1,260	1,140	1,170	1,040	e600	e410	e320
15	315	369	812	1,030	746	1,170	1,020	1,450	979	e580	e410	e325
16	334	654	730	855	723	1,010	884	1,840	947	e580	e400	e320
17	395	631	774	752	682	917	834	2,240	933	e570	e400	e315
18	564	666	839	703	651	1,020	824	2,240	863	e570	e410	e310
19	685	619	1,190	722	705	957	810	2,060	872	e560	e420	e315
20	798	554	1,360	710	685	901	767	2,010	860	e550	e480	e320
21	770	508	e1,300	e680	698	844	746	2,030	872	e540	e500	e340
22	623	446	e1,200	e670	703	749	681	1,870	881	e530	e470	e370
23	567	392	1,300	e660	688	863	766	1,550	853	e520	e440	383
24	560	370	1,610	648	696	847	720	1,390	824	e510	e450	352
25	542	351	1,200	682	723	779	648	1,450	804	e500	e460	335
26	497	365	1,030	768	713	870	676	1,360	802	e490	e460	314
27	475	435	905	695	721	773	711	1,330	787	e480	e470	314
28	449	383	925	613	752	814	899	1,280	811	e480	e480	312
29	434	487	883	654	921	791	1,010	1,250	844	e490	e460	317
30	422	376	909	635	---	724	943	1,130	850	e500	e440	313
31	408	---	748	778	---	690	---	e1,050	---	e490	e430	---
Total	14,496	12,472	40,386	28,969	22,327	27,073	23,868	39,971	30,282	18,928	13,880	10,130
Mean	468	416	1,303	934	770	873	796	1,289	1,009	611	448	338
Max	798	666	5,000	1,820	1,080	1,260	1,140	2,240	1,590	840	500	420
Min	313	278	388	613	571	663	618	785	787	480	400	275
Ac-ft	28,750	24,740	80,110	57,460	44,290	53,700	47,340	79,280	60,060	37,540	27,530	20,090
Cfsm	2.67	2.38	7.44	5.34	4.40	4.99	4.55	7.37	5.77	3.49	2.56	1.93

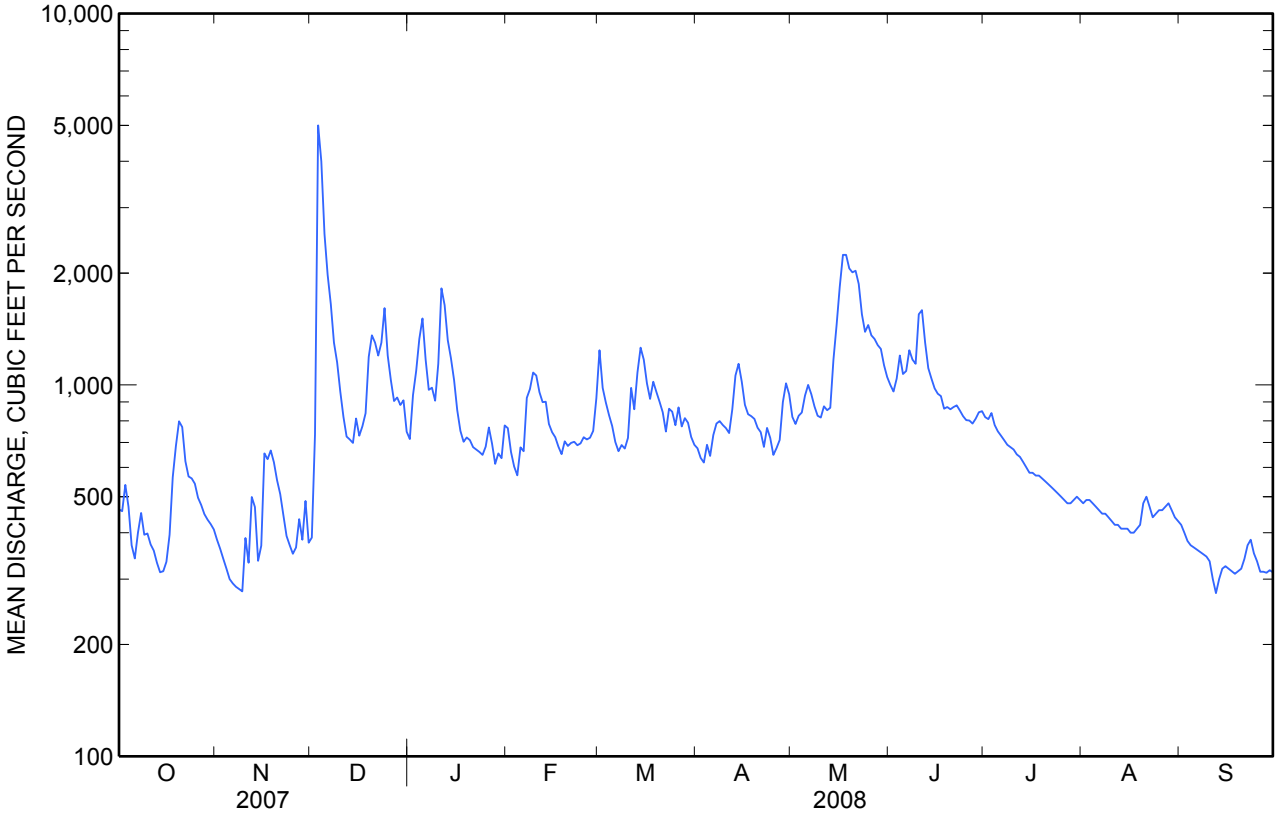
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1990 - 2008, BY WATER YEAR (WY)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Mean	403	900	1,159	1,075	1,098	1,025	988	846	645	410	286	246
Max	929	1,735	1,810	1,582	2,323	1,767	1,461	1,289	1,009	611	448	369
(WY)	(1998)	(2007)	(1996)	(1997)	(1996)	(1997)	(1991)	(2008)	(2008)	(2008)	(2008)	(1997)
Min	206	211	497	448	402	539	658	515	278	225	182	173
(WY)	(1994)	(1994)	(2001)	(2001)	(1993)	(1992)	(1992)	(1992)	(1992)	(1992)	(1990)	(1990)

14240525 NORTH FORK TOUTLE RIVER BELOW SEDIMENT RETENTION STRUCTURE NEAR KID VALLEY, WA—Continued

SUMMARY STATISTICS

	Calendar Year 2007		Water Year 2008		Water Years 1990 - 2008	
Annual total	250,218		282,782			
Annual mean	686		773		755	
Highest annual mean					1,074	1996
Lowest annual mean					465	2001
Highest daily mean	5,000	Dec 3	5,000	Dec 3	11,000	Feb 8, 1996
Lowest daily mean	236	Sep 9	275	Sep 12	140	Oct 1, 1989
Annual seven-day minimum	242	Sep 6	300	Nov 3	156	Aug 12, 1990
Annual runoff (ac-ft)	496,300		560,900		546,800	
Annual runoff (cfsm)	3.92		4.42		4.31	
10 percent exceeds	1,300		1,210		1,390	
50 percent exceeds	564		710		640	
90 percent exceeds	281		354		229	



14240525 NORTH FORK TOUTLE RIVER BELOW SEDIMENT RETENTION STRUCTURE NEAR KID VALLEY, WA—Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: May to September 1990, May to September 1991.
WATER TEMPERATURE: May to September 1990, May to September 1991, May 2001 to September 2002.
SUSPENDED SEDIMENT: February 2001 to September 2002, October 2006 to current year.

INSTRUMENTATION.--Automatic pumping sampler. D-74 suspended sediment sampler located near the bank operated cableway.

EXTREMES FOR PERIOD OF RECORD.--
SPECIFIC CONDUCTANCE: Maximum recorded, 999 microsiemens Sept. 26, 1991; minimum recorded, 322 microsiemens May 26, 1991.
WATER TEMPERATURE: Maximum recorded (more than 20 percent missing record), 29.7°C, July 22, 2002; minimum recorded 1.0°C Jan. 29, 2002.
SEDIMENT CONCENTRATION: Maximum daily, 79,800 mg/L Nov. 7, 2006; minimum daily, 82 mg/L Feb. 12, 2001.
SEDIMENT DISCHARGE: Maximum daily, 1,510,000 tons Nov. 7, 2006; minimum daily, 45 tons Sept. 22, 2001, Oct. 1-2, 2006.

EXTREMES FOR CURRENT YEAR.--
SEDIMENT CONCENTRATION: Maximum daily, 29,800 mg/L Dec. 3; minimum daily, 510 mg/L Sept. 30.
SEDIMENT DISCHARGE: Maximum daily, 402,000 tons Dec. 3; minimum daily, 409 tons Nov. 6.

14240525 NORTH FORK TOUTLE RIVER BELOW SEDIMENT RETENTION STRUCTURE NEAR KID VALLEY, WA—Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY)
WATER YEAR OCTOBER 2007 TO SEPTEMBER 2008
[e, estimated]

Day	Mean discharge (ft^3/s)	Mean concen-tration (mg/L)	Sediment discharge (tons/day)	Mean discharge (ft^3/s)	Mean concen-tration (mg/L)	Sediment discharge (tons/day)	Mean discharge (ft^3/s)	Mean concen-tration (mg/L)	Sediment discharge (tons/day)
		October			November			December	
1	462	2,730	3,370	383	1,100	1,140	388	1,120	1,170
2	457	2,190	2,780	362	985	964	736	1,740	3,460
3	538	2,600	3,850	e340	1,530	e1,480	e5,000	29,800	e402,000
4	470	1,730	2,190	e320	1,550	e1,340	e4,000	20,000	e216,000
5	370	1,290	1,290	e300	1,240	e1,010	2,550	5,430	37,300
6	341	932	857	292	518	409	1,980	4,960	26,500
7	400	1,250	1,410	286	702	543	e1,650	3,010	e13,400
8	452	1,640	2,040	282	874	666	e1,300	e2,440	e8,560
9	395	822	881	278	959	719	e1,150	e2,200	e6,830
10	398	1,040	1,130	387	1,370	1,420	e960	2,100	e5,440
11	372	1,250	1,260	332	1,200	1,080	e820	3,060	e6,770
12	358	1,260	1,220	499	2,290	3,710	726	5,060	9,890
13	332	1,160	1,040	469	1,610	2,100	713	4,610	8,880
14	313	1,070	902	336	1,540	1,370	698	4,850	9,170
15	315	1,030	881	369	1,680	1,640	812	7,600	16,700
16	334	1,080	972	654	2,750	4,980	730	5,900	11,700
17	395	1,460	1,590	631	2,180	3,710	774	5,080	10,700
18	564	e2,080	e3,160	666	1,490	2,670	839	8,420	19,700
19	685	e2,520	e4,700	619	1,750	2,920	1,190	10,600	34,500
20	798	e3,180	e6,870	554	1,400	2,100	1,360	8,660	32,200
21	770	e3,360	e7,010	508	1,760	2,400	e1,300	7,130	e25,000
22	623	e2,930	e4,930	446	1,620	1,950	e1,200	7,600	e24,600
23	567	e2,450	e3,760	392	1,440	1,520	1,300	9,800	37,400
24	560	e2,000	e3,000	370	1,320	1,320	1,610	9,990	44,000
25	542	1,690	2,470	351	1,280	1,210	1,200	5,740	18,800
26	497	1,740	2,330	365	1,340	1,330	1,030	3,740	10,500
27	475	1,210	1,560	435	1,330	1,560	905	2,600	6,330
28	449	1,300	1,580	383	1,260	1,300	925	2,130	5,320
29	434	1,280	1,510	487	1,450	1,920	883	1,770	4,210
30	422	991	1,130	376	1,230	1,250	909	1,640	4,020
31	408	1,090	1,200	---	---	---	748	1,540	3,110
Total	14,496	---	72,873	12,472	---	51,731	40,386	---	1,064,160

14240525 NORTH FORK TOUTLE RIVER BELOW SEDIMENT RETENTION STRUCTURE NEAR KID VALLEY, WA—Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY)
WATER YEAR OCTOBER 2007 TO SEPTEMBER 2008
[e, estimated]

Day	Mean discharge (ft^3/s)	Mean concen-tration (mg/L)	Sediment discharge (tons/day)	Mean discharge (ft^3/s)	Mean concen-tration (mg/L)	Sediment discharge (tons/day)	Mean discharge (ft^3/s)	Mean concen-tration (mg/L)	Sediment discharge (tons/day)
		January			February			March	
1	715	1,440	2,780	765	3,590	7,430	1,240	e7,930	e26,700
2	939	e3,190	e8,440	660	3,190	5,680	982	e6,250	e16,600
3	1,090	e4,100	e12,300	603	3,060	4,990	897	e5,300	e12,800
4	1,330	e6,260	e23,100	571	3,050	4,710	830	4,750	10,600
5	1,510	e8,020	e33,100	679	3,420	6,290	775	4,970	10,400
6	1,170	e5,490	e17,400	663	3,320	5,980	702	4,580	8,680
7	970	4,270	11,200	923	e6,690	e16,800	663	3,920	7,030
8	983	4,100	11,000	975	e6,450	e17,200	689	2,710	5,050
9	907	3,840	9,490	1,080	e7,180	e21,000	674	2,260	4,120
10	1,140	e4,960	e16,200	1,060	e6,480	e18,700	720	3,200	6,280
11	1,820	e11,200	e55,000	956	e5,360	e13,900	982	7,800	20,700
12	1,640	e10,200	e45,100	899	e5,030	e12,200	860	6,580	15,300
13	1,320	e7,400	e26,600	901	e4,880	e11,900	1,080	8,670	25,900
14	1,180	7,120	23,200	785	e4,370	6,490	1,260	8,990	30,600
15	1,030	7,690	21,400	746	2,900	5,840	1,170	6,410	20,300
16	855	6,440	14,900	723	2,810	5,490	1,010	7,870	21,500
17	752	5,830	11,900	682	2,730	5,030	917	6,650	16,500
18	703	6,080	11,500	651	2,670	4,690	1,020	5,590	15,400
19	722	5,910	11,500	705	2,680	5,100	957	4,250	11,000
20	710	4,750	9,130	685	2,700	4,990	901	4,260	10,400
21	e680	e3,850	e6,960	698	2,710	5,120	844	4,500	10,200
22	e670	e3,990	e7,220	703	2,730	5,180	749	4,730	9,580
23	e660	4,030	e7,720	688	2,750	5,100	863	5,490	13,000
24	648	3,780	6,630	696	2,760	5,190	847	5,420	12,500
25	682	3,730	6,870	723	2,780	5,430	779	4,340	9,130
26	768	3,870	8,230	713	2,790	5,380	870	4,920	11,600
27	695	3,420	6,440	721	2,810	5,480	773	4,120	8,630
28	613	3,300	5,470	752	2,930	5,950	814	4,750	10,500
29	654	3,700	6,540	921	e4,340	e11,700	791	4,350	9,280
30	635	3,680	6,320	---	---	---	724	3,530	6,900
31	778	3,790	7,970	---	---	---	690	3,060	5,710
Total	28,969	---	451,610	22,327	---	238,940	27,073	---	402,890

14240525 NORTH FORK TOUTLE RIVER BELOW SEDIMENT RETENTION STRUCTURE NEAR KID VALLEY, WA—Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY)
WATER YEAR OCTOBER 2007 TO SEPTEMBER 2008
[e, estimated]

Day	Mean discharge (ft^3/s)	Mean concen-tration (mg/L)	Sediment discharge (tons/day)	Mean discharge (ft^3/s)	Mean concen-tration (mg/L)	Sediment discharge (tons/day)	Mean discharge (ft^3/s)	Mean concen-tration (mg/L)	Sediment discharge (tons/day)
		April			May			June	
1	675	2,670	4,860	820	3,450	7,640	e1,000	5,470	e14,800
2	636	2,270	3,900	785	3,300	7,000	e960	5,100	e13,200
3	618	2,030	3,400	826	3,380	7,550	e1,040	4,700	e13,200
4	690	1,940	3,590	843	3,570	8,120	e1,200	4,470	e14,500
5	644	1,210	2,110	936	4,020	10,200	e1,070	4,500	e13,000
6	733	1,650	3,290	1,000	4,240	11,500	1,090	6,540	19,400
7	787	4,030	8,570	944	3,890	9,930	1,240	7,200	24,000
8	799	3,720	8,030	875	3,640	8,610	1,170	7,160	22,600
9	780	4,130	8,680	826	3,490	7,800	1,140	7,370	22,700
10	765	4,260	8,790	817	3,490	7,710	1,550	10,400	44,500
11	742	3,520	7,040	876	3,690	8,720	1,590	5,920	25,800
12	860	3,980	9,790	855	3,550	8,200	1,300	3,600	12,700
13	1,060	6,670	19,100	868	3,870	9,090	1,110	2,880	8,600
14	1,140	7,810	24,100	1,170	5,240	16,900	1,040	3,120	8,790
15	1,020	5,850	16,100	1,450	6,440	25,300	979	3,360	8,880
16	884	4,310	10,300	1,840	9,330	47,100	947	3,570	9,130
17	834	3,530	7,950	2,240	14,300	86,900	933	3,550	8,940
18	824	3,300	7,340	2,240	16,200	98,200	863	3,300	7,700
19	810	3,300	7,220	2,060	10,200	57,000	872	3,020	7,100
20	767	3,180	6,570	2,010	9,380	51,100	860	2,730	6,330
21	746	2,810	5,650	2,030	9,460	51,800	872	2,450	5,770
22	681	2,620	4,830	1,870	8,430	42,700	881	2,260	5,360
23	766	3,100	6,410	1,550	6,800	28,600	853	2,100	4,820
24	720	2,910	5,670	1,390	6,350	23,800	824	1,930	4,300
25	648	2,760	4,830	1,450	6,500	25,400	804	1,770	3,850
26	676	2,860	5,240	1,360	6,150	22,600	802	1,610	3,490
27	711	2,880	5,520	1,330	5,790	20,800	787	1,630	3,470
28	899	3,850	9,440	1,280	5,510	19,100	811	3,170	7,200
29	1,010	4,340	11,800	1,250	5,240	17,700	844	11,800	26,800
30	943	3,750	9,560	1,130	5,090	15,500	850	11,900	27,300
31	---	---	---	e1,050	5,420	e16,100	---	---	---
Total	23,868	---	239,680	39,971	---	778,670	30,282	---	398,230

14240525 NORTH FORK TOUTLE RIVER BELOW SEDIMENT RETENTION STRUCTURE NEAR KID VALLEY, WA—Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY)
WATER YEAR OCTOBER 2007 TO SEPTEMBER 2008
[e, estimated]

Day	Mean discharge (ft³/s)	Mean concen-tration (mg/L)	Sediment discharge (tons/day)	Mean discharge (ft³/s)	Mean concen-tration (mg/L)	Sediment discharge (tons/day)	Mean discharge (ft³/s)	Mean concen-tration (mg/L)	Sediment discharge (tons/day)
		July			August			September	
1	819	11,100	24,600	e480	2,460	e3,190	e420	1,660	e1,880
2	809	15,100	32,600	e490	1,240	e1,640	e400	1,470	e1,590
3	e840	12,600	e28,600	e490	1,080	e1,430	e380	1,290	e1,320
4	e780	8,820	e18,600	e480	896	e1,160	e370	1,310	e1,310
5	e750	5,420	e11,000	e470	1,090	e1,380	e365	1,460	e1,440
6	e730	2,600	e5,120	e460	1,130	e1,400	e360	1,440	e1,400
7	e710	2,860	e5,480	e450	995	e1,210	e355	1,550	e1,490
8	e690	2,890	e5,380	e450	728	e884	e350	1,200	e1,130
9	e680	2,770	e5,090	e440	869	e1,030	e345	913	e850
10	e670	2,660	e4,810	e430	1,480	e1,720	e335	1,090	e986
11	e650	2,540	e4,460	e420	1,480	e1,680	e300	660	e535
12	e640	2,430	e4,200	e420	1,390	e1,580	e275	532	e395
13	e620	2,310	e3,870	e410	1,670	e1,850	e300	631	e511
14	e600	2,200	e3,560	e410	2,010	e2,230	e320	683	e590
15	e580	2,080	e3,260	e410	1,960	e2,170	e325	688	e604
16	e580	2,160	e3,380	e400	1,400	e1,510	e320	695	e600
17	e570	2,410	e3,710	e400	1,390	e1,500	e315	702	e597
18	e570	2,700	e4,160	e410	2,000	e2,210	e310	709	e593
19	e560	3,020	e4,570	e420	1,620	e1,840	e315	716	e609
20	e550	3,190	e4,740	e480	1,890	e2,450	e320	723	e625
21	e540	2,660	e3,880	e500	3,340	e4,510	e340	730	e670
22	e530	2,230	e3,190	e470	3,270	e4,150	e370	737	e736
23	e520	2,920	e4,100	e440	1,490	e1,770	383	743	768
24	e510	3,580	e4,930	e450	2,430	e2,950	352	750	712
25	e500	3,240	e4,370	e460	3,110	e3,860	335	757	686
26	e490	2,760	e3,650	e460	2,760	e3,430	314	753	637
27	e480	2,380	e3,080	e470	2,580	e3,270	314	648	548
28	e480	2,530	e3,280	e480	2,390	e3,100	312	744	627
29	e490	2,750	e3,640	e460	2,210	e2,740	317	710	607
30	e500	2,960	e4,000	e440	2,030	e2,410	313	510	423
31	e490	3,180	e4,210	e430	1,840	e2,140	---	---	---
Total	18,928	---	223,520	13,880	---	68,394	10,130	---	25,469

	Mean discharge (ft³/s)	Mean concen-tration (mg/L)	Sediment discharge (tons/day)
Year	282,782	---	4,016,167