Water-Data Report 2008

01426500 WEST BRANCH DELAWARE RIVER AT HALE EDDY, NY

Upper Delaware Basin
Upper Delaware Subbasin

LOCATION.--Lat 42°00′11″, long 75°23′02″ referenced to North American Datum of 1927, Delaware County, NY, Hydrologic Unit 02040101, on left bank at downstream side of bridge on County Highway 56 in Hale Eddy, and 9 mi upstream from confluence of East and West Branches near Hancock. Water-quality sampling site at discharge station.

DRAINAGE AREA.--595 mi^2.

SURFACE-WATER RECORDS

PERIOD OF RECORD.--November 1912 to current year.

REVISED RECORDS.--WSP 871: 1916. WDR NY-82-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 946.46 ft above NGVD of 1929. Prior to Sept. 8, 1928, nonrecording gage.

REMARKS.--Records good except those for estimated daily discharges, which are fair. Subsequent to October 1963, entire flow from 454 mi^2 drainage area controlled by Cannonsville Reservoir (see 01424997). Part of flow diverted for New York City municipal supply. Remainder of flow (except for conservation releases and spill) impounded for release during periods of low flow in the lower Delaware River basin, as directed by the Delaware River Master. Satellite and telephone gage-height and temperature telemeter at station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge prior to construction of Cannonsville Reservoir, 28,900 ft^3/s, Mar. 22, 1948, gage height, 15.69 ft; maximum gage height, 15.8 ft, Sept. 30, 1924, from graph based on gage readings; maximum discharge since construction of Cannonsville Reservoir, 43,400 ft^3/s, June 28, 2006, gage height, 19.10 ft; minimum discharge, 17 ft^3/s, Oct. 20, 1963; minimum gage height, 1.03 ft, Aug. 4, 1936.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Oct. 10, 1903, reached a stage of 20.3 ft, from floodmarks, discharge, about 46,000 ft^3/s.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 11,400 ft^3/s, Mar. 8, gage height, 10.51 ft; minimum discharge, 159 ft^3/s, Oct. 19, gage height, 1.76 ft.

01426500 WEST BRANCH DELAWARE RIVER AT HALE EDDY, NY—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	1,050	337	510	2,000	1,770	e1,830	3,600	266	309	303	324	646
2	1,090	305	456	1,940	2,120	1,830	4,030	376	329	300	323	660
3	1,130	274	496	e1,750	1,920	1,840	3,810	384	324	303	323	684
4	1,130	252	452	e1,750	1,840	2,090	3,980	458	327	691	324	729
5	1,250	236	398	e1,780	1,810	5,920	4,540	415	320	612	320	246
6	1,280	291	e346	1,830	3,040	6,050	4,220	395	320	364	336	176
7	1,290	274	e328	1,960	2,700	5,810	3,750	386	319	364	324	177
8	1,220	247	e315	2,390	3,140	8,400	3,310	392	335	321	440	172
9	998	234	306	3,240	3,360	10,900	2,930	395	349	326	520	253
10	779	239	312	2,880	3,230	8,580	2,610	394	657	309	472	198
11	540	236	316	3,550	e2,710	6,120	2,380	368	576	858	433	182
12	456	226	761	3,120	e2,320	4,670	2,360	352	327	900	437	452
13	278	382	735	2,890	e2,290	3,930	2,190	338	436	503	427	257
14	225	344	727	2,940	e2,520	3,320	2,020	327	569	363	461	236
15	197	1,270	644	2,860	e2,460	3,520	1,850	324	381	317	680	206
16	180	1,210	631	2,630	e2,320	3,120	1,690	351	322	309	682	194
17	230	781	582	2,350	2,140	2,670	1,220	428	322	312	739	189
18	208	580	728	2,140	3,520	2,340	790	401	318	753	762	255
19	179	492	1,570	e1,880	4,580	2,720	484	388	311	884	910	498
20	774	636	1,800	e1,740	4,180	5,200	429	371	444	498	934	1,080
21	403	647	1,780	e1,650	3,500	4,540	508	364	465	433	959	756
22	267	561	1,770	e1,680	3,010	3,970	981	379	345	417	986	729
23	250	487	2,350	e1,690	2,650	3,420	1,530	373	331	653	1,030	946
24	593	446	4,000	e1,670	2,320	2,970	1,220	350	320	661	1,040	973
25	454	410	2,630	e1,660	2,080	2,610	786	337	312	490	1,030	688
26	375	766	2,270	1,680	1,960	2,360	385	327	310	410	919	486
27	1,080	2,110	2,120	1,680	1,910	2,190	379	317	382	404	838	215
28	915	1,160	2,030	1,670	e1,830	2,840	334	306	325	371	836	179
29	599	810	2,170	1,670	e1,810	2,580	311	299	304	352	866	180
30	466	624	2,100	1,790	---	2,320	252	293	308	340	859	169
31	387	---	2,050	1,730	---	2,930	---	291	---	330	891	---
Total	20,273	16,867	37,683	66,190	75,040	123,590	58,879	11,145	10,997	14,451	20,425	12,811
Mean	654	562	1,216	2,135	2,588	3,987	1,963	360	367	466	659	427
Max	1,290	2,110	4,000	3,550	4,580	10,900	4,540	458	657	900	1,040	1,080
Min	179	226	306	1,650	1,770	1,830	252	266	304	300	320	169

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1964 - 2008, BY WATER YEAR (WY)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Mean	697	617	708	692	728	1,358	1,770	940	716	681	676	693
Max	2,123	2,484	3,164	2,494	3,107	3,987	5,167	2,322	3,734	1,456	1,698	2,569
(WY)	(1976)	(2007)	(1997)	(1978)	(1976)	(2008)	(1993)	(1996)	(2006)	(1971)	(1968)	(2004)
Min	33.2	41.8	172	127	94.2	158	194	122	132	76.2	107	45.4
(WY)	(1964)	(1965)	(1982)	(1970)	(1989)	(1981)	(1985)	(1985)	(1965)	(1965)	(1985)	(1964)

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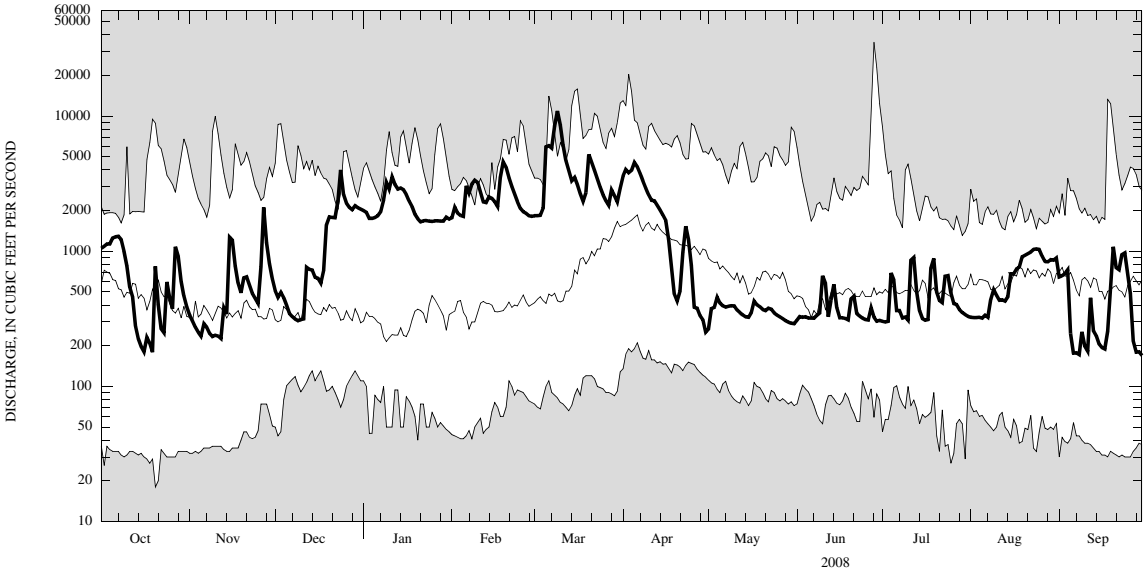
SUMMARY STATISTICS

	Calendar Year 2007		Water Year 2008		Water Years 1964 - 2008	
Annual total	400,045		468,351			
Annual mean	1,096		1,280		856	
Highest annual mean					1,411	1978
Lowest annual mean					204	1965
Highest daily mean	8,120	Mar 28	10,900	Mar 9	35,200	Jun 28, 2006
Lowest daily mean	179	Oct 19	169	Sep 30	18	Oct 20, 1963
Annual seven-day minimum	214	Oct 13	201	Sep 5	26	Oct 15, 1963
10 percent exceeds	2,330		3,020		1,890	
50 percent exceeds	596		655		503	
90 percent exceeds	268		277		130	



CURRENT WATER YEAR DAILY MEAN DISCHARGE (BOLD) WITH DAILY MEDIAN FOR PERIOD OF RECORD.
SHADED AREAS SHOW HIGHEST AND LOWEST DAILY MEAN FOR PERIOD OF RECORD THROUGH PREVIOUS WATER YEAR.

01426500 WEST BRANCH DELAWARE RIVER AT HALE EDDY, NY—Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1958-59, 1968 to current year.
CHEMICAL DATA: 1958-59 (d), 1970 (b), 1971-74 (d), 1975 (c).
MINOR ELEMENTS DATA: 1971-74 (a).
ORGANIC DATA: OC--1974 (a), 1975 (c).
NUTRIENT DATA: 1971-74 (d), 1975 (c).
BIOLOGICAL DATA: Bacteria--1971, 1973 (c); 1974 (d); 1975 (c).

PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: October 1967 to current year (no winter record for water years 1969-77).

INSTRUMENTATION.--Water-temperature satellite and telephone telemeter provides 15-minute-interval readings. From October 1976 to April 1993, water-temperature recorder provided one-hour-interval readings. Prior to October 1976, water-temperature recorder provided continuous readings.

REMARKS.--Temperature readings prior to Oct. 1, 2007, rounded to the nearest 0.5°C. Water temperature is affected by release of water from upstream reservoir.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: Prior to Oct. 1, 2007--Maximum (water years 1968-77, 1979-83, 1985, 1988-96, 1998-2007), 30.5°C, July 22, 23, 1972, June 16, 1981; minimum (water years 1968, 1978-2007), 0.0°C on many days during winter periods.
WATER TEMPERATURE: After Oct. 1, 2007--Maximum, 20.2°C, Sept. 8, 15, 2008; minimum, 0.0°C, Dec. 2, 2007.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURE: Maximum, 20.2°C, Sept. 8, 15; minimum, 0.0°C, Dec. 2.

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TEMPERATURE, WATER, DEGREES CELSIUS
WATER YEAR OCTOBER 2007 TO SEPTEMBER 2008

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
		October			November			December			January	
1	11.9	8.9	10.3	10.9	8.6	9.9	3.4	0.9	2.2	4.0	2.5	3.3
2	12.0	9.4	10.6	10.8	7.0	8.8	1.4	0.0	0.5	3.5	2.1	2.9
3	13.3	10.1	11.4	8.7	6.5	7.5	3.5	0.1	1.9	3.1	1.9	2.3
4	13.5	10.4	11.6	8.5	6.0	7.3	2.0	0.4	1.2	3.5	1.9	2.5
5	14.2	10.7	12.0	10.1	6.4	8.2	2.1	0.2	1.2	4.0	2.4	3.0
6	14.7	11.5	12.7	10.5	7.8	8.9	2.2	0.3	0.9	3.6	2.9	3.2
7	14.3	12.0	13.0	7.8	5.3	6.7	1.6	0.2	0.6	4.3	3.0	3.4
8	15.6	12.3	13.7	6.9	3.7	5.3	3.1	0.7	2.0	4.2	3.0	3.5
9	15.3	13.1	14.1	6.7	4.3	5.6	2.7	1.0	1.8	4.9	3.2	3.9
10	17.0	13.5	14.9	6.9	5.1	5.9	4.1	1.9	3.0	4.0	2.9	3.4
11	13.8	13.2	13.5	7.4	3.6	5.2	3.6	1.8	2.5	3.8	3.0	3.4
12	13.7	11.0	12.7	6.0	4.3	5.1	3.6	1.9	2.8	3.9	2.9	3.5
13	12.4	9.6	11.0	8.9	5.7	7.1	2.3	0.1	1.2	3.6	2.7	3.1
14	11.2	9.4	10.4	8.4	5.6	7.1	3.5	0.9	2.4	3.4	2.9	3.1
15	12.8	10.6	11.5	8.5	6.6	7.6	2.9	1.2	2.1	3.3	2.5	2.9
16	14.9	10.5	12.6	6.9	5.0	6.2	1.8	0.1	1.1	3.0	2.0	2.5
17	14.7	11.5	13.0	5.6	3.9	4.8	1.8	0.1	1.0	2.9	1.8	2.3
18	16.2	13.0	14.6	6.0	4.3	5.2	3.8	0.8	2.2	3.9	2.2	2.9
19	16.8	14.8	15.9	5.5	4.0	4.8	4.4	2.7	3.6	2.9	1.8	2.3
20	15.8	12.8	14.4	5.7	4.3	4.9	4.7	4.0	4.3	2.8	1.5	2.1
21	15.7	11.6	13.4	7.9	5.2	6.6	4.6	3.6	4.1	3.4	1.5	2.1
22	16.1	11.4	13.6	9.6	6.9	8.2	4.8	3.8	4.2	2.7	1.7	2.2
23	15.5	13.7	14.6	6.9	2.6	4.7	5.2	2.8	4.5	3.4	1.7	2.3
24	14.8	12.3	13.3	4.2	1.4	2.8	3.9	2.3	3.2	2.9	1.5	2.1
25	14.7	11.6	12.8	5.3	1.8	3.5	4.1	3.6	3.8	3.2	1.4	2.0
26	11.7	9.9	10.7	5.2	3.1	4.2	4.3	3.2	3.8	2.9	1.6	2.1
27	12.8	10.9	11.9	6.3	4.8	5.7	4.2	3.7	4.0	3.5	1.7	2.4
28	12.3	9.2	10.9	5.3	4.0	4.7	5.0	3.9	4.3	3.5	1.7	2.4
29	10.7	7.9	9.2	5.6	3.8	4.5	5.0	4.0	4.3	2.9	1.7	2.3
30	11.1	7.6	9.2	4.8	3.1	3.9	4.4	3.3	3.9	3.3	1.5	2.4
31	12.0	8.1	9.9	---	---	---	4.3	2.9	3.6	3.6	1.6	2.2
Month	17.0	7.6	12.4	10.9	1.4	6.0	5.2	0.0	2.7	4.9	1.4	2.7

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TEMPERATURE, WATER, DEGREES CELSIUS
WATER YEAR OCTOBER 2007 TO SEPTEMBER 2008

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
		February			March			April			May	
1	2.5	1.3	1.8	3.2	1.1	2.0	5.6	2.8	4.4	10.6	5.5	8.4
2	2.5	1.7	2.1	4.1	1.2	2.3	4.9	2.5	3.6	9.3	7.4	8.3
3	3.2	1.8	2.3	4.7	1.4	2.6	4.6	1.9	3.2	8.7	7.6	8.2
4	2.4	1.7	2.0	2.6	1.8	2.2	3.6	2.7	3.2	11.8	7.3	9.2
5	2.8	2.0	2.4	2.0	0.9	1.3	3.8	3.0	3.4	14.1	6.8	10.4
6	2.2	1.6	1.9	3.0	1.1	1.9	5.5	2.7	3.9	14.0	7.8	11.1
7	2.4	1.6	1.9	2.8	1.4	2.0	5.5	3.2	4.0	14.9	8.4	11.8
8	2.6	1.6	2.0	2.2	1.6	1.9	6.1	3.2	4.4	14.4	10.3	12.3
9	2.3	1.8	2.1	2.4	1.2	1.7	6.5	3.6	4.8	11.5	8.4	9.2
10	2.6	0.8	1.8	2.3	1.3	1.8	6.9	3.8	5.0	11.6	7.4	9.4
11	2.3	0.8	1.4	3.0	1.5	2.1	5.2	4.1	4.6	12.7	7.0	10.0
12	2.1	0.8	1.3	2.4	1.5	2.0	7.6	4.6	5.6	10.8	7.8	9.3
13	2.2	1.0	1.7	3.4	1.3	2.1	6.4	4.1	4.9	14.8	6.7	10.7
14	2.3	1.2	1.6	2.7	1.7	2.2	6.4	3.7	4.8	13.9	8.4	11.6
15	2.3	1.3	1.7	3.0	2.1	2.5	7.7	3.3	5.1	12.7	9.7	11.1
16	3.2	1.2	1.8	3.0	1.8	2.5	8.5	3.7	5.7	10.6	8.1	8.7
17	2.3	1.1	1.7	4.2	1.1	2.4	10.1	4.1	6.6	12.7	7.4	10.2
18	2.3	1.6	2.0	3.4	1.7	2.4	11.9	4.7	8.0	10.9	7.8	9.0
19	2.5	1.2	1.8	2.9	2.1	2.4	14.1	6.0	10.1	10.3	6.4	8.3
20	2.4	1.2	1.6	3.1	1.9	2.5	14.0	8.6	11.3	9.1	6.3	7.9
21	2.4	1.2	1.6	3.7	1.4	2.3	14.4	7.7	11.1	11.0	7.0	9.1
22	1.7	1.2	1.4	3.8	1.5	2.4	11.1	5.1	7.6	10.9	7.5	9.1
23	2.4	1.3	1.8	4.0	1.5	2.5	9.2	4.8	6.5	12.1	7.8	9.8
24	3.6	1.2	2.0	4.3	1.5	2.6	10.0	4.7	6.9	12.7	8.1	10.4
25	3.9	1.2	2.1	4.6	1.5	2.8	10.9	4.3	7.4	15.9	8.0	11.9
26	2.1	1.3	1.7	4.9	2.5	3.3	14.7	6.5	10.5	16.2	9.5	13.1
27	2.9	1.1	2.0	3.6	2.1	2.8	13.8	8.5	11.2	16.2	11.6	13.7
28	2.6	0.9	1.5	3.2	2.1	2.7	11.0	8.1	8.8	15.9	9.2	12.4
29	3.4	0.6	1.6	4.8	1.6	2.9	11.0	7.7	8.9	16.1	8.2	12.3
30	---	---	---	5.2	1.4	3.1	10.6	6.4	8.3	15.4	9.0	12.5
31	---	---	---	3.1	2.4	2.7	---	---	---	14.8	10.7	12.7
Month	3.9	0.6	1.8	5.2	0.9	2.4	14.7	1.9	6.5	16.2	5.5	10.4

01426500 WEST BRANCH DELAWARE RIVER AT HALE EDDY, NY—Continued

TEMPERATURE, WATER, DEGREES CELSIUS
WATER YEAR OCTOBER 2007 TO SEPTEMBER 2008

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
		June			July			August			September	
1	15.3	10.8	12.9	16.2	10.7	13.1	17.6	11.3	14.2	14.2	7.3	10.3
2	16.4	9.1	12.9	17.3	10.0	13.7	14.9	10.9	12.9	13.9	7.5	10.3
3	14.2	9.4	12.1	13.8	10.3	12.0	15.6	10.3	12.8	13.6	7.8	10.2
4	12.1	9.9	11.1	11.5	7.2	9.7	16.3	10.4	13.0	13.5	8.0	10.2
5	13.4	9.8	11.6	12.4	6.6	9.3	17.1	10.7	13.9	18.8	8.8	13.6
6	16.5	10.9	13.4	16.0	7.3	11.7	17.7	11.5	14.6	15.8	13.8	15.2
7	18.4	11.4	14.9	15.5	10.0	13.1	15.3	10.9	13.2	20.0	13.1	16.1
8	15.5	11.5	13.9	17.2	9.8	13.6	13.4	9.6	11.7	20.2	13.9	16.7
9	19.8	11.6	15.5	15.0	11.0	12.9	13.8	8.3	10.8	15.8	12.9	14.4
10	16.6	8.8	12.4	17.6	9.3	13.4	12.7	8.2	10.3	17.5	11.7	14.2
11	14.8	7.6	11.3	13.7	7.1	9.5	13.2	8.9	11.2	16.6	12.2	14.4
12	18.1	10.2	14.0	13.3	6.7	9.4	14.7	9.0	11.7	14.4	9.4	11.5
13	16.4	8.7	12.9	14.9	7.5	11.1	13.9	9.0	11.5	13.0	9.6	11.4
14	12.3	8.0	9.8	16.9	11.1	13.8	15.3	8.8	11.9	19.6	12.9	16.1
15	16.8	7.7	12.2	17.8	10.3	14.0	12.4	7.8	10.1	20.2	16.0	18.2
16	15.2	10.0	12.8	18.0	10.3	14.2	12.8	7.2	9.7	16.4	13.5	15.1
17	14.0	9.4	11.7	15.9	10.9	13.6	12.6	7.3	9.7	18.4	11.9	14.9
18	11.5	9.1	10.4	13.5	7.9	10.7	12.6	7.4	9.6	16.7	12.4	14.2
19	13.1	8.4	10.6	12.3	7.2	9.1	11.9	7.4	9.1	13.1	8.3	10.9
20	11.9	8.4	10.2	15.3	7.3	11.1	12.4	6.6	8.9	11.4	7.4	9.2
21	14.2	7.4	10.6	15.8	10.5	13.0	12.6	6.9	9.1	12.1	8.1	9.8
22	16.5	8.2	12.1	15.6	10.5	13.2	12.6	6.9	9.2	12.7	8.3	10
23	17.4	10.3	13.8	15.3	13.7	14.4	12.0	6.9	8.9	11.9	7.7	9.3
24	16.1	10.4	13.3	18.3	14.0	15.7	12.4	6.9	9.1	12.3	7.9	9.7
25	16.7	9.9	13.2	18.8	12.4	15.4	11.4	7.3	8.8	12.1	8.4	9.9
26	14.0	10.2	11.8	18.2	12.0	15.1	12.5	6.6	9.0	10.4	8.6	9.5
27	13.1	9.5	11.2	17.6	12.2	14.8	12.5	6.6	9.0	13.3	9.7	11.5
28	16.0	8.9	12.6	17.0	11.3	14.2	11.6	7.0	8.9	13.8	12.8	13.2
29	15.5	10.5	13.0	18.2	11.2	14.5	8.9	7.4	8.1	13.7	12.5	12.9
30	16.5	10.6	13.6	15.9	11.4	13.9	10.2	7.6	8.5	15.5	11.6	13.5
31	---	---	---	16.7	11.3	14.1	12.7	7.3	9.4	---	---	---
Month	19.8	7.4	12.4	18.8	6.6	12.8	17.7	6.6	10.6	20.2	7.3	12.5

	Max	Min	Mean
Year	20.2	0.0	7.8