



Water-Data Report 2006

**01402000 MILLSTONE RIVER AT BLACKWELLS MILLS, NJ**

RARITAN RIVER BASIN

LOCATION.--Lat 40°28'30", long 74°34'33" referenced to North American Datum of 1983, Hillsborough Township, Somerset County, NJ, Hydrologic Unit 02030105, on left bank 30 ft downstream from highway bridge at Blackwells Mills, and 0.3 mi downstream from Six Mile Run.

DRAINAGE AREA.--258 mi<sup>2</sup>.

**SURFACE-WATER RECORDS**

PERIOD OF RECORD.--June 1903 to December 1904 (gage heights only), August 1921 to current year. Monthly discharge only for some periods, published in WSP 1302. Published as "at Millstone" 1903-04.

REVISED RECORDS.--WSP 1552: 1924-25(M), 1926.

GAGE.--Water-stage recorder. Concrete control since Nov. 18, 1933. Datum of gage is 26.97 ft above NGVD of 1929. June 27, 1903 to Dec. 31, 1904, nonrecording gage at bridge 2.0 mi downstream at Millstone at different datum. Aug. 4, 1921 to Aug. 16, 1928, nonrecording gage at present site and datum.

REMARKS.--Records good, except for estimated daily discharges, which are fair. Inflow from and losses to Delaware and Raritan Canal above station. Flow slightly regulated by Carnegie Lake, capacity, 310,000,000 gal and several smaller reservoirs, combined capacity, 49,800,000 gal. Several measurements of water temperature were made during the year. Satellite gage-height telemetry at station.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 3,000 ft<sup>3</sup>/s and (or) maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Oct 09	1130	6,060	11.05
Oct 12	2130	*8,650	*12.90
Dec 17	0415	3,490	8.36
Jan 03	2345	3,890	8.86
Jan 19	0715	3,060	7.76

## 01402000 MILLSTONE RIVER AT BLACKWELLS MILLS, NJ—Continued

**DISCHARGE, CUBIC FEET PER SECOND**  
**WATER YEAR OCTOBER 2005 TO SEPTEMBER 2006**  
**DAILY MEAN VALUES**

[e, estimated]

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	46	277	1,660	521	551	245	154	204	107	387	136	118
2	46	233	1,040	489	451	262	151	189	418	270	113	494
3	46	218	582	2,710	583	299	147	178	1,700	221	98	2,050
4	45	197	443	3,370	711	253	185	168	1,750	182	130	1,590
5	45	183	395	1,940	1,130	239	182	156	684	207	100	758
6	46	169	363	906	739	224	173	151	458	310	91	614
7	47	161	346	590	533	214	163	140	585	325	85	417
8	624	156	302	483	443	207	259	133	951	267	e87	293
9	4,980	153	298	456	388	204	596	129	802	197	e84	218
10	2,740	173	313	426	347	216	416	122	547	151	e81	174
11	645	158	317	398	322	201	293	116	351	130	78	151
12	4,030	149	304	648	344	243	231	700	263	123	69	132
13	5,910	144	270	541	353	387	199	498	220	240	64	119
14	4,390	137	235	798	358	395	186	326	200	184	61	154
15	3,340	134	220	1,480	364	323	192	285	373	145	61	269
16	1,890	151	1,730	1,010	496	245	178	1,010	216	128	57	442
17	775	563	3,100	630	1,160	216	164	1,030	162	114	56	359
18	473	424	1,600	1,480	1,410	197	153	605	141	103	57	295
19	345	289	757	2,820	759	186	150	452	127	102	57	214
20	274	236	524	1,480	507	178	151	464	117	95	56	170
21	251	215	412	766	421	172	142	349	108	129	59	140
22	321	1,080	355	547	376	169	159	253	101	890	58	124
23	974	1,440	326	1,230	360	164	1,510	209	95	830	56	121
24	580	953	315	1,570	347	160	1,710	181	161	373	56	121
25	1,780	640	335	979	324	156	1,010	159	368	230	60	111
26	2,270	417	840	654	299	170	575	145	396	164	145	102
27	1,370	339	726	490	271	181	403	145	408	134	181	96
28	717	306	535	418	254	171	308	140	1,380	164	304	92
29	486	291	500	396	---	171	258	129	2,370	282	238	135
30	378	1,690	649	416	---	162	223	115	610	236	177	123
31	316	---	529	522	---	149	---	107	---	166	146	---
<b>Total</b>	40,180	11,676	20,321	31,164	14,601	6,759	10,621	8,988	16,169	7,479	3,101	10,196
<b>Mean</b>	1,296	389	656	1,005	521	218	354	290	539	241	100	340
<b>Max</b>	5,910	1,690	3,100	3,370	1,410	395	1,710	1,030	2,370	890	304	2,050
<b>Min</b>	45	134	220	396	254	149	142	107	95	95	56	92
<b>Cfsm</b>	5.02	1.51	2.54	3.90	2.02	0.85	1.37	1.12	2.09	0.94	0.39	1.32
<b>In.</b>	5.79	1.68	2.93	4.49	2.11	0.97	1.53	1.30	2.33	1.08	0.45	1.47

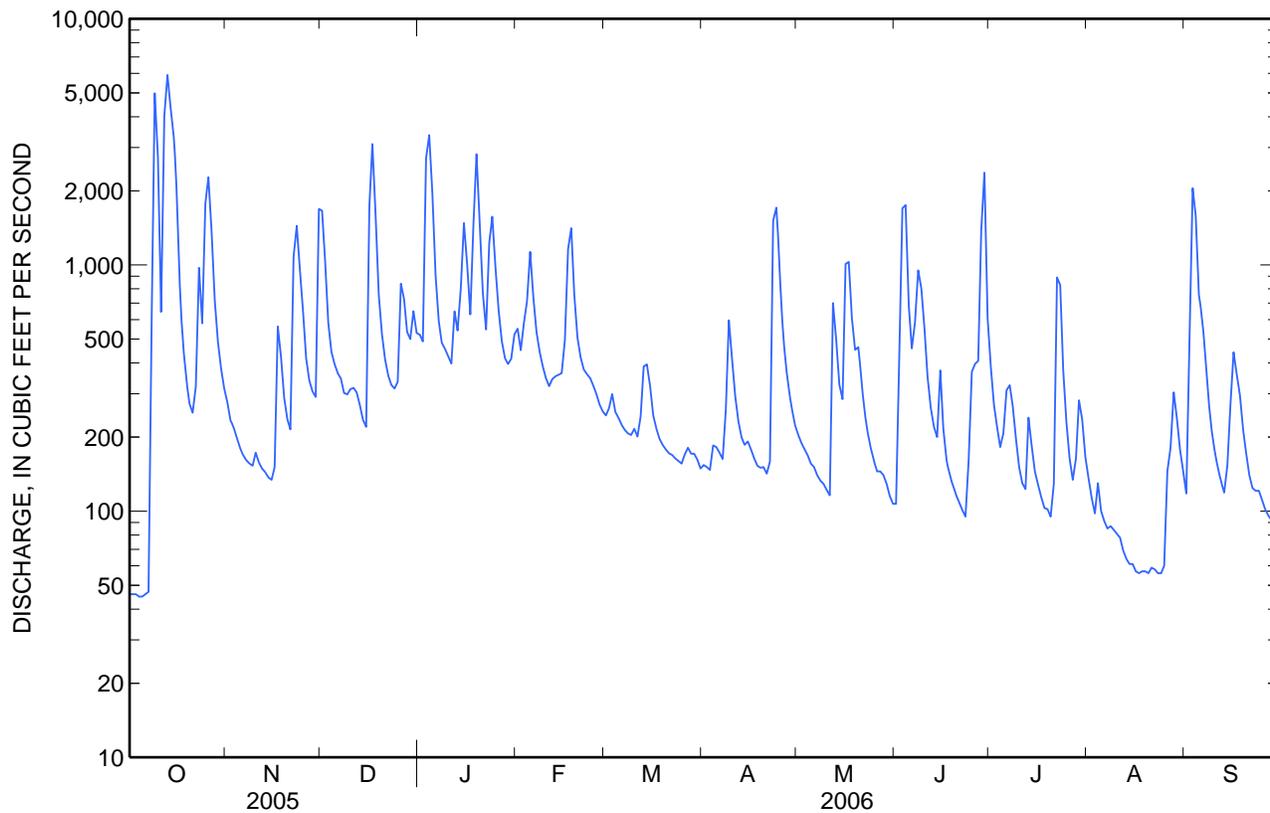
## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1922 - 2006, BY WATER YEAR (WY)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
<b>Mean</b>	214	336	476	517	565	685	540	359	253	244	213	229
<b>Max</b>	1,296	1,113	1,550	1,743	1,199	1,882	1,520	1,264	1,217	1,808	1,267	1,370
<b>(WY)</b>	(2006)	(1973)	(1997)	(1979)	(1925)	(1994)	(1983)	(1989)	(2003)	(1975)	(1971)	(1999)
<b>Min</b>	42.6	51.2	67.0	62.9	105	158	103	82.8	45.5	19.3	17.3	20.2
<b>(WY)</b>	(1942)	(1966)	(1966)	(1981)	(1934)	(1985)	(1985)	(1963)	(1963)	(1966)	(1981)	(1980)

01402000 MILLSTONE RIVER AT BLACKWELLS MILLS, NJ—Continued

SUMMARY STATISTICS

	Calendar Year 2005		Water Year 2006		Water Years 1922 - 2006	
<b>Annual total</b>	178,443		181,255			
<b>Annual mean</b>	489		497		385	
<b>Highest annual mean</b>					690	1975
<b>Lowest annual mean</b>					165	1985
<b>Highest daily mean</b>	5,910	Oct 13	5,910	Oct 13	22,000	Sep 17, 1999
<b>Lowest daily mean</b>	39	Sep 11	45	Oct 4, 5	5.0	Sep 16, 1923
<b>Annual seven-day minimum</b>	41	Sep 7	46	Oct 1	6.3	Aug 7, 1966
<b>Maximum peak flow</b>			8,650	Oct 12	26,200	Sep 17, 1999
<b>Maximum peak stage</b>			12.90	Oct 12	21.01	Sep 17, 1999
<b>Instantaneous low flow</b>			42	Oct 5	5	Sep 16, 1923
<b>Annual runoff (cfsm)</b>	1.89		1.92		1.49	
<b>Annual runoff (inches)</b>	25.73		26.13		20.28	
<b>10 percent exceeds</b>	1,160		1,100		830	
<b>50 percent exceeds</b>	249		269		200	
<b>90 percent exceeds</b>	60		103		60	



## 01402000 MILLSTONE RIVER AT BLACKWELLS MILLS, NJ—Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1962-69, 1973, 1976-80, 1991 to current year.

REMARKS.--Total nitrogen (00600) equals the sum of filtered ammonia plus organic nitrogen (00623), filtered nitrite plus nitrate nitrogen (00631), and total particulate nitrogen (49570). Bacteria samples were collected synoptically over a 30-day period during the summer.

COOPERATIVE NETWORK SITE DESCRIPTOR: Watershed Integrator and Trace Element Assessment (303d) special study site, New Jersey Department of Environmental Protection (NJDEP) Watershed Management Area 10. The sample on May 16 was for the trace element assessment (303d).

COOPERATION.--Physical measurements and samples for laboratory analyses were provided by personnel of the NJDEP. Bacteria samples were provided by the local county health department under the direction of the NJDEP through the County Environmental Health Act. Determinations of filtered ammonia, filtered orthophosphorus, BOD, total suspended residue, fecal coliform, E. coli, and enterococcus bacteria were performed by the NJ Department of Health and Senior Services. Analysis of the split and concurrent replicate samples was performed by the Laboratory Branch of the U.S. EPA, Region II, Division of Environmental Science and Assessment.

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2005 TO SEPTEMBER 2006**

Part 1 of 5

[Remark codes: <, less than; E, estimated.]

Date	Time	Sample type	Instan- taneous dis- charge, cfs (00061)	Turbdty white light, det ang 90+/-30 corrctd NTRU (63676)	UV absorb- ance, 254 nm, wat flt units /cm (50624)	UV absorb- ance, 280 nm, wat flt units /cm (61726)	Baro- metric pres- sure, mm Hg (00025)	Dis- solved oxygen, mg/L oxygen, (00300)	Dis- solved oxygen, percent of sat- uration (00301)	pH, water, unfltrd field, std units (00400)	Specif. conduc- tance, wat unf 25 degC uS/cm (00095)	Temper- ature, air, deg C (00020)
<b>Nov</b>												
02...	0900	Environmental	232	4.7	.155	.119	763	8.8	80	7.3	262	10.8
02...	0900	Split Replicate	--	--	--	--	--	--	--	--	--	--
02...	0901	Concurrent Replicate	--	--	--	--	--	--	--	--	--	--
<b>Mar</b>												
08...	0900	Environmental	210	4.1	.066	.050	765	12.5	96	7.9	436	1.9
08...	0900	Split Replicate	--	--	--	--	--	--	--	--	--	--
08...	0901	Concurrent Replicate	--	--	--	--	--	--	--	--	--	--
<b>May</b>												
09...	0900	Environmental	131	7.1	.116	.088	764	5.8	59	7.4	350	12.8
09...	0900	Split Replicate	--	--	--	--	--	--	--	--	--	--
09...	0901	Concurrent Replicate	--	--	--	--	--	--	--	--	--	--
16...	1000	Field Blank	--	--	--	--	--	--	--	--	--	--
16...	1030	Environmental	774	45	--	--	751	7.7	79	7.4	289	12.2
<b>Sep</b>												
05...	0900	Environmental	760	10	.291	.228	764	7.2	79	7.0	182	18.0
05...	0900	Split Replicate	--	--	--	--	--	--	--	--	--	--
05...	0901	Concurrent Replicate	--	--	--	--	--	--	--	--	--	--

## 01402000 MILLSTONE RIVER AT BLACKWELLS MILLS, NJ—Continued

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2005 TO SEPTEMBER 2006**

Part 2 of 5

[Remark codes: &lt;, less than; E, estimated.]

Date	Temperature, water, deg C (00010)	Hard- ness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnes- ium, water, fltrd, mg/L (00925)	Potas- sium, water, fltrd, mg/L (00935)	Sodium, water, fltrd, mg/L (00930)	ANC, wat unf fixed end pt, lab, mg/L as CaCO3 (90410)	Chlor- ide, water, fltrd, mg/L (00940)	Fluor- ide, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Residue water, sum of consti- tuents mg/L (70301)	Residue on evap. at 180degC wat flt mg/L (70300)
<b>Nov</b>													
02...	11.2	68	15.9	6.92	3.39	18.6	34	31.5	.12	12.2	25.2	146	153
02...	--	67	15.0	7.20	3.90	19.0	33	34.0	.17	--	24.0	136	160
02...	--	67	15.0	7.10	3.70	18.0	33	33.0	.17	--	23.0	133	160
<b>Mar</b>													
08...	4.4	84	19.6	8.59	3.19	42.6	33	83.1	.17	7.5	26.7	226	232
08...	--	80	18.0	8.40	3.60	44.0	32	80.0	<.10	--	29.0	216	230
08...	--	80	18.0	8.40	3.60	44.0	32	82.0	<.10	--	30.0	220	230
<b>May</b>													
09...	16.4	92	19.7	10.4	3.69	28.3	48	49.0	.22	5.8	27.9	185	208
09...	--	85	18.0	9.70	4.40	27.0	46	52.0	.17	--	30.0	181	230
09...	--	85	18.0	9.70	4.40	27.0	47	52.0	.16	--	30.0	180	210
16...	--	--	<.02	<.008	--	--	--	--	--	--	--	--	--
16...	15.6	61	14.3	6.24	--	--	--	--	--	--	--	--	--
<b>Sep</b>													
05...	20.0	39	9.14	3.84	3.41	13.6	23	22.2	.11	7.1	15.1	94	112
05...	--	43	10.0	4.30	4.10	14.0	24	23.0	.08	--	15.0	90	100
05...	--	43	10.0	4.30	4.20	14.0	22	23.0	.09	--	15.0	89	100

## 01402000 MILLSTONE RIVER AT BLACKWELLS MILLS, NJ—Continued

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2005 TO SEPTEMBER 2006**

Part 3 of 5

[Remark codes: &lt;, less than; E, estimated.]

Date	Residue total at 105 deg. C, sus- pended, mg/L (00530)	Ammonia + org-N, water, flt'd, mg/L as N (00623)	Ammonia + org-N, water, unflt'd mg/L as N (00625)	Ammonia water, flt'd, mg/L as N (00608)	Ammonia water, unflt'd mg/L as N (00610)	Nitrite + nitrate water flt'd, mg/L as N (00631)	Nitrite water, flt'd, mg/L as N (00613)	Partic- ulate nitro- gen, susp, water, mg/L (49570)	Total nitro- gen, water, flt'd, mg/L (00602)	Total nitro- gen, water, unflt'd mg/L (00600)	Ortho- phos- phate, water, flt'd, mg/L as P (00671)	Ortho- phos- phate, water, unflt'd mg/L as P (70507)	Phos- phorus, water, flt'd, mg/L (00666)
<b>Nov</b>													
02...	3	.45	--	.064	--	2.62	--	.04	3.1	3.1	.150	--	.17
02...	<10	.39	.53	.052	.054	2.70	<.050	--	3.1	3.2	.140	.15	.140
02...	<10	.56	.31	.051	.057	2.80	<.050	--	3.4	3.1	.140	.13	.140
<b>Mar</b>													
08...	16	.32	--	.186	--	3.11	--	.10	3.4	3.5	.089	--	.13
08...	<10	E.39	E.35	<.050	<.050	3.00	<.050	--	--	--	.093	.09	.130
08...	<10	E.30	E.47	<.050	<.050	3.20	<.050	--	--	--	.100	.09	.140
<b>May</b>													
09...	8	.59	--	.076	--	2.32	--	.14	2.9	3.0	.311	--	.34
09...	<10	E.43	E.48	.058	.070	2.60	<.050	--	--	--	.320	.35	.310
09...	<10	E.50	E.46	.055	.061	2.10	<.050	--	--	--	.320	.35	.310
16...	--	--	--	--	--	--	--	--	--	--	--	--	--
16...	--	--	--	--	--	--	--	--	--	--	--	--	--
<b>Sep</b>													
05...	17	.62	--	.079	--	1.13	--	.11	1.8	1.9	.078	--	.11
05...	15	E.42	E.49	<.050	<.050	1.10	<.050	--	--	--	.064	.08	.095
05...	13	E.43	E.77	<.050	<.050	1.10	<.050	--	--	--	.065	.08	.079

## 01402000 MILLSTONE RIVER AT BLACKWELLS MILLS, NJ—Continued

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2005 TO SEPTEMBER 2006**

Part 4 of 5

[Remark codes: &lt;, less than; E, estimated.]

Date	Phos- phorus, water, unfltrd mg/L (00665)	Total carbon, suspnd sedimnt total, mg/L (00694)	Inor- ganic carbon, suspnd sedimnt total, mg/L (00688)	Organic carbon, suspnd sedimnt total, mg/L (00689)	Organic carbon, water, fltrd, mg/L (00681)	BOD, water, unfltrd 5 day, 20 degC mg/L (00310)	Arsenic water, fltrd, ug/L (01000)	Arsenic water unfltrd ug/L (01002)	Boron, water, fltrd, ug/L (01020)	Cadmium water, fltrd, ug/L (01025)	Cadmium water, unfltrd ug/L (01027)	Chrom- ium, water, fltrd, ug/L (01030)	Chrom- ium, water, unfltrd recover- able, ug/L (01034)
<b>Nov</b>													
02...	.20	.5	<.1	.5	4.0	<1.0	--	--	50	--	--	--	--
02...	.170	--	--	--	5.0	--	--	--	60	--	--	--	--
02...	.180	--	--	--	5.1	--	--	--	60	--	--	--	--
<b>Mar</b>													
08...	.19	.6	<.1	.6	2.3	E1.5	--	--	44	--	--	--	--
08...	.220	--	--	--	2.8	--	--	--	40	--	--	--	--
08...	.210	--	--	--	2.8	--	--	--	40	--	--	--	--
<b>May</b>													
09...	.41	1.0	<.1	1.0	3.6	E1.6	--	--	59	--	--	--	--
09...	.370	--	--	--	4.5	--	--	--	60	--	--	--	--
09...	.350	--	--	--	4.5	--	--	--	60	--	--	--	--
16...	--	--	--	--	--	--	<.12	--	--	<.04	--	<.04	--
16...	--	--	--	--	--	--	.78	1.4	--	<.04	.05	.19	1.3
<b>Sep</b>													
05...	.17	.8	<.1	.8	6.0	E1.5	--	--	41	--	--	--	--
05...	.140	--	--	--	9.8	--	--	--	40	--	--	--	--
05...	.150	--	--	--	8.9	--	--	--	40	--	--	--	--

01402000 MILLSTONE RIVER AT BLACKWELLS MILLS, NJ—Continued

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2005 TO SEPTEMBER 2006**

Part 5 of 5

[Remark codes: <, less than; E, estimated.]

Date	Copper, water, unfltrd recover-able, ug/L (01040)	Copper, water, unfltrd recover-able, ug/L (01042)	Lead, water, unfltrd recover-able, ug/L (01049)	Lead, water, unfltrd recover-able, ug/L (01051)	Mercury water, unfltrd recover-able, ug/L (71890)	Mercury water, unfltrd recover-able, ug/L (71900)	Nickel, water, unfltrd recover-able, ug/L (01065)	Nickel, water, unfltrd recover-able, ug/L (01067)	Selenium, water, unfltrd recover-able, ug/L (01145)	Selenium, water, unfltrd recover-able, ug/L (01147)	Zinc, water, unfltrd recover-able, ug/L (01090)	Zinc, water, unfltrd recover-able, ug/L (01092)
<b>Nov</b>												
02...	--	--	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--	--	--	--
<b>Mar</b>												
08...	--	--	--	--	--	--	--	--	--	--	--	--
08...	--	--	--	--	--	--	--	--	--	--	--	--
08...	--	--	--	--	--	--	--	--	--	--	--	--
<b>May</b>												
09...	--	--	--	--	--	--	--	--	--	--	--	--
09...	--	--	--	--	--	--	--	--	--	--	--	--
09...	--	--	--	--	--	--	--	--	--	--	--	--
16...	<.4	--	<.08	--	<.010	--	<.06	--	<.08	--	<.6	--
16...	3.6	6.0	.14	2.53	<.010	E.006	1.45	2.42	.17	.20	3.9	11
<b>Sep</b>												
05...	--	--	--	--	--	--	--	--	--	--	--	--
05...	--	--	--	--	--	--	--	--	--	--	--	--
05...	--	--	--	--	--	--	--	--	--	--	--	--

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2005 TO SEPTEMBER 2006**

[Remark codes: <, less than.]

Date	Time	Instantaneous discharge, cfs (00061)	Temperature, water, deg C (00010)	Enterococci, m-E MF, water, col/100 mL (31649)	E coli, m-TEC MF, water, col/100 mL (31633)	Fecal coliform, ECbroth water, MPN/100 mL (31615)
<b>May</b>						
24...	1125	176	15.8	130	<10	300
31...	1140	111	24.6	180	80	220
<b>Jun</b>						
07...	1130	439	17.8	2,600	<10	1,700
14...	1140	188	20.9	200	150	230
21...	1125	107	23.6	60	10	40