

Water-Data Report 2009

01382500 PEQUANNOCK RIVER AT MACOPIN INTAKE DAM, NJ

PASSAIC RIVER BASIN

LOCATION.--Lat 41°01'06", long 74°24'04" referenced to North American Datum of 1983, West Milford Township, Passaic County, NJ, Hydrologic Unit 02030103, on left bank 15 ft downstream from culvert at crossover between northbound and southbound lanes on State Route 23, 1,000 ft downstream from abandoned Macopin Intake Dam, 0.6 mi downstream from Macopin River, and 2.8 mi northwest of Butler.

DRAINAGE AREA.--63.7 mi².

SURFACE-WATER RECORDS

PERIOD OF RECORD.--January 1898 to March 1990, September 1992 to current year. Monthly discharge only for some periods, published in WSP 1302. Records for January 1892 to December 1897, published in WSP 541, have been found to be unreliable therefore should not be used.

GAGE.--Water-stage recorder. Datum of gage is 549.17 ft above NGVD of 1929. Prior to May 22, 1970, at site just upstream from Macopin Intake Dam, at datum 34.38 ft higher (revised). May 22, 1970 to March 5, 1990, at site just upstream from Macopin Intake Dam, at datum 20.83 ft higher.

COOPERATION.--Gage-height record collected in cooperation with the Department of Public Affairs, Division of Water Supply, City of Newark. Prior to May 22, 1970, discharge figures provided by city of Newark.

REMARKS.--Records fair, except for estimated daily discharges and daily discharges below 1.0 ft³/s, which are poor. Flow regulated by Canistear (see 01382100), Oak Ridge (see 01382200), Clinton (see 01382300), and Charlotteburg (see 01382380) Reservoirs, and Echo Lake (see 01382400). Water diverted at Charlotteburg Reservoir for municipal supply of city of Newark (see 01382370). Several measurements of water temperature were made during the year. Satellite gage-height telemetry at station.

01382500 PEQUANNOCK RIVER AT MACOPIN INTAKE DAM, NJ—Continued

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2008 TO SEPTEMBER 2009
DAILY MEAN VALUES

[e, estimated]

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	6.5	9.2	14	173	e20	44	37	9.2	5.6	41	15	10
2	5.6	6.4	12	124	e14	53	63	9.5	4.9	111	35	8.2
3	4.6	5.0	9.1	119	e16	38	137	13	4.9	143	186	7.9
4	4.0	4.5	7.3	107	e15	25	245	18	14	105	105	7.7
5	3.6	4.2	6.6	99	e14	17	177	29	15	60	54	7.4
6	3.4	6.7	5.6	94	e10	15	132	58	15	32	31	7.1
7	3.2	5.8	6.1	138	e8.0	22	146	222	13	25	16	6.8
8	2.7	5.1	4.5	168	9.6	41	113	229	11	24	9.3	6.6
9	2.3	5.3	3.4	123	22	91	88	179	30	23	6.9	6.6
10	2.0	4.5	8.2	90	32	120	71	147	72	18	5.6	6.5
11	1.7	3.9	43	91	38	97	71	89	76	17	5.4	7.2
12	1.3	3.1	855	75	83	75	76	59	111	12	5.0	9.3
13	1.0	3.8	761	61	112	57	52	45	90	11	5.3	9.0
14	0.96	7.4	425	52	97	46	30	36	80	8.0	6.2	8.5
15	0.91	14	278	41	77	38	47	41	126	7.0	14	8.2
16	0.92	19	219	e40	61	34	51	44	212	5.3	17	8.1
17	1.2	13	204	e38	50	29	41	174	e152	5.3	7.5	7.8
18	1.4	10	182	e35	45	26	33	154	e234	6.7	4.6	7.7
19	1.6	7.5	163	e30	62	22	27	87	386	5.9	6.2	7.7
20	1.6	5.1	153	e28	63	29	20	57	319	5.2	12	7.4
21	1.3	5.0	135	e23	51	21	54	39	316	6.6	16	6.9
22	1.4	5.0	113	e20	43	14	92	24	292	7.9	27	6.8
23	1.6	3.4	86	e15	41	22	88	17	219	6.8	24	6.7
24	1.3	2.9	108	e15	32	15	61	13	152	6.2	29	6.8
25	1.9	6.6	272	e13	23	8.3	40	6.9	112	5.5	34	7.0
26	18	6.3	283	e13	21	6.5	32	6.2	92	5.1	16	6.8
27	16	5.7	209	e12	25	7.2	26	5.5	85	5.7	11	7.8
28	49	5.2	241	e15	42	7.8	20	5.1	76	5.4	10	8.1
29	48	4.6	299	e62	---	22	22	5.2	59	6.5	15	5.7
30	38	6.2	257	e45	---	92	14	6.0	40	9.6	21	4.1
31	16	---	196	e30	---	76	---	5.7	---	12	22	---
Total	242.99	194.4	5,558.8	1,989	1,126.6	1,210.8	2,106	1,833.3	3,414.4	742.7	772.0	222.4
Mean	7.84	6.48	179	64.2	40.2	39.1	70.2	59.1	114	24.0	24.9	7.41
Max	49	19	855	173	112	120	245	229	386	143	186	10
Min	0.91	2.9	3.4	12	8.0	6.5	14	5.1	4.9	5.1	4.6	4.1

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1923 - 2009, BY WATER YEAR (WY)

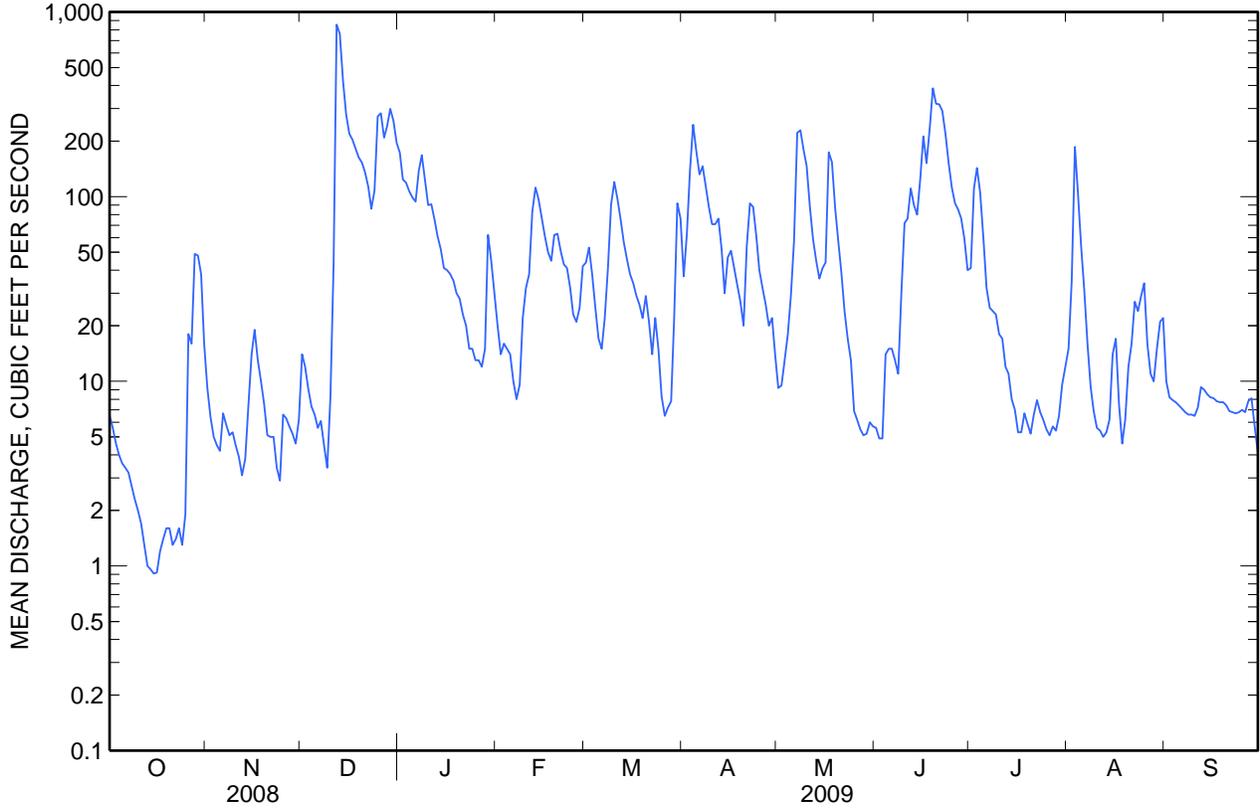
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Mean	19.3	36.0	48.2	47.1	53.5	104	130	65.0	35.5	18.2	14.7	19.3
Max	288	309	357	319	281	572	506	263	360	238	228	211
(WY)	(1956)	(1928)	(1997)	(2006)	(2008)	(1936)	(1983)	(1989)	(1972)	(1938)	(1955)	(1960)
Min	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
(WY)	(1929)	(1929)	(1929)	(1931)	(1930)	(1965)	(1950)	(1954)	(1944)	(1923)	(1923)	(1929)

01382500 PEQUANNOCK RIVER AT MACOPIN INTAKE DAM, NJ—Continued

SUMMARY STATISTICS

	Calendar Year 2008		Water Year 2009		Water Years 1923 - 2009	
Annual total	30,366.91		19,413.39			
Annual mean	83.0		53.2		49.1	
Highest annual mean					109	1952
Lowest annual mean					0.12	1954
Highest daily mean	1,240	Mar 9	855	Dec 12	3,170	Apr 6, 1984
Lowest daily mean	0.18	Sep 5	0.91	Oct 15	0.00	Oct 1, 1922
Annual seven-day minimum	0.28	Aug 30	1.1	Oct 12	0.00	Oct 18, 1922
Maximum peak flow			1,010	Dec 12	^a 6,100	Oct 10, 1903
Maximum peak stage			5.41	Dec 12	^a 17.40	Oct 10, 1903
Instantaneous low flow			0.89	Oct 13-17		
10 percent exceeds	220		146		147	
50 percent exceeds	9.1		19		5.9	
90 percent exceeds	1.2		4.8		0.00	

^a Since 1898, site and datum then in use.



01382500 PEQUANNOCK RIVER AT MACOPIN INTAKE DAM, NJ—Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1924, 1962-69, 1973-79, 1991 to current year.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: July 2001, July to September 2009.

SPECIFIC CONDUCTANCE: July 2001.

pH: July 2001.

DISSOLVED OXYGEN: July 2001.

DISSOLVED OXYGEN, PERCENT OF SATURATION: July 2001.

INSTRUMENTATION.--A WaterLOG Model H-377 Air/Water Temperature Probe was installed on Jul 28, 2009. The temperature probe contains a high accuracy temperature sensor, with operating temperature range of -40 to 105 °C. Water temperature measurements are in degrees Celsius at 15 minute intervals.

REMARKS.--Cooperative Network Site Descriptor: Watershed Integrator, NJ Department of Environmental Protection Watershed Management Area 3.

COOPERATION.--Physical measurements and samples for laboratory analyses on Dec 11, Feb 2, May 28, and Aug 13 were provided by personnel of the NJ Department of Environmental Protection. Determinations of dissolved ammonia, dissolved orthophosphate, and suspended residue were performed by the NJ Department of Health and Senior Services, Environmental and Chemical Laboratory.

**WATER-QUALITY DATA
WATER YEAR OCTOBER 2008 TO SEPTEMBER 2009**

Part 1 of 3

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

Date	Time	Baro- metric pres- sure, mm Hg (00025)	Temper- ature, air, deg C (00020)	UV absorb- ance, 254 nm, wat flt units /cm (50624)	UV absorb- ance, 280 nm, wat flt units /cm (61726)	Instan- taneous dis- charge, ft ³ /s (00061)	Dis- solved oxygen, mg/L (00300)	Dis- solved oxygen, percent of sat- uration (00301)	pH, water, unfltrd field, std units (00400)	Specif- ic conduc- tance, wat unf μS/cm @ 25 degC (00095)	Temper- ature, water, deg C (00010)	Turbdty white light, det ang 90+/-30 corrctd NTRU (63676)	Dis- solved solids dried @ 180degC wat flt mg/L (70300)
Dec													
11...	0830	749	6.0	.191	.148	17	12.4	98	7.6	237	5.1	1.5	129
Feb													
02...	1000	747	5.5	.137	.103	E14	12.2	86	7.5	238	1.3	.8	126
May													
28...	0830	747	18.5	.115	.088	5.1	8.5	85	7.5	267	15.1	1.4	156
Aug													
13...	0845	750	22.0	.143	.109	4.7	7.1	80	7.5	241	21.5	1.4	139

01382500 PEQUANNOCK RIVER AT MACOPIN INTAKE DAM, NJ—Continued

WATER-QUALITY DATA
WATER YEAR OCTOBER 2008 TO SEPTEMBER 2009

Part 2 of 3

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

Date	Dis- solved solids, sum of consti- tuents, mg/L (70301)	Hard- ness, water, mg/L as CaCO3 (00900)	Sus- pended solids, water, unfltrd mg/L (00530)	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)	Total carbon, suspnd sedimnt total, mg/L (00694)	Chlor- ide, water, fltrd, mg/L (00940)	Fluor- ide, water, fltrd, mg/L (00950)	Inor- ganic carbon, suspnd sedimnt total, mg/L (00688)	Silica, water, fltrd, mg/L as SiO2 (00955)
Dec 11...	E119	45	1	11.3	4.17	1.31	24.8	28	.2	43.1	<.08	<.04	7.3
Feb 02...	E118	49	6	12.6	4.37	.89	22.9	28	.3	43.7	<.08	<.04	6.9
May 28...	E137	56	3	14.5	4.85	.95	27.3	34	.3	52.0	E.09	<.04	6.9
Aug 13...	E120	53	2	13.6	4.74	.88	22.8	38	.2	40.6	E.06	E.1	5.9

WATER-QUALITY DATA
WATER YEAR OCTOBER 2008 TO SEPTEMBER 2009

Part 3 of 3

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

Date	Sulfate water, fltrd, mg/L (00945)	Ammonia + org-N, water, fltrd, mg/L as N (00623)	Ammonia water, fltrd, mg/L as N (00608)	Nitrate + nitrite water, fltrd, mg/L as N (00631)	Ortho- phos- phate, water, fltrd, mg/L as P (00671)	Partic- ulate nitro- gen, susp, water, mg/L (49570)	Phos- phorus, water, fltrd, mg/L as P (00666)	Phos- phorus, water, unfltrd mg/L as P (00665)	Total nitro- gen, water, fltrd, mg/L (00602)	Total nitro- gen, water, unfltrd mg/L (00600)	Organic carbon, suspnd sedimnt total, mg/L (00689)	Organic carbon, water, fltrd, mg/L (00681)
Dec 11...	8.71	.26	.024	.31	E.008	.03	.010	.018	.57	.60	.25	4.7
Feb 02...	8.44	.21	.018	.29	E.008	.03	E.007	.013	.51	.54	.29	3.6
May 28...	9.11	.21	.020	.26	.010	.05	.013	.020	.47	.52	.30	2.9
Aug 13...	7.05	.22	.022	.23	.015	.02	.019	.026	.45	.47	.16	3.8

01382500 PEQUANNOCK RIVER AT MACOPIN INTAKE DAM, NJ—Continued

TEMPERATURE, WATER, DEGREES CELSIUS
WATER YEAR OCTOBER 2008 TO SEPTEMBER 2009

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
	October			November			December			January		
1	---	---	---	---	---	---	---	---	---	---	---	---
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01382500 PEQUANNOCK RIVER AT MACOPIN INTAKE DAM, NJ—Continued

TEMPERATURE, WATER, DEGREES CELSIUS
WATER YEAR OCTOBER 2008 TO SEPTEMBER 2009

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
	February			March			April			May		
1	---	---	---	---	---	---	---	---	---	---	---	---
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01382500 PEQUANNOCK RIVER AT MACOPIN INTAKE DAM, NJ—Continued

TEMPERATURE, WATER, DEGREES CELSIUS
WATER YEAR OCTOBER 2008 TO SEPTEMBER 2009

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
	June			July			August			September		
1	---	---	---	---	---	---	24.0	21.0	22.5	20.8	19.2	20.1
2	---	---	---	---	---	---	23.3	20.7	21.6	20.1	18.4	19.4
3	---	---	---	---	---	---	26.1	21.0	24.3	20.6	18.8	19.9
4	---	---	---	---	---	---	26.0	23.8	25.0	21.5	19.7	20.7
5	---	---	---	---	---	---	25.7	24.1	25.0	22.2	20.6	21.5
6	---	---	---	---	---	---	24.8	22.7	23.7	22.1	20.5	21.4
7	---	---	---	---	---	---	23.5	21.5	22.6	21.1	19.6	20.4
8	---	---	---	---	---	---	22.3	20.8	21.6	20.8	19.4	20.2
9	---	---	---	---	---	---	21.8	21.0	21.2	21.4	20.0	20.6
10	---	---	---	---	---	---	25.3	20.3	22.5	20.4	18.8	19.4
11	---	---	---	---	---	---	26.2	22.5	24.1	18.9	17.7	18.1
12	---	---	---	---	---	---	24.4	22.3	23.4	18.6	17.6	18.1
13	---	---	---	---	---	---	22.9	21.0	21.6	20.6	18.5	19.4
14	---	---	---	---	---	---	23.4	20.1	21.7	20.5	18.8	19.7
15	---	---	---	---	---	---	25.5	20.9	23.2	20.4	18.5	19.5
16	---	---	---	---	---	---	26.0	23.4	24.7	19.8	18.4	19.1
17	---	---	---	---	---	---	26.3	23.4	25.0	18.4	17.0	17.7
18	---	---	---	---	---	---	28.1	22.7	25.2	18.5	16.2	17.3
19	---	---	---	---	---	---	26.2	22.5	24.2	18.0	16.4	17.3
20	---	---	---	---	---	---	24.7	22.9	23.9	17.5	15.4	16.6
21	---	---	---	---	---	---	24.8	23.7	24.2	18.0	15.7	17.0
22	---	---	---	---	---	---	23.8	22.6	23.2	18.4	17.0	17.7
23	---	---	---	---	---	---	24.3	22.3	23.2	19.8	18.0	18.9
24	---	---	---	---	---	---	24.6	22.2	23.3	21.1	19.2	20.0
25	---	---	---	---	---	---	24.9	22.3	23.4	19.8	16.9	18.4
26	---	---	---	---	---	---	24.8	22.5	23.6	16.9	15.0	15.9
27	---	---	---	---	---	---	23.9	22.6	23.1	16.9	15.9	16.3
28	---	---	---	---	---	---	22.8	20.6	21.6	17.9	16.1	17.0
29	---	---	---	22.8	21.3	21.9	20.9	20.2	20.5	17.4	15.1	16.2
30	---	---	---	25.2	21.0	22.7	23.4	20.9	21.9	15.2	12.8	14.3
31	---	---	---	23.1	21.4	22.3	22.0	20.6	21.2	---	---	---
Month	---	---	---	---	---	---	28.1	20.1	23.1	22.2	12.8	18.6

01382500 PEQUANNOCK RIVER AT MACOPIN INTAKE DAM, NJ—Continued

