



Water-Data Report 2010

01467150 COOPER RIVER AT HADDONFIELD, NJ

DELAWARE RIVER BASIN

LOCATION.--Lat 39°54'11", long 75°01'17" referenced to North American Datum of 1983, Cherry Hill Township, Camden County, NJ, Hydrologic Unit 02040202, on right bank just upstream of dam on Wallworth Lake in Pennypacker Park, 200 ft upstream from bridge on State Highway 41 (Kings Highway) in Haddonfield, 0.6 mi upstream from North Branch Cooper River, and 7.7 mi upstream from mouth.

DRAINAGE AREA.--17.0 mi².

SURFACE-WATER RECORDS

PERIOD OF RECORD.--October 1963 to current year.

REVISED RECORDS.--WDR NJ-1969: 1967(M). WDR NJ-82-2: Drainage area. WDR NJ-04-1: 1971(M).

GAGE.--Water-stage recorder above concrete dam. Datum of gage is 9.29 ft above NGVD of 1929.

REMARKS.--Records fair, except for estimated daily discharges and discharges below 40 ft³/s, which are poor. Bypass gates were installed on both sides of the dam in August 1987. Occasional regulation at low flow from small lakes upstream. Small wastewater treatment plants in the basin were regionalized after the summer 1987, significantly reducing low flow. Several measurements of water temperature were made during the year. Satellite telemetry at station.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 500 ft³/s and (or) maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Dec 9	1215	818	3.32
Dec 26	2030	667	3.08
Jan 25	1430	548	2.87
Mar 13	1915	*997	*3.58
Mar 29	0645	511	2.80

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01467150 COOPER RIVER AT HADDONFIELD, NJ—Continued

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2009 TO SEPTEMBER 2010
DAILY MEAN VALUES
[*e*, estimated]

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	13	38	27	51	21	44	52	20	e17	11	7.9	7.1
2	12	25	22	34	21	42	37	17	e13	10	7.8	6.7
3	20	19	221	27	24	40	34	75	e12	9.8	7.8	6.9
4	19	19	43	24	24	36	32	31	e12	9.1	8.0	6.5
5	10	17	73	23	e22	31	31	21	e11	8.5	8.3	6.2
6	11	16	89	22	28	29	30	19	e10	8.4	8.1	6.4
7	13	15	33	22	30	26	29	18	9.3	8.6	7.6	6.6
8	9.3	15	26	22	28	24	26	18	9.1	8.8	7.9	6.7
9	9.4	15	421	21	26	22	51	17	14	9.4	8.5	6.4
10	10	16	100	19	38	21	34	16	19	12	8.8	5.9
11	9.2	16	34	19	46	23	30	16	12	22	9.0	5.9
12	11	53	28	19	35	33	29	41	12	e12	9.9	11
13	e10	45	134	21	29	537	28	23	30	e76	8.4	8.5
14	11	40	110	18	26	338	27	23	34	e205	7.1	8.0
15	38	26	39	17	26	180	e23	50	17	e125	7.1	6.3
16	49	20	33	18	31	81	21	22	14	e24	8.3	9.8
17	75	18	26	65	27	43	24	17	14	e23	8.0	25
18	74	16	22	67	27	36	22	98	13	e14	13	8.3
19	27	16	23	33	37	33	21	51	12	e28	9.8	7.0
20	17	83	29	27	46	30	20	27	11	e18	8.2	6.9
21	15	28	32	23	44	31	20	20	11	e14	8.2	6.3
22	14	20	31	21	39	79	24	17	11	e14	28	8.5
23	12	19	30	20	190	123	24	16	12	e11	36	19
24	50	32	27	19	194	42	20	16	36	e10	14	7.1
25	155	22	35	244	116	32	20	17	33	e18	9.8	6.8
26	30	19	496	104	67	42	28	15	17	e17	8.6	6.1
27	47	18	277	38	44	31	37	14	15	9.0	7.9	16
28	274	15	61	29	39	29	31	14	15	8.6	7.3	13
29	68	16	36	25	---	274	24	14	16	8.6	7.3	11
30	31	21	29	22	---	194	21	e17	13	8.6	7.5	50
31	25	---	30	21	---	145	---	e13	---	8.3	7.1	---
Total	1,168.9	738	2,617	1,135	1,325	2,671	850	793	474.4	769.7	311.2	305.9
Mean	37.7	24.6	84.4	36.6	47.3	86.2	28.3	25.6	15.8	24.8	10.0	10.2
Max	274	83	496	244	194	537	52	98	36	205	36	50
Min	9.2	15	22	17	21	21	20	13	9.1	8.3	7.1	5.9
Cfsm	2.22	1.45	4.97	2.15	2.78	5.07	1.67	1.50	0.93	1.46	0.59	0.60
In.	2.56	1.61	5.73	2.48	2.90	5.84	1.86	1.74	1.04	1.68	0.68	0.67

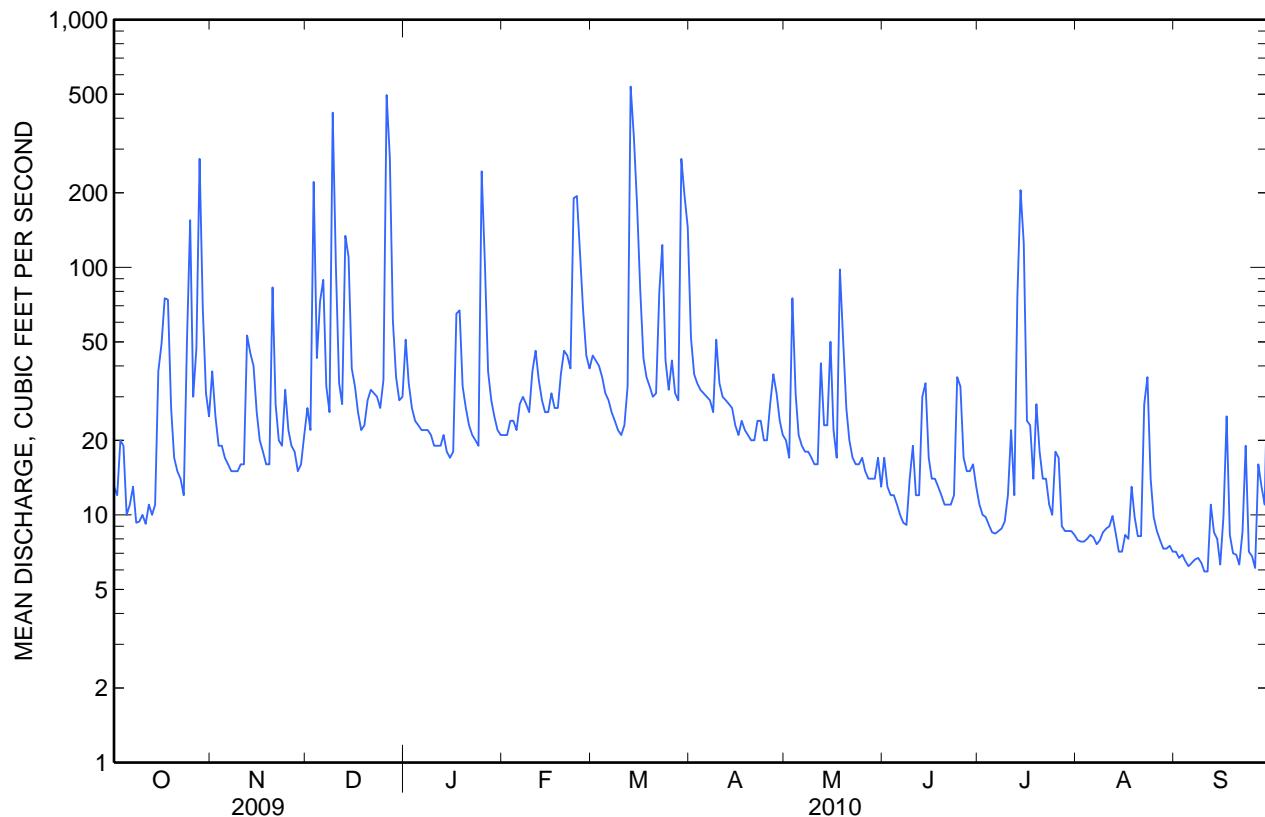
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1964 - 2010, BY WATER YEAR (WY)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Mean	26.3	30.0	37.9	36.9	35.5	41.8	40.0	33.3	28.9	29.8	27.5	25.4
Max	57.8	79.6	85.3	97.8	76.1	86.2	102	66.7	61.5	88.7	97.6	65.8
(WY)	(2006)	(1973)	(1997)	(1978)	(1979)	(2010)	(2007)	(1983)	(2003)	(2004)	(1971)	(1975)
Min	9.26	8.03	8.21	14.6	11.0	14.2	15.1	14.2	10.9	10.5	7.79	5.67
(WY)	(1966)	(2002)	(1999)	(1992)	(2002)	(2009)	(1992)	(1965)	(1988)	(1999)	(1966)	(2001)

SUMMARY STATISTICS

	Calendar Year 2009		Water Year 2010		Water Years 1964 - 2010	
Annual total	11,724.5		13,159.1			
Annual mean	32.1		36.1		32.8	
Highest annual mean					50.6	1973
Lowest annual mean					15.6	2002
Highest daily mean	496	Dec 26	537	Mar 13	1,510	Aug 28, 1971
Lowest daily mean	7.4	Jul 10	5.9	Sep 10, 11	1.2	Jun 27, 1964
Annual seven-day minimum	7.7	Jul 5	6.3	Sep 5	3.6	Sep 4, 2001
Maximum peak flow			997	Mar 13	3,300	Jul 13, 2004
Maximum peak stage			3.58	Mar 13	6.27	Jul 13, 2004
Instantaneous low flow			5.5	Sep 12	^a 0.80	Nov 13, 1972
Annual runoff (cfsm)	1.89		2.12		1.93	
Annual runoff (inches)	25.66		28.80		26.19	
10 percent exceeds	59		66		58	
50 percent exceeds	16		21		21	
90 percent exceeds	10		8.3		9.9	

^a Regulation from unknown source.



01467150 COOPER RIVER AT HADDONFIELD, NJ—Continued**WATER-QUALITY RECORDS**

PERIOD OF RECORD.--Water years 1968-79, 1991 to current year.

PERIOD OF DAILY RECORD.--

SUSPENDED-SEDIMENT DISCHARGE: March 1968 to September 1969.

WATER TEMPERATURE: March 1968 to August 1969, recorded once daily; October 1998 to September 2001, recorded hourly.

REMARKS.--Cooperative Network Site Descriptor: Urban Land Use Indicator, NJ Department of Environmental Protection Watershed Management Area 18.

COOPERATION.--Physical measurements and samples for laboratory analyses 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 2009 TO SEPTEMBER 2010**

Part 1 of 5

[%, percent; ANC, acid neutralizing capacity; CaCO₃, calcium carbonate; N, nitrogen; NTRU, nephelometric turbidity ratio unit; P, phosphorus; SiO₂, silicon dioxide; cm, centimeter; ft³/s, cubic feet per second; mg/L, milligrams per liter; mm Hg, millimeters of mercury; nm, nanometers; °C, degrees Celsius; µS/cm, microsiemens per centimeter; <, less than; E, estimated]

Date	Sample start time	Barometric pressure, mm Hg (00025)	Tempera-ture, air, °C (00020)	Absorbance, UV, 254 nm, 1 cm path length, water, filtered, units	Absorbance, UV, organic constituents, 280 nm, 1 cm path length, water, filtered, units	Discharge, instantane-ous, ft ³ /s (00061)	Dissolved oxygen, water, unfiltered, % saturation (00301)			pH, water, unfiltered, field, standard units (00400)
							cm path length, water, filtered, units	per centimeter (50624)	per centimeter (61726)	
12-08-2009	1100	770	3.9	.268	.216	26	9.6	76	6.9	
02-24-2010	1030	756	4.5	.142	.115	184	9.7	74	7.2	
05-18-2010	1100	762	14.7	.122	.098	157	7.3	73	7.0	
09-01-2010	0930	764	25.1	.038	.030	7.4	4.7	55	7.0	

**WATER-QUALITY DATA
WATER YEAR OCTOBER 2009 TO SEPTEMBER 2010**

Part 2 of 5

[%, percent; ANC, acid neutralizing capacity; CaCO₃, calcium carbonate; N, nitrogen; NTRU, nephelometric turbidity ratio unit; P, phosphorus; SiO₂, silicon dioxide; cm, centimeter; ft³/s, cubic feet per second; mg/L, milligrams per liter; mm Hg, millimeters of mercury; nm, nanometers; °C, degrees Celsius; µS/cm, microsiemens per centimeter; <, less than; E, estimated]

Date	Specific conduc-tance, water, unfiltered, µS/cm at 25 °C (00095)	Tempera-ture, water, °C (00010)	Turbidity, water, unfiltered, broad band light source (400-680 nm), detectors at multiple angles including 90 +/- 30 degrees, ratiometric correction, NTRU (63676)	Dissolved solids, dried at 180 °C, water, filtered, milligrams mg/L (70300)	Dissolved solids, water, filtered, sum of constituents, milligrams per liter (70301)			Hardness, water, mg/L as CaCO ₃ (00900)	Suspended solids, water, unfiltered, mg/L (00530)	Calcium, water, filtered, mg/L (00915)	Magne-sium, water, filtered, mg/L (00925)
					Dissolved solids, water, filtered, dried at 180 °C, water, filtered, milligrams mg/L (70300)	Hardness, water, mg/L as CaCO ₃ (00900)	Suspended solids, water, unfiltered, mg/L (00530)				
12-08-2009	264	5.3	16	156	139	58.3	11	16.2	4.31		
02-24-2010	414	2.4	29	225	E 204	41.7	7	12.1	2.83		
05-18-2010	246	14.2	34	150	125	45.4	15	12.8	3.24		
09-01-2010	279	21.8	31	181	158	70.0	12	18.6	5.71		

01467150 COOPER RIVER AT HADDONFIELD, NJ—Continued

WATER-QUALITY DATA
WATER YEAR OCTOBER 2009 TO SEPTEMBER 2010

Part 3 of 5

[%, percent; ANC, acid neutralizing capacity; CaCO₃, calcium carbonate; N, nitrogen; NTRU, nephelometric turbidity ratio unit; P, phosphorus; SiO₂, silicon dioxide; cm, centimeter; ft³/s, cubic feet per second; mg/L, milligrams per liter; mm Hg, millimeters of mercury; nm, nanometers; °C, degrees Celsius; µS/cm, microsiemens per centimeter; <, less than; E, estimated]

Date	ANC, water, unfiltered, fixed endpoint (pH 4.5)						Carbon (inorganic plus organic), Chloride, water, suspended sediment, filtered, mg/L			Inorganic carbon, water, suspended sediment, filtered, mg/L	Silica, water, filtered, mg/L as SiO ₂	Ammonia plus organic nitrogen, water, filtered, mg/L as N
	Potassium, water, filtered, mg/L (00935)	Sodium, water, filtered, mg/L (00930)	titration, laboratory, mg/L as CaCO ₃	total, mg/L (90410)	Fluoride, water, filtered, mg/L (00940)	(00950)	(00688)	(00955)	(00945)	(00623)		
12-08-2009	3.30	21.8	32	.65	42.4	.11	<.06	10.1	20.4	.42		
02-24-2010	2.30	57.6	24	.53	95.9	E .08	E .04	4.2	12.9	.34		
05-18-2010	2.90	23.8	29	.94	42.6	.09	<.06	7.0	13.7	.45		
09-01-2010	4.84	22.9	27	.43	47.7	.22	<.06	14.2	26.0	.30		

WATER-QUALITY DATA
WATER YEAR OCTOBER 2009 TO SEPTEMBER 2010

Part 4 of 5

[%, percent; ANC, acid neutralizing capacity; CaCO₃, calcium carbonate; N, nitrogen; NTRU, nephelometric turbidity ratio unit; P, phosphorus; SiO₂, silicon dioxide; cm, centimeter; ft³/s, cubic feet per second; mg/L, milligrams per liter; mm Hg, millimeters of mercury; nm, nanometers; °C, degrees Celsius; µS/cm, microsiemens per centimeter; <, less than; E, estimated]

Date	Nitrate plus nitrite, water, filtered, mg/L as N			Orthophos- phate, water, filtered, mg/L as P	Particulate nitrogen, suspended water, filtered, mg/L	Phosphorus, water, as P (49570)	Phosphorus, water, filtered, mg/L (00666)	Phosphorus, water, unfiltered, mg/L as P (00665)	Total nitrogen, water, unfiltered, mg/L (00602)	Total nitrogen, water, unfiltered, mg/L (00600)	Organic carbon, suspended sediment, total, mg/L (00689)
	Ammonia, water, filtered, mg/L as N (00608)	mg/L as N (00631)	mg/L as P (00671)	mg/L (49570)	mg/L (00666)	mg/L as P (00665)	mg/L (00602)	mg/L (00600)	mg/L (00689)		
12-08-2009	.155	.34	.015	.05	.033	.178	.77	.81	.65		
02-24-2010	.103	.40	.019	.05	.027	.183	.74	.79	.49		
05-18-2010	.155	.27	--	.10	.028	.265	.72	.82	.93		
09-01-2010	.140	.26	--	.06	.009	.186	.56	.62	.43		

01467150 COOPER RIVER AT HADDONFIELD, NJ—Continued

**WATER-QUALITY DATA
WATER YEAR OCTOBER
2009 TO SEPTEMBER
2010**

Part 5 of 5
 [%; percent; ANC, acid
 neutralizing capacity;
 CaCO_3 , calcium carbonate;
 N, nitrogen; NTRU,
 nephelometric turbidity
 ratio unit; P, phosphorus;
 SiO_2 , silicon dioxide; cm,
 centimeter; ft^3/s , cubic
 feet per second; mg/L,
 milligrams per liter; mm
 Hg, millimeters of
 mercury; nm, nanometers;
 °C, degrees Celsius;
 $\mu\text{S}/\text{cm}$, microsiemens per
 centimeter; <, less than; E,
 estimated]

Date	Organic carbon, water, filtered,	mg/L (00681)
12-08-2009		5.4
02-24-2010		4.1
05-18-2010		2.6
09-01-2010		1.2