Water-Data Report 2013

01471000 TULPEHOCKEN CREEK NEAR READING, PA

Lower Delaware Basin
Schuylkill Subbasin

LOCATION.--Lat 40°22′08″, long 75°58′46″ referenced to North American Datum of 1927, Berks County, PA, Hydrologic Unit 02040203, on right bank 15 ft upstream from covered bridge on Township Route 921, 1.0 mi downstream from Cacoosing Creek, 2.5 mi upstream from mouth, and 3.5 mi northwest of town square in Reading.

DRAINAGE AREA.--211 mi^2.

SURFACE-WATER RECORDS

PERIOD OF RECORD.--October 1950 to current year.

REVISED RECORDS.--WSP 1382: 1951-53, 1954 (M). WSP 2102: 1965 (M). WDR PA-72-1: 1971 (M).

GAGE.--Water-stage recorder. Datum of gage is 216.60 ft above National Geodetic Vertical Datum of 1929. Satellite and landline telemetry at station.

COOPERATION.--Station established and maintained by the U.S. Geological Survey. Funding for this station is provided by the U.S. Army Corps of Engineers, Philadelphia District, and the Pennsylvania Department of Environmental Protection.

REMARKS.--No estimated daily discharges. Records good except those for discharges less than 100 ft^3/s, which are fair. Flow regulated since April 1979 by Blue Marsh Lake (station 01470870) 3.9 mi upstream. Several measurements of water temperature were made during the year.

Suggested citation: U.S. Geological Survey, 2014, Water-resources data for the United States, Water Year 2013: U.S. Geological Survey Water-Data Report WDR-US-2013, site 01471000, accessed at http://wdr.water.usgs.gov/wy2013/pdfs/01471000.2013.pdf

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DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2012 TO SEPTEMBER 2013
DAILY MEAN VALUES

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	147	1,380	156	270	912	356	235	275	149	328	279	143
2	323	1,320	155	288	1,150	312	207	223	149	335	248	142
3	982	1,180	158	309	1,110	309	185	183	153	202	229	140
4	762	1,150	167	269	1,080	307	173	182	149	150	227	140
5	344	841	170	251	845	303	159	179	134	137	188	140
6	295	335	154	251	548	292	158	191	123	125	155	143
7	293	288	145	244	451	268	157	201	298	122	179	109
8	293	249	146	240	408	240	156	517	259	122	393	109
9	226	227	145	231	404	228	155	968	240	127	363	108
10	159	257	240	221	398	228	159	956	533	158	208	97
11	193	253	308	225	365	209	264	650	742	176	176	142
12	212	252	305	231	362	314	346	632	683	169	197	156
13	211	339	246	227	394	307	323	690	535	225	560	142
14	212	402	201	285	364	326	314	606	479	147	516	131
15	299	373	201	338	322	318	241	427	311	220	482	131
16	363	257	201	545	314	319	208	319	301	263	384	131
17	359	254	242	628	308	314	207	269	322	197	273	129
18	354	253	248	552	302	310	227	232	302	146	270	117
19	802	253	244	426	335	405	275	232	263	125	235	106
20	1,150	216	242	415	382	462	474	278	223	117	204	106
21	1,200	225	665	406	329	458	576	331	184	114	185	108
22	886	184	794	340	288	452	368	271	169	126	196	117
23	619	183	764	259	290	447	298	232	169	1,930	187	120
24	568	183	748	229	289	440	294	196	165	1,760	181	131
25	531	182	738	227	288	445	289	183	193	768	179	130
26	755	192	792	228	285	397	263	180	211	360	178	130
27	732	200	721	226	348	319	235	179	202	246	169	115
28	1,070	225	569	256	406	263	232	194	250	325	184	98
29	837	207	457	313	---	240	238	224	211	319	188	98
30	644	167	449	355	---	234	250	190	201	337	169	86
31	775	---	350	808	---	234	---	157	---	294	143	---
Total	16,596	12,027	11,121	10,093	13,277	10,056	7,666	10,547	8,303	10,170	7,725	3,695
Mean	535	401	359	326	474	324	256	340	277	328	249	123
Max	1,200	1,380	794	808	1,150	462	576	968	742	1,930	560	156
Min	147	167	145	221	285	209	155	157	123	114	143	86

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1951 - 1979, BY WATER YEAR (WY) (PRIOR TO REGULATION)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Mean	178	259	360	405	444	522	451	318	263	210	178	192
Max	689	490	829	1,193	917	914	806	712	1,434	645	481	588
(WY)	(1977)	(1973)	(1978)	(1979)	(1971)	(1978)	(1970)	(1953)	(1972)	(1969)	(1955)	(1975)
Min	55.8	67.5	84.4	124	178	202	170	116	72.8	57.5	41.9	54.8
(WY)	(1964)	(1966)	(1966)	(1966)	(1969)	(1969)	(1966)	(1965)	(1965)	(1966)	(1966)	(1957)

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SUMMARY STATISTICS

	Water Years 1951 - 1979	
Annual mean	314	
Highest annual mean	491	1952
Lowest annual mean	144	1966
Highest daily mean	12,000	Jun 23 1972
Lowest daily mean	33	Sep 1 1966
Annual seven-day minimum	35	Aug 28 1966
Maximum peak flow	[a]17,000	Jun 23 1972
Maximum peak stage	[b]15.65	Jun 23 1972
Instantaneous low flow	23	Dec 1 1964
Annual runoff (cfsm)	1.49	
Annual runoff (inches)	20.23	
10 percent exceeds	613	
50 percent exceeds	211	
90 percent exceeds	86	

[a] From rating curve extended above 3,600 ft³/s on basis of contracted-opening measurement of peak flow.
[b] From floodmark in gage shelter.

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1980 - 2013, BY WATER YEAR (WY)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Mean	286	314	440	379	398	518	403	351	308	241	183	237
Max	651	935	1,220	1,069	878	1,604	1,191	1,226	968	904	812	1,768
(WY)	(1997)	(2007)	(1997)	(1996)	(2008)	(1994)	(1983)	(1989)	(2003)	(2006)	(2004)	(2011)
Min	78.3	67.6	80.1	99.8	94.5	134	64.2	155	98.8	80.2	63.1	63.0
(WY)	(1996)	(2002)	(1999)	(1981)	(2002)	(2002)	(1985)	(1999)	(1999)	(2002)	(1981)	(1983)

SUMMARY STATISTICS

	Calendar Year 2012		Water Year 2013		Water Years 1980 - 2013	
Annual total	109,366		121,276			
Annual mean	299		332		338	
Highest annual mean					531	1984
Lowest annual mean					133	2002
Highest daily mean	2,300	Jun 3	1,930	Jul 23	6,370	Sep 9, 2011
Lowest daily mean	55	Sep 15	86	Sep 30	27	Sep 24, 1991
Annual seven-day minimum	58	Sep 10	113	Sep 24	35	Sep 19, 1995
Maximum peak flow			3,220	Jul 23	[a]7,010	Sep 8, 2011
Maximum peak stage			5.06	Jul 23	8.18	Sep 8, 2011
10 percent exceeds	642		672		674	
50 percent exceeds	212		251		232	
90 percent exceeds	90		142		88	

[a] From rating curve extended above 4,510 ft³/s on basis of contracted-opening measurement of peak flow at gage height 15.65 ft.

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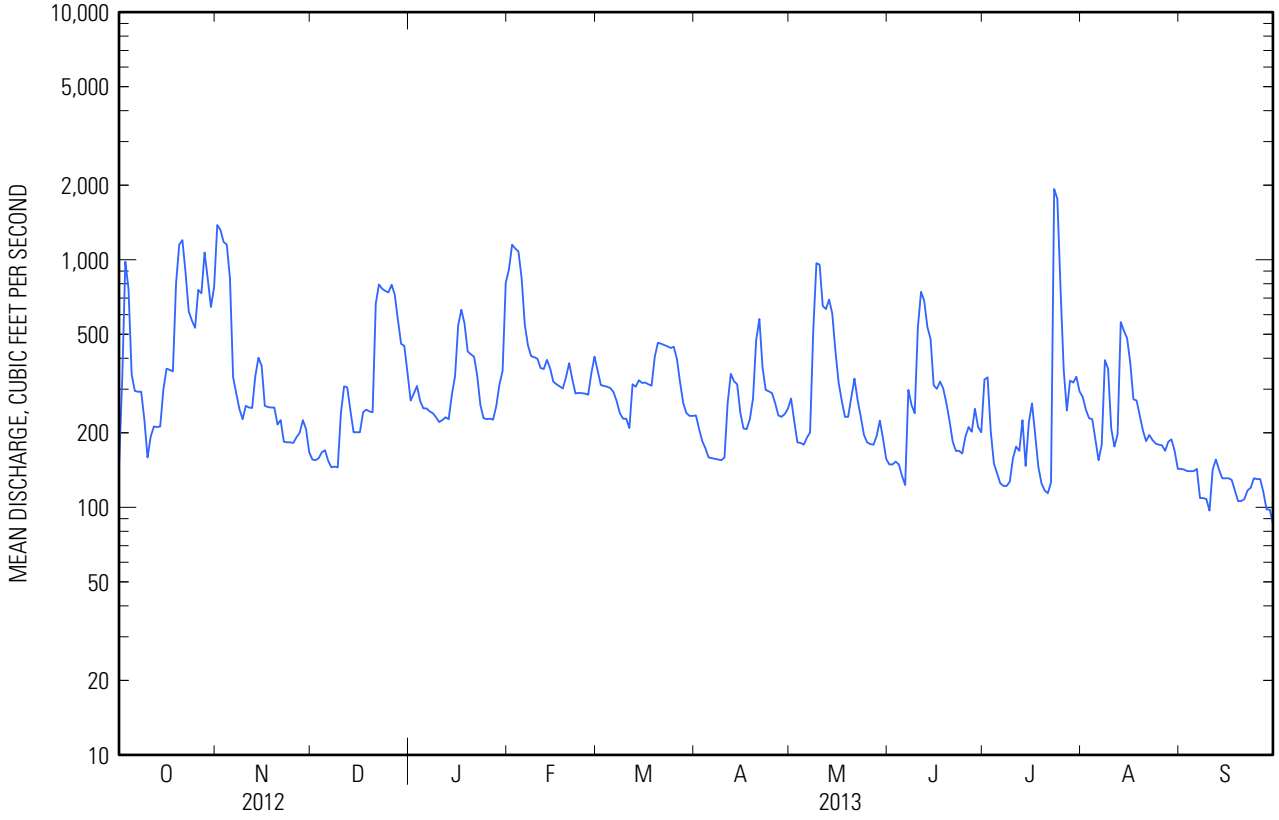

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WATER-QUALITY RECORDS

PERIOD OF RECORD.--April 2002 to current year.

COOPERATION.--Water-quality samples were collected as part of the Pennsylvania Department of Environmental Protection Water-Quality Network (WQN) with cooperation from the Pennsylvania Department of Environmental Protection.

REMARKS.--Analyses for pH, water temperature, specific conductance, and dissolved oxygen were performed on site. All other sample analyses were performed at the Pennsylvania Department of Environmental Protection laboratory in Harrisburg, Pa. Occasionally, values for filtered parameters may exceed values for the corresponding unfiltered parameter. These results are within the limits of analytical precision and methods.

WATER-QUALITY DATA
WATER YEAR OCTOBER 2012 TO SEPTEMBER 2013
Part 1 of 4

[ANC, acid neutralizing capacity; $CaCO_3$, calcium carbonate; N, nitrogen; P, phosphorus; ft³/s, cubic feet per second; mg/L, milligrams per liter; °C, degrees Celsius; µS/cm, microsiemens per centimeter; µg/L, micrograms per liter; --, no data; <, less than; M, presence verified but not quantified]

Date	Sample start time	Discharge, instantaneous, ft³/s (00061)	Dissolved oxygen, water, unfiltered, mg/L (00300)	pH, water, unfiltered, field, standard units (00400)	pH, water, unfiltered, laboratory, standard units (00403)	Specific conductance, water, unfiltered, laboratory, µS/cm at 25°C (90095)	Specific conductance, water, unfiltered, µS/cm at 25°C (00095)	Temperature, water, °C (00010)	Dissolved solids dried at 180°C, water, filtered, mg/L (70300)	Hardness, water, mg/L as $CaCO_3$ (00900)
11-13-2012	**1300**	413	13.7	8.3	8.2	373	369	9.2	222	160
01-15-2013	**0930**	338	13.5	8.0	8.3	397	405	4.5	238	170
03-25-2013	**1000**	445	14.4	8.6	8.5	399	398	5.3	240	160
05-29-2013	**1500**	224	9.5	7.8	8.2	380	372	16.5	234	140
07-08-2013	**1400**	122	11.6	8.3	8.5	427	429	23.5	272	160
09-09-2013	**1330**	108	11.6	8.1	7.9	434	455	19.3	274	180

WATER-QUALITY DATA
WATER YEAR OCTOBER 2012 TO SEPTEMBER 2013
Part 2 of 4

[ANC, acid neutralizing capacity; $CaCO_3$, calcium carbonate; N, nitrogen; P, phosphorus; ft³/s, cubic feet per second; mg/L, milligrams per liter; °C, degrees Celsius; µS/cm, microsiemens per centimeter; µg/L, micrograms per liter; --, no data; <, less than; M, presence verified but not quantified]

Date	Sample start time	Suspended solids, water, unfiltered, mg/L (00530)	Calcium, water, unfiltered, recoverable, mg/L (00916)	Magnesium, water, unfiltered, recoverable, mg/L (00927)	ANC, water, unfiltered, fixed endpoint (pH 4.5) titration, laboratory, mg/L as $CaCO_3$ (00417)	Bromide, water, filtered, mg/L (71870)	Chloride, water, filtered, mg/L (00940)	Sulfate, water, filtered, mg/L (00945)	Ammonia, water, unfiltered, mg/L as N (00610)	Nitrate, water, unfiltered, mg/L as N (00620)
11-13-2012	**1300**	8	44.1	11.0	125	--	20.0	20.0	0.060	5.16
01-15-2013	**0930**	< 5	49.0	11.8	134	--	21.7	20.9	< .020	5.55
03-25-2013	**1000**	< 5	46.5	11.7	126	--	28.9	20.3	< .020	4.98
05-29-2013	**1500**	10	37.1	10.7	119	< 0.025	27.5	19.7	.080	3.86
07-08-2013	**1400**	6	44.2	12.9	140	< 0.025	33.0	21.7	.030	3.62
09-09-2013	**1330**	< 5	48.0	14.0	152	< 0.025	21.7	21.8	.040	3.49

01471000 TULPEHOCKEN CREEK NEAR READING, PA—Continued

WATER-QUALITY DATA
WATER YEAR OCTOBER 2012 TO SEPTEMBER 2013
Part 3 of 4
[ANC, acid neutralizing capacity; $CaCO_3$, calcium carbonate; N, nitrogen; P, phosphorus; ft^3/s, cubic feet per second; mg/L, milligrams per liter; °C, degrees Celsius; µS/cm, microsiemens per centimeter; µg/L, micrograms per liter; --, no data; <, less than; M, presence verified but not quantified]

Date	Sample start time	Nitrite, water, unfiltered, mg/L as N (00615)	Orthophosphate, water, unfiltered, mg/L as P (70507)	Phosphorus, water, unfiltered, mg/L as P (00665)	Total nitrogen, water, unfiltered, mg/L (00600)	Aluminum, water, unfiltered, recoverable, µg/L (01105)	Copper, water, unfiltered, recoverable, µg/L (01042)	Iron, water, unfiltered, recoverable, µg/L (01045)	Lead, water, unfiltered, recoverable, µg/L (01051)	Manganese, water, unfiltered, recoverable, µg/L (01055)
11-13-2012	**1300**	< .040	0.04	0.055	5.5	< 200	< 4	110	< 1.0	40
01-15-2013	**0930**	< .040	.02	.032	6.0	< 200	< 4	60	< 1.0	20
03-25-2013	**1000**	< .040	< .01	.030	5.4	< 200	20	60	< 1.0	20
05-29-2013	**1500**	< .040	.03	.047	4.2	< 200	10	260	< 1.0	90
07-08-2013	**1400**	< .040	.05	.061	3.9	< 200	M	90	< 1.0	40
09-09-2013	**1330**	< .040	.06	.063	3.8	< 200	< 4	50	< 1.0	30

WATER-QUALITY DATA
WATER YEAR OCTOBER 2012 TO SEPTEMBER 2013
Part 4 of 4
[ANC, acid neutralizing capacity; $CaCO_3$, calcium carbonate; N, nitrogen; P, phosphorus; ft^3/s, cubic feet per second; mg/L, milligrams per liter; °C, degrees Celsius; µS/cm, microsiemens per centimeter; µg/L, micrograms per liter; --, no data; <, less than; M, presence verified but not quantified]

Date	Sample start time	Nickel, water, unfiltered, recoverable, µg/L (01067)	Zinc, water, unfiltered, recoverable, µg/L (01092)
11-13-2012	**1300**	< 50	< 10
01-15-2013	**0930**	< 50	< 10
03-25-2013	**1000**	< 50	< 10
05-29-2013	**1500**	< 50	< 10
07-08-2013	**1400**	< 50	< 10
09-09-2013	**1330**	< 50	< 10