



Water-Data Report 2007

**01479820 RED CLAY CREEK NEAR KENNETT SQUARE, PA**

Lower Delaware Basin  
Brandywine-Christina Subbasin

LOCATION.--Lat 39°49'00", long 75°41'31" referenced to North American Datum of 1927, Chester County, PA, Hydrologic Unit 02040205, on left bank along SR 82 (Creek Road), and 3.0 mi south of the intersection of SR 82 and U.S. Highway 1 at Kennett Square.

DRAINAGE AREA.--28.3 mi<sup>2</sup>.

**SURFACE-WATER RECORDS**

PERIOD OF RECORD.--January 1988 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 196.02 ft above National Geodetic Vertical Datum of 1929. Satellite telemetry at station.

COOPERATION.--Station established and maintained by the U.S. Geological Survey in cooperation with the Pennsylvania Department of Environmental Protection and the Delaware Geological Survey.

REMARKS.--Records poor except those above 200 ft<sup>3</sup>/s, which are fair. Some regulation upstream of gage. Several measurements of water temperature were made during the year.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,000 ft<sup>3</sup>/s and (or) maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Oct 28	0930	1,580	6.38
Nov 8	1100	1,030	5.66
Mar 2	0830	*2,380	*7.10
Apr 15	1445	1,820	6.62

Minimum discharge, 8.8 ft<sup>3</sup>/s, Sept. 24, 25, gage height, 3.14 ft.

**01479820 RED CLAY CREEK NEAR KENNETT SQUARE, PA—Continued**

**DISCHARGE, CUBIC FEET PER SECOND**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**  
**DAILY MEAN VALUES**  
[*e*, estimated]

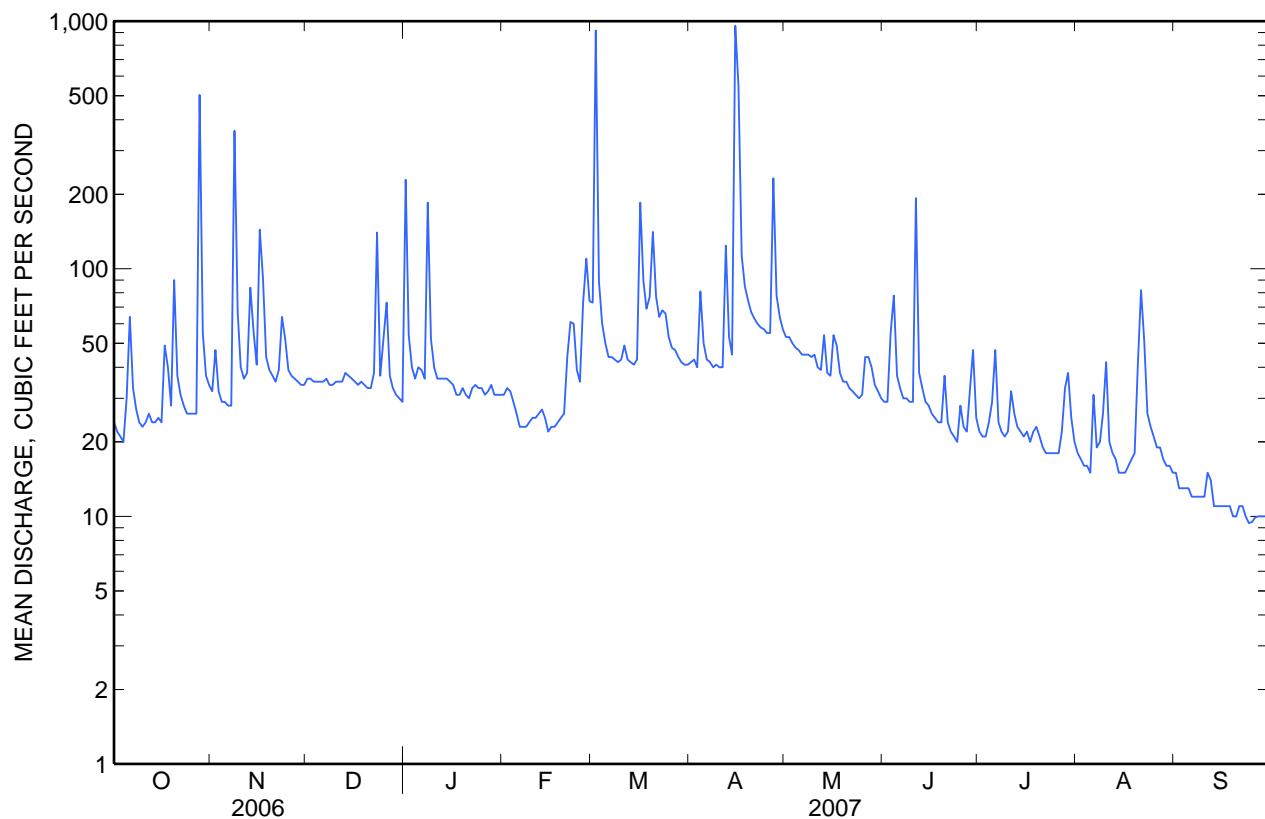
<b>Day</b>	<b>Oct</b>	<b>Nov</b>	<b>Dec</b>	<b>Jan</b>	<b>Feb</b>	<b>Mar</b>	<b>Apr</b>	<b>May</b>	<b>Jun</b>	<b>Jul</b>	<b>Aug</b>	<b>Sep</b>
<b>1</b>	24	32	36	229	31	73	42	53	29	22	18	15
<b>2</b>	22	47	36	54	33	917	43	53	29	21	17	13
<b>3</b>	21	32	35	40	32	89	40	50	55	21	16	13
<b>4</b>	20	29	35	36	29	60	81	48	78	24	16	13
<b>5</b>	30	29	35	40	26	50	50	47	37	29	15	13
<b>6</b>	64	28	35	39	e23	44	43	45	33	47	31	12
<b>7</b>	33	28	36	36	e23	44	42	45	30	24	19	12
<b>8</b>	27	361	34	185	e23	43	40	45	30	22	20	12
<b>9</b>	24	67	34	52	e24	42	41	44	29	21	26	12
<b>10</b>	23	40	35	40	e25	43	40	45	29	22	42	12
<b>11</b>	24	36	35	36	e25	49	40	40	193	32	20	15
<b>12</b>	26	38	35	36	26	43	124	39	38	26	18	14
<b>13</b>	24	84	38	36	27	42	53	54	33	23	17	11
<b>14</b>	24	56	37	36	e25	41	45	38	29	22	15	11
<b>15</b>	25	41	36	35	e22	43	959	37	28	21	15	11
<b>16</b>	24	144	35	34	e23	185	548	54	26	22	15	11
<b>17</b>	49	92	34	31	e23	89	113	49	25	20	16	11
<b>18</b>	40	44	35	31	e24	69	85	38	24	22	17	11
<b>19</b>	28	39	34	33	25	77	75	35	24	23	18	10
<b>20</b>	90	37	33	31	26	141	67	35	37	21	41	10
<b>21</b>	37	35	33	30	44	77	63	33	24	19	82	11
<b>22</b>	31	39	38	33	61	64	60	32	22	18	51	11
<b>23</b>	28	64	140	34	60	68	58	31	21	18	26	10
<b>24</b>	26	52	37	33	39	66	57	30	20	18	23	9.4
<b>25</b>	26	39	52	33	35	53	55	31	28	18	21	9.5
<b>26</b>	26	37	73	31	73	48	55	44	23	18	19	9.9
<b>27</b>	26	36	37	32	110	47	232	44	22	22	19	e10
<b>28</b>	504	35	33	34	74	44	78	40	32	33	17	e10
<b>29</b>	55	34	31	31	---	42	64	34	47	38	16	e10
<b>30</b>	37	34	30	31	---	41	57	32	25	25	16	e10
<b>31</b>	34	---	29	31	---	41	---	30	---	20	15	---
<b>Total</b>	1,472	1,709	1,236	1,443	1,011	2,775	3,350	1,275	1,100	732	717	342.8
<b>Mean</b>	47.5	57.0	39.9	46.5	36.1	89.5	112	41.1	36.7	23.6	23.1	11.4
<b>Max</b>	504	361	140	229	110	917	959	54	193	47	82	15
<b>Min</b>	20	28	29	30	22	41	40	30	20	18	15	9.4

**STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1988 - 2007, BY WATER YEAR (WY)**

	<b>Oct</b>	<b>Nov</b>	<b>Dec</b>	<b>Jan</b>	<b>Feb</b>	<b>Mar</b>	<b>Apr</b>	<b>May</b>	<b>Jun</b>	<b>Jul</b>	<b>Aug</b>	<b>Sep</b>
<b>Mean</b>	33.9	38.9	47.2	49.0	48.2	63.0	52.2	40.3	41.7	29.6	25.3	42.3
<b>Max</b>	79.0	93.8	128	96.1	106	116	112	79.2	112	94.5	88.7	212
(WY)	(2004)	(2005)	(1997)	(1996)	(2004)	(1994)	(2007)	(1989)	(2003)	(1989)	(2004)	(2003)
<b>Min</b>	10.8	10.9	12.9	22.0	16.6	27.0	21.7	20.5	16.0	12.0	5.84	8.83
(WY)	(1995)	(1999)	(1999)	(1992)	(2002)	(2006)	(2002)	(2006)	(1995)	(1995)	(1995)	(1995)

**01479820 RED CLAY CREEK NEAR KENNETT SQUARE, PA—Continued****SUMMARY STATISTICS**

	<b>Calendar Year 2006</b>	<b>Water Year 2007</b>			<b>Water Years 1988 - 2007</b>	
<b>Annual total</b>	15,398		17,162.8			
<b>Annual mean</b>	42.2		47.0		42.9	
<b>Highest annual mean</b>					78.2	2004
<b>Lowest annual mean</b>					18.9	2002
<b>Highest daily mean</b>	1,370	Jun 28	959	Apr 15	4,150	Sep 15, 2003
<b>Lowest daily mean</b>	13	Aug 22 <sup>a</sup>	9.4	Sep 24	0.86	Sep 3, 1995
<b>Annual seven-day minimum</b>	14	Aug 17	9.8	Sep 23	1.1	Sep 2, 1995
<b>Maximum peak flow</b>			2,380	Mar 2	<sup>b</sup> 19,700	Sep 15, 2003
<b>Maximum peak stage</b>				7.10 Mar 2	<sup>c</sup> 15.30	Sep 15, 2003
<b>10 percent exceeds</b>	56		67		64	
<b>50 percent exceeds</b>	28		33		29	
<b>90 percent exceeds</b>	18		16		13	

<sup>a</sup> Also Aug 23.<sup>b</sup> From rating curve extended above 2,580 ft<sup>3</sup>/s based on slope-conveyance determination of discharge at gage height 15.30 ft.<sup>c</sup> From outside highwater mark.

**01479820 RED CLAY CREEK NEAR KENNETT SQUARE, PA—Continued****WATER-QUALITY RECORDS**

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

REMARKS.--Analysis for pH, water temperature, specific conductance, and dissolved oxygen is performed on site. All other sample analyses were performed at the Pennsylvania Department of Environmental Protection laboratory in Harrisburg, Pa.

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.

**WATER-QUALITY DATA  
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 1 of 3

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

Date	Time	Instantaneous discharge, cfs (00061)		pH, water, unfltrd field, std (00400)		Specif. conduc-tance, wat unf 25 degC (90095)		Specif. conduc-tance, wat unf 25 degC (00095)		Temper-ature, water, deg C (00010)	Hard-ness, water, mg/L as CaCO3 (00900)	Magnes-iun, water, unfltrd recover -able, mg/L (00916)		ANC, wat unf fixed end pt, lab, mg/L as CaCO3 (00417)		Sulfate water, filtrd, mg/L (00945)
		Dis-solved oxygen, mg/L (00300)	units (00400)	water, unfltrd lab, std (00403)	pH, water, unfltrd lab, std (00403)	μS/cm	μS/cm	water, unfltrd recover -able, mg/L (00916)	water, unfltrd recover -able, mg/L (00927)			water, unfltrd recover -able, mg/L (00916)	water, unfltrd recover -able, mg/L (00927)	ANC, wat unf fixed end pt, lab, mg/L as CaCO3 (00417)		
Nov 06...	1400	29	13.6	8.1	8.0	394	395	7.8	160	38.2	15.0	85	38.3			
Jan 03...	1300	38	13.9	7.9	7.9	353	340	5.5	140	33.5	12.7	71	37.3			
Mar 06...	1300	42	15.1	7.8	7.8	386	389	2.0	140	33.3	13.0	68	36.4			
May 01...	1400	48	13.4	8.8	8.5	364	359	15.2	140	35.5	13.6	75	33.8			
Jul 10...	1100	23	10.1	7.9	8.2	399	408	22.3	150	37.1	14.3	85	34.1			
Sep 12...	1100	14	9.0	7.9	8.1	428	427	19.0	170	41.0	15.6	91	36.1			

**01479820 RED CLAY CREEK NEAR KENNETT SQUARE, PA—Continued**

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 2 of 3  
 [Remark codes: <, less than.]

Date	Residue on evap. at 105degC wat flt	Residue total non- filter- able, mg/L (00515)	Ammonia water, unfltrd mg/L (00610)	Nitrate water unfltrd mg/L (00620)	Nitrite water, unfltrd mg/L (00615)	Total nitro- gen, water, unfltrd mg/L (00600)	Ortho- phos- phate, water, unfltrd mg/L (70507)	Phos- phorus, water, unfltrd mg/L (00665)	Fecal coliform, M-FC 0.45uMF 100 mL (31616)	Alum- inum, water, unfltrd recover -able, µg/L (01105)	Copper, water, unfltrd recover -able, µg/L (01042)	Iron, water, unfltrd recover -able, µg/L (01045)	Lead, water, unfltrd recover -able, µg/L (01051)
Nov 06...	342	8	<.020	4.82	<.040	5.0	.07	.076	120	<200	<10	80	<1.0
Jan 03...	252	12	<.020	4.54	<.040	4.8	.07	.079	260	<200	<10	220	<1.0
Mar 06...	288	<2	.090	4.95	<.040	5.2	.07	.086	20	<200	10	200	<1.0
May 01...	236	<2	<.020	4.06	<.040	4.3	.04	.055	80	<200	40	140	<1.0
Jul 10...	280	2	.040	5.02	<.040	5.3	.20	.207	200	<200	<10	210	<1.0
Sep 12...	316	4	.040	5.26	<.040	5.5	.28	.315	1,700	<200	<10	200	<1.0

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO**  
**SEPTEMBER 2007**

Part 3 of 3  
 [Remark codes: <, less than.]

Date	Mangan- ese, water, unfltrd recover -able, µg/L (01055)	Nickel, water, unfltrd recover -able, µg/L (01067)	Zinc, water, unfltrd recover -able, µg/L (01092)
Nov 06...	20	<50	10
Jan 03...	30	<50	<10
Mar 06...	40	<50	20
May 01...	30	<50	30
Jul 10...	30	<50	40
Sep 12...	20	<50	<10

**01479820 RED CLAY CREEK NEAR KENNETT SQUARE, PA—Continued****ECOLOGICAL RECORDS**

COOPERATION.--Station established and maintained by the U.S. Geological Survey in cooperation with the Pennsylvania Department of Environmental Protection and the Delaware Geological Survey. 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.

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

REMARKS.--Samples were collected using rapid bioassessment protocols for benthic macroinvertebrates using a D-Frame net with a mesh size of 500 mm. Counts are based on a randomly-selected 100-organism (approximate) subsample.

**BIOLOGICAL DATA-BENTHIC MACROINVERTEBRATES**

Date	Count
Benthic Macroinvertebrate	
Platyhelminthes	•
Turbellaria (FLATWORMS)	•
Tricladida	•
Planariidae	• 26
Nematoda (NEMATODES)	• 2
Arthropoda	•
Acariformes	•
Hydrachnidia (WATER MITES)	• 2
Crustacea	•
Amphipoda (SCUDS)	•
Crangonyctidae	•
<i>Stygonectes</i>	• 1
Gammaridae	•
<i>Gammarus</i>	• 2
Insecta	•
Ephemeroptera (MAYFLIES)	•
Baetidae	•
<i>Baetis</i>	• 4
Heptageniidae	•
<i>Maccaffertium</i>	• 5
Trichoptera (CADDISFLIES)	•
Hydropsychidae	•
<i>Cheumatopsyche</i>	• 11
<i>Hydropsyche</i>	• 13
Hydroptilidae	•
<i>Hydroptila</i>	• 1
<i>Leucotrichia</i>	• 15
Philopotamidae	•
<i>Chimarra</i>	• 14
Coleoptera (BEETLES)	•
Elmidae (RIFLE BEETLES)	•
<i>Optioservus</i>	• 3
<i>Stenelmis</i>	• 7

**01479820 RED CLAY CREEK NEAR KENNETT SQUARE, PA—Continued**

Date	10/04/06
Benthic Macroinvertebrate	Count
Diptera (TRUE FLIES)	•
Chironomidae (MIDGES)	• 59
Empididae (DANCE FLIES)	•
<i>Hemerodromia</i>	• 3
Simuliidae (BLACK FLIES)	•
<i>Simulium</i>	• 3
Tipulidae (CRANE FLIES)	•
<i>Antocha</i>	• 6
Total Organisms	177